2012 – 4th Quarter Report Support for Conducting Systems & Performance Audits of CASTNET Sites and NADP Monitoring Stations

EPA Contract No. EPW12019

Prepared for:

U. S. Environmental Protection Agency

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January 2013

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List of Acronyms and Abbreviations

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

1.0 CASTNET Quarterly Report

1.1 Introduction

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

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

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

As of January 2012, the network is comprised of 82 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, 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 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 continue to operate meteorological sensors. Those sites are BEL116, BVL30, CHE185, and PAL190.

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	\leq ±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	≤±0.50° 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 mp	
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	
Ozone	Slope	Linear regression of multi-	$0.9000 \le m \le 1.1000$	
Ozone	Intercept	point test gas concentration as	-5.0 ppb ≤b ≤5.0 ppb	
Ozone	Correlation Coefficient	measured with a certified transfer standard	$0.9950 \le r$	
DAS Accuracy Comparison with cer standard		Comparison with certified standard	$\leq \pm 0.003 \text{ VDC}$	

 Table 1. Performance Audit Challenge and Acceptance Criteria

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 Sites Visited Fourth Quarter 2012

This report consists of the systems and performance audit results from the CASTNET sites audited during the fourth quarter (October through December) of 2012. The locations and dates of the audits are presented in Table 2.

Site ID	Sponsor Agency	Site Location	Visit dates	
ACA416	NPS	Acadia NP	10/9/2012	
HOW191	EPA	Howland-AmeriFlux	10/10/2012	
HOW132	EPA	Howland	10/11/2012	

 Table 2. Site Audit Visits

Site ID	Sponsor Agency	Site Location	Visit dates
ASH135	EPA	Ashland	10/12/2012
WST109	EPA	Woodstock	10/22/2012
ABT147	EPA	Abington	10/23/2012
CAT175	EPA	Claryville	10/24/2012
ARE128	EPA	Arendtsville	10/30/2012
PSU 106	EPA	Penn State University	11/1/2012
BEL116	EPA	Beltsville	11/20/2012

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) ozone Performance Evaluations (PE).

Site ID	Sponsor Agency	Site Location	Visit dates
CDR119	EPA	Cedar Creek St. Park	10/23/2012
PAR107	EPA	Parsons	10/24/2012
LRL117	EPA	Laurel Hill St. Park	10/25/2012
GRS420	NPS	Great Smoky Mountains NP	11/2/2012
SHN418	NPS	Shenandoah NP - Big Meadows	11/13/2012
BWR139	EPA	Blackwater NWR	11/17/2012
BFT142	EPA	Beaufort	11/29/2012
CND 125	EPA	Candor	11/29/2012

 Table 3.
 Site Ozone PE Visits

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.

One kilometer, five kilometer, and forty kilometer radius maps are only included for those sites not previously audited. Other photographs of site conditions are included within each systems report where necessary.

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

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

2.0 NADP Quarterly Report

2.1 Introduction

The National Atmospheric Deposition Program (NADP) operates three precipitation chemistry networks and two atmospheric concentration networks. The National Trends Network (NTN) has been measuring acidic precipitation since 1978. The network currently has more than 200 sites. The Atmospheric Integrated Research Monitoring Network (AIRMoN) began operation in 1992 and currently measures event based precipitation events at 7 sites. The Mercury Deposition Network (MDN) measures total mercury in precipitation samples from more than 100 stations. The MDN began operation in 1996 and includes sites throughout the US and Canada. The Atmospheric Mercury Network (AMNet) and the Ammonia Monitoring Network (AMoN) measure ambient concentrations of mercury and ammonia, respectively.

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

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

2.2 **Project Objectives**

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

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

2.3 Sites Visited Fourth Quarter 2012

This report covers the results from the NADP sites surveyed during the fourth quarter (October through December) of 2012. The station name and dates of the audits are presented in Table 4.

Side ID	Network	Survey Date	Station Name		
ME96	MDN/NTN	10/3/2012	Casco Bay-Wolfe's Neck Farm		
ME09	MDN/NTN	10/15/2012	Greenville Station		
ME04	MDN/NTN	10/16/2012	Carrabassett Valley		
ME02	MDN/NTN	10/17/2012	Bridgton		
ME08	NTN	10/18/2012	Gilead		
WV18	AMoN	10/24/2012	Parsons		
PA83	NTN	10/25/2012	Laurel Hill State Park		
DE02	AIRMoN	10/26/2012	Lewes		
PA71	NTN	10/31/2012	Little Buffalo State Park		
PA98	NTN	10/31/2012	Frances Slocum State Park		
TN11	MDN/NTN	11/1/2012	Great Smoky Mountains National Park-Elkmont		
PA 37	MDN	11/2/2012	Waynesburg		
PA 02	NTN	11/3/2012	Crooked Creek Lake		
PA 72	MDN/NTN	11/4/2012	Milford		
MD13	NTN	11/16/2012	UM Wye Center		

 Table 4. Sites Surveyed – Fourth Quarter 2012

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

CASNTET Audit Report Forms

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number		
ACA416-Eric Hebert-10/09/2012								
1	10/9/2012	Computer	Hewlett Packard	ACAD	6730b	CNU9335F7W		
2	10/9/2012	DAS	Environmental Sys Corp	ACADIA1	8832	unknown2		
3	10/9/2012	Delta Temperature	Climatronics	none	100093	3976		
4	10/9/2012	Elevation	Elevation	None	1	None		
5	10/9/2012	F460 translator	Climatronics	none	100163	683		
6	10/9/2012	Filter pack flow pump	Thomas	none	107CAB11	119900011314		
7	10/9/2012	Flow Rate	Tylan	none	FC280	AW9403021		
8	10/9/2012	Infrastructure	Infrastructure	none	none	none		
9	10/9/2012	Mainframe	Climatronics	01342	100081	1288		
10	10/9/2012	Met tower	Climatronics	none	unknown	illegible		
11	10/9/2012	MFC power supply	Tylan	00045	RO-32	FP902028		
12	10/9/2012	Modem	US Robotics	none	33.6 fax modem	unknown		
13	10/9/2012	Ozone	ThermoElectron Inc	90744	49C	49C-74536-376		
14	10/9/2012	Ozone Standard	ThermoElectron Inc	none	49CPS	49CPS-75057-378		
15	10/9/2012	Precipitation	Texas Electronics	02179	TR-525i-HT	illegible		
16	10/9/2012	Printer	Hewlett Packard	none	842C	unknown		
17	10/9/2012	Relative Humidity	Vaisala	none	HMP45AC	Illegible		
18	10/9/2012	Sample Tower	Aluma Tower	none	В	AT-71103-7I-3		
19	10/9/2012	Shelter Temperature	unknown	none	none	none		
20	10/9/2012	Shield (10 meter)	Climatronics	none	100325	illegible		
21	10/9/2012	Shield (2 meter)	Climatronics	none	100325	illegible		
22	10/9/2012	Siting Criteria	Siting Criteria	None	1	None		
23	10/9/2012	Solar Radiation	Licor	none	LI-200	illegible		
24	10/9/2012	Solar Radiation Translator	Climatronics	none	100144	314		
25	10/9/2012	Surface Wetness	RM Young	90725	58101	none		
26	10/9/2012	Temperature	Climatronics	none	100093	5976		
27	10/9/2012	Temperature Translator	Climatronics	03630	100088-2	401		
28	10/9/2012	Wind Direction	Climatronics	none	100076	illegible		

Site Visit Date		Parameter	Mfg	Owner ID	Model Number	Serial Number
29	10/9/2012	Wind Speed	Climatronics	none	100075	1947
30	10/9/2012	Zero air pump	ThermoElectron Inc	none	111	111-30215-237

DAS Data Form

DAS Time Max Error: 0.4

Mfg	Serial	Number Sit	e '	Fechnician	Site Visit Date	Parameter	Use Desc.
Environmental	Sys unkno	own2 AC	CA416	Eric Hebert	10/09/2012	DAS	Primary
Das Date:	10/9 /2012	Audit Date		Mfg	Datel	Parameter	DAS
Das Time:	9:04:00	Audit Time		Serial Number	4000392	Tfor Doco	Source generator (D
Das Day:	283	Audit Day	283	Serial Number		Tier Desc.	Source generator (D
Low Channel	:	High Chann	el:	Tfer ID	01321		
Avg Diff:	Max Diff:	Avg Diff:	Max Diff:	Slope	1.0000	O Intercept	0.00000
0.0003	0.0	007 0.000	0.0007	Cert Date	2/13/201	2 CorrCoff	1.00000
				Cert Date	2/10/201		1.00000
				Mfg	Fluke	Parameter	DAS
				Serial Number	86590148	Tfer Desc.	DVM
				Tfer ID	01310		
				Slope	1.0000	D Intercept	0.00000
				Cert Date	2/9/201	2 CorrCoff	1.00000
Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference	
2	0.0000	0.0000	0.0000) V	V	0.0000	
2	0.1000	0.1000	0.0997	7 V	V	-0.0003	
2	0.3000	0.3000	0.2993	3 V	V	-0.0007	
2	0.5000	0.4999	0.4999		V	0.0000	
2	0.7000	0.6999	0.6992	2 V	V	-0.0007	
2	0.9000	0.8999	0.8999	9 V	V	0.0000	
2	1.0000	1.0000	0.9998	8 V	V	-0.0002	

Flow Data Form

Mfg	Serial Nu	nber Ta	Site	Tec	hnician	Site Visit I	Date Paran	neter	Owner ID
Tylan	AW94030	21	ACA416	Eri	c Hebert	10/09/201	2 Flow F	Rate	none
Mfg	Tylan				Mfg	BIOS	F	arameter Flo	ow Rate
SN/Owner ID	FP902028	00045			Serial Number	al Number 122974		fer Desc. Bl	OS 220-H
	MFC power su	pply			Tfer ID	01416			
Tarameter		PP'J			CI	1	00000 T-4	Г	0.00000
					Slope	1.00000 Intercep			
					Cert Date	2/	6/2012 Co	rrCoff	1.00000
DAS 1:		DAS 2:			Cal Factor Z	ero	0.0	04	
A Avg % Diff: A	A Max % Di	A Avg %l	Dif A Max	: % Di	Cal Factor F	ull Scale	5.4	41	
1.96%	2.09%				Rotometer R	eading:	1.	55	
UseDescription:	Test type:	Input l/m:	Input STP:	MfcDisp.:	OutputSignal:	Output S E:	InputUnit:	OutputSignal	IPctDifference:
primary	pump off	0.000	0.000	-0.01	-0.004	0.04	l/m	l/m	
primary	leak check	0.000	0.000	0.01	0.003	0.05	l/m	l/m	
primary	test pt 1	0.000	1.528	1.33	1.363	1.50	l/m	l/m	-1.85%
primary	test pt 2	0.000	1.530	1.33	1.363	1.50	l/m	l/m	-1.94%
primary	test pt 3	0.000	1.532	1.33	1.363	1.50	l/m	l/m	-2.09%
Sensor Compo	nent Leak Te	st		Condition	n		Status	s pass	
Sensor Compo	nent Filter Az	imuth		Conditio	n 135 Deg		Statu	pass	
Sensor Compo	nent Filter De	pth		Condition	n - 1.0 cm		Statu	Fail	
Sensor Compo	nent Filter Po	sition		Condition	n Poor		Statu	Fail	
Sensor Compo	nent Moisture	Present		Condition	n See comments	;	Status	pass	
Sensor Compo	nent Rotomet	er Condition	1	Condition	n Clean and dry		Status	pass	
Sensor Compo	nent System	Memo		Condition	n			pass	
Sensor Compo	ensor Component Tubing Condition		Condition	n Good		Statu	pass		
Sensor Compo	nent Filter Dis	stance		Condition	n 6.0 cm		Statu	pass	

Ozone Data Form

Mfg	Serial Number Ta	Site	Te	Technician		Site Visit Date		Parame	eter	Owner I	D
ThermoElectron Inc	49C-74536-376	ACA416	Er	ric Hebert	:	10/09/20)12	Ozone		90744	
Intercept	0.96212 Slope: 0.29896 Intercept 0.99993 CorrCoff	0.0000	0 Serial Number			ThermoE 5171121			rameter o er Desc. C	zone Dzone primary	r stan
DAS 1:	DAS 2:			Slope			1.0098	7 Inter	cont	0.07	483
	Max % Di A Avg % 4.3%	%Dif A Max	% Di	Cert Da	nte		/23/201		•	1.00	
UseDescription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	Unit:	PctDi	fference:	
primary	1	0.42	0.				ppb				
primary	2	33.78	33.	.37			ppb			-4.26%	
primary	3	64.46	63.		61		ppb			-3.14%	
primary	4	82.51	81.				ppb			-1.56%	
primary	5	210.75	208	3.61	200	0.45	ppb			-3.91%	
Sensor Compone	nt Cell B Noise		Condition	on 0.6 pr	b			Status	pass]
Sensor Compone	nt Cell B Tmp.		Conditio	on				Status	pass		
Sensor Compone	nt Fullscale Voltage		Condition	on 9.998	0			Status	pass		
Sensor Component Inlet Filter Condition			Conditio	on Clear	1			Status	pass		
Sensor Compone	nt Line Loss		Conditio	on Not te	ested			Status	pass		
Sensor Compone	nt Offset		Condition	on 0.1				Status	pass		
Sensor Compone	nt Span		Condition	on 1.082				Status	pass		
Sensor Compone	nt Cell B Freq.		Condition 93.2 kHz				Status	pass			
Sensor Compone	nt System Memo		Conditio	on				Status	pass		
Sensor Compone	nt Sample Train		Conditio	on See c	omments	;		Status	pass		
Sensor Compone	nt Cell B Pressure		Condition	on				Status	pass		
Sensor Compone	nt Cell B Flow		Condition	on 0.73 l	pm			Status	pass		
Sensor Compone	nt Cell A Tmp.		Condition	on 35.7 (2			Status	pass		
Sensor Compone	nt Cell A Pressure		Condition	on 759 m	nmHg			Status	pass		
Sensor Compone	nt Cell A Noise		Condition	on 0.4 pp	b			Status	pass		
Sensor Compone	nt Cell A Freq.			on 104.8				Status			
Sensor Compone	Cell A Flow			on 0.73 l	pm			Status			
Sensor Compone	nt Battery Backup		Condition					Status	pass		
Sensor Compone	nt Zero Voltage		Condition 0.000					Status	pass		

Wind Speed Data Form

Mfg	Serial Numbe	er Ta Site		Technician	Site Visit Da	nte Parameter	Owner ID
Climatronics	1947	ACA416	6	Eric Hebert	10/09/2012	Wind Speed	none
	Climatronics			Mfg	RM Young		neter wind speed
SN/Owner ID	683	none		Serial Number		Tier D	
Parameter	F460 translator			Tfer ID	01262		
Prop or Cups SN	2033			Slope	1.00	0000 Intercep	t 0.00000
Prop or Cups To Prop Correction	orque	0.2 to	0.2	Cert Date	1/13/	2010 CorrCof	f 1.00000
•				Mfg	RM Young	Param	eter wind speed
				Serial Number		Tfer D	esc. wind speed motor (I
				Tfer ID	01261		
				Slope	1.00	0000 Intercep	t 0.00000
				Cert Date	1/13/	2010 CorrCof	if 1.00000
D	AS 1:	D	OAS 2:				
L	ow Range Hi	gh Range L	ow Range	High Range			
Abs Avg Err	0.20	0.74%					
Abs Max Er	0.22	1.64%					
UseDescription:	InputDevice:	Input RPM:	Input m/s		DAS m/s:	Diff/ %Diff:	Difference:
primary	none	0	0.20	0.000	0.0		-0.20
primary	01261	50	1.40	0.000	1.2		-0.20
primary	01261	100	2.57	0.000	2.4		-0.17
primary	01261	170	4.22	0.000	4.0		-0.22
primary	01261	250	6.10	0.000	6.0	-1.64%	%
primary	01262	500	11.97	0.000	11.9	-0.589	%
primary	01262	800	19.02	0.000	19.0	0.059	%
primary	01262	2000	47.22	0.000	47.5	0.689	%
Sensor Compo	nent System Mer	Condi	ition		Status pas	S	

Sensor Component	System Memo	Condition		Status	pass
Sensor Component	Sensor Plumb	Condition	Plumb	Status	pass
Sensor Component	Sensor Heater	Condition	Functioning	Status	pass
Sensor Component	Prop or Cups Condition	Condition	Good	Status	pass
Sensor Component	Condition	Condition	Good	Status	pass
Sensor Component	Torque	Condition		Status	pass

Wind Direction Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Climatronics	illegible	ACA416	Eric Hebert	10/09/2012	Wind Direction	none
Mfg	Climatronics		Mfg	Ushikata	Parameter wind	d direction
SN/Owner ID	683 none		Serial Number	190037	Tfer Desc. tran	sit
Parameter	F460 translator		Tfer ID	01265		
Vane SN: 12	230 C. A	. Align. deg. true:	Slope	1.0000	0 Intercept	0.00000
VaneTorque	5 to 7	180	Cert Date	1/4/201	1 CorrCoff	1.00000
			Mfg	RM Young	Parameter wind	d direction
			Serial Number		Tfer Desc. wind	d direction wheel
			Tfer ID	01266		

	DAS 1:		DAS 2:	
	Orientation	Linearity:	Orientation	Linearity:
Abs Avg Err	3.4	1.3		
Abs Max Er	5	4		
TT D I I		T D	.	

UseDescription:	TferID:	Input Raw:	Linearity	Output V:	Output Deg.:	Difference:	Change:	Error:
primary	01266	0		0.000	4	4	45	0
primary	01266	45	✓	0.000	47	2	43	-2
primary	01266	90	✓	0.000	91	1	44	-1
primary	01266	135	✓	0.000	135	0	44	-1
primary	01266	180	✓	0.000	184	4	49	4
primary	01266	225	✓	0.000	229	4	45	0
primary	01266	270	✓	0.000	275	5	46	1
primary	01266	315	✓	0.000	319	4	44	-1
primary	01265	90		0.000	91	1		1
primary	01265	90		0.000	93	3		3
primary	01265	180		0.000	184	4		4
primary	01265	270		0.000	275	5		5
primary	01265	360		0.000	4	4		4
Sensor Compon	ent Mast		Cond	ition Good		Status	pass	
Sensor Compon	ent Condition		Cond	Condition Good		Status	pass	
Sensor Compon	ent Sensor Heate	er	Cond	Condition Functioning			pass	
Sensor Compon	ent Sensor Plum	b	Cond	ition Plumb		Status	pass	
Sensor Compon	ent Torque		Cond	ition		Status	pass	
Sensor Component Vane Condition		Cond	ition Good		Status	pass		
Sensor Component System Memo		Cond	ition		Status	pass		

Temperature Data Form

Mfg	Serial Number	Tag Site	T	ſechni	ician	Site Visit Dat	e Param	eter	Owner ID	
Climatronics	5976	ACA416		Eric He	ebert	10/09/2012	Tempe	rature	none	
Mfg	Climatronics			Mf	g	Eutechnics	Pa	arameter Te	emperature	
SN/Owner ID	401 03	3630		Ser	rial Number	01D102193	T	fer Desc. R	TD translator	
Parameter	Temperature Transl	rature Translator			er ID	01231				
DAS 1:	DAS	5 2:		Slo	ре	1.001	57 Inte	rcept	-0.020	95
Abs Avg Err	Abs Max Er Abs	Avg Err Abs	Max Er	Cer	rt Date	2/10/20)12 Cor	rCoff	1.000	00
				Mf	g	Eutechnics	Pa	arameter Te	emperature	
				Ser	rial Number	01H0060	Tfer Desc. RTD probe			
				Tfe	er ID	01230				
				Slo	Slope 1.0015		57 Inte	rcept	-0.020	95
				Cer	rt Date	2/10/20)12 Cor	rCoff	1.000	00
0.05	0.09									
UseDesc.:	Test type:	InputTmpRaw	InputTmp	Corr.:	OutputTmpS	ignal: OutputS	ignalEng:	OSE Unit:	Difference:	
	emp Low Range	0.08	0.10		0.000		0.2	С	0.09	
	emp Mid Range	27.99	27.97		0.000		8.0	C	0.05	
	emp High Range	49.98	49.92		0.000	4	9.9	C	0	
Sensor Comp	Sensor Component Shield			tion C	Clean		Status	pass		
Sensor Component Blower Status Switch			Condit	Condition N/A			Status	pass		
Sensor Component Blower		Condit	tion F	unctioning		Status	pass			
Sensor Comp	Sensor Component System Memo			Condition				pass		

Delta Temperature Data Form

Mfg	Serial Number Ta	Site T	echnician	Site Visit Date	Parameter	Owner ID
Climatronics	3976	ACA416 E	Eric Hebert	10/09/2012	Delta Temperature	none
Mfg	Climatronics		Mfg	Eutechnics	Parameter Ter	nperature
SN/Owner ID	401 03630		Serial Number	01H0060	Tfer Desc. RTI	D probe
Parameter	Temperature Translator		Tfer ID	01230]	
			Slope	1.00157	Intercept	-0.02095
DAS 1:	DAS 2:		Cert Date	2/10/2012	2 CorrCoff	1.00000
			Mfg Serial Number Tfer ID Slope Cert Date	Eutechnics 01D102193 01231 1.00157 2/10/2012		
			Cert Date	2/10/2012		1.00000

UseDescription:	Iteration:	OutputTmpSignal:	OutputSignalEng:	OutputSignalEngUnit:	Difference:		
primary	1	0.000	0.06	0.06 C			
primary	2	0.000	0.07	С	0.07		
primary	3	0.000	0.05	С	0.05		
Sensor Component System Memo			Condition		Status pass		
Sensor Component Shield		Condition Clean		Status pass			
Sensor Compo	nent Properly Site	d	Condition Properly	' sited	Status pass		
Sensor Compo	nent Blower Statu	s Switch	Condition N/A		Status pass		
Sensor Compo	onent Blower		Condition Function	ning	Status pass		

Humidity Data Form

Mfg	S	Serial Nur	nber Tag	Site		Т	echnician		Site V	isit Date	Para	meter	Owner ID
Vaisala		Illegible		ACA	416	E	ric Hebert		10/09	/2012	Relat	tive Humidity	none
							Mfg		Rotron	lic		Parameter Rel	ative Humidity
							Serial Nu	mber	12443	2		Tfer Desc. Hyg	groclip
							Tfer ID		01225				
							Slope			1.0000	0 In	tercept	0.00000
	DAS 1	l:			DAS 2:		Cert Date	e		2/13/201	2 C	orrCoff	1.00000
	Low F		High Ran		Low Range]	High Range	e					
Abs Avg Err		6.7 5.1											
Abs Max Er		7.7		5.1									
UseDesc.:	Tes	st type:	Devic	e:	Input RH:	G	TL Raw:	RH (Corr.:	DAS V	olts:	DAS %RH:	Difference:
primary	RH Lo	w Range	Hygroc	lip	32.8		30.1	32	2.8	0.38	5	38.5	5.7
primary	RH Lo	w Range	Hygroc	lip	52.9		57.4	52	2.9	0.60	6	60.6	7.7
primary	RH Hi	gh Range	Hygroc	clip	93.6		89.1	93	8.6	0.88	5	88.5	-5.1
Sensor Com	ponent	System I	/lemo		Cor	nditi	on				Statu	us pass	
Sensor Com	ponent	Blower			Cor	nditi	on N/A				Statu	us pass	
Sensor Com	ponent	Blower S	tatus Swite	ch	Cor	nditi	on N/A				Statu	us pass	
Sensor Com	ponent	RH Filter			Cor	nditi	on Clean				Statu	us pass	
Sensor Com	ponent	Shield			Cor	nditi	on Clean				Statu	us pass	

Solar Radiation Data Form

Mfg	Serial Number	Tag Site	Т	echnician	Site Visit Dat	e Param	neter	Owner ID	
Licor	illegible	ACA416	E	Fric Hebert	10/09/2012	Solar F	Radiation	none	
Mfg	Climatronics			Mfg	Eppley	P	arameter	solar radiation	
SN/Owner ID	314 r	ione		Serial Number	10765	Т	fer Desc.	SR transfer transla	at
Parameter	Solar Radiation Tra	anslator		Tfer ID	01246				
DAS 1:	DAS 2:			Slope	1.000	000 Inte	ercept	0.00000)
% Diff of Avg	%Diff of Max %l	Diff of Avg %D	iff of Max	Cert Date	1/6/20	010 Cor	rCoff	1.00000)
				Mfg	Eppley	P	arameter	solar radiation	
				Serial Number	34341F3	Т	fer Desc.	SR transfer senso)r
				Tfer ID	01245				
				Slope	1.000	000 Inte	ercept	0.00000)
				Cert Date	12/16/2010 Cor		rCoff	1.00000)
2.9%	2.6%	0.0%	0.0%						
UseDescription	: Measure Date	MeasureTime	Tfer Cor	r: DAS w/r	m2: PctDi	fference:			
primary	10/9/2012	10:00	575	533		-7.3%	,		
primary	10/9/2012	12:00	689	671		-2.6%			
primary	10/9/2012	13:00	619	606		-2.1%)		
primary	10/9/2012	15:00	285	295		3.5%)		
Sensor Comp	onent Sensor Leve	l	Conditi	ion Full bubble off	level	Status	Fail		
Sensor Comp	Sensor Component Sensor Clean Condit		ion Clean		Status	pass			
Sensor Comp	Sensor Component Properly Sited Cond			on Properly sited	Status	pass			
Sensor Comp	Sensor Component System Memo			ion See comments	3	Status	pass		

Surface Wetness Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	none	ACA416	Eric Hebert	10/09/2012	Surface Wetness	90725
			Mfg	Ohmite	Parameter su	rface wetness
			Serial Numbe	er 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	0.955	95.50	V	N/A	% Wet		
primary	dry	N/A	0.003	0.28 V		N/A	% Wet		
Sensor Compon	ent Grid Orientati	on	Condition	North	Stat	tus pass			
		L							
Sensor Compon	ent Grid Clean		Condition	Condition Clean			Status pass		
Sensor Compon	ent Grid Angle		Condition	Condition about 45 deg					
Sensor Compon									
Sensor Compon	ent Grid Condition	n	Condition	Condition Good					
Sansor Compon	ent Properly Sited	4	Condition	Properly sited	Stat	tus pass			
Sensor Compon	the ropoly choi	-	Condition	ropony onou	Dia	us pace			
Sensor Compon	ent System Memo	0	Condition		Stat	tus pass			

Precipitation Data Form

Mfg	Seri	al Number Ta	Site]	Гech	nician		Site	Visit Date	Parame	eter	Owner ID
Texas Electror	nics illeç	jible	ACA416		Eric	Hebert		10/	09/2012	Precipita	ation	02179
					N	ſſg		PMF	>	Pa	rameter	Precipitation
DAS 1:		DAS 2:			S	erial Nur	nber	EW-	06134-50	Tf	er Desc. 2	50ml graduate
		% Di A Avg %	6Dif A I	Max % Di	Т	fer ID		012	50			
19.0%		22.0%				_			1 0000			0.00000
					S	lope			1.0000	0 Inter	cept	0.00000
					C	Cert Date			9/5/200	5 Corr	Coff	1.00000
	1		1							0.07777		
UseDesc.	Test type	e: TferVolume: 10 manual		^	p:	Eq.Ht: 1.00	DAS					its:PctDifference
primary primary	tip check test 1	231.5	1	10 sec 10 sec	-	5.00	5.8		mm mm	mm mm	ml ml	16.0%
primary	test 2	231.5	2	10 sec	-	5.00	6.		mm	mm	ml	22.0%
Sensor Com	ponent Sy	/stem Memo	1	Condi	ition	See com	ments			Status	pass	
Sensor Com	ponent Se	ensor Heater		Condi	ition	Not funct	ioning			Status	Fail	
Sensor Com	ponent P	operly Sited		Condi	ndition See comments				Status pass			
Sensor Com	ponent G	auge Drain Scree	en	Condi	ition	Not insta	lled			Status	Fail	
Sensor Com	ponent Le	evel		Condi	ition	Level				Status	pass	
Sensor Component Gauge Clean		Condi	ition	Clean				Status	pass			
Sensor Com	ponent Fu	unnel Clean		Condi	ition	Clean				Status	pass	
Sensor Com	ponent C	ondition		Condi	ition	Good				Status	pass	
Sensor Com	ponent G	auge Screen		Condi	ition	Installed				Status	pass	

Infrastructure Data For

Site ID	ACA416	Technician Eric Heb	ert Site Visit Date 10/09/2012
Shelter	Make	Shelter Model	Shelter Size
Ekto		8818 (s/n 2920-1)	1152 cuft
and the second			

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	Good	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	Good	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

Shelter Temperature Data For

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
unknown	none	ACA416	Eric Hebert	10/09/2012	Shelter Temperature	none
DAS 1:	DAS 2: s Max Er Abs Avg 0.67		MfgMfgSerial NumberTfer IDSlopeCert DateMfgSerial NumberTfer IDSlopeCert Date	Eutechnics 01D102193 01231 1.0015 2/10/201 Eutechnics 01H0060 01230 1.0015 2/10/201	Parameter She Tfer Desc. RTD Tintercept CorrCoff Parameter She Tfer Desc. RTD Tintercept Tfer Desc. RTD Tintercept Tintercept	Iter Temperatur D translator -0.02095 1.00000 Iter Temperatur

UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	21.82	21.81	0.000	22.2	С	0.39
primary	Temp Mid Range	21.51	21.50	0.000	22.2	С	0.67

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Flow Rate The filter sample tubing	ACA416 has drops of moi	Eric Hebert sture in low sectior	10/09/2012 as outside the sh	Moisture Present elter.	Tylan	3649		
Ozone The ozone sample train i	ACA416 s composed of m	Eric Hebert naterials other than	10/09/2012 the recommende	Sample Train ed materials which a	ThermoElectron are Teflon and glas			
Precipitation Objects violate the 45 de	ACA416 gree rule for the	Eric Hebert tipping bucket rain	10/09/2012 gage.	Properly Sited	Texas Electronic	2328		
Precipitation The tipping bucket heate	ACA416 r is generating e	Eric Hebert xcessive heat, enoug	10/09/2012 gh to evaporate	Sensor Heater water on the funnel	Texas Electronic	2328		
Solar Radiation The solar radiation senso	ACA416 or is mounted on	Eric Hebert the meteorological	10/09/2012 tower and is dif	Sensor Level ficult to access. Th	Licor e site operator doe	3648 s not check the	sensor weel	L kly.

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: PollAnalyzerCom

The ozone sample inlet has a stainless steel funnel and stainless steel fittings. The recommended material for ozone sample train is Teflon or glass.

4 Parameter: ShelterCleanNotes

The shelter is clean and well organized.

5 Parameter: MetSensorComme

The solar radiation sensor is a full bubble off level and bias to the west.

6 Parameter: MetOpMaintCom

The tipping bucket heater thermostat has failed in the closed circuit position allowing the heater to be continuously on. The tipping mechanism was beginning to melt. The heater was unplugged during the site audit.

Site ID ACA416	Technician Eric Hebert	Site Visit Date 10/0	09/2012		
Alleran	A CARLENS	and the Martin	The second second		
Site Sponsor (agency)	NPS/EPA	USGS Map	Salsbury Cove		
Operating Group	NPS/MEDEP	Map Scale			
AQS #	23-009-0103	Map Date			
Meteorological Type	Climatronics				
Air Pollutant Analyzer	Ozone, SO2, NOx, NOy, PM, VOC	QAPP Latitude	44.3770		
Deposition Measurement	dry, wet, Hg	QAPP Longitude	-68.2610		
Land Use	Costal, woodland - mixed	QAPP Elevation Meters	158		
Terrain	rolling	QAPP Declination			
Conforms to MLM	No	QAPP Declination Date			
Site Telephone	(432) 288-9322	Audit Latitude	44.377086		
Site Address 1	Route 233	Audit Longitude	-68.2608		
Site Address 2		Audit Elevation	153		
County	Hancock	Audit Declination	-16.5		
City, State	Bar Harbor, ME	Present			
Zip Code	04609	Fire Extinguisher 🗹	Inspected Dec 2011		
Time Zone	Eastern	First Aid Kit			
Primary Operator	Beth Arsenault	Safety Glasses			
Primary Op. Phone #	(207) 288-8734	Safety Hard Hat			
Primary Op. E-mail	Beth_Arsenault@nps.gov	Climbing Belt			
Backup Operator	Bill Gawley	Security Fence			
Backup Op. Phone #	(207) 288-8723	Secure Shelter			
Backup Op. E-mail	bill_gawley@nps.gov	Stable Entry Step 🔽			
Shelter Working Room	Make Ekto N	fodel 8818 (s/n 2920-1)	Shelter Size 1152 cuft		
		organized.			
Site OK	Notes				

Field S	vstems T	Data Form
I ICIU D	y Stems L	ata r urm

ACA416

F-02058-1500-S2-rev001

Site ID

Technician Eric Hebert

Site Visit Date 10/09/2012

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		
Major industrial complex	10 to 20 km]
City > 50,000 population	40 km]
City 10,000 to 50,000 population	10 km]
City 1,000 to 10,000 population	5 km]
Major highway, airport or rail yard	2 km		
Secondary road, heavily traveled	500 m		
Secondary road, lightly traveled	200 m		
Feedlot operations	500 m		
Intensive agricultural ops (including aerial spraying)	500 m		
Limited agricultural operations	200 m		
Large parking lot	200 m		
Small parking lot	100 m		
Tree line	50 m	25 m	
Obstacles to wind	10 times obstacle height		

Siting Distances OK

Siting Criteria Comment

Fi	eld Systems Data	Form	F-02058-1	500-S3-rev001	
Site	e ID ACA416	Technician Eric Hebert	20.001.002	Site Visit Date 10/09/2012	
1	Are wind speed and directi	on sensors sited so as to avoid	☑ [an Albert
	being influenced by obstrue				
2	(i.e. wind sensors should be	so as to minimize tower effects? e mounted atop the tower or on a n >2x the max diameter of the ind)			
3	Are the tower and sensors j				
4		s pointed north or positioned to s such as buildings, walls, etc?			
5	conditions? (i.e. ground bel	ensors sited to avoid unnatural low sensors should be natural oed. Ridges, hollows, and areas of voided)			
6	Is the solar radiation senso	r plumb?			
7	Is it sited to avoid shading, light?	or any artificial or reflected			
8	Is the rain gauge plumb?				
9	Is it sited to avoid shelterin towers, etc?	g effects from buildings, trees,		45 degree rule violation	
10	Is the surface wetness sense facing north?	or sited with the grid surface			
11	Is it inclined approximatel	y 30 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 solar radiation sensor is a full bubble off level and bias to the west.

Field S	Systems Dat	a Form		F-02058-1500-S4-rev001					
Site ID	ACA416	Technician Eric He	ebert	Site Visit Date 10/09/	/2012				
	ll the meterological ition, and well mair	sensors appear to be intact, ntained?	in good 🔽]					
	ll the meteorologic rting data?	al sensors operational online	e, and 🔽						
Are t	he shields for the te	emperature and RH sensors	clean?]					
Aret	he aspirated motor	s working?	✓						
Is the scrat		nsor's lens clean and free of	~]					
5 Is the	e surface wetness se	ensor grid clean and undama	aged?]					
	he sensor signal an ition, and well mair	d power cables intact, in goo ntained?	od ⊻]					
Are t from	he sensor signal an the elements and w	d power cable connections p vell maintained?	orotected 🔽]					
Paramete	r	Manufacturer I	Model	S/N	Client ID				
Met tower		Climatronics	unknown	illegible	none				
Temperature Climatronics 100093				5976	none				
Delta Temperature Climatronics 100093				3976	none				
Shield (10 meter) Climatronics 100325			100325	illegible	none				
Shield (2 meter) Climatronics 100325				illegible	none				
			-04.04		00705				

Precipitation **Texas Electronics** TR-525i-HT illegible 02179 Relative Humidity Vaisala HMP45AC Illegible none Wind Speed 1947 Climatronics 100075 none Wind Direction Climatronics 100076 illegible none LI-200 Solar Radiation Licor illegible none

none

90725

58101

RM Young

Surface Wetness

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 tipping bucket heater thermostat has failed in the closed circuit position allowing the heater to be continuously on. The tipping mechanism was beginning to melt. The heater was unplugged during the site audit.

Fie	eld Systems Data For	'n		F-02058-	1500-S5-rev001	
Site	ACA416	Technician Eri	c Hebert		Site Visit Date 10/09/2012	
	Siting Criteria: Are the pollutan	t analyzers and	deposition eq	<u>uipr</u>	nent sited in accordance with 40 CFI	<u>R 58, Appendix E</u>
1	Do the sample inlets have at leas unrestricted airflow?	t a 270 degree a	rc of			
2	Are the sample inlets 3 - 15 meters	ers above the gro	ound?			
3	Are the sample inlets > 1 meter and 20 meters from trees?	from any major	obstruction,			
	Pollutant analyzers and depositi	on equipment of	perations and	mai	intenance	
1	Do the analyzers and equipment condition and well maintained?	appear to be in	good			
2	Are the analyzers and monitors reporting data?	operational, on-	line, and			
3	Describe ozone sample tube.				3/8 teflon by 12 meters and Stainless S	Steel
4	Describe dry dep sample tube.				3/8 teflon by 12 meters	
5	Are in-line filters used in the ozo indicate location)	one sample line?	(if yes		At inlet only	
6	Are sample lines clean, free of ki obstructions?	inks, moisture, a	and			
7	Is the zero air supply desiccant u	insaturated?				
8	Are there moisture traps in the s	sample lines?			No moisture traps present	
9	Is there a rotometer in the dry d clean?	eposition filter li	ine, and is it		Clean and dry	
Par	rameter Man	ufacturer	Model		S/N	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	119900011314	none
MFC power supply	Tylan	RO-32	FP902028	00045

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 has a stainless steel funnel and stainless steel fittings. The recommended material for ozone sample train is Teflon or glass.

Fie	eld Sy	ystems Dat	a Form		F-02058-1500-S6-rev00					
Site	ID	ACA416	Technician	Eric Hebert	Site Vis	it Date 10/09/2012				
	DAS, s	ensor translators	, and peripheral equip	oment operations	and maintena	nce				
1	Do the well m	DAS instrument aintained?	s appear to be in good	condition and						
		the components n, backup, etc)	of the DAS operation:	al? (printers, 🛛						
		analyzer and sen ng protection circ	isor signal leads pass t cuitry?	hrough 🔽						
4		e signal connectio aintained?	ons protected from the	weather and						
5	Are the	e signal leads con	nected to the correct I	DAS channel?						
	Are the ground		inslators, and shelter j							
7	Does th	ne instrument she	elter have a stable pow							
8	Is the i	nstrument shelte	r temperature control	led?						
9	Is the r	net tower stable :	and grounded?		Stable	Gro	ounded			
10	Is the s	ample tower stat	ole and grounded?							
11	Tower	comments?								

