2013 – 2nd Quarter Report Support for Conducting Systems & Performance Audits of CASTNET Sites and NADP Monitoring Stations

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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 June 2013, the network is comprised of 93 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	≤±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)	≤±0.5° C	
Temperature Difference	Accuracy	Comparison to station temperature sensor	$\leq \pm 0.50^{\circ} \mathrm{C}$	
Wind Direction	Orientation Accuracy	Parallel to alignment rod/crossarm, or sighted to distant point	$\leq \pm 5^{\circ}$ from degrees true	
Wind Direction	Linearity	Eight cardinal points on test fixture	≤±5° mean absolute error	
Wind Direction	Response Threshold	Starting torque tested with torque gauge	< 10 g-cm Climatronics; < 20 g-cm R.M. Young	
Wind Speed	Accuracy	Shaft rotational speed generated and measured with certified synchronous motor	$\leq \pm 0.5$ mps below 5.0 mps input; $\leq \pm 5.0\%$ of input at or above 5.0 mps	
Wind Speed	Starting Threshold	Starting torque tested with torque gauge	< 0.5 g-cm	
Mass Flow Controller	Flow Rate	Comparison with Primary Standard	$\leq \pm 5.0\%$ of designated rate	
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	transfer standard	0.9950 ≤ r	
DAS	Accuracy	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 Second Quarter 2013

This report consists of the systems and performance audit results from the CASTNET sites audited during the first quarter (April through June) of 2013. The locations and dates of the audits are presented in Table 2.

<u>Side ID</u>	<u>Audit Type</u>	<u>Sponsor</u>	Site Visit Date	Station Name
CNT169	Audit w/o met	EPA	5/14/2013	Centennial
DCP114	Audit w/o met	EPA	4/22/2013	Deer Creek St. Park
GTH161	Audit w/o met	EPA	6/13/2013	Gothic

 Table 2. Site Audit Visits

Side ID	Audit Type	<u>Sponsor</u>	Site Visit Date	Station Name
KNZ184	Audit w/o met	EPA	4//26/2013	Konza Prairie
LAV410	Audit with met	NPS	5/7/2013	Lassen Volcanic NP
OXF122	Audit w/o met	EPA	5/8/2013	Oxford
PIN414	Audit with met	NPS	4/11/2013	Pinnacles NM
PND165	Audit w/o met	EPA	5/12/2013	Pinedale
QAK172	Audit w/o met	EPA	5/9/2013	Quaker City
ROM206	Audit w/o met	EPA	6/11/2013	Rocky Mountain NP
ROM406	Audit with met	NPS	6/10/2013	Rocky Mountain NP (NPS)
SAN189	Audit w/o met	EPA	4/25/2013	Santee Sioux
SEK430	Audit with met	NPS	5/3/2013	Sequoia NP - Ash Mountain
YEL408	Audit with met	NPS	6/6/2013	Yellowstone NP
YOS404	Audit with met	NPS	5/1/2013	Yosemite NP

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	<u>Visit dates</u>
CAN407	NPS	Canyonlands NP	4/19/2013
CHA467	NPS	Chiricahua NM	4/1/1013
DEN417	NPS	Denali NP	6/15/2013
GRB411	EPA	Great Basin NP	4/16/2013
GRC474	NPS	Grand Canyon NP	4/4/2013
JOT403	NPS	Joshua Tree NP	4/8/2013
MCK231	EPA	Mackville (precision site)	5/18/2013
MEV405	NPS	Mesa Verde NP	4/18/2013
MOR409	NPS	Mount Rainier NP	6/17/2013
PET427	NPS	Petrified Forest NP	4/2/2013
PNF126	EPA	Cranberry	5/12/2013

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 Second Quarter 2013

This report covers the results from the NADP sites surveyed during the first quarter (April through June) of 2013. The station name and dates of the audits are presented in Table 4.

Side ID	Network	Survey Date	Station Name		
AK01	NTN	6/14/2013	Poker Creek		
AK03	NTN	6/15/2013	Denali National Park-Mt. McKinley		
AK06	MDN/NTN	6/14/2013	Gates of the Arctic National Park - Bettles		
AK97	NTN	6/9/2013	Katmai National Park-King Salmon		
AK98	MDN	6/11/2013	Kodiak		
AZ02	MDN	4/3/2013	Sycamore Canyon		
CA20	MDN	5/9/2013	Yurok Tribe-Requa		
CA42	NTN	4/10/2013	Tanbark Flat		
CA45	NTN	5/6/2013	Hopland		
CA50	NTN	4/28/2013	Sagehen Creek		
CA66	NTN	4/11/2013	Pinnacles National Monument-Bear Valley		
CA67	NTN/AMoN	4/8/2013	Joshua Tree National Park-Black Rock		
CA75	MDN/NTN	5/3/2013	Sequoia National Park-Giant Forest		
CA76	NTN	5/10/2013	Montague		
CA88	NTN	4/30/2013	Davis		
CA94	MDN/NTN	4/9/2013	Converse Flats		
CA96	NTN	5/7/2013	Lassen Volcanic National Park-Manzanita Lake		
CA99	NTN	5/1/2013	YosemiteNational Park - Hogdon Meadow		
IN34	NTN	4/23/2013	Indiana Dunes National Lakeshore		
KY35	NTN	5/7/2013	Clark State Fish Hatchery		
MA01	MDN/NTN	5/21/2013	North Atlantic Coastal Lab		
MA08	NTN	5/22/2013	Quabbin Reservoir		
MD08	MDN/NTN/AMoN	5/10/2013	Piney Reservoir		
MD15	NTN	5/28/2013	Smith Island		
MD18	NTN	5/24/2013	Assateague Island National Seashore-Woodcock		

 Table 4. Sites Surveyed – Second Quarter 2013

Side ID	Network	Survey Date	Station Name	
MT07	NTN	6/5/2013	Clancy	
MT95	MDN	6/3/2013	Badger Peak	
NY96	NTN	5/23/2013	Cedar Beach, Southold	
OH17	NTN	5/8/2013	Delware	
SC03	MDN/NTN	4/2/2013	Savannah River	
TN00	AIRMoN	4/29/2013	Walker Branch Watershed	
WA98	NTN	6/17/2013	Columbia River Gorge	
WV05	NTN	4/20/2013	Cedar Creek State Park	
WV18	NTN	4/19/2013	Parsons	
WY00	NTN	5/14/2013	Snowy Range	
WY02	NTN	5/15/2013	Sinks Canyon	
WY06	NTN	5/12/2013	Pinedale	
WY08	MDN/NTN	6/4/2013	Yellowstone National Park-Tower Falls	
WY26	MDN	5/16/2013	Roundtop Mountain	
WY95	NTN	5/14/2013	Brooklyn Lake	
WY97	NTN	5/15/2013	South Pass City	
WY98	NTN	5/13/2013	Gypsum Creek	

2.4 Survey Results

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

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

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

APPENDIX A

CASTNET Audit Report Forms

Site Inventory by Site Visit

Site Visit Date		Parameter	Mfg	Owner ID	Model Number	Serial Number		
PIN4	PIN414-Eric Hebert-04/11/2013							
1	4/11/2013	Computer	Gateway	none	Solo	unknown		
2	4/11/2013	DAS	Environmental Sys Corp	90612	8816	2615		
3	4/11/2013	Elevation	Elevation	None	1	None		
4	4/11/2013	F460 translator	Climatronics	none	100163	788		
5	4/11/2013	Filter pack flow pump	Thomas	none	107CA18	1088002897		
6	4/11/2013	Flow Rate	Tylan	03385	FC280	AW9403017		
7	4/11/2013	Infrastructure	Infrastructure	none	none	none		
8	4/11/2013	MFC power supply	Tylan	03685	RO-32	FP9404005		
9	4/11/2013	Modem	US Robotics	none	33.6 fax modem	unknown		
10	4/11/2013	Ozone	ThermoElectron Inc	90765	49C	49c-74530376		
11	4/11/2013	Ozone Standard	ThermoElectron Inc	90752	49C	49C-74532-376		
12	4/11/2013	Precipitation	Climatronics	91040	100508-2	illegible		
13	4/11/2013	Printer	Hewlett Packard	none	842C	unknown		
14	4/11/2013	Relative Humidity	Vaisala	none	HMP45ASP	A1040016		
15	4/11/2013	Sample Tower	Aluma Tower	928348	В	AT-5381-F9-3		
16	4/11/2013	Shelter Temperature	ARS	none	none	none		
17	4/11/2013	Siting Criteria	Siting Criteria	None	1	None		
18	4/11/2013	Solar Radiation	Licor	none	LI-200	PY29490		
19	4/11/2013	Solar Radiation Translator	Climatronics	none	100144	350		
20	4/11/2013	Temperature	Climatronics	none	100093	missing		
21	4/11/2013	Temperature Translator	Climatronics	none	100088-2	397		
22	4/11/2013	Wind Direction	Climatronics	none	100076	1808		
23	4/11/2013	Wind Speed	Climatronics	91053	100076	4559		
24	4/11/2013	Zero air pump	Werther International	none	PC 70/4	000706555		

DAS Data Form

DAS Time Max Error: 0.67

Mfg	Serial 1	Number Site	• 1	Fechnician	Site Visit Date	Parameter	Use Desc.
Environmental	l Sys 2615	PIN	V414 I	Eric Hebert	04/11/2013	DAS	Primary
Das Date: Das Time: Das Day:	4 /11/2013 17:03:30 101	Audit Date Audit Time Audit Day	4 /11/2013 17:04:10 101	Mfg Serial Number	Datel 4000392	Parameter Tfer Desc.	DAS 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
0.0003	3 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	1/27/201	3 CorrCoff	1.00000
Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference	
2	0.0000	0.0000	-0.0001	V	V	-0.0001	
2	0.1000	0.1000	0.1000	V	V	0.0000	
2	0.3000	0.3000	0.3001	V	V	0.0001	
2	0.5000	0.5000	0.5003	V	V	0.0003	
2	0.7000	0.7000	0.7004	· V	V	0.0004	
2	0.9000	0.9000	0.9005	V	V	0.0005	
2	1.0000	1.0000	1.0007	V	V	0.0007	
9	0.0000	0.0000	0.0000	V	V	0.0000	
9	0.1000	0.1000	0.1002	V	V	0.0002	
9	0.3000	0.3000	0.3000	V	V	0.0000	
9	0.5000	0.5000	0.4999	V	V	-0.0001	
9	0.7000	0.7000	0.7002	V	V	0.0002	
9	0.9000	0.9000	0.8999	V	V	-0.0001	
9	1.0000	1.0000	1.0002	V	V	0.0002	

Flow Data Form

Mfg	Serial Nun	rial Number Ta Site			chnician	Site Visit I	Date Paran	neter	Owner ID	
Tylan	AW940301	7	PIN414	Eri	c Hebert	04/11/2013	3 Flow R	ate	03385	
Mfg	Tylan				Mfg	BIOS	P	arameter Flo	ow Rate	
SN/Owner ID	FP9404005	03685			Serial Number	122974	Т	fer Desc. Bl	er Desc. BIOS 220-H	
Parameter	MFC power sup	oply			Tfer ID	01416				
					Slope	1.	00000 Inte	ercept	0.00000	
					Cert Date	1/8	8/2013 Col	rCoff	1.00000	
DAS 1:		DAS 2:		L	Cal Factor Z	ero		0		
A Avg % Diff:	A Max % Di	A Avg %	Dif A Max	x % Di	Cal Factor F	ull Scale		0		
0.11%	0.14%				Rotometer R	eading:	2.9	95		
UseDescription:	Test type:	Input l/m:	Input STP:	MfcDisp.:	OutputSignal:	Output S E:	InputUnit:	OutputSignal	PctDifference:	
primary	pump off	0.000	0.000	-0.53	-0.476	0.03	l/m	l/m		
primary	leak check	0.000	0.000	-0.53	-0.476	0.03	l/m	l/m		
primary	test pt 1	0.000	3.024	2.49	2.254	3.02	l/m	l/m	-0.14%	
primary	test pt 2	0.000	3.023	2.49	2.254	3.02	l/m	l/m	-0.11%	
primary	test pt 3	0.000	3.022	2.49	2.254	3.02	l/m	l/m	-0.07%	
Sensor Compo	nent Leak Tes	t		Conditio	n		Status	pass		
Sensor Compo	Filter Azi	muth		Conditio	n 90 deg		Status	pass		
Sensor Compo	Filter Dep	oth		Conditio	n 0.0 cm		Status	pass		
Sensor Compo	Filter Pos	ition		Conditio	n Fair		Status	pass		
Sensor Compo	Moisture	Present		Conditio	n No moisture p	resent	Status	pass		
Sensor Compo	Sensor Component Rotometer Condition				n Clean and dry		Status	pass		
Sensor Compo	Sensor Component System Memo			Conditio	n		Status	pass		
Sensor Compo	ensor Component Tubing Condition				lition Good			pass		
Sensor Compo	sor Component Filter Distance				n 5.0 cm		Status	pass		

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician S		Site Visi	it Date	Parame	eter	Owner I	D	
ThermoElectron Inc	49c-74530376	PIN414	Er	ic Hebert		04/11/2	013	Ozone		90765	
Slope:	0.98686 Slope:	0.00000)	Mfg		ThermoE	Electron	Inc Pa	rameter 0	zone	
Intercept	0.13471 Intercept	0.00000	D	Serial N	lumber	5171121	75	Tf	er Desc.	Dzone primary	/ stan
CorrCoff	0.99998 CorrCoff	0.00000)	Tfor ID		01111		7			
DAS 1:	DAS 2:			Slope			0.9972	0 Inter	rcent	0.18	428
A Avg % Diff: A N	/Iax % Di A Avg %	6Dif A Max	% Di	Stope		L	4/0/004		a	4.00	
1.1%	1.7%			Cert Da	ite		1/2/201	3 Cori	Coff	1.00	000
UseDescription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Sit	te:	Site	Unit:	PctDi	fference:	
primary	1	0.05	-0.	13	-0.	01	ppb				
primary	2	30.65	30.	.03	ppb			-1.70%			
primary	3	49.69	49.64 49.40				ppb			-0.48%	
primary	4	84.48	84.53 83.76 pp				ppb			-0.91%	
primary	5	109.50	109	.62	108	.10	ppb			-1.39%	
Sensor Compone	nt Cell B Noise		Condition 0.4 ppb					Status	pass		
Sensor Compone	nt Cell B Tmp.		Condition					Status	pass		
Sensor Compone	nt Fullscale Voltage	Conditio	on 1.001	6			Status	pass			
Sensor Compone	nt Inlet Filter Condition	on	Conditio	on Clean				Status	pass		
Sensor Compone	nt Line Loss		Conditio	on Not te	sted			Status	pass		
Sensor Compone	nt Offset		Conditio	on 1.2				Status	pass		
Sensor Compone	nt Span		Condition 1.002					Status	pass		
Sensor Compone	nt Cell B Freq.		Conditio	on 72.1 k	κHz			Status	Fail		
Sensor Compone	nt System Memo		Conditio	on See c	omments			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 0.75 l	pm			Status	pass		
Sensor Compone	nt Cell A Tmp.		Conditio	on 38.7 (2			Status	pass		
Sensor Compone	nt Cell A Pressure		Conditio	on 707 m	nmHg			Status	pass		
Sensor Compone	nt Cell A Noise	Cell A Noise			b			Status	pass		
Sensor Compone	nt Cell A Freq.	Conditio	on 77.2 k	κHz			Status	Fail			
Sensor Compone	Cell A Flow			Condition 0.76 lpm				Status	pass		
Sensor Compone	nt Battery Backup	Condition N/A					Status	pass			
Sensor Compone	nt Zero Voltage		Condition 0.0006			Statu			atus pass		

Wind Speed Data Form

Mfg	Serial Numbe	r Ta Site	Te	echnician	Site Visit Date	Parameter	Owner ID
Climatronics	4559	PIN414	E	ric Hebert	04/11/2013	Wind Speed	91053
Mfg	imatronics			Mfg	RM Young	Paramete	er wind speed
SN/Owner ID 78	18 I	none		Serial Number		Tfer Des	c. wind speed motor (h
	······································			Tfor ID	01262		
Parameter F4	60 translator				01202		
Prop or Cups SN	2333			Slope	1.0000	0.00000	
Prop or Cups Tore	que 0	.4 to	0.5	Cert Date	1/13/202	1.00000	
Prop Correction F	act N/A						
				Mfg	RM Young	Paramet	er wind speed
				Serial Number		Tfer Des	c. wind speed motor (I
				Tfor ID	01261		
				Tier ID	01201		
				Slope	1.0000	00 Intercept	0.00000
				Cert Date	1/13/20	10 CorrCoff	1.00000
DA	S 1:	D	AS 2:				
Lov	v Range Hig	h Range L	ow Range	High Range			
Abs Avg Err	0.01	0.28%					
Abs Max Er	0.03	0.33%					
UseDescription:	InputDevice:	Input RPM:	Input m/s:	Output V:	DAS m/s:	Diff/ %Diff:	Difference:
primary	00000	0	0.20	0.000	0.2		0.03
primary	00000	50	1.40	0.000	1.4		0.00
primary	00000	100	2.57	0.000	2.6		0.01
primary	00000	170	4.22	0.000	4.2		0.01
primary	00000	250	6.10	0.000	6.1	0.33%	
primary	00000	500	11.97	0.000	12.0	0.17%	
primary	00000	800	19.02	0.000	19.1	0.32%	
primary	00000	2000	47.22	0.000	47.4	0.30%	
Sensor Compone	System Men	0	Conditi	on		Status pass	

•				, i	
Sensor Component	Sensor Plumb	Condition	Plumb	Status	pass
Sensor Component	Sensor Heater	Condition	N/A	Status	pass
Sensor Component	Prop or Cups Condition	Condition	Good	Status	pass
Sensor Component	Condition	Condition	Good	Status	pass
Sensor Component	Torque	Condition	Fair	Status	pass

Wind Direction Data Form

DIGA

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Climatronics	1808	PIN414	Eric Hebert	04/11/2013	Wind Direction	none
Mfg	Climatronics		Mfg	Ushikata	Parameter wir	d direction
SN/Owner ID	788 none		Serial Number	190037	Tfer Desc. trai	nsit
Parameter	F460 translator		Tfer ID	01265		
Vane SN: 35	503 C. A	. Align. deg. true:	Slope	1.0000	0 Intercept	0.00000
VaneTorque	8 to 8	3	Cert Date	1/4/201	1 CorrCoff	1.00000
			Mfg	RM Young	Parameter wir	d direction
			Serial Number		Tfer Desc. wir	d direction wheel
			Tfer ID	01266		

	DAS I:		DAS 2:		
	Orientation	Linearity:	Orientation	Linearity:	
Abs Avg Err	3.4	2.3			
Abs Max Er	6	6			
UsaDasarintic	TforID	Input Do	uu Linoori	by Output V.	6

DICO

UseDescription:	TferID:	Input Raw:	Linearity	Output V:	Output Deg.:	Difference:	Change:	Error:
primary	01266	0	\checkmark	0.000	0	0	46	1
primary	01266	45	\checkmark	0.000	43	2	43	-2
primary	01266	90	\checkmark	0.000	87	3	44	-1
primary	01266	135	\checkmark	0.000	132	3	45	0
primary	01266	180	✓	0.000	183	3	51	6
primary	01266	225	✓	0.000	223	2	40	-5
primary	01266	270	✓	0.000	270	0	47	2
primary	01266	315	✓	0.000	314	1	44	-1
primary	01265	3		0.000	0	3		3
primary	01265	93		0.000	88	5		5
primary	01265	93		0.000	87	6		6
primary	01265	183		0.000	183	0		0
primary	01265	273		0.000	270	3		3
Sensor Compon	ent Mast		Condi	tion Good		Status	pass	
Sensor Compon	ent Condition		Condi	tion Poor	Poor		Fail	
Sensor Compon	ent Sensor Heate	r	Condi	tion N/A		Status	pass	
Sensor Compon	ent Sensor Plumb)	Condi	tion Plumb		Status	pass	
Sensor Compon	ensor Component Torque					Status	pass	
Sensor Compon	ensor Component Vane Condition				Condition Good			
Sensor Compon	nsor Component System Memo				lition See comments			

Temperature Data Form

Mfg	i	Serial Number Ta Site			Те	Technician			isit Date	Param	eter	Owner II)	
Climatronics		missing		PIN414		E	ric H	lebert	04/11	/2013	Temper	rature	none	
Mfg	Clim	natronics					Mi	fg	Extech	1	Pa	arameter Te	mperature	
SN/Owner ID	397		none				Sei	rial Number	H2326	579	Tf	fer Desc. RT	D	
Parameter	Tem	nperature Tra	anslator				Tf	er ID	01228					
DAS 1:		DAS 2:					Slope			1.00732 Inte		rcept	-0.123	880
Abs Avg Err	Abs	bs Max Er Abs Avg Err Abs Ma				Er Cert Date		1/12/2013 Corr		rCoff	1.000	000		
0.08		0.11												
UseDesc.:		Test type:	Inp	utTmpRaw	Input	TmpC	orr.:	OutputTmpS	ignal:	OutputSig	nalEng:	OSE Unit:	Difference:	
primary 7	Гетр	Low Range		-0.07		0.05		0.000	0.2		2	С	0.1	
primary 7	Гетр	Mid Range		17.35		17.35		0.000		17.	2	С	-0.11	
primary 7	Гетр	High Range	•	45.87		45.66		0.000		45.	7	C	0.02	
Sensor Comp	ponen	t Shield			C	onditi	on (Clean			Status	pass]
Sensor Com	sor Component Blower Status Switch			C	onditi	on	N/A			Status	pass]	
Sensor Com	mponent Blower			C	onditi	on [Functioning			Status	pass]	
Sensor Com	r Component System Memo			C	onditi	on				Status	pass]	

Humidity Data Form

Mfg	Serial Nu	Serial Number Ta S		e Teo		echnician		sit Date	Para	meter	Owner ID
Vaisala	A104001	6 F	PIN414		Eric Hebert		04/11/	2013	Relat	tive Humidity	none
					Mfg Serial Nu	mber	Rotron	ic 2		Parameter Rel	ative Humidity
					Tfer ID		01225				
					Slope			1.0000	0 In	ntercept	0.00000
	DAS 1:	DAS 1:			Cert Date	e		1/29/201	3 C	orrCoff	1.00000
	Low Range	High Range	e Low R	ange	High Range	e					
Abs Avg Err	2.5	4	l.0								
Abs Max Er	4.2	4	l.0								
UseDesc.:	Test type:	Device:	Input 1	RH:	GTL Raw: RH G		Corr.:	DAS V	olts:	DAS %RH:	Difference:
primary	RH Low Range	Hygrocli	p 32.	3	30.3	32	2.8 0.320		0	32.0	-0.8
primary	RH Low Range	Hygrocli	p 52.9)	48.9	52	.9	0.48	7	48.7	-4.2
primary	RH High Rang	e Hygroclij	p 93.	5	88.1	93	.6	0.89	6	89.6	-4.0
Sensor Com	ponent System	Memo		Cond	lition				Stat	us pass	
Sensor Com	ponent Blower			Cond	lition Function	ning			State	us pass	
Sensor Com	ponent Blower	Blower Status Switch			lition N/A				Stat	us pass	
Sensor Com	omponent RH Filter Co			Cond	ondition Clean					us pass	
Sensor Com	ponent Shield	nt Shield			Condition Clean				State	us pass	

Solar Radiation Data Form

Mfg	Serial N	Serial Number Ta Site		J	Technician		Site Visit Date	Param	eter	Owner ID
Licor	PY2949)	PIN414		Eric He	ebert	04/11/2013	Solar R	adiation	none
Mfg	Climatronics				Mf	g	Eppley	Pa	arameter sol	ar radiation
SN/Owner ID	350	non	e		Ser	ial Number	10765	Tí	fer Desc. SR	transfer translat
Parameter	Solar Radiat	on Trans	lator		Tfe	r ID	01246			
DAS 1:		DAS	2:		Sloj	ре	1.000	00 Inte	ercept	0.00000
% Diff of Avg	%Diff of Ma	x %Dif	f of Avg 🛛 %	Diff of Max	Cer	rt Date	1/6/20	10 Cor	rCoff	1.00000
					Mf	3	Eppley	Pa	arameter sol	ar radiation
					Ser	ial Number	34341F3	Tí	fer Desc. SR	transfer sensor
					Tfe	r ID	01245			
					Sloj	ре	1.000	00 Inte	ercept	0.00000
					Cer	rt Date	12/16/20	10 Cor	rCoff	1.00000
9.4%	9.0%	6	0.0%	0.0%						
UseDescription:	Measure I	Date N	leasureTime	Tfer Co	orr:	DAS w/n	n2: PctDif	ference:		
primary	4/12/20	3	6:00	59		66		11.9%		
primary	4/12/20	3	7:00	372		307		-17.5%		
primary	4/12/20	.3	8:00	565		506		-10.4%		