Parameter	Manufacturer	Model	S/N	Client ID		
Computer	Hewlett Packard	6730b	CNU9335F7W	ACAD		
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	314	none		
Temperature Translator	Climatronics	100088-2	401	03630		

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	Fo	rm					F-02	058	-1500-S7-rev001
Site ID ACA416		Tec	hnician	Eric Hebert		Site Visit Date	10/09/2012	10.00	A STATE AND A
								653	
Documentation									
Does the site have the require	ed in	nstrun	ent and	l equipment	manuals?				
	Yes						Yes	No	N/A
Wind speed sensor		 ✓ 	and the second		Data logger				
Wind direction sensor		✓	Contract of the		Data logger				
Temperature sensor			ALC: NO.	and the second se	Strip chart	recorder			
Relative humidity sensor			CALL COLOR STORE		Computer				
Solar radiation sensor			AND STREET, ST.	STREET WALLS ST	Modem				
Surface wetness sensor	Ц	 ✓ 	Section Section	STREET,	Printer				
Wind sensor translator			and the second		Zero air pu	the second of the second second second			
Temperature translator					Filter flow				
Humidity sensor translator					Surge proto	ector			
Solar radiation translator					UPS				
Tipping bucket rain gauge			A WELLER		Lightning p	protection device			
Ozone analyzer			A STATISTICS	Service States and States	Shelter hea				
Filter pack flow controller		 Image: A start of the start of	20030200 Page		Shelter air	conditioner			
Filter pack MFC power supply		✓							
Does the site have the requi	red	and m	ost rece	ent QC docu	ments and	report forms?			
	Pre	esent					Currei	ıt	
Station Log			Datavie	ew					
SSRF									
Site Ops Manual			June 20	000					
HASP									
Field Ops Manual									
Calibration Reports									
Ozone z/s/p Control Charts									The Charles Ser
Preventive maintenance schedu									
1 Is the station log properly completed during every site visit? ✓ Dataview									
2 Are the Site Status Report current?	For	ms bei	ng comj	pleted and					
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 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:									

Fie	eld Sy	stems Data	Form	F-02058-1500-S8-rev001				
Site	e ID	ACA416	Technician	Eric Hebert		Site Visit Date	10/09/2012	
1	Has the	eration procedure e site operator att ? If yes, when and	ended a formal CAS	TNET training				
2			r attended a formal (when and who instru			Trained on-site by A	RS during site ins	stallation
3	Is the si schedul		y on the required T	ıesday				
4		standard CASTN d by the site oper	IET operational pro ator?	cedures being		Operator procedures	s are very good fo	or filter replacement
5			owledgeable of, and a s? (including docum	Stand and the second second second second				
	Are reg	ular operational (QA/QC checks perfo	rmed on meteor	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 Monthly 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?
- Are the automatic and manual z/s/p checks monitored and 3 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-02058-1500-S9-rev				
Site	e ID	ACA416	Tech	nician	Eric Hebert		Site Visit Date	10/09/2012			
	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 ol	bservation sections c	only		
 3 Are data downloads and backups being performed as scheduled? 4 Are general observations being made and recorded? How 					ormed as		No longer required				
4 Are general observations being made and recorded? How					corded? How?		SSRF				
5	Are site fashion?	supplies on-hand and	replenis	hed in	a timely						
6	Are sam	ple flow rates recorde	d? How	2			SSRF				
7	Are sam fashion?	ples sent to the lab on	a regula	r sche	dule in a timely						
8		rs protected from con pping? How?	taminati	on dur	ing handling		Clean gloves on an	d off			
9		site conditions reporte ns manager or staff?	ed regula	rly to 1	the field						
QC	Check Pe	erformed		Free	Juency			Compliant			
N	Iulti-poi	nt MFC Calibrations		Sem	iannually						
F	low Syste	em Leak Checks		Vee Wee	kly						
F	Filter Pack Inspection										
F	low Rate	Setting Checks	ed regularly to the field Frequency ✓ Semiannually ✓ Weekly Not performed ✓ Weekly meter ✓ Weekly Meekly Meekly ✓ Weekly								
V	Flow Rate Setting ChecksImage: WeeklyVisual Check of Flow Rate RotometerImage: Weekly					10000					
I	n-line Filt	ter Inspection/Replace	ement	Contraction of the		20022743					
		ne Check for Dirt/Wa		Con Co	Sector Distances						

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
HO	W191-Eric I	Hebert-10/10/2012				
1	10/10/2012	DAS	Campbell	000348	CR3000	2127
2	10/10/2012	elevation	Elevation	none	none	none
3	10/10/2012	Filter pack flow pump	Thomas	06022	107CAB18	060400022686
4	10/10/2012	Filter pack flow pump	Thomas	04921	107CAB18	060300019983
5	10/10/2012	Flow Rate	Арех	000645	AXMC105LPMDPCV	illegible
6	10/10/2012	Flow Rate	Apex	000671	AXMC105LPMDPCV	illegible
7	10/10/2012	Infrastructure	Infrastructure	none	none	none
8	10/10/2012	Modem	Raven	06470	H4222-C	0808311250
9	10/10/2012	Ozone	ThermoElectron Inc	unknown	49i A1NAA	1104347326
10	10/10/2012	Ozone Standard	ThermoElectron Inc	000514	49i A3NAA	0922236892
11	10/10/2012	Shelter Temperature	Campbell	none	107-L	none
12	10/10/2012	siting criteria	Siting Criteria	none	none	None
13	10/10/2012	Temperature23.5meter	RM Young	00245	41342VC	Illegible
14	10/10/2012	Temperature2meter	RM Young	04449	41342VC	4547
15	10/10/2012	Zero air pump	Werther International	06908	C 70/4	000821900

Flow Data Form

Mfg	Serial Nun	nber Ta S	lite	Tec	hnician	Site Visit I	Date Paran	neter	Owner ID
Apex	illegible		HOW191	Eric	c Hebert	10/10/2012	2 Flow R	ate	000671
]	Mfg	BIOS	P	arameter F	low Rate
				:	Serial Number	122974	Т	fer Desc. B	IOS 220-H
				,	Tfer ID	01416			
				:	Slope	1.	00000 Inte	ercept	0.00000
					Cert Date	2/		rCoff	1.00000
DAS 1:		DAS 2:			Cal Factor Z	ero	-0.0)1	
A Avg % Diff:	A Max % Di	A Avg %I	Dif A Max	: % Di	Cal Factor F		0.9		
0.17%	0.90%				Rotometer R			0	
UseDescription:	Test type:	Input l/m:	Input STP:	MfcDisp.:	OutputSignal:	Output S E:	InputUnit:	OutputSigna	allPctDifference:
primary	pump off	0.000	0.000	0.00	0.000	0.02	1/m	l/m	
primary	leak check	0.000	0.000	0.03	0.000	0.04	1/m	l/m	
primary	test pt 1	0.000	1.502	1.49	1.507	1.50	l/m	l/m	-0.16%
primary	test pt 2	0.000	1.505	1.49	1.505	1.50	l/m	l/m	-0.31%
primary	test pt 3	0.000	1.504	1.49	1.505	1.49	l/m	l/m	-0.90%
Sensor Compo	nent Leak Tes	it		Condition	n		Status	pass	
Sensor Compo	Filter Azi	muth		Condition	n 135 Deg		Status	pass	
Sensor Compo	nent Filter Dep	oth		Condition	n 1.5 cm		Status	pass	
Sensor Compo	nent Filter Pos	sition		Condition	Good		Status	pass	
Sensor Compo	Moisture	Present		Condition	No moisture p	resent	Status	pass	
Sensor Compo	Rotomete	er Condition		Condition	n N/A		Status	pass	
Sensor Compo	onent System N	/lemo		Condition	n		Status	pass	
Sensor Compo	nent Tubing C	ondition		Condition	Good		Status	pass	
Sensor Compo	Filter Dis	tance		Condition	1 4.5 cm		Status	pass	

						Mfg	BIOS	P	arameter Flo	ow Rate
						Serial Number	122974	Т	fer Desc. Bl	OS 220-H
						Tfer ID	01416			
									_	
						Slope	1	.00000 Int	ercept	0.00000
						Cert Date	2/	/6/2012 Co	rrCoff	1.00000
DAS 1:			DAS 2:			Cal Factor Z	ero		0	
A Avg % Diff: .	A Ma	x % Di	A Avg %D	oif A Max	: % Di	Cal Factor F	ull Scale	1.()2	
0.34%		0.90%				Rotometer R	eading:		0	
UseDescription:	Tes	st type:	Input l/m:	Input STP:	MfcDisp.:	OutputSignal:	Output S E:	InputUnit:	OutputSignal	IPctDifference:
primary	pump	off	0.000	0.000	-0.01	0.032	0.03	l/m	l/m	
primary	leak c	check	0.000	0.000	0.01	0.033	0.03	l/m	l/m	
primary	test p	t 1	0.000	1.513	1.46	1.473	1.51	l/m	l/m	-0.20%
primary	test p	t 2	0.000	1.512	1.46	1.473	1.51	l/m	l/m	-0.12%
primary	test p	t 3	0.000	1.516	1.46	1.473	1.51	l/m	l/m	-0.38%
Sensor Compo	onent	Leak Tes	t		Condition	n		Status	pass	
Sensor Compo	onent	Filter Aziı	muth		Condition	a 45 Deg		Status	pass	
Sensor Compo	onent	Filter Dep	oth		Condition	n 3.0 cm		Status	pass	
Sensor Compo	onent	Filter Pos	sition		Condition	n Good		Status	pass	
Sensor Compo	onent	Moisture	Present		Condition	No moisture pr	resent	Status	pass	
Sensor Compo	onent	Rotomete	er Condition		Condition	n N/A		Status	pass	
Sensor Compo	onent	System N	lemo		Condition	n		Status	pass	
Sensor Compo	onent	Tubing C	ondition		Condition	Good		Status	pass	
Sensor Compo	onent	Filter Dist	tance		Condition	1 5.0 cm		Status	pass	

Ozone Data Form

Mfg	S	erial Number Ta	Site	Teo	chnician		Site Visit D	ate Param	eter	Owner II)
ThermoElec	tron Inc 1	104347326	HOW191	Eri	ic Hebert		10/10/2012	Ozone		unknown	
Slope: Intercept CorrCoff	0.5	28987Slope:57532Intercept00000CorrCoff	0.00000)	Mfg Serial N Tfer ID		ThermoElec 517112175 01111		arameter o fer Desc. O	ozone Dzone primary	stan
	Diff: A Ma	DAS 2: x % Di A Avg % 6.1%	6Dif A Max 9		Slope Cert Da	ite	L		rcept rCoff	0.074	
UseDesc	cription:	ConcGroup:	Tfer Raw:	Tfer C	Corr:	Si	te:	Site Unit:	PctDi	ifference:	
prin	•	1	0.23	0.1		0.	11				
-	nary	2 3	7.49 18.43	7.3		7.	11			6.13%	
prin prin	nary	4	38.07	37.0		37.	11			0.51%	
		Cell B Noise		Conditio			pp	Status	pass	0.0170]
		Cell B Tmp.		Conditio	n			Status	pass		
Sensor Co	omponent	Fullscale Voltage		Conditio	n N/A			Status	pass]
Sensor Co	omponent	Inlet Filter Conditio	n	Conditio	n Clean			Status	pass]
Sensor Co	omponent	Line Loss		Conditio	n Not te	sted		Status	pass]
Sensor Co	omponent	Offset		Conditio	n -0.6			Status	pass]
Sensor Co	omponent	Span		Conditio	n 1.025			Status	pass]
Sensor Co	omponent	Cell B Freq.		Conditio	n 93.8 k	Hz		Status	pass		
Sensor Co	omponent	System Memo		Conditio	n			Status	pass]
Sensor Co	omponent	Sample Train		Conditio	n Good			Status	pass]
Sensor Co	omponent	Cell B Pressure		Conditio	n			Status	pass		
Sensor Co	omponent	Cell B Flow		Conditio	n 0.64 lp	om		Status	pass]
Sensor Co	omponent	Cell A Tmp.		Conditio	n 34.0 C)		Status	pass]
Sensor Co	omponent	Cell A Pressure		Conditio	n 700 m	mHg		Status	pass		
Sensor Co	omponent	Cell A Noise		Conditio	n 0.8 pp	b		Status	pass]
Sensor Co	omponent	Cell A Freq.		Conditio	n 83.9 k	Hz		Status	pass]
Sensor Co	omponent	Cell A Flow		Conditio	n 0.67 lp	om		Status	pass]
Sensor Co	omponent	Battery Backup		Conditio	n N/A			Status	pass]
Sensor Co	omponent	Zero Voltage		Conditio	n N/A			Status	pass		

Infrastructure Data For

Site ID	HOW191	Technician	Eric Hebert	Site Visit Date 10/10/2012
Shelter M	ake	Shelter Model	Shelt	ter Size

Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Sample Tower Type	Condition	N/A	Status	pass
Sensor Component	Conduit	Condition	N/A	Status	pass
Sensor Component	Met Tower	Condition	N/A	Status	pass
Sensor Component	Moisture Trap	Condition	Not installed	Status	pass
Sensor Component	Power Cables	Condition	Good	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 Floor	Condition	Good	Status	pass
Sensor Component	Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component	Signal Cable	Condition	Good	Status	pass
Sensor Component	Tubing Type	Condition	1/4 teflon	Status	pass
Sensor Component	Shelter Door	Condition	Good	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

Shelter Temperature Data For

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	HOW191	Eric Hebert	10/10/2012	Shelter Temperature	none
DAS 1:	DAS 2: s Max Er Abs Avg 0.40		Mfg Serial Number Tfer ID Slope Cert Date Mfg Serial Number Tfer ID Slope Cert Date	Eutechnics 01D102193 01231 1.0015 2/10/201 Eutechnics 01H0060 01230 1.0015 2/10/201	Parameter She Tfer Desc. RTD Tintercept CorrCoff Parameter She Tfer Desc. RTD Tintercept Tfer Desc. RTD Tintercept Tintercept Tintercept	Iter Temperatur D translator -0.02095 1.00000

UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	20.11	20.10	0.000	19.9	С	-0.22
primary	Temp Mid Range	20.40	20.39	0.000	20.0	С	-0.4
primary	Temp Mid Range	21.75	21.74	0.000	21.6	С	-0.17

Field Systems Da			F-02058-1500-S1-rev00
Site ID HOW191	Technician Eric Hebert	Site Visit Date 10/	10/2012
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		
	flat, gently rolling	QAPP Elevation Meters	
Terrain	Yes	QAPP Declination	
Conforms to MLM		QAPP Declination Date	
Site Telephone		Audit Latitude	45.20396
Site Address 1		Audit Longitude	-68.74004
Site Address 2		Audit Elevation	6
County	Penobscot	Audit Declination	-17
City, State	Howland, ME	Present	
Zip Code		Fire Extinguisher 🗹	
Time Zone	Eastern	First Aid Kit	
Primary Operator	John Lee	Safety Glasses	
Primary Op. Phone #	(207) 581-2930	Safety Hard Hat 🗹	
Primary Op. E-mail	jtlee@maine.edu	Climbing Belt	
Backup Operator		Security Fence	
Backup Op. Phone #		Secure Shelter	
Backup Op. E-mail		Stable Entry Step 🗹	
Shelter Working Room	Make custom N	fodel custom	Shelter Size 800 cuft
	Notes The custom built shelter is cle	ean and organized.	
Site OK	Notes		

Field Systems Data Form

HOW191

F-02058-1500-S2-rev001

Site ID

Technician Eric Hebert

Site Visit Date 10/10/2012

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

Siting Distances OK

Siting Criteria Comment

The CASTNET filter pack at this location is located above a tree canopy at approximately 23.5 meters from the ground. A second filter is located below the canopy at approximately 2 meters. This is an AmeriFlux site which is approximately 2.5 km to the SW of the HOW132 CASTNET site. See the map included as Figure 1.

Fi	eld Systems Da	ta Form		F-02058-1500-S3-rev001
Site	HOW191	Technician Er	ic Hebert	Site Visit Date 10/10/2012
1	Are wind speed and di being influenced by of	irection sensors sited so as ostructions?	s to avoid 🛛 🗹	N/A
2	(i.e. wind sensors shou	nted so as to minimize tov ld be mounted atop the to boom >2x the max diame ng wind)	wer or on a	N/A
3	Are the tower and sen			N/A
4		hields pointed north or po urces such as buildings, w		
5	conditions? (i.e. groun	RH sensors sited to avoid d below sensors should be y sloped. Ridges, hollows, be avoided)	e natural	
6	Is the solar radiation s	ensor plumb?		N/A
7	Is it sited to avoid shad light?	ding, or any artificial or r	eflected 🔽	N/A
8	Is the rain gauge plum	ıb?		N/A
9	Is it sited to avoid shel towers, etc?	tering effects from buildin	ngs, trees,	N/A
10	Is the surface wetness facing north?	sensor sited with the grid	surface 🔽	N/A
11	Is it inclined approxim	nately 30 degrees?		N/A
Pro	ovide any additional ext	planation (photograph or s	sketch if necessar	y) regarding conditions listed above, or any other features,

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

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

condition, and well maintained? 2 Are all the meteorological sensors operational online, and reporting data? 3 Are the shields for the temperature and RH sensors clean? 4 Are the aspirated motors working? 4 5 Is the solar radiation sensor's lens clean and free of scratches? 6 Is the surface wetness sensor grid clean and undamaged? 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? 9 Parameter Manufacturer Model	Do all the meterological sensors appear to be intact, in good ondition, and well maintained? N/A Are all the meteorological sensors operational online, and eporting data? N/A Are the shields for the temperature and RH sensors clean? N/A Are the shields for the temperature and RH sensors clean? N/A Are the aspirated motors working? N/A s the solar radiation sensor's lens clean and free of cratches? N/A s the surface wetness sensor grid clean and undamaged? N/A Are the sensor signal and power cables intact, in good ondition, and well maintained? N/A Are the sensor signal and power cable connections protected rom the elements and well maintained? N/A Inter Manufacturer Model S/N Client ID Client ID 00245	Do all the meterological sensors appear to be intact, in good condition, and well maintained? Are all the meteorological sensors operational online, and reporting data? Are the shields for the temperature and RH sensors clean? Are the aspirated motors working? Are the aspirated motors working? Is the solar radiation sensor's lens clean and free of scratches? Is the surface wetness sensor grid clean and undamaged? N/A Are the sensor signal and power cables intact, in good condition, and well maintained? Are the sensor signal and power cables connections protected from the elements and well maintained? Are the sensor signal and power cable connections protected from the elements and well maintained? Are the sensor signal and power cable connections protected from the elements and well maintained? Are the sensor signal and power cable connections protected from the elements and well maintained? Are the sensor signal and power cable connections protected from the elements and well maintained? Are the sensor signal and power cable connections protected from the elements and well maintained? Are the sensor signal and power cable connections protected from the elements and well maintained? Are the sensor signal and power cable connections protected from the elements and well maintained? Are the sensor signal and power cable connections protected from the elements and well maintained? Are the sensor signal and power cable connections protected from the elements and well maintained? Model S/N Client ID Maintaine (Photograph or sketch if necessary) regarding conditions listed above, or any other featuree	1 Do all the meterological sensors appear to be intact, in good condition, and well maintained? N/A 2 Are all the meteorological sensors operational online, and reporting data? N/A 3 Are the shields for the temperature and RH sensors clean? Image: Constraint of the sensor's lens clean and free of scratches? N/A 4 Are the aspirated motors working? Image: N/A N/A 5 Is the solar radiation sensor's lens clean and free of scratches? N/A 6 Is the surface wetness sensor grid clean and undamaged? Image: N/A 7 Are the sensor signal and power cables intact, in good condition, and well maintained? Image: N/A 8 Are the sensor signal and power cable connections protected from the elements and well maintained? Image: N/A Parameter Manufacturer Model S/N Client ID Temperature RM Young 41342 Illegible 00245 rovide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other ference Image: Note Character in the clean and the cle		ita Form			-02058-1500-S4-re
2 Are all the meteorological sensors operational online, and reporting data? ✓ N/A 3 Are the shields for the temperature and RH sensors clean? ✓ N/A 4 Are the aspirated motors working? ✓ N/A 5 Is the solar radiation sensor's lens clean and free of scratches? ✓ N/A 6 Is the surface wetness sensor grid clean and undamaged? ✓ N/A 7 Are the sensor signal and power cables intact, in good condition, and well maintained? ✓ N/A 8 Are the sensor signal and power cable connections protected from the elements and well maintained? ✓ N/A Parameter Manufacturer Model S/N Client ID	ondition, and well maintained? Are all the meteorological sensors operational online, and eporting data? Are the shields for the temperature and RH sensors clean? Are the aspirated motors working? Are the aspirated motors working? Are the solar radiation sensor's lens clean and free of cratches? s the solar radiation sensor is lens clean and free of cratches? s the surface wetness sensor grid clean and undamaged? Are the sensor signal and power cables intact, in good ondition, and well maintained? Are the sensor signal and power cable connections protected rom the elements and well maintained? Manufacturer Model S/N Client ID Manufacture M1342	Are all the meteorological sensors operational online, and reporting data? Are the shields for the temperature and RH sensors clean? Are the shields for the temperature and RH sensors clean? Are the aspirated motors working? Is the solar radiation sensor's lens clean and free of scratches? Is the surface wetness sensor grid clean and undamaged? Are the sensor signal and power cables intact, in good condition, and well maintained? Are the sensor signal and power cable connections protected from the elements and well maintained? rameter Manufacturer Model S/N Client ID mperature IRM Young 41342 illegible 00245	 condition, and well maintained? Are all the meteorological sensors operational online, and reporting data? Are the shields for the temperature and RH sensors clean? Are the aspirated motors working? N/A 5 Is the solar radiation sensor's lens clean and free of scratches? 6 Is the surface wetness sensor grid clean and undamaged? Are the sensor signal and power cables intact, in good condition, and well maintained? 8 Are the sensor signal and power cables connections protected from the elements and well maintained? Parameter Manufacturer Model S/N Client ID Temperature [RM Young] [41342] illegible 00245 	ite ID HOW191	Technician Eric Hebe	ert	Site Visit Date 10/10	0/2012
condition, and well maintained? 2 2 Are all the meteorological sensors operational online, and reporting data? 3 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 undamaged? 7 Are the sensor signal and power cables intact, in good condition, and well maintained? 8 Are the sensor signal and power cable connections protected from the elements and well maintained? Parameter Manufacturer Model	ondition, and well maintained? Are all the meteorological sensors operational online, and eporting data? Are the shields for the temperature and RH sensors clean? Are the aspirated motors working? Are the aspirated motors working? Are the solar radiation sensor's lens clean and free of cratches? s the solar radiation sensor is lens clean and free of cratches? s the surface wetness sensor grid clean and undamaged? Are the sensor signal and power cables intact, in good ondition, and well maintained? Are the sensor signal and power cable connections protected rom the elements and well maintained? Manufacturer Model S/N Client ID Manufacture M1342	Are all the meteorological sensors operational online, and reporting data? Are the shields for the temperature and RH sensors clean? Are the shields for the temperature and RH sensors clean? Are the aspirated motors working? Is the solar radiation sensor's lens clean and free of scratches? Is the surface wetness sensor grid clean and undamaged? Are the sensor signal and power cables intact, in good condition, and well maintained? Are the sensor signal and power cable connections protected from the elements and well maintained? rameter Manufacturer Model S/N Client ID mperature IRM Young 41342 illegible 00245	 condition, and well maintained? Are all the meteorological sensors operational online, and reporting data? Are the shields for the temperature and RH sensors clean? Are the aspirated motors working? N/A the solar radiation sensor's lens clean and free of scratches? Is the solar radiation sensor's lens clean and free of scratches? Is the surface wetness sensor grid clean and undamaged? N/A Are the sensor signal and power cables intact, in good condition, and well maintained? Are the sensor signal and power cables connections protected from the elements and well maintained? Parameter Manufacturer Model S/N Client ID Temperature RM Young 41342 illegible 00245 					
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 A re the aspirated motors working? Is the solar radiation sensor's lens clean and free of scratches? Is the surface wetness sensor grid clean and undamaged? N/A Are the sensor signal and power cables intact, in good condition, and well maintained? Are the sensor signal and power cable connections protected from the elements and well maintained? Parameter Manufacturer Model S/N Client ID 	Are the aspirated motors working? Image: Manufacture in a fore of cratches? s the solar radiation sensor's lens clean and free of cratches? Image: Manufacture in a fore of cratches? s the surface wetness sensor grid clean and undamaged? Image: Manufacture in a fore of cratches in a fore of cratches? Are the sensor signal and power cables intact, in good condition, and well maintained? Image: Manufacture in a fore of cratches intact, in good condition in a fore of condition in a fore of cratches? Image: Manufacture in a fore of condition in a fore of condit	Are the aspirated motors working? Is the solar radiation sensor's lens clean and free of scratches? Is the surface wetness sensor grid clean and undamaged? N/A Are the sensor signal and power cables intact, in good condition, and well maintained? Image: Clean and undamaged in the sensor signal and power cables connections protected from the elements and well maintained? Are the sensor signal and power cable connections protected from the elements and well maintained? Manufacturer Model S/N Client ID mperature RM Young 41342 illegible 00245	 Are the aspirated motors working? Is the solar radiation sensor's lens clean and free of scratches? Is the surface wetness sensor grid clean and undamaged? N/A Are the sensor signal and power cables intact, in good condition, and well maintained? Are the sensor signal and power cables connections protected from the elements and well maintained? Parameter Manufacturer Model S/N Client ID Temperature RM Young 41342 illegible 00245 		ical sensors operational online, a	and 🗹	N/A	
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6 Is the sonar runnetor or o	s the surface wetness sensor grid clean and undamaged? Are the sensor signal and power cables intact, in good ondition, and well maintained? Are the sensor signal and power cable connections protected rom the elements and well maintained? meter Manufacturer Model S/N Client ID erature RM Young 41342 illegible 00245	scratches? Is the surface wetness sensor grid clean and undamaged? Are the sensor signal and power cables intact, in good condition, and well maintained? Are the sensor signal and power cable connections protected from the elements and well maintained? rameter Manufacturer Model S/N Client ID mperature RM Young 41342 illegible 00245 ride any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features	scratches? 6 Is the surface wetness sensor grid clean and undamaged? ✓ 7 Are the sensor signal and power cables intact, in good condition, and well maintained? 8 Are the sensor signal and power cable connections protected from the elements and well maintained? Parameter Manufacturer Model S/N Client ID Temperature RM Young 41342 rovide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other feature	Are the aspirated mot	ors working?		N/A	
 6 Is the surface wetness sensor grid clean and undamaged? 7 Are the sensor signal and power cables intact, in good condition, and well maintained? 8 Are the sensor signal and power cable connections protected from the elements and well maintained? Parameter Manufacturer Model S/N Client ID 	s the surface wetness sensor grid clean and undamaged? Are the sensor signal and power cables intact, in good ondition, and well maintained? Are the sensor signal and power cable connections protected rom the elements and well maintained? meter Manufacturer Model S/N Client D eerature RM Young 41342 illegible 00245	Is the surface wetness sensor grid clean and undamaged? N/A Are the sensor signal and power cables intact, in good condition, and well maintained? Are the sensor signal and power cable connections protected from the elements and well maintained? rameter Manufacturer Model S/N Client ID mperature RM Young 41342 illegible 00245 ride any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features	6 Is the surface wetness sensor grid clean and undamaged? ✓ 7 Are the sensor signal and power cables intact, in good condition, and well maintained? ✓ 8 Are the sensor signal and power cable connections protected from the elements and well maintained? ✓ Parameter Manufacturer Model S/N Client ID Temperature RM Young 41342 illegible 00245		ensor's lens clean and free of		N/A	
and the sensor signal and power cable connections protected 8 Are the sensor signal and power cable connections protected 9 from the elements and well maintained? Parameter Manufacturer Model S/N Client ID	are the sensor signal and power cable connections protected Image: Connection of the sensor signal and power cable connections protected are the sensor signal and power cable connections protected Image: Connection of the sensor signal and power cable connection of the sensor signal and well maintained? meter Manufacturer Model S/N Client ID meter RM Young 41342 illegible 00245	Interface on solution and power cable connections protected from the elements and well maintained? Are the sensor signal and power cable connections protected from the elements and well maintained? rameter Manufacturer Model S/N Client ID mperature RM Young vide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features	and the sensor signal and power cable connections protected Image: Sensor signal and power cable connections protected 8 Are the sensor signal and power cable connections protected Image: Sensor signal and power cable connections protected 8 Are the sensor signal and power cable connections protected Image: Sensor signal and power cable connections protected 8 Are the sensor signal and power cable connections protected Image: Sensor signal and power cable connections protected 9 Parameter Manufacturer Model S/N Client ID Temperature RM Young 41342 illegible 00245 'rovide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other feature Sensor signal conditions listed above, or any other feature		sensor grid clean and undamage	ed? 🔽	N/A	
8 Are the sensor signal and power cable connections protected from the elements and well maintained? Parameter Manufacturer Model S/N Client ID	Are the sensor signal and power cable connections protected rom the elements and well maintained? meter Manufacturer Model S/N Client ID ereature RM Young 41342 illegible 00245	Are the sensor signal and power cable connections protected from the elements and well maintained? ✓ rameter Manufacturer Model S/N Client ID mperature RM Young 41342 illegible 00245 vide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features	8 Are the sensor signal and power cable connections protected from the elements and well maintained? Parameter Manufacturer Model S/N Client ID Temperature RM Young 41342 illegible 00245 'rovide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other feature Sketch if necessary) RM Young Sketch if necessary)					
	erature RM Young 41342 illegible 00245	nperature RM Young 41342 illegible 00245	Temperature RM Young 41342 illegible 00245 Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features 00245	Are the sensor signal a	and power cable connections pro	etected 🗹		
Temperature RM Young 41342 illegible 00245		vide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features	rovide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other fea	'arameter	Manufacturer Mo	odel	S/N	Client ID
				emperature	RM Young 413	342	illegible	00245
Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other fea natural or man-made, that may affect the monitoring parameters:				ovide any additional expl	anation (photograph or sketch if		2020 Contraction of the second	sted above, or any other featur

Fie	eld Sy	stems Data	Form			F-020	58-1500-S5-rev001
Site	ID	HOW191	Technician Eric H	lebert		Site Visit Date 10/10/2012	
	Siting (Criteria: Are the po	ollutant analyzers and dep	oosition equ	<u>ipn</u>	nent sited in accordance with 4	<u>0 CFR 58, Appendix E</u>
1		sample inlets have icted airflow?	at least a 270 degree arc (of	•		
2	Are the	sample inlets 3 - 1	5 meters above the groun	d?			
3		sample inlets > 1 meters from trees?	meter from any major obs ,	struction,		in canopy	
	Polluta	nt analyzers and de	eposition equipment oper	ations and n	nai	ntenance	
1		analyzers and equi on and well mainta	pment appear to be in go ined?	od			
2		analyzers and monopole ng data?	nitors operational, on-line	e, and			
3	Describe ozone sample tube.					1/4 teflon by 40 meters	
4	Describe dry dep sample tube.					1/4 teflon by 40 meters	
5		line filters used in t e location)	the ozone sample line? (if	yes 💽		At inlet only	
6	Are san obstruc		ee of kinks, moisture, and	1 8			
7	Is the z	ero air supply desi	ccant unsaturated?	R			
8	Are the	ere moisture traps i	n the sample lines?				
9	Is there clean?	a rotometer in the	e dry deposition filter line.	, and is it			
Par	ameter	11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Manufacturer	Model		S/N	Client ID
Filte	er pack fl	ow pump	Thomas	107CAB18		060300019983	04921

Ozone		ThermoElectron Inc	49i A1NAA	1104347326	unknown	
Zero air I	oump	Werther International	C 70/4	000821900	06908	
Filter pad	k flow pump	Thomas	107CAB18	060400022686	06022	

Ozone measurements at this location are being conducted at 8 levels through the tree canopy from 2 meters to 23.5 meters. Three minute measurements for each height are aggregated into an hourly average for each height to produce a through-canopy ozone profile.

Fie	eld Sy	ystems Da	ita Form				F- ()2058-1	1500-S6-1	ev001
Site	ID	HOW191	Technician	Eric Hebert	29422	Site Visit	Date 10/10/20)12		
		1.1.1	100 mm					Ser Said		
	DAS, s	ensor translato	rs, and peripheral equip	ment operation	<u>ns ar</u>	<u>id maintenan</u>	<u>ce</u>			
1	Do the well ma	DAS instrumer aintained?	nts appear to be in good	condition and						
2		the component 1, backup, etc)	s of the DAS operationa	l? (printers,						
3		analyzer and song protection ci	ensor signal leads pass th rcuitry?	hrough						
4		e signal connect aintained?	ions protected from the	weather and						
5	Are the	e <mark>signal leads c</mark> o	nnected to the correct I	OAS channel?						
6	Are the ground		ranslators, and shelter p	roperly						
7	Does th	ne instrument sl	helter have a stable pow	er source?						
8 Is the instrument shelter temperature controlled?										
9 Is the met tower stable and grounded?						Stable ✓		Grounde	ed	
10	Is the s	ample tower sta	able and grounded?							
11	Tower	comments?				✓ 24 meter walk	-up tower			
Par	ameter		Manufacturer	Model		S/N		C	Client ID	
DAS	5		Campbell	CR3000	112534	2127		0	00348	
Moc	dem		Raven	H4222-C	120363	080831	1250	0	6470	

Field Systems Data	Fo	rm				F-02	058-	1500-S7-rev001
Site ID HOW191		Technician	Eric Hebert		Site Visit Date	10/10/2012		Terra Anna
Decompositation								
Documentation								
Does the site have the requir	2000	的复数的复数 化化过去 经上口		manuals?		Ver	N	NUA
Wind speed sensor	Yes	No N/		Data logge		Yes	No ✓	N/A
Wind direction sensor				Data logge				
Temperature sensor				Strip chart				
Relative humidity sensor			0	Computer				
Solar radiation sensor			N	Iodem				
Surface wetness sensor			Р	Printer				
Wind sensor translator			Z	Zero air pu	mp			
Temperature translator			F	Filter flow	pump			
Humidity sensor translator			S	Surge prot	ector			
Solar radiation translator			t	JPS				
Tipping bucket rain gauge			L	lightning]	protection device			
Ozone analyzer			S	Shelter hea	ter			
Filter pack flow controller			S	Shelter air	conditioner			
Filter pack MFC power supply								
Does the site have the requi	ired a	and most rece	nt QC docum	nents and	report forms?			
	Pre	sent				Curre	nt	
Station Log								
SSRF								
Site Ops Manual								
HASP								
Field Ops Manual								
Calibration Reports								
Ozone z/s/p Control Charts								
Preventive maintenance schedu	l							
1 Is the station log properly	comj	pleted during	every site vis	sit? 🗸 🗌				
2 Are the Site Status Report current?	For	ms being com	oleted and					
3 Are the chain-of-custody for sample transfer to and from the sample transfer to and from the sample transfer to and from the same transfer to and the same transfer to a same transf			l to documer	nt 🗹				
4 Are ozone z/s/p control cha current?	arts j	properly comp	leted and		ontrol charts not us	sed		
Provide any additional explana natural or man-made, that may					egarding condition	ons listed a	above, o	or any other features,
	ann an						NAME OF COMPANY	

Fi	eld S	ystems Data	Form			F-02058-	1500-S8-rev001
Site	e ID	HOW191	Technician	Eric Hebert	Site Visit Date	10/10/2012	
1 2	Has th course Has th	e? If yes, when and he backup operato	ended a formal CAS	CASTNET			
3	Is the s schedu	and the second	ly on the required T	uesday 🗸			
4		e standard CASTN ed by the site oper	NET operational pro rator?	cedures being			
5			owledgeable of, and s? (including docum				

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

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

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

QC Check Performed		Frequency	Compliant
Multi-point Calibrations		Semiannually	
Automatic Zero/Span Tests		Daily	
Manual Zero/Span Tests			
Automatic Precision Level Tests		Daily	
Manual Precision Level Test			
Analyzer Diagnostics Tests		Weekly	
In-line Filter Replacement (at inlet)		Every 2 weeks	
In-line Filter Replacement (at analyze		N/A	
Sample Line Check for Dirt/Water		Weekly	ta 🗖 estas de la companya de la companya
Zero Air Desiccant Check		Weekly	
1 Do multi-point calibration gases go thr	ough the	complete	

- 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
	reported? If yes, how?					

A 1997 MARK AND A A 1997 MARK AND
At one location only

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 daily zero, span, and precision checks are conducted through one of the 8 inlets only.

Fie	eld Sy	stems Data Fo	rm					F-02058-1	500-S9-rev001
Site	e ID	HOW191	Techni	cian [Eric Hebert		Site Visit Date	10/10/2012	
	Site ope	ration procedures							
1	Is the fi	lter pack being change	d every T	uesday	y as scheduled?				
2	Are the correctl	Site Status Report For y?	ms being	comp	leted and filed				
3	Are dat schedul	a downloads and backu ed?	ıps being	perfo	rmed as		No longer required		
4	Are general observations being made and recorded? How?						SSRF		
5	Are site fashion	supplies on-hand and ?	replenish	ed in a	ı timely				
6	Are san	nple flow rates recorded	l? How?				SSRF		4
7	Are san fashion	uples sent to the lab on ?	a regular	sched	lule in a timely				
8		ers protected from cont pping? How?	aminatio	n duri	ng handling		Clean gloves on an	d off	
9		site conditions reported ons manager or staff?	d regular	ly to tl	he field				
QC	Check P	erformed		Freq	uency			Compliant	
N	Iulti-poi	nt MFC Calibrations		Semia	annually	5798-16778			
F	low Syst	em Leak Checks		Week	kly				
F	Filter Pack Inspection								
F	Flow Rate Setting Checks								
V	Visual Check of Flow Rate Rotometer Weekly								States and a state
	In-line Filter Inspection/Replacement								
S	Sample Line Check for Dirt/Water Weekly					1794			
		dditional explanation (an-made, that may affe) regarding conditi	ons listed above, or	any other features,

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
HOV	W191-B-Eri	c Hebert-10/10/2012				
1	10/10/2012	DAS	Campbell	000348	CR3000	2127
2	10/10/2012	Filter pack flow pump	Thomas	06022	107CAB18	060400022686
3	10/10/2012	Flow Rate	Арех	000671	AXMC105LPMDPCV	illegible
4	10/10/2012	Temperature2meter	RM Young	04449	41342VC	4547

Flow Data Form

Mfg	Serial Nun	nber Ta S	lite	Tec	hnician	Site Visit l	Date Paran	neter	Owner ID
Apex	illegible		HOW191-B	Eri	c Hebert	10/10/201	2 Flow F	Rate	000671
					Mfg	BIOS	F	Parameter FI	ow Rate
					Serial Number	122974	1	fer Desc. Bl	OS 220-H
					Tfer ID	01416			
					Slope	1	.00000 Int	ercept	0.00000
					Cert Date	2/	6/2012 Co	rrCoff	1.00000
DAS 1:		DAS 2:		L	Cal Factor Z	ero	-0.0	01	
A Avg % Diff:	A Max % Di	A Avg %I	Dif A Max	x % Di	Cal Factor F	ull Scale	0.9	99	
0.46%	0.90%				Rotometer R	eading:		0	
UseDescription:	Test type:	Input l/m:	Input STP:	MfcDisp.:	OutputSignal:	Output S E:	InputUnit:	OutputSigna	IIPctDifference
primary	pump off	0.000	0.000	0.00	0.000	0.02	l/m	l/m	
primary	leak check	0.000	0.000	0.03	0.000	0.04	l/m	l/m	
primary	test pt 1	0.000	1.502	1.49	1.507	1.50	l/m	l/m	-0.16%
primary	test pt 2	0.000	1.505	1.49	1.505	1.50	l/m	l/m	-0.31%
primary	test pt 3	0.000	1.504	1.49	1.505	1.49	l/m	l/m	-0.90%
Sensor Compo	ment Leak Tes	st		Conditio	n		Status	s pass	
Sensor Compo	nent Filter Azi	muth		Conditio	n 135 deg		Statu	s pass	
Sensor Compo	nent Filter Dep	oth		Conditio	n 1.5 cm		Status	s pass	
Sensor Compo	nent Filter Pos	sition		Conditio	n Good		Status	s pass	
Sensor Compo	onent Moisture	Present		Conditio	n No moisture p	resent	Status	s pass	
Sensor Compo	nent Rotomete	er Condition		Conditio	n N/A		Status	s pass	
Sensor Compo	onent System M	/lemo		Conditio	n See comments	6	Status	s pass	
Sensor Compo	Sensor Component Tubing Condition			Conditio	n Good	Status	s pass		
Sensor Compo	nent Filter Dis	tance		Conditio	n 4.5 cm		Statu	s pass	

Temperature Data Form

Sensor Component System Memo

Mfg	Serial Number Ta	a Site	Те	chnic	cian	Site Visit Date	Param	eter	Owner ID
RM Young	4547	HOW191-	BEr	ric He	bert	10/10/2012	Temper	rature	04449
				Mfg	ç.	Eutechnics	Pa	arameter	emperature
				Seri	ial Number	01D102193	Tí	fer Desc. R	TD translator
				Tfei	r ID	01231			
DAS 1:	DAS 2	:		Slop	pe	1.001	57 Inte	rcept	-0.02095
Abs Avg Err	Abs Max Er Abs A	vg Err Abs	Max Er	Cer	t Date	2/10/20	12 Cor	rCoff	1.00000
				Mfg	5	Eutechnics	Pa	arameter T	emperature
				Seri	ial Number	01H0060	Tí	fer Desc. R	TD probe
				Tfei	r ID	01230			
				Slop	pe	1.001	57 Inte	rcept	-0.02095
				Cer	t Date	2/10/20	12 Cor	rCoff	1.00000
0.08	0.17		L						
UseDesc.:	Test type: I	nputTmpRaw	InputTmpCo	orr.:	OutputTmpS	ignal: OutputSi	gnalEng:	OSE Unit:	Difference:
primary	Temp Low Range	0.05	0.07		0.000	0	1	С	0.07
primary	Temp Mid Range	23.39	23.37		0.000	23	.4	С	-0.01
primary	Temp High Range	49.10	49.04		0.000	49	.2	С	0.17
Sensor Com	Sensor Component Shield C				lean		Status	pass	
Sensor Com	ponent Blower Status S	Conditio	on N/	/A		Status	pass		
Sensor Com	Sensor Component Blower Co						Status	pass	

Condition See comments

Status pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Flow Rate This parameter is being	HOW191-B measured at 2 me	Eric Hebert eters from the groun	10/10/2012 nd and below a t	System Memo ree canopy.	Apex	3652		
Temperature This parameter is being	HOW191-B measured at 2 me	Eric Hebert eters from the grour	10/10/2012 nd and below a t	System Memo ree canopy.	RM Young	3693		

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
HO	W132-Eric I	Hebert-10/11/2012				
1	10/11/2012	Computer	Dell	000501	D610	unknown
2	10/11/2012	DAS	Campbell	000352	CR3000	2130
3	10/11/2012	Elevation	Elevation	None	1	None
4	10/11/2012	Filter pack flow pump	Thomas	01423	107CA18	00002560587
5	10/11/2012	Flow Rate	Apex	000666	AXMC105LPMDPCV	54763
6	10/11/2012	Infrastructure	Infrastructure	none	none	none
7	10/11/2012	Met tower	Universal Tower	03533	unknown	none
8	10/11/2012	Modem	Raven	06483	H4222-C	0808310816
9	10/11/2012	Ozone	ThermoElectron Inc	000737	49i A1NAA	1105347912
10	10/11/2012	Ozone Standard	ThermoElectron Inc	000373	49i A3NAA	0726124685
11	10/11/2012	Sample Tower	Aluma Tower	03534	A	none
12	10/11/2012	Shelter Temperature	Campbell	none	107-L	unknown
13	10/11/2012	Shield (10 meter)	RM Young	02392	Aspirated 43408	none
14	10/11/2012	Siting Criteria	Siting Criteria	None	1	None
15	10/11/2012	Temperature	RM Young	04448	41342	4546
16	10/11/2012	Zero air pump	Werther International	06928	C 70/4	000822222

DAS Data Form

DAS Time Max Error:

0

Mfg	Serial Nu	mber Site	1	Fechnician	Site Visit Date	Parameter	Use Desc.
Campbell	2130	HOW	V132	Eric Hebert	10/11/2012	DAS	Primary
Das Date:	10/13/2012	Audit Date	10/13/2012	Mfg	Datel	Parameter	DAS
Das Time:	12:08:00	Audit Time	12:08:00	Contal Number	4000392	Tfor Dore	Source generator (D
Das Day:	287	Audit Day	287	Serial Number	4000392	Tier Desc.	Source generator (D
Low Channel	l:	High Channel	:	Tfer ID	01321		
Avg Diff:	Max Diff:	Avg Diff:	Max Diff:	Slope	1.0000	0 Intercept	0.00000
0.0000	0.0001	0.0000	0.0001	Cert Date	2/13/201	2 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	2/9/201	2 CorrCoff	1.00000
Channel	Input D	VM Output	DAS Output	InputUnit	OutputUnit	Difference	
7	0.0000	0.0000	0.0000) V	V	0.0000	
7	0.1000	0.1000	0.1000) V	V	0.0000	
7	0.3000	0.3000	0.3000) V	V	0.0000	
7	0.5000	0.5001	0.5001	V	V	0.0000	
7	0.7000	0.7002	0.7001	V	V	-0.0001	
7	0.9000	0.9002	0.9001	V	V -0.0001		
7	1.0000	1.0003	1.0002	2 V	V	-0.0001	

Flow Data Form

Mfg	Serial Nun	nber Ta S	Site	Тес	hnician	Site Visit l	Date Paran	neter	Owner ID
Apex	54763		HOW132	Eri	c Hebert	10/11/201	2 Flow F	Rate	000666
					Mfg	BIOS	Ι	Parameter FI	ow Rate
					Serial Number	122974	1	fer Desc. B	IOS 220-H
					Tfer ID	01416			
					Slope	1.	.00000 Int	ercept	0.00000
					Cert Date	2/		rrCoff	1.00000
DAS 1:		DAS 2:			Cal Factor Z	ero	-0.0	18	
A Avg % Diff:	A Max % Di	A Avg %I	Dif A Max	x % Di	Cal Factor F		0.9		
1.55%	1.72%				Rotometer R			45	
UseDescription:	Test type:	Input l/m:	Input STP:	MfcDisp.:	OutputSignal:	Output S E:	InputUnit:	OutputSigna	llPctDifference
primary	pump off	0.000	0.000	0.02	0.028	0.01	l/m	l/m	
primary	leak check	0.000	0.000	0.02	0.021	0.00	l/m	l/m	
primary	test pt 1	0.000	1.475	1.52	1.509	1.50	l/m	l/m	1.69%
primary	test pt 2	0.000	1.475	1.52	1.509	1.50	l/m	l/m	1.72%
primary	test pt 3	0.000	1.482	1.52	1.509	1.50	l/m	l/m	1.24%
Sensor Compo	ment Leak Tes	st		Condition	n		Statu	s pass	
Sensor Compo	Filter Azi	muth		Conditio	n 90 Deg		Statu	s pass	
Sensor Compo	nent Filter Dep	oth		Conditio	n 3.5 cm		Statu	s pass	
Sensor Compo	nent Filter Pos	sition		Conditio	n Good		Statu	s pass	
Sensor Compo	Moisture	Present		Condition	No moisture p	resent	Statu	s pass	
Sensor Compo	Rotomete	er Condition	I	Condition	n Clean and dry		Statu	s pass	
Sensor Compo	onent System N	Nemo		Condition	n		Statu	s pass	
Sensor Compo	Sensor Component Tubing Condition				n Good		Statu	s pass	
Sensor Compo	nent Filter Dis	tance		Conditio	n 6.0 cm		Statu	s pass	

Ozone Data Form

Mfg	Serial Number Ta	Site	Te	chnician		Site Visi	t Date	Parame	eter	Owner I	D
ThermoElectron Inc	1105347912	HOW132	Er	ric Hebert		10/11/20)12	Ozone		000737	
Intercept	D.98028 Slope: D.17489 Intercept D.999990 CorrCoff	0.0000	0	Mfg Serial N Tfer ID		ThermoE 5171121			rameter 02 er Desc. 0	zone zone primary	[,] stan
DAS 1: A Avg % Diff: A M 1.5%	DAS 2: fax % Di A Avg % 2.6%	6Dif A Max	% Di	Slope Cert Da			1.0098 ⁻ /23/201		- L	0.07	
UseDescription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	Unit:	PctDif	fference:	
primary	1	0.56	0.4	48	0.3	37	ppb				
primary	2	26.77	26	.43	25.	.99	ppb			-1.66%	
primary	3	64.52	63.	.81	63.	.30	ppb			-0.80%	
primary	4	82.44	81		80.		ppb			-1.05%	
primary	5	104.95	103	3.85	101	.20	ppb			-2.55%	
Sensor Compone	nt Cell B Noise		Condition	on 1.0 pp	b			Status	pass		
Sensor Compone	nt Cell B Tmp.		Conditio	on				Status	pass		
Sensor Compone	nt Fullscale Voltage		Conditio	on N/A				Status	pass		
Sensor Compone	nt Inlet Filter Condition	งท	Conditio	on Clean	1			Status	pass		
Sensor Compone	nt Line Loss		Conditio	on Not te	sted			Status	pass		
Sensor Compone	nt Offset		Conditio	on -0.10				Status	pass		
Sensor Compone	nt Span		Conditio	on 1.035				Status	pass		
Sensor Compone	nt Cell B Freq.		Conditio	on 85.7 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 0.72 l	pm			Status	pass		
Sensor Compone	nt Cell A Tmp.		Conditio	on 33.5 ()			Status	pass		
Sensor Compone	nt Cell A Pressure		Conditio	on 738 m	nmHg			Status	pass		
Sensor Compone	nt Cell A Noise		Condition	on 0.9 pp	b			Status	pass		
Sensor Compone	nt Cell A Freq.		Conditio	on 81.6 k	Hz			Status	pass		
Sensor Compone	t Cell A Flow		Conditio	on 0.70 l	pm			Status	pass		
Sensor Compone	nt Battery Backup		Conditio	on N/A				Status	pass		
Sensor Compone	nt Zero Voltage		Conditio	on N/A				Status	pass		

Temperature Data Form

Mfg	Serial Number Tag	g Site	Т	echni	ician	Site V	isit Date	Param	eter	Owner ID
RM Young	4546	HOW132	E	Eric H	ebert	10/11	/2012	Temper	ature	04448
				Mf	g	Eutec	hnics	Pa	rameter Te	emperature
				Ser	rial Number	01D10)2193	Tf	er Desc. R	TD translator
				Tfe	er ID	01231				
DAS 1:	DAS 2:			Slo	pe		1.0015	7 Inte	rcept	-0.02095
		g Err Abs	Max Er	Ce	rt Date		2/10/201	2 Cor	rCoff	1.00000
				Mf	g	Eutecl	hnics	Ра	rameter Te	emperature
				Ser	rial Number	01H00)60	Tf	er Desc. R	TD probe
				Tfe	er ID	01230	1			
				Slo	pe		1.0015	7 Inte	rcept	-0.02095
				Ce	rt Date		2/10/201	2 Cor	rCoff	1.00000
0.14	0.25									
UseDesc.:	Test type: In	putTmpRaw	InputTmpC	Corr.:	OutputTmpS	Signal:	OutputSig	gnalEng:	OSE Unit:	Difference:
primary	Temp Low Range	0.14	0.16		0.000		0.	1	С	-0.05
	Temp Mid Range	23.29	23.27		0.000		23.		С	0.12
primary	Temp High Range	47.88	47.83		0.000		48.	1	С	0.25
Sensor Com	ponent Shield		Condit	tion N	Noderately cle	an		Status	pass	
Sensor Com	ponent Blower Status Sw	itch	Condit	tion F	unctioning			Status	pass	
Sensor Com	Sensor Component Blower				unctioning			Status	pass	
Sensor Component System Memo				tion				Status	pass	

Infrastructure Data For

Site ID	HOW132	Technician Eric Hel	Dert Site Visit Date 10/11/2012
Shelter	Make	Shelter Model	Shelter Size
Unv. Of	Maine	none	2400 cuft

Sensor Component	Shelter Roof	Condition	Fair	Status	pass
Sensor Component	Sample Tower Type	Condition	Туре А	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	Rotometer	Condition	Installed	Status	pass
Sensor Component	Sample Tower	Condition	Poor	Status	Fail
Sensor Component	Shelter Condition	Condition	Fair	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	Fair	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

Shelter Temperature Data For

Mfg Se	erial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	unknown	HOW132	Eric Hebert	10/11/2012	Shelter Temperature	none
DAS 1:	DAS 2: Max Er Abs Avg 0.65		Mfg Serial Number Tfer ID Slope Cert Date Mfg Serial Number Tfer ID Slope Cert Date	Eutechnics 01D102193 01231 1.0015 2/10/201 Eutechnics 01H0060 01230 1.0015 2/10/201	Parameter She Tfer Desc. RTD Tintercept CorrCoff Parameter She Tfer Desc. RTD Tintercept Tfer Desc. RTD Tintercept Tintercept	Iter Temperatur D translator -0.02095 1.00000 Iter Temperatur

UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	19.42	19.41	0.000	20.0	С	0.55
primary	Temp Mid Range	18.81	18.80	0.000	19.5	С	0.65
primary	Temp Mid Range	18.40	18.39	0.000	18.6	С	0.24

Field Systems Comments

1 Parameter: SiteOpsProcComm

The site operator reported that he does not always use gloves to handle the filters consistently.

2 Parameter: SiteOpsProcedures

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

3 Parameter: SitingCriteriaCom

There is a small power plant about 30 km northeast of the site. It is on-line approximately 50% of the time. The site is near a plantation and within 20 meters of the tree line.

4 Parameter: ShelterCleanNotes

The shelter is cleaner than it has been during previous audit visits

5 Parameter: PollAnalyzerCom

There is a tree branch that contacts the filter enclosure and the filter pack when the tower is lowered and raised.

Site ID HOW132	Technician Eric Hebert	Site Visit Date 10	/11/2012
Site Sponsor (agency)	EPA	USGS Map	Howland
Operating Group	University of ME	Map Scale	
AQS#	23-019-9991	Map Date	
Meteorological Type	R.M. Young		
Air Pollutant Analyzer	Ozone	QAPP Latitude	45.2158
Deposition Measurement	dry	QAPP Longitude	-68.7085
Land Use	woodland- mixed, wetland	QAPP Elevation Meters	69
Terrain	flat, gently rolling	QAPP Declination	18.02
Conforms to MLM	Yes	QAPP Declination Date	
Site Telephone	(207) 745-6841	Audit Latitude	45.21560
Site Address 1	Lagrange Rd.	Audit Longitude	-68.7085
Site Address 2		Audit Elevation	6
County	Penobscot	Audit Declination	-17
City, State	Howland, ME	Present	
Zip Code	04453	Fire Extinguisher 🔽	inspected Feb 2007
Time Zone	Eastern	First Aid Kit	
Primary Operator	John Lee	Safety Glasses	
Primary Op. Phone #	(207) 581-2930	Safety Hard Hat	
Primary Op. E-mail	jtlee@maine.edu	Climbing Belt	
Backup Operator	none	Security Fence	
Backup Op. Phone #		Secure Shelter	
Backup Op. E-mail		Stable Entry Step 🗹	
Shelter Working Room	Make Unv. Of Maine M	lodel none	Shelter Size 2400 cuft
Shelter Clean		nas been during previous audi	it visits
Site OK	Notes		
to the	Interstate 95, take exit 217 and turn wes a landfill on the right, take the next gravel e, continue about 1 mile bearing to the rig	road on the left. Go through	the gate (lock combo 3061) and over the

Field Systems Data Form

HOW132

F-02058-1500-S2-rev001

Site ID

Technician Eric Hebert

Site Visit Date 10/11/2012

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

Siting Distances OK

Siting Criteria Comment

There is a small power plant about 30 km northeast of the site. It is on-line approximately 50% of the time. The site is near a plantation and within 20 meters of the tree line.

Fie	eld Systems Da	ta Form		F-02058-1500-S3-rev001				
Site	HOW132	Technician	Eric Hebert	Site Visit Date 10/11/2012				
1	Are wind speed and di being influenced by ob		as to avoid	N/A				
2		ld be mounted atop the boom >2x the max diar	e tower or on a	N/A				
3	Are the tower and sense	Contract of the second second second second		N/A				
4		hields pointed north or urces such as buildings						
5		d below sensors should y sloped. Ridges, hollov	be natural					
6	Is the solar radiation s	ensor plumb?		N/A				
7	Is it sited to avoid shad light?	ling, or any artificial o	r reflected	N/A				
8	Is the rain gauge plum	b?		N/A				
9	Is it sited to avoid shel towers, etc?	tering effects from buil	dings, trees,	N/A				
10	Is the surface wetness facing north?	sensor sited with the g	rid surface 🗹	N/A				
11	Is it inclined approxim	nately 30 degrees?		N/A				
Dre	wide any additional ave	Japation (photograph	or skotch if nacessa	w) regarding conditions listed above, or any other features				

Fie	eld Sy	stems Data F	orm			F-02058-1500-S4-rev001				
Site	e ID	HOW132	Technician	Eric Hebert	29.08	Site Visit Date	10/11/2012			
1		e meterological senso n, and well maintaine		intact, in good		N/A				
2 Are all the meteorological sensors operational online, and reporting data?						N/A				
3 Are the shields for the temperature and RH sensors clean?										
4	Are the	aspirated motors wor	king?							
5	Is the so scratche	lar radiation sensor's s?	lens clean and	free of		N/A				
6	Is the su	rface wetness sensor	grid clean and ı	indamaged?		N/A				
7		sensor signal and pov n, and well maintaine		t, in good						
8		sensor signal and pov e elements and well m		ctions protected						
Par	rameter	М	anufacturer	Model		S/N		Client ID		
Temperature RM Young 41342			41342	naran Usean	4546		04448			
Shie	eld (10 m	eter)	M Young	Aspirated	4340	18 none		02392		
Met	t tower	Ur	niversal Tower	unknown		none		03533		

Fie	eld Sy	stems Dat	a Form		F-02058-1500-S5-rev001					
Site	ID	HOW132	Technician Eric Heber	t	Site Visit Date 10/11/2012]				
	Siting C	Criteria: Are the	pollutant analyzers and depositi	<u>ion equip</u> r	nent sited in accordance with 40 CFR 5	8. Appendix E				
1		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		sample inlets > neters from tree	1 meter from any major obstruc vs?	tion, 🗌	One tree interferring					
	Pollutar	nt analyzers and	deposition equipment operation	ns and mai	intenance					
1		nalyzers and eq on and well main	uipment appear to be in good tained?							
2	Are the reportin		ionitors operational, on-line, and	d 🔽						
3	Describ	e ozone sample (ube.		1/4 teflon by 16 meters					
4	Describ	e dry dep sampl	e tube.		3/8 teflon by 16 meters					
5		ine filters used i location)	n the ozone sample line? (if yes		At inlet only					
6	Are san obstruct		free of kinks, moisture, and							
7	Is the ze	ero air supply de	siccant unsaturated?							
8	Are the	re moisture trap	s in the sample lines?							
9	Is there clean?	a rotometer in t	he dry deposition filter line, and	l is it 🗹	Clean and dry					
Par	ameter		Manufacturer Mod	lol	S/N Cli	ient ID				

Parameter	Manufacturer	Model	S/N	Client ID	
Sample Tower	Aluma Tower	A	none	03534	
Ozone	ThermoElectron Inc	49i A1NAA	1105347912	000737	
Filter pack flow pump	Thomas	107CA18	00002560587	01423	
Zero air pump	Werther International	C 70/4	000822222	06928	

There is a tree branch that contacts the filter enclosure and the filter pack when the tower is lowered and raised.

Fie	eld Sy	stems Data Fo	orm				F	-02058-	-15	00-S6-rev0	01
Site	ID	HOW132	Technician	Eric Hebert	SPI III	Site Visi	t Date 10/11	/2012			
	DAS, se	nsor translators, and 1	peripheral equi	oment operation	<u>ns ai</u>	<u>nd maintena</u>	nce				
1		DAS instruments appe intained?	ar to be in good	condition and							
2		he components of the backup, etc)	DAS operation	al? (printers,							10100
3		nalyzer and sensor sig g protection circuitry?		hrough		Met sensors	only				100 CON
4		signal connections pro intained?	otected from the	weather and							
5	Are the	signal leads connected	to the correct	DAS channel?							100100100100
6	Are the grounde	DAS, sensor translato cd?	rs, and shelter	properly							
7	Does the	e instrument shelter ha	ave a stable pov	ver source?							
8	Is the in	strument shelter temp	erature control	led?							
9	Is the m	et tower stable and gr	ounded?			Stable		Groun	ided		
		mple tower stable and				~					
		omments?	9-100000								
	10mel e	omments.						water - we we will have			

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D610	unknown	000501
DAS	Campbell	CR3000	2130	000352
Modem	Raven	H4222-C	0808310816	06483

Field Sy	stems Data	For	m					F-02	.058-	1500-S7-rev001
Site ID	HOW132		Tech	nician	Eric Hebert		Site Visit Date	0/11/2012	<u>2</u>	
Decomposition	1. A.									
Documentation Does the site have the required instrument and equipment manuals?										
Does the s	site have the requir	200000	and the second	10.23		anuals;	A STREET & STREET			NT/A
Wind speed	sensor	Yes	No	N/.		ta logg	er	Yes	No ✓	N/A
Wind directi						ta logg				
Temperatur							rt recorder			
Relative hun						mpute				
Solar radiati						odem				
Surface wetr	iess sensor				Pri	inter				
Wind sensor	translator				Zei	ro air p	oump			
Temperature	e translator				Filt	ter flov	v pump			
Humidity set	nsor translator				Su	rge pro	otector			
Solar radiati	on translator				UP	S				
Tipping buck	ket rain gauge				Lig	htning	protection device			
Ozone analy	zer				She	elter he	eater			
Filter pack f	low controller				She	elter ai	r conditioner			
Filter pack M	AFC power supply									
Does the	site have the requi	ired aı	nd mo	ost rece	nt QC docume	ents and	d report forms?			
		Prese	ent					Curre	ent	
Station Log			•				14			
SSRF										
Site Ops Ma	nual			Oct 200						
HASP		V		Nov 20						
Field Ops M	anual			July 19						
Calibration	Reports	V								
Ozone z/s/p	Control Charts									
Preventive n	naintenance schedu	d [
1 Is the st	ation log properly	compl	eted	during	every site visit ⁴	? 🗸				
2 Are the current	Site Status Report ?	Form	s beiı	ng comp	pleted and					
	chain-of-custody f transfer to and fro			erly used	d to document					
4 Are ozo current	ne z/s/p control cha ?	arts pr	oper	ly comp	leted and		Control charts not use	d		
Drovide and	additional ambau	tion (-	hate	granh	n skotah if nor	0000) recording condition	ng listod	abora	or any other features
	additional explana) regarding conditio	its listed	above,	or any other features,
		The second			81	ST. Street		Sale and a large		
	and the set of the state	S.D. 813	19155		and the second	- NBCONST		11002001140	12,1257-14	

Fie	eld S	ystems Data Fo	orm				F-02058-	1500-S8-rev001
Site	ID	HOW132	Technician	Eric Hebert		Site Visit Date	10/11/2012	
1	Has th	peration procedures ne site operator attended ? If yes, when and who		TNET training		Trained on-site by E	SE employee	
2		ne backup operator atte ng course? If yes, when				no backup operator		
3	Is the s schedu	ite visited regularly on le?	the required T	uesday				
4		e standard CASTNET o ed by the site operator?		cedures being				
5		ite operator(s) knowled uired site activities? (in						
	Are re	gular operational QA/Q	C checks perfo	rmed on meteo	rolog	cical instruments?		
QC	Check	Performed		Frequency			Complian	ıt
Mu	ltipoint	Calibrations	✓	N/A				
Vici	191 Incr	vections		Weekly				

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

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

QC Check Performed Compliant Frequency **Multi-point Calibrations** ~ ~ Semiannually ~ \checkmark **Automatic Zero/Span Tests** Daily Manual Zero/Span Tests \checkmark \checkmark Daily **Automatic Precision Level Tests** \square **Manual Precision Level Test** ✓ ~ Weekly **Analyzer Diagnostics Tests** \checkmark ~ Monthly **In-line Filter Replacement (at inlet)** \checkmark ~ N/A **In-line Filter Replacement (at analyze** ~ ~ 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?
- Are the automatic and manual z/s/p checks monitored and 3 reported? If yes, how?

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

~

~

 \checkmark

~

SSRF, call-in

Fie	eld Sy	stems Data Fo	rm						F-02058	8-15	00-S9-rev001	
Site	e ID	HOW132	Tech	nician	Eric Hebert		Site Visit Dat	e 10/1	1/2012			
	Site ope	ration procedures										
1	Is the fi	lter pack being change	d every	Tuesda	y as scheduled	? 🔽	Filter changed mo	rinings				
2			ms bein	g comp	leted and filed							
3			ups bein	g perfo	ormed as		No longer required	b				
4	Are gen	eral observations being	g made a	and rec	orded? How?		SSRF, logbook					
5			replenis	hed in	a timely							
6							SSRF, call-in					
7			a regula	r schee	dule in a timely							
8			taminati	on dur	ing handling							
9			d regula	rly to 1	he field							
QC	Check P	erformed		Freq	luency			Con	pliant			
N	Iulti-poi	nt MFC Calibrations		Sem	iannually	604. CH						
F	low Syst	em Leak Checks		Vee Wee	kly	Sector Sector						
F	ilter Pac	k Inspection		✓ Wee	kly							
F	Are samples sent to the lab on a regular schedule in a fashion? Are filters protected from contamination during hand and shipping? How? Are the site conditions reported regularly to the field operations manager or staff? C Check Performed Frequency Multi-point MFC Calibrations Flow System Leak Checks Filter Pack Inspection Flow Rate Setting Checks Visual Check of Flow Rate Rotometer In-line Filter Inspection/Replacement Sample Line Check for Dirt/Water											
V											an Cards Stores	
I	n-line Fil	ter Inspection/Replace	ment 🕻	Sem 2	iannually							
S	ample Li	ine Check for Dirt/Wat	ter	Wee	kly							
100	Self-Self-Self-Self-Self-Self-Self-Self-			Sec. 2			Charles and the second	1.5	Charles States			

The site operator reported that he does not always use gloves to handle the filters consistently.

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
ASE	H135-Eric H	ebert-10/12/2012				
1	10/12/2012	Computer	Dell	000430	D630	unknown
2	10/12/2012	DAS	Campbell	000343	CR3000	2122
3	10/12/2012	Elevation	Elevation	None	1	None
4	10/12/2012	Filter pack flow pump	Thomas	01458	107CA110	028871488
5	10/12/2012	Flow Rate	Apex	000648	AXMC105LPMDPCV	54777
6	10/12/2012	Infrastructure	Infrastructure	none	none	none
7	10/12/2012	Modem	Raven	06471	H4222-C	0808311148
8	10/12/2012	Ozone	ThermoElectron Inc	000743	49i A1NAA	1105347321
9	10/12/2012	Ozone Standard	ThermoElectron Inc	000438	49i A3NAA	CM08200014
10	10/12/2012	Sample Tower	Aluma Tower	03536	А	none
11	10/12/2012	Shelter Temperature	Campbell	none	107-L	none
12	10/12/2012	Siting Criteria	Siting Criteria	None	1	None
13	10/12/2012	Temperature	RM Young	06389	41342	13994
14	10/12/2012	UPS	APC	06797	RS900	unknown
15	10/12/2012	Zero air pump	Werther International	06923	C 70/4	000836208

DAS Data Form

0 DAS Time Max Error:

Mfg	Serial Nu	mber Site	7	Fechnician	Site Visit Date	Parameter	Use Desc.
Campbell	2122	ASH	1135	Eric Hebert	10/12/2012	DAS	Primary
Das Date:	10/12/2012	Audit Date	10/12/2012	Mfg	Datel	Parameter	DAS
Das Time:	10:00:15	Audit Time	10:00:15		4000000	T A _ D	Occurrence and a sector (D
Das Day:	286	Audit Day	286	Serial Number	4000392	Tfer Desc.	Source generator (D
Low Channel	:	High Channel	l:	Tfer ID	01321		
Avg Diff:	Max Diff:	Avg Diff:	Max Diff:	Slope	1.0000	0 Intercept	0.00000
0.0000	0.0001	0.0000	0.0001	Cert Date	2/13/201	2 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	2/9/201	2 CorrCoff	1.00000
Channel	Input D'	VM Output	DAS Output	InputUnit	OutputUnit	Difference	
7	0.0000	0.0000	0.0000) V	V	0.0000	
7	0.1000	0.1000	0.1000) V	V	0.0000	
7	0.3000	0.3001	0.3001	l V	V	0.0000	
7	0.5000	0.5001	0.500	l V	V	0.0000	
7	0.7000	0.7002	0.7002	2 V	V	0.0000	
7	0.9000	0.9002	0.9003	3 V	V	0.0001	
7	1.0000	1.0003	1.0003	3 V	V	0.0000	

Flow Data Form

Mfg	Serial Nun	nber Ta S	ite	Tec	chnician	Site Visit l	Date Paran	neter	Owner ID
Арех	54777		ASH135	Eri	c Hebert	10/12/201	2 Flow F	late	000648
					Mfg	BIOS	F	arameter F	low Rate
					Serial Number	122974	1	fer Desc.	IOS 220-H
					Tfer ID	01416			
					Slope	1.	.00000 Int	ercept	0.00000
					Cert Date			rrCoff	1.00000
DAS 1:		DAS 2:			Cal Factor Z	ero		0	
A Avg % Diff: A	A Max % Di	A Avg %I	Dif A Max	x % Di	Cal Factor E		1.0		
0.10%	0.11%				Rotometer R			.5	
UseDescription:	Test type:	Input l/m:	Input STP:	MfcDisp.:	OutputSignal:	Output S E:	InputUnit:	OutputSign	allPctDifference
primary	pump off	0.000	0.000	0.00	0.003	0.02	l/m	l/m	
primary	leak check	0.000	0.000	0.03	0.070	0.05	l/m	l/m	
primary	test pt 1	0.000	1.509	1.50	1.500	1.51	l/m	l/m	0.07%
primary	test pt 2	0.000	1.508	1.50	1.500	1.51	l/m	l/m	0.11%
primary	test pt 3	0.000	1.512	1.50	1.500	1.51	l/m	l/m	-0.11%
Sensor Compo	ment Leak Tes	st		Conditio	n		Status	pass	
Sensor Compo	Filter Azi	muth		Conditio	n 280 Deg		Statu	pass	
Sensor Compo	nent Filter Dep	oth		Conditio	n 3.5 cm		Status	pass	
Sensor Compo	nent Filter Pos	sition		Conditio	n Good		Statu	pass	
Sensor Compo	Moisture	Present		Conditio	n No moisture p	resent	Statu	pass	
Sensor Compo	nent Rotomete	er Condition		Conditio	n Clean and dry		Status	pass	
Sensor Compo	onent System M	/lemo		Conditio	n		Status	pass	
Sensor Compo	ment Tubing C	ondition		Conditio	n Good		Status	pass	
Sensor Compo	nent Filter Dis	tance		Conditio	n 5.5 cm		Statu	pass	

Ozone Data Form

Mfg	Serial Number Ta	Site	Te	chnician		Site Visit	t Date	Parame	eter	Owner I	D
ThermoElectron Inc	1105347321	ASH135	Er	ric Hebert	:	10/12/20	12	Ozone		000743	
Intercept	1.01773 Slope: 0.34656 Intercept 0.999999 CorrCoff	0.0000	0	Mfg Serial N		ThermoE 51711217			rameter o: er Desc. O	zone zone primary	/ stan
DAS 1: A Avg % Diff: A N 1.4%	DAS 2: <u>Max % Di</u> A Avg % 1.5%	6Dif A Max	% Di	Tfer ID Slope Cert Da		L	1.0098 /23/201			0.07	
UseDescription:	ConcGroup:	Tfer Raw:	Tfer	Corr	Si	te•	Site	Unit:	PetDit	fference:	
primary	1	0.49	0.4		-0.		opb	^o cint.	Teth		
primary	2	35.73	35.		35.	1	opb			1.36%	
primary	3	66.72	65.	.99	66		opb			1.32%	
primary	4	84.33	83.	.43	84.	.70 1	opb			1.52%	
primary	5	118.09	116	5.86	118	.40	opb			1.32%	
Sensor Compone	nt Cell B Noise		Conditio	on 1.4 pp	b			Status	pass		
Sensor Compone	nt Cell B Tmp.		Conditi	on				Status	pass		
Sensor Compone	nt Fullscale Voltage		Conditio	on N/A				Status	pass		
Sensor Compone	nt Inlet Filter Condition	ก	Conditio	on Clear	1			Status	pass		
Sensor Compone	nt Line Loss		Conditio	on Not te	ested			Status	pass		
Sensor Compone	nt Offset		Conditio	on 0.20				Status	pass		
Sensor Compone	nt Span		Conditio	on 1.059				Status	pass		
Sensor Compone	nt Cell B Freq.		Conditio	on 94.9 k	κHz			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		Condition	on				Status	pass		
Sensor Compone	nt Cell B Flow		Conditio	on 0.64 l	pm			Status	pass		
Sensor Compone	nt Cell A Tmp.		Conditio	on 32.1 (2			Status			
	nt Cell A Pressure			on 720 m				Status			
Sensor Compone				on 1.7 pp				Status	<u>[</u>		
Sensor Compone				on 66.1 k				Status			
Sensor Compone				on 0.70 l				Status			
	nt Battery Backup			on Funct	ioning			Status			
Sensor Compone	nt Zero Voltage		Condition	on N/A				Status	pass		

Temperature Data Form

Mfg	Serial Number Tag	Site	Т	'echni	ician	Site Visit	Date	Parame	eter	Owner ID
RM Young	13994	ASH135	E	Eric H	ebert	10/12/20	12	Temper	ature	06389
				Mf	`g	Eutechnic	cs	Pa	rameter	emperature
				Ser	rial Number	01D1021	93	Tf	er Desc. R	TD translator
				Tfe	er ID	01231				
DAS 1:	DAS 2:			Slo	pe		1.00157	Inter	rcept	-0.02095
Abs Avg Err		Err Abs	Max Er	Ce	rt Date	2/	10/2012	2 Cori	Coff	1.00000
				Mf	g	Eutechnic	cs	Pa	rameter	emperature
				Ser	rial Number	01H0060		Tf	er Desc. R	TD probe
				Tfe	er ID	01230				
				Slo	pe		1.00157	/ Inter	rcept	-0.02095
				Ce	rt Date	2/	10/2012	2 Cori	Coff	1.00000
0.06	0.09									
UseDesc.:	Test type: Inp	utTmpRaw	InputTmpC	Corr.:	OutputTmpS	ignal: Ou	tputSig	nalEng:	OSE Unit:	Difference:
- · ·	emp Low Range	0.03	0.05		0.000		0.1		С	0.09
	emp Mid Range	21.90	21.89		0.000		22.0		С	0.08
primary Te	emp High Range	46.61	46.56		0.000		46.6	5	С	0.01
Sensor Compo	nent Shield		Condit	ion N	Noderately cle	an		Status	pass	
Sensor Compo	nent Blower Status Swit	ch	Condit	ion N	N/A			Status	pass	
Sensor Compo	nent Blower		Condit	ion N	N/A			Status	pass	
Sensor Compo	ment System Memo		Condit	ion				Status	pass	

Infrastructure Data For

Site ID	ASH135	Technician Eric Hebe	ert Site Visit Date 10/12/2012
Shelter	Make	Shelter Model	Shelter Size
Ekto		8810 (s/n 2149-17)	640 cuft

Sensor Component	Shelter Roof	Condition	Good	Status	pass
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	Rotometer	Condition	Installed	Status	pass
Sensor Component	Sample Tower	Condition	Fair	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	Good	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

Shelter Temperature Data For

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	ASH135	Eric Hebert	10/12/2012	Shelter Temperature	none
DAS 1:	DAS 2: s Max Er Abs Avg 0.84		MfgSerial NumberTfer IDSlopeCert DateMfgSerial NumberTfer IDSlopeCert Date	Eutechnics 01D102193 01231 1.0015 2/10/201 Eutechnics 01H0060 01230 1.0015 2/10/201	Parameter She Tfer Desc. RTD Tintercept CorrCoff Parameter She Tfer Desc. RTD Tintercept Tfer Desc. RTD Tintercept Tintercept Tintercept	Iter Temperatur D translator -0.02095 1.00000 Iter Temperatur

UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	19.03	19.02	0.000	19.9	С	0.84
primary	Temp Mid Range	18.12	18.11	0.000	18.6	С	0.5
primary	Temp Mid Range	17.95	17.94	0.000	17.6	С	-0.31

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: ShelterCleanNotes

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

4 Parameter: SitingCriteriaCom

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

Site ID ASH135	Technician Eric Hebert	Site Visit Date 10/	12/2012
Site Sponsor (agency)	EPA	USGS Map	Squa Pan
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	46.60383
Site Address 1	Radar Road	Audit Longitude	-68.41322
Site Address 2		Audit Elevation	23
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	Jodi Reese	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 2149-17)	Shelter Size 640 cuft
		ion, clean, and very well organiz	ed.
Site OK	Notes		

Field C	uctoma I	lata 1	Form
rield S	ystems I	Jala	L OL III

ASH135

F-02058-1500-S2-rev001

Site ID

Technician Eric Hebert

Site Visit Date 10/12/2012

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

Siting Distances OK

Siting Criteria Comment

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

Field Systems Data Form						F-02058-1500-S3-rev001			
Site	e ID	ASH135	Technician	Eric Hebert		Site Visit Date 10/12/2012			
1		nd speed and dir afluenced by obs	ection sensors sited so tructions?	as to avoid	•	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				✓	N/A			
3		nto the prevailin tower and sense	and the second second second second second	Ŀ	✓	N/A			
4			ields pointed north or rces such as buildings	Positioned to	<				
5	conditie surface	ons? (i.e. ground	H sensors sited to avo below sensors should sloped. Ridges, hollow be avoided)	be natural	✓				
6	Is the s	olar radiation se	nsor plumb?	Ŀ	✓	N/A			
7	Is it site light?	ed to avoid shadi	ing, or any artificial o	r reflected	~	N/A			
8	Is the r	ain gauge plumb)?	5	~	N/A			
9	Is it site towers,		ering effects from buil	dings, trees,	•	N/A			
10	Is the s facing i		ensor sited with the gr	id surface	•	N/A			
11	Is it in	clined approxim	ately 30 degrees?		~	N/A			
Dre	vido on	v additional oval	anation (nhotograph (r ekateh if nacass		x) regarding conditions listed above or any other features			

ASH135					-02058-1500-S4-rev0
	Technician	Eric Hebert		Site Visit Date 10/12	/2012
he meterological on, and well main	sensors appear to be i itained?	ntact, in good		N/A	
the meteorologic 1g data?	al sensors operational	online, and		N/A	
shields for the te	emperature and RH se	ensors clean?			
4 Are the aspirated motors working?				N/A	
olar radiation ser es?	ısor's lens clean and fi	ree of		N/A	
irface wetness se	nsor grid clean and u	ndamaged?		N/A	
		in good			
		ions protected			
	Manufacturer	Model		S/N	Client ID
	RM Young	41342	1126-024	13994	06389
	g data? shields for the to aspirated motor lar radiation ser s? rface wetness se sensor signal an n, and well mair sensor signal an e elements and w	g data? shields for the temperature and RH se aspirated motors working? lar radiation sensor's lens clean and fr s? rface wetness sensor grid clean and un sensor signal and power cables intact, n, and well maintained? sensor signal and power cable connect e elements and well maintained? Manufacturer RM Young	shields for the temperature and RH sensors clean? aspirated motors working? lar radiation sensor's lens clean and free of s? rface wetness sensor grid clean and undamaged? sensor signal and power cables intact, in good n, and well maintained? sensor signal and power cable connections protected e elements and well maintained? Manufacturer Model	g data? shields for the temperature and RH sensors clean? aspirated motors working? aspirated motors working? lar radiation sensor's lens clean and free of s? rface wetness sensor grid clean and undamaged? sensor signal and power cables intact, in good n, and well maintained? sensor signal and power cable connections protected elements and well maintained? Manufacturer Model RM Young	g data? shields for the temperature and RH sensors clean? aspirated motors working? Iar radiation sensor's lens clean and free of s? rface wetness sensor grid clean and undamaged? Isensor signal and power cables intact, in good n, and well maintained? sensor signal and power cable connections protected elements and well maintained? Manufacturer Model S/N

Fie	eld Systems Data Form			F-02058-1500-S5-rev001
Site	ID ASH135 To	echnician Eric Hebert		Site Visit Date 10/12/2012
	Siting Criteria: Are the pollutant a	nalyzers and deposition e	<u>quip</u>	nent sited in accordance with 40 CFR 58, Appendix E
1	Do the sample inlets have at least a unrestricted airflow?	270 degree arc of		
2	Are the sample inlets 3 - 15 meters	above the ground?		
3	Are the sample inlets > 1 meter from and 20 meters from trees?	m any major obstruction		
	Pollutant analyzers and deposition	equipment operations an	d ma	intenance
1	Do the analyzers and equipment ap condition and well maintained?	pear to be in good		
2	Are the analyzers and monitors opereporting data?	erational, on-line, and		
3	Describe ozone sample tube.			1/4 teflon by 12 meters
4	Describe dry dep sample tube.			3/8 teflon by 12 meters
5	Are in-line filters used in the ozone indicate location)	sample line? (if yes		At inlet only
6	Are sample lines clean, free of kink obstructions?	s, moisture, and		
7	Is the zero air supply desiccant uns	aturated?		
8	Are there moisture traps in the san	ple lines?		
9	Is there a rotometer in the dry depo clean?	osition filter line, and is it		Clean and dry
Par	ameter Manufa	cturer Model		S/N Client ID

Parameter	Manufacturer	Model	S/N	Client ID	
Sample Tower	Aluma Tower	A	none	03536	
Ozone	ThermoElectron Inc	49i A1NAA	1105347321	000743	
Filter pack flow pump	Thomas	107CA110	028871488	01458	
Zero air pump	Werther International	C 70/4	000836208	06923	

Field Systems Data Form						F-02058 -	1500-S6-rev001
Site	ID	ASH135	Technician	Eric Hebert		Site Visit Date 10/12/2012	
	DAS, se	nsor translators, and	peripheral equi	pment operation	<u>15 ai</u>	<u>nd maintenance</u>	
1	Do the l well ma	DAS instruments appe intained?	ear to be in good	l condition and			
2		the components of the , backup, etc)	DAS operation	al? (printers,			
3		analyzer and sensor signaly protection circuitry		hrough		Met sensors only	
4		signal connections pro intained?	otected from the	e weather and			
5	Are the signal leads connected to the correct DAS channel?						
6	Are the ground	DAS, sensor translate ed?	ors, and shelter	properly			
7	Does th	e instrument shelter h	ave a stable pov	ver source?			
8	Is the ir	nstrument shelter temp	perature control	led?			
9	Is the m	iet tower stable and gr	ounded?			Stable Ground	led
10	Is the sa	ample tower stable and	l grounded?				
11	Tower o	comments?					

Manufacturer	Model	S/N	Client ID
Dell	D630	unknown	000430
Campbell	CR3000	2122	000343
Raven	H4222-C	0808311148	06471
APC	RS900	unknown	06797
	Dell Campbell Raven	Dell D630 Campbell CR3000 Raven H4222-C	Dell D630 unknown Campbell CR3000 2122 Raven H4222-C 0808311148

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	Form				F-02	058-	1500-S7-rev001	
Site ID ASH135	Tec	hnician	Eric Hebert	Site Visit Date	10/12/2012		Territo Asia	
Documentation			1					
Does the site have the require	PARAMETERS AND A DESCRIPTION	1 N N N N N N N N N N N N N N N N N N N		<u>uals?</u>				
Wind speed sensor Wind direction sensor Temperature sensor Relative humidity sensor Solar radiation sensor Surface wetness sensor Wind sensor translator Temperature translator Humidity sensor translator Solar radiation translator Solar radiation translator Tipping bucket rain gauge Ozone analyzer Filter pack flow controller	Yes No.		Data Data Strip Comj Mode Print Zero Filter Surg UPS Light Shelt	em	Yes		N/A □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	
Does the site have the requi	red and m	ost recei	nt QC document	s and report forms?				
Station Log SSRF Site Ops Manual HASP	Present	June 20			Currer V V V V	nt		
Field Ops Manual Calibration Reports Ozone z/s/p Control Charts		Nov 200)9					
Preventive maintenance schedu								
1 Is the station log properly completed during every site visit? ☑								
2 Are the Site Status Report current?	Forms bei	ng comp	leted and					
3 Are the chain-of-custody for sample transfer to and from		erly used	l to document					
4 Are ozone z/s/p control cha current?	rts propei	·ly comp	leted and	Control charts not u	sed			
Provide any additional explanat natural or man-made, that may					ions listed a	bove, (or any other features,	

Field Systems Data Form						F-02058	-1500-S8-rev001
Site	e ID	ASH135	Technician	Eric Hebert	Site Visit Date	10/12/2012	
1 2	Has th course Has th trainin	? If yes, when an e backup operato ng course? If yes,	tended a formal CAS d who instructed? or attended a formal when and who instru	CASTNET			
3	Is the s	and the second secon	rly on the required T				
4		e standard CAST ed by the site ope	NET operational pro rator?	cedures being 🔽			
5			nowledgeable of, and es? (including docum				

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

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

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

0	C	Ch	ecl	s P	erf	orm	ed
s ne			100.00				

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 analyz
Sample Line Check for Dirt/Water
Zaro Air Designant Check

Frequency	Compliant
Semiannually	
Daily	
As needed	
Daily	
As needed	
Weekly	
Monthly	
N/A	
Weekly	
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

 \checkmark

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.

Fie	eld Systems Data Form			F-02058-1500-S9-rev001				
Site	e ID ASH135 Te	chnician Eric Heber	rt	Site Visit Da	te 10/12/2012			
	Site operation procedures							
1	Is the filter pack being changed eve	ry Tuesday as sched	uled? 🗹	Filter changed mo	prinings			
2	Are the Site Status Report Forms b correctly?	eing completed and	filed 🔽					
3	Are data downloads and backups b scheduled?	eing performed as		No longer require	d			
4	Are general observations being mad	le and recorded? Ho	ow? ✓	SSRF				
5	Are site supplies on-hand and reple fashion?	✓						
6	Are sample flow rates recorded? How?			SSRF, call-in				
7	Are samples sent to the lab on a reg fashion?	ular schedule in a ti	mely 🔽					
8	Are filters protected from contamir and shipping? How?	nation during handli	ng 🔽	Clean gloves on and off				
9	Are the site conditions reported reg operations manager or staff?	ularly to the field	✓					
QC	Check Performed	Frequency			Compliant			
N	Multi-point MFC Calibrations	Semiannually						
F	Flow System Leak Checks	✓ Weekly						
F	Filter Pack Inspection							
F	Flow Rate Setting Checks	✓ Weekly						
V	Visual Check of Flow Rate Rotometer							
I	In-line Filter Inspection/Replacement Semiannually							
S	Sample Line Check for Dirt/Water	Veekly						
	vide any additional explanation (phot iral or man-made, that may affect the			y) regarding cond	itions listed above,	or any other features,		

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
WSZ	T109-Eric H	lebert-10/22/2012				
1	10/22/2012	Computer	Dell	000291	D520	unknown
2	10/22/2012	DAS	Campbell	000427	CR3000	2526
3	10/22/2012	Elevation	Elevation	None	1	None
4	10/22/2012	Filter pack flow pump	Thomas	00476	107CA18	000025705
5	10/22/2012	Flow Rate	Apex	000466	AXMC105LPMDPCV	43970
6	10/22/2012	Infrastructure	Infrastructure	none	none	none
7	10/22/2012	Met tower	Universal Tower	03532	unknown	none
8	10/22/2012	Modem	Raven	06598	V4221-V	0844349943
9	10/22/2012	Ozone	ThermoElectron Inc	000695	49i A1NAA	1030244801
10	10/22/2012	Ozone Standard	ThermoElectron Inc	000371	49i A3NAA	0726124692
11	10/22/2012	Sample Tower	Aluma Tower	03531	A	none
12	10/22/2012	Shelter Temperature	Campbell	none	107-L	none
13	10/22/2012	Shield (10 meter)	RM Young	00947	Aspirated 43408	none
14	10/22/2012	Siting Criteria	Siting Criteria	None	1	None
15	10/22/2012	Temperature	RM Young	02192	41342	148
16	10/22/2012	Zero air pump	Werther International	06934	P 70/4	000821881

DAS Data Form

DAS Time Max Error: 0.02

Mfg	Serial Nu	mber Site		Technician	Site Visit Date	Parameter	Use Desc.
Campbell	2526	WS	T109	Eric Hebert	10/22/2012	DAS	Primary
Das Date:	10/22/2012	Audit Date	10/22/2012	Mfg	Datel	Parameter	DAS
Das Time:	10:08:01	Audit Time	10:08:00		4000392		Source generator (D
Das Day:	296	Audit Day	296	Serial Number	4000392	Tfer Desc.	Source generator (D
Low Channel	:	High Channe	l:	Tfer ID	01321		
Avg Diff:	Max Diff:	Avg Diff:	Max Diff:	Slope	1.0000	0 Intercept	0.00000
0.0001	0.0002	0.0001	0.0002	Cert Date	2/13/201	2 CorrCoff	1.00000
				Cert Date	2/10/201		1.00000
				Mfg	Fluke	Parameter	DAS
				Serial Number	86590148	Tfer Desc.	DVM
				Tfer ID	01310		
				Slope	1.0000	0 Intercept	0.00000
				Cert Date	2/9/201	2 CorrCoff	1.00000
Channel	Input D	VM Output	DAS Output	InputUnit	OutputUnit	Difference	
7	0.0000	0.0000	0.0000	0 V	V	0.0000	
7	0.1000	0.1000	0.1000	0 V	V	0.0000	
7	0.3000	0.3000	0.3000		V	0.0000	
7	0.5000	0.5001	0.5000	0 V	V	-0.0001	
7	0.7000	0.7001	0.7000		V	-0.0001	
7	0.9000	0.9001	0.9000		V	-0.0001	
7	1.0000	1.0002	1.0000	0 V	V	-0.0002	

Flow Data Form

Mfg	Serial Nun	nber Ta	Site	Tec	hnician	Site Visit I	Date Paran	neter	Owner ID	
Apex	43970		WST109	Eri	c Hebert	10/22/201	2 Flow F	late	000466	
					Mfg	BIOS	F	arameter Fl	ow Rate	
					Serial Number	122974	1	fer Desc. Bl	OS 220-H	
					Tfer ID	01416				
					Slope	1.	.00000 Int	ercept	0.00000	
					¹					
					Cert Date	2/	6/2012 Co	rrCoff	1.00000	
DAS 1:		DAS 2:			Cal Factor Z	ero	-0.	01		
A Avg % Diff:	A Max % Di	A Avg %l	Dif A Max	x % Di	Cal Factor F	ull Scale	0.9	98		
0.82%	0.89%				Rotometer R	eading:	1.	55		
UseDescription:	Test type:	Input l/m:	Input STP:	MfcDisp.:	OutputSignal:	Output S E:	InputUnit:	OutputSigna	llPctDifference:	
primary	pump off	0.000	0.000	0.01	0.009	-0.01	l/m	l/m		
primary	leak check	0.000	0.000	0.01	0.022	0.01	l/m	l/m		
primary	test pt 1	0.000	1.512	1.53	1.521	1.50	l/m	l/m	-0.79%	
primary	test pt 2	0.000	1.512	1.53	1.521	1.50	l/m	l/m	-0.77%	
primary	test pt 3	0.000	1.514	1.53	1.521	1.50	l/m	l/m	-0.89%	
Sensor Compo	nent Leak Tes	st		Condition	n		Statu	pass		
Sensor Compo	nent Filter Azi	muth		Conditio	n 180 deg		Status	pass		
Sensor Compo	nent Filter De	oth		Condition	n -1.0 cm		Statu	Fail		
Sensor Compo	nent Filter Pos	sition		Condition	n Poor		Status	Fail		
Sensor Compo	ment Moisture	Present		Condition	n No moisture p	resent	Statu	pass		
Sensor Compo	nent Rotomete	er Conditior	۱	Conditio	Clean and dry		Status	pass		
Sensor Compo	onent System M	Nemo		Conditio	n See comments	3	Status	pass	pass	
Sensor Compo	ment Tubing C	ondition		Conditio	n Good		Status	Status pass		
Sensor Compo	nent Filter Dis	tance		Conditio	n 5.0 cm		Statu	pass		

Ozone Data Form

Mfg	5	Serial Number Ta	Site	Te	chnician		Site Visi	t Date	Parame	eter	Owner I	D
ThermoElec	tron Inc	1030244801	WST109	Er	ric Heberl	t	10/22/20)12	Ozone		000695	
Slope: [Intercept [CorrCoff [0	Mfg Serial N Tfer ID		· · · · · · · · · · · · · · · · · · ·			arameter ozone		/ stan	
DAS 1:		DAS 2:			Slone			1.0098	7 Into	t	0.07	183
	iff: A M	ax % Di A Avg %	6Dif A Max	% Di	Slope					rcept		
0.2		0.5%			Cert Da	nte	3	/23/201	2 Corr	Coff	1.00	0000
UseDesc	cription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	Unit:	PctDif	ference:	
prim	nary	1	0.18	0.	10	0.3	30	ppb				
prim	nary	2	24.51	24.	.19	24.	.30	ppb			0.45%	
prim	nary	3	66.93	66.	.20	66.	.34	ppb			0.21%	
prim	nary	4	87.89	86	.95	86.	.90	ppb			-0.06%	
prim	nary	5	120.58	119	0.32	119	0.40	ppb			0.07%	
Sensor Co	omponen	t Cell B Noise		Conditi	on 0.9 pp	ob			Status	pass		
Sensor Co	omponen	t Cell B Tmp.		Conditi	on				Status	pass		
Sensor Co	omponen	t Fullscale Voltage		Condition	on N/A				Status	pass		
Sensor Co	omponen	Inlet Filter Condition	on	Conditi	on Clear	1			Status	pass		
Sensor Co	omponen	t Line Loss		Conditio	on Not te	ested			Status	pass		
Sensor Co	omponen	t Offset		Conditi	on -0.20				Status	pass		
Sensor Co	omponen	t Span		Conditio	on 1.030				Status	pass		
Sensor Co	omponen	t Cell B Freq.		Conditi	on 102.5	kHz			Status	pass		
Sensor Co	omponen	t System Memo		Conditi	on				Status	pass		
Sensor Co	omponen	t Sample Train		Conditi	on Good				Status	pass		
Sensor Co	omponen	t Cell B Pressure		Conditi	on				Status	pass		
Sensor Co	omponen	t Cell B Flow		Conditio	on 0.70 I	pm			Status	pass		
Sensor Co	omponen	t Cell A Tmp.		Conditio	on 31.8 (C			Status	pass		
Sensor Co	omponen	t Cell A Pressure		Conditio	on 707 m	nmHg			Status	pass		
Sensor Co	omponen	t Cell A Noise		Conditio	on 1.1 pp	ob			Status	pass		
Sensor Co	omponen	t Cell A Freq.		Conditio	on 98.0 l	κHz			Status	pass		
Sensor Co	omponen	t Cell A Flow		Conditio	on 0.71 l	pm			Status	pass		
Sensor Co	omponen	Battery Backup		Conditio	on N/A				Status	pass		
Sensor Co	omponen	t Zero Voltage		Conditio	on N/A				Status	pass		

Temperature Data Form

Sensor Component Blower Status Switch

Sensor Component Blower

Sensor Component System Memo

Mfg	Serial Number T	Sa Site	Те	echnician	Site Visit Date	Parameter	Owner ID	
RM Young	148	WST109	E	ric Hebert	10/22/2012	Temperature	02192	
				Mfg	Eutechnics	Paramete	r Temperature	
				Serial Number	01D102193	Tfer Desc	RTD translator	
				Tfer ID	01231			
DAS 1:	DAS	2:		Slope	1.0015	7 Intercept	-0.02095	
		Avg Err Abs	Max Er	Cert Date	2/10/201	2 CorrCoff	1.00000	
				Mfg	Eutechnics	Paramete	r Temperature	
				Serial Number	01H0060	Tfer Desc	RTD probe	
				Tfer ID	01230			
				Slope	1.0015	7 Intercept	-0.02095	
				Cert Date	2/10/201	12 CorrCoff	1.00000	
0.10	0.21							
UseDesc.:	Test type:	InputTmpRaw	InputTmpC	orr.: OutputTmpS	Signal: OutputSig	gnalEng: OSE U	nit: Difference:	
primary	Temp Low Range	0.09	0.11	0.000	-0.	.1 C	-0.21	
primary	Temp Mid Range	25.57	25.55	0.000	25	.6 C	0.06	
primary	Temp High Range	48.36	48.31	0.000	48	.4 C	0.04	
Sensor Com	Sensor Component Shield Condition Moderately clean Status pass							

Condition Functioning

Condition Functioning

Condition

Status pass

Status pass

Status pass

Infrastructure Data For

Site ID	WST109	Technician Eric Heb	ert Site Visit Date 10/22/2012
Shelter	Make	Shelter Model	Shelter Size
Ekto		8810 (s/n 2149-16)	640 cuft

Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Sample Tower Type	Condition	Туре А	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	Rotometer	Condition	Installed	Status	pass
Sensor Component	Sample Tower	Condition	Poor	Status	Fail
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	Good	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

Shelter Temperature Data For

Mfg	Serial Number Ta Site		Technician	Site Visit Date	Parameter	Owner ID
Campbell	none WST109		Eric Hebert	10/22/2012	Shelter Temperature	none
DAS 1: Abs Avg Err Abs 0.67	DAS 2: Max Er Abs Avg 0.76	Err Abs Max Er	Mfg Serial Number Tfer ID Slope Cert Date Mfg Serial Number Tfer ID Slope Cert Date	Eutechnics 01D102193 01231 1.0015 2/10/201 Eutechnics 01H0060 01230 1.0015 2/10/201	Parameter She Tfer Desc. RTI 1 7 Intercept 2 CorrCoff Parameter She Tfer Desc. RTI 1 7 Intercept 1 Tfer Desc. RTI 1 Tfer Desc. RTI 1 Tfer Desc. RTI	elter Temperatur D translator -0.02095 1.00000 elter Temperatur

UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	21.91	21.90	0.000	21.3	С	-0.58
primary	Temp Mid Range	22.06	22.05	0.000	21.4	С	-0.68
primary	Temp Mid Range	20.14	20.13	0.000	20.9	С	0.76

Site Visit Comments

Parameter	Parameter Site		S.V. Date	Component	Mfg	Serial No.	Hazaro	Hazard Problem	
Flow Rate	WST109	Eric Hebert	10/22/2012	Filter Position	Apex	3248			

The filter attachment plate is mounted too low in the enclosure resulting in the filter being exposed to wind-driven rain and in the standard geometric orientation.