4/12/2013	8:00	303 300		-10.4%	
4/12/2013	9:00	741	670	-9.6%	
4/12/2013	10:00	872	790	-9.4%	
4/12/2013	11:00	941	851	-9.6%	
4/12/2013	12:00	943	858	-9.0%	
4/12/2013	13:00	879	803	-8.6%	
4/12/2013	14:00	740	685	-7.4%	
nent Sensor Leve	l	Condition 1	/2 bubble off level	Status	pass
nent Sensor Clear	n	Condition	Clean	Status	pass
nent Properly Site	d	Condition P	roperly sited	Status	pass
	4/12/2013 4/12/2013 4/12/2013 4/12/2013 4/12/2013 4/12/2013 4/12/2013 hent Sensor Leve	4/12/2013 8:00 4/12/2013 9:00 4/12/2013 10:00 4/12/2013 11:00 4/12/2013 12:00 4/12/2013 13:00 4/12/2013 14:00 hent Sensor Level	4/12/2013 8:00 363 4/12/2013 9:00 741 4/12/2013 10:00 872 4/12/2013 11:00 941 4/12/2013 12:00 943 4/12/2013 13:00 879 4/12/2013 14:00 740 hent Sensor Level Condition 1	4/12/2013 8:00 565 506 4/12/2013 9:00 741 670 4/12/2013 10:00 872 790 4/12/2013 11:00 941 851 4/12/2013 12:00 943 858 4/12/2013 13:00 879 803 4/12/2013 14:00 740 685 hent Sensor Level Condition 1/2 bubble off level	4/12/2013 8:00 565 506 -10.4% 4/12/2013 9:00 741 670 -9.6% 4/12/2013 10:00 872 790 -9.4% 4/12/2013 11:00 941 851 -9.6% 4/12/2013 12:00 943 858 -9.0% 4/12/2013 13:00 879 803 -8.6% 4/12/2013 14:00 740 685 -7.4% nent Sensor Level Condition 1/2 bubble off level Status

Precipitation Data Form

Mfg	5	Serial Number Ta Site				Technician			Site Visit Date P			Parameter		
Climatronics		illegible	9	PIN414		Eri	c Hebert		04/	11/2013	Precipita	ation	91040	
							Mfg		PMF)	Pa	rameter	Precipitation	
DAS 1:			DAS 2:				Serial Nur	nber	EW-	06134-50	Tf	er Desc. 2	250ml graduate	
A Avg % Diff	f: A M	ax % I	Di A Avg %	Dif A N	/Iax % Di		Tfer ID		012	50				
2.0%		4.0	J 70				Slope			1.0000	0 Inter	cent	0.00000	
							Cont Data			9/5/200	5 Com	Coff	1 00000	
										5/5/200			1.00000	
UseDesc.	Test	type:	TferVolume:	Iteration:	TimePerTi	p:	Eq.Ht:	DAS	eng:	Eq.HtUnit:	OSE Un	t: TferUn	its:PctDifference	
primary	tip che	ck	10 manual	1	2 sec		1.00	1.0	00 mm		mm	ml		
primary	test 1		231.5	1	10 sec	_	5.00	5.0	00 mm		mm	ml	0.0%	
primary	test 2		231.5	2	10 sec		5.00	4.8	30	mm	mm	ml	-4.0%	
Sensor Com	ponen	Syste	em Memo		Condi	itio	n See com	ments			Status	pass		
Sensor Com	ponen	t Sens	or Heater		Condi	itio	n Not funct	ioning			Status	Fail		
Sensor Com	ponen	Prope	erly Sited		Condi	itio	n See com	ments			Status	pass		
Sensor Com	ponen	t Gaug	e Drain Scree	n	Condi	itio	n Not insta	lled			Status	Fail		
Sensor Com	ponen	t Level			Condi	itio	n Level				Status	pass		
Sensor Com	omponent Gauge Clean			Condi	itio	n Clean				Status	pass			
Sensor Com	Component Funnel Clean			Condi	itio	n Clean				Status	pass			
Sensor Com	ponen	nt Condition			Condi	dition Fair					Status	pass		
Sensor Com	ponen	t Gaug	Gauge Screen			lition Installed			Status pass			pass		

Infrastructure Data For

Site ID P	PIN414	Technician Eric He	lebert Site Visit Date 04/11/2013
Shelter Mal	ke	Shelter Model	Shelter Size
Alan pre-fab		s/n 861168 1808	512 cuft

Sensor Component	Shelter Roof	Condition	Poor	Status	Fail
Sensor Component	Sample Tower Type	Condition	Туре В	Status	pass
Sensor Component	Met Tower	Condition	Good	Status	pass
Sensor Component	Moisture Trap	Condition	Not installed	Status	Fail
Sensor Component	Power Cables	Condition	Fair	Status	pass
Sensor Component	Rotometer	Condition	Installed	Status	pass
Sensor Component	Conduit	Condition	Fair	Status	pass
Sensor Component	Sample Tower	Condition	Good	Status	pass
Sensor Component	Shelter Condition	Condition	Poor	Status	Fail
Sensor Component	Shelter Floor	Condition	Poor	Status	Fail
Sensor Component	Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component	Signal Cable	Condition	Fair	Status	pass
Sensor Component	Tubing Type	Condition	1/2 inch 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
ARS	none	PIN414	Eric Hebert	04/11/2013	Shelter Temperature	e none
DAS 1:	DAS 2:		Mfg	Extech	Parameter Sh	elter Temperatur
Abs Avg Err Abs 1.28	2.09 Abs Avg	Err Abs Max Er	Serial Number	H232679	Tfer Desc. R	D
			Tfer ID	01228		
			Slope	1.0073	2 Intercept	-0.12380
			Cert Date	1/12/201	3 CorrCoff	1.00000

UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	20.17	20.15	0.000	22.2	С	2.09
primary	Temp Mid Range	24.51	24.45	0.000	23.4	С	-1.04
primary	Temp Mid Range	22.50	22.46	0.000	23.2	С	0.71

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Ozone	PIN414	Eric Hebert	04/11/2013	Cell B Freq.	ThermoElectron	2770		
This analyzer diagno	ostic check is outsi	ide the manufacturer's	s recommended	value.				
Ozone	PIN414	Eric Hebert	04/11/2013	Cell A Freq.	ThermoElectron	2770		
This analyzer diagno	ostic check is outsi	ide the manufacturer's	s recommended	value.				
Precipitation	PIN414	Eric Hebert	04/11/2013	Properly Sited	Climatronics	2767		
Objects violate the 4	5 degree rule for t	he tipping bucket rain	n gage.					
Precipitation The tinning bucket ra	PIN414	Eric Hebert	04/11/2013	Sensor Heater	Climatronics	2767		
The upping bucket it	ani gauge neuter i	not functioning.						
Wind Direction	PIN414	Eric Hebert	04/11/2013	Condition	Climatronics	3738		
The upper and lower	sections of the w	ind sensor body are lo	oose. This cond	ition will cause pre-	mature failure of the	e sensor and car	n affect data	accuracy.

Field Systems Comments

1 Parameter: SiteOpsProcComm

The site operator reported that the flow pump is routinely turned on while the tower is down after the dry deposition filter is installed. She reported that she was instructed by ARS to operate the flow pump while the tower was in the down position to check for proper filter pack installation. It was discussed that this is not a proper check of filter installation since air flow could be going through the connector with the connector completely locked in place. The operator reported that the plastic bag is used to handle the filter and that gloves are not used. The site operator reported that the ozone inlet filter is changed while the dry deposition filter is still installed and exposed on the tower.

2 Parameter: SiteOpsProcedures

The site operator reviews data each week to ensure proper operation of sensors and instruments.

3 Parameter: ShelterCleanNotes

Shelter has some loose tiles and signs of a leak in the SW corner. It is somewhat cluttered with equipment that is unused and some that requires installation. The lighting is poor.

Site ID PIN414	Technician Eric Hebert	Site Visit Date 04/	11/2013
Site Sponsor (agency)	NPS	USGS Map	North Chalone Peak
Operating Group	NPS	Map Scale	
AQS#		Map Date	
Meteorological Type	Climatronics		
Air Pollutant Analyzer	Ozone, IMPROVE	QAPP Latitude	36.4850
Deposition Measurement	dry, wet	QAPP Longitude	-121.1556
Land Use	woodland - scrub	QAPP Elevation Meters	335
Terrain	complex	QAPP Declination	
Conforms to MLM	Marginally	QAPP Declination Date	
Site Telephone	(831) 389-4586	Audit Latitude	36.483235
Site Address 1	5000 Hwy 146	Audit Longitude	-121.156876
Site Address 2		Audit Elevation	317
County	San Benito	Audit Declination	13.5
City, State	Paicines, CA	Present	
Zip Code	95043	Fire Extinguisher 🗹	inspected 5/19/2012
Time Zone	Pacific	First Aid Kit	
Primary Operator		Safety Glasses	
Primary Op. Phone #		Safety Hard Hat	
Primary Op. E-mail		Climbing Belt	
Backup Operator		Security Fence	
Backup Op. Phone #		Secure Shelter	
Backup Op. E-mail		Stable Entry Step 🗹	
Shelter Working Room	Make Alan pre-fab	Iodel s/n 861168 1808	Shelter Size 512 cuft
Shelter Clean	Notes Shelter has some loose tiles equipment that is unused and	and signs of a leak in the SW of some that requires installation	orner. It is somewhat cluttered with
Site OK 🔽	Notes		
Driving Directions From	Hollister proceed south on route 25 to h	ighway 146 and the entrance to	Pinnacles National Monument. Turn

STATES OF

Field	ST	151	tems	Π	91	19	F	orm
I ICIU	\mathbf{J}	D.			<u>a</u>	Let -		

PIN414

F-02058-1500-S2-rev001

Site ID

Technician Eric Hebert

Site Visit Date 04/11/2013

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

Siting Distances OK

Siting Criteria Comment

Fie	eld Sy	stems Data Fo	orm		F-02058-1500-S3-rev001		
Site	e ID	PIN414	Technician Eric Hebert		Site Visit Date 04/11/2013		
1	Are win being in	nd speed and direction afluenced by obstruction	sensors sited so as to avoid ons?				
2 Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)							
3	Are the	tower and sensors plu	mp5				
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?						
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)						
6	Is the s	olar radiation sensor p	lumb?		1/2 bubble off level		
7	Is it site light?	ed to avoid shading, or	any artificial or reflected				
8	Is the r	ain gauge plumb?					
9	Is it site towers,	ed to avoid sheltering e etc?	ffects from buildings, trees,		45 degree rule violation		
10	Is the start facing i	urface wetness sensor : north?	sited with the grid surface		N/A		
11	Is it in	clined approximately 3	i0 degrees?		N/A		

Fie	eld Sy	stems Data I	Form				F-020	58-15	00-S4-re	ev001
Site	ID	PIN414	Technician	Eric Hebert		Site Visit Da	te 04/11/2013			
1	Do all th condition	e meterological sen n, and well maintair	sors appear to be ned?	intact, in good			-			
2	Are all t reportin	he meteorological s g data?	ensors operationa	l online, and						
3	3 Are the shields for the temperature and RH sensors clean?									
4	4 Are the aspirated motors working?									
5	Is the so scratche	lar radiation sensor s?	's lens clean and	free of						
6	Is the su	rface wetness senso	r grid clean and u	indamaged?		N/A				
7	Are the s	sensor signal and po n, and well maintain	ower cables intact ned?	, in good						
8	Are the s from the	sensor signal and po elements and well	ower cable connec maintained?	tions protected						
Par	ameter		Manufacturer	Model		S/N		Clie	ent ID	
Pre	cipitation		Climatronics	100508-2	unanu Uranez	illegible		910	40	
Sola	ar Radiatio	on I	Licor	LI-200	20020	PY29490		non	e	
Relative Humidity Vaisala HMP45ASF			P	A1040016		non	e			
Ten	nperature		Climatronics	100093	1202	missing		non	le	
Win	d Directio	n	Climatronics	100076	10,000	1808		non	e	
Win	d Speed		Climatronics	100076		4559		910	53	

Fi	Field Systems Data Form					F-02058-15	00-S5-rev001
Site	e ID	PIN414	Technician Eric	c Hebert		Site Visit Date 04/11/2013	
	Siting C	Criteria: Are the	e pollutant analyzers and c	leposition equ	<u>iipr</u>	nent sited in accordance with 40 CFR 58	8. Appendix E
1	Do the s unrestri	sample inlets hat interview in the second se	ave at least a 270 degree ar	•c of			
2	Are the	sample inlets 3	- 15 meters above the gro	und?			
3	Are the and 20 m	sample inlets > meters from tre	• 1 meter from any major (ees?	obstruction,			
	Pollutar	nt analyzers an	d deposition equipment op	erations and	mai	<u>intenance</u>	
1	Do the a condition	analyzers and e on and well mai	quipment appear to be in ntained?	good			
2	Are the reportin	analyzers and ng data?	monitors operational, on-l	ine, and			
3	Describ	e ozone sample	tube.			1/4 teflon by 12 meters	
4	Describ	e dry dep samp	le tube.			1/2 teflon by 10 meters	
5	Are in-l indicate	ine filters used location)	in the ozone sample line?	(if yes		At inlet only	
6	Are san obstruc	ple lines clean, tions?	, free of kinks, moisture, a	nd			
7	Is the ze	ero air supply d	lesiccant unsaturated?				
8	Are the	re moisture tra	ps in the sample lines?				
9	Is there clean?	a rotometer in	the dry deposition filter li	ne, and is it	<	Clean and dry	
Par	ameter	- 10 B	Manufacturer	Model		S/N Clie	ent ID

Parameter	Manufacturer	Model	S/N	Client ID	
Sample Tower	Aluma Tower	В	AT-5381-F9-3	928348]
Ozone	ThermoElectron Inc	49C	49c-74530376	90765]
MFC power supply	Tylan	RO-32	FP9404005	03685	
Filter pack flow pump	Thomas	107CA18	1088002897	none]
Zero air pump	Werther International	PC 70/4	000706555	none	

Fie	eld Sy	vstems Data Fo	orm			F-02	058-15	00-86	-rev001		
Site	ID	PIN414	Technician	Eric Hebert	922162	Site Visi	it Date	04/11/2013			
	DAS, s	ensor translators, and p	<u>ns ar</u>	id maintena	<u>nce</u>						
1	Do the well ma	DAS instruments appe aintained?									
2	Are all modem	the components of the , backup, etc)	al? (printers,								
3	Do the lightnii	analyzer and sensor signs of the sensor sign of the	gnal leads pass t ?	hrough		Met sensors	only				
4	Are the well ma	e signal connections pro aintained?	otected from the	weather and							
5	Are the	e signal leads connected	I to the correct I	DAS channel?							
6	Are the ground	e DAS, sensor translato led?	ors, and shelter j	oroperly							
7	Does th	ie instrument shelter h	ave a stable pow	ver source?							
8	Is the in	nstrument shelter temp	led?								
9	Is the n	net tower stable and gr	ounded?			Stable			Grounded		
10	Is the s	ample tower stable and	l grounded?						V		
11	Tower	comments?									

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Gateway	Solo	unknown	none
DAS	Environmental Sys Corp	8816	2615	90612
F460 translator	Climatronics	100163	788	none
Modem	US Robotics	33.6 fax modem	unknown	none
Printer	Hewlett Packard	842C	unknown	none
Solar Radiation Translator	Climatronics	100144	350	none
Temperature Translator	Climatronics	100088-2	397	none

Field Systems Data	Foi	m				F-02	058-	1500-S7-rev001	
Site ID PIN414		Tecl	nician	Eric Hebert	Site Visit Date	04/11/2013	C. Mark	and the second	
See See									
Documentation									
Does the site have the requir	ed in	strum	ent and	equipment man	uals?				
Wind speed sensor	Yes	No	N/2	A Data	logger	Yes	No	N/A	
Wind direction sensor				Data	logger				
Temperature sensor				Strin	chart recorder				
Relative humidity sensor				Com	puter				
Solar radiation sensor				Mod	em				
Surface wetness sensor				Print	er				
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				Shelt	er heater				
Filter pack flow controller				Shelt	er air conditioner				
Filter pack MFC power supply									
Does the site have the requ	ired a	nd m	ost rece	nt QC document	ts and report forms?				
	Pres	ent				Curre	nt		
Station Log		<	DataVie	w2					
SSRF		<							
Site Ops Manual	[<	Jan 200	06					
HASP	[
Field Ops Manual	[
Calibration Reports	[~	Not cur	rent					
Ozone z/s/p Control Charts									
Preventive maintenance schedu	ll (
1 Is the station log properly completed during every site visit? ▼ Dataview checklists									
2 Are the Site Status Report Forms being completed and current? Flow section only									
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 explana natural or man-made, that may	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:								
	-230354		1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1			en and an			

Fie	eld Sy	stems Data	a Form		F-02058-1500-S8-rev0				
Site	e ID	PIN414	Technician	Eric Hebert	Site Visit Date	04/11/2013			
1	Site op Has the	eration procedur e site operator at ? If yes, when an	<u>res</u> tended a formal CAS ⁷ d who instructed?	FNET training	Trained by previous semiannually	operator, ARS p	provides updates		
2	Has the trainin	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?							
3	Is the si schedul	te visited regular e?	rly on the required Tu	esday					
4	Are the flollowe	standard CAST d by the site oper	NET operational proc rator?	edures being					
5	Is the si	te operator(s) kn	owledgeable of, and a	ble to perform					

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

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

the required site activities? (including documentation)

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

QC Check Performed Frequency **Multi-point Calibrations** ~ Monthly and semiannually ~ **Automatic Zero/Span Tests** Daily < Every 2 weeks Manual Zero/Span Tests \checkmark Daily **Automatic Precision Level Tests** ~ As needed **Manual Precision Level Test** \checkmark Alarm values only **Analyzer Diagnostics Tests** \checkmark Every 2 weeks **In-line Filter Replacement (at inlet)** N/A **In-line Filter Replacement (at analyze** Weekly Sample Line Check for Dirt/Water ~ Weekly **Zero Air Desiccant Check**

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

Datalogger only

Compliant

Compliant

~

~

~

 \checkmark

~

~

 \square

~

 \checkmark

 \mathbf{X}

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

~

The site operator reviews data each week to ensure proper operation of sensors and instruments.

Fie	eld Sy	stems Data Fo	rm				F-02058-1500-S9-rev001				
Site	ID	PIN414	Techn	ician Eric Hebert		Site Visit Date	e 04/11/2013]			
	Site oper	ration procedures									
1 Is the filter pack being changed every Tuesday as scheduled?							Filter changed mornings 90%				
2 Are the Site Status Report Forms being completed and filed correctly?											
3	Are data downloads and backups being performed as scheduled?						No longer required	I			
4	Are general observations being made and recorded? How?						SSRF and dataview checklists				
5	Are site supplies on-hand and replenished in a timely fashion?										
6	Are sample flow rates recorded? How?						SSRF				
7	Are sam fashion?	ples sent to the lab on	a regulai	sche	dule in a timely						
8	Are filte and ship	rs protected from cont ping? How?	aminatio	n dur	ing handling		Bag used as glove	e, gloves not used			
9	Are the soperatio	site conditions reporte ns manager or staff?	d regular	ly to 1	the field						
QC	Check Pe	erformed		Free	luency			Compliant			
Μ	Iulti-poir	t MFC Calibrations		Sem	iannually	796					
F	low Syste	em Leak Checks		Wee	kly						
Fi	Filter Pack Inspection										
F	Flow Rate Setting Checks				0.000						
V	Visual Check of Flow Rate Rotometer Weekly										
Ir	n-line Filt	ter Inspection/Replace	ment 🗹	As n	eeded						
S	ample Li	ne Check for Dirt/Wat	er								
Duon	de env e	dditional avalanation	nhotogra	mh ar	. skotah if pagas) regarding condit	tions listed above or a	ny other features		

The site operator reported that the flow pump is routinely turned on while the tower is down after the dry deposition filter is installed. She reported that she was instructed by ARS to operate the flow pump while the tower was in the down position to check for proper filter pack installation. It was discussed that this is not a proper check of filter installation since air flow could be going through the connector with the connector completely locked in place. The operator reported that the plastic bag is used to handle the filter and that gloves are not used. The site operator reported that the ozone inlet filter is changed while the dry deposition filter is still installed and exposed on the tower.

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number				
DCF	DCP114-Sandy Grenville-04/22/2013									
1	4/22/2013	DAS	Campbell	000345	CR3000	2124				
2	4/22/2013	Elevation	Elevation	None	1	None				
3	4/22/2013	Filter pack flow pump	Thomas	04926	107CAB18	100300020819				
4	4/22/2013	Flow Rate	Арех	000659	AXMC105LPMDPCV	54748				
5	4/22/2013	Infrastructure	Infrastructure	none	none	none				
6	4/22/2013	Modem	Raven	06479	H4222-C	0808311283				
7	4/22/2013	Ozone	ThermoElectron Inc	000732	49i A1NAA	1105347319				
8	4/22/2013	Ozone Standard	ThermoElectron Inc	000545	49i A3NAA	0929938241				
9	4/22/2013	Sample Tower	Aluma Tower	000030	В	AT-81056-J-4				
10	4/22/2013	Shelter Temperature	Campbell	none	107-L	none				
11	4/22/2013	Siting Criteria	Siting Criteria	None	1	None				
12	4/22/2013	Temperature	RM Young	02828	41342	illegible				
13	4/22/2013	Zero air pump	Werther International	06939	PC70/4	000829175				
DAS Data Form

DAS Time Max Error:

0

Mfg	Seria	l Number Site	e T	echnician	Site Visit Date	Parameter	Use Desc.
Campbell	2124	DC	CP114	Sandy Grenville	04/22/2013	DAS	Primary
Das Date: Das Time: Das Day: Low Chann Avg Diff: 0.000	4 /22/2013 14:31:37 112 el: Max Diff: 01 0.0	Audit Date4 /22/2013Audit Time14:31:37Audit Day112High Channel:Avg Diff:Max Diff:0010.00010.0001		Mfg Serial Number Tfer ID Slope Cert Date Mfg Serial Number Tfer ID	Datel 15510194 01320 1.0000 2/13/201 Fluke 95740135 01311	Parameter Tfer Desc. Intercept CorrCoff Parameter Tfer Desc.	DAS Source generator (D 0.00000 1.00000 DAS DVM
				Slope	1.0000	0 Intercept	0.00000
				Cert Date	1/26/201	3 CorrCoff	1.00000
Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference	
7	7 0.0000	0.0000	0.0001	V	V	0.0001	
7	7 0.1000	0.0999	0.1000	V	V	0.0001	
7	0.3000	0.2998	0.2998	V	V	0.0000	
7	0.5000	0.4997	0.4998	V	V	0.0001	
7	0.7000	0.6997	0.6997	V	V	0.0000	
7	0.9000	0.8996	0.8997	V	V	0.0001	
7	1.0000	0.9994	0.9995	V	V	0.0001	