Field Systems Comments

1 Parameter: 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 ID WST109	Technician Eric Hebert	Site Visit Date 10/2	22/2012				
	A STATE	LIGGEN	Woodstock				
Site Sponsor (agency)	EPA	USGS Map	WOODSIOCK				
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 ✓	Inspected March 2012				
Time Zone	Eastern	First Aid Kit					
Primary Operator	Brenda Minicucci	Safety Glasses					
Primary Op. Phone #	(603) 726-4204	Safety Hard Hat 🗹					
Primary Op. E-mail	bminicucci70703@roadrunner.com	Climbing Belt					
Backup Operator	Don Buso	Security Fence					
Backup Op. Phone #	(603) 7264-204	Secure Shelter					
Backup Op. E-mail	dbuso@worldpath.net	Stable Entry Step 🗹					
Shelter Working Room	Make Ekto M	fodel 8810 (s/n 2149-16)	Shelter Size 640 cuft				
Shelter Clean	Notes The shelter floor and roof have	e been repaired. Hand rails ha	ave been installed on platform.				
Site OK	Notes State of NH Department of Environmental Services contact is Tom Fazzina (603) 271-0911 and tfazzina@DES.state.NH.US						

Field Systems Data Form

WST109

F-02058-1500-S2-rev001

Site ID

Technician Eric Hebert

Site Visit Date 10/22/2012

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		
Major industrial complex	10 to 20 km		
City > 50,000 population	40 km		
City 10,000 to 50,000 population	10 km]
City 1,000 to 10,000 population	5 km		
Major highway, airport or rail yard	2 km		
Secondary road, heavily traveled	500 m		
Secondary road, lightly traveled	200 m		
Feedlot operations	500 m		
Intensive agricultural ops (including aerial spraying)	500 m		
Limited agricultural operations	200 m		
Large parking lot	200 m		
Small parking lot	100 m	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 Sy	ystems Dat	a Form			F-02058-1500-S3-rev001				
Site	D	WST109	Technician	Eric Hebert		Site Visit Date 10/22/2012				
1		nd speed and dire nfluenced by obst	ection sensors sited so tructions?	as to avoid		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			elds pointed north or rces such as buildings,	positioned to						
5	conditi surface	ons? (i.e. ground	H sensors sited to avoi below sensors should sloped. Ridges, hollow e avoided)	be natural						
6	Is the s	olar radiation se	nsor plumb?			N/A				
7	Is it site light?	ed to avoid shadi	ng, or any artificial or	reflected		N/A				
8	Is the r	ain gauge plumb	?			N/A				
9	Is it site towers,		ring effects from build	lings, trees,		N/A				
10	Is the s facing		ensor sited with the gr	id surface		N/A				
11	Is it in	clined approxima	ately 30 degrees?		<	N/A				
Due			motion (abotaceash a	n drotob if noosa		v) regarding conditions listed above or any other features				

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

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

Fi	eld Systems Data	Form				F-02058	8-1500-S4-re	ev001	
Sit	e ID WST109	Technician	ric Hebert		Site Visit Date	10/22/2012			
1	Do all the meterological se condition, and well mainta		ntact, in good		N/A				
2	Are all the meteorological reporting data?	sensors operational	online, and		N/A				
3	Are the shields for the tem	perature and RH se	nsors clean?		Moderately clean				
4	Are the aspirated motors v								
5	Is the solar radiation sense scratches?	or's lens clean and fr	ee of	✓ N/A					
6	Is the surface wetness sens	or grid clean and un	damaged?		N/A				
7	Are the sensor signal and j condition, and well mainta		in good						
8	Are the sensor signal and p from the elements and wel	ions protected							
Pa	rameter	Manufacturer	Model		S/N		Client ID		
Те	mperature	RM Young	41342		148		02192		
Sh	ield (10 meter)	RM Young	Aspirated 4	4340	8 none		00947		

none

03532

unknown

Universal Tower

Met tower

Fie	eld Sy	stems Da	ta Form	F-02058-1500-S5-rev001					
Site	ID	WST109	Technician Eric Hebert		Site Visit Date 10/22/2012				
	Siting (Criteria: Are the	e pollutant analyzers and deposition ec	uipı	nent sited in accordance with 40 CFR 58, Appendix E				
1		sample inlets ha icted airflow?	we at least a 270 degree arc of						
2	Are the	sample inlets 3	- 15 meters above the ground?						
3		sample inlets > meters from tre	1 meter from any major obstruction, es?						
	Polluta	nt analyzers and	d deposition equipment operations and	ma	intenance				
1		analyzers and e on and well mai	quipment appear to be in good ntained?						
2		analyzers and ang data?	monitors operational, on-line, and						
3	Describ	e ozone sample	tube.		1/4 teflon by 15 meters				
4	Describ	e dry dep samp	le tube.		3/8 teflon by 15 meters				
5		line filters used e location)	in the ozone sample line? (if yes		At inlet only				
6	Are san obstruc	A second s	free of kinks, moisture, and						
7	Is the z	ero air supply d	esiccant unsaturated?						
8	Are the	re moisture traj	ps in the sample lines?						
9	Is there clean?	a rotometer in	the dry deposition filter line, and is it		Clean and dry				
Par	ameter		Manufacturer Model		S/N Client ID				

Parameter	Manufacturer	Model	5/IN	Client ID		
Sample Tower	Aluma Tower	A	none	03531		
Ozone	ThermoElectron Inc	49i A1NAA	1030244801	000695		
Zero air pump	Werther International	P 70/4	000821881	06934		
Filter pack flow pump	Thomas	107CA18	000025705	00476		

Fie	eld Sy	vstems Data Fo	orm				F-02058	8-15	00-S6-rev001	
Site	D	WST109	Technician	Eric Hebert		Site Visit Date	10/22/2012			
	DAS, se	ensor translators, and j	peripheral equip	pment operation	<u>ns ai</u>	nd maintenance				
1	Do the well ma	DAS instruments appe aintained?	ar to be in good	condition and						Concernance of the second
2		the components of the , backup, etc)	DAS operation:	al? (printers,						Constant of the local data
3		analyzer and sensor signs of the sensor sign of the		hrough		Met sensors only				CLOSED DOLLAR
4	Are the signal connections protected from the weather and well maintained?									ALC: NOT ALC
5	Are the	signal leads connected	to the correct l	DAS channel?						Contraction of the
6	Are the ground	e DAS, sensor translato ed?	rs, and shelter j	properly						A REPORT OF
7		e instrument shelter h								South States of the States of
8	Is the in	nstrument shelter temp	erature control	led?						and the second
9	Is the n	net tower stable and gr	ounded?			Stable 🗸	Grou	ınded		
10	Is the s	ample tower stable and	grounded?							
11	Tower	comments?								and the second se

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D520	unknown	000291
DAS	Campbell	CR3000	2526	000427
Modem	Raven	V4221-V	0844349943	06598

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 Systems Data	Form				F-02	0 58- 1	1500-S7-rev001
Site ID WST109	Tecl	nnician	Eric Hebert	Site Visit Date	10/22/2012		
Documentation							
Does the site have the require	d instrum	ent and	equinment mar	male?			
	les No	1 N. C.		<u>luais.</u>	Yes	No	N/A
Wind speed sensor				logger			
Wind direction sensor			Data	logger			
Temperature sensor			Strip	o chart recorder			
Relative humidity sensor			Com	puter			
Solar radiation sensor			Mod	em			
Surface wetness sensor			Prin	ter			
Wind sensor translator			Zero	air pump			
Temperature translator			Filte	r flow pump			
Humidity sensor translator			Surg	e protector			
Solar radiation translator			UPS				
Tipping bucket rain gauge		✓	Ligh	tning protection device			
Ozone analyzer			Shel	ter heater			
Filter pack flow controller			Shel	ter air conditioner			
Filter pack MFC power supply							
Does the site have the requir	ed and m	ost recei	nt QC documen	ts and report forms?			
	Present				Curren	nt	
Station Log							
SSRF							
Site Ops Manual		Oct 200)1				
HASP		Nov 200)9				
Field Ops Manual		July 199	90				
Calibration Reports							
Ozone z/s/p Control Charts							
Preventive maintenance schedul							
1 Is the station log properly c	omploted	during	avanu sita visit?				
1 is the station log property c	ompieteu	uuning	every site visit.				
2 Are the Site Status Report I current?	Forms bei	ng comp	oleted and				
3 Are the chain-of-custody fo sample transfer to and from		erly used	l to document				
4 Are ozone z/s/p control char current?	rts proper	ly comp	leted and	Control charts not u	used		
Provide any additional explanati natural or man-made, that may					tions listed a	bove, o	r any other features,

Fie	eld Sy	stems Data Fo	rm			F-02058-1500-S8-rev001				
Site	Site ID WST109 Technician Eric Hebert		Eric Hebert		Site Visit Date	10/22/2012				
1	Contract processing and the	eration procedures e site operator attended	La formal CAS	TNET training		The site operator wa	as trained by the	previo	ous operator, who was	
		If yes, when and who			trained by the previo		previo	us operator, who was		
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?							0.0000325624.5°07		
3	Is the si schedule	te visited regularly on e?	the required T	iesday						
4		standard CASTNET o d by the site operator?	CONTRACTOR CONTRACTOR CONTRACTOR	cedures being						
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)									
	Are reg	ular operational QA/Q	C checks perfo	rmed on meteor	<u>olo</u>	gical instruments?				

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

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

QC	Check Performed	

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 analy
Sample Line Check for Dirt/Water
Zero Air Desiccant Check

Frequency	Compliant
Semiannually	
Daily	
Daily	
Weekly	
Every 2 weeks	
N/A	
Weekly	
Every 2 weeks	

oliant

- 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

ze

- 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.

Fie	eld Systems Data			F-02058-1500-S9-rev00				
Site	e ID WST109	Techni	cian Eric Hebert		Site Visit Dat	e 10/22/2012		
	Site operation procedures							
1	Is the filter pack being char	nged every T	uesday as scheduled	? 🔽	Filter changed mo	rinings		
2	Are the Site Status Report 1 correctly?	Forms being	completed and filed					
3	Are data downloads and ba scheduled?	ckups being	performed as		No longer required	t		
4	Are general observations be	eing made an	nd recorded? How?		SSRF, logbook			
5	Are site supplies on-hand a fashion?	nd replenish	ed in a timely					
6	Are sample flow rates reco	rded? How?			SSRF, logbook, ca	all-in		
7	Are samples sent to the lab fashion?	on a regular	schedule in a timely					
8	Are filters protected from c and shipping? How?	ontaminatio	n during handling		Clean gloves on a	nd off		
9	Are the site conditions repo operations manager or staf		ly to the field					
QC	Check Performed		Frequency			Compliant		
N	Aulti-point MFC Calibration	IS	Semiannually					
F	low System Leak Checks		Weekly					
F	ilter Pack Inspection							
F	Tow Rate Setting Checks		Weekly	Children of the				
	isual Check of Flow Rate R		Weekly	120000				
	n-line Filter Inspection/Repl	a distant series and	Semiannually	000000740	1			
S	ample Line Check for Dirt/V	Water 🗹	Weekly	. 60h				
	ide any additional explanati ral or man-made, that may a				y) regarding condi	tions listed above,	or any other features,	

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
ABT	T147-Eric H	ebert-10/23/2012				
1	10/23/2012	Computer	Dell	000321	D520	unknown
2	10/23/2012	DAS	Campbell	000413	CR3000	2519
3	10/23/2012	Elevation	Elevation	None	1	None
4	10/23/2012	Filter pack flow pump	Thomas	02974	107CAB18	0493002469
5	10/23/2012	Flow Rate	Арех	000467	AXMC105LPMDPCV	43973
6	10/23/2012	Infrastructure	Infrastructure	none	none	none
7	10/23/2012	Met tower	Universal Tower	06486	unknown	none
8	10/23/2012	Modem	Raven	06602	H4223-C	0844430633
9	10/23/2012	Ozone	ThermoElectron Inc	000733	49i A1NAA	1105347322
10	10/23/2012	Ozone Standard	ThermoElectron Inc	000220	49i A3NAA	0622717868
11	10/23/2012	Sample Tower	Aluma Tower	000017	В	AT-61152-A-H8-C
12	10/23/2012	Shelter Temperature	Campbell	none	107-L	none
13	10/23/2012	Shield (10 meter)	RM Young	02804	Aspirated 43408	none
14	10/23/2012	Siting Criteria	Siting Criteria	None	1	None
15	10/23/2012	Temperature	RM Young	06503	41342	14623
16	10/23/2012	UPS	APC	06795	RS900	unknown
17	10/23/2012	Zero air pump	Werther International	06930	P 70/4	000829168

DAS Data Form

DAS Time Max Error: 0.02

Mfg	Serial 1	Number Site	2	Technician	Site Visit Date	Parameter	Use Desc.
Campbell	2519	AB	T147	Eric Hebert	10/23/2012	DAS	Primary
Das Date:	10/23/2012	Audit Date	10/23/2012	Mfg	Datel	Parameter	DAS
Das Time:	11:00:01 297	Audit Time Audit Day	11:00:00 297	Serial Number	4000392	Tfer Desc.	Source generator (D
Low Channel	l:	High Channe	el:	Tfer ID	01321		
Avg Diff:	Max Diff:	Avg Diff:	Max Diff:	Slope	1.0000	0 Intercept	0.00000
0.0001	0.00	0.000	1 0.0002	Cert Date	2/13/201	2 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	2/9/201	2 CorrCoff	1.00000
Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference	
7	0.0000	0.0000	0.0000) V	V	0.0000	
7	0.1000	0.1000	0.1000) V	V	0.0000	
7	0.3000	0.3000	0.2999		V	-0.0001	
7	0.5000	0.5000	0.4999	9 V	V	-0.0001	
7	0.7000	0.7000	0.6999		V	-0.0001	
7	0.9000	0.9000	0.8999		V	-0.0001	
7	1.0000	1.0001	0.9999	Θ V	V	-0.0002	

Flow Data Form

Mfg	Serial Nun	nber Ta S	lite	Tec	chnician	Site Visit I	Date Paran	neter	Owner ID
Арех	43973		ABT147	Eri	c Hebert	10/23/201	2 Flow F	Rate	000467
					Mfg	BIOS	I	Parameter Flo	ow Rate
					Serial Number	122974	1	lfer Desc. Bl	OS 220-H
					Tfer ID	01416			
					Slope	1.	.00000 Int	ercept	0.00000
					Cert Date	2/		rrCoff	1.00000
DAS 1:		DAS 2:			Cal Factor Z	ero	-0.	01	
A Avg % Diff: A	A Max % Di	A Avg %I	Dif A Max	: % Di	Cal Factor F			99	
0.19%	0.39%				Rotometer R			55	
UseDescription:	Test type:	Input 1/m:	Input STP:	MfcDisp.:	OutputSignal:	Output S E:	InputUnit:	OutputSignat	IPctDifference:
-	pump off	0.000	0.000	-0.01	0.002	-0.01	l/m	l/m	
primary	leak check	0.000	0.000	0.02	0.020	0.01	l/m	l/m	
primary	test pt 1	0.000	1.498	1.51	1.506	1.50	l/m	l/m	0.13%
primary	test pt 2	0.000	1.499	1.51	1.506	1.50	l/m	l/m	0.06%
primary	test pt 3	0.000	1.506	1.51	1.506	1.50	l/m	l/m	-0.39%
Sensor Compo	onent Leak Tes	st		Conditio	n		Statu	s pass	
Sensor Compo	Filter Azi	muth		Conditio	n 240 deg		Statu	s pass	
Sensor Compo	nent Filter Dep	oth		Conditio	n 0.0 cm		Statu	s pass	
Sensor Compo	nent Filter Pos	sition		Conditio	n Fair		Statu	s pass	
Sensor Compo	Moisture	Present		Conditio	n See comments	6	Statu	s pass	
Sensor Compo	nent Rotomete	er Condition		Conditio	n Clean and dry		Statu	s pass	
Sensor Compo	onent System N	/lemo		Conditio	n See comments	6	Statu	s pass	
Sensor Compo	onent Tubing C	ondition		Conditio	n Good		Statu	s pass	
Sensor Compo	Filter Dis	tance		Conditio	n 5.0 cm		Statu	s pass	

Ozone Data Form

Mfg	S	erial Number Ta	Site	Te	chnician		Site Visi	t Date	Parame	ter	Owner l	D
ThermoElec	tron Inc	1105347322	ABT147	Er	ic Hebert	:	10/23/20	12	Ozone		000733	
Slope: [Intercept [CorrCoff [0.2	96006Slope:29628Intercept99995CorrCoff	0.00000	0	Mfg Serial N Tfer ID		ThermoE 51711213 01111			rameter o er Desc. C	zone Dzone primar	y stan
DAS 1:		DAS 2:			Slope			1.0098	7 Inter	aant	0.07	7483
	iff: A Ma	x % Di A Avg %	6Dif A Max	% Di	Slope					•		
3.2		4.2%			Cert Da	ite	3,	/23/201	2 Corr	Coff	1.00	0000
UseDesc	cription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	Unit:	PctDi	fference:	
prim	*	1	0.38	0.	30	0.	14	ppb				
prim	nary	2	33.17	32	.77	32.	-	ppb			-2.26%	
prim		3	64.07	63	.36	61.	-	ppb			-2.92%	
prim	nary	4	83.43	82	.54	79.		ppb			-3.32%	
prim	•	5	116.71	115	5.49	110	-	ppb			-4.15%	
-	•	Cell B Noise		Conditi	on 0.8 pp	h	4		Status	nass		7
	-	Cell B Tmp.		Conditio					Status			
Sensor Co	omponent	Fullscale Voltage		Condition	on N/A				Status	pass		
Sensor Co	omponent	Inlet Filter Condition	n	Conditio	on Clean	1			Status	pass		
Sensor Co	omponent	Line Loss		Conditi	on Not te	sted			Status	pass		
Sensor Co	omponent	Offset		Conditio	on -0.20				Status	pass		
Sensor Co	omponent	Span		Condition	on 1.028				Status	pass		
Sensor Co	omponent	Cell B Freq.		Conditi	on 93.0 k	κHz			Status	pass		
Sensor Co	omponent	System Memo		Conditi	on				Status	pass		
Sensor Co	omponent	Sample Train		Conditio	on Good				Status	pass		
Sensor Co	omponent	Cell B Pressure		Conditio	on				Status	pass		
Sensor Co	omponent	Cell B Flow		Conditio	on 0.71 l	pm			Status	pass		
Sensor Co	omponent	Cell A Tmp.		Conditio	on 31.8 (2			Status	pass		
Sensor Co	omponent	Cell A Pressure		Condition	on 722 m	nmHg			Status	pass		
Sensor Co	omponent	Cell A Noise		Condition	on 0.9 pp	b			Status	pass		
Sensor Co	omponent	Cell A Freq.		Condition	on 87.1 k	κHz			Status	pass		
Sensor Co	omponent	Cell A Flow		Condition	on 0.73 l	pm			Status	pass		
Sensor Co	omponent	Battery Backup		Conditio	on Not fu	Inctioning			Status	Fail		
Sensor Co	omponent	Zero Voltage		Conditio	on N/A				Status	pass		

Temperature Data Form

Sensor Component System Memo

Mfg	Serial Number T	Sa Site	Te	chnician	Site V	Visit Date	Paramo	eter	Owner ID
RM Young	14623	ABT147	Er	ic Hebert	10/23	3/2012	Temper	ature	06503
				Mfg	Euteo	hnics	Pa	rameter Te	emperature
				Serial Numb	per 01D1	02193	Tf	er Desc. R	TD translator
				Tfer ID	01231	1]		
DAS 1:	DAS	2:		Slope		1.0015	7 Inte	rcept	-0.02095
Abs Avg Err	Abs Max Er Abs A	Avg Err Abs	Max Er	Cert Date		2/10/201	2 Corr	rCoff	1.00000
				Mfg	Euteo	hnics	Pa	rameter Te	emperature
				Serial Numb	oer 01H0	060	Tf	er Desc. R	TD probe
				Tfer ID	01230)			
				Slope		1.00157	7 Inte	rcept	-0.02095
				Cert Date		2/10/201	2 Corr	rCoff	1.00000
0.09	0.14								
UseDesc.:	Test type:	InputTmpRaw	InputTmpCo	orr.: OutputT	mpSignal:	OutputSig	nalEng:	OSE Unit:	Difference:
primary 7	Femp Low Range	0.19	0.21	0.	000	0.1		С	-0.14
primary 7	Temp Mid Range	25.31	25.29	0.	000	25.3	3	С	-0.04
primary 7	Femp High Range	46.80	46.75	0.	000	46.8	3	С	0.08
Sensor Comp	onent Shield		Conditio	Moderately	/ clean		Status	pass	
Sensor Comp	Blower Status S	Switch	Conditio	Functioning	g		Status	pass	
Sensor Comp	onent Blower		Conditio	Functionin	g		Status	pass	

Condition

Status pass

Infrastructure Data For

Site ID	ABT147	Technician Eric Heb	ert Site Visit Date 10/23/2012
Shelter	Make	Shelter Model	Shelter Size
Ekto		8810 (s/n 2149-9)	640 cuft

Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Sample Tower Type	Condition	Туре В	Status	pass
Sensor Component	Conduit	Condition	Fair	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	Rotometer	Condition	Installed	Status	pass
Sensor Component	Sample Tower	Condition	Good	Status	pass
Sensor Component	Shelter Condition	Condition	Good	Status	pass
Sensor Component	Shelter Floor	Condition	Good	Status	pass
Sensor Component	Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component	Signal Cable	Condition	Good	Status	pass
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Shelter Door	Condition	Fair	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	ABT147	Eric Hebert	10/23/2012	Shelter Temperature	none
DAS 1: Abs Avg Err Abs 1.23	DAS 2: Max Er Abs Avg 3.40	Err Abs Max Er	Mfg Serial Number Tfer ID Slope Cert Date Mfg Serial Number Tfer ID Slope Cert Date	Eutechnics 01D102193 01231 1.0015 2/10/201 Eutechnics 01H0060 01230 1.0015 2/10/201	Parameter She Tfer Desc. RTI 1 1 1 2 CorrCoff Parameter She Tfer Desc. RTI 1 Tfer Desc. RTI 1 <	elter Temperatur D translator -0.02095 1.00000 elter Temperatur

UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	20.22	20.21	0.000	23.6	С	3.4
primary	Temp Mid Range	19.71	19.70	0.000	19.9	С	0.16
primary	Temp Mid Range	19.28	19.27	0.000	19.4	С	0.14

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazaro	Problem
Flow Rate	ABT147	Eric Hebert	10/23/2012	Moisture Present	Apex	3224		
The filter sample tubing	has drops of mo	isture in low section	ns outside the sh	elter.				

Field Systems Comments

1 Parameter: SiteOpsProcComm

During the filter change-out it was observed that the filter flow pump was operating when the tower was lowered. This was discussed with the operator and the proper procedure was described by the auditor. The site operator indicated that she had been instructed by AMEC personnel to leave the filter installed and operate the flow pump while the tower was down.

2 Parameter: DasComments

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

3 Parameter: SitingCriteriaCom

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

4 Parameter: ShelterCleanNotes

The shelter is clean and well organized.

5 Parameter: MetSensorComme

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

Site ID ABT147	Technician Eric Hebert	Site Visit Date 10/2	23/2012
Site Sponsor (agency)	EPA	USGS Map	Hampton
Operating Group	private	Map Scale	
AQS#	09-015-9991	Map Date	
Meteorological Type	R.M. Young		
Air Pollutant Analyzer	Ozone	QAPP Latitude	41.8402
Deposition Measurement	dry, wet	QAPP Longitude	-72.0111
Land Use	agriculture, woodland - mixed	QAPP Elevation Meters	209
Terrain	rolling	QAPP Declination	14.8
Conforms to MLM	Marginally	QAPP Declination Date	2/22/2006
Site Telephone	(860) 974-2273	Audit Latitude	41.8404
Site Address 1	80 Ayers Road	Audit Longitude	-72.01036
Site Address 2		Audit Elevation	20
County	Windham	Audit Declination	-14.5
City, State	Abington, CT	Present	
Zip Code	06230	Fire Extinguisher ☑	Inspected Nov 1992
Time Zone	Eastern	First Aid Kit	
Primary Operator	Pam Brundage	Safety Glasses	
Primary Op. Phone #	(860) 377-7159	Safety Hard Hat	
Primary Op. E-mail	pambrundage@charter.net	Climbing Belt	
Backup Operator	Andrea Cunningham	Security Fence	
Backup Op. Phone #	(860) 974-0262	Secure Shelter	
Backup Op. E-mail	abingtonandi@hotmail.com	Stable Entry Step 🔽	
Shelter Working Room	Make Ekto	Model 8810 (s/n 2149-9)	Shelter Size 640 cuft
	Notes The shelter is clean and we	ell organized.	
Site OK	Notes		

Field Systems Data Form

ABT147

F-02058-1500-S2-rev001

Site ID

Technician Eric Hebert

Site Visit Date 10/23/2012

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

Siting Distances OK

Siting Criteria Comment

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

Fie	eld Systems Da	ta Form		F-02058-1500-S3-rev001				
Site	ABT147	Technician	Eric Hebert	Site Visit Date 10/23/2012				
1	Are wind speed and di being influenced by ob	rection sensors sited so a structions?	as to avoid 🛛 🗹	N/A				
2	(i.e. wind sensors shou	nted so as to minimize to ld be mounted atop the boom >2x the max diam ng wind)	tower or on a	N/A				
3	Are the tower and sense			N/A				
4		hields pointed north or j urces such as buildings,						
5	conditions? (i.e. groun	RH sensors sited to avoid d below sensors should y sloped. Ridges, hollow: be avoided)	be natural					
6	Is the solar radiation s	ensor plumb?		N/A				
7	Is it sited to avoid shad light?	ding, or any artificial or	reflected 🗹	N/A				
8	Is the rain gauge plum	ıb?		N/A				
9	Is it sited to avoid shel towers, etc?	tering effects from build	lings, trees, 🗹	N/A				
10	Is the surface wetness facing north?	sensor sited with the gri	id surface 🗹	N/A				
11	Is it inclined approxim	nately 30 degrees?		N/A				
Dre	wide any additional ev	Janation (photograph o	r ekoteb if nocossa	w) regarding conditions listed above, or any other features				

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

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

Fie	eld Sy	stems Data F	orm				F-02058- 1	1500-S4-rev001
Site ID ABT147 Technician Eric Hebert						Site Visit Date	10/23/2012	Tests View
		1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1					and a second state	
1		ne meterological sense on, and well maintaine		intact, in good		N/A		
2	Are all reportin	the meteorological ser ng data?	nsors operationa	l online, and		N/A		
3	Are the	shields for the tempe	rature and RH :	sensors clean?				
4	Are the	aspirated motors wo	rking?					
5	Is the so scratche	lar radiation sensor's es?	s lens clean and	free of		N/A		
6	Is the su	irface wetness sensor	grid clean and t	indamaged?		N/A		
7		sensor signal and pov on, and well maintain		t, in good				
8 Are the sensor signal and power cable connections protected from the elements and well maintained?								
Parameter Manufacturer Model						S/N	(Client ID
Temperature RM Young 41342				815452	14623		06503	
Shield (10 meter) RM Young Aspirated				Aspirated	4340	08 none		02804
Met tower Universal Tower unknown					anasa	none		06486

Fie	ld Systems Data Form		F-02058-1500-S5-rev001
Site	ID ABT147 Technician Eric Hebert		Site Visit Date 10/23/2012
	Siting Criteria: Are the pollutant analyzers and deposition e	quip	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	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?		
9	Is there a rotometer in the dry deposition filter line, and is it clean?		Clean and dry
Par	meter Manufacturer Model		S/N Client ID

Parameter	Manufacturer	Model	S/IN	Client ID
Sample Tower	Aluma Tower	В	AT-61152-A-H8-C	000017
Ozone	ThermoElectron Inc	49i A1NAA	1105347322	000733
Filter pack flow pump	Thomas	107CAB18	0493002469	02974
Zero air pump	Werther International	P 70/4	000829168	06930

Fie	eld Sy	v <mark>stems Data F</mark> o	orm		F-0 2	2058-15	00-S6-rev001		
Site	D	ABT147	Technician	Eric Hebert		Site Visit Dat	e 10/23/201	2	
	DAS, se	ensor translators, and p	peripheral equi	pment operation	<u>ns ai</u>	nd maintenance			
1		DAS instruments appe intained?	ar to be in good	condition and					
2		the components of the , backup, etc)	DAS operation	al? (printers,					
3		analyzer and sensor signg protection circuitry?		hrough		Met sensors only			
4		signal connections pro iintained?	tected from the	e weather and					
5	Are the	signal leads connected	to the correct	DAS channel?					
6	Are the ground	DAS, sensor translato ed?	rs, and shelter j	properly					
7	Does th	e instrument shelter ha	ive a stable pov	ver source?					
8	Is the in	nstrument shelter temp	erature control	led?					
9	Is the met tower stable and grounded?					Stable		Grounded	
10	Is the sample tower stable and grounded?								
11	Tower	comments?							
				Sec. 1					

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D520	unknown	000321
DAS	Campbell	CR3000	2519	000413
Modem	Raven	H4223-C	0844430633	06602
UPS	APC	RS900	unknown	06795

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

Field Systems D	ata Fo	rm			F-02	058-1500-S7-rev001
Site ID ABT147		Technic	an Eric Hebert	Site Visit Date	10/23/2012	
Documentation						
Does the site have the	<u>required in</u> Yes	strument : No	nd equipment N/A	<u>manuals?</u>	Yes	No N/A
Wind speed sensor				Data logger		
Wind direction sensor				Data logger		
Temperature sensor				Strip chart recorder		
Relative humidity sensor				Computer		
Solar radiation sensor				Modem		
Surface wetness sensor				Printer		
Wind sensor translator				Zero air pump		
Temperature translator				Filter flow pump		
Humidity sensor translat	or 🗌			Surge protector		
Solar radiation translator				UPS		
Tipping bucket rain gaug	ALC: NOT COMPANY AND A DOMESTICS			Lightning protection devic		
Ozone analyzer				Shelter heater		
Filter pack flow controlle	r 🗌			Shelter air conditioner		
Filter pack MFC power s	upply					
Does the site have the	e required a	and most r	ecent QC docu	ments and report forms?		
	Pres	sent			Curren	nt
Station Log						
SSRF						
Site Ops Manual		 Oct 	2001			
HASP		✓ Nov	2009			
Field Ops Manual						
Calibration Reports						
Ozone z/s/p Control Char	rts					
Preventive maintenance s	schedul					
1 Is the station log pro	perly com	oleted duri	ng every site vi	sit? 🗸	1.1	
2 Are the Site Status F current?	Report Form	ns being c	ompleted and			
3 Are the chain-of-cus sample transfer to a			used to docume	ent 🔽		
4 Are ozone z/s/p cont. current?	rol charts p	oroperly co	mpleted and	Control charts not u	used	
Provide any additional ex natural or man-made, that					tions listed a	bove, or any other features,

Fi	eld Sy	ystems Data	a Form		F-02058-1500-S8-rev001			
Site	e ID	ABT147	Technician	Eric Hebert		Site Visit Date	10/23/2012	
1 2	Has th course Has th	? If yes, when and the backup operato	tended a formal CAS d who instructed? or attended a formal	CASTNET				
3	training course? If yes, when and who instructed?3 Is the site visited regularly on the required Tuesday schedule?					under im der Statische Annales werden ein der Statische Ger		
4		e standard CAST ed by the site ope	NET operational pro rator?	cedures being				
5			owledgeable of, and es? (including docum					

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

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

~ •

✓

~

~

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

QC Check Performed

3

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**

reported? If yes, how?

Frequency	Con
Semiannually	
Daily	
As needed	
Daily	
As needed	
Weekly	
Every 2 weeks	
N/A	
Weekly	
Weekly	

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

Are the automatic and manual z/s/p checks monitored and

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

SSRF, call-in

Unknown

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:

liant

Field Systems Data Form							F-02058-1500-S9-rev001				
Site	D	ABT147	Tech	nician	Eric Hebert		Site Visit Dat	te 10	0/23/2012		
	Site ope	ration procedures									
1 Is the filter pack being changed every Tuesday as scheduled?							Filter changed morinings				
2 Are the Site Status Report Forms being completed and filed correctly?											
3	Are dat schedul	a downloads and backı ed?	ıps bein	ig perfo	ormed as		No longer required	No longer required			
4	Are gen	eral observations being	g made :	and rec	corded? How?		SSRF, logbook				
5	Are site fashion	supplies on-hand and ? ?	replenis	hed in	a timely						
6	Are san	nple flow rates recorded	d? How	?			SSRF, call-in				
7	Are san fashion	aples sent to the lab on ?	a regul:	ar sche	dule in a timely						
8		ers protected from cont pping? How?	taminat	ion dur	ing handling		Clean gloves on and off				
9		site conditions reporte ons manager or staff?	d regul:	arly to t	the field						
QC	Check P	erformed		Free	quency			С	ompliant		
N	Iulti-poi	nt MFC Calibrations	[Sem	iannually	604. CR		V			
F	Flow System Leak Checks					2014/09/02		V			
	Filter Pack Inspection							C]		
	Flow Rate Setting Checks						V				
	Visual Check of Flow Rate Rotometer						V				
Ь	n-line Fil	ter Inspection/Replace	ment [Sem	iannually			V			
		ine Check for Dirt/Wat		✔ Wee	kly			V			
Prov	ido onv s	ditional evolution ((nhotog	ranh ai	r sketch if neces	cort) regarding condi	ition	s listed above or	any other features	

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

During the filter change-out it was observed that the filter flow pump was operating when the tower was lowered. This was discussed with the operator and the proper procedure was described by the auditor. The site operator indicated that she had been instructed by AMEC personnel to leave the filter installed and operate the flow pump while the tower was down.

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
CAT	T175-Eric H	ebert-10/24/2012				
1	10/24/2012	Computer	Dell	000275	D520	unknown
2	10/24/2012	DAS	Campbell	000412	CR3000	2532
3	10/24/2012	Elevation	Elevation	None	1	None
4	10/24/2012	Filter pack flow pump	Brailsford	none	TD-4X2N	none
5	10/24/2012	Flow Rate	Apex	000550	AXMC105LPMDPCV	50740
6	10/24/2012	Infrastructure	Infrastructure	none	none	none
7	10/24/2012	Met tower	Universal Tower	02742	unknown	none
8	10/24/2012	Modem	Raven	06481	H4222-C	0808311025
9	10/24/2012	Sample Tower	Aluma Tower	666359	В	none
10	10/24/2012	Shield (10 meter)	RM Young	none	41003	none
11	10/24/2012	Siting Criteria	Siting Criteria	None	1	None
12	10/24/2012	Temperature	RM Young	06409	41342VO	14042

DAS Data Form

DAS Time Max Error: 0.03

Mfg	Serial Nu	imber Site		Fechnician	Site Visit Date	Parameter	Use Desc.
Campbell	2532	CAT	175	Eric Hebert	10/24/2012	DAS	Primary
Das Date:	10/24/2012	Audit Date	10/24/2012	Mfg	Datel	Parameter	DAS
Das Time:	11:16:00	Audit Time	11:16:02	Serial Number	4000392	Tfor Doco	Source generator (D
Das Day:	298	Audit Day	298	Serial Nulliber		Ther Desc.	Source generator (D
Low Channel: High Channel:			Tfer ID	01321			
Avg Diff:	Max Diff:	Avg Diff:	Max Diff:	Slope	1.0000	0 Intercept	0.00000
0.0001	0.0002	0.0001	0.0002		2/13/201		1.00000
				Cert Date	2/13/201	2 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	2/9/201	2 CorrCoff	1.00000
Channel	Input D	OVM Output	DAS Output	InputUnit	OutputUnit	Difference	
5	0.0000	0.0000	0.0000) V	V	0.0000	
5	0.1000	0.1000	0.1000) V	V	0.0000	
5	0.3000	0.3000	0.300		V	0.0001	
5	0.5000	0.5001	0.500		V	0.0000	
5	0.7000	0.7001	0.7002		V	0.0001	
5	0.9000	0.9002	0.9002		V	0.0000	
5	1.0000	1.0002	1.0000) V	V	-0.0002	

Flow Data Form

Mfg	Serial Nun	nber Ta S	Site	Tec	echnician Site Visit Dat		Date Paran	neter	Owner ID	
Apex	50740		CAT175	Eri	c Hebert	10/24/201	2 Flow F	Rate	000550	
					Mfg	BIOS	I	Parameter F	low Rate	
					Serial Number	122974	1	fer Desc. BIOS 220-H		
					Tfer ID	01416				
					Slope	1.	.00000 Int	ercept	0.00000	
					Cert Date	2/		rrCoff	1.00000	
DAS 1:		DAS 2:		L	Cal Factor Z	ero	 	0		
A Avg % Diff: A	A Max % Di	x % Di	Cal Factor F			0				
2.63%	2.70%	A Avg %I			Rotometer R		1	45		
UseDescription:	Test type:	Input l/m:	Input STP:	MfcDisp.:	OutputSignal:	Output S E:	InputUnit:	OutputSigna	allPctDifference	
primary	pump off	0.000	0.000	0.10	0.000	0.03	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	0.000	1.461	1.50	0.000	0.000 1.50		l/m	2.70%	
primary	test pt 2	0.000	1.462	1.50	0.000	1.50	l/m	l/m	2.57%	
primary	test pt 3	0.000	1.462	1.50	0.000	1.50	l/m	l/m	2.61%	
Sensor Compo	nent Leak Tes	st		Conditio	n		Statu	s pass		
Sensor Compo	nent Filter Azi	muth		Conditio	n 180 deg		Statu	s pass		
Sensor Compo	nent Filter Dep	oth		Conditio	n -1.0 cm		Statu	s Fail		
Sensor Compo	nent Filter Pos	sition		Conditio	n Poor		Status		Fail	
Sensor Compo	Moisture	Present		Conditio	No moisture p	resent	Statu	s pass		
Sensor Compo	nent Rotomete	er Condition	1	Conditio	Clean and dry		Statu	s pass		
Sensor Compo	onent System N	/lemo		Conditio	n See comments	Statu	s pass			
Sensor Compo	nent Tubing C	Tubing Condition			n Good		Statu	s pass		
Sensor Compo	nent Filter Dis	tance		Conditio	n 4.5 cm		Statu	s pass		

Temperature Data Form

Sensor Component Blower Status Switch

Sensor Component Blower

Sensor Component System Memo

Mfg	Serial Number 7	Fa Site	Tech	nician	Site Visit Date	Parameter	Owner ID
RM Young	14042	CAT175	Eric I	Hebert	10/24/2012	Temperature	06409
			Μ	lfg	Eutechnics	Parameter	Temperature
			Se	erial Number	01D102193	Tfer Desc.	RTD translator
			T	Tfer ID			
DAS 1:	DAS	2.	SI	lope	1.0015	7 Intercept	-0.02095
		Avg Err Abs	Max Er C	ert Date	2/10/201	2 CorrCoff	1.00000
		Μ	Mfg		Parameter	Temperature	
			Se	Serial Number		01H0060 Tfer Desc. RTD probe	
			T				
			SI			7 Intercept	-0.02095
			С	ert Date	2/10/201	2 CorrCoff	1.00000
0.16	6 0.27						
UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.	: OutputTmpS	Signal: OutputSig	nalEng: OSE Un	it: Difference:
primary	Temp Low Range	0.08	0.10	0.000	0.2	2 C	0.11
primary	Temp Mid Range	13.53	13.53	0.000	13.	5 C	-0.08
primary	Temp Mid Range	23.92	23.90	0.000	23.	6 C	-0.27
primary Temp High Range 47.99			47.94	47.94 0.000		8 C	-0.16
Sensor Con	nponent Shield		Condition	Moderately cle	an	Status pass	

Condition N/A

Condition N/A

Condition

Status pass

Status pass

Status pass

Infrastructure Data For

Site ID	CAT175	Technician Eric Heb	ert Site Visit Date 10/24/2012
Shelter	Make	Shelter Model	Shelter Size
Ekto		8810 (s/n 1977-1)	640 cuft

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

Site Visit Comments

Flow Rate CAT175 Eric Hebert 10/24/2012 Filter Position Apex 3683	Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
	Flow Rate	CAT175	Eric Hebert	10/24/2012	Filter Position	Apex	3683		

The filter attachment plate is mounted too low in the enclosure resulting in the filter being exposed to wind-driven rain and in the standard geometric orientation.

Field Systems Comments

1 Parameter: SiteOpsProcComm

The site operator was not available to meet with the auditor during the audit visit due to a personal family matter.

2 Parameter: DasComments

The shelter is not temperature controlled. The site is solar and DC battery powered.

3 Parameter: ShelterCleanNotes

The shelter and grounds are neat and clean. The shelter roof has been repaired.

4 Parameter: PollAnalyzerCom

Ozone monitoring is no longer being conducted at the site.

(-)/	EPA	USCS Mer	
1		USGS Map	Claryville
.QS #	private	Map Scale	
		Map Date	
Ieteorological Type	R.M. Young		
ir Pollutant Analyzer	Ozone	QAPP Latitude	41.9423
eposition Measurement	dry	QAPP Longitude	-74.5519
and Use	woodland - mixed	QAPP Elevation Meters	765
errain	complex	QAPP Declination	13.5
Conforms to MLM	No	QAPP Declination Date	2/22/2006
ite Telephone	(845) 798-0947	Audit Latitude	41.94232
ite Address 1	Wildcat Mt. Road	Audit Longitude	-74.55199
ite Address 2		Audit Elevation	75
County	Ulster	Audit Declination	-13.2
Sity, State	Claryville, NY	Present	
ip Code	12725	Fire Extinguisher 🔽	No inspection date
'ime Zone	Eastern	First Aid Kit	
rimary Operator	Mike Edwards	Safety Glasses	
rimary Op. Phone #	(845) 701-1819	Safety Hard Hat	
rimary Op. E-mail	medwards@usadatanet.net	Climbing Belt	
ackup Operator	none	Security Fence	
ackup Op. Phone #		Secure Shelter	
ackup Op. E-mail		Stable Entry Step 🔽	
helter Working Room 🔽	Make Ekto Mo	odel 8810 (s/n 1977-1)	Shelter Size 640 cuft
	Notes The shelter and grounds are not	eat and clean. The shelter ro	of has been repaired.
	Notes		

Field Systems Data Form

CAT175

F-02058-1500-S2-rev001

Site ID

Technician Eric Hebert

ric Hebert

Site Visit Date 10/24/2012

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	š]
Secondary road, lightly traveled	200 m		
Feedlot operations	500 m	4]
Intensive agricultural ops (including aerial spraying)	500 m]
Limited agricultural operations	200 m]
Large parking lot	200 m]
Small parking lot	100 m	S]
Tree line	50 m	2]
Obstacles to wind	10 times obstacle height]

Siting Distances OK

Siting Criteria Comment

Fie	eld Sy	ystems Dat	ta Form		F-02058-1500-S3-rev00				
Site	e ID	CAT175	Technician	Eric Hebert	Site Vis	isit Date 10/24/2012			
1		nd speed and dir nfluenced by obs	ection sensors sited so tructions?	as to avoid 🛛 🗹	/A				
2	(i.e. wi horizo	nd sensors should ntally extended b	ted so as to minimize t d be mounted atop the oom >2x the max dian	tower or on a	/A				
3	tower into the prevailing wind) Are the tower and sensors plumb?				/A				
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?								
5	conditi surface	ions? (i.e. ground	H sensors sited to avoi below sensors should sloped. Ridges, hollow be avoided)	be natural					
6	Is the s	solar radiation se	nsor plumb?		/A				
7	Is it sit light?	ed to avoid shadi	ing, or any artificial or	reflected	/A				
8	Is the 1	rain gauge plumb)?		/A				
9	Is it sit towers		ering effects from build	lings, trees,	/A				
10	Is the s facing		ensor sited with the gr	id surface 🔽	/A				
11	Is it in	clined approxim	ately 30 degrees?		/A				
Dre	wido on	v additional ovnl	anation (nhotograph o	r skotch if nasass	rogordin	ng conditions listed abov	a or any other features		

Fiel	d Sy	stems Data Fo	orm		F-02058-1500-S4-rev00			
Site II	D	CAT175	Technician	Eric Hebert		Site Visit Date	10/24/2012	Territo Asses
		e meterological senso n, and well maintaine		intact, in good		N/A		
		he meteorological sen g data?	sors operationa	l online, and		N/A		
3 A	Are the shields for the temperature and RH sensors clean							
4 A	Are the aspirated motors working?					Natural aspiration		
	5 Is the solar radiation sensor's lens clean and free of scratches?					N/A		
6 Is	s the su	rface wetness sensor ş	grid clean and u	indamaged?		N/A		
		sensor signal and pow n, and well maintaine		, in good		N/A		
		sensor signal and pow elements and well ma		ctions protected		N/A		
Paran	Parameter Manufacturer Model			Model		S/N	(Client ID
Temperature RM Young 41342VO			UNION	14042		06409		
Shield	l (10 me	eter)	/I Young	41003	21560.512	none	r	none
Met to	Met tower Universal Tower unknown				1946	none)2742

Fie	ld Systen	ns Data Fo	rm			F-0205	58-1500-85-	rev001		
Site	ID CAT1	75	Technician E	ric Hebert		Site Visit Date 10/24/2012				
	Siting Criteria	: Are the polluta	nt analyzers and	l deposition eq	uip	ment sited in accordance with 40	CFR 58, Append	<u>ix E</u>		
1	Do the sample unrestricted a	inlets have at lea irflow?	st a 270 degree a	arc of						
2	Are the sampl	e inlets 3 - 15 me	ters above the gr	ound?						
	Are the sampl and 20 meters	e inlets > 1 meter from trees?	from any major	r obstruction,						
	Pollutant anal	yzers and deposit	tion equipment a	operations and	ma	intenance				
1	COMPANY STOCKNOOL COMPANY OF	ers and equipmer well maintained?		n good		Ozone not measured				
	Are the analyzers and monitors operational, on-line, and reporting data?									
3	Describe ozon	e sample tube.				N/A				
4	Describe dry o	lep sample tube.				3/8 teflon by 18 meters				
	Are in-line filt indicate locati	ers used in the oz on)	one sample line	? (if yes		N/A				
6	Are sample lin obstructions?	es clean, free of l	cinks, moisture,	and						
7	Is the zero air	supply desiccant	unsaturated?			N/A				
8	Are there moisture traps in the sample lines?									
9	Is there a rotometer in the dry deposition filter line, and is it clean?					Clean and dry				
Para	ameter	Ma	nufacturer	Model		S/N	Client ID			
Sam	ple Tower	Alur	na Tower	В		none	666359			

none

none

TD-4X2N

Ozone monitoring is no longer being conducted at the site.

Brailsford

Filter pack flow pump

Fie	ld Sy	stems Data Fo	orm			F-02058-1500-S6-rev001				
Site	ID	CAT175	Technician	Eric Hebert		Site Visit Date	e 10/24/2012			
	DAS, se	ensor translators, and j	<mark>peripheral equi</mark>	pment operation	<u>is an</u>	<u>id maintenance</u>				
		DAS instruments appe intained?	ar to be in good	l condition and						
		the components of the , backup, etc)	DAS operation	al? (printers,						
		analyzer and sensor signs of the sensor signs and sensor signs and sensor signs and sensor signs and sensor signs are sensor signs and sensor signs and sensor signs are sensor signs and sensor signs are sensor sin signs are sensor signs are sensor signs are sen		hrough		Met sensors only				
		signal connections pro intained?	otected from the	e weather and						
5	Are the signal leads connected to the correct DAS channel?									
	Are the ground	DAS, sensor translato ed?	rs, and shelter	properly						
7	Does th	e instrument shelter h	ave a stable pov	ver source?		Solar power				
8	Is the i	nstrument shelter temp	erature control	led?		Shelter not temper	rature controlled			
9	Is the n	net tower stable and gr	ounded?			Stable	Grou			
10	Is the s	ample tower stable and	l grounded?				v			
11	Tower	comments?								

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D520	unknown	000275
DAS	Campbell	CR3000	2532	000412
Modem	Raven	H4222-C	0808311025	06481

The shelter is not temperature controlled. The site is solar and DC battery powered.

Field Systems Data I	Form	1 , 19			F-02	.058-	1500-S7-rev001				
Site ID CAT175	Т	echnician	Eric Hebert	Site Visit Date	e 10/24/2012	<u>2</u>					
Documentation											
Does the site have the required	March Constants	LEAN AND A DAMAG		nuals?							
Y Wind speed sensor		No N/A		1 logger	Yes	No ✓	N/A				
				i logger							
wind direction sensor				o chart recorder							
				iputer							
			Mod	Self- A line of the self-self-self-							
Surface wetness sensor			Prin								
	and the second second			air pump							
				er flow pump							
and a second				ge protector							
and a second			UPS	Carl States and the second second							
Tipping bucket rain gauge			Ligł	tning protection devic	e 🗆						
Ozone analyzer			Shel	ter heater							
Filter pack flow controller			Shel	ter air conditioner							
Filter pack MFC power supply											
Does the site have the requir	ed and	most rece	nt OC documen	ts and report forms?							
	Present				Curre	nt					
Station Log		1.2		<u></u>							
SSRF											
Site Ops Manual		Oct 200)1								
HASP		Nov 200									
Field Ops Manual											
Calibration Reports											
Ozone z/s/p Control Charts		N/A									
Preventive maintenance schedul											
1 Is the station log properly c	omplete	ed during	every site visit?								
2 Are the Site Status Report F current?	Forms b	eing comp	oleted and								
3 Are the chain-of-custody forms properly used to document sample transfer to and from lab?											
4 Are ozone z/s/p control char current?	rts prop	erly comp	leted and	□ N/A							
Provide any additional explanati natural or man-made, that may a					itions listed	above, (or any other features,				
Diagonal di											

Fie	eld Sy	stems Data Fo	rm			F-02058-1500-S8-rev001			
Site	ID	CAT175	Technician	Eric Hebert		Site Visit Date	10/24/2012		
1	Has the	eration procedures e site operator attended ? If yes, when and who		TNET training		Trained by previous	operator		
2		e backup operator atte g course? If yes, when				No backup operator			
3	3 Is the site visited regularly on the required Tuesday schedule?								
4		standard CASTNET o d by the site operator?	CONTRACTOR CONTRACTOR CONTRACTOR	cedures being					
5		te operator(s) knowled iired site activities? (in		Personal Per					
	Are reg	ular operational QA/Q	C checks perfo	ermed on meteor	olog	ical instruments?			
QC	Check H	Performed		Frequency			Compliant		

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

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

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

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

□ N/A

N/A

□ N/A

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

Field Systems Data Form							F-02058-1500-S9-rev001				
Site	D	CAT175	Tech	nician	Eric Hebert		Site Visit Da	te [0/24/2012		
	Site ope	ration procedures									
1	Is the fi	lter pack being changed	d every '	Fuesda	y as scheduled	?⊻	Filter changed afternoons				
2	2 Are the Site Status Report Forms being completed and filed correctly?										
3	Are data downloads and backups being performed as scheduled?						No longer require	d			
4	4 Are general observations being made and recorded? How?						SSRF, logbook				
5	Are site supplies on-hand and replenished in a timely fashion?										
6	6 Are sample flow rates recorded? How?						SSRF, e-mail				
7	Are san fashion	nples sent to the lab on ?	a regula	r sche	dule in a timely						
8		ers protected from cont pping? How?	aminati	on dur	ing handling		Clean gloves on and off				
9		site conditions reported ons manager or staff?	d regula	rly to	the field						
QC	Check P	erformed		Free	luency				Compliant		
N	Iulti-poi	nt MFC Calibrations		Sem	iannually	00010000		[✓		
F	low Syst	em Leak Checks		Wee	kly			[✓		
F	Filter Pack Inspection							[
F	Flow Rate Setting Checks					A-MATEX		[✓		
V	Visual Check of Flow Rate Rotometer							[
I	n-line Fil	ter Inspection/Replace	ment 🛽	Sem	iannually	Haroson ([✓		
S	ample L	ine Check for Dirt/Wat	er 🚺	Wee	kly	2 C 10 77/3		[
Prov	ide anv e	ditional explanation (nhotog	anh o	r sketch if nece	scart) regarding cond	itio	ns listed above or a	ny other features	

The site operator was not available to meet with the auditor during the audit visit due to a personal family matter.

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
ARE	E128-Sandy	Grenville-10/30/2012				
1	10/30/2012	Computer	Dell	000244	D520	67FNHB1
2	10/30/2012	DAS	Campbell	000400	CR3000	2524
3	10/30/2012	Elevation	Elevation	None	1	None
4	10/30/2012	Filter pack flow pump	Thomas	02661	107CA110	000012187C
5	10/30/2012	Flow Rate	Apex	000462	AXMC105LPMDPCV	42228
6	10/30/2012	Infrastructure	Infrastructure	none	none	none
7	10/30/2012	Met tower	Universal Tower	03505	unknown	none
8	10/30/2012	Modem	Raven	06591	V4221-V	0844349616
9	10/30/2012	Ozone	ThermoElectron Inc	000609	49i A1NAA	1009241782
10	10/30/2012	Ozone Standard	ThermoElectron Inc	000328	49i A3NAA	0622717850
11	10/30/2012	Sample Tower	Aluma Tower	666361	В	none
12	10/30/2012	Shelter Temperature	Campbell	none	107-L	none
13	10/30/2012	Shield (10 meter)	Climatronics	01167	100325	1272
14	10/30/2012	Siting Criteria	Siting Criteria	None	1	None
15	10/30/2012	Temperature	Climatronics	06678	100093	missing
16	10/30/2012	Zero air pump	Werther International	06866	PC70/4	000815262

DAS Data Form

DAS Time Max Error: 0.07

Mfg	Serial N	Number Site	T	echnician	Site Visit Date	Parameter	Use Desc.
Campbell	2524	ARE	128	Sandy Grenville	10/30/2012	DAS	Primary
Das Date:	10/30/2012	Audit Date	10/30/2012	Mfg	Datel	Parameter	DAS
Das Time:	15:38:04	Audit Time	15:38:00		45540404		O
Das Day:	306	Audit Day	306	Serial Number	15510194	Tfer Desc.	Source generator (D
Low Channe	1:	High Channel	l:	Tfer ID	01320		
Avg Diff:	Max Diff:	Avg Diff:	Max Diff:	Slope	1.0000	0 Intercept	0.00000
0.0001	0.000	0.0001	0.0002	Cert Date	2/2/201	0 CorrCoff	1.00000
				Mfg	Fluke	Parameter	DAS
				Serial Number	95740135	Tfer Desc.	DVM
				Tfer ID	01311		
				Slope	1.0000	0 Intercept	0.00000
				Cert Date	2/9/201	2 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	0.0998	0.0999	V	V	0.0001	
7	0.3000	0.2997	0.2997	V	V	0.0000	
7	0.5000	0.4996	0.4996	V	V	0.0000	
7	0.7000	0.6996	0.6994	V	V	-0.0002	
7	0.9000	0.8996	0.8995		V	-0.0001	
7	1.0000	0.9993	0.9991	V	V	-0.0002	

Flow Data Form

Mfg	Se	erial Num	iber Ta	Site	Тес	hnician	Site Visit I	Date Paran	neter	Owner ID	
Арех	4	2228		ARE128	Sa	ndy Grenville	10/30/2012	2 Flow R	late	000462	
						Mfg	BIOS	P	arameter	Flow Rate	
						Serial Number	103471	Т	fer Desc.	nexus	
						Tfer ID	01420		L		
							01420				
						Mfg	BIOS	Р	arameter	Flow Rate	
						Serial Number	103424	Т	fer Desc.	BIOS cell	
						Tfer ID	01410				
								00000		0.00000	
						Slope			ercept	0.00000	
						Cert Date	1/27	7/2012 Co	rrCoff	1.00000	
DAS 1:			DAS 2:		_	Cal Factor Z	ero	0.0	01		
A Avg % Diff:	A Max	x % Di	A Avg %	Dif A Max	% Di	Cal Factor F	ull Scale	0.9	99		
2.78%		3.29%				Rotometer R	eading:		1		
UseDescription:	Tes	st type:	Input l/m:	Input STP:	MfcDisp.:	OutputSignal:	Output S E:	InputUnit:	OutputSigr	nallPctDifference:	
primary	pump		0.000	0.000	-0.03	0.035	0.04	l/m	l/m		
primary	leak c		0.000	0.000	-0.01	0.037	0.04	l/m	l/m		
primary	test pt		1.532	1.551	1.51	1.511	1.50	l/m	l/m	-3.29%	
primary	test pt		1.531	1.549	1.51	1.513	1.50	l/m	l/m	-3.16%	
primary	test pt		1.548	1.529	1.51	1.511	1.50	l/m	l/m	-1.90%	
Sensor Comp	onent	Leak Tes	t		Conditio	n	Status		pass		
Sensor Comp	onent	Filter Azir	nuth		Conditio	n 280 deg		Status	pass		
Sensor Comp	onent	Filter Dep	oth		Conditio	n 3.0 cm		Status	pass		
Sensor Comp	onent	Filter Pos	ition		Conditio	n Good		Status	pass		
Sensor Comp	onent	Moisture	Present		Conditio	n Moisture prese	ent	Status	pass		
Sensor Comp				1	Conditio	n Clean		Status	pass		
Sensor Component System Memo			_	n See comments	Status						
					Condition				Status pass		
Sensor Component Tubing Condition Sensor Component Filter Distance			Conditio		Status						
Sensor Comp	onent							Status	, pass		

Ozone Data Form

Mfg	S	Serial Number Ta	Site	Te	chnician		Site Visit	t Date	Parame	ter	Owner I	D
ThermoElec	tron Inc	1009241782	ARE128	Sa	andy Grei	nville	10/30/20	12	Ozone		000609	
Slope: [Intercept [CorrCoff [0.	99968Slope:06764Intercept99993CorrCoff	0.0000	0	Mfg Serial N Tfer ID		ThermoE 49C-7310 01100			rameter ozo er Desc. Oz		 r
DAS 1:		DAS 2:			Slope			1.01297	7 Inter	rcent	0.09	498
A Avg % D 0.8		A Avg % 1.9%	6Dif A Max	% Di	Cert Da	ite	L	/23/201				0000
UseDesc	cription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	Unit:	PctDiff	erence:	
prin	nary	1	0.11	0.0	01	0.2	77 j	ppb				
prin	nary	2	36.32	35.	.76	36.	.05	ppb			0.81%	
prin	nary	3	65.97	65.	.03	65.	.24]	ppb			0.32%	
prin	nary	4	87.27	86.	.05	84.	.40 j	ppb			-1.92%	
prin	nary	5	213.43	210	0.60	211	.20	ppb			0.28%	
Sensor Co	omponent	Cell B Noise		Conditio	0.8 pp	b			Status	pass		
Sensor Co	omponent	Cell B Tmp.		Conditio	on				Status	pass		
Sensor Co	omponent	Fullscale Voltage		Conditio	on N/A				Status	pass		
Sensor Co	omponent	Inlet Filter Condition	on	Conditio	on Clean	1			Status	pass		
Sensor Co	omponent	Line Loss		Conditio	on Not te	sted			Status	pass		
Sensor Co	omponent	Offset		Conditio	on -0.30				Status	pass		
Sensor Co	omponent	Span		Conditio	on 1.004				Status	pass		
Sensor Co	omponent	Cell B Freq.		Conditio	on 92.5 k	Hz			Status	pass		
Sensor Co	omponent	System Memo		Conditio	on				Status	pass		
Sensor Co	omponent	Sample Train		Conditio	on Good				Status	pass		
Sensor Co	omponent	Cell B Pressure		Conditio	on				Status	pass		
Sensor Co	omponent	Cell B Flow		Conditio	on 0.72 l	pm			Status	pass		
Sensor Co	omponent	Cell A Tmp.		Conditio	on 28.1 (2			Status	pass		
Sensor Co	omponent	Cell A Pressure		Conditio	on 703 m	nmHg			Status	pass		
Sensor Co	omponent	Cell A Noise		Conditio	on 0.9 pp	b			Status	pass		
Sensor Co	omponent	Cell A Freq.		Conditio	on 87.9 k	Hz			Status	pass		
Sensor Co	omponent	Cell A Flow		Conditio	on 0.70 l	pm			Status	pass		
Sensor Co	omponent	Battery Backup		Conditio	on N/A				Status	pass		
Sensor Component Zero Voltage			Conditio	on N/A				Status	pass			

Temperature Data Form

Sensor Component Blower

Sensor Component System Memo

Mfg	Serial Number Ta	Site	Те	echnician	Site Visit Date	Parame	eter	Owner ID
Climatronics	missing	ARE128	Sa	andy Grenville	10/30/2012	Temper	ature	06678
				Mfg	Eutechnics	Pa	rameter	emperature
				Serial Number	01D102193	Tf	er Desc. R	TD translator
			Tfer ID	01231				
DAS 1:	DAS 2		Slope	1.0015	7 Inter	rcept	-0.02095	
Abs Avg Err		vg Err Abs	Max Er	Cert Date	2/10/201	2/10/2012 Cor		1.00000
				Mfg	Eutechnics Pa		arameter Temperature	
				Serial Number	01H0060	Tf	er Desc. R	TD probe
				Tfer ID	01230			
				Slope	1.0015	7 Inter	rcept	-0.02095
				Cert Date	2/10/201	2 Corr	Coff	1.00000
0.08	0.21							
UseDesc.:	Test type: In	putTmpRaw	InputTmpCo	orr.: OutputTmpS	ignal: OutputSig	gnalEng:	OSE Unit:	Difference:
	Temp Low Range	0.05	0.07	0.000	0.0	D C	С	-0.03
	rimary Temp Mid Range 25.00 24.98		24.98	0.000			С	-0.21
primary T	Temp High Range	45.35	45.30	0.000	45.	.3	С	0.01
Sensor Component Shield Condition Moderately clean						Status	pass	
Sensor Comp	onent Blower Status Sv	vitch	Conditio	on Functioning		Status	pass	

Condition Functioning

Condition

Status pass

Status pass

Infrastructure Data For

Site ID	ARE128	Technician Sandy G	renville Site Visit Date 10/30/2012
Shelter	Make	Shelter Model	Shelter Size
Ekto		8810 (s/n 2116-7)	640 cuft

Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Sample Tower Type	Condition	Туре В	Status	pass
Sensor Component	Conduit	Condition	N/A	Status	pass
Sensor Component	Met Tower	Condition	Good	Status	pass
Sensor Component	Moisture Trap	Condition	Installed	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	Rotometer	Condition	Installed	Status	pass
Sensor Component	Sample Tower	Condition	Good	Status	pass
Sensor Component	Shelter Condition	Condition	Fair	Status	pass
Sensor Component	Shelter Floor	Condition	Fair	Status	pass
Sensor Component	Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component	Signal Cable	Condition	Good	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	Fair	Status	pass

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	ARE128	Sandy Grenville	10/30/2012	Shelter Temperature	none
DAS 1: Abs Avg Err Abs 2.04	DAS 2: Max Er Abs Avg 2.73	Err Abs Max Er	Mfg Serial Number Tfer ID Slope Cert Date Mfg Serial Number Tfer ID Slope Cert Date	Eutechnics 01D102193 01231 1.0015 2/10/201 Eutechnics 01H0060 01230 1.0015 2/10/201	Parameter She Tfer Desc. RTI 1 1 1 2 CorrCoff Parameter She Tfer Desc. RTI 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 <th>elter Temperatur D translator -0.02095 1.00000 elter Temperatur</th>	elter Temperatur D translator -0.02095 1.00000 elter Temperatur

UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	17.20	17.19	0.000	19.9	С	2.73
primary	Temp Mid Range	18.90	18.89	0.000	20.7	С	1.84
primary	Temp Mid Range	19.40	19.39	0.000	21.0	С	1.56

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Flow Rate Additional details can be	ARE128 found in the har	Sandy Grenville dcopy of the site au	10/30/2012 dit report.	System Memo	Apex	3308		
Flow Rate There is moisture present	ARE128 t in the dry depo	Sandy Grenville sition sample train i	10/30/2012 nside the shelte	Moisture Present r.	Apex	3308		

Field Systems Comments

1 Parameter: DasComments

The meteorological tower is grounded but the lightning rod has been removed. The sample tower is not grounded.

2 Parameter: SitingCriteriaCom

The site is located in an active orchard where spraying occurs. Fruit trees are rotated with corn and other crops.

3 Parameter: ShelterCleanNotes

The shelter is cluttered and disorganized.

4 Parameter: PollAnalyzerCom

Moisture was present in the moisture trap and tubing upon arrival for the audit one day after hurricane Sandy. The system was left open without the filter installed for one day and then the audit of the flow system was performed.

5 Parameter: MetOpMaintCom

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

Site ID ARE128	Technician Sandy Grenville	e Site Visit Date 10/3	30/2012
Site Sponsor (agency)	EPA	USGS Map	Arendtsville
Operating Group	PSU/private	Map Scale	
AQS #	42-001-9991	Map Date	
	Climatronics		
Meteorological Type		CAPRE : 1	39.9231
Air Pollutant Analyzer	Ozone, IMROVE	QAPP Latitude	
Deposition Measurement	dry, wet, Hg, PM	QAPP Longitude	-77.3078
Land Use	agriculture	QAPP Elevation Meters	269
Terrain	complex - rolling	QAPP Declination	10.9
Conforms to MLM	Marginally	QAPP Declination Date	2/22/2006
Site Telephone	(717) 677-9866	Audit Latitude	39.92324
Site Address 1	PSU Fruit Research Orchard	Audit Longitude	-77.30786
Site Address 2	Winding Road	Audit Elevation	26
County	Adams	Audit Declination	-11
City, State	Arendtsville, PA	Present	
Zip Code	17307	Fire Extinguisher 🔽	No inspection date
Time Zone	Eastern	First Aid Kit	
Primary Operator	Sharon Scamack	Safety Glasses	
Primary Op. Phone #	(717) 677-6116	Safety Hard Hat	
Primary Op. E-mail	sks8@psu.edu	Climbing Belt	
Backup Operator	Kathy Wholaver	Security Fence	
Backup Op. Phone #	(717) 677-6116	Secure Shelter	
Backup Op. E-mail		Stable Entry Step 🗹	
Shelter Working Room	Make Ekto M	odel 8810 (s/n 2116-7)	Shelter Size 640 cuft
Shelter Clean	Notes The shelter is cluttered and dis		
	Notes		
Driving Directions From Continionto (Gettysburg take route 34 north to Biglerv nue into the town of Arendtsville. At the s Chambersburg Street. Continue approxin r Nursery & Orchard. The site will be visit	top sign next to the gas station nately 0.4 miles and turn right	n, turn left and immediately turn right, onto Winding Road. There is a sign for

Field Systems Data Form

ARE128

F-02058-1500-S2-rev001

Site ID

Technician Sandy Grenville

Site Visit Date 10/30/2012

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	2003 S	
Secondary road, lightly traveled	200 m		
Feedlot operations	500 m		
Intensive agricultural ops (including aerial spraying)	500 m	20 m	
Limited agricultural operations	200 m	20 m	
Large parking lot	200 m]
Small parking lot	100 m		
Tree line	50 m]
Obstacles to wind	10 times obstacle height		

Siting Distances OK

Siting Criteria Comment

The site is located in an active orchard where spraying occurs. Fruit trees are rotated with corn and other crops.

Fie	eld Systems Data Fo	orm	F-02058-1500-S3-rev001					
Site	e ID ARE128	Technician Sandy Grenville		Site Visit Date 10/30/2012				
1	Are wind speed and direction being influenced by obstruction			N/A				
 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 plu			N/A				
4	Are the temperature shields p avoid radiated heat sources s							
5	Are temperature and RH sent conditions? (i.e. ground below surface and not steeply sloped standing water should be avoid	y sensors should be natural I. Ridges, hollows, and areas of						
6	Is the solar radiation sensor p	lumb?		N/A				
7	Is it sited to avoid shading, or light?	any artificial or reflected		N/A				
8	Is the rain gauge plumb?			N/A				
9	Is it sited to avoid sheltering o towers, etc?	ffects from buildings, trees,		N/A				
10	Is the surface wetness sensor a facing north?	sited with the grid surface		N/A				
11	Is it inclined approximately 3	0 degrees?		N/A				
Dro	wide onv additional evaluatio	n (nhatagranh ar skatch if naca	ccor	x) regarding conditions listed above or any other features				

Fi	eld Sy	stems Data Fo	orm			1992) 1992 - 1993 - 1993 1993 - 1993 - 1993	F-02058-1500-S4-rev00			
Site	e ID	ARE128	Technician	Sandy Grenville	1998	Site Visit Date	10/30/2012	Territo Vision		
							1. A.			
1		e meterological senso n, and well maintaine		intact, in good		N/A				
2 Are all the meteorological sensors operational online, and reporting data?						N/A				
3 Are the shields for the temperature and RH sensors clean?										
4	Are the	aspirated motors wor	king?							
5	Is the so scratche	lar radiation sensor's s?	lens clean and	free of		N/A				
6	Is the su	rface wetness sensor §	grid clean and ι	indamaged?		N/A				
7		sensor signal and pow n, and well maintaine		, in good						
8		sensor signal and pow elements and well ma		ctions protected						
Par	ameter	Ma	anufacturer	Model		S/N	CI	ient ID		
Shi	eld (10 me	eter)	matronics	100325	1126024	1272	01	167		
Ter	nperature	Cli	matronics	100093	252252	missing	06	678		
Me	t tower	Un	iversal Tower	unknown		none	03	505		

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

Fi	eld Systems Data Form		F-02058-1500-S5-rev001				
Site	ID ARE128 Technician Sandy Grenvill	e	Site Visit Date 10/30/2012				
	Siting Criteria: Are the pollutant analyzers and deposition	<u>equip</u>	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?	1, 🔽					
	Pollutant analyzers and deposition equipment operations an	nd 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 12 meters				
4	Describe dry dep sample tube.		3/8 teflon by 12 meters				
5	Are in-line filters used in the ozone sample line? (if yes indicate location)		At inlet only				
6	Are sample lines clean, free of kinks, moisture, and obstructions?		Moisture present				
7	Is the zero air supply desiccant unsaturated?						
8	Are there moisture traps in the sample lines?						
9	Is there a rotometer in the dry deposition filter line, and is i clean?	it 🗹	Clean and dry				
Do	remotor Manufacturor Model		S/N Client ID				

Parameter	Manufacturer	Model	S/N	Client ID
Sample Tower	Aluma Tower	В	none	666361
Ozone	ThermoElectron Inc	49i A1NAA	1009241782	000609
Filter pack flow pump	Thomas	107CA110	000012187C	02661
Zero air pump	Werther International	PC70/4	000815262	06866

Moisture was present in the moisture trap and tubing upon arrival for the audit one day after hurricane Sandy. The system was left open without the filter installed for one day and then the audit of the flow system was performed.

Fie	eld S	ystems Data	Form					F-	02058-	15	00-S6-rev001
Site	D	ARE128	Technician	Sandy Grenville	9	Si	te Visit D	ate 10/30/20	012		
	DAS, s	ensor translators,	and peripheral equip	oment operatio	ons a	<u>nd mai</u>	ntenance				
1	Do the well m	DAS instruments aintained?	appear to be in good	condition and							
2		the components of a, backup, etc)	f the DAS operationa	l? (printers,							
3		analyzer and sense ng protection circu	or signal leads pass t iitry?	hrough		Met se	ensors onl	ly			
4		e signal connection aintained?	s protected from the	weather and							
5	Are th	e signal leads conn	ected to the correct I	OAS channel?							
6	Are th ground		slators, and shelter p	oroperly							
7	Does t	he instrument shelt	ter have a stable pow	er source?							
8	Is the i	nstrument shelter	temperature control	led?							
9 Is the met tower stable and grounded?						Sta	ible		Ground	ded	
10 Is the sample tower stable and grounded?							2				
11	11 Tower comments?						ower groun ded	nded but light	tning rod re	emov	ed, sample tower not
Par	ameter		Manufacturer	Model			S/N			Clie	nt ID
Con	nputer		Dell	D520			67FNHB	1		0002	244
DAS Campbell CR3000				0440308C	2524 000400				400		

0844349616

06591

V4221-V

The meteorological tower is grounded but the lightning rod has been removed. The sample tower is not grounded.

Raven

Modem

Fiel	d Systems Data	Fo	rm				F-02	058-	1500-S7-rev001
Site I	D ARE128		Tecl	hnician	Sandy Grenville	Site Visit Date	10/30/2012		- A Company
					No.				
Do	<u>cumentation</u>								
Do	es the site have the requi	i <mark>red in</mark>	<u>strum</u>	ent and	equipment manuals	<u>?</u>			
		Yes	No				Yes	No	N/A
	speed sensor			STATISTICS.	Data logg	And the second second second second second			
	direction sensor			Constant State	Data logg	Contraction of the second second second			
100101-0170	erature sensor			A STORES	Contraction of the second second second	rt recorder			
Relati	ve humidity sensor			A COLUMN	Compute	r			
	radiation sensor				Modem				
	ce wetness sensor				Printer				
	sensor translator				Zero air				
Temp	erature translator				Filter flo	w pump			
Humi	dity sensor translator				Surge pro	otector			
Solar	radiation translator				UPS				
Tippi	ng bucket rain gauge				Lightning	g protection device	CARLES AND AND A DOMESTICS		
Ozone	e analyzer				Shelter h	eater			
Filter	pack flow controller				Shelter a	ir conditioner			
Filter	pack MFC power supply	у 🗖							
D	oes the site have the requ	uired a	ind m	ost recei	nt QC documents an	d report forms?			
		Pres	sent				Curre	nt	
Statio	n Log		✓	No page	e numbers				
SSRF			✓	rio page					
Site O	ps Manual		<	Oct 201	0				
HASP			✓	Oct 201					
Field	Ops Manual		✓	Oct 200					
Calib	ration Reports		✓						
Ozone	z/s/p Control Charts								
Preve	ntive maintenance sched	lul							
	s the station log properly		oleted	during e	every site visit? 🔽	Minimal information		S.A.	
	Are the Site Status Repor urrent?	rt Forr	ns bei	ng comp	eleted and				
	Are the chain-of-custody ample transfer to and fr			erly used	I to document 🔽				
	are ozone z/s/p control cl urrent?	harts p	oroper	ly comp	leted and	Control charts not u	sed		
	de any additional explan al or man-made, that ma) regarding condit	ions listed a	ibove, o	or any other features,

Fie	eld Sy	stems Data F	orm			F-02058-1500-S8-rev001		
Site	e ID	ARE128	Technician	Sandy Grenville	: :	Site Visit Date 10/30/2012		
1	Has the	eration procedures e site operator attend ? If yes, when and wh		TNET training		Refresher training by Lavery and Howell, July 2006		
2		e backup operator att g course? If yes, when				Refresher training by Lavery and Howell, July 2006		
3	Is the si schedul	te visited regularly or e?	n the required T	ıesday				
4		standard CASTNET d by the site operator	CONTRACTOR AND A REAL PROPERTY OF A DESCRIPTION OF A DESC	cedures being				
5		te operator(s) knowle uired site activities? (i		States and the second second second				
	Are reg	ular operational QA/	QC checks perfo	rmed on meteo	<u>rolog</u>	gical instruments?		
QC	Check I	Performed		Frequency		Compliant		
Mu	ltipoint	Calibrations			ly			

Munipoliti Canorations	Sec. 1
Visual Inspections	
Translator Zero/Span Tests (climatronics)	
Manual Rain Gauge Test	
Confirm Reasonableness of Current Values	
Test Surface Wetness Response	

requency	COL
Semiannually	
Weekly	
N/A	
N/A	
Weekly	
N/A	
	Semiannually Weekly N/A N/A Weekly

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	Compliant
Semiannually	
Daily	
Daily	
Every 2 weeks	
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?
- Unknown

SSRF, logbook, call-in

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

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:

✓

Fie	eld Sy	stems Data Fo	rm				F-02058-1500-S9-rev001				
Site	ID	ARE128	Technic	cian	Sandy Grenville		Site Visit Date	10/30/2012			
	Site op	eration procedures									
1	Is the fi	ilter pack being changed	l every Tı	iesday	y as scheduled		Filter changed afternoons				
2	Are the correct	Site Status Report Fori ly?	ms being o	compl	leted and filed						
3	Are dat schedul	ta downloads and backu led?	ps being	perfor	rmed as		No longer required				
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	Are sar fashion	nples sent to the lab on a ?	a regular	sched	ule in a timely						
8		ers protected from conta pping? How?	aminatior	ı duri	ng handling		Gloves not consistently used				
9		site conditions reported ons manager or staff?	l regularl	y to tł	ne field						
QC	Check P	erformed		Frequ	uency			Compliant			
N	Iulti-poi	nt MFC Calibrations		Semia	annually						
F	low Syst	tem Leak Checks		Week	ly						
		k Inspection									
	Flow Rate Setting Checks Veekly										
	Visual Check of Flow Rate Rotometer				200000						
	In-line Filter Inspection/Replacement ✓ Semiannually Sample Line Check for Dirt/Water □					201067273					
	the second s	additional explanation (an-made, that may affeo		and the second second second		10.000) regarding condit	ions listed above, or	any other features,		

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number				
PSU	PSU106-Sandy Grenville-11/03/2012									
1	11/3/2012	Computer	Dell	000268	D520	unknown				
2	11/3/2012	DAS	Campbell	000407	CR3000	2512				
3	11/3/2012	Elevation	Elevation	None	1	None				
4	11/3/2012	Filter pack flow pump	Thomas	06023	107CAB18	060400022676				
5	11/3/2012	Flow Rate	Арех	000560	AXMC105LPMDPCV	50732				
6	11/3/2012	Infrastructure	Infrastructure	none	none	none				
7	11/3/2012	Modem	Raven	06601	V4221-V	0844430833				
8	11/3/2012	Ozone	ThermoElectron Inc	000684	49i A1NAA	1030244795				
9	11/3/2012	Ozone Standard	ThermoElectron Inc	000684	49i A3NAA	1030244812				
10	11/3/2012	Sample Tower	Aluma Tower	02747	A	none				
11	11/3/2012	Shelter Temperature	Campbell	none	107-L	none				
12	11/3/2012	Siting Criteria	Siting Criteria	None	1	None				
13	11/3/2012	Temperature	RM Young	04316	41342VO	4013				
14	11/3/2012	Zero air pump	Werther International	06914	C 70/4	000829156				

DAS Data Form

DAS Time Max Error: 0.02

Mfg	Serial N	umber Site	I	Fechnician	Site Visit Date	Parameter	Use Desc.
Campbell	pbell 2512 PSU106 S		Sandy Grenville	11/03/2012	DAS	Primary	
Das Date:	11/3 /2012	Audit Date	11/3 /2012	Mfg	Datel	Parameter	DAS
Das Time:	11:50:01	Audit Time	11:50:00		45540404		
Das Day:	308	Audit Day	308	Serial Number	15510194	Tfer Desc.	Source generator (D
Low Channe	l:	High Channel	l:	Tfer ID	01320		
Avg Diff:	Max Diff:	Avg Diff:	Max Diff:	Slope	1.0000	D Intercept	0.00000
0.000	1 0.000	2 0.0001	0.0002		2/2/201		1.00000
				Cert Date	2/2/201	0 CorrCoff	1.00000
				Mfg	Fluke	Parameter	DAS
				Serial Number	95740135	Tfer Desc.	DVM
				Tfer ID	01311		
				Slope	1.0000	D Intercept	0.00000
				Cert Date	2/9/201	2 CorrCoff	1.00000
Channel	Input I	DVM Output	DAS Output	InputUnit	OutputUnit	Difference	
7	0.0000	-0.0001	0.0000	V	V	0.0001	
7	0.1000	0.0998	0.1000	V	V	0.0002	
7	0.3000	0.2997	0.2998	V	V	0.0001	
7	0.5000	0.4996	0.4997		V	0.0001	
7	0.7000	0.6996	0.6996	i V	V	0.0000	
7	0.9000	0.8995	0.8995	V	V	0.0000	
7	1.0000	0.9994	0.9994	V	V	0.0000	