Flow Data Form

Apex 54748 DCP114 Sandy Grenville 04/22/2013 Flow Rate 000659 Mfg BIOS Parameter Flow Rate Serial Number 103471 Tfer Desc. nexus Tfer ID 01420 Intercept 0.00 Slope 1.00000 Intercept 0.00 Cert Date 6/13/2012 CorrCoff 1.00 Mfg BIOS Parameter Flow Rate Serial Number 103424 Tfer Desc. BIOS cell Mfg BIOS Parameter Flow Rate Serial Number 103424 Tfer Desc. BIOS cell 1 Tfer ID 01410 Intercept 0.00 Cert Date 1/27/2012 CorrCoff 1.00 DAS 1: DAS 2: Cal Factor Zero -0.09 0.00 Cal Factor Full Scale 0.98 1.64% 1.70% Max % Di A Max % Di Cal Factor Full Scale 0.98 Notometer Reading: 1.5 UseDescription: Test type: Input I/m: Input STP; MtcDisp.: OutputSignal: Output S E: InputUnit: OutputSignal: PottputSignal:	000
Mfg BIOS Parameter Flow Rate Serial Number 103471 Tfer Desc. nexus Tfer ID 01420 Intercept 0.00 Cert Date 6/13/2012 Corr Coff 1.00 Mfg BIOS Parameter Flow Rate 9 Stope 1.00000 Intercept 0.00 Cert Date 6/13/2012 Corr Coff 1.00 Mfg BIOS Parameter Flow Rate 9 Stope 1.00000 Intercept 0.00 Cert Date 103424 Tfer Desc. BIOS cell 1 Tfer ID 01410 1 100000 1 Stope 1.00000 Intercept 0.00 Cert Date 1/27/2012 Corr Coff 1.0000 DAS 1: DAS 2: Cal Factor Zero -0.09 A Avg % Diff: A Max % Di A Avg % Diff A Max % Di 0.38 1.64% 1.70% Cal Factor Full Scale 0.98 Rotometer Reading: 1.5 UseDescription: Test type: Input I/m: Input Signal! OutputSignal! PetDiffere	000
Serial Number 103471 Tfer Desc. nexus Tfer ID 01420 Slope 1.00000 Intercept 0.00 Cert Date 6/13/2012 CorrCoff 1.00 Mfg BIOS Parameter Flow Rate Serial Number 103424 Tfer Desc. BIOS cell Tfer ID 01410 103424 Tfer Desc. BIOS cell Tfer ID 01410 103424 Tfer Desc. BIOS cell DAS 1: DAS 2: Cal Factor Zero -0.09 A Avg % Diff: A Max % Di A Avg %Dif A Max % Di Cal Factor Full Scale 0.98 1.64% 1.70% Rotometer Reading: 1.5 1.5	000
Sterial Number 1034/1 Iter Desc. nexus Tfer ID 01420 Slope 1.00000 Intercept 0.00 Cert Date 6/13/2012 CorrCoff 1.00 Mfg BIOS Parameter Flow Rate Serial Number 103424 Tfer Desc. BIOS cell Tfer ID 01410 Slope 1.00000 Intercept 0.00 Cert Date 1/27/2012 CorrCoff 1.00 DAS 1: DAS 2: Cal Factor Zero -0.09 A Avg % Diff: A Max % Di A Avg %Dif A Max % Di Cal Factor Full Scale 0.98 1.64% 1.70% Rotometer Reading: 1.5 UseDescription: Test type: Input I/m: Input STP: MtcDisp.: Output Signal Output S E: InputUnit: Output Signal PetDiffere	000
Tfer ID 01420 Slope 1.00000 Intercept 0.00 Cert Date 6/13/2012 CorrCoff 1.00 Mfg BIOS Parameter Flow Rate Serial Number 103424 Tfer Desc. BIOS cell Tfer ID 01410 100000 Intercept 0.00 Slope 1.00000 Intercept 0.00 Cert Date 1/27/2012 CorrCoff 1.00 DAS 1: DAS 2: Cal Factor Zero -0.09 A Avg % Diff: A Max % Di A Avg %Dif A Max % Di Cal Factor Full Scale 0.98 1.64% 1.70% Rotometer Reading: 1.5 1.5 UseDescription: Test type: Input 1/m; Input STP; MfcDisp.; OutputSignal: Output S E; InputUnit: OutputSignal: PetDiffere	000
Slope 1.00000 Intercept 0.00 Cert Date 6/13/2012 CorrCoff 1.00 Mfg BIOS Parameter Flow Rate Serial Number 103424 Tfer Desc. BIOS cell Tfer ID 01410 1100000 DAS 1: DAS 2: Cal Factor Zero -0.09 A Avg % Diff: A Max % Di A Avg %Dif A Max % Di Cal Factor Full Scale 0.388 1.64% 1.70% Input J/m: Input STP: MfcDisp.: OutputSignal: Output S E: InputUnit: OutputSignal: PctDiffere	000
Cert Date 6/13/2012 CorrCoff 1.00 Mfg BIOS Parameter Flow Rate Serial Number 103424 Tfer Desc. BIOS cell Tfer ID 01410 Tfer Desc. BIOS cell Slope 1.00000 Intercept 0.00 Cert Date 1/27/2012 CorrCoff 1.00 DAS 1: DAS 2: Cal Factor Zero -0.09 A Avg % Diff: A Max % Di A Avg %Dif A Max % Di Cal Factor Full Scale 0.988 1.64% 1.70% Cal Factor Full Scale 0.998 0.998 Rotometer Reading: 1.5 VulputSignall PctDiffere	000
Mfg BIOS Parameter Flow Rate Serial Number 103424 Tfer Desc. BIOS cell Tfer ID 01410 Tfer Desc. BIOS cell Slope 1.00000 Intercept 0.000 Cert Date 1/27/2012 CorrCoff 1.0000 A Avg % Diff: A Max % Di A Avg % Dif A Max % Di Cal Factor Zero -0.09 1.64% 1.70% Cal Factor Tell Scale 0.98 1.5 UseDescription: Test type: Input I/m: Input STP: MfcDisp.: OutputSignal: Output S E: InputUni: OutputSignal: PctDiffere	200
Serial Number 103424 Tfer Desc. BIOS cell Tfer ID 01410 Slope 1.00000 Intercept 0.00 Cert Date 1/27/2012 Corr Coff 1.0000 DAS 1: DAS 2: Cal Factor Zero -0.09 A Avg % Diff: A Max % Di A Avg % Dif A Max % Di Cal Factor Full Scale 0.98 1.64% 1.70% Input I/m: Input STP: MfcDisp.: OutputSignal: Output S E: InputUnit: OutputSignali OutputSignali	200
Tfer ID 01410 Slope 1.00000 Intercept 0.00 Cert Date 1/27/2012 CorrCoff 1.00 A Avg % Diff: A Max % Di A Avg % Dif A Avg % Diff: A Max % Di Cal Factor Zero -0.09 -0.98 1.64% 1.70% UseDescription: Test type: Input J/m: Input STP: MfcDisp.: Output Signal: Output S E: Input Unit: Output Signal: Output S E:	200
Slope 1.00000 Intercept 0.00 Cert Date 1/27/2012 CorrCoff 1.00 DAS 1: DAS 2: Cal Factor Zero -0.09 A Avg % Diff: A Max % Di A Avg %Dif A Max % Di Cal Factor Full Scale 0.98 1.64% 1.70% Rotometer Reading: 1.5 UseDescription: Test type: Input 1/m: Input STP: MfcDisp.: Output Signal: Output S E: Input Unit: OutputSignal! PctDifferent	200
DAS 1: DAS 2: Cal Factor Zero -0.09 A Avg % Diff: A Max % Di A Avg %Dif A Max % Di Cal Factor Full Scale 0.98 1.64% 1.70% Input STP: MfcDisp.: Output Signal: Output S E: Input Unit: Output Signal	000
DAS 1: DAS 2: Cal Factor Zero -0.09 A Avg % Diff: A Max % Di A Avg % Dif A Max % Di Cal Factor Full Scale 0.98 1.64% 1.70% Input STP: MfcDisp.: Output Signal: Output S E: Input Unit: Output Signal Output S E:	000
A Avg % Diff: A Max % Di A Avg %Dif A Max % Di Cal Factor Full Scale 0.98 1.64% 1.70% Imput STP: MfcDisp.: OutputSignal: Output S E: Input Unit: Input S E: Input S	
1.64% 1.70% Rotometer Reading: 1.5 UseDescription: Test type: Input I/m: Input STP: MfcDisp.: OutputSignal: Output S E: InputUnit: OutputSignal	
UseDescription: Test type: Input 1/m: Input STP: MfcDisp.: OutputSignal: Output S E: InputUnit: OutputSignalIPctDifferent	
	ice:
primary pump off 0.000 0.000 0.01 0.007 -0.02 1/m 1/m	_
primary leak check 0.000 0.000 0.00 0.001 -0.02 1/m 1/m	70/
primary test pt 2 1.541 1.524 1.55 1.516 1.50 1/m 1/m -1.5 primary test pt 2 1.542 1.525 1.52 1.515 1.50 1/m 1/m -1.6	1%
primary test pt 3 1.543 1.526 1.52 1.518 1.50 1/m 1/m -1.7	0%
Sensor Component Leak Test Condition Status pass	
Sensor Component Filter Azimuth Condition Not tested Status pass	
Sensor Component Filter Depth Condition 3.0 cm Status pass	
Sensor Component Filter Position Condition Good Status pass	
Sensor Component Moisture Present Condition No moisture present 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	
Sensor Component Filter Distance Condition 4.0 cm Status pass]

Ozone Data Form

Mfg	Se	rial Number Ta	Site	Te	chnician		Site Visit Date		Parameter		Owner I	D
ThermoElect	ron Inc 1	105347319	DCP114	Sa	andy Gre	nville	04/22/2013		Ozone		000732	
Slope: Intercept CorrCoff	0.99	9300Slope:2403Intercept9999CorrCoff	0.00000	0 0 0	Mfg Serial Number		ThermoE 49C-731 01100	ThermoElectron IncPa49C-73104-373Tf01100		rameter ozone		r
DAS 1.		DAS 2.			Classe			1 0020	0		0.15	7061
A Avg % Di	iff: A Max	x % Di A Avg %	Dif A Max	% Di	Slope			1.00300	• Inter	cept	-0.17	901
1.09	%	2.6%			Cert Da	ate		4/2/201	3 Corr	Coff	1.00	0000
UseDesc	ription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	Unit:	PctDif	ference:	
prima	ary	1	0.00	0.1	17	1.	17	ppb				
prima	ary	2	31.00	31.	08	31.	.90	ppb			2.64%	
prima	ary	3	50.74	50.	76	51.	.09	ppb			0.65%	
prima	ary	4	80.16	80.	09	80.	.30	ppb			0.26%	
prim	ary	5	103.74	103	.60	104	.00	ppb			0.39%	
Sensor Co	mponent	Cell B Noise		Conditio	on 0.5 pp	ob			Status	pass		
Sensor Co	mponent	Cell B Tmp.		Conditio	on				Status	pass		
Sensor Co	mponent	Fullscale Voltage		Conditio	n N/A				Status	pass		
Sensor Co	mponent	Inlet Filter Conditio	n	Conditio	on Clear	1			Status	pass		
Sensor Co	mponent	Line Loss		Conditio	on < 1 %)			Status	pass		
Sensor Co	mponent	Offset		Conditio	n -0.60				Status	pass		
Sensor Co	mponent	Span		Condition 0.998				Status	pass			
Sensor Co	mponent	Cell B Freq.		Condition 99.5 kHz				Status	pass			
Sensor Co	mponent	System Memo		Condition				Status	pass			
Sensor Co	mponent	Sample Train		Condition Good				Status	pass			
Sensor Co	mponent	Cell B Pressure		Conditio	on				Status	pass		
Sensor Co	mponent	Cell B Flow		Conditio	on 0.73 l	pm			Status	pass		
Sensor Co	mponent	Cell A Tmp.		Conditio	on 36.6 (0			Status	pass		
Sensor Co	mponent	Cell A Pressure		Conditio	n 725 m	nmHg			Status	pass		
Sensor Component Cell A Noise			Conditio	on 0.9 pp	ob			Status	pass			
Sensor Co	mponent	Cell A Freq.		Conditio	n 113.8	kHz			Status	pass		
Sensor Co	mponent	Cell A Flow		Conditio	on 0.74	pm			Status	pass		
Sensor Co	mponent	Battery Backup		Conditio	ondition N/A				Status	pass		
Sensor Component Zero Voltage			Condition N/A				Status	pass				

Temperature Data Form

Mfg		Serial Nun	nber Ta	Site		Tec	Technician		Site V	visit Date	Paramo	eter	Owner II	•
RM Young	I Young illegible DCP114		Sa	Sandy Grenville		04/22	2/2013	Temper	ature	02828				
							Mfg	g	Extec	h	Pa	arameter Te	emperature	
							Seri	ial Number	H232	734	Tf	er Desc. R	TD	
							Tfe	r ID	01227	7				
DAS 1.			DAS 2.				Sloj	ре		1.0043	5 Inte	rcept	-0.084	80
Abs Avg Err	Abs	Max Er	Abs Avg	g Err Abs	Max Er		Cer	rt Date		1/12/201	3 Corr	rCoff	1.000	00
0.13		0.15]								
UseDesc.:		Test type:	Inp	outTmpRaw	InputTm	pCor	rr.:	OutputTmpS	ignal:	OutputSig	nalEng:	OSE Unit:	Difference:	
primary	Temp	Low Range	9	-0.10	-0.0	-0.02 0.000		0.000	0.1		С	0.1		
primary	Temp	Mid Range	;	24.51	24.4	19	0.000		24.6		С	0.15		
primary	Temp	High Rang	e	48.36	48.2	23		0.000		48.	4	С	0.13	
Sensor Com	ponen	t Shield			Cond	litio	n M	loderately clea	an		Status	pass	· · · ·	
Sensor Com	ponen	t Blower S	tatus Swi	tch	Cond	litio	n F	unctioning			Status	pass		
Sensor Com	ponen	t Blower			Cond	litio	n N	lot functioning			Status	Fail		
Sensor Com	ponen	t System N	/lemo		Cond	litio	n S	ee comments			Status	pass		

Infrastructure Data For

Site ID	DCP114	Technician Sandy G	renville Site Visit Date 04/22/2013
Shelter	Make	Shelter Model	Shelter Size
Ekto		8810 (s/n 2149-13)	640 cuft

Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Sample Tower Type	Condition	Туре В	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	Conduit	Condition	N/A	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	Good	Status	pass

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	DCP114	Sandy Grenville	04/22/2013	Shelter Temperatu	ire none
DAS 1:	DAS 2:	-	Mfg	Extech	ParameterS	Shelter Temperatur
Abs Avg ErrAb0.11	g Err Abs Max Er Abs Avg Err Abs 0.11 0.12		Serial Number	H232734	Tfer Desc.	RTD
			Tfer ID	01227		
			Slope	1.0043	5 Intercept	-0.08480
			Cert Date	1/12/201	3 CorrCoff	1.00000

UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	25.84	25.81	0.000	25.7	С	-0.1
primary	Temp Mid Range	25.14	25.12	0.000	25.0	С	-0.11
primary	Temp Mid Range	25.07	25.05	0.000	24.9	С	-0.12

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem	
Temperature	DCP114	Sandy Grenville	04/22/2013	Blower	RM Young	1006			
The forced-air blower for the shield is not functioning.									

Field Systems Comments

1 Parameter: SiteOpsProcComm

The site operator is following procedures and doing a very good job with filter handling.

2 Parameter: DasComments

One leg of the meteorological sensor tower is damaged and has a hole near the midpoint of the tower.

3 Parameter: SiteOpsProcedures

The ozone inlet filter is replaced and the sample line is leak-tested every two weeks.

4 Parameter: SitingCriteriaCom

The site is located in a wooded thicket within a state park. The area surrounding the park is almost completely intensive agriculture. The site may not be regionally representative.

5 Parameter: ShelterCleanNotes

The shelter is currently in fair condition. There are loose floor tiles. There are signs of rodent infestation.

6 Parameter: MetOpMaintCom

The blower for the aspirated temperature sensor shield is not functioning. This will affect sensor accuracy and data quality.

Site ID DCP114		Technician Sandy Grenvill	e Site Visit Date 04/	22/2013	
Site Sponsor (agency)	EPA		USGS Map	Mount Sterling	
Operating Group	private /	state	Map Scale		
AQS #	39-047-9	9991	Map Date		
Meteorological Type	R.M. Yo	ung]		
Air Pollutant Analyzer	Ozone		QAPP Latitude	39.6358	
Deposition Measureme	nt dry, wet		QAPP Longitude	-83.2600	
Land Use	agricultu	re, woodland - mixed	QAPP Elevation Meters	267	
Terrain	flat		QAPP Declination	6.25	
Conforms to MLM	Margina	ly	QAPP Declination Date	2/23/2006	
Site Telephone	(740) 86	9-4722	Audit Latitude	39.63588	
Site Address 1	Waterloo	Road	Audit Longitude	-83.26056	
Site Address 2	Deer Cre	eek State Park	Audit Elevation	26	
County	Fayette		Audit Declination	-6.3	
City, State	Mount S	terling, OH	Present		
Zip Code	43143		Fire Extinguisher ☑	No inspection date	
Time Zone	Eastern		First Aid Kit		
Primary Operator			Safety Glasses		
Primary Op. Phone #			Safety Hard Hat 🗹		
Primary Op. E-mail			Climbing Belt		
Backup Operator	none		Security Fence		
Backup Op. Phone #			Secure Shelter		
Backup Op. E-mail			Stable Entry Step 🗹		
Shelter Working Roon	Make	Ekto M	lodel 8810 (s/n 2149-13)	Shelter Size 640 cuft	
Shelter Clean	Notes	The shelter is currently in fair infestation.	condition. There are loose floo	or tiles. There are signs of rodent	
Site OK	Notes				
Driving Directions Fi si lo ta	om Circleville gns for the pa dge. Continu ke the next rig	e take 22/56 west. Stay on 22 the take 22/56 west. Stay on 22 the trk office and lodge. After cross e approximately 1.5 miles and the top of a stone road. Continue to the top of	hrough Williamsport. Turn righ sing the river, turn right at the s turn right again into the park. (e to the end and turn left. The	nt (north) onto route 207 and follow the sign for the park office, golf course, and Go past the office and golf course and site is on the left before the gas pipeline	

Field Systems Data Form

DCP114

F-02058-1500-S2-rev001

Site ID

Technician Sandy Grenville

Site Visit Date 04/22/2013

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		
Major industrial complex	10 to 20 km]
City > 50,000 population	40 km]
City 10,000 to 50,000 population	10 km]
City 1,000 to 10,000 population	5 km]
Major highway, airport or rail yard	2 km]
Secondary road, heavily traveled	500 m]
Secondary road, lightly traveled	200 m]
Feedlot operations	500 m	8]
Intensive agricultural ops (including aerial spraying)	500 m]
Limited agricultural operations	200 m]
Large parking lot	200 m]
Small parking lot	100 m		
Tree line	50 m	15 m]
Obstacles to wind	10 times obstacle height]

Siting Distances OK

Siting Criteria Comment

The site is located in a wooded thicket within a state park. The area surrounding the park is almost completely intensive agriculture. The site may not be regionally representative.

Fi	eld Sy	stems Data	a Form		F-02058-1500-S3-rev001					
Site	e ID	DCP114	Technician San	dy Grenville	Site Visit Date 04/22/2013					
1	Are win being in	nd speed and dire ifluenced by obsti	ction sensors sited so as t ructions?	o avoid 🛛 🗹	Ν/Α					
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)				r effects?	N/A					
3	Are the	tower and sensor	rs plumb?		N/A					
4	Are the avoid ra	temperature shie adiated heat source	elds pointed north or posi ces such as buildings, wal	tioned to ☑ ls, etc?						
5	Are ten conditio surface standin	operature and RH ons? (i.e. ground l and not steeply sl g water should be	I sensors sited to avoid un below sensors should be n loped. Ridges, hollows, an e avoided)	natural 🔽 atural nd areas of						
6	Is the so	olar radiation sen	sor plumb?		N/A					
7	Is it site light?	ed to avoid shadin	g, or any artificial or ref	lected 🔽	N/A					
8	Is the ra	ain gauge plumb?			N/A					
9	Is it site towers,	ed to avoid shelter etc?	ing effects from building	s, trees, 🔽	N/A					
10	Is the su facing n	urface wetness ser orth?	nsor sited with the grid su	irface 🔽	N/A					
11	Is it inc	clined approximation	tely 30 degrees?		N/A					
Dro	wide one	additional avala	nation (nhotograph or sk	atch if naccess	ry) regarding conditions listed above or any other features					

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	ld Sys	tems Data F	orm				F-0205	8-1500-S4-rev	700
Site	ID [DCP114	Technician	Sandy Grenville		Site Visit Date	04/22/2013		
1	Do all the condition	e meterological senso , and well maintaine	ors appear to be ed?	intact, in good					
	Are all th reporting	e meteorological ser ; data?	isors operationa	l online, and					
	Are the s	hields for the tempe	rature and RH s	sensors clean?		Moderately clean			
	Are the aspirated motors working?					Not functioning			
	Is the sola scratches	ar radiation sensor's ?	lens clean and	free of		N/A			
	Is the sur	face wetness sensor	grid clean and u	indamaged?		N/A			
	Are the secondition	ensor signal and pov , and well maintaine	ver cables intact ed?	t, in good					
	Are the so from the	ensor signal and pov elements and well m	ver cable connec aintained?	ctions protected					
Para	meter	М	anufacturer	Model		S/N		Client ID	
Гem	perature	R	M Young	41342		illegible		02828	

The blower for the aspirated temperature sensor shield is not functioning. This will affect sensor accuracy and data quality.

Fie	ld Sy	stems Data	Form			F-02058-1500-S5-rev001
Site	ID	DCP114	Technician	Sandy Grenville		Site Visit Date 04/22/2013
	Siting (Criteria: Are the p	ollutant analyzers ar	nd deposition eq	<u>luipr</u>	ment sited in accordance with 40 CFR 58, Appendix E
1	Do the s unrestr	sample inlets have icted airflow?	e at least a 270 degree	e arc of		
2	Are the	e sample inlets 3 -	15 meters above the	ground?		
3	Are the and 20	e sample inlets > 1 meters from trees	meter from any maj ?	or obstruction,		Small trees within 10 meters
	Polluta	nt analyzers and d	leposition equipment	t operations and	l mai	intenance
1	Do the a	analyzers and equ on and well maint	ipment appear to be ained?	in good		
2	Are the reportion	e analyzers and mo ng data?	onitors operational, o	on-line, and		
3	Describ	oe ozone sample tu	be.			1/4 teflon by 12 meters
4	Describ	oe dry dep sample	tube.			3/8 teflon by 12 meters
5	Are in-l indicate	line filters used in e location)	the ozone sample lin	e? (if yes		At inlet only
6	Are san obstruc	nple lines clean, fr tions?	ee of kinks, moisture	e, and		
7	Is the z	ero air supply des	iccant unsaturated?			
8	Are the	ere moisture traps	in the sample lines?			
9	Is there clean?	e a rotometer in th	e dry deposition filte	r line, and is it		Clean and dry
Para	meter	A	Manufacturer	Model		S/N Client ID
	ann 1958					

Sample Tower	Aluma Tower	В	AT-81056-J-4	000030	
Filter pack flow pump	Thomas	107CAB18	100300020819	04926	
Zero air pump	Werther International	PC70/4	000829175	06939	
Ozone	ThermoElectron Inc	49i A1NAA	1105347319	000732	

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 Dat	a Form				F-02058-1500-S6-rev001						
Site	e ID	DCP114	Technician	Sandy Grenville	24179	Site Visit Date	04/22/2013						
	DAS, se	nsor translators	, and peripheral equip	ment operation	ns an	<u>d maintenance</u>							
1	Do the I well ma	DAS instruments intained?	appear to be in good	condition and									
2	Are all modem,	the components backup, etc)	of the DAS operationa	l? (printers,									
3	Do the a lightnin	nalyzer and sen g protection circ	sor signal leads pass tl uitry?	hrough		Met sensors only							
4	Are the well ma	signal connectio intained?	ns protected from the	weather and									
5	Are the	signal leads con	nected to the correct D	OAS channel?									
6	Are the ground	DAS, sensor tra ed?	nslators, and shelter p	roperly									
7	Does the	e <mark>instrument</mark> she	lter have a stable pow	er source?									
8	Is the in	strument shelter	• temperature controll	ed?									
9	Is the m	et tower stable a	ind grounded?			Stable	Grou	nded					
10	Is the sa	mple tower stab	le and grounded?										
11	Tower o	comments?				Towers are not grour	nded						
Par	ameter		Manufacturer	Model		S/N		Client ID					
DAS	S		Campbell	CR3000		2124		000345					
Mod	dem		Raven	H4222-C	105003	0808311283		06479					

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:

One leg of the meteorological sensor tower is damaged and has a hole near the midpoint of the tower.

Field Systems Data	Fo	rm				F-02	.058-	1500-S7-rev001
Site ID DCP114		Tec	hnician	Sandy Grenville	Site Visit Date	04/22/2013	3	at the second
Documentation								
Does the site have the require	ed in	strun	nent and	equinment ma	nuals?			
Does the site have the require	Ves	N	N/	A	<u>IIIIII5.</u>	Ves	No	N/A
Wind speed sensor				Dat	a logger			
Wind direction sensor]	Dat	a logger			
Temperature sensor]	Stri	p chart recorder			
Relative humidity sensor]	Cor	nputer			
Solar radiation sensor]	Мо	dem			
Surface wetness sensor		S.C]	Pri	iter			
Wind sensor translator				Zer	o air pump			
Temperature translator	Ц			Filt	er flow pump			
Humidity sensor translator				Sur	ge protector			
Solar radiation translator				UPS	Same and the second			
Tipping bucket rain gauge				Lig	htning protection device			
Ozone analyzer				She	lter heater			
Filter pack flow controller				She	lter air conditioner			
Filter pack MFC power supply								
Does the site have the requi	red a	and m	lost rece	nt QC docume	nts and report forms?			
	Pre	sent				Curre	nt	
Station Log								
SSRF								
Site Ops Manual								
HASP			Nov 20	09				
Field Ops Manual			July 19	90				
Calibration Reports								
Ozone z/s/p Control Charts								
Preventive maintenance schedu	l.							
1 Is the station log properly of	comj	pleted	during	every site visit?				
2 Are the Site Status Report current?	For	ms bei	ing comp	pleted and				
3 Are the chain-of-custody for sample transfer to and from	orms n lal	s prop b?	erly used	d to document				
4 Are ozone z/s/p control cha current?	rts j	prope	rly comp	oleted and	Control charts not us	sed		
Provide any additional explanat natural or man-made, that may	tion affe	(photo ect the	ograph o monitoi	or sketch if neco ring parameter	essary) regarding conditi s:	ons listed a	above, (or any other features,
	0000000	10000000				5 FALSO T 10 1 1 1 1 1	100000000000000000000000000000000000000	

Fie	ld Sy	stems Data Fo	rm				F-02058	-1500-S8-rev001
Site	ID	DCP114	Technician	Sandy Grenville	•	Site Visit Date	04/22/2013	
1	Site op Has th course	<u>eration procedures</u> e site operator attendec ? If yes, when and who	l a formal CAS instructed?	STNET training		Trained during site i	nstallation by ESE	employee DDK
2	Has th trainin	e backup operator atte g course? If yes, when	nded a formal and who instru	CASTNET				
3	Is the site visited regularly on the required Tuesday schedule?							1
4	Are the flollowe	standard CASTNET or of by the site operator?	perational pro	cedures being				
5]	Is the si the req	te operator(s) knowled uired site activities? (in	geable of, and cluding docum	able to perform entation)				
	<u>Are reg</u>	ular operational QA/Q	C checks perfo	ormed on meteo	rolog	ical instruments?		
QC	Check I	Performed		Frequency			Complia	ant
Mult	ultipoint Calibrations V N/A			N/A				
Visu	isual Inspections 🔽 N/A							
Trar	nslator Zero/Span Tests (climatronics)							

Confirm Reasonableness of Current ValuesImage: Confirm Reasonableness of Current ValuesTest Surface Wetness ResponseImage: Confirm Reasonableness of Current Values

N/A
Image: Constraint of the second second

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

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QC Check Performed

Manual Rain Gauge Test

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

SSRF, call-in

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

The ozone inlet filter is replaced and the sample line is leak-tested every two weeks.

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Fie	eld Sy	stems Data Fo	rm				F-02058-1500-S9-rev001					
Site	D	DCP114	Tech	nician	Sandy Grenvill	e	Site Visit Dat	te 0	94/22/2013			
	Site ope	ration procedures										
1	Is the fil	ter pack being change	d every '	Fuesda	ay as scheduled	? 🗹	Filter changed mo	orinii	ngs			
2	Are the correctl	Site Status Report For y?	ms bein	g comj	oleted and filed							
3	Are data	a downloads and backu ed?	ıps bein	g perfo	ormed as		No longer required					
4	Are general observations being made and recorded? How?						SSRF, logbook					
5	Are site supplies on-hand and replenished in a timely fashion?											
6	Are sample flow rates recorded? How?						SSRF, call-in					
7	Are san fashion	pples sent to the lab on	a regula	r sche	dule in a timely							
8	Are filte and ship	ers protected from cont oping? How?	aminati	on dui	ing handling		Clean gloves on a	and	off			
9	Are the operation	site conditions reported ons manager or staff?	d regula	rly to	the field							
QC	Check P	erformed		Free	quency			0	Compliant			
N	Iulti-poin	nt MFC Calibrations		Sem	iannually	2004 (M)						
F	low Syste	em Leak Checks		Wee	kly				✓			
F	Filter Pack Inspection											
F	Flow Rate Setting Checks					And 161 (122)		•	V			
V	Visual Check of Flow Rate Rotometer 🔽 weekly				reday (1.76*							
Ь	n-line Fil	ter Inspection/Replace	ment	Sem	iannually	121220						
S	ample Li	ne Check for Dirt/Wat	er 🕻	Wee	kly			•				
Prov	ide any a	dditional explanation ((photogi	aph o	r sketch if nece	ssary) regarding condi	itio	ns listed above, or a	any other features,		

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

The site operator is following procedures and doing a very good job with filter handling.

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
SAN	189-Sandy	Grenville-04/25/2013				
1	4/25/2013	Computer	Dell	000271	D520	unknown
2	4/25/2013	DAS	Campbell	000360	CR3000	2138
3	4/25/2013	Elevation	Elevation	None	1	None
4	4/25/2013	Filter pack flow pump	Thomas	06026	107CAB18	060400022659
5	4/25/2013	flow rate	Tylan	000174	FC280SAV	AW423006
6	4/25/2013	Infrastructure	Infrastructure	none	none	none
7	4/25/2013	MFC power supply	MACTEC	none	none	none
8	4/25/2013	Modem	Raven	06453	V4221-V	0808337397
9	4/25/2013	Ozone	ThermoElectron Inc	000740	49i A1NAA	1105347311
10	4/25/2013	Ozone Standard	ThermoElectron Inc	000444	49i A3NAA	CM08200020
11	4/25/2013	Sample Tower	Aluma Tower	000207	В	none
12	4/25/2013	Shelter Temperature	Campbell	none	107-L	223461
13	4/25/2013	Siting Criteria	Siting Criteria	None	1	None
14	4/25/2013	Temperature	RM Young	06537	41342VC	14798
15	4/25/2013	Zero air pump	Werther International	06875	C 70/4	000814272

DAS Data Form

DAS Time Max Error:

0

Mfg	Serial N	Number Site	e T	echnician	Site Visit Date	Parameter	Use Desc.	
Campbell	2138	SA	N189	Sandy Grenville	04/25/2013	DAS	Primary	
Das Date:	4 /25/2013	Audit Date	4 /25/2013 15:46:01	Mfg	Datel	Parameter	DAS	
Das Day:	115	Audit Day	115	Serial Number	15510194	Tfer Desc.	Source generator (D	
Low Channe	d:	High Chann	el:	Tfer ID	01320			
Avg Diff:	Max Diff:	Avg Diff:	Max Diff:	Slope	1.0000	0 Intercept	0.00000	
0.000	1 0.00	01 0.000	1 0.0001	Cert Date	2/13/201	2 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	1/26/201	3 CorrCoff	1.00000	
Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference		
7	0.0000	0.0000	0.0000	V	V	0.0000		
7	0.1000	0.0999	0.0999	V	V	0.0000		
7	0.3000	0.2999	0.2998	V	V	-0.0001		
7	0.5000	0.4997	0.4997	V	V	0.0000		
7	0.7000	0.6997	0.6996	V	V	-0.0001		
7	0.9000	0.8996	0.8995	V	V	-0.0001		
7	1.0000	0.9994	0.9993	V	V	-0.0001		

Flow Data Form

Mfg	Serial Nun	ıber Ta	Site	Тес	chnician	Site Visit Date	Param	eter	Owner ID
Tylan	AW423006	6	SAN189	Sa	ndy Grenville	04/25/2013	flow rat	e	000174
Mfg	MACTEC				Mfg	BIOS	Pa	arameter	Flow Rate
SN/Owner ID	none	none			Serial Number	103471	Т	fer Desc.	iexus
Parameter	MFC power sup	oply			Tfer ID	01420			
					Slope	1.000	00 Inte	ercept	0.00000
					Cert Date	6/13/20	12 Cor	rCoff	1.00000
					Mfg	BIOS	Pa	arameter	low Rate
					Serial Number	103424	T	fer Desc.	BIOS cell
					Tfer ID	01410			
					Slope	1.000	00 Inte	ercept	0.00000
					Cert Date	1/27/20	012 CorrCoff		1.00000
DAS 1:		DAS 2:		L	Cal Factor Z	ero	-0.0	2	
A Avg % Diff:	A Max % Di	A Avg %	Dif A Max	: % Di	Cal Factor F	ull Scale	1.0	1	
1.13%	1.15%				Rotometer R	eading:	1.	5	
UseDescription:	Test type:	Input l/m	: Input STP:	MfcDisp.:	OutputSignal:	Output S E: Inp	outUnit:	OutputSign	allPctDifference:
primary	pump off	0.000	0.000	-0.11	-0.011	-0.03 l/m		l/m	
primary	leak check	0.000	0.000	-0.11	-0.011	-0.03	l/m	l/m	
primary	test pt 1	3.121	2.966	2.82	2.816	3.00	l/m	l/m	1.15%
primary	test pt 2	3.121	2.966	2.82	2.817	3.00	l/m	l/m	1.15%
primary	test pt 3	3.121	2.968	2.82	2.816	3.00	l/m	l/m	1.08%
Sensor Comp	onent Leak Tes	t		Conditio	n		Status	pass	
Sensor Comp	onent Filter Azi	muth		Conditio	n 270 deg		Status	pass	
Sensor Comp	onent Filter Dep	oth		Conditio	n 3.5 cm		Status	pass	
Sensor Comp	onent Filter Pos	sition		Conditio	n Good		Status	pass	
Sensor Comp	onent Moisture	Present		Conditio	n No moisture pr	resent	Status	pass	
Sensor Comp	nent Rotomete	er Conditio	n	Conditio	n Clean and dry		Status	pass	
Sensor Comp	onent System N	lemo		Conditio	n		Status	pass	
Sensor Comp	onent Tubing C	ondition		Conditio	n Good		Status	pass	
Sensor Comp	onent Filter Dist	tance		Conditio	n 3.5 cm		Status	pass	
					L				

Ozone Data Form

Mfg	:	Serial Number Ta	Site	Te	chnician		Site Visi	t Date	Parame	ter	Owner I	D
ThermoElec	hermoElectron Inc 1105347311			Sa	andy Grei	nville	04/25/20)13	Ozone		000740	
Slope: Intercept CorrCoff	0	.95175 Slope: .21042 Intercept .99993 CorrCoff	0.00000 0.00000 0.00000		Mfg Serial Number		ThermoE 49C-7310 01100	lectron 04-373	Inc Pa	nc Parameter ozor Tfer Desc. Ozo		 r
DAS 1:		DAS 2:			Slone			1.0030	8 Testor	voor t	-0.17	061
A Avg % D	Diff: A M	ax % Di A Avg %	6Dif A Max	% Di	Slope		L	1.0030		cept	-0.17	301
3.0	0%	3.6%			Cert Da	ite		4/2/201	3 Corr	Coff	1.00	000
UseDesc	cription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	Unit:	PctDiff	erence:	
prin	nary	1	0.00	0.1	17	1.5	85	ppb				
prin	nary	2	30.02	30.	10	29.	.50	ppb			-1.99%	
prin	nary	3	51.62	51.	64	49.	.76	ppb			-3.64%	
prin	nary	4	82.16	82.	08	79.	.69	ppb			-2.91%	
prin	nary	5	101.29	101	.15	97.	.60	ppb			-3.51%	
Sonsor Co	omnonon	Cell B Noise		Conditio	0.4 pr	<u></u>			Status	nass		7
Sensor Co	omponen	t Cell B Tmp.		Conditio)n pr				Status	pass		
Sensor Co	omnonen	t Fullscale Voltage		Conditio	n N/A				Status	Dass		
	omponen			C N					Gui			
Sensor Co	omponen		n	Conditio		1			Status	pass		
Sensor Co	omponen	t Line Loss		Conditio	on < 1 %	•			Status	pass		
Sensor Co	omponen	t Offset		Conditio	n -0.10				Status	pass		
Sensor Co	omponen	t Span		Conditio	n 1.005				Status	pass		
Sensor Co	omponen	t Cell B Freq.		Conditio	on 83.7 k	κHz			Status	pass		
Sensor Co	omponen	t System Memo		Conditio	on				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 0.65 l	pm			Status	pass		
Sensor Co	omponen	t Cell A Tmp.		Conditio	on 35.9 (2			Status	pass		
Sensor Co	omponen	t Cell A Pressure		Conditio	on 688 m	nmHg			Status	pass		
Sensor Co	omponen	t Cell A Noise		Conditio	on 0.4 pp	b			Status	pass		
Sensor Co	omponen	t Cell A Freq.		Conditio	on 92.0 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	n N/A				Status	pass		
Sensor Co	omponen	t Zero Voltage		Conditio	n N/A				Status	pass		

Temperature Data Form

Mfg	i	Serial Nun	nber Ta	Site		Tec	Technician		Site V	isit Date	Param	eter	Owner I	D
RM Young		14798		SAN189		Sa	ndy	Grenville	04/25	6/2013	Temper	rature	06537	
							Mf	g	Extect	า	Pa	arameter Te	emperature	
							Ser	ial Number	H2327	734	Tí	fer Desc. RT	ſD	
							Tfe	er ID	01227	,				
DAS 1:			DAS 2:				Slo	ре		1.0043	5 Inte	rcept	-0.08	480
Abs Avg Err	Abs	Max Er	Abs Av	g Err Abs	Abs Max Er		Cert Date			1/12/2013 Cor		rCoff 1.00000		000
0.11		0.24]								
UseDesc.:		Test type:	In	putTmpRaw	InputTmp	oCoi	rr.:	OutputTmpS	ignal:	OutputSig	nalEng:	OSE Unit:	Difference:	
primary	Temp	Low Range	e	0.32	0.40	0		0.000		0.5	5	С	0.09	
primary	Temp	Mid Range	,	24.20	24.1	8		0.000		24.	2	С	-0.01	
primary	Temp	High Rang	e	48.31	48.1	9		0.000		48.	0	С	-0.24	
Sensor Com	ponen	t Shield			Cond	litio	n C	Clean			Status	pass]
Sensor Com	ponen	t Blower S	tatus Sw	vitch	Cond	litio	n F	unctioning			Status	pass		
Sensor Com	ponen	t Blower			Cond	Condition Functioning					Status	pass]
Sensor Com	ponen	t System N	Nemo		Cond	litio	n 🗌				Status	pass		

Infrastructure Data For

Site ID	SAN189	Technician Sandy	Grenville Site Visit Date 04/25/2013
Shelter	Make	Shelter Model	Shelter Size
Shelter	One	E8109-26012	720 cuft

Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Sample Tower Type	Condition	Туре В	Status	pass
Sensor Component	Met Tower	Condition	N/A	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	N/A	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	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 Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	223461	SAN189	Sandy Grenville	04/25/2013	Shelter Temperatu	ire none
DAS 1: Abs Avg Err Al 0.34	DAS 2: bs Max Er Abs Avg 0.65	Err Abs Max Er	Mfg Serial Number Tfer ID Slope	Extech H232734 01227 1.0043	Parameter S Tfer Desc. R 1 5 Intercept	Shelter Temperatur RTD -0.08480
			Cert Date	1/12/201	3 CorrCoff	1.00000

UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	27.38	27.35	0.000	27.4	С	0.04
primary	Temp Mid Range	27.38	27.35	0.000	27.7	С	0.32
primary	Temp Mid Range	23.36	23.34	0.000	22.7	С	-0.65

Field Systems Comments

1 Parameter: SiteOpsProcComm

The site operator was observed to be not completely familiar with all aspects of CASTNET site operation. Additional training is recommended. Flow rate leak checks are not performed although they are reported. The initial and final flow rates are not recorded correctly. These observations were reported following the previous audit.

2 Parameter: SiteOpsProcedures

CASTNET procedures including filter pack leak check and filter pack final flow rate are not being performed correctly. Additional training is recommended.

3 Parameter: ShelterCleanNotes

The shelter is in very good condition, however somewhat cluttered.

Site ID SAN189	Technician Sandy Grenville	e Site Visit Date 04/2	25/2013
Site Sponsor (agency)	EPA	USGS Map	Santee
Operating Group	Santee Sioux Nation	Map Scale	
AOS #	31-107-9991	Map Date	
Meteorological Type	R.M. Young		
Air Pollutant Analyzer	Ozone, SO2, NOx, CO	OAPP Latitude	
Deposition Measuremen	t dry	OAPP Longitude	
Land Use	range	OAPP Elevation Meters	429
Terrain	rolling	OAPP Declination	
Conforms to MLM	Yes	OAPP Declination Date	6/21/2006
Site Telephone	(402) 857-2546	Audit I atituda	/2 8201F
Site Address 1	SR \$54D	Audit Langitude	-07 85/12
Site Address 2	Santee Sigur Indian Reservation	Audit Elevation	-57.05412
She Address 2	Knov	Audit Declination	5.0
County	Niobrara NE	Audit Dechnation	0.0
City, State	68760	Present	No inspection date
Zip Coue		First Aid Vit	
Primary Operator		Safety Glasses	
Primary Op. Franci			
Paolaun Oncreter		Compiler Force	
Backup Operator		Security refice	
Backup Op. Frione #		Stable Entry Stor	
Shelter Working Room	Make Shelter One M	odel E8109-26012	Shelter Size 720 cuft
Shelter Clean	Notes The shelter is in very good cor	ndition, however somewhat clu	ittered.
Site OK	Notes		
Driving Directions Fro app app	n Yankton, South Dakota go south on route roximately 26 miles. Just past the casino a roximately 6.5 miles. The site will be visible	e 81. Turn right (south) at the nd gas station, turn right (nort e through the farm gate on the	intersection of route 12 and continue h) onto SR 54 toward Santee. Continue left at the top of a hill just before

Field Systems Data Form

SAN189

F-02058-1500-S2-rev001

Site ID

Technician Sandy Grenville

Site Visit Date 04/25/2013

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

Siting Distances OK

Siting Criteria Comment

Fi	eld Syst	tems Data Fo	orm		F-02058-1500-S3-rev001					
Site	D S	AN189	Technician S	andy Grenville		Site Visit Date 04/25/2013				
1	Are wind a being influ	speed and direction lenced by obstruction	sensors sited so a ons?	s to avoid		N/A				
2	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 to	wer and sensors plu	mb?		✓	N/A				
4	Are the ter avoid radi	mperature shields p ated heat sources si	ointed north or p ich as buildings, v	ositioned to walls, etc?						
5	Are tempo conditions surface an standing v	rature and RH sens ? (i.e. ground below d not steeply sloped vater should be avoi	sors sited to avoid y sensors should b l. Ridges, hollows ided)	l unnatural e natural , and areas of						
6	Is the sola	r radiation sensor p	lumb?			N/A				
7	Is it sited t light?	o avoid shading, or	any artificial or	reflected		N/A				
8	Is the rain	gauge plumb?				N/A				
9	Is it sited to towers, etc	to avoid sheltering e ??	ffects from build	ings, trees,		N/A				
10	Is the surf facing nor	ace wetness sensor s th?	sited with the grid	l surface		N/A				
11	Is it inclin	ed approximately 3	0 degrees?			N/A				
Dre	vido onv o	ditional avalanctio	n (nhotograph or	ekateh if nagas	car	x) regarding conditions listed above or any other features				

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	ld Systems Da	ita Form			F-0 2	2058-1500-S4-rev	58-1500-S4-rev001		
Site	ID SAN189	Technician	Sandy Grenville		Site Visit Date 04/25/201	3			
1	Do all the meterologic	al sensors appear to be	intact, in good						
2	condition, and well ma Are all the meteorolog	aintained? gical sensors operationa	l online, and						
3	3 Are the shields for the temperature and RH sensors clean?								
4	4 Are the aspirated motors working?								
5	5 Is the solar radiation sensor's lens clean and free of scratches?			N/A					
6	5 Is the surface wetness sensor grid clean and undamaged?				N/A				
7	7 Are the sensor signal and power cables intact, in good condition, and well maintained?				N/A				
8	Are the sensor signal a from the elements and	and power cable connec I well maintained?	tions protected		N/A				
Para	ameter	Manufacturer	Model		S/N	Client ID			
Tem	perature	RM Young	41342VC	10.000	14798	06537			

Fie	ld Syste	ms Data	Form		F-02058-1500-S5-rev001				
Site	ID SAM	1189	Technician Sandy	Grenville	Site Visit Date 04/25/	2013			
	Siting Criter	ia: Are the po	llutant analyzers and depo	osition equipr	nent sited in accordance	with 40 CFR 58, Appendix E			
1	Do the samp unrestricted	e inlets have airflow?	at least a 270 degree arc of	V					
2	Are the samj	ole inlets 3 - 1	5 meters above the ground	?					
3	Are the samj and 20 meter	ole inlets > 1 r rs from trees?	neter from any major obst	ruction, 🗹					
	Pollutant and	alyzers and de	eposition equipment operat	tions and mai	<u>ntenance</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 ozo	ne sample tub)e.		1/4 teflon by 16 meters				
4	Describe dry	dep sample t	ube.		1/4 teflon by 16 meters				
5	Are in-line fi indicate loca	lters used in t tion)	he ozone sample line? (if y	es 🔽	At inlet only				
6	Are sample l obstructions	ines clean, fre ?	e of kinks, moisture, and						
7	Is the zero ai	r supply desid	ccant unsaturated?						
8	Are there mo	isture traps i	n the sample lines?						
9	Is there a rot clean?	ometer in the	dry deposition filter line, a	and is it					
Para	ameter		Manufacturer N	Iodel	S/N	Client ID			
Sam	ple Tower		Aluma Tower B		none	000207			

Sample Tower	Aluma Tower	В	none	000207	
MFC power supply	MACTEC	none	none	none	
Ozone	ThermoElectron Inc	49i A1NAA	1105347311	000740	
Filter pack flow pump	Thomas	107CAB18	060400022659	06026	
Zero air pump	Werther International	C 70/4	000814272	06875	

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	orm			F-02058-1500-S6-rev001				
Site	ID	SAN189	Technician	Sandy Grenville		Site Visit Dat	e 04/25/2013]-1,``	
	DAS, se	ensor translators, and j	peripheral equi	pment operation	<u>ns ai</u>	nd maintenance				
1	Do the well ma	DAS instruments appe iintained?	ar to be in good	l condition and						
2	Are all the components of the DAS operational? (printers, modem, backup, etc)									
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?					Met sensors only				
4	Are the signal connections protected from the weather and well maintained?									
5	Are the	signal leads connected	to the correct	DAS channel?						
6	Are the ground	DAS, sensor translato ed?	rs, and shelter	properly						
7	Does th	e instrument shelter h	ave a stable pov	ver source?						
8	Is the in	nstrument shelter temp	erature contro	lled?						
9	Is the n	net tower stable and gr	ounded?			Stable	(Frounded		
10	Is the sa	ample tower stable and	grounded?							
11	Tower	comments?								

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D520	unknown	000271
DAS	Campbell	CR3000	2138	000360
Modem	Raven	V4221-V	0808337397	06453

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			1999 - 1999 -	F-02	058-	1500-S7-rev001
Site ID	SAN189		Те	chnician	Sandy Grenville	Site Visit Date	04/25/2013		THE ALL
Docu	Documentation								
Does	the site have the requir	<u>ed in</u>	strur	nent and	equipment manua	<u>ls?</u>			
Wind su	and sonsor	Yes	N	0 N/2	A Data lo	ggor	Yes	No	N/A
Wind di	irection sensor				Data lo	gger			
Temper	ature sensor				Strin cl	ggei vart recorder			
Relative	humidity sensor		Ē		Compu	ter			
Solar ra	diation sensor				Modem				
Surface	wetness sensor				Printer				
Wind se	ensor translator				Zero ai	r pump			
Temper	ature translator				Filter fl	low pump			
Humidi	ty sensor translator		C		Surge p	orotector			
Solar ra	diation translator				UPS				
Tipping	bucket rain gauge				Lightni	ng protection device			
Ozone a	nalyzer				Shelter	heater			
Filter p	ack flow controller		V		Shelter	air conditioner			
Filter pa	ack MFC power supply		V						
Doe	es the site have the requi	ired a	and n	nost rece	nt QC documents a	and report forms?			
		Pre	sent				Currer	ıf	
Station	Log					140			
SSRF									
Site Op:	s Manual			Feb 200	05				
HASP			<	Feb 200	05				
Field O	ps Manual								
Calibra	tion Reports								
Ozone z	/s/p Control Charts								
Prevent	ive maintenance schedu	1							
1 Is 1	the station log properly	com	pletec	l during o	every site visit? 🔽				
2 Are the Site Status Report Forms being completed and current?									
3 Are the chain-of-custody forms properly used to document sample transfer to and from lab?									
4 Ar cui	e ozone z/s/p control cha rrent?	arts p	orope	erly comp	oleted and	Control charts not us	sed		
Provide natural	any additional explana or man-made, that may	tion (affe	(phot ct the	ograph o e monitor	or sketch if necessa ring parameters:	ry) regarding conditi	ions listed a	bove,	or any other features,
		203		1.11.11.11.11.11.11.11.11.11.11.11.11.1				0.57.9	

Fie	eld Sy	ystems Data Fo	orm				F-02058	-1500-S8-rev001
Site	e ID	SAN189	Technician	Sandy Grenville		Site Visit Date	04/25/2013	
1	Site of Has th course	<u>peration procedures</u> ne site operator attende ?? If yes, when and who	d a formal CAS instructed?	TNET training	; 🗆 [Trained by previous	site operator	
2	Has th trainin	e backup operator atte ng course? If yes, when	ended a formal and who instru	CASTNET cted?				
3	Is the s schedu	ite visited regularly on le?	the required T	uesday				
4	Are the flollow	e standard CASTNET ed by the site operator	operational pro ?	cedures being				
5	Is the sthe req	ite operator(s) knowled uired site activities? (in	lgeable of, and Icluding docum	able to perform entation)				
	Are reg	gular operational QA/Q	OC checks perfo	ermed on meteo	rolog	ical instruments?		
QC	Check	Performed		Frequency			Compli	ant
Mu	ltipoint	Calibrations		N/A				
T7:	TTAN	Constant and the second second second		NI/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?

• •

00	0	1.1.1	-	0	82
QU	Ch	eck	Per	torm	lec

2

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	

~

~

 \checkmark

~

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

ze

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

SSRF, logbook, call-in

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

 \checkmark

CASTNET procedures including filter pack leak check and filter pack final flow rate are not being performed correctly. Additional training is recommended.