Flow Data Form

Apex 50732 PSU106 Sandy Grenville 11/03/2012 Flow Rate 000560 Mfg BIOS Parameter/Flow Rate Serial Number 103471 Ter Desc. [nexus Tfer ID 01420 01420 Parameter/Flow Rate Serial Number 103424 Ter Desc. [nexus Ter Desc. [nexus Tfer ID 01420 01420 000000 Cert Date 1032712 CorCoff 1.00000 DAS 1: DAS 2: Cal Factor Zero -0.01 Avg % Diff: A Max % Di A Xeg % Diff< A Max % Di Cal Factor Zero -0.01 Cal Factor Zero -0.01 Cal Factor Zero -0.01 Avg % Diff: A Max % Di A Xeg % Diff Max % Di Cal Factor Zero -0.01 Cal Factor Zero -0.01 Cal Factor Zero -0.01 -0.01 Avg % Diff: A Max % Di A Xeg % Diff Max % Di Cal Factor Zero -0.01 Genescription Test type Input J/m Input J/m Input J/m Input J/m primary leak check 0.0	Mfg	Se	erial Num	iber Ta	Site	Тео	chnician	Site Visit I	Date Param	leter	Owner ID
Serial Number 103471 Ter Dese. nexus Ter ID 01420 01420 Mfg BIOS Parameter Flow Rate Serial Number 103424 Ter Dese. BIOS cell Tfer ID 01410 Ter Dese. BIOS cell Tfer ID 01410 Ter Dese. BIOS cell Avg % Diff A Max % Di A Avg % Diff A Max % Di Car Factor 0.00000 Cert Date 1/27/2012 CorrCoff 1.00000 Avg % Diff A Max % Di A Max % Di Cal Factor Full Scale 0.977 Avag % Diff A Max % Di OutputSignal: OutputSignal: 0.001 primary number 1.527 1.561 1.53 1.527 1.49 Vm Vm primary test pt 1 1.527 1.561 1.53 1.527 1.49 Vm Vm 4.4.36% primary test pt 1 1.528 1.53 1.527 1.49 Vm Vm 4.4.36% Sensor Component Filter Position Condition 0.5 cm Status	Apex	5	0732		PSU106	Sa	ndy Grenville	11/03/2012	2 Flow R	ate	000560
Tter ID 01420 Mg BIOS Parameter Flow Rate Serial Number 103424 Tter Desc. BIOS cell Tfer ID 01410 Tter ID 01410 DAS 1: DAS 2: Cal Factor Zero -0.01 Avg % Diff: A Max % Di A Avg %Dif A Max % Di Cal Factor Full Scale 0.97 4.42% 4.55% Cal Factor Full Scale 0.97 1.00000 Avg % Diff: A Max % Di A Max % Di Cal Factor Full Scale 0.97 4.42% 4.55% Coloque Status 0.00 0.00 primary nump off 0.000 0.000 0.000 0.001 0.00 primary leak check 0.000 0.000 0.003 0.03 1/m 1/m primary leak pt 1 1.527 1.561 1.53 1.526 1.49 1/m 1/m -4.36% Sensor Component Elek Test Condition 250 deg Status pass							Mfg	BIOS	P	arameter	Flow Rate
Tfer ID 01420 Mfg BIOS Parameter Flow Rate Serial Number 103424 Tfer Desc. Status DAS 2: Cal Factor Zero 0.0140 Cert Date 1/27/2012 CorrCoff 1.00000 Avg % Diff: A Max % Di A Avg %Diff A Max % Di Cal Factor Zero 0.01 4.42% 4.55% Cal Factor Zero 0.01 0.097 4.42% 4.55% Colputs/Sinal: Output's E: 0.097 4.42% 4.55% Colputs/Sinal: Output's E: 0.097 6.42% 4.55% Mfg Output's Input /mit's Computignal/PetDifference's Colpital: primary exit typ: Input /mit's Input STP: MfcDisp: Outputs/Sinal: Output's Computignal/PetDifference's Colpital's Computignal PetDifference's Colpital's C							Serial Number	103471	T	fer Desc.	nexus
Mfg BIOS Parameter Flow Rate Serial Number 103424 Tfer Desc. BIOS cell Tfer ID 01410 Slope 1.00000 Intercept 0.00000 Cert Date 1/27/2012 CorrCoff 1.00000 DAS 1: DAS 2: Cal Factor Full Scale 0.97 4.42% 4.55% Cal Factor Full Scale 0.97 4.42% 4.55% Cal Factor Full Scale 0.97 VseDescription: Test type: Input Jm: Input STP: MfcDisp: OutputSignal: OutputSignal: Dettype: primary pump off 0.000 0.000 0.000 0.003 Vm Vm 4.35% primary test pt 1 1.527 1.561 1.53 1.526 1.49 Vm Vm 4.36% primary test pt 2 1.526 1.558 1.53 1.526 1.49 Vm 4.36% Sensor Component Filter Azimuth Condition 250 deg Status pass Sensor Component Status pass Sensor Component Filter Position Condi								01420		L	
Serial Number 103424 Tfer Desc. BIOS cell Tfer ID 01410 Stope 1.00000 Intercept 0.00000 Cert Date 1/27/2012 CorrCoff 1.00000 DAS 1: DAS 2: Cal Factor Zero -0.01 A Avg % Diff: A Max % Di A Avg %Dif A Max % Di Cal Factor Full Scale 0.977 4.42% 4.55% Cal Factor Full Scale 0.977 Rotometer Reading: 1.5 UseDescription: Test type: Input J/m: Input STP: MtcDisp:: Output Step Input J/m Um primary pump off 0.000 0.000 0.000 0.001 U/m U/m primary test pt 2 1.526 1.53 1.527 1.49 U/m U/m -4.35% primary test pt 1 1.524 1.558 1.53 1.526 1.49 U/m U/m -4.35% primary test pt 2 1.526 1.53 1.526 1.49 U/m U/m -4.35% Sensor Component Filter Azimuth Condition 250 deg Status <td></td> <td colspan="4"></td> <td></td> <td>THET ID</td> <td>01420</td> <td></td> <td></td> <td></td>							THET ID	01420			
Serial Number 103424 Tfer Desc. BIOS cell Tfer ID 01410 Stope 1.00000 Intercept 0.00000 Cert Date 1/27/2012 CorrCoff 1.00000 DAS 1: DAS 2: Cal Factor Zero -0.01 A Avg % Diff: A Max % Di A Avg %Dif A Max % Di Cal Factor Full Scale 0.977 4.42% 4.55% Cal Factor Full Scale 0.977 Rotometer Reading: 1.5 UseDescription: Test type: Input J/m: Input STP: MtcDisp:: Output Step Input J/m Um primary pump off 0.000 0.000 0.000 0.001 U/m U/m primary test pt 2 1.526 1.53 1.527 1.49 U/m U/m -4.35% primary test pt 1 1.524 1.558 1.53 1.526 1.49 U/m U/m -4.35% primary test pt 2 1.526 1.53 1.526 1.49 U/m U/m -4.35% Sensor Component Filter Azimuth Condition 250 deg Status <td></td>											
Serial Number 103424 Tfer Desc. BIOS cell Tfer ID 01410 Stope 1.00000 Intercept 0.00000 Cert Date 1/27/2012 CorrCoff 1.00000 DAS 1: DAS 2: Cal Factor Zero -0.01 A Avg % Diff: A Max % Di A Avg %Dif A Max % Di Cal Factor Full Scale 0.977 4.42% 4.55% Cal Factor Full Scale 0.977 Rotometer Reading: 1.5 UseDescription: Test type: Input J/m: Input STP: MtcDisp:: Output Step Input J/m Um primary pump off 0.000 0.000 0.000 0.001 U/m U/m primary test pt 2 1.526 1.53 1.527 1.49 U/m U/m -4.35% primary test pt 1 1.524 1.558 1.53 1.526 1.49 U/m U/m -4.35% primary test pt 2 1.526 1.53 1.526 1.49 U/m U/m -4.35% Sensor Component Filter Azimuth Condition 250 deg Status <td></td>											
Tfer ID 01410 Slope 1.00000 Intercept 0.00000 Cert Date 1/27/2012 CorrCoff 1.00000 DAS 1: DAS 2: Cal Factor Zero 0.01 A Avg % Diff: A Max % Di A Avg %Diff A Max % Di Cal Factor Full Scale 0.97 4.42% 4.55% Cal Factor Full Scale 0.97 Motometer Reading: 1.5 UseDescription: Test type: Input I/m: Input STP: MfcDisp: OutputSignal: OutputS E: Input Unit: OutputSignal/PctDifference: primary test pt 1 0.527 1.561 1.53 1.526 1.49 Vm Vm -4.35% primary test pt 2 1.526 1.53 1.526 1.49 Vm Vm -4.35% primary test pt 3 1.524 1.53 1.526 1.49 Vm Vm -4.35% Sensor Component Filter Azimuth Condition 250 deg Status pass Sensor Component Filter Position <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Mfg</td> <td>BIOS</td> <td>P</td> <td>arameter</td> <td>Flow Rate</td>							Mfg	BIOS	P	arameter	Flow Rate
Tfer ID 01410 Slope 1.00000 Intercept 0.00000 Cert Date 1/27/2012 CorrCoff 1.00000 DAS 1: DAS 2: Cal Factor Zero 0.01 A Avg % Diff: A Max % Di A Avg %Diff A Max % Di Cal Factor Full Scale 0.97 4.42% 4.55% Cal Factor Full Scale 0.97 Motometer Reading: 1.5 UseDescription: Test type: Input I/m: Input STP: MfcDisp: OutputSignal: OutputS E: Input Unit: OutputSignal/PctDifference: primary test pt 1 0.527 1.561 1.53 1.526 1.49 Vm Vm -4.35% primary test pt 2 1.526 1.53 1.526 1.49 Vm Vm -4.35% primary test pt 3 1.524 1.53 1.526 1.49 Vm Vm -4.35% Sensor Component Filter Azimuth Condition 250 deg Status pass Sensor Component Filter Position <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Serial Number</td> <td>103424</td> <td>Т</td> <td>fer Desc.</td> <td>BIOS cell</td>							Serial Number	103424	Т	fer Desc.	BIOS cell
Slope 1.00000 Intercept 0.00000 Cert Date 1/27/2012 CorrCoff 1.00000 DAS 1: DAS 2: Cal Factor Zero -0.01 A Avg % Diff: A Max % Di A Avg %Diff: A Max % Di Cal Factor Full Scale 0.97 4.42% 4.55% Cal Factor Full Scale 0.97 Kotometer Reading: 1.5 1.5 UseDescription: Test type: Input Vm: Input STP: MfcDisp:: Output S E: Input/mit: Output Signal PctDifference primary pump off 0.000 0.000 0.004 0.00 Vm Vm -4.55% primary test pt 1 1.527 1.561 1.53 1.526 1.49 Vm Vm -4.35% primary test pt 1 1.524 1.558 1.53 1.526 1.49 Vm Vm -4.36% primary test pt 3 1.524 1.558 1.53 1.526 1.49 Vm Vm -4.36% Sensor Component Filter Azimuth Condition 250 deg Status pass Sen								01410			
Cert Date 1/27/2012 CorrCoff 1.00000 DAS 1: DAS 2: Cal Factor Zero -0.01 A Avg % Diff: A Max % Di A Avg % Diff: A Max % Di Cal Factor Zero -0.01 A 42% 4.55% Cal Factor Zero 0.97 4.42% 4.55% Cal Factor Full Scale 0.97 Rotometer Reading: 1.5 UseDescription: Test type: Input Vm: Input STP: MfcDisp.: OutputSignal: Output S E: InputUnit: OutputSignalPetDifference: primary pump off 0.000 0.000 0.004 0.00 Vm Vm primary test pt 1 1.527 1.561 1.53 1.526 1.49 Vm Vm -4.35% primary test pt 2 1.526 1.558 1.53 1.526 1.49 Vm Vm -4.36% Sensor Component Leak Test Condition 250 deg Status pass Sensor Component Filter Azimuth Condition 0.5 cm Status pass Sensor Component Filter Position Condition											
DAS 1: DAS 2: Cal Factor Zero -0.01 A Ayg % Diff: A Max % Di A Ayg %Dif A Max % Di Cal Factor Full Scale 0.97 4.42% 4.55% 1 Rotometer Reading: 1.5 UseDescription: Test type: Input /m: Input STP; MfcDisp.: OutputSignal: Output S E: InputUnit: OutputSignal/PetDifference: primary pump off 0.000 0.000 0.004 0.00 Vm Vm primary test pt 1 1.527 1.561 1.53 1.526 1.49 Vm Vm -4.35% primary test pt 2 1.526 1.558 1.53 1.527 1.49 Vm Vm -4.35% primary test pt 3 1.524 1.558 1.53 1.526 1.49 Vm Vm -4.36% Sensor Component Filter Azimuth Condition 250 deg Status pass Sensor Component Filter Depth Condition 0.5 cm Status pass Sensor Component Filter Position Condition Good Status </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Slope</td> <td>1.</td> <td>00000 Inte</td> <td>ercept</td> <td>0.00000</td>							Slope	1.	00000 Inte	ercept	0.00000
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4.42%4.55%Rotometer Reading:1.5UseDescription: Test type: Input I/m: Input STP: MfcDisp.: OutputSignal: Output S E: InputUnit: OutputSignal PctDifference: primary pump off0.0000.0000.0040.00I/mI/mprimarypump off0.0000.0000.0000.0040.00I/mI/mI/mprimaryleak check0.0000.0000.0040.00I/mI/mI/mprimaryleak check0.0000.0000.0390.03I/mI/mI/mprimarytest pt 11.5271.5611.531.5261.49I/mI/m-4.35%primarytest pt 21.5261.5581.531.5261.49I/mI/m-4.36%primarytest pt 31.5241.5581.531.5261.49I/mI/m-4.36%Sensor ComponentLeak TestCondition250 degStatuspassSensor ComponentFilter AzimuthCondition0.5 cmStatuspassSensor ComponentFilter PositionConditionGoodStatuspassSensor ComponentMosture PresentConditionConditionStatuspassSensor ComponentMosture PresentConditionConditionStatuspassSensor ComponentNometer ConditionConditionClean and dryStatuspassSensor ComponentSystem MemoConditionGoodStatuspass	DAS 1:			DAS 2:		L	Cal Factor Z	ero	-0.0)1	
UseDescription:Test type:Input J/m:Input STP:MfcDisp.:OutputSignal:Output S E:InputUnit:OutputSignaliPctDifference:primarypump off0.0000.0000.0000.0000.0001/m1/m1/mprimaryleak check0.0000.0000.0390.031/m1/m1/mprimarytest pt 11.5271.5611.531.5261.491/m1/m-4.35%primarytest pt 21.5261.5581.531.5271.491/m1/m-4.36%primarytest pt 31.5241.5581.531.5261.491/m1/m-4.36%Sensor ComponentLeak TestCondition250 degStatuspassSensor ComponentFilter AzimuthCondition0.5 cmStatuspassSensor ComponentFilter DepthCondition0.5 cmStatuspassSensor ComponentFilter PositionConditionGoodStatuspassSensor ComponentFilter PositionConditionNo moisture presentStatuspassSensor ComponentMoisture PresentConditionClean and dryStatuspassSensor ComponentSystem MemoConditionGoodStatuspassSensor ComponentSystem MemoConditionGoodStatuspassSensor ComponentTubing ConditionConditionStatuspass	A Avg % Diff:	A Ma	x % Di	A Avg %	Dif A Max	% Di	Cal Factor F	ull Scale	0.9	97	
primary pump off 0.000 0.000 0.004 0.00 1/m 1/m primary leak check 0.000 0.000 0.039 0.03 1/m 1/m primary leak check 0.000 0.000 0.039 0.03 1/m 1/m primary test pt 1 1.527 1.561 1.53 1.526 1.49 1/m 1/m -4.55% primary test pt 2 1.526 1.558 1.53 1.526 1.49 1/m 1/m -4.36% primary test pt 3 1.524 1.558 1.53 1.526 1.49 1/m 1/m -4.36% Sensor Component Leak Test Condition 250 deg Status pass Sensor Sensor Sensor Status pass Sensor Component Filter Depth Condition 0.5 cm Status pass Sensor Component Filter Present Condition Good Status pass Sens	4.42%		4.55%				Rotometer R	eading:	1	.5	
primary leak check 0.000 0.000 0.000 0.039 0.03 I/m I/m primary test pt 1 1.527 1.561 1.53 1.526 1.49 I/m I/m I/m -4.55% primary test pt 2 1.526 1.558 1.53 1.527 1.49 I/m I/m -4.36% primary test pt 3 1.524 1.558 1.53 1.526 1.49 I/m I/m -4.36% Sensor Component Leak Test Condition 250 deg Status pass Sensor Status pass Sensor Sensor Component Filter Azimuth Condition 0.5 cm Status pass Sensor Sensor Component Filter Depth Condition 0.5 cm Status pass Sensor Sensor Component Filter Position Condition Good Status pass Sensor Component Moisture Present Condition No moisture present Status pass Sensor Component System Memo	UseDescription	: Tes	st type:	Input l/m:	Input STP:	MfcDisp.:	OutputSignal:	Output S E:	InputUnit:	OutputSigr	nallPctDifference:
primarytest pt 11.5271.5611.531.5261.49I/mI/m4.55%primarytest pt 21.5261.5581.531.5271.49I/mI/m4.36%primarytest pt 31.5241.5581.531.5261.49I/mI/m4.36%Sensor ComponentLeak TestConditionStatuspassSensor ComponentFilter AzimuthCondition250 degStatuspassSensor ComponentFilter DepthCondition0.5 cmStatuspassSensor ComponentFilter PositionConditionGoodStatuspassSensor ComponentFilter PositionConditionGoodStatuspassSensor ComponentFilter PositionConditionConditionStatuspassSensor ComponentFilter PositionConditionNo moisture presentStatuspassSensor ComponentRotometer ConditionConditionClean and dryStatuspassSensor ComponentSystem MemoConditionGoodStatuspassSensor ComponentSystem MemoConditionGoodStatuspassSensor ComponentTubing ConditionConditionGoodStatuspass											
primarytest pt 21.5261.5581.531.5271.49I/mI/m-4.36%primarytest pt 31.5241.5581.531.5261.49I/mI/m-4.36%Sensor ComponentLeak TestConditionStatuspassSensor ComponentFilter AzimuthCondition250 degStatuspassSensor ComponentFilter DepthCondition0.5 cmStatuspassSensor ComponentFilter PositionConditionGoodStatuspassSensor ComponentFilter PositionConditionGoodStatuspassSensor ComponentFilter PositionConditionConditionStatuspassSensor ComponentFormerConditionConditionStatuspassSensor ComponentStatuspassStatuspassSensor ComponentRotometer ConditionConditionClean and dryStatuspassSensor ComponentSystem MemoConditionGoodStatuspassSensor ComponentSystem MemoConditionGoodStatuspassSensor ComponentTubing ConditionConditionGoodStatuspass											
primary test pt 3 1.524 1.558 1.53 1.526 1.49 1/m 1/m -4.36% Sensor Component Leak Test Condition Status pass		-									
Sensor ComponentLeak TestConditionStatuspassSensor ComponentFilter AzimuthCondition250 degStatuspassSensor ComponentFilter DepthCondition0.5 cmStatuspassSensor ComponentFilter PositionConditionGoodStatuspassSensor ComponentFilter PositionConditionGoodStatuspassSensor ComponentMoisture PresentConditionNo moisture presentStatuspassSensor ComponentRotometer ConditionConditionClean and dryStatuspassSensor ComponentSystem MemoConditionStatuspassSensor ComponentTubing ConditionConditionGoodStatuspass		-			-						
Sensor ComponentFilter AzimuthCondition250 degStatuspassSensor ComponentFilter DepthCondition0.5 cmStatuspassSensor ComponentFilter PositionConditionGoodStatuspassSensor ComponentMoisture PresentConditionNo moisture presentStatuspassSensor ComponentRotometer ConditionConditionClean and dryStatuspassSensor ComponentSystem MemoConditionConditionStatuspassSensor ComponentTubing ConditionConditionGoodStatuspass		-			1.558	7	1	1.49			-4.36%
Sensor ComponentFilter DepthCondition0.5 cmStatuspassSensor ComponentFilter PositionConditionGoodStatuspassSensor ComponentMoisture PresentConditionNo moisture presentStatuspassSensor ComponentRotometer ConditionConditionClean and dryStatuspassSensor ComponentSystem MemoConditionStatuspassSensor ComponentTubing ConditionConditionGoodStatuspass	Sensor Comp	onent	Leak Tes	t		Conditio	n		Status	pass	
Sensor ComponentFilter PositionConditionGoodStatuspassSensor ComponentMoisture PresentConditionNo moisture presentStatuspassSensor ComponentRotometer ConditionConditionClean and dryStatuspassSensor ComponentSystem MemoConditionStatuspassSensor ComponentTubing ConditionConditionGoodStatuspass	Sensor Comp	onent	Filter Azir	nuth		Conditio	n 250 deg		Status	pass	
Sensor ComponentMoisture PresentConditionNo moisture presentStatuspassSensor ComponentRotometer ConditionConditionClean and dryStatuspassSensor ComponentSystem MemoConditionStatuspassSensor ComponentTubing ConditionConditionGoodStatuspass	Sensor Comp	onent	Filter Dep	oth		Conditio	n 0.5 cm		Status	pass	
Sensor ComponentMoisture PresentConditionNo moisture presentStatuspassSensor ComponentRotometer ConditionConditionClean and dryStatuspassSensor ComponentSystem MemoConditionStatuspassSensor ComponentTubing ConditionConditionGoodStatuspass	Sensor Comp	onent	Filter Pos	ition		Conditio	n Good		Status	pass	
Sensor Component Rotometer Condition Condition Clean and dry Status pass Sensor Component System Memo Condition Status pass Sensor Component Tubing Condition Condition Good Status pass			<u> </u>			_	<u>u</u>	resent			
Sensor Component System Memo Condition Status pass Sensor Component Tubing Condition Condition Good Status pass			_								
Sensor Component Tubing Condition Condition Good Status pass											
	Sensor Component System Memo			Conditio	n	Status pass					
Sensor Component Filter Distance Condition 6.5 cm Status pass	Sensor Comp	onent	Tubing C	ondition		Conditio	n Good	Status	Status pass		
	Sensor Comp	Sensor Component Filter Distance			Conditio	n 6.5 cm		Status	pass		

Ozone Data Form

Mfg	S	erial Number Ta	Site	Te	chnician		Site Visi	t Date	Parame	eter	Owner I	D
ThermoElect	tron Inc 1	030244795	PSU106	Sa	andy Gre	nville	11/03/20)12	Ozone		000684	
Slope: Intercept CorrCoff	0.6	29049Slope:36213Intercept39999CorrCoff	0.00000	D	Mfg Serial N Tfer ID		ThermoE 49C-7310 01100			rameter oz er Desc. Oz	one zone transfe	;r
DAS 1:		DAS 2:						1.01297	7 Testor		0.00	9498
	iff: A Ma	x % Di A Avg %	6Dif A Max 9	% Di	Slope					- L		
0.8		2.1%			Cert Da	ite	1	/23/2012	2 Corr	Coff	1.00	0000
UseDesc	cription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Sit	te:	Site	Unit:	PctDiff	ference:	
prim	nary	1	-0.06	-0.	15	0.2	27	ppb				
prim	nary	2	35.81	35.	25	36.	.00	ppb			2.13%	
prim	nary	3	66.13	65.	18	65.	.09	ppb			-0.14%	
prim	nary	4	86.69	85.	48	85.	.30	ppb			-0.21%	
prim	nary	5	214.62	211	.77	210	.40	ppb			-0.65%	
Sensor Co	omponent	Cell B Noise		Conditio	on 0.9 pp	b			Status	pass		
Sensor Co	omponent	Cell B Tmp.		Conditio	on				Status	pass		
Sensor Co	omponent	Fullscale Voltage		Conditio	n N/A				Status	pass		
Sensor Co	omponent	Inlet Filter Condition	on	Conditio	on Clear	1			Status	pass		
Sensor Co	mponent	Line Loss		Conditio	n Not te	ested			Status	pass		
Sensor Co	omponent	Offset		Conditio	on 0.000				Status	pass		
Sensor Co	-			Conditio					Status			
	_	Cell B Freq.		Conditio					Status			
	•	System Memo		Conditio					Status			
		Sample Train		Conditio					Status			
	_											
		Cell B Pressure		Conditio					Status			
		Cell B Flow		Conditio					Status			
	•	Cell A Tmp.		Conditio					Status			
Sensor Co	omponent	Cell A Pressure		Conditio	on 710 m	nmHg			Status	pass		
Sensor Co	omponent	Cell A Noise		Conditio	on 1.1 pp	b			Status	pass		
Sensor Co	omponent	Cell A Freq.		Conditio	on 87.9	κHz			Status	pass		
Sensor Co	omponent	Cell A Flow		Conditio	on 0.68 l	pm			Status	pass		
Sensor Co	omponent	Battery Backup		Conditio	on N/A				Status	pass		
Sensor Co	omponent	Zero Voltage		Conditio	n N/A				Status	pass		

Temperature Data Form

Sensor Component System Memo

Mfg	Serial Number T	a Site	Tec	chnician	Site Visit Date	Param	eter	Owner ID
RM Young	4013	PSU106	Sa	ndy Grenville	11/03/2012	Temper	ature	04316
				Mfg	Eutechnics	Ра	Parameter Temperature	
				Serial Number	01D102193	Tf	er Desc. R	TD translator
				Tfer ID	01231			
DAS 1:	DAS 2	2:		Slope	1.001	7 Inte	rcept	-0.02095
		vg Err Abs	Max Er	Cert Date	2/10/20	12 Cor	rCoff	1.00000
			Mfg	Eutechnics	Pa	Parameter Temperature		
				Serial Number	01H0060	Tf	er Desc. R	TD probe
				Tfer ID	01230			
				Slope	1.001	1.00157 Intercept		-0.02095
				Cert Date	2/10/20	12 Cor	rCoff	1.00000
0.14	0.19							
UseDesc.:	Test type: I	nputTmpRaw	InputTmpCor	rr.: OutputTmp	Signal: OutputSi	gnalEng:	OSE Unit:	Difference:
primary	Temp Low Range	0.04	0.06	0.000	0.	1	С	0.06
primary	Temp Mid Range	26.86	26.84	0.000	26	.7	С	-0.19
primary	Temp High Range	46.43	46.38	0.000	46	.2	С	-0.17
Sensor Com	ponent Shield	Condition	n Clean		Status	pass		
Sensor Com	ponent Blower Status S	Conditio	n N/A		Status	pass		
Sensor Com	ponent Blower		Conditio	n N/A		Status	pass	

Condition

Status pass

Infrastructure Data For

Site ID	PSU106	Technician Sandy (Grenville Site Visit Date 11/03/2012
Shelter 1	Make	Shelter Model	Shelter Size
PSU		N/A	3840 cuft

Sensor Component	Shelter Roof	Condition	Good	Status	pass
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	Rotometer	Condition	Installed	Status	pass
Sensor Component	Sample Tower	Condition	Fair	Status	pass
Sensor Component	Shelter Condition	Condition	Good	Status	pass
Sensor Component	Shelter Floor	Condition	Good	Status	pass
Sensor Component	Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component	Signal Cable	Condition	Good	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

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none PSU106		Sandy Grenville	Sandy Grenville 11/03/2012 S		ire none
DAS 1: Abs Avg Err Abs 0.17	DAS 2: s Max Er Abs Avg 0.33	Err Abs Max Er	Mfg Serial Number Tfer ID	Eutechnics 01D102193 01231		Shelter Temperatur
			Slope Cert Date	1.0015 2/10/201		-0.02095 1.00000
			Mfg Serial Number	Eutechnics 01H0060	Parameter S Tfer Desc. F	Shelter Temperatur
			Tfer ID Slope Cert Date	01230		-0.02095

UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	23.60	23.58	0.000	23.3	С	-0.33
primary	Temp Mid Range	23.84	23.82	0.000	23.7	С	-0.13
primary	Temp Mid Range	23.95	23.93	0.000	23.9	С	-0.06

Field Systems Comments

1 Parameter: DasComments

The meteorological tower has been removed.

2 Parameter: SitingCriteriaCom

The site is within 10 km of State College which has a population of approximately 50,000. The site is located in a university agricultural research field.

3 Parameter: ShelterCleanNotes

The shelter is owned by the university and is clean and orderly. The site is part of the Surfrad network.

4 Parameter: MetOpMaintCom

The 10-meter temperature sensor is now mounted in a naturally aspirated shield on the sample tower.

Site ID PSU106	Technician Sandy Grenvill	e Site Visit Date 1	1/03/2012
Site Sponsor (agency)	EPA	USGS Map	Pine Grove Mills
Operating Group	PSU	Map Scale	
AQS#	42-027-9991	Map Date	
Meteorological Type	Climatronics		
Air Pollutant Analyzer	Ozone	QAPP Latitude	40.7209
Deposition Measurement	dry	QAPP Longitude	-77.9316
Land Use	agriculture	QAPP Elevation Meters	s 376
Terrain	rolling - complex	QAPP Declination	10.9
Conforms to MLM	Marginally	QAPP Declination Date	9/16/2005
Site Telephone	(814) 237-5778	Audit Latitude	40.72090
Site Address 1	PSU Agriculture Research Farm	Audit Longitude	-77.93175
Site Address 2	Tadpole Road	Audit Elevation	36
County	Centre	Audit Declination	-10.7
City, State	Rockspring, PA	Presen	t
Zip Code	16865	Fire Extinguisher 🗹	No inspection date
Time Zone	Eastern	First Aid Kit	
Primary Operator	Bob Ziegler	Safety Glasses	
Primary Op. Phone #	(814) 863-4526	Safety Hard Hat	
Primary Op. E-mail	rfz1@psu.edu	Climbing Belt	
Backup Operator	none	Security Fence	
Backup Op. Phone #		Secure Shelter	
Backup Op. E-mail		Stable Entry Step 🗹	
Shelter Working Room	Make PSU M	lodel N/A	Shelter Size 3840 cuft
Shelter Clean	Notes The shelter is owned by the unnetwork.	niversity and is clean and or	derly. The site is part of the Surfrad
Site OK	Notes	na do desta contratorio da constructor de la contratoria de la constructiona de la constructione de la constru	

Field Systems Data Form

PSU106

F-02058-1500-S2-rev001

Site ID

Technician Sandy Grenville

Site Visit Date 11/03/2012

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

Siting Distances OK

Siting Criteria Comment

The site is within 10 km of State College which has a population of approximately 50,000. The site is located in a university agricultural research field.

Fie	eld Sy	stems Data F	orm		F-02058-1500-S3-rev001
Site	e ID	PSU106	Technician	Sandy Grenville	Site Visit Date 11/03/2012
1		nd speed and direction afluenced by obstructi		as to avoid	N/A
2	Are win (i.e. win horizon	nd sensors mounted so nd sensors should be m ntally extended boom > nto the prevailing wind	as to minimize counted atop the 2x the max diar	e tower or on a	N/A
3		tower and sensors plu			N/A
4		e temperature shields p adiated heat sources s			
5	condition surface	nperature and RH sen ons? (i.e. ground below and not steeply sloped g water should be avo	v sensors should I. Ridges, hollov	be natural	
6	Is the s	olar radiation sensor p	olumb?		N/A
7	Is it site light?	ed to avoid shading, or	any artificial o	r reflected	N/A
8	Is the r	ain gauge plumb?			N/A
9	Is it site towers,	ed to avoid sheltering o etc?	effects from buil	dings, trees,	N/A
10	Is the states of	urface wetness sensor north?	sited with the g	rid surface	N/A
11	Is it in	clined approximately 3	30 degrees?		N/A
Due	wide on	additional avalenctic	n (nhotogranh)	on chotch if noon	x) regarding conditions listed shows or any other features

Field S	ystems Data F	orm			F-02058-1500-S4-					
Site ID	PSU106	Technician	Sandy Grenville		Site Visit Da	te 11/03/2012				
	the meterological sension, and well maintain	The second s	intact, in good		N/A					
	l the meteorological sen ing data?	nsors operationa	l online, and		N/A					
3 Are th	e shields for the tempe	ensors clean?								
4 Are th	Are the aspirated motors working?				N/A					
5 Is the s scratel	solar radiation sensor': 1es?	s lens clean and f	ree of		N/A					
5 Is the	surface wetness sensor	grid clean and u	ndamaged?		N/A					
	e sensor signal and pov ion, and well maintain		, in good							
Are the sensor signal and power cable connections protected from the elements and well maintained?										
Parameter	Ν	Ianufacturer	Model		S/N		Clie	ent ID		
Temperatur	e R	M Young	41342VO	100000	4013		043	16		

The 10-meter temperature sensor is now mounted in a naturally aspirated shield on the sample tower.

Fie	ld Sy	stems Data	Form			F-02058-1500-S5-re				
Site	ID	PSU106	Technician	Sandy Grenville		Site Visit Date 11/03	/2012			
	<u>Siting (</u>	Criteria: Are the pol	lutant analyzers a	nd deposition eq	<u>luipr</u>	nent sited in accordance	with 40 CFR	<u>58, Appendix E</u>		
		sample inlets have a icted airflow?	it least a 270 degree	e arc of						
2	Are the	sample inlets 3 - 15	meters above the	ground?						
		sample inlets > 1 m meters from trees?	eter from any maj	or obstruction,						
	Polluta	nt analyzers and de	position equipment	t operations and	l mai	intenance				
1		analyzers and equip on and well maintai	Conversion of the second second second second second second	in good						
		analyzers and mon ng data?	itors operational, o	on-line, and						
3	Describ	e ozone sample tub	e.			1/4 teflon by 20 meters				
4	Describ	e dry dep sample tu	ıbe.			3/8 teflon by 20 meters				
		line filters used in the location)	ne ozone sample lin	e? (if yes		At inlet only				
6	Are san obstruc	nple lines clean, free tions?	e of kinks, moisture	e, and						
7	Is the z	ero air supply desic	cant unsaturated?							
8	Are the	re moisture traps ir	the sample lines?			Flow line only				
9	Is there clean?	a rotometer in the	dry deposition filte	r line, and is it		Clean and dry				
Par	ameter	-	Manufacturer	Model		S/N	С	lient ID		
Sor			Alumo Tower			Inone		747		

100	Sample Tower	Aluma Tower	A	none	02747	Sec. S
CONTRACTOR OF	Filter pack flow pump	Thomas	107CAB18	060400022676	06023	
COUNTRY OF	Zero air pump	Werther International	C 70/4	000829156	06914	
Concession of the local distribution of the	Ozone	ThermoElectron Inc	49i A1NAA	1030244795	000684	

Fi	Field Systems Data FormF-02058-1500-S6-rev001								
Site	PSU106	Technician Sa	ndy Grenville		Sit	e Visit Date 1	1/03/2012		
	DAS, sensor translators, a	nd peripheral equipm	ent operation	is an	<u>d mai</u>	ntenance			
1 Do the DAS instruments appear to be in good condition and well maintained?									
2	Are all the components of modem, backup, etc)	the DAS operational?	(printers,						
3	Do the analyzer and senso lightning protection circui		ough		Met se	ensors only			
4	Are the signal connections well maintained?	protected from the w	eather and						
5	Are the signal leads conne	cted to the correct DA	S channel?						
6	Are the DAS, sensor trans grounded?	lators, and shelter pro	perly						
7	Does the instrument shelte	er have a stable power	source?						
8	Is the instrument shelter to	emperature controlled	!?						
9	Is the met tower stable and	d grounded?			Sta	ble	Grou	nded	ار
10	10 Is the sample tower stable and grounded?					1	v	7	
11	11 Tower comments?				2020020202	wer removed			
Pa	rameter	Manufacturer	Model			S/N		Client ID	
Co	mputer	Dell	D520		TECHTUS	unknown		000268	
DA	S	Campbell	CR3000	1957013	193532.0	2512		000407	
Modem Raven V/4221-V					0844430833		06601	124 C	

The meteorological tower has been removed.

Field Systems Data F	`orm	4		F-02058-1500-S7-rev001
Site ID PSU106	Tecl	hnician Sandy Grenv	ville Site Visit Date 11	/03/2012
Documentation Does the site have the required	inctrum	ent and equipment r	nonuale?	
Does the site have the required Ye	ALC: NO DECISION OF		<u>uanuais;</u>	Yes No N/A
			ata logger	
			ata logger	
Temperature sensor		S	trip chart recorder	
Relative humidity sensor		✓ C	omputer	
Solar radiation sensor		✓ N	Iodem	
Surface wetness sensor		✓ P	rinter	
Wind sensor translator		✓ Z	ero air pump	
Temperature translator		✓ F	ilter flow pump	
Humidity sensor translator		✓ S	urge protector	
Solar radiation translator		✓ U	PS	
Tipping bucket rain gauge		✓ L	ightning protection device	
Ozone analyzer		S	helter heater	
Filter pack flow controller		S	helter air conditioner	
Filter pack MFC power supply				
Does the site have the require	d and m	ost recent QC docum	nents and report forms?	
	resent			Current
Station Log			less.	
SSRF				
Site Ops Manual		Apr 2009		
HASP		Nov 2009		
Field Ops Manual		1107 2003		
Calibration Reports				
Ozone z/s/p Control Charts				
Preventive maintenance schedul				
1 Is the station log properly co	mpleted	during every site visi	it? 🗸	
2 Are the Site Status Report Focurrent?	orms bei	ng completed and		
3 Are the chain-of-custody for sample transfer to and from	and the second	erly used to documen	nt 🗸	
4 Are ozone z/s/p control chart current?		ly completed and	Control charts not used	1
Provide any additional explanation natural or man-made, that may a				is listed above, or any other features,
natural or man-maue, that may a	neer me	monitoring paramet	c15.	

Field Systems Data Form							F-02058	-1500-S8-rev001
Site	e ID	PSU106	Technician	Sandy Grenville		Site Visit Date	11/03/2012	
1	Has th	peration procedures the site operator attended ? If yes, when and who		TNET training		Trained by previous	operator	
2 Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?				No backup operator				
3	Is the s schedu	ite visited regularly on le?	the required T	uesday				
4		e standard CASTNET of ed by the site operator?	CONTRACTOR CONTRACTOR CONTRACTOR OF CONTRACTOR CON	cedures being				
5		ite operator(s) knowled uired site activities? (in	Construction of the second second second	CONTRACTOR OF A DESCRIPTION OF A DESCRIP				
	Are reg	gular operational QA/Q	C checks perfo	rmed on meteo	<u>rolog</u>	ical instruments?		
QC	Check	Performed		Frequency			Complia	ant

QC Check Performed	Frequency	, C	-on
Multipoint Calibrations			
Visual Inspections	Weekly		
Translator Zero/Span Tests (climatronics)			
Manual Rain Gauge Test			
Confirm Reasonableness of Current Values	Weekly		
Test Surface Wetness Response			

~

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

QC C	heck	Perfo	rmed
------	------	-------	------

3

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	Compliant
Semiannually	
Daily	
As needed	
Daily	
As needed	
Weekly	
Every 2 weeks	
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?

N. S. M. M. S. S. M. S.			
Are the automatic and	manual z/s/p	checks monitored and	
AND REAL PROPERTY AND		Construction of the second s	
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:

	iu by	stems Data						1-02030	-1500-S9-rev00	
Site	ID	PSU106	Tech	nician	Sandy Grenville		Site Visit Date	11/03/2012		
	<u>Site ope</u>	ration procedures								
	Is the fil	ter pack being chai	nged every	Tuesda	ay as scheduled?		Filter changed mori	nings		
	Are the correctly	Site Status Report 1 y?	Forms bein	g comj	pleted and filed					
	Are data schedule	a downloads and ba ed?	ickups bein	g perf	ormed as		No longer required			
	Are gen	eral observations b	eing made a	and ree	corded? How?		SSRF, logbook			
	Are site fashion?	supplies on-hand a	nd replenis	hed in	a timely					
	Are sam	ple flow rates reco	rded? How	?			SSRF, logbook, call-in			
	Are sam fashion?	ples sent to the lab	on a regula	ır sche	dule in a timely					
		rs protected from c pping? How?	contaminati	io <mark>n du</mark> i	ring handling		gloves are not used			
		site conditions repo ons manager or staf		rly to	the field					
C C	Check Po	erformed		Free	quency			Compliant		
M	ulti-poir	nt MFC Calibration	IS	Sem	niannually					
	2010/01/01/01	em Leak Checks	Contraction of the second	✓ Wee	ekly					
	HO IN HIS IN	k Inspection								
		Setting Checks		✓ Wee	kly					
Vi	Visual Check of Flow Rate Rotometer Weekly									
In	-line Fil	ter Inspection/Repl	acement	Sem	niannually	10000				
Sa	mple Li	ne Check for Dirt/V	Water	✓ Wee	Sample Line Check for Dirt/Water Weekly					

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number					
BEL	BEL116-Eric Hebert-11/20/2012										
1	11/20/2012	Computer	Dell	000280	D520	unknown					
2	11/20/2012	DAS	Campbell	000341	CR3000	2120					
3	11/20/2012	Elevation	Elevation	None	1	None					
4	11/20/2012	Filter pack flow pump	Thomas	02755	107CAB18	1192001881					
5	11/20/2012	Flow Rate	Apex	illegible	AXMC105LPMDPCV	illegible					
6	11/20/2012	Infrastructure	Infrastructure	none	none	none					
7	11/20/2012	Met tower	Universal Tower	06484	unknown	none					
8	11/20/2012	Modem	Raven	06382	H4222-C	0802310513					
9	11/20/2012	Ozone	ThermoElectron Inc	000692	49i A1NAA	1030244803					
10	11/20/2012	Ozone Standard	ThermoElectron Inc	000366	49i A3NAA	0726124695					
11	11/20/2012	Precipitation	Texas Electronics	06332	TR-525i-HT	43527-807					
12	11/20/2012	Relative Humidity	Rotronic	06219	MP 101A-C4	123962					
13	11/20/2012	Sample Tower	Aluma Tower	000127	В	none					
14	11/20/2012	Shelter Temperature	Campbell	none	107-L	44281					
15	11/20/2012	Shield (10 meter)	RM Young	05042	Aspirated 43408	none					
16	11/20/2012	Shield (2 meter)	RM Young	05041	Aspirated 43408	none					
17	11/20/2012	Siting Criteria	Siting Criteria	None	1	None					
18	11/20/2012	Solar Radiation	Licor	04935	LI-200	PY47675					
19	11/20/2012	Solar Radiation Translator	RM Young	04888	70101-X	none					
20	11/20/2012	Surface Wetness	RM Young	04608	58101	none					
21	11/20/2012	Temperature	RM Young	06308	41342VO	12533					
22	11/20/2012	Temperature2meter	RM Young	06309	41342VO	12534					
23	11/20/2012	Wind Direction	RM Young	03416	AQ05103-5	17096wdr					
24	11/20/2012	Wind Speed	RM Young	03416	AQ05103-5	17096wsp					
25	11/20/2012	Zero air pump	Teledyne	000776	701H	606					
25	11/20/2012	∠ero air pump	leledyne	000776	701H	606					

DAS Data Form

DAS Time Max Error: 0.02

Mfg	Serial Nu	mber Site	,	Technician	Site Visit Date	Parameter	Use Desc.
Campbell	2120	BEL	116	Eric Hebert	11/20/2012	DAS	Primary
Das Date:	11/20/2012	Audit Date	11/20/2012	Mfg	Datel	Parameter	DAS
Das Time:	10:30:01	Audit Time	10:30:00	C I North and	4000392	Tfer Dere	Source generator (D
Das Day:	325	Audit Day	325	Serial Number	4000392	Tier Desc.	Source generator (D
Low Channel	:	High Channel	:	Tfer ID	01321		
Avg Diff:	Max Diff:	Avg Diff:	Max Diff:	Slope	1.0000	0 Intercept	0.00000
0.0000	0.0001	0.0000	0.0001		2/13/201		1.00000
				Cert Date	2/13/201	2 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	2/9/201	2 CorrCoff	1.00000
Channel	Input D	VM Output	DAS Output	InputUnit	OutputUnit	Difference	
7	0.0000	0.0000	0.0000	0 V	V	0.0000	
7	0.1000	0.1000	0.1000	0 V	V	0.0000	
7	0.3000	0.3000	0.3000		V	0.0000	
7	0.5000	0.5000	0.5000	0 V	V	0.0000	
7	0.7000	0.7001	0.700		V	-0.0001	
7	0.9000	0.9001	0.9000		V	-0.0001	
7	1.0000	1.0001	1.000	0 V	V	-0.0001	

Flow Data Form

Mfg	Serial Nun	nber Ta S	Site	Тес	chnician	Site Visit 1	Date Paran	neter	Owner ID
Арех	illegible		BEL116	Eri	c Hebert	11/20/201	2 Flow F	late	illegible
					Mfg	BIOS	P	arameter F	ow Rate
					Serial Number	122974	Г	fer Desc. B	IOS 220-H
					Tfer ID	01416			
					Slope	1	.00000 Int	ercept	0.00000
					Cert Date			rrCoff	1.00000
					Cert Date			rcoll	1.00000
DAS 1:		DAS 2:			Cal Factor Z	ero	-0.0)2	
A Avg % Diff:	A Max % Di	A Avg %I	Dif A Max	x % Di	Cal Factor F	ull Scale	0.9	98	
0.11%	0.16%				Rotometer R	eading:	1.8	35	
UseDescription:	Test type:	Input l/m:	Input STP:	MfcDisp.:	OutputSignal:	Output S E:	InputUnit:	OutputSigna	llPctDifference
primary	pump off	0.000	0.000	0.01	0.033	0.02	l/m	l/m	
primary	leak check	0.000	0.000	0.01	0.042	0.02	l/m	l/m	
primary	test pt 1	0.000	1.512	1.53	1.528	1.51	l/m	l/m	-0.16%
primary	test pt 2	0.000	1.511	1.53	1.528	1.51	l/m	l/m	-0.07%
primary	test pt 3	0.000	1.512	1.53	1.528	1.51	l/m	l/m	-0.11%
Sensor Compo	onent Leak Tes	st		Conditio	n		Status	pass	
Sensor Compo	nent Filter Azi	muth		Conditio	n 270 deg		Status	pass	
Sensor Compo	nent Filter Dep	oth		Conditio	n 0.5 cm		Status	pass	
Sensor Compo	nent Filter Pos	sition		Conditio	n Good		Status	pass	
Sensor Compo	onent Moisture	Present		Conditio	n No moisture p	resent	Status	pass	
Sensor Compo	Sensor Component Rotometer Condition			Conditio	n Clean and dry		Status	pass	
Sensor Compo	onent System N	/lemo		Conditio	n		Status	pass	
Sensor Compo	ment Tubing C	ondition		Conditio	n Good	Status	pass		
Sensor Compo	nent Filter Dis	tance		Conditio	n 5.0 cm		Status	pass	