Field Systems Data Form				F-02058-1	500-S9-rev001	
Site ID SAN189 Tec	hnic	ian Sandy Grenville		Site Visit Date	04/25/2013	
Site operation procedures						
1 Is the filter pack being changed every	y Tu	esday as scheduled?		Filter changed mori	inings	
2 Are the Site Status Report Forms being completed and filed correctly?						
3 Are data downloads and backups bei scheduled?	ing p	performed as		No longer required		
4 Are general observations being made	Are general observations being made and recorded? How?			SSRF, logbook		
5 Are site supplies on-hand and replen fashion?	Are site supplies on-hand and replenished in a timely fashion?					
6 Are sample flow rates recorded? How	w?			SSRF, call-in		
7 Are samples sent to the lab on a regulation fashion?	ılar s	schedule in a timely				
8 Are filters protected from contamina and shipping? How?	tion	during handling				
9 Are the site conditions reported regu operations manager or staff?	larly	y to the field				
QC Check Performed		Frequency			Compliant	
Multi-point MFC Calibrations		Semiannually	196. STR			
Flow System Leak Checks						
Filter Pack Inspection	ilter Pack Inspection					
Flow Rate Setting Checks			0001120			
Visual Check of Flow Rate Rotometer	Visual Check of Flow Rate Rotometer					
In-line Filter Inspection/Replacement		Semiannually				
Sample Line Check for Dirt/Water						
Provide any additional explanation (photo	grar	oh or sketch if neces	sarv) regarding condit	ions listed above, or a	any other features.

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

The site operator was observed to be not completely familiar with all aspects of CASTNET site operation. Additional training is recommended. Flow rate leak checks are not performed although they are reported. The initial and final flow rates are not recorded correctly. These observations were reported following the previous audit.

Site Inventory by Site Visit

Site \	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number				
KNZ	NZ184-Sandy Grenville-04/26/2013									
1	4/26/2013	Computer	Dell	000278	D520	unknown				
2	4/26/2013	DAS	Campbell	000361	CR3000	2139				
3	4/26/2013	Elevation	Elevation	None	1	None				
4	4/26/2013	Filter pack flow pump	Thomas	04925	107CAB18D	100300020744				
5	4/26/2013	Flow Rate	Арех	000654	AXMC105LPMDPCV	54774				
6	4/26/2013	Infrastructure	Infrastructure	none	none	none				
7	4/26/2013	Modem	Raven	06478	V4221-V	0808311141				
8	4/26/2013	Ozone	ThermoElectron Inc	000616	49i A1NAA	1009241781				
9	4/26/2013	Ozone Standard	ThermoElectron Inc	000495	49i A3NAA	0622717849				
10	4/26/2013	Sample Tower	Aluma Tower	missing	В	none				
11	4/26/2013	Shelter Temperature	Campbell	none	107-L	none				
12	4/26/2013	Siting Criteria	Siting Criteria	None	1	None				
13	4/26/2013	Temperature	RM Young	04686	41342VC	6700				
14	4/26/2013	Zero air pump	Werther International	000626	PC 70/4	000815300				

DAS Data Form

0 DAS Time Max Error:

Mfg	Serial	Number Site	e 7	Fechnician	Site Visit Date	Parameter	Use Desc.
Campbell	2139 KNZ184 S		Sandy Grenville	04/26/2013	DAS	Primary	
Das Date: Das Time: Das Day:	4 /26/2013 17:37:25	Audit Date Audit Time Audit Day	4 /26/2013 17:37:25	Mfg Serial Number	Datel	Parameter Tfer Desc.	DAS Source generator (D
Low Chann	el:	High Chann	el:	Tfer ID	01320		
Avg Diff:	$\mathbf{Max Diff:} $	Avg Diff:	$\mathbf{Max Diff:} \\ 0 0 0 0 0 0 0 0 0 0$	Slope	1.0000	0 Intercept	0.00000
0.000				Cert Date	2/13/201	2 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	1/26/201	3 CorrCoff	1.00000
Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference	
7	0.0000	0.0000	0.0000) V	V	0.0000	
7	0.1000	0.0999	0.1000) V	V	0.0001	
7	0.3000	0.2998	0.2998	8 V	V	0.0000	
7	0.5000	0.4997	0.4997	7 V	V	0.0000	
7	0.7000	0.6997	0.6997	7 V	V	0.0000	
7	0.9000	0.8996	0.8995	5 V	V	-0.0001	
7	1.0000	0.9995	0.9994	l V	V	-0.0001	
Flow Data Form

Mfg	Serial Nun	iber Ta	Site	Тес	hnician	Site Visit D	ate Param	eter	Owner ID
Apex	54774		KNZ184	Sa	ndy Grenville	04/26/2013	Flow Ra	ate	000654
					Mfg	BIOS	Pa	arameter Flo	w Rate
					Sorial Number	103/71		for Doco De	VIIC
						04400	1	ler Desc. ne	AU3
					Tfer ID	01420			
					Slope	1.0	00000 Inte	rcept	0.00000
					Cert Date	6/13	/2012 Cor	rCoff	1.00000
					Mfg	BIOS	Pa	arameter Flo	w Rate
					Serial Number	103424	T	fer Desc. BIC	OS cell
					Tfer ID	01410			
					Slope	1.0	00000 Inte	rcept	0.00000
					Cert Date	1/27	/2012 Cor	rCoff	1.00000
DAS 1.		DAS 2.		L	Cal Factor 7	ero	-0.0	1	
A Avg % Diff:	A Max % Di	A Avg %	Dif A Max	: % Di	Cal Factor F	ull Scale	1.0	1	
0.08%	0.13%				Rotometer R	eading:		3	
UseDescription:	Test type:	Input l/m:	Input STP:	MfcDisp.:	OutputSignal:	Output S E:	InputUnit:	OutputSignal	PctDifference:
primary	pump off	0.000	0.000	0.00	0.002	-0.01	l/m	l/m	
primary	leak check	0.000	0.000	0.01	0.006	0.00	1/m	1/m	0.120/
primary	test pt 1	3.048	2.994	2.96	2.954	2.99	1/m	1/m	-0.13%
primary	test pt 3	3.051	2.993	2.90	2.933	2.99	1/m	1/111 1/m	-0.10%
Sensor Comp	nent Leak Tes	t	2.550	Conditio	n	2.99	Status	pass	0.0070
c c					200 dan				
Sensor Compo		num			n 300 deg		Status	pass	
Sensor Comp	onent Filter Dep	oth		Conditio	n 3.5 cm		Status	pass	
Sensor Comp	onent Filter Pos	sition		Conditio	n Good		Status	pass	
Sensor Comp	onent Moisture	Present		Conditio	n No moisture p	resent	Status	pass	
Sensor Comp	onent Rotomete	er Conditior	1	Conditio	n Clean and dry		Status	pass	
Sensor Comp	onent System N	lemo		Conditio	n		Status	pass	
Sensor Comp	onent Tubing C	ondition		Conditio	n Good		Status	pass	
Sensor Comp	nent Filter Dist	tance		Conditio	n 5.5 cm		Status	pass	
							Status	L <u> </u>	

Temperature Data Form

Mfg		Serial Nun	ıber Ta	Site		Tech	nician	Site Visit Date	Param	eter	Owner ID
RM Young		6700		KNZ184		Sand	dy Grenville	04/26/2013	Tempe	rature	04686
						N	Лfg	Extech	Pa	arameter Te	mperature
						S	erial Number	H232734	Tí	fer Desc. RT	D
						Т	fer ID	01227			
DAS 1:			DAS 2:			S	lope	1.004	35 Inte	rcept	-0.08480
Abs Avg Err Abs Max Er Abs Avg Err Abs M		Max Er	r Cert Date		1/12/2013 Corr		rCoff	1.00000			
0.17		0.19									
UseDesc.:		Test type:	In	putTmpRaw	InputTmp	Corr	.: OutputTmpS	ignal: OutputSi	gnalEng:	OSE Unit:	Difference:
primary	Temp	Low Range	e	0.04	0.12	2	0.000	0	3	С	0.17
primary	Temp	Mid Range	;	27.26	27.2	3	0.000	27	.4	С	0.14
primary	Temp	High Rang	e	48.58	48.4	5	0.000	48	.6	С	0.19
Sensor Com	ponen	t Shield			Cond	ition	Clean		Status	pass	
Sensor Com	ponen	t Blower S	tatus Sw	vitch	Cond	ition	Functioning		Status	pass	
Sensor Com	ponen	t Blower			Cond	Condition Functioning			Status	pass	
Sensor Com	ponen	t System N	/lemo		Cond	ition			Status	pass	

Infrastructure Data For

Site ID KNZ184	Technician Sandy Grer	NvilleSite Visit Date04/26/2013
Shelter Make	Shelter Model	Shelter Size
Wells Cargo	EW1211 (s/n 1WC200E1623048028)	640 cuft

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	Installed	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	Rotometer	Condition	Installed	Status	pass
Sensor Component	Conduit	Condition	N/A	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	none	KNZ184	Sandy Grenville	04/26/2013	Shelter Temperatu	none
DAS 1:	DAS 2:		Mfg	Extech	Parameter S	Shelter Temperatur
Abs Avg Err Ab	os Max Er Abs Avg 1.17	Err Abs Max Er	Serial Number	H232734	Tfer Desc.	RTD
			Tfer ID	01227		
			Slope	1.0043	5 Intercept	-0.08480
			Cert Date	1/12/201	3 CorrCoff	1.00000

UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	24.93	24.91	0.000	23.7	С	-1.17
primary	Temp Mid Range	26.84	26.81	0.000	25.9	С	-0.95
primary	Temp Mid Range	27.00	26.97	0.000	26.3	С	-0.67

Field Systems Comments

1 Parameter: SiteOpsProcComm

One clean glove is used to handle the filter for removal and installation.

2 Parameter: SiteOpsProcedures

Ozone monitor not operating.

3 Parameter: SitingCriteriaCom

The site is located at a Long Term Ecological Research site operated by KSU.

4 Parameter: ShelterCleanNotes

The shelter is very clean, neat, well organized and well maintained.

5 Parameter: PollAnalyzerCom

By request of the Kansas Department of Health and Environment, the site ozone monitor was not operating at the time of the site audit.

Field Systems D	ata Form	Let Y	F-02058-1500-S1-rev001
Site ID KNZ184	Technician Sandy Grenvill	e Site Visit Date 04/2	26/2013
	Carlo Carlos	LICCOM	Swada Crook
Site Sponsor (agency)	EPA		Jwede Cleek
Operating Group	Kansas State University	Map Scale	
AQS#	20-161-9991	Map Date	
Meteorological Type	R.M. Young		
Air Pollutant Analyzer	Ozone	QAPP Latitude	39.1021
Deposition Measurement	dry, wet	QAPP Longitude	-96.6096
Land Use	range	QAPP Elevation Meters	348
Terrain	gently rolling	QAPP Declination	4.5
Conforms to MLM	Yes	QAPP Declination Date	01/07/2005
Site Telephone	(785) 770-8426	Audit Latitude	39.10216
Site Address 1	Konza Prairie Lane	Audit Longitude	-96.609583
Site Address 2	CR 901	Audit Elevation	346
County	Riley	Audit Declination	4.2
City, State	Manhattan, KZ] Present	
Zip Code	66502	Fire Extinguisher 🗹	Inspected Feb 2002
Time Zone	central	First Aid Kit	
Primary Operator		Safety Glasses	
Primary Op. Phone #		Safety Hard Hat	
Primary Op. E-mail		Climbing Belt	
Backup Operator		Security Fence	
Backup Op. Phone #		Secure Shelter	
Backup Op. E-mail		Stable Entry Step 🗹	
Shelter Working Room	Make Wells Cargo M	Iodel EW1211 (s/n 1WC20	Shelter Size 640 cuft
Shelter Clean	Notes The shelter is very clean, neat	t, well organized and well main	tained.
Site OK	Notes		
Driving Directions right Biolo	Manhattan take route 177 south. At the onto CR901 (McDowell Creek Road). Co gical Station. The site is through the gate	east edge of town, immediately ntinue approximately 6.2 miles and up the hill past the three-	/ after crossing the Kansas river, turn and turn left into the Konza Prairie story stone farm house.

Field Systems Data Form

KNZ184

F-02058-1500-S2-rev001

Site ID

Technician Sandy Grenville

Site Visit Date 04/26/2013

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

Siting Distances OK

Siting Criteria Comment

The site is located at a Long Term Ecological Research site operated by KSU.

Fi	eld Systems I	Data Form			F-02058-1500-S3-rev001				
Site	KNZ184	Tecl	hnician	Sandy Grenville		Site Visit Date 04/26/2013			
1	Are wind speed and being influenced by	l direction sensors	s sited so	as to avoid		N/A			
2	Are wind sensors n (i.e. wind sensors sh horizontally extend tower into the prey	nounted so as to m nould be mounted led boom >2x the r ailing wind)	inimize (atop the nax diar	tower effects? e tower or on a neter of the		N/A			
3	Are the tower and	sensors plumb?				N/A			
4	Are the temperatur avoid radiated heat	re shields pointed i t sources such as b	north or uildings	positioned to , walls, etc?					
5	Are temperature an conditions? (i.e. gro surface and not ster standing water sho	nd RH sensors site ound below sensor eply sloped. Ridge uld be avoided)	ed to avo s should s, hollow	id unnatural be natural vs, and areas of					
6	Is the solar radiation	on sensor plumb?				N/A			
7	Is it sited to avoid s light?	hading, or any art	tificial or	r reflected		N/A			
8	Is the rain gauge pl	umb?				N/A			
9	Is it sited to avoid s towers, etc?	heltering effects fi	rom buil	dings, trees,		N/A			
10	Is the surface wetne facing north?	ess sensor sited wi	th the gr	id surface		N/A			
11	Is it inclined appro	oximately 30 degre	es?			N/A			
Dre	wide any additional	avalanation (shot	ogranh (or skatch if poss	ccar	x) regarding conditions listed above or any other features			

	Systems Data	a Form			F-0 2	2058-15	500-S4-rev001
Site ID	KNZ184	Technician	Sandy Grenville		Site Visit Date 04/26/201	3	
						a start	
1 Do : con	all the meterological dition, and well main	sensors appear to be itained?	intact, in good				
2 Are rep	all the meteorologic orting data?	al sensors operationa	l online, and				
3 Are	the shields for the te	emperature and RH s	ensors clean?				
4 Are	the aspirated motor	s working?					
5 Is the scra	he solar radiation ser atches?	nsor's lens clean and f	free of		N/A		
6 Is th	he surface wetness se	nsor grid clean and u	indamaged?		N/A		
7 Are	the sensor signal and dition, and well main	d power cables intact tained?	, in good		N/A		
8 Are from	the sensor signal and n the elements and w	d power cable connec /ell maintained?	tions protected		N/A		
Parame	ter	Manufacturer	Model		S/N	Cli	ent ID
		DMAXerman	440.40\/0	16.7	0700		
atural o	r man-made, that ma	ay affect the monitori	ing parameters:	sary)	regarding conditions inseed		
atural o	r man-made, that ma	ay affect the monitori	ng parameters:	sary)	regarding conditions listed		
natural o	r man-made, that ma	ay affect the monitori	ng parameters:	sary)	regarding conditions listed		
atural o	r man-made, that ma	ay affect the monitori	ing parameters:	ary)			
natural o	r man-made, that ma	ay affect the monitori	ng parameters:	ary)	regarung conditions ilsted		
natural o	r man-made, that ma	ay affect the monitori	ing parameters:	ary)			
natural o	r man-made, that ma	ay affect the monitori	ng parameters:	ary)			
natural o	r man-made, that ma	ay affect the monitori	ng parameters:	ary)			
natural o	r man-made, that ma	ay affect the monitori	ng parameters:	ary)			
natural o	r man-made, that ma	ay affect the monitori	ing parameters:	ary)			
natural o	r man-made, that ma	ay affect the monitori	ing parameters:	ary)			

Fi	eld Sys	stems Data	Form		F-02058-1500-S5-rev001
Sit	e ID	KNZ184	Technician Sandy Grenville		Site Visit Date 04/26/2013
	Siting C	riteria: Are the po	llutant analyzers and deposition ec	<u>luip</u> i	nent sited in accordance with 40 CFR 58, Appendix E
1	Do the sa unrestric	ample inlets have a cted airflow?	at least a 270 degree arc of		
2	Are the s	sample inlets 3 - 1	5 meters above the ground?		
3	Are the s and 20 m	sample inlets > 1 n teters from trees?	neter from any major obstruction,		
	Pollutan	t analyzers and de	position equipment operations and	l ma	<u>intenance</u>
1	Do the an condition	nalyzers and equip n and well maintai	pment appear to be in good ined?		
2	Are the a reporting	analyzers and mor g data?	nitors operational, on-line, and		
3	Describe	ozone sample tub	ю .		1/4 teflon by 12 meters
4	Describe	dry dep sample t	ube.		3/8 teflon by 12 meters
5	Are in-lin indicate	ne filters used in t location)	he ozone sample line? (if yes		At inlet only
6	Are sam	ple lines clean, fre ions?	e of kinks, moisture, and		
7	Is the zer	ro air supply desic	cant unsaturated?		
8	Are ther	e moisture traps i	n the sample lines?		
9	Is there a clean?	a rotometer in the	dry deposition filter line, and is it		Clean and dry
D					

Parameter	Manufacturer	Model	S/N	Client ID	
Sample Tower	Aluma Tower	В	none	missing	
Ozone	ThermoElectron Inc	49i A1NAA	1009241781	000616	
Filter pack flow pump	Thomas	107CAB18D	100300020744	04925	
Zero air pump	Werther International	PC 70/4	000815300	000626	

By request of the Kansas Department of Health and Environment, the site ozone monitor was not operating at the time of the site audit.

Fie	eld Sy	stems Data Fo	orm					F-0205	58-15	00-S6-rev	v001
Site	D	KNZ184	Technician	Sandy Grenville		Site Visit	Date 04/	/26/2013			
	DAS, se	nsor translators, and J	peripheral equi	<u>pment operatio</u>	<u>ns an</u> d	<u>l maintenar</u>	<u>1ce</u>				
1	Do the I well mai	DAS instruments appe intained?	ar to be in good	l condition and							
2	Are all t modem,	he components of the backup, etc)	DAS operation	al? (printers,							
3	Do the a lightnin	nalyzer and sensor sig g protection circuitry?	gnal leads pass t	hrough							
4	Are the well mai	signal connections pro intained?	otected from the	e weather and							
5	Are the	signal leads connected	to the correct	DAS channel?							
6	Are the grounde	DAS, sensor translato ed?	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		Gr	ounded		
10	Is the sa	mple tower stable and	l grounded?								
11 Towar commonts?											
11	Tower	onnicitty :									

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D520	unknown	000278
DAS	Campbell	CR3000	2139	000361
Modem	Raven	V4221-V	0808311141	06478

Field Systems Data	Fo	rm					F-02	2058-	1500-S7-rev001
Site ID KNZ184		Tech	nician	Sandy Grenvill	e	Site Visit Date	04/26/201:	3	at the second
Doministration									
Documentation									
Does the site have the requir	ed in	strum	ent and	equipment ma	anuals?				NUA
Wind speed sensor	Yes			A Dai	ta loggei	-	Yes		N/A
Wind direction sensor				Da	ta loggei				
Temperature sensor				Str	ip chart	recorder			
Relative humidity sensor				Co	mputer				
Solar radiation sensor				Mo	dem				
Surface wetness sensor				Pri	nter				
Wind sensor translator				Zei	ro air pu	mp			
Temperature translator				Filt	ter flow	pump			
Humidity sensor translator				Sui	rge prote	ector			
Solar radiation translator				UP	S				
Tipping bucket rain gauge				Lig	htning p	protection device			
Ozone analyzer				She	elter hea	ter			
Filter pack flow controller				She	elter air	conditioner			
Filter pack MFC power supply									
Does the site have the requ	ired a	and mo	ost rece	nt QC docume	nts and	report forms?			
	Pres	sent					Curr	ent	
Station Log						No. of Concession, Name			
SSRF									
Site Ops Manual			Oct 200)1					
HASP			001200						
Field Ops Manual									
Calibration Reports									
Ozone z/s/p Control Charts									
Preventive maintenance schedu	ıl								
			16117						
1 Is the station log properly	com	pleted	during	every site visit	? 🔽				
2 Are the Site Status Report	Form	ns beii	ng comp	pleted and					
3 Are the chain-of-custody f	orms	prope	rly used	d to document					
sample transfer to and fro	m lal	b?				ontrol oborto not	vod		
4 Are ozone z/s/p control ch current?	arts p	oroper.	ly comp	Dieted and		ontroi charts not us	sea		
Provide any additional explana	tion	(photo	graph o	or sketch if nec	essary) i	regarding conditi	ons listed	above,	or any other features,
natural or man-made, that may	y affe	ct the	monito	ring parameter	:s:				
	Section 20						2 444 (19 19 19 19 19 19 19 19 19 19 19 19 19 1		

Fie	eld Sy	stems Data Fo	orm			F-02058-1500-S8-rev001
Site	e ID	KNZ184	Technician	Sandy Grenville		Site Visit Date 04/26/2013
1	Site ope Has the course?	eration procedures site operator attende If yes, when and who	d a formal CAS instructed?	TNET training		Trained by MACTEC personnel during site installation
2	Has the training	backup operator atte g course? If yes, when	nded a formal (and who instru	CASTNET cted?		Trained by site operator
3	Is the sig	te visited regularly on e?	the required Tu	iesday		
4	Are the flollowe	standard CASTNET (d by the site operator?	operational pro	cedures being		
5	Is the sit the requ	te operator(s) knowled lired site activities? (ir	lgeable of, and a cluding docum	able to perform entation)		
	Are reg	ular operational QA/Q	OC checks perfo	rmed on meteor	<u>colo</u>	gical instruments?
QC	Check P	erformed		Frequency		Compliant

QC Check Performed	Frequency	Com
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	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		
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	N/A	
Sample Line Check for Dirt/Water		
Zero Air Desiccant Check		

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

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

Ozone monitor not operating.

Fie	eld Sy	stems Data Fo	rm				F-02058-1500-S9-rev00						
Site	D	KNZ184	Tech	nician	Sandy Grenville		Site Visit Dat	te	04/26/2013				
	Site ope	ration procedures											
1	Is the fi	lter pack being changed	d every '	Fuesda	ay as scheduled		Filter changed mo	orin	ings				
2	Are the correctl	Site Status Report For y?	ms bein	g comj	pleted and filed					and a construction of the			
3	Are dat schedul	a downloads and backu ed?	ıps bein	g perf	ormed as		No longer required						
4	Are gen	eral observations being	g made a	nd ree	corded? How?		SSRF, logbook			and a second second			
5	Are site supplies on-hand and replenished in a timely fashion?												
6	Are san	ple flow rates recorded	d? How:				SSRF, call-in						
7	Are san fashion	uples sent to the lab on ?	a regula	r sche	dule in a timely					and the second s			
8	Are filte and ship	ers protected from cont pping? How?	aminati	o <mark>n du</mark> i	ring handling		Clean glove (one	onl	ly) on and off				
9	Are the operation	site conditions reported ons manager or staff?	d regula	rly to	the field					A DOWNER OF THE OWNER OF THE OWNE			
QC	Check P	erformed		Fre	quency				Compliant				
N	Iulti-poi	nt MFC Calibrations		Sem	niannually	7198-1978							
F	low Syst	em Leak Checks		Wee	kly	104.0944							
F	Filter Pack Inspection												
F	Flow Rate Setting Checks				ekly	000000000							
V	Visual Check of Flow Rate Rotometer 🗹 Weekly				ekly								
I	n-line Filter Inspection/Replacement Veekly				ekly								
S	ample Li	ine Check for Dirt/Wat	er 🚺	Wee	ekly								
Prov	ide anv a	dditional explanation (photog	aph o	r sketch if neces	sarv) regarding cond	itio	ons listed above, or any other features,				

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

One clean glove is used to handle the filter for removal and installation.

Site Inventory by Site Visit

Site Visit Date		Parameter	Mfg	Owner ID	Model Number	Serial Number
YOS4	04-Eric H	ebert-05/01/2013				
1	5/1/2013	DAS	Environmental Sys Corp	90645	8816	2558
2	5/1/2013	Elevation	Elevation	None	1	None
3	5/1/2013	F460 translator	Climatronics	none	100163	1101
4	5/1/2013	Filter pack flow pump	Thomas	00253	107CA18	0688001767
5	5/1/2013	flow rate	Tylan	none	FC280SAV	AW02213002
6	5/1/2013	Infrastructure	Infrastructure	none	none	none
7	5/1/2013	Met tower	unknown	none	unknown	none
8	5/1/2013	MFC power supply	Tylan	03870	RO-32	FP9508008
9	5/1/2013	Modem	US Robotics	none	V.92	unknown
10	5/1/2013	Ozone	ThermoElectron Inc	90763	49C	49C-74534-376
11	5/1/2013	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	1130450190
12	5/1/2013	Precipitation	Climatronics	illegible	100508-2	illegible
13	5/1/2013	Relative Humidity	Rotronic	none	MP 601A	59018
14	5/1/2013	Sample Tower	Aluma Tower	none	В	none
15	5/1/2013	Shelter Temperature	ARS	none	none	none
16	5/1/2013	Siting Criteria	Siting Criteria	None	1	None
17	5/1/2013	Solar Radiation	Licor	none	LI-200	PY77051
18	5/1/2013	Solar Radiation Translator	RM Young	03184	70101-X	none
19	5/1/2013	Temperature	RM Young	none	41342	18748
20	5/1/2013	Wind Direction	Climatronics	90832	100076	4058
21	5/1/2013	Wind Speed	Climatronics	91022	100075	4088
22	5/1/2013	Zero air pump	Werther International	none	PC70/4	531397

DAS Data Form

DAS Time Max Error: 1.4

Mfg	Seria	l Number Site	e T	echnician	Site Visit Date	Parameter	Use Desc.
Environmental	Sys 2558	YO	S404 E	Eric Hebert	05/01/2013	DAS	Primary
Das Date: Das Time: Das Day:	5 /2 /2013 11:15:24 122	Audit Date Audit Time Audit Day	5 /2 /2013 11:14:00 122	Mfg Serial Number	Datel 4000392	Parameter Tfer Desc.	DAS 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
0.0000	0.0	0.000	0.0003	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	1/27/201	3 CorrCoff	1.00000
Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference	
6	0.0000	0.0000	0.0000	V	V	0.0000	
6	0.1000	0.1000	0.1000	V	V	0.0000	
6	0.3000	0.3000	0.3000	V	V	0.0000	
6	0.5000	0.5000	0.5000	V	V	0.0000	
6	0.7000	0.7000	0.7001	V	V	0.0001	
6	0.9000	0.9001	0.9001	V	V	0.0000	
6	1.0000	1.0001	1.0001	V	V	0.0000	
15	0.0000	0.0000	0.0000	V	V	0.0000	
15	0.1000	0.1000	0.0999	V	V	-0.0001	
15	0.3000	0.3000	0.3001	V	V	0.0001	
15	0.5000	0.5000	0.4999	V	V	-0.0001	
15	0.7000	0.7000	0.6999	V	V	-0.0001	
15	0.9000	0.9000	0.8997	V	V	-0.0003	
15	1.0000	1.0000	0.9999	V	V	-0.0001	

Flow Data Form

Mfg	Serial Nun	nber Ta	Site	Te	chnician	Site Visit I	Date Paran	neter	Owner ID
Tylan	AW022130	002	YOS404	Er	ic Hebert	05/01/2013	3 flow ra	te	none
Mfg	Tylan				Mfg	BIOS	F	arameter Flo	ow Rate
SN/Owner ID	FP9508008	03870			Serial Number	122974]	fer Desc. Bl	OS 220-H
Parameter	MFC power sup	oply			Tfer ID	01416			
					Slope	1.	00000 Int	ercept	0.00000
					Cert Date	1/8	8/2013 Co	rrCoff	1.00000
DAS 1:		DAS 2:		L	Cal Factor Z	ero	0.:	28	
A Avg % Diff:	A Max % Di	A Avg %	Dif A Max	x % Di	Cal Factor F	ull Scale	10.8	38	
3.14%	3.22%				Rotometer R	eading:	3.4	45	
UseDescription:	Test type:	Input l/m:	Input STP:	MfcDisp.:	: OutputSignal:	Output S E:	InputUnit:	OutputSignal	IIPctDifference:
primary	pump off	0.000	0.000	-0.20	-0.1670	-0.07	l/m	l/m	
primary	leak check	0.000	0.000	-0.19	-0.1680	-0.06	l/m	l/m	
primary	test pt 1	0.000	3.086	1.26	1.2770	2.99	l/m	l/m	-3.10%
primary	test pt 2	0.000	3.090	1.26	1.2770	2.99	l/m	l/m	-3.22%
primary	test pt 3	0.000	3.086	1.26	1.2770	2.99	l/m	l/m	-3.11%
Sensor Compo	nent Leak Tes	t		Conditio	n		Statu	pass	
Sensor Compo	nent Filter Azir	muth		Conditio	n 135 deg		Statu	pass	
Sensor Compo	nent Filter Dep	oth		Conditio	n - 1.0 cm		Statu	Fail	
Sensor Compo	nent Filter Pos	sition		Conditio	Poor		Statu	Fail	
Sensor Compo	Moisture	Present		Conditio	No moisture p	resent	Statu	pass	
Sensor Compo	nent Rotomete	er Conditior)	Conditio	N/A		Status	pass	
Sensor Component System Memo			Conditio	Condition See comments			pass		
Sensor Compo	nent Tubing C	ondition		Conditio	Good		Statu	pass	
Sensor Compo	nent Filter Dist	tance		Conditio	3.5 cm		Statu	pass	

Ozone Data Form

Mfg	5	Serial Number Ta	Site	Te	chnician		Site Visi	t Date	Parame	eter	Owner I	D
ThermoElecti	ron Inc	49C-74534-376	YOS404	Er	ic Heber	t	05/01/20	013	Ozone		90763	
Slope: Intercept CorrCoff	1. -0. 0.	00354 Slope: 98519 Intercept 99999 CorrCoff	0.00000	0 0 0	Mfg Serial N Tfer ID	Number	ThermoE 5171121 01111	lectron	Inc Pa	rameter oz er Desc. Oz	one zone primary	/ stan
DAS 1:		DAS 2:			Slone			0 0072	0 Into	noomt	0.18	128
A Avg % Di	ff: A Ma	ax % Di A Avg %	6Dif A Max 9	% Di	Slope			0.9972		rcept	0.18	420
1.39	%	1.9%			Cert Da	ate		1/2/201	3 Cori	Coff	1.00	000
UseDesci	ription:	ConcGroup:	Tfer Raw:	Tfer (Corr:	Si	te:	Site	Unit:	PctDif	ference:	
prima	ary	1	0.65	0.4	46	-0.	72	ppb				
prima	ary	2	30.22	30.	12	29.	.56	ppb			-1.86%	
prima	ary	3	49.95	49.	90	48.	.96	ppb			-1.88%	
prima	ary	4	79.75	79.	78	79.	.21	ppb			-0.71%	
prima	ary	5	109.60	109	.72	109	0.00	ppb			-0.66%	
Sensor Co	mponen	t Cell B Noise		Conditio	on 1.1 pr	ob			Status	pass		
Sensor Co	mponen	t Cell B Tmp.		Conditio	on				Status	pass		
Sensor Co	mponen	t Fullscale Voltage		Conditio	n 1.003	1			Status	pass		
Sensor Co	mponen	Inlet Filter Condition	วท	Conditio	on Clear	1			Status	pass		
Sensor Co	mponen	t Line Loss		Conditio	on Not te	ested			Status	pass		
Sensor Co	mponen	t Offset		Conditio	on 0.3				Status	pass		
Sensor Co	mponen	t Span		Conditio	n 1.012				Status	pass		
Sensor Co	mponen	t Cell B Freq.		Conditio	on 85.1 l	κHz			Status	pass		
Sensor Co	mponen	t System Memo		Conditio	on See c	comments	;		Status	pass		
Sensor Co	mponen	t Sample Train		Conditio	on Good				Status	pass		
Sensor Co	mponen	t Cell B Pressure		Conditio	on				Status	pass		
Sensor Co	mponen	t Cell B Flow		Conditio	on 0.62 l	pm			Status	pass		
Sensor Co	mponen	t Cell A Tmp.		Conditio	on 36.5 (0			Status	pass		
Sensor Co	mponen	t Cell A Pressure		Conditio	on 621 n	nmHg			Status	pass		
Sensor Co	mponen	t Cell A Noise		Conditio	on 2.0 p	ob			Status	pass		
Sensor Co	mponen	t Cell A Freq.		Conditio	on 78.6k	Hz			Status	Fail		
Sensor Component Cell A Flow				Conditio	on 0.62	pm			Status	pass		
Sensor Con	mponen	Battery Backup		Conditio	n N/A				Status	pass		
Sensor Con	mponen	zero Voltage		Conditio	on 0.004	4			Status	pass		

Wind Speed Data Form

Mfg	Serial Nur	nber Ta Sit	e	7	Technician	Site Visit Date	Parameter	Owner ID
Climatronics	4088	YC)S404		Eric Hebert	05/01/2013	Wind Speed	91022
Mfg	Climatronics				Mfg	RM Young	Paramet	er wind speed
SN/Owner ID	1101	none			Serial Number		Tfer Des	c. wind speed motor (h
Parameter	F460 translator	ſ			Tfer ID	01262		
Prop or Cups S	N 2335				Slope	1.0000	0 Intercept	0.00000
Prop or Cups 7 Prop Correctio	Forque	0.3 to		0.3	Cert Date	1/13/201	0 CorrCoff	1.00000
					Mfg	RM Young	Paramet	er wind speed
					Serial Number		Tfer Des	wind speed motor (I
					Tfer ID	01261		
					Slope	1.0000	0 Intercept	0.00000
					Cert Date	1/13/201	0 CorrCoff	1.00000
]	DAS 1:		DAS	5 2:				
]	Low Range	High Range	Low	Range	High Range			
Abs Avg Err	0.02	0.70%	Ď					
Abs Max Er	0.03	0.75%	ó					
UseDescription	: InputDevice	e: Input RI	PM:	Input m/s	: Output V:	DAS m/s:	Diff/ %Diff:	Difference:
primary	00000	0		0.20	0.0000	0.2		0.02
primary	00000	50		1.40	0.0000	1.4		-0.01
primary	00000	100		2.57	0.0000	2.6		-0.01
primary	00000	170		4.22	0.0000	4.2		-0.03
primary	00000	250		6.10	0.0000	6.1	-0.66%	
primary	00000	500		11.97	0.0000	11.9	-0.75%	
primary	00000	800		19.02	0.0000	18.9	-0.68%	

primary	00000	800	19.02	0.0000	18.9	-0.68%		1	
primary	00000	2000	47.22	0.0000	46.9	-0.70%			
Sensor Compo	Sensor Component System Memo			See comments	3	Status pass	Status pass		
Sensor Compo	Condition	Plumb		Status pass	Status pass				
Sensor Component Sensor Heater			Condition	Functioning		Status pass			
Sensor Compo	ensor Component Prop or Cups Condition			Good		Status pass			
Sensor Compo	Sensor Component Condition			Poor		Status Fail			
Sensor Compo	Sensor Component Torque			Good		Status pass		7	

Wind Direction Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Climatronics	4058	YOS404	Eric Hebert	05/01/2013	Wind Direction	90832
Mfg	Climatronics		Mfg	Ushikata	Parameter wind	d direction
SN/Owner ID	1101 none		Serial Number	190037	Tfer Desc. tran	sit
Parameter	F460 translator		Tfer ID	01265		
Vane SN: 30	63 C. A	A. Align. deg. true:	Slope	1.0000	0 Intercept	0.00000
VaneTorque	8 to 8	2	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:		DA	S 2:						
	Orientation	Linearity:	Ori	ientation	Linearity:					
Abs Avg Err	10.8	1.	5							
Abs Max Er	13		4							
UseDescriptio	on: TferID:	Input	Raw:	Linearity	Output V:	Output Deg.:	Difference:	Change:	Error:	
primary	01266	0			0.0000	353	7	46	1	
primary	01266	45	5	\checkmark	0.0000	34	11	41	-4	
primary	01266	90)	\checkmark	0.0000	79	11	45	0	
primary	01266	13	5	\checkmark	0.0000	124	11	45	0	
primary	01266	18	0	\checkmark	0.0000	172	8	48	3	
primary	01266	22	5	\checkmark	0.0000	215	10	43	-2	
primary	01266	27	0	\checkmark	0.0000	261	9	46	1	
primary	01266	31	5	\checkmark	0.0000	307	8	46	1	
primary	01265	2			0.0000	353	9		9	
primary	01265	92	2		0.0000	79	13		13	
primary	01265	18	2		0.0000	172	10		10	
primary	01265	27	2		0.0000	261	11		11	
Sensor Com	ponent Mast			Cond	ition Good		Status	pass		
Sensor Com	ponent Condition	n		Cond	ition Poor		Status	Fail]
Sensor Com	ponent Sensor	Heater		Cond	ition Functioni	ng	Status	pass]
Sensor Com	ponent Sensor	Plumb		Cond	ition Plumb		Status	pass]
Sensor Com	ponent Torque	Torque		Cond	ition Good		Status	pass]
Sensor Com	ponent Vane Co	Vane Condition		Cond	ition Poor		Status	Fail]
Sensor Com	ponent System	Memo		Cond	ition See com	ments	Status	pass		

Temperature Data Form

Mfg	-	Serial Nun	ıber Ta	Site			nnician	Site Visit Date	Param	eter	Owner ID	
RM Young		18748		YOS404		Eric Hebert		05/01/2013	Temper	rature	none	
						N	Mfg	Extech	Pa	arameter Te	mperature	
						S	Serial Number	H232679	Tí	fer Desc. RT	D	
						ſ	lfer ID	01228				
DAS 1:			DAS 2:	1		S	Slope	1.0073	2 Inte	rcept	-0.12380	1
Abs Avg Err	Abs	Max Er	Abs Av	g Err Abs	Max Er	0	Cert Date	1/12/201	3 Cor	rCoff	1.00000	l
0.05		0.12]						
UseDesc.:		Test type:	In	putTmpRaw	InputTm	oCorr	r.: OutputTmpS	ignal: OutputSig	gnalEng:	OSE Unit:	Difference:	
primary	Temp	Low Range	e	-0.03	0.09	9	0.0000	0.	1	С	-0.04	
primary	Temp	Mid Range	;	25.31	25.2	25	0.0000	25	.3	С	0	
primary	Temp	High Rang	e	47.26	47.0)4	0.0000	47	.2	С	0.12	
Sensor Com	ponen	t Shield			Cond	lition	Clean		Status	pass		
Sensor Com	ponen	t Blower S	tatus Sw	vitch	Cond	lition	N/A		Status	pass		
Sensor Com	ponen	t Blower			Cond	lition	Functioning		Status	pass		
Sensor Com	ponen	t System N	/lemo		Cond	lition	ı		Status	pass		

Humidity Data Form

Mfg	Serial Nu	Serial Number Ta Site		Tec		chnician		Site Vi	sit Date	Parar	neter	Owner ID
Rotronic	59018		YOS40)4	Er	ric Hebert		05/01/	2013	Relati	ve Humidity	none
						Mfg Serial Nu	mber	Rotroni	c		Parameter Rel	ative Humidity
						Tfer ID		01225				
						Slope			1.0000	0 Int	tercept	0.00000
	DAS 1:		Ι	DAS 2:		Cert Date	!		1/29/201	3 Co	orrCoff	1.00000
	Low Range	High Rang	ge I	Low Range	H	ligh Range						
Abs Avg Err	3.3		2.1									
Abs Max Er	4.3		2.1									
UseDesc.:	Test type:	Device	e:	Input RH:	G	TL Raw:	RH C	Corr.:	DAS V	olts:	DAS %RH:	Difference:
primary	RH Low Range	Hygrocl	lip	32.8		34.8	32	.8	0.349	7	35.0	2.2
primary	RH Low Range	Hygrocl	lip	52.9		55.1	52	.9	0.572	.4	57.2	4.3
primary	RH High Range	Hygrocl	lip	93.6		89.4	93	.6	0.957	'4	95.7	2.1
Sensor Com	ponent System	Memo		Con	ditio	on				Statu	s pass	
Sensor Com	ponent Blower			Con	ditio	Function	ning			Statu	s pass	
Sensor Com	ponent Blower	Status Switc	h	Con	ditio	on N/A				Statu	s pass	
Sensor Com	Sensor Component RH Filter Con				ndition Clean					Status pass		
Sensor Com	ponent Shield			Con	ditio	Clean				Statu	s pass	

Solar Radiation Data Form

Sensor Component Properly Sited

Sensor Component System Memo

Mfg	Serial Number Ta Site		Т	Technician		Site Visit I	ate Pa	rameter	Owner ID
Licor	PY77051	YOS4	04 E	Eric He	lebert 05/01/2013		So	lar Radiation	none
Mfg	RM Young			Mf	g	Eppley		Parameter	solar radiation
SN/Owner ID	none	03184		Ser	ial Number	10765		Tfer Desc.	SR transfer translat
Parameter	Solar Radiation Tr	anslator		Tfe	r ID	01246			
DAS 1:	D	AS 2:		Slo	ре	1.	00000	Intercept	0.00000
% Diff of Avg	%Diff of Max %	Diff of Avg	%Diff of Max	Cer	rt Date	1/6	/2010	CorrCoff	1.00000
				Mf	g	Eppley		Parameter	solar radiation
				Ser	ial Number	34341F3		Tfer Desc.	SR transfer sensor
				Tfe	r ID	01245			
				Slo	ре	1.	00000	Intercept	0.00000
				Cer	rt Date	12/16	/2010	CorrCoff	1.00000
3.8%	4.8%	0.0%	0.0%						
UseDescription	: Measure Date	MeasureTin	ne Tfer Cor	r:	DAS w/r	n2: Pct	Differen	ce:	
primary	5/2/2013	8:00	668		651		-2	2.5%	
primary	5/2/2013	9:00	840		809		-3	.7%	
primary	5/2/2013	10:00	962		919		-4	.5%	
primary	5/2/2013	11:00	1018		969		-4	.8%	
primary	5/2/2013	12:00	1007		960		-4	.7%	
primary	5/2/2013	13:00	933		896		-4	.0%	
primary	5/2/2013	14:00	802		776		-3	.2%	
primary	5/2/2013	15:00	622		610		-1	.9%	
Sensor Comp	onent Sensor Leve	el	Condit	ion 1	/2 bubble off I	evel	St	atus pass	
Sensor Comp	onent Sensor Clea	า	Condit	ion C	lean		St	atus pass	

Condition Properly sited

Condition

Status pass

Status pass

Precipitation Data Form

Mfg	Serial	Serial Number Ta Site		ſ	Fec l	hnician		Site	Visit Date	Param	eter	Owner ID
Climatronics	illegibl	e	YOS404		Eric	Hebert		05/01/2013 P		Precipit	ation	illegible
					I	Mfg PMP)	Parameter Precipitation		
DAS 1:		DAS 2:			5	Serial Nun	ıber	EW-	06134-50	Tfer Desc. 250ml graduate		
A Avg % Diff	A Avg % Diff: A Max % Di A Avg %Dif A Max % Di 3.0% 4.0%							012	50			
3.076		5	Slope			1.0000	0 Inte	0.00000				
					(Cert Date			9/5/200	5 Cor	Coff	1.00000
UseDesc	Test type:	TferVolume	Iteration	TimePerTir		Ea Ht.	DAS	ong.	Fa HtUnit:	OSE Un	it: TforI	Inits:PctDifference
primary	tip check	10 manual	1	2 sec		1.00	1.0	$\frac{\text{cng.}}{0}$	mm	mm	m	l
primary	test 1	231.5	1	8 sec		5.00	4.8	30	mm	mm	m	1 -4.0%
primary	test 2	231.5	2	10 sec		5.00	4.9	90	mm	mm	m	1 -2.0%
Sensor Com	ponent Syste	em Memo		Condi	tion	1				Status	pass	
Sensor Com	ponent Sens	or Heater		Condi	tion	Functioni	ng			Status	pass	
Sensor Com	ponent Prop	erly Sited		Condi	tion	Properly	sited			Status	pass	
Sensor Com	ponent Gaug	ge Drain Scree	n	Condi	tion	Not insta	lled			Status	Fail	
Sensor Com	ponent Leve	I		Condi	tion	Level				Status	pass	
Sensor Com	ponent Gaug	ge Clean		Condi	tion	Clean				Status	pass	
Sensor Com	ponent Funn	el Clean		Condi	tion	Clean				Status	pass	
Sensor Component Condition			Condi	tion	on Good				Status	pass		
Sensor Component Gauge Screen			Condi	tion	ion Not installed				Status	Fail		

Infrastructure Data For

Site ID	YOS404	Technician Eric Heb	ert Site Visit Date 05/01/2013
Shelter	Make	Shelter Model	Shelter Size
Ekto		8812 (s/n 3515-2)	768 cuft

Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Sample Tower Type	Condition	Туре В	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	Conduit	Condition	Fair	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
ARS	none	YOS404	Eric Hebert	05/01/2013 Shelter Temperature		enone
DAS 1:	DAS 2:		Mfg	Extech	Parameter St	nelter Temperatur
Abs Avg Err Abs	Abs Max Er Abs Avg Err Abs Max Er 3.60		Serial Number	H232679	Tfer Desc. R	ГD
	3.00		Tfer ID	01228		
			Slope	1.0073	2 Intercept	-0.12380
			Cert Date	1/12/201	3 CorrCoff	1.00000

UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	24.40	24.35	0.000	26.5	С	2.11
primary	Temp Mid Range	24.69	24.63	0.000	27.4	С	2.78
primary	Temp Mid Range	24.71	24.65	0.000	21.1	С	-3.6

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Flow Rate	YOS404	Eric Hebert	05/01/2013	Filter Position	Tylan	1254		
The filter attachment orientation.	t plate is mounted t	too low in the enclos	sure resulting in	the filter being expo	osed to wind-driven	rain and in the	standard ge	eometric
Ozone	YOS404	Eric Hebert	05/01/2013	Cell A Freq.	ThermoElectron	438		\checkmark
This analyzer diagno	ostic check is outsid	de the manufacturer'	s recommended	value.				
Wind Direction	YOS404	Eric Hebert	05/01/2013	Vane Condition	Climatronics	3750		\checkmark
The wind direction v	ane is slightly ben	t and could be causing	ng additional bia	s in wind direction	measurements.			
Wind Direction	YOS404	Eric Hebert	05/01/2013	Condition	Climatronics	3750		
The upper and lower	sections of the wi	nd sensor body are l	oose. This cond	ition will cause prer	nature failure of the	e sensor and car	n affect data	a accuracy.
Wind Speed	YOS404	Eric Hebert	05/01/2013	Condition	Climatronics	3751		
The upper and lower	sections of the wi	nd sensor body are l	oose. This cond	ition will cause prer	nature failure of th	e sensor and car	n affect data	a accuracy.

Field Systems Comments

1 Parameter: PollAnalyzerCom

The DAS full scale and zero factors for the ozone channel are set to 497 and -3 respectively. The usual settings are 500 and 0. This may not be a problem but it does contribute to the error observed during the ozone accuracy check. It is possible that polled data at the central polling station have different factors.

2 Parameter: ShelterCleanNotes

The site is neat, clean, and well organized.

Field Systems D	ata Form	A PARTIN A	F-02058-1500-S1-rev001
Site ID YOS404	Technician Eric Hebert	Site Visit Date 05/	01/2013
Site Sponsor (agency)	NPS	USGS Map	El Capitan
Operating Group	NPS	Map Scale	
AQS#	06-043-0003	Map Date	
Meteorological Type	Climatronics		
Air Pollutant Analyzer	Ozone, CO, NOx, IMPROVE	QAPP Latitude	37.7133
Deposition Measurement	dry	QAPP Longitude	-119.7061
Land Use	mountain top, woodland - evergreen	QAPP Elevation Meters	1605
Terrain	complex	QAPP Declination	
Conforms to MLM	Marginally	QAPP Declination Date	
Site Telephone	(209) 372-4411	Audit Latitude	37.713251
Site Address 1	Turtleback Dome	Audit Longitude	-119.706196
Site Address 2		Audit Elevation	1599
County	Mariposa	Audit Declination	13.5
City, State	Yosemite National Park, CA	Present	
Zip Code	95389	Fire Extinguisher	Not present
Time Zone	Pacific	First Aid Kit	
Primary Operator		Safety Glasses	
Primary Op. Phone #		Safety Hard Hat	
Primary Op. E-mail		Climbing Belt	
Backup Operator		Security Fence	
Backup Op. Phone #		Secure Shelter	
Backup Op. E-mail		Stable Entry Step 🗹	
Shelter Working Room ✓	Make Ekto M	Iodel 8812 (s/n 3515-2)	Shelter Size 768 cuft
Shelter Clean	Notes The site is neat, clean, and w	ell organized.	
Site OK	Notes		
Driving Directions and t appro- 100 y	Mariposa take route 140 into Yosemite. hrough the tunnel. Approximately one mi oximately 1/2 mile past the gate to the cor yards on the path behind the station.	From the loop road, take route ile past the tunnel look for a dir mmunication station at the top of	41 toward Oakhurst. Continue uphill t road on the left. Continue of Turtleback Dome. The site is another

Field	ST	151	tems	Π	91	19	F	orm
I ICIU	\mathbf{J}	D.			<u>a</u>	Let -		

YOS404

F-02058-1500-S2-rev001

Site ID

Technician Eric Hebert

Site Visit Date 05/01/2013

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

Siting Distances OK

Siting Criteria Comment

Fi	eld Sy	stems Data Fo	rm		F-02058-1500-S3-rev001
Site	e ID	YOS404	Technician Eric Hebert		Site Visit Date 05/01/2013
1	Are win being in	d speed and direction fluenced by obstructio	sensors sited so as to avoid ns?		
2 Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)					
3	Are the	tower and sensors plu	nb?		
4	Are the avoid ra	temperature shields po diated heat sources su	ointed north or positioned to ch as buildings, walls, etc?		
5	5 Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)				
6	Is the so	lar radiation sensor pl	umb?		
7	Is it site light?	d to avoid shading, or	any artificial or reflected		
8	Is the ra	in gauge plumb?			
9	Is it site towers,	d to avoid sheltering e etc?	fects from buildings, trees,		
10	Is the su facing n	rface wetness sensor s orth?	ited with the grid surface		N/A
11	Is it inc	lined approximately 3) degrees?		N/A

Fie	eld Systems D	Data Form			F-02058-15	00-S4-rev001
Site	YOS404	Technician	ric Hebert	Site Visit Date	5/01/2013	
1	Do all the meterolog	rical sensors appear to be in	tact, in good 🛛			1. 1. The second
	condition, and well	maintained?	, ,			
2	Are all the meteorol reporting data?	ogical sensors operational o	online, and 🖳			
3	Are the shields for t	he temperature and RH sen	isors clean?			
4	Are the aspirated m	otors working?				
5	Is the solar radiation scratches?	n sensor's lens clean and fre	e of			
6	Is the surface wetne	ss sensor grid clean and uno	damaged?	N/A		
7	Are the sensor signa condition, and well a	ll and power cables intact, in maintained?	n good 🛛			
8	Are the sensor signation from the elements at	l and power cable connection nd well maintained?	ons protected 🛛			
Par	ameter	Manufacturer	Model	S/N	Clie	ent ID
Pre	cipitation	Climatronics	100508-2	illegible	illeg	ible
Rel	ative Humidity	Rotronic	MP 601A	59018	non	e
Met	Vet tower unknown unknown		unknown	none	non	e
Wir	d Direction	Climatronics	100076	4058	908	32
Wir	nd Speed	Climatronics	100075	4088	910	22
Ter	nperature	RM Young	41342	18748	non	e
Sola	ar Radiation	Licor	LI-200	PY77051	non	e

Fie	eld Sy	stems Dat	ta Form			F-02058-15	00-S5-rev001
Site	e ID	YOS404	Technician Eric	Hebert		Site Visit Date 05/01/2013	
	Siting C	Criteria: Are the	pollutant analyzers and c	leposition equ	uipı	ment sited in accordance with 40 CFR 58	8. Appendix E
1	Do the sunrestri	sample inlets ha icted airflow?	ve at least a 270 degree ar	rc of			
2	Are the	sample inlets 3	- 15 meters above the grou	und?			
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?						
	Pollutar	nt analyzers and	l deposition equipment op	erations and	ma	<u>intenance</u>	
1	Do the a conditio	analyzers and ea on and well main	quipment appear to be in a ntained?	good			
2	Are the reportin	analyzers and 1 1g data?	nonitors operational, on-l	ine, and			
3	Describ	e ozone sample	tube.			1/4 teflon by 10 meters	
4	Describ	e dry dep samp	le tube.			3/8 teflon by 10 meters	
5	Are in-l indicate	ine filters used i location)	in the ozone sample line? ((if yes		At inlet only	
6	Are san obstruct	ple lines clean, tions?	free of kinks, moisture, a	nd			
7	Is the ze	ero air supply d	esiccant unsaturated?				
8	Are the	re moisture traj	os in the sample lines?			Not present	
9	Is there clean?	a rotometer in	the dry deposition filter li	ne, and is it		Clean and dry	
Par	ameter	-	Manufacturer	Model		S/N Clie	ent ID

Parameter	Manufacturer	Model	S/N	Client ID	
Sample Tower	Aluma Tower	В	none	none	
Ozone	ThermoElectron Inc	49C	49C-74534-376	90763	
Filter pack flow pump	Thomas	107CA18	0688001767	00253	
MFC power supply	Tylan	RO-32	FP9508008	03870	
Zero air pump	Werther International	PC70/4	531397	none	

The DAS full scale and zero factors for the ozone channel are set to 497 and -3 respectively. The usual settings are 500 and 0. This may not be a problem but it does contribute to the error observed during the ozone accuracy check. It is possible that polled data at the central polling station have different factors.