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician S		Site Visi	t Date	Parame	eter	Owner I	D	
ThermoElectron Inc	1030244803	BEL116	E	ric Hebert	:	11/20/20	012	Ozone		000692	
Intercept	0.97643 Slope: 0.47920 Intercept 0.99999 CorrCoff	0.0000 0.0000 0.0000	Serial Number		ThermoE 5171121 01111			rameter o er Desc. O	zone Dzone primary	/ stan	
DAS 1: A Avg % Diff: A M 1.6%	DAS 2: Max % Di A Avg % 2.1%	%Dif A Max	% Di	Slope Cert Da			1.0098 9/23/201		- 1	0.07	7483 0000
UseDescription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	e Unit:	PctDi	fference:	
primary	1	0.19	0.	11	0.:	57	ppb				
primary	2	31.84	31	.45	31.	.11	ppb			-1.08%	
primary	3	66.12	65	.39	64.	.34	ppb			-1.61%	
primary	4	83.36	82	.47	81.	.30	ppb			-1.42%	
primary	5	107.98	106	5.85	104	.60	ppb			-2.11%	
Sensor Compone	nt Cell B Noise		Conditi	on 1.0 pp	b			Status	pass		
Sensor Compone	nt Cell B Tmp.	Cell B Tmp.						Status	pass		
Sensor Compone	nt Fullscale Voltage	Condition N/A					Status	pass			
Sensor Compone	nt Inlet Filter Condition	Inlet Filter Condition			1			Status	pass		
Sensor Compone	nt Line Loss		Conditi	on Not te	ested			Status	pass		
Sensor Compone	nt Offset		Condition -0.20					Status	pass		
Sensor Compone	nt Span		Condition 1.025					Status	pass		
Sensor Compone	nt Cell B Freq.		Conditi	on 101.1	kHz			Status	pass		
Sensor Compone	nt System Memo		Conditi	on				Status	pass		
Sensor Compone	nt Sample Train		Conditi	on Good				Status	pass		
Sensor Compone	nt Cell B Pressure		Conditi	on				Status	pass		
Sensor Compone	nt Cell B Flow			on 0.69 l				Status			
Sensor Compone	nt Cell A Tmp.		Conditi	on 35.9 (2			Status			
-	nt Cell A Pressure			on 733 m				Status			
	onent Cell A Noise			on 1.1 pp				Status			
_	Cell A Freq.			on 88.9				Status			
Sensor Compone	sor Component Cell A Flow			Condition 0.70 lpm				Status	pass		
Sensor Compone	nt Battery Backup		Conditi	on N/A				Status			
Sensor Compone	Component Zero Voltage			Condition N/A				Status	pass		

Wind Speed Data Form

Mfg	Serial Numbe	er Ta Site	Тес	chnician	Site Visit Date	e Parameter	Owner ID
RM Young	17096wsp	BEL116	Eri	ic Hebert	11/20/2012	Wind Speed	03416
				Mfg	RM Young	Parame	ter wind speed
				Serial Number		Tfer De	esc. wind speed motor (h
				Tfer ID	01262		
Prop or Cups SN	65736			Slope	1.000	000 Intercept	0.00000
Prop or Cups To		0.2 to	0.3	Cert Date	1/13/20	010 CorrCoff	1.00000
Prop Correction	Fact 0.0512			Mfg	RM Young	Parame	ter wind speed
				Serial Number		Tfer De	sc. wind speed motor (I
				Tfer ID	01261		
				Slope	1.000	000 Intercept	0.00000
				Cert Date	1/13/20	010 CorrCoff	1.00000
D	AS 1:	D	AS 2:				
Le	ow Range Hig	gh Range Lo	ow Range H	igh Range			
Abs Avg Err	0.05	0.00%					
Abs Max Er	0.20	0.00%					
UseDescription:	InputDevice:	Input RPM:	Input m/s:	Output V:	DAS m/s:	Diff/ %Diff:	Difference:
primary	none	0	0.20	0.000	0.0		-0.20
primary	01262	200	1.02	0.000	1.0		0.00
primary	01262	400	2.05	0.000	2.1		0.00
primary	01262	800	4.10	0.000	4.1		0.00
primary	01262	1200	6.14	0.000	6.1	0.00%	
primary	01262	2400	12.29	0.000	12.3	0.00%	
primary	01262	4000	20.48	0.000	20.5	0.00%	
primary		9400	48.13	0.000	48.1	0.00%	
Sensor Compo			Conditio	n		Status pass	
Sensor Compo	nent System Men	no	Conditio	n		Status pass	
Sensor Compo	nent Sensor Plum	hb	Conditio	n Plumb		Status pass	
Sensor Compo	nent Sensor Heat	ter	Conditio	n N/A		Status pass	
Sensor Compo	Sensor Component Prop or Cups Condition Condit			n Good		Status pass	
Sensor Compo	nent Condition		Conditio	n Good		Status pass	

Wind Direction Data Form

Mfg	Serial Nu	mber Ta	Site		Technician			Site Visit Date Param		eter	Owner ID)	
RM Young	17096wdi	•	BEL1	16		Eric Hebert		11/20/20	12	12 Wind Dire		03416	
						Mfg Serial Nun Tfer ID	nber	RM Youn 01266	g	1		wind direction	vheel
Vane SN:	I/A 15 to	C. A	. Align	. deg. tru 3	1e: 60								
						Mfg		Ushikata		P	arameter	wind direction	
						Serial Nun	nber	190037		 	fer Desc.	transit	
						Tfer ID		01265]	L		
						Slope			1.00000	Inte	ercept	0.000)00
						Cert Date			1/4/201	1 Cor	rCoff	1.000)00
	DAS 1:			DAS 2:									
	Orientation	Linearity	y:	Orienta	tion	Linearity:							
Abs Avg Err	2.3		1.3										
Abs Max Er	3		2										
UseDescriptio	n: TferID:	In	put Rav	w: Line	earity	Output V:	Out	put Deg.:	Differ	ence:	Change:	Error:	
primary	01265		90			0.000		88		2		2	
primary	01265		180			0.000		177		3		3	
primary	01265		270			0.000		267		3		3	
primary	01265		360			0.000		1		1		1	
primary	01266		0		 	0.000		1		1	47	2	
primary	01266		45			0.000		44		1	43	-2	
primary	01266		90 135		 	0.000		88 133		2	44	-1	
primary primary	01266		135			0.000		133		2	43	-1	
primary	01200		225		<u> </u>	0.000		221		4	44	-1	
primary	01266		270			0.000		267		3	46	1	
primary	01266		315			0.000		314		1	47	2	
Sensor Comp	ponent Mast				Condi	ition Good				Status	pass]
Sensor Comp	condition	n			Condi	ition Good				Status	pass]
Sensor Comp	ponent Sensor	Heater			Condi	ition N/A				Status	pass]
Sensor Comp	ponent Sensor	Plumb			Condi	ition Plumb				Status	pass]
Sensor Component Torque Co				Condi	ndition Status			s pass					
Sensor Component Vane Condition C				Condi	ondition Good				Status	pass]	
Sensor Comp	nponent System Memo				Condi	ondition				Status	pass]

Temperature Data Form

Sensor Component Blower

Sensor Component System Memo

Mfg	Serial Number	Ta Site	Тес	chnician	Site Visit Date	Parame	eter	Owner ID
RM Young	12533	BEL116	Eri	ic Hebert	11/20/2012	Temper	ature	06308
				Mfg	Eutechnics	Pa	rameter	emperature
				Serial Number	01D102193	Tf	er Desc. F	RTD translator
				Tfer ID	01231			
DAS 1:	DAS	2.		Slope	1.0015	57 Inter	rcept	-0.02095
		Avg Err Abs	Max Er	Cert Date	2/10/20	12 Corr	Coff	1.00000
				Mfg	Eutechnics	Pa	rameter 7	emperature
				Serial Number	01H0060	Tf	er Desc. F	RTD probe
				Tfer ID	01230			
				Slope	1.0015	57 Inter	rcept	-0.02095
				Cert Date	2/10/20	12 Corr	Coff	1.00000
0.15	0.33							
UseDesc.:	Test type:	InputTmpRaw	InputTmpCo	orr.: OutputTmpS	Signal: OutputSig	gnalEng:	OSE Unit	: Difference:
primary	Temp Low Range	0.24	0.26	0.000	0.1	17	С	-0.09
primary	Temp Mid Range	14.28	14.28	0.000			С	0.03
primary	Temp High Range	47.01	46.96	0.000	47.	29	С	0.33
Sensor Com	ponent Shield		Conditio	Moderately cle	an	Status	pass	
Sensor Component Blower Status Switch Co			Conditio	Functioning		Status	pass	

Condition Functioning

Condition

Status pass

Status pass

2 Meter Temperature Data For

Sensor Component Shield

Calc. Difference

Mfg	Serial Number	r Ta Site	Tech	nnician	Site Visit Date	Parameter	Owner ID
RM Young	12534	BEL116	Eric	Hebert	11/20/2012	Temperature2meter	06309
				Mfg Serial Number	Eutechnics 01H0060	Parameter Ten Tfer Desc. RTI	
				fer ID	01230		
DAS 1:	DA	S 2:	S	Slope	1.0015	7 Intercept	-0.02095
Abs Avg Err At		s Avg Err Abs	Max Er	Cert Date	2/10/201	2 CorrCoff	1.00000
			N	Mfg	Eutechnics	Parameter Ten	nperature
			S	Serial Number	01D102193	Tfer Desc. RTI	D translator
			r	Ffer ID	01231		
			S	Slope	1.0015	7 Intercept	-0.02095
			C	Cert Date	2/10/201	2 CorrCoff	1.00000
0.17	0.35						
UseDescription:			<u> </u>			ignalEng: OSE Unit:	
1 0	Cemp Low Rang	0.24		0.26	0.000	0.14 C	-0.12
	Cemp Mid Rang Cemp High Ran	14.28 47.01		14.28 46.96	0.000	14.31 C 47.31 C	0.03
Sensor Compone				Functioning	0.000	Status pass	0.33
Sensor Compone	ent System Mem	0	Condition	1		Status pass	
Sensor Compone	ent Blower		Condition	Functioning		Status pass	
Sensor Compone	ent Properly Site	d	Condition	Properly sited		Status pass	

Condition Moderately clean

Status pass

Humidity Data Form

Mfg	Serial Nu	nber Ta S	Site		Tec	hnician		Site V	isit Date	Para	meter	Owner ID
Rotronic	123962	123962 BEL116			Eric	Eric Hebert		11/20	/2012	Relati	ive Humidity	06219
]	Mfg		Rotron	lic		Parameter Re	lative Humidity
					:	Serial Nu	mber	12443	2		Tfer Desc. Hy	groclip
					,	Tfer ID		01225				
					:	Slope			1.0000	0 In	tercept	0.00000
	DAS 1:		DA	S 2:		Cert Date	e		2/13/201	2 C	orrCoff	1.00000
	Low Range	High Rang		w Range	Hi	igh Range	e					
Abs Avg Err	7.1		5.9									
Abs Max Er	8.0	:	5.9									
UseDesc.:	Test type:	Device	: In	out RH:	GT	L Raw:	RH (Corr.:	DAS V	olts:	DAS %RH:	Difference:
primary	RH Low Range	Hygrocli	ip	32.8		33.4	32	2.8	0.38	9	38.9	6.1
primary	RH Low Range	Hygroch	ip	52.9	4	55.1	52	2.9	0.60	9	60.9	8.0
primary	RH High Range	Hygrocli	ip	93.6	9	91.4	93	.6	0.99	5	99.5	5.9
Sensor Com	ponent System	Memo		Con	ditio	n				Statu	Is pass	
Sensor Com	ponent Blower			Con	ditio	n N/A				Statu	Is pass	
Sensor Com	ponent Blower S	Status Switch	า	Con	ditio	n N/A				Statu	Is pass	
Sensor Com	ponent RH Filte	r		Con	ditio	n Dirty				Statu	IS Fail	
Sensor Com	ponent Shield			Con	ditio	n Modera	tely clea	an		Statu	Is pass	

Solar Radiation Data Form

Mfg	Serial Nun	nber Ta	Site	Т	echni	ician	Site Visit Date	Parar	neter	Owner ID
Licor	PY47675		BEL116	E	Eric He	ebert	11/20/2012	Solar	Radiation	04935
Mfg	RM Young				Mf	g	Eppley]	Parameter	solar radiation
SN/Owner ID	none	04888			Ser	rial Number	10765]	Ffer Desc.	SR transfer translat
Parameter	Solar Radiation	Translat	or		Tfe	er ID	01246			
DAS 1:		DAS 2:			Slo	ре	1.000	00 Int	tercept	0.00000
% Diff of Avg	%Diff of Max	%Diff o	f Avg %I	Diff of Max	Cer	rt Date	1/6/20	10 Co	orrCoff	1.00000
					Mf	g	Eppley		Parameter	solar radiation
					Ser	ial Number	34341F3]	Ffer Desc.	SR transfer sensor
					Tfe	er ID	01245			
					Slo	ре	1.000	00 Int	tercept	0.00000
					Cei	rt Date	12/16/20	10 Co	orrCoff	1.00000
6.4%	6.4%		0.0%	0.0%						
UseDescription	: Measure Dat	te Mea	asureTime	Tfer Cor	rr:	DAS w/r	n2: PctDif	ference:		
primary	11/20/2012	,	11:00	299		318		6.4%	%	
primary	11/20/2012	,	12:00	288		304		5.6%	%	
primary	11/20/2012		13:00	216		232		7.4%	%	
Sensor Comp	onent Sensor L	evel		Condit	tion L	evel		Statu	s pass	
Sensor Comp	onent Sensor C	lean		Condit	ion C	Clean		Statu	s pass	
Sensor Comp	onent Properly	Sited		Condit	ion P	Properly sited		Statu	s pass	
Sensor Comp	onent System M	/lemo		Condit	ion			Statu	s pass	

Surface Wetness Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
RM Young	none	BEL116	Eric Hebert	11/20/2012	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	1.017	1.02	V	N/A	V
primary	dry	N/A	0.008	0.01	V	N/A	V
Sensor Compone	nt Grid Orientati	on	Condition	North	Stat	us pass	
Sensor Compone					Sta		
Sensor Compone	nt Grid Clean		Condition	Clean	Stat	tus pass	
Sensor Compone	nt Grid Angle		Condition	About 45 deg	Stat	us pass	
			L				
Sensor Compone	Grid Condition	n	Condition	Good	Stat	tus pass	
Sensor Compone	nt System Memo	0	Condition		Stat	tus pass	
S		4	C 111	Droparly aited	St	D 000	
Sensor Compone	nt Fropeny Siled	1	Condition	Properly sited	Stat	tus pass	
Sensor Compone	nt Grid Type		Condition	Grid without ho	les Stat	tus pass	

Precipitation Data Form

Mfg	Serial	Serial Number Ta Site			echnician		Site	Visit Date	Parameter		Owner ID
Texas Electror	nics 43527	'- 807	BEL116	E	ric Hebert		11/2	20/2012	Precipitat	ion	06332
					Mfg PM			>	Par	ameterP	recipitation
DAS 1:		DAS 2:			Serial Nur	nber	EW-	06134-50	Tfe	r Desc. 2	50ml graduate
A Avg % Diff			Dif A N	/Iax % Di	Tfer ID		0125	50			
5.0%	8.	0%								г	
					Slope			1.0000	0 Interc	ept	0.00000
					Cert Date			9/5/200	5 Corr(Coff	1.00000
	-	-				1		•			
UseDesc.	Test type:	TferVolume:		*			<u> </u>	*			ts:PctDifference
primary	tip check	10 manual	1	2 sec	0.10	0.1		in	in ·	ml	2.00/
primary primary	test 1 test 2	231.5 231.5	1 2	8 sec 10 sec	0.50	0.4		in in	in in	ml ml	-2.0%
			2			0	FU				-0.070
Sensor Com	ponent Syst	em Memo		Conditi	ion				Status F	ass	
Sensor Com	ponent Sens	sor Heater		Conditi	ion Function	ing			Status F	ass	
Sensor Com	ponent Gau	ge Screen		Conditi	ion Installed				Status F	ail	
Sensor Com	ponent Leve	əl		Conditi	ion Level				Status P	ass	
Sensor Com	Component Gauge Drain Screen			Conditi	ion Installed				Status P	ass	
Sensor Com	Gensor Component Gauge Clean			Conditi	ion Clean				Status P	ass	
Sensor Com	ponent Fun	nel Clean		Conditi	ion Clean				Status F	ass	
Sensor Com	Sensor Component Condition			Conditi	ion Good				Status F	ass	
Sensor Com	aponent Properly Sited Co			Conditi	ion Properly	sited			Status F	ass	

Infrastructure Data For

Site ID	BEL116	Technician Eric Heb	ert Site Visit Date 11/20/2012
Shelter	Make	Shelter Model	Shelter Size
Ekto		8810 (s/n 2140-4)	640 cuft

Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Sample Tower Type	Condition	Туре В	Status	pass
Sensor Component	Conduit	Condition	Good	Status	pass
Sensor Component	Met Tower	Condition	Good	Status	1
Sensor Component	Moisture Trap	Condition	Installed	Status	pass
Sensor Component	Power Cables	Condition	Good	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 Floor	Condition	Good	Status	pass
Sensor Component	Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component	Signal Cable	Condition	Good	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

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	44281	BEL116	Eric Hebert	11/20/2012	Shelter Temperature	none
DAS 1:	DAS 2: Max Er Abs Avg 0.19		Mfg Serial Number Tfer ID Slope Cert Date Mfg Serial Number Tfer ID Slope	Eutechnics 01D102193 01231 1.0015 2/10/201 Eutechnics 01H0060 01230 1.0015	Parameter She Tfer Desc. RTI 7 Intercept 2 CorrCoff Parameter She Tfer Desc. RTI 7 Intercept 1 Tfer Desc. RTI 1 Tfer Desc. RTI 1 Tfer Desc. RTI 1 Tfer Desc. RTI	elter Temperatur D translator -0.02095 1.00000 elter Temperatur D probe -0.02095
			Cert Date	2/10/201	2 CorrCoff	1.00000

UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	23.44	23.42	0.000	23.6	С	0.19
primary	Temp Mid Range	24.27	24.25	0.000	24.2	С	-0.02

Field Systems Comments

1 Parameter: SiteOpsProcedures

The site operator was incorrectly recording the filter final flow as the filter installed flow (on the SSRF) as instructed by the previous site operator. This was discussed during the audit and the correct procedures were described by the auditor.

2 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.

3 Parameter: ShelterCleanNotes

Larger shelter installed since previous audit visit in 2010.

Site ID BEL116	Technician Eric Hebert	Site Visit Date 11/2	20/2012
Site Sponsor (agency)	EPA	USGS Map	Laurel
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	39.02817
Site Address 1	BARC old airport	Audit Longitude	-76.81712
Site Address 2	Springfield Road	Audit Elevation	2
County	Prince George's	Audit Declination	-11
City, State	Laurel, MD		
Zip Code	20708	Present Fire Extinguisher ☑	No inspection date
Fime Zone	Eastern	First Aid Kit	
Primary Operator	Dan Goldberg	Safety Glasses	
Primary Op. Phone #	(301) 405-7638	Safety Hard Hat	
Primary Op. E-mail	dgoldb@atmos.umd.edu	Climbing Belt	
Backup Operator	Allison Ring	Security Fence	
Backup Op. Phone #		Secure Shelter	
Backup Op. E-mail	aring1@umd.edu	Stable Entry Step	
Shelter Working Room		Intry step Iodel	Shelter Size Unknown
	Contraction of the second second second second		
	Notes		

Field Systems Data Form

BEL116

F-02058-1500-S2-rev001

Site ID

Technician Eric Hebert

Site Visit Date 11/20/2012

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	25 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	<u> </u>	
Secondary road, heavily traveled	500 m		
Secondary road, lightly traveled	200 m		
Feedlot operations	500 m]
Intensive agricultural ops (including aerial spraying)	500 m		
Limited agricultural operations	200 m]
Large parking lot	200 m		
Small parking lot	100 m		
Tree line	50 m	5	
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.

		nta Form	F-02058-1500-S3-rev001		
Site	ID BEL116	Technician Eric Hebert	Site Visit Date 11/20/2012		
	Are wind speed and d being influenced by o	irection sensors sited so as to avoid bstructions?			
	(i.e. wind sensors show	inted so as to minimize tower effects? ild be mounted atop the tower or on a boom >2x the max diameter of the ing wind)			
3	Are the tower and ser	sors plumb?			
		shields pointed north or positioned to ources such as buildings, walls, etc?			
	conditions? (i.e. grou	RH sensors sited to avoid unnatural ad below sensors should be natural y sloped. Ridges, hollows, and areas of l be avoided)			
6]	Is the solar radiation	sensor plumb?			
	Is it sited to avoid sha light?	ding, or any artificial or reflected			
8]	Is the rain gauge plur	ab?			
	Is it sited to avoid she towers, etc?	ltering effects from buildings, trees,			
	Is the surface wetness facing north?	sensor sited with the grid surface			
11	Is it inclined approxi	mately 30 degrees?	About 45 degrees		

Field S	Systems Dat	a Form			F-02058-1500-S4-rev001
Site ID	BEL116	Technician Eric Heb	pert	Site Visit Date 11/2	0/2012
	ll the meterological ition, and well main	sensors appear to be intact, in ntained?	n good 🔽		
2 Are all the meteorological sensors operational online, and reporting data?			and 🗹		
3 Are 1	the shields for the t	emperature and RH sensors c	lean? 🗹		
Are 1	the aspirated motor	rs working?			
	e solar radiation se ches?	nsor's lens clean and free of			
5 Is the	e surface wetness so	ensor grid clean and undamag	ged? 🔽		
	the sensor signal an ition, and well main	id power cables intact, in good ntained?			
Contraction of the second second	the sensor signal an the elements and v	d power cable connections pr vell maintained?	otected 🔽		
Paramete	er	Manufacturer M	lodel	S/N	Client ID
Solar Rad	liation	Licor	-200	PY47675	04935
Shield (10) meter)	RM Young As	spirated 43408	none	05042

The second s		and the second	CONTRACTOR AND A TOP OF A DATA
RM Young	Aspirated 43408	none	05041
RM Young	58101	none	04608
RM Young	41342VO	12533	06308
RM Young	41342VO	12534	06309
Rotronic	MP 101A-C4	123962	06219
Texas Electronics	TR-525i-HT	43527-807	06332
Universal Tower	unknown	none	06484
RM Young	AQ05103-5	17096wsp	03416
RM Young	AQ05103-5	17096wdr	03416
	RM Young RM Young RM Young Rotronic Texas Electronics Universal Tower RM Young	RM Young58101RM Young41342VORM Young41342VORotronicMP 101A-C4Texas ElectronicsTR-525i-HTUniversal TowerunknownRM YoungAQ05103-5	RM Young58101noneRM Young41342VO12533RM Young41342VO12534RotronicMP 101A-C4123962Texas ElectronicsTR-525i-HT43527-807Universal TowerunknownnoneRM YoungAQ05103-517096wsp

Field Systems Data Form					F-02058-1500-S5-rev001
Site	ID	BEL116	Technician Eric Hebert		Site Visit Date 11/20/2012
	Siting C	riteria: Are th	e pollutant analyzers and deposition	<u>on equipr</u>	nent sited in accordance with 40 CFR 58, Appendix E
1		ample inlets hat the second se	ave at least a 270 degree arc of		
2	Are the	sample inlets 3	3 - 15 meters above the ground?		
3		sample inlets > neters from tre	> 1 meter from any major obstruct ees?	tion, 🗹	
	Pollutan	it analyzers an	d deposition equipment operation	s and mai	intenance
1		nalyzers and e n and well mai	equipment appear to be in good intained?		
2	Are the reportin		monitors operational, on-line, and		
3	Describe	e ozone sample	e tube.		1/4 teflon by 15 meters
4	Describe	e dry dep samı	ole tube.		3/8 teflon by 15 meters
5		ine filters used location)	in the ozone sample line? (if yes		At inlet only
6	Are sam		, free of kinks, moisture, and		
7	Is the ze	ro air supply o	desiccant unsaturated?		
8	Are then	e moisture tra	ps in the sample lines?		
9	Is there clean?	a rotometer in	the dry deposition filter line, and	is it 🗹	Clean and dry
Par	ameter		Manufacturer Mode	el	S/N Client ID

Parameter	Manufacturer	Model	S/N	Client ID	
Sample Tower	Aluma Tower	В	none	000127	
Ozone	ThermoElectron Inc	49i A1NAA	1030244803	000692	
Filter pack flow pump	Thomas	107CAB18	1192001881	02755	
Zero air pump	Teledyne	701H	606	000776	

Field Systems Data Form							F-0	2058-15	00-S6-rev001
Site	te ID BEL116 Technician Eric Hebert				Site Visit D	ate 11/20/201	12		
	DAS, se	nsor translators, and p	peripheral equi	pment operation	<u>os ar</u>	<u>ud maintenance</u>			
1		DAS instruments appearintained?	ar to be in good	condition and					
2		he components of the backup, etc)	DAS operation	al? (printers,					
3		nalyzer and sensor sig g protection circuitry?		hrough		Met sensors only	y		
4		signal connections pro intained?	tected 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	ive a stable pov	ver source?					
8	Is the in	strument shelter temp	erature control	led?					
9	Is the m	et tower stable and gr	ounded?			Stable		Grounded	
10	Is the sa	mple tower stable and	grounded?						
11									

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D520	unknown	000280
DAS	Campbell	CR3000	2120	000341
Modem	Raven	H4222-C	0802310513	06382
Solar Radiation Translator	RM Young	70101-X	none	04888

Field Systems Data	Fo	rm				F-02	058-	1500-S7-rev001	
Site ID BEL116		Tec	hnician	Eric Hebert	Site Visit Date	11/20/2012		The second second	
				State Sector					
Documentation									
Does the site have the require	ed iı	nstrum	ent and	equipment manu:	<u>als?</u>				
	Yes					Yes	No	N/A	
Wind speed sensor		 ✓ 	States Links	Data lo	the second s				
Wind direction sensor		 ✓ 	Contract of the local sectors	Data lo					
Temperature sensor	H	 ✓ 		STATISTIC CONTRACTOR	hart recorder				
Relative humidity sensor			ALC: NO DE LA COMPANY	Сотр					
Solar radiation sensor			STREET, STREET, ST	Moden			2002 (S. 2		
Surface wetness sensor		 <th>Contraction of the</th><th>Printer</th><th></th><th></th><th></th><th></th>	Contraction of the	Printer					
Wind sensor translator					ir pump		\checkmark		
Temperature translator					low pump				
Humidity sensor translator Solar radiation translator		~		UPS	protector				
			State of the second		ing protection device				
Tipping bucket rain gauge Ozone analyzer			A CONTRACTOR OF	STEPPEN STREET,	heater				
Filter pack flow controller			A CONTRACTOR OF THE OWNER		air conditioner				
Filter pack MFC power supply			2012/2012/2012 01	Sheller					
Does the site have the requi		alle New	ost recen	nt QC documents	and report forms?				
	Pre	esent				Curren	ıt		
Station Log									
SSRF									
Site Ops Manual			Oct 200						
HASP			Nov 201						
Field Ops Manual			Nov 201	0					
Calibration Reports									
Ozone z/s/p Control Charts									
Preventive maintenance schedu	1								
1 Is the station log properly of	com	pleted	during e	every site visit? 🔽	3				
2 Are the Site Status Report current?	For	ms bei	ng comp	leted and 🛛	With the exception	of final flow			
3 Are the chain-of-custody for sample transfer to and from			erly used	l to document	1				
4 Are ozone z/s/p control cha current?	rts	ргореі	ly comp	leted and	Control charts not u	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:								

Fi	eld Sy	ystems Dat	a Form			F-02058-1500-S8				
Site	e ID	BEL116	Technician	Eric Hebert	Site Visit Date	11/20/2012				
1 2	Has th course Has th	? If yes, when an le backup operate	res tended a formal CAS d who instructed? or attended a formal when and who instru	CASTNET						
3	Is the s schedu		rly on the required T							
4		e standard CAST ed by the site ope	NET operational pro rator?	cedures being						
5			nowledgeable of, and es? (including docum							

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

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

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

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

- **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 autom	atic and	manual	z/s/p	checks	monitored	and
	reported? If y	es, 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:

 \checkmark

The site operator was incorrectly recording the filter final flow as the filter installed flow (on the SSRF) as instructed by the previous site operator. This was discussed during the audit and the correct procedures were described by the auditor.

Fi	eld Systems Data Form				F-02058-1500-S9-rev001			
Site	BEL116 Ter	hnician	Eric Hebert		Site Visit Date	11/20/2012		
	Site operation procedures							
1	Is the filter pack being changed ever	y Tuesda	y as scheduled?		Filter changed morr	nings		
2	Are the Site Status Report Forms be correctly?	ing comp	leted and filed		With noted exception	ons		
3	Are data downloads and backups being performed as scheduled?				No longer required			
4	Are general observations being made and recorded? How?				SSRF			
5	Are site supplies on-hand and replenished in a timely fashion?							
6	Are sample flow rates recorded? How?				SSRF, call-in			
7	Are samples sent to the lab on a regulation fashion?	ılar schee	lule in a timely					
8	Are filters protected from contamina and shipping? How?	ation dur	ing handling		Clean glove on and off			
9	Are the site conditions reported regulations manager or staff?	ilarly to t	he field					
QC	Check Performed	Freq	uency			Compliant		
N	Aulti-point MFC Calibrations	Sem	iannually					
F	Tow System Leak Checks	✓ Wee	kly					
F	Tilter Pack Inspection			1491123				
F	Tow Rate Setting Checks	Weekly						
	/isual Check of Flow Rate Rotometer							
	In-line Filter Inspection/Replacement			21967773				
S	ample Line Check for Dirt/Water	✓ Wee	kly	628				
	ide any additional explanation (photo ral or man-made, that may affect the				y) regarding conditi	ions listed above, or any other features,		

APPENDIX B

CASTNET Site Spot Report Forms

Data Compile	ed: 10/28/2012 6:00:22 PM						
SiteVisitDat	e Site	Technician					
10/09/2012	ACA416	Eric Hebert					
Line Audit	ed Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units
1 Wind S	Speed average error below 5m/s in	m/s P	3	0.5	4	0.20	m/s
2 Wind S	Speed max error below 5m/s in m/s	Р	3	0.5	4	0.22	m/s
3 Wind S	Speed average % difference above :	5 m/s P	3	5	4	0.7	%

3	Wind Speed average % difference above 5 m/s	Р	3	5	4	0.7	%	Р
4	Wind Speed max % difference above 5 m/s	Р	3	5	4	1.6	%	Р
5	Wind Speed Torque average error	Р	3	0.5	1	0.20	g-cm	Р
6	Wind Speed Torque max error	Р	3	0.5	1	0.2	g-cm	Р
7	Wind Direction Input Deg True average error (de	Р	2	5	5	3.4	degrees	Р
8	Wind Direction Input Deg True max error (deg)	Р	2	5	5	5	degrees	Р
9	Wind Direction Linearity average error (deg)	Р	2	5	8	1.2	degrees	Р
10	Wind Direction Linearity max error (deg)	Р	2	5	8	4	degrees	Р
11	Wind Direction Torque average error	Р	2	20	1	6	g-cm	Р
12	Wind Direction Torque max error	Р	2	20	1	7	g-cm	Р
13	Temperature average error	Р	4	0.5	12	0.05	с	Р
14	Temperature max error	Р	4	0.5	12	0.09	с	Р
15	Delta Temperature average error	Р	5	0.5	12	0.06	с	Р
16	Delta Temperature max error	Р	5	0.5	12	0.07	с	Р
17	Relative Humidity average above 85%	Р	6	10	1	5.1	%	Р
18	Relative Humidity max above 85%	Р	6	10	1	5.1	%	Р
19	Relative Humidity average below 85%	Р	6	10	2	6.7	%	Р
20	Relative Humidity max below 85%	Р	6	10	2	7.7	%	Р
21	Solar Radiation % diff of avg	Р	9	10	4	2.91	%	Р
22	Solar Radiation % diff of max STD value	Р	9	10	4	2.6	%	Р
23	Precipitation average % difference	Р	1	10	2	19.0	%	Fail
24	Precipitation max % difference	Р	1	10	2	22.0	%	Fail
25	Ozone Slope	Р	0	1.1	4	0.96212	unitless	Р
26	Ozone Intercept	Р	0	5	4	0.29896	ppb	Р
27	Ozone correlation	Р	0	0.995	4	0.99993	unitless	Р
28	Ozone % difference avg	Р	7	10	4	3.2	%	Р
29	Ozone % difference max	Р	7	10	4	4.3	%	Р
30	Flow Rate average % difference	Р	10	5	2	1.96	%	Р
31	Flow Rate max % difference	Р	10	5	2	2.09	%	Р
32	DAS Time maximum error	Р	0	5	1	0.40	min	Р
33	DAS Voltage average error	Р	2	0.003	14	0.0003	V	Р
34	Surface Wetness Response	Р	12	100	1	95.5		Р

Pass/Fail

P P

SiteVisitDate	Site	Technician		_				
10/09/2012	ACA416	Eric Hebert						
35 Shelter Te	emperature average error	Р	5	1	2	0.53	с	
36 Shelter Te	emperature max error	Р	5	1	2	0.67	с	

10/09/2012 ACA416

Field Performance Comments

208										
The ozone sample train is composed of materials other than the recommended materials which are Teflon and glass only.										
193										
104										
The tipping bucket heater is generating excessive heat, enough to evaporate water on the funnel.										
128										
g										

The solar radiation sensor is mounted on the meteorological tower and is difficult to access. The site operator does not check the sensor weekly.

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: ShelterCleanNotes

The shelter is clean and well organized.

4 Parameter: PollAnalyzerCom

The ozone sample inlet has a stainless steel funnel and stainless steel fittings. The recommended material for ozone sample train is Teflon or glass.

5 Parameter: MetSensorComme

The solar radiation sensor is a full bubble off level and bias to the west.

6 Parameter: MetOpMaintCom

The tipping bucket heater thermostat has failed in the closed circuit position allowing the heater to be continuously on. The tipping mechanism was beginning to melt. The heater was unplugged during the site audit.

Data Compiled: 1/18/2013 12:03:13 PM

SiteVisitDate Site Technician 10/10/2012 HOW191 Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	3	0.26	с	Р
2	Temperature max error	Р	4	0.5	3	0.34	с	Р
3	Ozone Slope	Р	0	1.1	3	0.98987	unitless	Р
4	Ozone Intercept	Р	0	5	3	0.57532	ppb	Р
5	Ozone correlation	Р	0	0.995	3	1.00000	unitless	Р
6	Ozone % difference avg	Р	7	10	3	3.0	%	Р
7	Ozone % difference max	Р	7	10	3	6.1	%	Р
8	Flow Rate average % difference	Р	11	5	2	0.24	%	Р
9	Flow Rate max % difference	Р	11	5	2	0.38	%	Р
10	Shelter Temperature average error	Р	5	1	3	0.26	с	Р
11	Shelter Temperature max error	Р	5	1	3	0.40	с	Р

10/10/2012 HOW191

Field Performance Comments

1	Parameter:	Flow Rate	SensorComponent:	System Memo	CommentCode	209
	This parameter	r is being measured at 23	.5 meters from the ground	and above a tree canopy.		
2	Parameter:	Temperature	SensorComponent:	System Memo	CommentCode	209

Parameter: Temperature SensorComponent: System Memo This parameter is being measured at 23.5 meters from the ground and above a tree canopy.

Field Systems Comments

Parameter: SiteOpsProcedures 1

The daily zero, span, and precision checks are conducted through one of the 8 inlets only.

2 Parameter: SitingCriteriaCom

> The CASTNET filter pack at this location is located above a tree canopy at approximately 23.5 meters from the ground. A second filter is located below the canopy at approximately 2 meters. This is an AmeriFlux site which is approximately 2.5 km to the SW of the HOW132 CASTNET site. See the map included as Figure 1.

3 Parameter: ShelterCleanNotes

The custom built shelter is clean and organized.

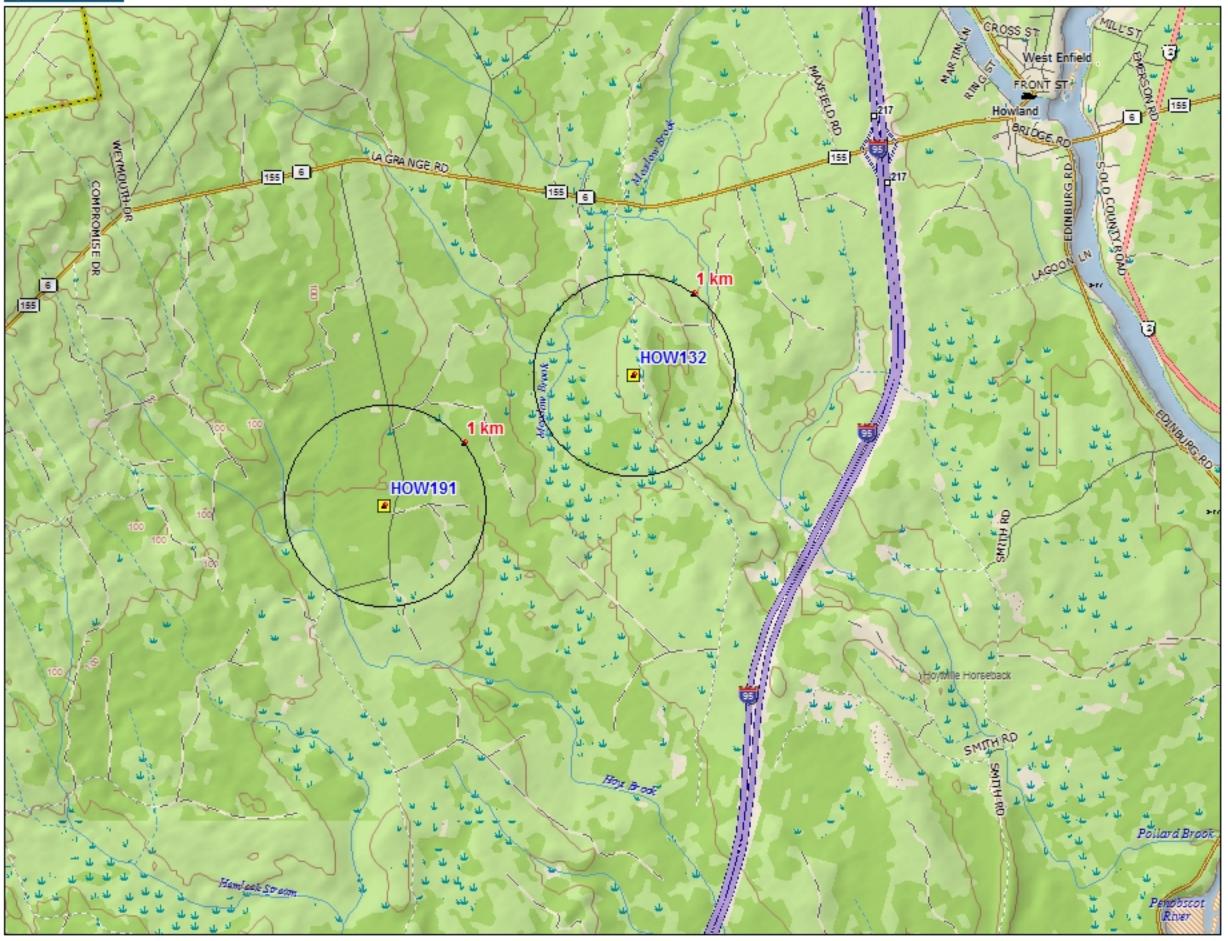
Parameter: PollAnalyzerCom 4

> Ozone measurements at this location are being conducted at 8 levels through the tree canopy from 2 meters to 23.5 meters. Three minute measurements for each height are aggregated into an hourly average for each height to produce a through-canopy ozone profile.

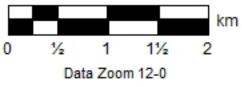
5 Parameter: MetSensorComme

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

Delorme



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MN (16.8° W)

Data Compiled: 1/17/2013 2:09:52 PM

SiteVisitDate		Site	Technician				
10/10/2012		HOW191-B	Eric Hebert				
Line	e Audited Parameter		DAS	Ch. #	Criteria +/-	Counts	QaResult
1	Temperat	ure average error	Р	4	0.5	3	0.08
2	Temperat	ure max error	Р	4	0.5	3	0.17
3	Flow Rat	e average % difference	Р	10	5	2	0.46
4	Flow Rate	e max % difference	Р	10	5	2	0.90

Field Performance Comments

1	Parameter:	Flow Rate	SensorComponent:	System Memo	CommentCode	210
	This paramete					
2	Parameter:	Temperature	SensorComponent:	System Memo	CommentCode	210

This parameter is being measured at 2 meters from the ground and below a tree canopy.

Units

с

с %

%

Pass/Fail

Р

P P

Data Compiled:

d: 10/28/2012 8:20:23 PM

SiteVisitDateSiteTechnician10/11/2012HOW132Eric 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	0.25	с	Р
3	Ozone Slope	Р	0	1.1	4	0.98028	unitless	Р
4	Ozone Intercept	Р	0	5	4	0.17489	ppb	Р
5	Ozone correlation	Р	0	0.995	4	0.99990	unitless	Р
6	Ozone % difference avg	Р	7	10	4	1.5	%	Р
7	Ozone % difference max	Р	7	10	4	2.6	%	Р
8	Flow Rate average % difference	Р	10	5	2	1.55	%	Р
9	Flow Rate max % difference	Р	10	5	2	1.72	%	Р
10	DAS Time maximum error	Р	0	5	1	0.00	min	Р
11	DAS Voltage average error	Р	7	0.003	28	0.0000	V	Р
12	Shelter Temperature average error	Р	5	1	9	0.48	с	Р
13	Shelter Temperature max error	Р	5	1	9	0.65	с	Р

10/11/2012 **HOW132**

Field Systems Comments

1 Parameter: SiteOpsProcComm

The site operator reported that he does not always use gloves to handle the filters consistently.

2 **Parameter:** SiteOpsProcedures

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

3 Parameter: SitingCriteriaCom

> There is a small power plant about 30 km northeast of the site. It is on-line approximately 50% of the time. The site is near a plantation and within 20 meters of the tree line.

4 Parameter: ShelterCleanNotes

The shelter is cleaner than it has been during previous audit visits

Parameter: PollAnalyzerCom 5

There is a tree branch that contacts the filter enclosure and the filter pack when the tower is lowered and raised.