Fie	eld Sy	stems Data Fo	orm				F-0	2058-1	500-S6-rev001
Site	e ID	YOS404	Technician	Eric Hebert		Site Visi	it Date 05/01/20	13	
	DAS, se	nsor translators, and p	peripheral equi	oment operation	<u>ns ai</u>	<u>ıd maintena</u>	nce		
1	Do the l well ma	DAS instruments appearintained?	ar to be in good	condition and					
2	Are all modem,	the components of the backup, etc)	DAS operation:	al? (printers,					
3	Do the a lightnin	nalyzer and sensor sig g protection circuitry?	hrough		Met sensors	only			
4	Are the signal connections protected from the weather and well maintained?								
5	Are the signal leads connected to the correct DAS channel?								
6	Are the ground	DAS, sensor translato ed?	rs, and shelter j	oroperly					
7	Does the	e instrument shelter ha	ave a stable pow	ver source?					
8	Is the in	strument shelter temp	erature control	led?					
9	Is the m	et tower stable and gr	ounded?			Stable		Groundee	i
10	Is the sa	umple tower stable and	grounded?						1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1
11	Tower of	comments?							
Par	ameter	Ma	anufacturer	Model		S/N		Cl	ient ID

Parameter	Manufacturer	Model	5/IN	Client ID	
DAS	Environmental Sys Corp	8816	2558	90645	
F460 translator	Climatronics	100163	1101	none	
Modem	US Robotics	V.92	unknown	none	
Solar Radiation Translator	RM Young	70101-X	none	03184	

Field Systems Data	Form				F-02	.058-	1500-S7-rev001
Site ID YOS404	Тес	hnician Eric l	Hebert	Site Visit Date	5/01/2013	3	Di Antonio Antonio
Documentation			and the second				
Doos the site have the requir	od instrum	nont and aqui	nmont monu	alc?			
Does the site have the requir	Ves N	o N/A	pment manu	<u>ais:</u>	Ves	No	N/A
Wind speed sensor			Data l	ogger			
Wind direction sensor]	Data l	ogger			
Temperature sensor			Strip o	hart recorder			
Relative humidity sensor]	Comp	uter			
Solar radiation sensor			Mode	n			
Surface wetness sensor			Printe	r			
Wind sensor translator			Zero a	ir pump			
Temperature translator			Filter	flow pump			
Humidity sensor translator			Surge	protector			
Solar radiation translator			UPS				
Tipping bucket rain gauge			Lightr	ing protection device			
Ozone analyzer			Shelte	r heater			
Filter pack flow controller			Shelte	r air conditioner			
Filter pack MFC power supply							
Does the site have the requ	ired and n	nost recent QC	<u>C</u> documents	and report forms?			
	Present				Curre	ent	
Station Log		DataView2					
SSRF							
Site Ops Manual		Jan 2006					
HASP							
Field Ops Manual							
Calibration Reports		10/11/2012					
Ozone z/s/p Control Charts							
Preventive maintenance schedu			STATES AND ARE				
1 Is the station log properly	completed	l during every	site visit?	Dataview			
2 Are the Site Status Report current?	Forms be	ing completed	l and	Flow section only			
3 Are the chain-of-custody f sample transfer to and fro	orms prop m lab?	erly used to d	ocument				
4 Are ozone z/s/p control cha current?	arts prope	rly completed	and	Control charts not use	ed		
Provide any additional explana natural or man-made, that may	tion (phot v affect the	ograph or ske e monitoring p	tch if necessa parameters:	ary) regarding conditio	ons listed	above,	or any other features,

Fie	eld S	ystems Data	a Form			F-02058	-1500-S8-rev001
Site	e ID	YOS404	Technician	Eric Hebert	Site Visit Date	05/01/2013	
1 2	Site of Has th course Has th trainin	peration procedur ne site operator att ? If yes, when and ne backup operato ng course? If yes, y	<u>es</u> cended a formal CAS l who instructed? r attended a formal (when and who instru	TNET training			
3	Is the s schedu	ite visited regular le?	ly on the required Tı	iesday 🗸			
4	Are the flollow	e standard CASTN ed by the site oper	NET operational proc ator?	cedures being			
5	Is the s the req	ite operator(s) kn uired site activitie	owledgeable of, and a s? (including docum	able to perform 🗹 entation)			

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

OC Check Performed

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

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

QC Check Performed

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

- 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?

Compliant Frequency ~ ~ Monthly and semiannually ~ Daily ~ ~ Every 2 weeks \checkmark \checkmark Daily \square Alarm values only \checkmark ~ Every 2 weeks V N/A

Dataview

~

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:
Fie	eld Sy	ystems Data For	rm				F-02058-1500-S9-rev001					
Site	e ID	YOS404	Technic	cian E	ric Hebert		Site Visit Date 05/01/2013					
	Site op	eration procedures										
1	Is the f	ilter pack being changed	every Tu	iesday	as scheduled?		Filter changed mornings					
2	Are the correct	Site Status Report Forn ly?	ns being o	comple	ted and filed		Flow section only					
3	Are da schedu	ta downloads and backuj led?	ps being j	perfort	ned as		No longer required					
4	Are gei	neral observations being	made and	d recor	ded? How?		SSRF, dataview					
5	Are site fashion	e supplies on-hand and ro ?	eplenishe	d in a t	timely							
6	Are sai	nple flow rates recorded	? How?				SSRF					
7	Are san fashion	nples sent to the lab on a ?	regular :	schedu	le in a timely							
8	Are filt and shi	ers protected from conta pping? How?	mination	ı durin	g handling		Single clean glove used to handle filter					
9	Are the operation	e site conditions reported ons manager or staff?	regularl	y to the	e field							
QC	Check F	Performed		Frequ	ency		Compliant					
N F F F	Aulti-poi low Sys liter Pac low Rat	int MFC Calibrations tem Leak Checks ck Inspection e Setting Checks		Semiar Weekly Weekly	nnually ,							
V Iı S	'isual Cl n-line Fi ample L	neck of Flow Rate Rotom Iter Inspection/Replacen .ine Check for Dirt/Wate	nent	VVEEKIY	/							
Prov natu	ide any ral or m	additional explanation (p an-made, that may affect	ohotograp t the mon	ph or s nitoring	ketch if neces g parameters:	sary	y) regarding conditions listed above, or any other features,					

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
SEK	430-Eric H	ebert-05/03/2013				
1	5/3/2013	Computer	Gateway	none	Solo	B2500251306
2	5/3/2013	DAS	Environmental Sys Corp	90649	8816	2562
3	5/3/2013	Elevation	Elevation	None	1	None
4	5/3/2013	Filter pack flow pump	Thomas	none	107CAB11A	10950000039
5	5/3/2013	flow rate	Tylan	03384	FC280AV	AW9403014
6	5/3/2013	Infrastructure	Infrastructure	none	none	none
7	5/3/2013	Met tower	Aluma Tower	none	В	none
8	5/3/2013	MFC power supply	Tylan	03679	RO-32	FP9403015
9	5/3/2013	Modem	US Robotics	none	56k	unknown
10	5/3/2013	Ozone	ThermoElectron Inc	90835	49C	0520012327
11	5/3/2013	Ozone Standard	ThermoElectron Inc	90729	49C	49C-90523-366
12	5/3/2013	Precipitation	Novalynx	none	260-2500	0977
13	5/3/2013	Printer	Hewlett Packard	none	842C	unknown
14	5/3/2013	Relative Humidity	Rotronic	none	MP 100	14103
15	5/3/2013	Shelter Temperature	ARS	none	none	none
16	5/3/2013	Shield (10 meter)	RM Young	90810	Aspirated 43408	none
17	5/3/2013	Siting Criteria	Siting Criteria	None	1	None
18	5/3/2013	Solar Radiation	Licor	none	LI-200	PY37610
19	5/3/2013	Solar Radiation Translator	RM Young	none	70101-X	none
20	5/3/2013	Temperature	RM Young	none	41342	8472
21	5/3/2013	Temperature Translator	RM Young	00819	41406-X	063143
22	5/3/2013	Wind Direction	RM Young	90850	AQ05103-5	59339wdr
23	5/3/2013	Wind Speed	RM Young	90850	AQ05103-5	59339wsp
24	5/3/2013	Zero air pump	Werther International	none	PC 70/4	627676

DAS Data Form

0.33 DAS Time Max Error:

Mfg	s Serial Number Site		Technician	Site Visit Date	Parameter	Use Desc.			
Environment	tal Sys	2562		SEK4	430	Eric Hebert	05/03/2013	DAS	Primary
Das Date: Das Time: Das Day:	5 /3 13	/2013 :14:45 124	Audit Da Audit Tir Audit Da	nte me ny	5 /3 /2013 13:14:25 124	Mfg Serial Number	Datel 4000392	Parameter Tfer Desc.	DAS Source generator (D
Low Chann	el:		High Cha	nnel:		Tfer ID	01321		
Avg Diff:	Ma	x Diff:	Avg Diff:		Max Diff:	Slope	1.0000	0 Intercept	0.00000
0.00	02	0.0004	0.0	0002	0.0003	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	1/27/201	3 CorrCoff	1.00000
Channel	Inp	out D	VM Output		DAS Output	InputUnit	OutputUnit	Difference	
2	2 (0.0000	0.00	00	0.000	0 V	V	0.0000	
2	2 0	0.1000	0.10	00	0.100	0 V	V	0.0000	
2	2 0	0.3000	0.30	00	0.300	1 V	V	0.0001	
2	2 0	0.5000	0.50	00	0.500	2 V	V	0.0002	
2	2 0	0.7000	0.70	00	0.700	3 V	V	0.0003	
2	2 0).9000	0.90	00	0.900	3 V	V	0.0003	
2	2 1	.0000	1.00	00	1.000	4 V	V	0.0004	
9) (0.0000	0.00	00	0.000	0 V	V	0.0000	
9) (0.1000	0.10	00	0.100	0 V	V	0.0000	
9) (0.3000	0.30	00	0.300	1 V	V	0.0001	
9) ().5000	0.50	00	0.500	2 V	V	0.0002	
9) (0.7000	0.70	00	0.700	2 V	V	0.0002	
9) ().9000	0.90	00	0.900	3 V	V	0.0003	
9) 1	.0000	1.00	01	1.000	4 V	V	0.0003	

Flow Data Form

Mfg	Serial Nun	nber Ta	Site	Тес	hnician	Site Visit l	Date Paran	neter	Owner ID
Tylan	AW940301	14	SEK430	Eri	c Hebert	05/03/201	3 flow ra	ite	03384
Mfg	Tylan				Mfg	BIOS	ŀ	Parameter Fl	ow Rate
SN/Owner ID	FP9403015	03679			Serial Number	122974]	fer Desc. Bl	OS 220-H
Parameter	MFC power su	oply			Tfer ID	01416			
					Slope	1.	.00000 Int	ercept	0.00000
					Cert Date	1/	8/2013 Co	rrCoff	1.00000
DAS 1:		DAS 2:		L	Cal Factor Z	ero	0.1	13	
A Avg % Diff:	A Max % Di	A Avg %	Dif A Max	x % Di	Cal Factor F	ull Scale	5.	56	
0.20%	0.31%				Rotometer R	eading:	3.	05	
UseDescription:	Test type:	Input 1/m:	Input STP:	MfcDisp.:	OutputSignal:	Output S E:	InputUnit:	OutputSigna	IIPctDifference:
primary	pump off	0.000	0.000	-0.08	-0.0570	0.07	l/m	l/m	
primary	leak check	0.000	0.000	-0.08	-0.0570	0.07	l/m	l/m	
primary	test pt 1	0.000	2.999	2.45	2.6370	2.99	l/m	l/m	-0.31%
primary	test pt 2	0.000	2.996	2.45	2.6370	2.99	l/m	l/m	-0.20%
primary	test pt 3	0.000	2.987	2.45	2.6370	2.99	l/m	l/m	0.09%
Sensor Compo	nent Leak Tes	st		Condition	n		Statu	s pass	
Sensor Compo	Filter Azi	muth		Conditio	n 360 deg		Statu	s pass	
Sensor Compo	Filter Dep	oth		Condition	n - 0.5 cm		Status	s Fail	
Sensor Compo	nent Filter Pos	sition		Condition	n Poor		Status	s Fail	
Sensor Compo	Filter Dis	tance		Condition	n 5.0 cm		Statu	s pass	
Sensor Compo	onent Tubing C	ondition		Condition	n Good		Status	s pass	
Sensor Compo	nent Rotomete	er Condition	ı	Condition	Clean and dry		Status	s pass	
Sensor Compo	onent Moisture	Present		Conditio	n No moisture p	resent	Statu	s pass	
Sensor Compo	onent System M	/lemo		Condition	n See comments	6	Status	pass	

Ozone Data Form

Mfg	Se	rial Number Ta	Site	Te	chnician		Site Vis	it Date	Parame	eter	Owner I	D
ThermoElectron Ir	nc 05	520012327	SEK430	E	ric Hebert		05/03/2	013	Ozone		90835	
Slope:	0.98	3730 Slope: 2037 Intercept	0.0000	0	Mfg Serial N	umber	Thermol	Electron	Inc Pa	rameter 0. er Desc. 0	zone Dzone primary	y stan
	1.00	CorrColl	0.0000	U	Tfer ID		01111					
DAS 1:		DAS 2:			Slope			0.9972	0 Inter	cent	0.18	3428
A Avg % Diff: A	Max	x % Di A Avg %	6Dif A Max	% Di	Slope			4/0/004			4.00	
0.9%		2.4%			Cert Da	ite		1/2/201	3 Cori	Coff	1.00	0000
UseDescriptio	on:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	e Unit:	PctDi	fference:	
primary		1	-0.38	-0.	.56	0.	16	ppb				
primary		2	24.51	24	.39	24	.97	ppb			2.38%	
primary		3	54.75	54	.71	54	.91	ppb			0.37%	
primary		4	83.46	83	.50	83.	.33	ppb			-0.20%	
primary		5	109.66	109	9.78	109	.10	ppb			-0.62%	
Sensor Compo	nent	Cell B Noise		Conditi	on 1.1 pp	b			Status	pass		
Sensor Compo	nent	Cell B Tmp.		Conditi	on				Status	pass		
Sensor Compo	nent	Fullscale Voltage		Conditi	on 0.999	4			Status	pass		
Sensor Compo	nent	Inlet Filter Conditio	n	Conditi	on Clean				Status	pass		
Sensor Compo	nent	Line Loss		Conditi	on Not te	sted			Status	pass		
Sensor Compo	nent	Offset		Conditi	on 0.2				Status	pass		
Sensor Compo	nent	Span		Conditi	on 1.016				Status	pass		
Sensor Compo	nent	Cell B Freq.		Conditi	on 97.0 k	Hz			Status	pass		
Sensor Compo	nent	System Memo		Conditi	on				Status	pass		
Sensor Compo	nent	Sample Train		Conditi	on Good				Status	pass		
Sensor Compo	nent	Cell B Pressure		Conditi	on				Status	pass		
Sensor Compo	nent	Cell B Flow		Conditi	on 0.68 l	om			Status	pass		
Sensor Compo	nent	Cell A Tmp.		Conditi	on 39.7 (Status	pass		
Sensor Compo	nent	Cell A Pressure		Conditi	on 698 m	nmHg			Status	pass		
Sensor Compo	nent	Cell A Noise		Conditi	on 0.9 pp	b			Status	pass		
Sensor Compo	nent	Cell A Freq.		Conditi	on 113.4	kHz			Status	pass		
Sensor Compo	nent	Cell A Flow		Conditi	on 0.67 l	om			Status	pass		
Sensor Compo	nent	Battery Backup		Conditi	on N/A				Status	pass		
Sensor Compo	Sensor Component Zero Voltage			Condition -0.0006					Status	pass		

Wind Speed Data Form

Mfg	Serial Numbe	r Ta Site	Te	chnician	Site Visit Dat	e Parameter	Owner ID		
RM Young	59339wsp	SEK430) Er	ic Hebert	05/03/2013	Wind Speed	90850		
				Mfg	RM Young	Paramet	er wind speed		
				Sorial Numbor		Tfor Doc	wind speed motor (h		
				Serial Number					
				Tfer ID	01262				
Prop or Cups SN	62005			Slope	1.000	000 Intercept	0.00000		
Prop or Cups Tor	cque 0	.4 to	0.4	Cert Date	1/13/2	010 CorrCoff	1.00000		
Prop Correction I	Fact 0.0512								
				Mfg	RM Young	Paramet	er wind speed		
				Serial Number		Tfer Des	sc. wind speed motor (I		
				Tfer ID	01261				
				Slope	1.000	000 Intercept	0.00000		
				Cert Date	1/13/2	010 CorrCoff	1.00000		
DA	S 1:	D	AS 2:						
Lo	w Range Hig	h Range L	ow Range H	ligh Range					
Abs Avg Err	0.07	0.25%							
Abs Max Er	0.19	0.49%							
UseDescription:	InputDevice:	Input RPM:	Input m/s:	Output V:	DAS m/s:	Diff/ %Diff:	Difference:		
primary	none	0	0.20	0.0000	0.0		-0.19		
primary	01262	200	1.02	0.0000	1.0		0.02		
primary	01262	400	2.05	0.0000	2.1		0.04		
primary	01262	800	4.10	0.0000	4.1	0.40	0.03		
primary	01262	1200	6.14	0.0000	6.2	0.49%			
primary	01262	2400	12.29	0.0000	12.3	0.24%			
primary	01262	4000	20.48	0.0000	20.5	0.20%			
Sensor Compon	ent System Merr	9400	40.15	0.0000	40.2	Status Dass			
Sensor Compon	cint oyotoin mon		Condition			Status pace			
Sensor Compon	ent Sensor Plum	b	Conditio	Plumb		Status pass			
Sensor Compon	ent Sensor Heat	er	Conditio	n N/A		Status pass			
Sensor Compon	ent Prop or Cups	s Condition	Conditio	Good		Status pass			
Sensor Compon	ent Condition		Conditio	Good		Status pass			
Sensor Component Torque Con			Conditio	n Fair		Status pass			

Wind Direction Data Form

Mfg	Serial	Number	Ta Site		Technician	Site Visit	t Date Paran	neter	Owner ID	
RM Young	5933	9wdr	SEK4	30	Eric Hebert	05/03/20	013 Wind I	Direction	irection 90850	
					Mfg Serial Nur Tfer ID	Ushikata nber 190037	I I I I I I I I I I I I I I I I I I I	Parameter V	vind direction ransit	
Vane SN: N VaneTorque	1/A 14 to	14	C. A. Align	a. deg. true:	Slope Cert Date Mfg	RM Youn	1.00000 Int 1/4/2011 Co	ercept rrCoff Parameter	0.00000 1.00000 vind direction))
					Serial Nur Tfer ID	01266		lfer Desc. [vind direction whe	÷el
DAS 1: DAS 2: Orientation Linearity: Orienta					Linearity:					
Abs Avg Err 2.8 1.8										
Abs Max Er		5	3							
UseDescription	n: Tfe	rID:	Input Ray	w: Linearity	Output V:	Output Deg.:	Difference:	Change:	Error:	
primary	012	266	0		0.0000	356	4	42	-3	
primary	012	266	45		0.0000	44	1	48	3	
primary	01	266	90		0.0000	88	2	44	-1	
primary	012	266	135		0.0000	132	3	44	-1	
primary	012	266	180		0.0000	180	0	48	3	
primary	01	266	225		0.0000	223	2	43	-2	
primary	01	200	270		0.0000	269	1	40	1	
primary	01	200	1		0.0000	314	1	43	5	
primary	01	205	91		0.0000	88	3		3	
primary	01	265	181		0.0000	180	1		1	
primary	01	265	271		0.0000	269	2		2	
Sensor Comp	oonent Mas	st		Con	dition Good		Statu	s pass		
Sensor Comp	onent Cor	dition		Con	dition Good		Statu	s pass		
Sensor Comp	oonent Sen	isor Heate	er	Con	dition N/A		Statu	s pass		
Sensor Component Sensor Plumb C		Con	dition Plumb		Statu	s pass				
Sensor Component Torque C		Con	dition Good		Statu	s pass				
Sensor Component Vane Condition Co			dition Good		Statu	s pass				
Sensor Component System Memo Co			Con	Condition Status pass						

Temperature Data Form

Mfg	Serial Number Ta Site		Т	ecl	hni	cian	Site V	isit Date	Param	eter	Owner ID				
RM Young		8472		SEK430		E	Eric	: He	ebert	05/03	8/2013	Tempe	rature	none	
Mfg	RM	Young					I	Mfg	g	Extec	h	Pa	arameter Te	mperature	
SN/Owner ID	wner ID 063143 00819					Serial Number		H2326	679	T	fer Desc. RT	er Desc. RTD			
Parameter	meter Temperature Translator					Tfer ID		01228							
DAS 1:		DA	S 2:				5	Sloj	ре		1.0073	2 Inte	rcept	-0.123	80
Abs Avg Err	Abs	Max Er Ab	s Avg	Err Abs	Max	Er		Cer	t Date		1/12/201	3 Cor	rCoff	1.000	00
0.13		0.21													
UseDesc.:		Test type:	Inpu	ıtTmpRaw	Inpu	ıtTmpC	Cor	r.:	OutputTmpS	ignal:	OutputSig	nalEng:	OSE Unit:	Difference:	
primary	Temp	Low Range		0.14		0.26			0.0000	0.1		С	-0.21		
primary	Temp	Mid Range		19.46		19.44			0.0000		19.	3	С	-0.11	
primary	Temp	High Range		44.08		43.88			0.0000		43.	8	C	-0.08	
Sensor Com	ponen	t Shield				Condit	tion	M	loderately clea	an		Status	pass		
Sensor Com	ponen	t Blower Statu	s Swite	ch		Condit	tion	N	//A			Status	pass		
Sensor Com	ponen	t Blower				Condit	tion	N	ot functioning			Status	Fail		
Sensor Component System Memo			Condition See comments				Status	pass							