Data Compiled: 10,

ed: 10/28/2012 8:55:37 PM

SiteVisitDateSiteTechnician10/12/2012ASH135Eric Hebert

Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
Temperature average error	Р	4	0.5	9	0.06	с	Р
Temperature max error	Р	4	0.5	9	0.09	с	Р
Ozone Slope	Р	0	1.1	4	1.01773	unitless	Р
Ozone Intercept	Р	0	5	4	-0.34656	ppb	Р
Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
Ozone % difference avg	Р	7	10	4	1.4	%	Р
Ozone % difference max	Р	7	10	4	1.5	%	Р
Flow Rate average % difference	Р	10	5	2	0.09	%	Р
Flow Rate max % difference	Р	10	5	2	0.11	%	Р
DAS Time maximum error	Р	0	5	1	0.00	min	Р
DAS Voltage average error	Р	7	0.003	28	0.0000	V	Р
Shelter Temperature average error	Р	5	1	9	0.55	с	Р
Shelter Temperature max error	Р	5	1	9	0.84	с	Р
	Temperature max error Ozone Slope Ozone Intercept Ozone correlation Ozone % difference avg Ozone % difference max Flow Rate average % difference Flow Rate max % difference DAS Time maximum error DAS Voltage average error Shelter Temperature average error	Temperature average errorPTemperature max errorPOzone SlopePOzone InterceptPOzone correlationPOzone % difference avgPOzone % difference maxPFlow Rate average % differencePFlow Rate max % differencePDAS Time maximum errorPDAS Voltage average errorPShelter Temperature average errorP	Temperature average errorP4Temperature max errorP4Ozone SlopeP0Ozone InterceptP0Ozone correlationP0Ozone % difference avgP7Ozone % difference maxP7Flow Rate average % differenceP10Flow Rate max % differenceP10DAS Time maximum errorP0DAS Voltage average errorP5	Temperature average errorP40.5Temperature max errorP40.5Ozone SlopeP01.1Ozone InterceptP05Ozone correlationP00.995Ozone % difference avgP710Ozone % difference maxP710Flow Rate average % differenceP105Flow Rate max % differenceP105DAS Time maximum errorP70.003Shelter Temperature average errorP51	Temperature average errorP40.59Temperature max errorP40.59Ozone SlopeP01.14Ozone InterceptP054Ozone correlationP00.9954Ozone % difference avgP7104Ozone % difference maxP7104Flow Rate average % differenceP1052Flow Rate max % differenceP1051DAS Voltage average errorP70.00328Shelter Temperature average errorP519	Temperature average errorP40.590.06Temperature max errorP40.590.09Ozone SlopeP01.141.01773Ozone SlopeP054-0.34656Ozone correlationP00.99540.99999Ozone % difference avgP71041.4Ozone % difference maxP71041.5Flow Rate average % differenceP10520.09Flow Rate max % differenceP10510.00DAS Time maximum errorP70.003280.0000Shelter Temperature average errorP5190.55	Temperature average errorP40.590.06cTemperature max errorP40.590.09cOzone SlopeP01.141.01773unitlessOzone SlopeP054-0.34656ppbOzone InterceptP00.99540.99999unitlessOzone v difference avgP71041.4%Ozone % difference maxP71041.5%Flow Rate average % differenceP10520.09%Flow Rate max % differenceP10510.00minDAS Time maximum errorP70.003280.0000VShelter Temperature average errorP5190.55c

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:

1/7/2013 12:37:55 PM

SiteVisitDateSiteTechnician10/22/2012WST109Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	6	0.10	с	Р
2	Temperature max error	Р	4	0.5	6	0.21	с	Р
3	Ozone Slope	Р	0	1.1	4	0.99876	unitless	Р
4	Ozone Intercept	Р	0	5	4	0.16956	ppb	Р
5	Ozone correlation	Р	0	0.995	4	1.00000	unitless	Р
6	Ozone % difference avg	Р	7	10	4	0.2	%	Р
7	Ozone % difference max	Р	7	10	4	0.5	%	Р
8	Flow Rate average % difference	Р	10	5	3	0.82	%	Р
9	Flow Rate max % difference	Р	10	5	3	0.89	%	Р
10	DAS Time maximum error	Р	0	5	1	0.02	min	Р
11	DAS Voltage average error	Р	7	0.003	21	0.0001	V	Р
12	Shelter Temperature average error	Р	5	1	6	0.67	с	Р
13	Shelter Temperature max error	Р	5	1	6	0.76	с	Р

10/22/2012 WST109 Eric Hebert

Field Performance Comments

1 Parameter: Flow Rate

SensorComponent: Filter Position

CommentCode 71

The filter attachment plate is mounted too low in the enclosure resulting in the filter being exposed to wind-driven rain and in the standard geometric orientation.

Field Systems Comments

1 Parameter: 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.

SitingCriteriaCom 3 Parameter:

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.

Parameter: SiteOKNotes 4

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

Parameter: ShelterCleanNotes 5

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.

Data Compiled:

1/7/2013 1:40:40 PM

SiteVisitDateSiteTechnician10/23/2012ABT147Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	6	0.09	с	Р
2	Temperature max error	Р	4	0.5	6	0.14	с	Р
3	Ozone Slope	Р	0	1.1	4	0.96006	unitless	Р
4	Ozone Intercept	Р	0	5	4	0.29628	ppb	Р
5	Ozone correlation	Р	0	0.995	4	0.99995	unitless	Р
6	Ozone % difference avg	Р	7	10	4	3.2	%	Р
7	Ozone % difference max	Р	7	10	4	4.1	%	Р
8	Flow Rate average % difference	Р	10	5	3	0.20	%	Р
9	Flow Rate max % difference	Р	10	5	3	0.39	%	Р
10	DAS Time maximum error	Р	0	5	1	0.02	min	Р
11	DAS Voltage average error	Р	7	0.003	14	0.0001	V	Р
12	Shelter Temperature average error	Р	5	1	6	1.23	с	Fail
13	Shelter Temperature max error	Р	5	1	6	3.4	с	Fail

10/23/2012 ABT147

Technician

Eric Hebert

Field Performance Comments

1 Parameter: Flow Rate SensorComponent: Moisture Present Co

CommentCode 72

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

Field Systems Comments

1 Parameter: SiteOpsProcComm

During the filter change-out it was observed that the filter flow pump was operating when the tower was lowered. This was discussed with the operator and the proper procedure was described by the auditor. The site operator indicated that she had been instructed by AMEC personnel to leave the filter installed and operate the flow pump while the tower was down.

2 Parameter: DasComments

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

3 Parameter: SitingCriteriaCom

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

4 Parameter: ShelterCleanNotes

The shelter is clean and well organized.

5 Parameter: MetSensorComme

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

Data Compiled:

1/4/2013 2:41:01 PM

SiteVisitDate	Site	Technician
10/23/2012	CDR119	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	1.00905	unitless	Р
2	Ozone Intercept	Р	0	5	4	0.34390	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
4	Ozone % difference avg	Р	7	10	4	1.3	%	Р
5	Ozone % difference max	Р	7	10	4	2.2	%	Р

Data Compiled: 1/7/2013 5:36:38 PM

SiteV	isitDate	Site	Technician					
10/24/2	2012	CAT175	Eric Hebert					
Line	Audited	d Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units
1	Temperat	ure average error	Р	4	0.5	12	0.15	с
2	Temperat	ure max error	Р	4	0.5	12	0.27	с
3	Flow Rate	e average % difference	Р	10	5	2	2.63	%
4	Flow Rate	e max % difference	Р	10	5	2	2.7	%
5	DAS Tim	e maximum error	Р	0	5	1	0.03	min
6	DAS Vol	tage average error	Р	5	0.003	7	0.0001	V

Field Performance Comments

1 Parameter: Flow Rate SensorComponent: Filter Position

CommentCode 71

The filter attachment plate is mounted too low in the enclosure resulting in the filter being exposed to wind-driven rain and in the standard geometric orientation.

Field Systems Comments

1 Parameter: SiteOpsProcComm

The site operator was not available to meet with the auditor during the audit visit due to a personal family matter.

2 Parameter: DasComments

The shelter is not temperature controlled. The site is solar and DC battery powered.

3 Parameter: ShelterCleanNotes

The shelter and grounds are neat and clean. The shelter roof has been repaired.

4 Parameter: PollAnalyzerCom

Ozone monitoring is no longer being conducted at the site.

Pass/Fail

Р Р Р Р Р Р

Data Compiled: 1/4/2013 3:19:59 PM

SiteVisit	Date Site	Technician					
10/24/2012	PAR107	Sandy Grenvill	e				
Line Au	udited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units
1 Oz	cone Slope	Р	0	1.1	4	1.00657	unitless
2 Oz	cone Intercept	Р	0	5	4	0.59606	ppb
3 Oz	cone correlation	Р	0	0.995	4	0.99999	unitless
4 Oz	cone % difference avg	Р	7	10	4	1.4	%
5 Oz	cone % difference max	Р	7	10	4	2.6	%

Field Performance Comments

1	Parameter:	Ozone	SensorComponent:	Cell B Freq.	CommentCode	99
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This analyzer diagnostic check is outside the manufacturer's recommended value.

Pass/Fail

Р

Р

Р

Р

Р

Data Compiled: 1/

1/4/2013 3:42:05 PM

SiteVisitDate	Site	Technician
10/25/2012	LRL117	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.96660	unitless	Р
2	Ozone Intercept	Р	0	5	4	0.56306	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
4	Ozone % difference avg	Р	7	10	4	2.8	%	Р
5	Ozone % difference max	Р	7	10	4	3.4	%	Р

Data Compiled: 1/7/2013 7:11:30 PM

SiteVisitDateSiteTechnician10/30/2012ARE128Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	6	0.08	с	Р
2	Temperature max error	Р	4	0.5	6	0.21	с	Р
3	Ozone Slope	Р	0	1.1	4	0.99968	unitless	Р
4	Ozone Intercept	Р	0	5	4	0.06764	ppb	Р
5	Ozone correlation	Р	0	0.995	4	0.99993	unitless	Р
6	Ozone % difference avg	Р	7	10	4	0.8	%	Р
7	Ozone % difference max	Р	7	10	4	1.9	%	Р
8	Flow Rate average % difference	Р	10	5	3	2.78	%	Р
9	Flow Rate max % difference	Р	10	5	3	3.29	%	Р
10	DAS Time maximum error	Р	0	5	1	0.07	min	Р
11	DAS Voltage average error	Р	7	0.003	21	0.0001	V	Р
12	Shelter Temperature average error	Р	5	1	6	2.04	с	Fail
13	Shelter Temperature max error	Р	5	1	6	2.73	с	Fail

10/30/2012 ARE128

Field Performance Comments

1	Parameter:	Flow Rate	SensorComponent:	System Memo	CommentCode	174				
	Additional details can be found in the hardcopy of the site audit report.									
2	Parameter:	Flow Rate	SensorComponent:	Moisture Present	CommentCode	204				

There is moisture present in the dry deposition sample train inside the shelter.

Field Systems Comments

1 Parameter: DasComments

The meteorological tower is grounded but the lightning rod has been removed. The sample tower is not grounded.

2 Parameter: SitingCriteriaCom

The site is located in an active orchard where spraying occurs. Fruit trees are rotated with corn and other crops.

3 Parameter: PollAnalyzerCom

Moisture was present in the moisture trap and tubing upon arrival for the audit one day after hurricane Sandy. The system was left open without the filter installed for one day and then the audit of the flow system was performed.

4 Parameter: ShelterCleanNotes

The shelter is cluttered and disorganized.

5 Parameter: MetOpMaintCom

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

Data Compiled:

1/4/2013 4:37:12 PM

SiteVisitDate	Site	Technician
11/01/2012	GRS420	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.99614	unitless	Р
2	Ozone Intercept	Р	0	5	4	1.25232	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99994	unitless	Р
4	Ozone % difference avg	Р	7	10	4	1.9	%	Р
5	Ozone % difference max	Р	7	10	4	3.1	%	Р

Data Compiled:

1/8/2013 4:38:48 PM

SiteVisitDateSiteTechnician11/03/2012PSU106Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	6	0.14	c	Р
2	Temperature max error	Р	4	0.5	6	0.19	с	Р
3	Ozone Slope	Р	0	1.1	4	0.99049	unitless	Р
4	Ozone Intercept	Р	0	5	4	0.66213	ppb	Р
5	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
6	Ozone % difference avg	Р	7	10	4	0.8	%	Р
7	Ozone % difference max	Р	7	10	4	2.1	%	Р
8	Flow Rate average % difference	Р	10	5	2	4.43	%	Р
9	Flow Rate max % difference	Р	10	5	2	4.55	%	Р
10	DAS Time maximum error	Р	0	5	1	0.02	min	Р
11	DAS Voltage average error	Р	7	0.003	21	0.0001	V	Р
12	Shelter Temperature average error	Р	5	1	6	0.17	с	Р
13	Shelter Temperature max error	Р	5	1	6	0.33	c	Р

Field Systems Comments

1 Parameter: DasComments

The meteorological tower has been removed.

2 Parameter: SitingCriteriaCom

The site is within 10 km of State College which has a population of approximately 50,000. The site is located in a university agricultural research field.

3 Parameter: ShelterCleanNotes

The shelter is owned by the university and is clean and orderly. The site is part of the Surfrad network.

4 Parameter: MetOpMaintCom

The 10-meter temperature sensor is now mounted in a naturally aspirated shield on the sample tower.

Data Compiled:

1/4/2013 5:04:25 PM SiteVisitDate Site Technician

11/13/2	2012 SHN418	Eric Hebert						
Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	1.00815	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.21303	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99995	unitless	Р
4	Ozone % difference avg	Р	7	10	4	0.9	%	Р
5	Ozone % difference max	Р	7	10	4	1.8	%	Р

Field Performance Comments

SensorComponent: Cell A Freq. CommentCode 99 1 Parameter: Ozone

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

Data Compiled:

1/4/2013 3:54:31 PM

SiteVisitDate	Site	Technician
11/17/2012	BWR139	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.99669	unitless	Р
2	Ozone Intercept	Р	0	5	4	0.06569	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99992	unitless	Р
4	Ozone % difference avg	Р	7	10	4	0.5	%	Р
5	Ozone % difference max	Р	7	10	4	1.0	%	Р

Data Compile	d:	1/9/2013 5:23:13 PM		
SiteVisitDate	e Site		Technician	
11/20/2012	BEL11	6	Eric Hebert	

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature2meter average error	Р	5	0.5	3	0.17	с	Р
2	Temperature2meter max error	Р	5	0.5	3	0.35	с	Р
3	Wind Speed average error below 5m/s in m/s	Р	3	0.5	4	0.05	m/s	Р
4	Wind Speed max error below 5m/s in m/s	Р	3	0.5	4	0.20	m/s	Р
5	Wind Speed average % difference above 5 m/s	Р	3	5	4	0.0	%	Р
6	Wind Speed max % difference above 5 m/s	Р	3	5	4	0.0	%	Р
7	Wind Speed Torque average error	Р	3	0.5	1	0.25	g-cm	Р
8	Wind Speed Torque max error	Р	3	0.5	1	0.3	g-cm	Р
9	Wind Direction Input Deg True average error (de	Р	2	5	4	2.2	degrees	Р
10	Wind Direction Input Deg True max error (deg)	Р	2	5	4	3	degrees	Р
11	Wind Direction Linearity average error (deg)	Р	2	5	8	1.2	degrees	Р
12	Wind Direction Linearity max error (deg)	Р	2	5	8	2	degrees	Р
13	Wind Direction Torque average error	Р	2	20	1	15	g-cm	Р
14	Wind Direction Torque max error	Р	2	20	1	15	g-cm	Р
15	Temperature average error	Р	4	0.5	9	0.15	с	Р
16	Temperature max error	Р	4	0.5	9	0.33	с	Р
17	Relative Humidity average above 85%	Р	6	10	3	5.9	%	Р
18	Relative Humidity max above 85%	Р	6	10	3	5.9	%	Р
19	Relative Humidity average below 85%	Р	6	10	6	7.0	%	Р
20	Relative Humidity max below 85%	Р	6	10	6	8.0	%	Р
21	Solar Radiation % diff of avg	Р	9	10	9	6.35	%	Р
22	Solar Radiation % diff of max STD value	Р	9	10	9	6.4	%	Р
23	Precipitation average % difference	Р	1	10	2	5.0	%	Р
24	Precipitation max % difference	Р	1	10	2	8.0	%	Р
25	Ozone Slope	Р	0	1.1	4	0.97643	unitless	Р
26	Ozone Intercept	Р	0	5	4	0.47920	ppb	Р
27	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
28	Ozone % difference avg	Р	7	10	4	1.6	%	Р
29	Ozone % difference max	Р	7	10	4	2.1	%	Р
30	Flow Rate average % difference	Р	10	5	2	0.11	%	Р
31	Flow Rate max % difference	Р	10	5	2	0.16	%	Р
32	DAS Time maximum error	Р	0	5	1	0.02	min	Р
33	DAS Voltage average error	Р	7	0.003	28	0.0000	V	Р
34	Surface Wetness Response	Р	12	0.5	1	1.02		Р

SiteVisitDate	Site	Technician		_				
11/20/2012	BEL116	Eric Hebert						
35 Shelter T	emperature average error	Р	5	1	6	0.10	с	P
36 Shelter T	emperature max error	Р	5	1	6	0.19	с	P

Field Systems Comments

1 Parameter: SiteOpsProcedures

The site operator was incorrectly recording the filter final flow as the filter installed flow (on the SSRF) as instructed by the previous site operator. This was discussed during the audit and the correct procedures were described by the auditor.

2 Parameter: ShelterCleanNotes

Larger shelter installed since previous audit visit in 2010.

3 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: 1/4/2013 5:26:04 PM

SiteVis	sitDate	Site	Technicia	ın					
11/29/20)21	BFT142	Sandy Gren	ville					
Line /	Audited	d Parameter	DA	S Ch.	#	Criteria +/-	Counts	QaResult	Units
1 (Ozone Slo	ope	Р		0	1.1	4	1.00277	unitless
2 0	Ozone Int	tercept	P		0	5	4	-0.04122	ppb
3 (Ozone co	rrelation	P		0	0.995	4	0.99997	unitless
4 (Ozone %	difference avg	P		7	10	4	0.5	%
5 (Ozone %	difference max	Р		7	10	4	1.3	%

Field Performance Comments

1	Parameter:	Ozone	SensorComponent:	Cell B Freq.	CommentCode	99
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This analyzer diagnostic check is outside the manufacturer's recommended value.

Pass/Fail

Р

Р

Р Р

Р

Data Compiled: 1/4/2013 5:47:24 PM

SiteVisit	tDate Site		Techi	nician					
11/29/2012	2 CND1	25	Sandy	Grenville	e				
Line A	udited Para	imeter		DAS	Ch. #	Criteria +/-	Counts	QaResult	Units
1 Oz	zone Slope			Р	0	1.1	4	1.01781	unitless
2 Oz	zone Intercept			Р	0	5	4	0.18162	ppb
3 Oz	zone correlatio	n		Р	0	0.995	4	0.99997	unitless
4 Oz	zone % differe	nce avg		Р	7	10	4	1.9	%
5 Oz	zone % differe	nce max		Р	7	10	4	2.3	%

Field Performance Comments

1Parameter:OzoneSensorComponent:Cell A Freq.CommentCode99

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

Pass/Fail P P P P P P **APPENDIX C**

CASTNET Ozone Performance Evaluation Forms

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
CDF	R119-Sandy	Grenville-10/23/2012				
1	10/23/2012	DAS	Campbell	000332	CR3000	2111
2	10/23/2012	Ozone	ThermoElectron Inc	000611	49i A1NAA	1009241795
3	10/23/2012	Ozone Standard	ThermoElectron Inc	000330	49i A3NAA	0622717854
4	10/23/2012	Sample Tower	Aluma Tower	928376	В	AT-51060-56
5	10/23/2012	Zero air pump	Werther International	06903	C 70/4	000899159

Mfg	Serial Number 7	a Site	Tec	hnician		Site Visi	it Date	Parame	ter	Owner I	D
ThermoElectron In	c 1009241795	CDR119	Sar	ndy Grer	ville	10/23/20	012	Ozone		000611	
Slope:	1.00905 Slope: 0.34390 Interce	-	00	Mfg Serial N	umber	ThermoE 49C-731			rameter oz er Desc. Oz	one cone transfe	r
CorrCoff	0.99999 CorrCo	off 0.0000		Tfer ID		01100]			
DAS 1:	DAS	2:		Slope			1.01297	Inter	cent	0.09	498
A Avg % Diff: A		g %Dif A Max	: % Di	Cert Da	to	1	/23/2012		• _	1.00	
1.3%	2.2%						120/2012				
UseDescription	n: ConcGroup		Tfer C		Si			Unit:	PctDiff	ference:	
primary	1	0.04	-0.0		0.4		ppb				
primary	2	36.10	35.5		36.		ppb			1.29%	
primary	3	64.90	63.9		65.		ppb			2.22%	
primary	4	86.60	85.3		86.		ppb			0.71%	
primary	5	216.00	213.	14	215	.50	ppb			1.11%	
Sensor Compon	Cell B Noise		Condition	n 1.3 pp	b			Status	pass		
Sensor Compon	ent Cell B Tmp.		Conditio	n				Status	pass		
Sensor Compon	ent Fullscale Volta	је	Conditio	n N/A				Status	pass		
Sensor Compon	ent Inlet Filter Con	dition	Condition	n Clean				Status	pass		
Sensor Compon	ent Line Loss		Conditio	n Not te	sted			Status	pass		
Sensor Compon	ent Offset		Conditio	n -0.13				Status	pass		
Sensor Compon	ent Span		Conditio	n 1.004				Status	pass		
Sensor Compon	ent Cell B Freq.		Conditio	<mark>n</mark> 98.1 k	Hz			Status	pass		
Sensor Compon	ent System Memo		Conditio	n				Status	pass		
Sensor Compon	ent Sample Train		Conditio	n Good				Status	pass		
Sensor Compon	ent Cell B Pressure)	Condition	n				Status	pass		
Sensor Compon	Cell B Flow		Condition	<mark>n</mark> 0.71 կ	om			Status	pass		
Sensor Compon	ent Cell A Tmp.		Condition	n 35.0 C	;			Status	pass		
Sensor Compon	ent Cell A Pressure)	Condition	n 719 m	mHg			Status	pass		
Sensor Compon	ent Cell A Noise		Condition	n 1.3 pp	b			Status	pass		
Sensor Compon	Cell A Freq.		Condition	n 82.9 k	Hz			Status	pass		
Sensor Compon	Cell A Flow		Condition	n 0.69 lj	om			Status	pass		
Sensor Compon	Battery Backup		Condition	n N/A				Status	pass		
Sensor Compon	ent Zero Voltage		Condition	n N/A				Status	pass		

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
PAR	2107-Sandy	Grenville-10/24/2012				
1	10/24/2012	DAS	Campbell	000333	CR3000	2112
2	10/24/2012	Ozone	ThermoElectron Inc	000735	49i A1NAA	1105347308
3	10/24/2012	Ozone Standard	ThermoElectron Inc	000704	49i A3NAA	1030244816
4	10/24/2012	Zero air pump	Werther International	06932	C 70/4	000829174

Mfg	Se	rial Number Ta	Site	Te	chnician		Site Visi	t Date	Parame	ter	Owner ID	
ThermoElectron Ir	nc 11	105347308	PAR107	Sa	andy Grei	nville	10/24/20)12	Ozone		000735	
Slope: Intercept CorrCoff	0.59	D657Slope:D606InterceptD999CorrCoff	0.00000	0	Mfg Serial N		ThermoE 49C-7310			rameter ozo er Desc. Ozo		
DAS 1: A Avg % Diff: A 1.4%	Max	DAS 2: 3 % Di A Avg % 2.6%	bDif A Max	% Di	Tfer ID Slope Cert Da		L	1.01297 /23/2012	_		0.09498	
UseDescriptio	on:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	Unit:	PctDiffe	rence:	
primary		1	0.00	-0.		0.9		ppb				
primary		2	34.83	34.		35.		ppb			2.60%	
primary		3	65.36	64.		65.	-	ppb			1.10%	
primary		4	87.27	86.		86.		ppb			0.87%	
primary		5	216.83	213		216	5.20 j	ppb			1.05%	
Sensor Compo	nent	Cell B Noise		Conditio	on 0.9 pp	b			Status	pass		
Sensor Compo	nent	Cell B Tmp.		Conditio	on				Status	pass		
Sensor Compo	nent	Fullscale Voltage		Conditio	on N/A				Status	pass		
Sensor Compo	nent	Inlet Filter Conditio	n	Conditio	on Clean	I			Status	pass		
Sensor Compo	nent	Line Loss		Conditio	on Not te	sted			Status	pass		
Sensor Compo	nent	Offset		Conditio	on -0.20				Status	pass		
Sensor Compo	nent	Span		Conditio	on 1.013				Status	pass		
Sensor Compo	nent	Cell B Freq.		Conditio	on 78.6 k	Hz			Status	Fail		
Sensor Compo	nent	System Memo		Conditio	on See c	omments			Status	pass		
Sensor Compo	nent	Sample Train		Conditio	on Good				Status	pass		
Sensor Compo	nent	Cell B Pressure		Conditio	on				Status	pass		
Sensor Compo	nent	Cell B Flow		Conditio	on 0.62 l	pm			Status	pass		
Sensor Compo	nent	Cell A Tmp.		Conditio	on 34.7 ()			Status	pass		
Sensor Compo	nent	Cell A Pressure		Conditio	on 701 m	nmHg			Status	pass		
Sensor Compo	nent	Cell A Noise		Conditio	on 0.7 pp	b			Status	pass		
Sensor Compo	nent	Cell A Freq.		Conditio	on 83.4 k	Hz			Status	pass		
Sensor Compo	nent	Cell A Flow		Conditio	on 0.73	pm			Status	pass		
Sensor Compo	nent	Battery Backup		Conditio	on N/A				Status	pass		
Sensor Compo	nent	Zero Voltage		Conditio	on N/A				Status	pass		

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
LRL	117-Sandy	Grenville-10/25/2012				
1	10/25/2012	DAS	Campbell	000344	CR300	2123
2	10/25/2012	Ozone	ThermoElectron Inc	000701	49i A1NAA	1030244808
3	10/25/2012	Ozone Standard	ThermoElectron Inc	000327	49i A3NAA	0622717852
4	10/25/2012	Zero air pump	Werther International	06904	C 70/4	000821901

Mfg	S	Serial Number Ta	Site	Te	chnician		Site Visit	t Date	Parame	eter	Owner I	D
ThermoElect	tron Inc	1030244808	LRL117	Sa	andy Grei	nville	10/25/20	12	Ozone		000701	
Slope: [Intercept [CorrCoff [0.	96660 Slope: 56306 Intercept 99999 CorrCoff	0.0000	0	Mfg Serial N Tfer ID		ThermoE 49C-7310 01100			rameter ozo er Desc. Oz		
DAS 1:		DAS 2:			Slope			1.01297	7 Inter	cent	0.09	498
	iff: A Ma	ax % Di A Avg %	6Dif A Max	% Di	•		L		_			
2.8	3%	3.4%			Cert Da	ite	1,	/23/2012	² Corr	Coff	1.00	000
UseDesc	cription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	Unit:	PctDiff	erence:	
prim	nary	1	0.33	0.2	23	1.	10 j	ppb				
prim	nary	2	36.30	35.	74	34.	.53	ppb			-3.39%	
prim	nary	3	66.22	65.	27	63.	.76 j	ppb			-2.31%	
prim	nary	4	86.54	85.	33	83.	20	ppb			-2.50%	
prim	nary	5	215.29	212	.43	205	.90	ppb			-3.07%	
Sensor Co	omponent	Cell B Noise		Conditio	on 1.5 pp	b			Status	pass		
Sensor Co	omponent	Cell B Tmp.		Conditio	on				Status	pass		
Sensor Co	mponent	Fullscale Voltage		Conditio	on N/A				Status	pass		
Sensor Co	omponent	Inlet Filter Condition	n	Conditio	on Clean	l			Status	pass		
Sensor Co	omponent	Line Loss		Conditio	n Not te	ested			Status	pass		
Sensor Co	omponent	Offset		Conditio	n -0.10				Status	pass		
Sensor Co	omponent	Span		Conditio	n 1.015				Status	pass		
Sensor Co	omponent	Cell B Freq.		Conditio	on 96.3 k	κHz			Status	pass		
Sensor Co	omponent	t System Memo		Conditio	on				Status	pass		
Sensor Co	omponent	Sample Train		Conditio	Good				Status	pass		
Sensor Co	omponent	t Cell B Pressure		Conditio	on				Status	pass		
Sensor Co	omponent	Cell B Flow		Conditio	on 0.70 l	pm			Status	pass		
Sensor Co	omponent	Cell A Tmp.		Conditio	on 32.3 (2			Status	pass		
Sensor Co	omponent	Cell A Pressure		Conditio	on 696 m	nmHg			Status	pass		
Sensor Co	omponent	Cell A Noise		Conditio	on 1.4 pp	b			Status	pass		
Sensor Co	omponent	Cell A Freq.		Conditio	on 97.3 k	κHz			Status	pass		
Sensor Co	omponent	Cell A Flow		Conditio	on 0.68 l	pm			Status	pass		
Sensor Co	omponent	Battery Backup		Conditio	n N/A				Status	pass		
Sensor Co	mponent	Zero Voltage		Conditio	n N/A				Status	pass		

Site V	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
GRS-	420-Eric H	lebert-11/01/2012				
1	11/1/2012	DAS	Environmental Sys Corp	none	8832	A4115K
2	11/1/2012	Ozone	ThermoElectron Inc	none	49i A3NAA	1023943903
3	11/1/2012	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	CM08460051
4	11/1/2012	Sample Tower	Aluma Tower	90945	В	none
5	11/1/2012	Zero air pump	Thomas	none	917CA18	0000174

Mfg	Se	erial Number Ta	Site	Te	chnician		Site Visi	it Date	Paramo	eter	Owner I	D
ThermoElect	ron Inc 1	023943903	GRS420	Er	ric Hebert	t	11/01/20	012	Ozone		none	
Slope: Intercept CorrCoff	1.2	9614Slope:5232Intercept9994CorrCoff	0.00000	D	Mfg Serial N Tfer ID		ThermoE 5171121 01111			rameter 02 er Desc. 0	zone zone primary	/ stan
DAS 1:		DAS 2:			Slope			1.0098	7 Inte	rcept	0.07	483
A Avg % Di	iff: A Max		6Dif A Max	% Di	•							
1.9	%	3.1%			Cert Da	nte	3	8/23/201	2 Cori	Coff	1.00	0000
UseDesc	ription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	Unit:	PctDif	ference:	
prim	ary	1	0.13	0.0	05	0.9	98	ppb				
prim	ary	2	37.36	36.	.92	38.	.06	ppb			3.09%	
prim	ary	3	56.33	55.	.70	57.	.18	ppb			2.66%	
prim	ary	4	87.05	86.	.12	87.	.45	ppb			1.54%	
prim	ary	5	109.98	108	3.83	109	0.10	ppb			0.25%	
Sensor Co	mponent	Cell B Noise		Conditio	on 0.8 pr	ob			Status	pass		
Sensor Co	mponent	Cell B Tmp.		Conditio	on				Status	pass		
Sensor Co	mponent	Fullscale Voltage		Conditio	on 1.000	8			Status	pass		
Sensor Co	mponent	Inlet Filter Condition	on	Conditio	on Clear	1			Status	pass		
Sensor Co	mponent	Line Loss		Conditio	on Not te	ested			Status	pass		
Sensor Co	mponent	Offset		Conditio	on 0.000				Status	pass		
Sensor Co	mponent	Span		Conditio	on 1.027				Status	pass		
Sensor Co	mponent	Cell B Freq.		Conditio	on 97.7 k	κHz			Status	pass		
Sensor Co	mponent	System Memo		Conditio	on				Status	pass		
Sensor Co	mponent	Sample Train		Conditio	on Good				Status	pass		
Sensor Co	mponent	Cell B Pressure		Conditio	on				Status	pass		
Sensor Co	mponent	Cell B Flow		Conditio	on 0.69 l	pm			Status	pass		
Sensor Co	mponent	Cell A Tmp.		Conditio	on 31.5 (0			Status	pass		
Sensor Co	mponent	Cell A Pressure		Conditio	on 680 m	nmHg			Status	pass		
Sensor Co	mponent	Cell A Noise		Conditio	on 0.9 pp	ob			Status	pass		
Sensor Co	mponent	Cell A Freq.		Conditio	on 113.2	kHz			Status	pass		
Sensor Co	mponent	Cell A Flow		Conditio	on 0.68 l	pm			Status	pass		
Sensor Co	mponent	Battery Backup		Conditio	on N/A				Status	pass		
Sensor Co	mponent	Zero Voltage		Conditio	on 0.001	8			Status	pass		

Site V	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
SHN	418-Eric H	lebert-11/13/2012				
1	11/13/2012	DAS	Environmental Sys Corp	90643	8816	2529
2	11/13/2012	Ozone	ThermoElectron Inc	none	49i A3NAA	0733726103
3	11/13/2012	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	CM08460008
4	11/13/2012	Sample Tower	Aluma Tower	923307	В	none
5	11/13/2012	Zero air pump	Werther International	none	P 70/4	000756726

Mfg	Serial Number Ta	Site	Te	chnician		Site Visi	t Date	Parame	eter	Owner I	D
ThermoElectron Inc	0733726103	SHN418	Er	ric Hebert		11/13/20	012	Ozone		none	
•	1.00815 Slope:	0.00000	_	Mfg		ThermoE			rameter		
	0.21303 Intercept 0.99995 CorrCoff	0.0000	-	Serial N	lumber	5171121	75	Tf	er Desc.	Dzone primary	∕ stan
		0.0000	5	Tfer ID		01111					
DAS 1:	DAS 2:			Slope			1.0098	7 Inter	cept	0.07	483
A Avg % Diff: A M	Max % Di A Avg	%Dif A Max	% Di		4.0	3	6/23/201		•	1.00	
0.9%	1.8%			Cert Da	ite	5	/23/201	2 Corr	-Coll	1.00	000
UseDescription	: ConcGroup:	Tfer Raw:	Tfer	Corr:	Sit	te:	Site	Unit:	PctD	ifference:	
primary	1	0.16	0.	08	-0.	56	ppb				
primary	2	34.62	34	.20	34.	81	ppb			1.78%	
primary	3	65.94	65	.22	65.	77	ppb			0.84%	
primary	4	86.08	85.		85.		ppb			0.46%	
primary	5	101.82	100).75	101	.10	ppb			0.35%	
Sensor Compone	Cell B Noise		Conditio	on 0.9 pp	b			Status	pass		
Sensor Compone	ent Cell B Tmp.		Conditio	on				Status	pass		
Sensor Compone	Fullscale Voltage		Condition	on 0.999	6			Status	pass		
Sensor Compone	Inlet Filter Conditi	on	Condition	on Clean	I			Status	pass		
Sensor Compone	ent Line Loss		Conditi	on Not te	sted			Status	pass		
Sensor Compone	ent Offset		Conditio	on 2.1				Status	pass		
Sensor Compone	ent Span		Conditio	on 1.027				Status	١		
Sensor Compone	ent Cell B Freq.			on 108.4				Status	pass		
Sensor Compone	System Memo				omments			Status	pass		
Sensor Compone	ent Sample Train		Conditio	on Good				Status	pass		
-	Cell B Pressure		Conditio					Status	pass		
Sensor Compone	Cell B Flow			on 0.69 l				Status	pass		
Sensor Compone	ent Cell A Tmp.			on 35.7 (Status	pass		
Sensor Compone	ent Cell A Pressure		Condition	on 665 m	nmHg			Status	pass		
Sensor Compone	ent Cell A Noise		Conditio	on 0.7 pp	b			Status			
Sensor Compone				on 70.0 k				Status	<u></u>		
Sensor Compone				on 0.71 l	pm			Status	L		
	ent Battery Backup		Condition					Status			
Sensor Compone	Zero Voltage		Conditi	on 0.003	3			Status	pass		

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
BWI	R139-Eric H	Iebert-11/17/2012				
1	11/17/2012	DAS	Campbell	000431	CR3000	2536
2	11/17/2012	Ozone	ThermoElectron Inc	000731	49i A1NAA	1105347309
3	11/17/2012	Ozone Standard	ThermoElectron Inc	000376	49i A3NAA	0726124693
4	11/17/2012	Sample Tower	Aluma Tower	missing	В	none
5	11/17/2012	UPS	APC	06093	RS800	unknown
6	11/17/2012	Zero air pump	Werther International	06877	C 70/4	000815258

Mfg	S	erial Number Ta	Site	Te	chnician		Site Visi	t Date	Parame	ter	Owner]	D
ThermoElec	ctron Inc	1105347309	BWR139	Er	ic Hebert	:	11/17/20)12	Ozone		000731	
Slope: Intercept CorrCoff	0.0	99669Slope:06569Intercept99992CorrCoff	0.00000	0	Mfg Serial N Tfer ID		ThermoE 5171121 01111			rameter o er Desc. O	izone Dzone primar	y stan
DAS 1:		DAS 2:			Slope			1.0098	7 Inter	aant	0.07	7483
	Diff: A Ma	ax%Di AAvg%	6Dif A Max	% Di	Slope					•	L	
0	5%	1.0%			Cert Da	ite	3	/23/201	2 Corr	Coff	1.00	0000
UseDes	cription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	e Unit:	PctDi	fference:	
prin	nary	1	0.25	0.	17	-0.	09	ppb				
prin	nary	2	23.74	23.	.43	23.	.45	ppb			0.09%	
prin	nary	3	62.42	61.	.73	61	.99	ppb			0.42%	
prin	nary	4	86.18	85.	.26	85.		ppb			0.52%	
	nary	5	107.78	106	5.65	105		ppb			-0.98%	
-	•	Cell B Noise		Conditi	on 0.9 pp	h	1		Status	nass		7
	_	Cell B Tmp.		Conditio					Status			
Sensor Co	omponent	Fullscale Voltage		Conditio	on N/A				Status	pass		
Sensor Co	omponent	Inlet Filter Condition	n	Conditio	on Mode	rately clea	an		Status	pass		
Sensor Co	omponent	Line Loss		Conditio	on Not te	sted			Status	pass		
Sensor Co	omponent	Offset		Conditio	on 0.000				Status	pass		
Sensor Co	omponent	Span		Conditio	on 1.023				Status	pass		
Sensor Co	omponent	Cell B Freq.		Conditio	on 82.7 k	κHz			Status	pass		
Sensor Co	omponent	System Memo		Conditio	on				Status	pass		
Sensor Co	omponent	Sample Train		Conditio	on Good				Status	pass		
Sensor Co	omponent	Cell B Pressure		Conditio	on				Status	pass		
Sensor Co	omponent	Cell B Flow		Conditio	on 0.74 l	pm			Status	pass		
Sensor Co	omponent	Cell A Tmp.		Conditio	on 31.5 (2			Status	pass		
Sensor Co	omponent	Cell A Pressure		Conditio	on 752 m	nmHg			Status	pass		
Sensor Co	omponent	Cell A Noise		Conditio	on 1.0 pp	b			Status	pass		
Sensor Co	omponent	Cell A Freq.		Conditio	on 90.1 k	κHz			Status	pass		
Sensor Co	omponent	Cell A Flow		Conditio	on 0.75 l	pm			Status	pass		
Sensor Co	omponent	Battery Backup		Conditio	Funct	ioning			Status	pass		
Sensor Co	omponent	Zero Voltage		Conditio	on N/A				Status	pass		

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
BFT	142-Sandy	Grenville-11/29/2021				
1	11/29/2021	DAS	Campbell	000498	CR3000	3815
2	11/29/2021	Ozone	ThermoElectron Inc	000629	49i A1NAA	1009241784
3	11/29/2021	Ozone Standard	ThermoElectron Inc	000219	49i A3NAA	06227833
4	11/29/2021	UPS	APC	05003	XS800	unknown
5	11/29/2021	Zero air pump	Werther International	06897	C 70/4	000821893

Mfg	:	Serial Number Ta	Site	Te	chnician		Site Visi	t Date	Parame	ter	Owner I	D
ThermoElec	tron Inc	1009241784	BFT142	Sa	andy Gre	nville	11/29/20)21	Ozone		000629	
Slope: [Intercept [CorrCoff [-0	.00277 Slope: .04122 Intercept .99997 CorrCoff	0.0000	0	Mfg Serial N Tfer ID		ThermoE 49C-7310 01100			rameter ozo er Desc. Oz		•
DAS 1:		DAS 2:			Slope			1.01297	7 Inter	cent	0.09	498
		ax % Di A Avg %	%Dif A Max	% Di	Cert Da	nte	L	/23/201		-	1.00	
UseDesc	cription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	Unit:	PctDiff	erence:	
prin	nary	1	0.04	-0.	05	-0.	37	ppb				
prin	nary	2	35.70	35.	.14	35.	.60	ppb			1.31%	
prin	nary	3	65.75	64.	.81	64.	.78	ppb			-0.05%	
prin	nary	4	86.18	84.	.98	85.	.50	ppb			0.61%	
prin	nary	5	111.14	109	.62	109	.60	ppb			-0.02%	
Sensor Co	omponen	t Cell B Noise		Conditio	on 0.8 pp	b			Status	pass		
Sensor Co	omponen	t Cell B Tmp.		Conditio	on				Status	pass		
Sensor Co	omponen	t Fullscale Voltage		Conditio	n N/A				Status	pass		
Sensor Co	omponen	t Inlet Filter Condition	on	Conditio	on Clear	1			Status	pass		
Sensor Co	omponen	t Line Loss		Conditio	on Not te	ested			Status	pass		
Sensor Co	omponen	t Offset		Conditio	on 0.20				Status	pass		
Sensor Co	omponen	t Span		Conditio	n 1.041				Status	pass		
Sensor Co	omponen	t Cell B Freq.		Conditio	on 78.2 k	κHz			Status	Fail		
Sensor Co	omponen	t System Memo		Conditio	on See c	omments	,		Status	pass		
Sensor Co	omponen	t Sample Train		Conditio	on Good				Status	pass		
Sensor Co	omponen	t Cell B Pressure		Conditio	on				Status	pass		
Sensor Co	omponen	t Cell B Flow		Conditio	on 0.70 l	pm			Status	pass		
Sensor Co	omponen	t Cell A Tmp.		Conditio	on 32.9 (2			Status	pass		
Sensor Co	omponen	t Cell A Pressure		Conditio	on 777 m	nmHg			Status	pass		
Sensor Co	omponen	t Cell A Noise		Conditio	on 0.9 pr	b			Status	pass		
Sensor Co	omponen	t Cell A Freq.		Conditio	on 80.8 k	κHz			Status	pass		
Sensor Co	omponen	t Cell A Flow		Conditio	on 0.68 l	pm			Status	pass		
Sensor Co	omponen	t Battery Backup		Conditio	Funct	ioning			Status	pass		
Sensor Co	omponen	t Zero Voltage		Conditio	n N/A				Status	pass		

Site \	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
CND	0125-Sandy	Grenville-11/29/2012				
1	11/29/2012	DAS	Campbell	000499	CR3000	3816
2	11/29/2012	Ozone	ThermoElectron Inc	000728	49i A1NAA	1105347306
3	11/29/2012	Ozone Standard	ThermoElectron Inc	000543	49i A3NAA	0929938240
4	11/29/2012	Zero air pump	Werther International	06868	C 70/4	000814284

Mfg Se		erial Number Ta	Site	Te	chnician		Site Visit Date		Parameter		Owner ID	
ThermoElectron Inc		105347306	CND125		Sandy Grenville		11/29/2012		Ozone		000728	
Slope:1.01781Slope:Intercept0.18162InterceptCorrCoff0.99997CorrCoff		0.00000 0.00000 0.00000				ThermoElectron In 49C-73104-373 01100		Inc Parameter Ozo				
DAS 1:		DAS 2:						1 01 20	7	. [0.00	408
			6Dif A Max 9	Slope		1.01297 Inter		•				
1.9		2.3%			Cert Da	ate	1	/23/2012	2 Corr	Coff	1.00	000
UseDescription:		ConcGroup:	cGroup: Tfer Raw:		Tfer Corr:		Site: Sit		Unit:	PctDiff	ference:	
primary		1 0.10		0.00		0.47		ppb				
primary		2 35.56		35.01		35.59 I		ppb			1.66%	
primary		3 65.48		64.54		65.72		ppb		1.83%		
primary		4	85.63	84.43		85.80		ppb		1.62%		
primary		5 111.38		109.86		112.40 p		ppb		2.31%		
Sensor Co	omponent	Cell B Noise		Conditio	on 0.7 pp	ob			Status	pass		
Sensor Co	omponent	Cell B Tmp.		Conditio	on				Status	pass		
Sensor Co	omponent	Fullscale Voltage		Conditio	n N/A				Status	pass		
Sensor Co	omponent	Inlet Filter Condition	n	Conditio	on Clean	1			Status	pass		
Sensor Co	omponent	Line Loss		Conditio	n Not te	ested			Status	pass		
Sensor Component		Offset	Condition 0.000					Status	pass			
Sensor Co	omponent	Span	Condition 1.023					Status	pass			
Sensor Component		Cell B Freq.	Condition 100.7 kHz				Status	pass				
Sensor Component		System Memo		Condition See comments				Status pass				
Sensor Component		Sample Train	Condition Good				Status			pass		
Sensor Co	omponent	Cell B Pressure		Conditio	on				Status	pass		
Sensor Co	omponent	Cell B Flow		Conditio	on 0.76 l	pm			Status	pass		
Sensor Co	omponent	Cell A Tmp.	Condition 32.8 C			Status pa			pass			
Sensor Co	omponent	Cell A Pressure		Condition 740 mmHg		Status		pass				
Sensor Co	omponent	Cell A Noise	Condition 0.6 ppb				Status	pass				
Sensor Co	omponent	Cell A Freq.	Condition 79.8 kHz					Status	Fail			
Sensor Co	omponent	Cell A Flow		Conditio	on 0.69 l	pm			Status	pass		
Sensor Co	omponent	Battery Backup		Conditio	n N/A				Status	pass		
Sensor Co	omponent	Zero Voltage		Conditio	n N/A				Status	pass		