Humidity Data Form

Mfg	Ifg Serial Number Ta Site			Technician		Site V	isit Date	Para	meter	Owner ID
Rotronic	14103	S	EK430	Eric Hebert		05/03/	/2013	Relat	tive Humidity	none
				Mfg Serial Nu	ımber	Rotron 124432	ic 2		Parameter Re	ative Humidity
	DAS 1:		DAS 2:	Slope Cert Dat	e		1.0000	0 In 3 C	orrCoff	0.00000
Abs Avg Err	Low Range	High Range	.0	High Rang	e					
Abs Max Er	2.9	2	.0							
UseDesc.:	Test type:	Device:	Input RH:	GTL Raw:	RH C	Corr.:	DAS V	olts:	DAS %RH:	Difference:
primary	RH Low Range	Hygroclip	32.8	33.8	32	2.8	0.317	'8	31.8	-1.0
primary	RH Low Range	Hygroclip	52.9	51.4	52	2.9	0.499	95	50.0	-2.9
primary	RH High Range	Hygroclip	93.6	89.9	93	8.6	0.916	53	91.6	-2.0
Sensor Com	ponent System	Memo	Col	ndition				State	us pass	
Sensor Com	ponent Blower		Со	ndition Function	oning			Stat	us pass	
Sensor Com	ponent Blower S	Status Switch	Со	ndition N/A				State	us pass	
Sensor Com	ponent RH Filte	r	Сог	ndition Clean				Stat	us pass	
Sensor Com	ponent Shield		Со	ndition Clean				State	us pass	

Solar Radiation Data Form

Mfg	g Serial Number Ta Site			chnician	Site Visit Date	Parameter	Owner ID
Licor	PY37610	SEK430	Er	ric Hebert	05/03/2013	Solar Radiation	none
Mfg	RM Young			Mfg	Eppley	Paramete	er solar radiation
SN/Owner ID	none r	none		Serial Number	10765	Tfer Des	SR transfer translat
Parameter	Solar Radiation Tra	anslator		Tfer ID	01246		
DAS 1:	DA	AS 2:		Slope	1.0000	0 Intercept	0.00000
% Diff of Avg	%Diff of Max %	Diff of Avg %I	Diff of Max	Cert Date	1/6/201	0 CorrCoff	1.00000
				Mfg	Eppley	Paramete	er solar radiation
				Serial Number	34341F3	Tfer Des	SR transfer sensor
				Tfer ID	01245		
				Slope	1.0000	0 Intercept	0.00000
				Cert Date	12/16/201	0 CorrCoff	1.00000
1.7%	2.2%	0.0%	0.0%				
UseDescription:	Measure Date	MeasureTime	Tfer Corr	: DAS w/r	n2: PctDiffe	erence:	
primary	5/3/2013	16:00	349	388		11.2%	
primary	5/4/2013	9:00	757	773		2.1%	
primary	5/4/2013	10:00	913	893		-2.2%	
Sensor Compo	onent Sensor Leve		Conditio	Not tested		Status pass	
Sensor Compo	onent Sensor Clear	n	Conditio	on Clean		Status pass	
Sensor Compo	onent Properly Site	d	Conditio	on Properly sited		Status pass	
Sensor Compo	onent System Merr	10	Conditio	on		Status pass	

Precipitation Data Form

Mfg	Mfg Serial Number Ta Site				Technician			Site Visit Date		ter	Owner ID
Novalynx	0977		SEK430	E	Fric Hebert		05/0	03/2013	Precipita	tion	none
					Mfg		PMF)	Par	ameter P	recipitation
DAS 1:		DAS 2:			Serial Nur	nber	EW-	06134-50	Tfe	r Desc. 2	50ml graduate
A Avg % Diff	f: A Max % I	Di A Avg %	bDif A N	/Iax % Di	Tfer ID		0125	50			
4.7%	5.5	5%								Г	
					Slope			1.0000	0 Intere	cept	0.00000
					Cert Date			9/5/200	5 Corre	Coff	1.00000
	1					1					
UseDesc.	Test type:	TferVolume:	Iteration:	TimePerTip:	Eq.Ht:	DAS	eng:	Eq.HtUnit:	OSE Unit	t: TferUni	ts:PctDifference
primary	tip check	10 manual	1	3 sec	2.50	2.:	90 26	mm	mm	ml	2.00/
primary	test 2	563	1	10 sec	14.28	13.	50 49	mm	mm	ml	-5.5%
Sensor Com	ponent Syste	em Memo	1	Conditi	ion See com	ments			Status F	bass	
Sensor Com	ponent Sens	or Heater		Conditi	ion Not funct	ioning			Status F	ail	
Sensor Com	ponent Prop	erly Sited		Conditi	ion See com	ments			Status F	ass	
Sensor Com	ponent Gaug	ge Drain Scree	n	Conditi	ion Installed				Status [bass	
Sensor Com	ponent Leve	I		Conditi	ion Level				Status [bass	
Sensor Com	ponent Gaug	ge Clean		Conditi	ion Clean				Status [bass	
Sensor Com	ponent Funn	el Clean		Conditi	ion Clean				Status [bass	
Sensor Com	ponent Conc	dition		Conditi	ion Good				Status [bass	
Sensor Com	Sensor Component Gauge Screen Con			Conditi	ion Installed				Status F	ass	

Infrastructure Data For

Site ID	SEK430	Technician Eric Heb	ert Site Visit Date 05/03/2013
Shelter 1	Make	Shelter Model	Shelter Size
Alan pre-	fab	s/n 861166 1808	512 cuft

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

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ARS	none	SEK430	Eric Hebert	05/03/2013	Shelter Temperature	none
DAS 1:	DAS 2:		Mfg	Extech	Parameter She	Iter Temperatur
Abs Avg ErrAbs1.42	S Max Er Abs Avg 1.50	Err Abs Max Er	Serial Number	H232679	Tfer Desc. RTE)
			Tfer ID	01228		
			Slope	1.0073	2 Intercept	-0.12380
			Cert Date	1/12/201	3 CorrCoff	1.00000

UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	23.06	23.02	0.000	24.4	С	1.37
primary	Temp Mid Range	22.97	22.93	0.000	24.4	С	1.5
primary	Temp Mid Range	23.10	23.06	0.000	24.5	С	1.39

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Flow Rate	SEK430	Eric Hebert	05/03/2013	Filter Position	Tylan	1414		\checkmark
The filter attachment pl orientation.	ate is mounted	too low in the enclos	ure resulting in t	he filter being expo	osed to wind-driv	en rain and in the	standard ge	ometric
Precipitation	SEK430	Eric Hebert	05/03/2013	Sensor Heater	Novalynx	1409		\checkmark
The tipping bucket rain	gauge heater is	not functioning.						
Precipitation	SEK430	Eric Hebert	05/03/2013	Properly Sited	Novalynx	1409		\checkmark
Objects violate the 45 d	legree rule for th	he tipping bucket rain	1 gage.					
Temperature	SEK430	Eric Hebert	05/03/2013	Blower	RM Young	1405		\checkmark
The forced-air blower f	or the shield is i	not functioning.						

Field Systems Comments

1 Parameter: SitingCriteriaCom

The site is a wooded area with spaced trees on three sides and a steep drop in elevation on the west side. Although not strictly conforming to siting criteria it is elevated in a wide valley and representative of the area. Some trees have been trimmed since the previous site audit. Trees are still within 5 meters, however none are higher than the CASTNET sample inlets.

2 Parameter: ShelterCleanNotes

The shelter is aging but is in fair condition and kept clean, neat, and well organized.

3 Parameter: MetSensorComme

The rain gauge is mounted near the tower.

4 Parameter: MetOpMaintCom

The temperature sensor aspirated shield blower is not functioning which will impact temperature data accuracy.

Field Systems D	ata Form	A. A. S. S.	F-02058-1500-S1-rev001				
Site ID SEK430	Technician Eric Hebert	Site Visit Date 05/0	03/2013				
Site Engineer (agameri)	NDS	USGS Man	Case Mountain				
Site Sponsor (agency)	NDC	Man Scale					
Operating Group		Map Deta					
AQS #	06-107-0009	Map Date					
Meteorological Type	R.M. Young						
Air Pollutant Analyzer	Ozone, IMPROVE, BAM] QAPP Latitude					
Deposition Measurement	dry	QAPP Longitude					
Land Use	woodland - mixed	QAPP Elevation Meters					
Terrain	complex	QAPP Declination					
Conforms to MLM	Marginally	QAPP Declination Date					
Site Telephone		Audit Latitude	36.489469				
Site Address 1	Southern Sierra Research Center	Audit Longitude	-118.829153				
Site Address 2	Highway 198	Audit Elevation	510				
County	Tulare	Audit Declination	13.1				
City, State	Sequoia National Park, CA] Present					
Zip Code	93262	Fire Extinguisher 🗹	Inspected May 2012				
Time Zone	Pacific	First Aid Kit					
Primary Operator		Safety Glasses					
Primary Op. Phone #		Safety Hard Hat					
Primary Op. E-mail		Climbing Belt					
Backup Operator		Security Fence					
Backup Op. Phone #		Secure Shelter					
Backup Op. E-mail		Stable Entry Step 🗹 💦					
Shelter Working Room	Make Alan pre-fab	lodel s/n 861166 1808	Shelter Size 512 cuft				
Shelter Clean	Notes The shelter is aging but is in fair condition and kept clean, neat, and well organized.						
Site OK	Notes						
Driving Directions National Park. Less than one mile past the Fee both, take the first paved road to the right at the Southern Sierra Research Center. The site is on the hill behind the center.							

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Field Systems Data Form

SEK430

F-02058-1500-S2-rev001

Site ID

Technician Eric Hebert

Site Visit Date 05/03/2013

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

Siting Distances OK

Siting Criteria Comment

The site is a wooded area with spaced trees on three sides and a steep drop in elevation on the west side. Although not strictly conforming to siting criteria it is elevated in a wide valley and representative of the area. Some trees have been trimmed since the previous site audit. Trees are still within 5 meters, however none are higher than the CASTNET sample inlets.

Fie	ield Systems Data Form				F-02058-1500-S3-rev001				
Site	e ID	SEK430	Technician	Eric Hebert	Site Visit Date 05/03/2013				
1	Are win being in	id speed and direction ifluenced by obstruction	sensors sited so ons?	as to avoid					
2 Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)									
3	3 Are the tower and sensors plumb?								
4	4 Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?			positioned to , walls, etc?					
5	5 Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)								
6	Is the so	olar radiation sensor p	lumb?						
7	Is it site light?	ed to avoid shading, or	any artificial o	r reflected					
8	Is the ra	ain gauge plumb?							
9	Is it site towers,	d to avoid sheltering e etc?	ffects from buil	dings, trees,					
10	Is the su facing r	irface wetness sensor s orth?	ited with the g	rid surface	N/A				
11	Is it inc	lined approximately 3	0 degrees?		N/A				

The rain gauge is mounted near the tower.

Field S	ystems Data I	orm				F -	02058-:	1500-S4-rev001
Site ID	SEK430	Technician Eric	Hebert		Site	Visit Date 05/03/2	013	
1 Do all t conditi	he meterological sension, and well maintair	sors appear to be inta red?	ct, in good				AST (794)	
2 Are all reporti	the meteorological so ng data?	ensors operational on	line, and					
3 Are the	e shields for the temp	erature and RH sense	ors clean?					
4 Are the aspirated motors working?								
5 Is the solar radiation sensor's lens clean and free of scratches?								
6 Is the s	6 Is the surface wetness sensor grid clean and undamaged?				N/A			
7 Are the conditi	e sensor signal and po on, and well maintair	wer cables intact, in jud?	good		Signs	of wear		
8 Are the from the	e sensor signal and po ne elements and well i	wer cable connection naintained?	is protected					
Parameter	I	Manufacturer	Model		5	S/N		Client ID
Met tower	\ 	Aluma Tower	В	USBOR	r	none		none
Solar Radia	tion	.icor	LI-200	1997.90	F	PY37610		none
Precipitation	1	Novalynx	260-2500)977	1	none
Temperatur	e [RM Young	41342		3	3472		none
Shield (10 m	neter)	RM Young	Aspirated 4	4340	8 r	none		90810
Wind Directi	on	RM Young	AQ05103-	5	Ę	59339wdr		90850
Wind Speed	F	RM Young	AQ05103-	5	E	59339wsp		90850

14103

none

MP 100

The temperature sensor aspirated shield blower is not functioning which will impact temperature data accuracy.

Rotronic

Relative Humidity

Fie	eld Systems I	Data Form		F-02058-1500-S5-rev001				
Site	ID SEK430	Technician Eric Hebert	:	Site Visit Date 05/03/201	13			
	Siting Criteria: Are	the pollutant analyzers and depositi	<u>on equip</u> i	nent sited in accordance wit	th 40 CFR 58, Appendix E			
1	Do the sample inlets unrestricted airflow	s have at least a 270 degree arc of ?						
2	Are the sample inle	ts 3 - 15 meters above the ground?						
3	Are the sample inle and 20 meters from	ts > 1 meter from any major obstruct trees?	tion, 🗆	Trees within 10 meters				
	Pollutant analyzers	and deposition equipment operation	s and ma	intenance				
1	Do the analyzers an condition and well r	d equipment appear to be in good naintained?						
2	Are the analyzers a reporting data?	nd monitors operational, on-line, and	1					
3	Describe ozone sam	ple tube.		1/4 teflon by 16 meters				
4	Describe dry dep sa	mple tube.		3/8 teflon by 15 meters				
5	Are in-line filters us indicate location)	ed in the ozone sample line? (if yes		At inlet only				
6	Are sample lines cle obstructions?	an, free of kinks, moisture, and						
7	Is the zero air supp	y desiccant unsaturated?						
8	Are there moisture	traps in the sample lines?	✓	Flow line only				
9	Is there a rotometer clean?	in the dry deposition filter line, and	is it 🗹	Clean and dry				
Par	ameter	Manufacturer Mod	el	S/N	Client ID			
Ozo	ne	ThermoElectron Inc 49C		0520012327	90835			

Filter pack flow pump	Thomas	107CAB11A	109500000039	none	
MFC power supply	Tylan	RO-32	FP9403015	03679	
Zero air pump	Werther International	PC 70/4	627676	none	

Fie	eld Systems Data F	orm			F-02058-15	00-S6-rev001
Site	ID SEK430	Technician Eric Hebert		Site Visit Date	05/03/2013	
	DAS, sensor translators, and	peripheral equipment operatio	<u>ns a</u>	nd maintenance		
1	Do the DAS instruments app well maintained?	ear to be in good condition and				
2	Are all the components of th modem, backup, etc)	e DAS operational? (printers,				
3	Do the analyzer and sensor s lightning protection circuitry	ignal leads pass through /?				
4	Are the signal connections pr well maintained?	rotected from the weather and				
5	Are the signal leads connected	ed to the correct DAS channel?				
6	Are the DAS, sensor translat grounded?	ors, and shelter properly		The shelter ground r	nay not be adequate	
7	Does the instrument shelter	nave a stable power source?				
8	Is the instrument shelter ten	perature controlled?				
9	Is the met tower stable and g	rounded?		Stable	Grounded	
10	Is the sample tower stable ar	id grounded?				ALC: NO.
11	Tower comments?			The met sensors are	mounted on the samp	le tower.
Dar	ometer 1	Annufacturer Model		S/N	Cli	ant ID

	Bell Harris Charles State	STREET, STREET			
Computer	Gateway	Solo	B2500251306	none	
DAS	Environmental Sys Corp	8816	2562	90649	
Modem	US Robotics	56k	unknown	none	
Printer	Hewlett Packard	842C	unknown	none	
Solar Radiation Translator	RM Young	70101-X	none	none	
Temperature Translator	RM Young	41406-X	063143	00819	

Field Systems Data	Fo	rm				F-02	.058-	1500-S7-rev001
Site ID SEK430		Tech	nician	Eric Hebert	Site Visit Date	05/03/2013	3	and the second second
Documentation					14 N. S.			
Does the site have the require	red in	strum	ent and	<u>equipment manu</u>	<u>als?</u>			The second second
Wind speed sensor	Yes			A Data l	ogger	Yes		N/A
Wind direction sensor		✓		Data l	ogger			
Temperature sensor				Strip o	hart recorder			
Relative humidity sensor				Comp	uter			
Solar radiation sensor				Mode	n			
Surface wetness sensor				Printe	r			
Wind sensor translator				Zero a	ir pump			
Temperature translator				Filter	flow pump			
Humidity sensor translator				Surge	protector			
Solar radiation translator				UPS				
Tipping bucket rain gauge				Lightr	ing protection device			
Ozone analyzer				Shelte	r heater			
Filter pack flow controller				Shelte	r air conditioner	V		
Filter pack MFC power supply	7							
Does the site have the requ	ired a	and mo	ost recei	nt QC documents	and report forms?			
	Pres	sent				Curre	ent	
Station Log			DataVie	ew2				
SSRF								R. Land
Site Ops Manual			Jan 200	06				
HASP								
Field Ops Manual								
Calibration Reports			Not ava	ilable on-site				
Dzone Z/S/p Control Charts								
Trevenuve manitenance scheut				1997 TO 1998 (NA 199				
1 Is the station log properly	comp	oleted	during	every site visit?	Dataview			
2 Are the Site Status Report current?	t Forn	ns beii	ng comp	oleted and	SSRFs are reviewe	d before ser	nding	
3 Are the chain-of-custody to sample transfer to and from the sample transfer to and from the sample transfer to and from the sample transfer to and the sample transfer to and the sample transfer to and the same transfer	forms om lat	prope)?	erly used	l to document				
4 Are ozone z/s/p control ch current?	arts p	oroper	ly comp	leted and	Control charts not u	sed		
Provide any additional explana natural or man-made, that ma	ation (y affe	(photo ct the	graph o monitor	r sketch if necess ing parameters:	ary) regarding condit	ions listed a	above,	or any other features,
	-200320	0101000		and the second secon		1712 182 182 182 183 184	C. C	

Fi	eld S	ystems Dat	a Form			F-02058-1500-S8-rev001
Sit	e ID	SEK430	Technician	Eric Hebert	Site Visit Date	05/03/2013
1	Site of Has th course	peration procedur ne site operator at e? If yes, when an	<u>'es</u> tended a formal CAS d who instructed?	STNET training	Trained by previous	s operator
2	Has th trainin	ne backup operato ng course? If yes,	or attended a formal when and who instru	CASTNET		
3	Is the s schedu	site visited regular le?	ly on the required T	uesday 🗸		

- Are the standard CASTNET operational procedures being ~ 4 flollowed by the site operator?
- Is the site operator(s) knowledgeable of, and able to perform 5 the required site activities? (including documentation)

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

OC Check Performed

QC Check Performed	Frequency	Compliant
Multipoint Calibrations	Semiannually	
Visual Inspections	Weekly	
Translator Zero/Span Tests (climatronics)	N/A	
Manual Rain Gauge Test	Monthly	
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

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	Comj
Monthly and semiannually	
Daily	
Monthly	
Daily	
As needed	
Alarm values only	
Every 2 weeks	
N/A	
Weekly	
Weekly	

oliant

- 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?

~ **DataView**

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

~

~

Fie	ield Systems Data Form						F-02058-1500-S9-rev00				
Site	e ID	SEK430	Technic	cian E	Eric Hebert	1943) 	Site Visit Dat	e 05/03/2013			
	Site oper	ration procedures									
1	Is the fil	ter pack being changed e	very Tu	iesday	as scheduled?		Filter changed mo	rinings			
2	Are the correctly	Site Status Report Forms /?	being o	comple	eted and filed		Flow and observat	tion sections only			
3	Are data schedule	downloads and backups d?	being J	perfor	med 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				
7	Are sam fashion?	ples sent to the lab on a r	egular	schedu	ule in a timely						
8	Are filte and ship	rs protected from contan ping? How?	nination	ı durir	ng handling		Clean gloves on and off				
9	Are the soperatio	site conditions reported r ns manager or staff?	egularl	y to th	e field						
QC	Check Pe	erformed		Frequ	iency			Compliant			
N	/ulti-poin	t MFC Calibrations		Semia	innually						
F	low Syste	m Leak Checks		Weekl	ly						
F	ilter Pacl	s Inspection		0.000000400		1491129					
F	low Rate	Setting Checks		Weekl	y						
V	Visual Check of Flow Rate Rotometer Weekly								Contraction of the second		
I	In-line Filter Inspection/Replacement As needed					1005.075					
S	ample Li	ne Check for Dirt/Water		Weekl	y	lates:					
Prov natu	ide any a ral or ma	dditional explanation (ph n-made, that may affect (otograj the mor	ph or s nitorin	sketch if necessing parameters:	sary) regarding condi	tions listed above, or	r any other features,		

Site Inventory by Site Visit

Site V	isit Date/	Parameter	Mfg	Owner ID	Model Number	Serial Number	
LAV4	10-Eric H	ebert-05/07/2013					
1	5/7/2013	Computer	Gateway	0019275982	Solo	B52500251350	
2	5/7/2013	DAS	Environmental Sys Corp	90535	8816	2026	
3	5/7/2013	Elevation	Elevation	None	1	None	
4	5/7/2013	F460 translator	Climatronics	00853	100163	unknown	
5	5/7/2013	Filter pack flow pump	Thomas	00253	107CA18	0688001767	
6	5/7/2013	flow rate	Tylan	03379	FC280AV	AW9403023	
7	5/7/2013	Infrastructure	Infrastructure	none	none	none	
8	5/7/2013	Mainframe	Climatronics	none	100081	1377	
9	5/7/2013	Mainframe power supply	Climatronics	none	101074	858	
10	5/7/2013	Met tower	Rohn	none	unknown	none	
11	5/7/2013	MFC power supply	Tylan	03684	RO-32	FP9404003	
12	5/7/2013	Modem	US Robotics	none	56k	unknown	
13	5/7/2013	Ozone	ThermoElectron Inc	90834	49C	49C-520012-328	
14	5/7/2013	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	1030745083	
15	5/7/2013	Precipitation	Texas Electronics	none	TR-525i-HT	20895-398	
16	5/7/2013	Printer	Hewlett Packard	none	842C	unknown	
17	5/7/2013	Relative Humidity	Rotronic	none	MP 601A	52062	
18	5/7/2013	Sample Tower	Aluma Tower	923314	В	AT-5324-F6-O	
19	5/7/2013	Shelter Temperature	ARS	none	none	003	
20	5/7/2013	Shield (10 meter)	Climatronics	01199	100325	1290	
21	5/7/2013	Siting Criteria	Siting Criteria	None	1	None	
22	5/7/2013	Solar Radiation	Licor	none	LI-200	PY49113	
23	5/7/2013	Solar Radiation Translator	Climatronics	none	100144	391	
24	5/7/2013	Temperature	Climatronics	03794	100093	ARS101	
25	5/7/2013	Temperature Translator	Climatronics	03629	100088-2	398	
26	5/7/2013	Wind Direction	Climatronics	90831	100076	1494	
27	5/7/2013	Wind Speed	Climatronics	90843	100075	4265	
28	5/7/2013	Zero air pump	Werther International	none	PC70/4	434533	

DAS Data Form

DAS Time Max Error: 0.15

Mfg	fg Serial Number Site		e T	echnician	Site Visit Date	Parameter	Use Desc.	
Environmenta	l Sys 2026	LA	V410 E	Eric Hebert	05/07/2013	DAS	Primary	
Das Date: Das Time: Das Day:	5 /7 /2013 15:09:00 127	Audit Date Audit Time Audit Day	5 /7 /2013 15:09:09 127	Mfg Serial Number	Datel 4000392	Parameter Tfer Desc.	DAS Source generator (D	
Low Channe	l:	High Chann	el:	Tfer ID	01321			
Avg Diff:	Max Diff:	Avg Diff:	Max Diff:	Slope	1.0000	0 Intercept	0.00000	
0.000	0.0	0.000	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	1/27/201	3 CorrCoff	1.00000	
Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference		
2	0.0000	0.0000	0.0000	V	V	0.0000		
2	0.1000	0.1000	0.1000	V	V	0.0000		
2	0.3000	0.3001	0.3001	V	V	0.0000		
2	0.5000	0.5001	0.5001	V	V	0.0000		
2	0.7000	0.7002	0.7001	V	V	-0.0001		
2	0.9000	0.9002	0.9001	V	V	-0.0001		
2	1.0000	1.0003	1.0002	V	V	-0.0001		
9	0.0000	0.0000	0.0000	V	V	0.0000		
9	0.1000	0.1000	0.1000	V	V	0.0000		
9	0.3000	0.3001	0.3000	V	V	-0.0001		
9	0.5000	0.5001	0.5000	V	V	-0.0001		
9	0.7000	0.7002	0.7001	V	V	-0.0001		
9	0.9000	0.9002	0.9000	V	V	-0.0002		
9	1.0000	1.0003	1.0003	V	V	0.0000		

Flow Data Form

Mfg	Serial Nun	iber Ta S	ite	Тес	chnician	Site Visit Da	ate Paran	neter	Owner ID
Tylan	AW940302	23	_AV410	Eri	c Hebert	05/07/2013	flow ra	te	03379
Mfg	Tylan				Mfg	BIOS	P	arameter	ow Rate
SN/Owner ID	FP9404003	03684			Serial Number	122974	1	fer Desc. Bl	OS 220-H
Parameter	MFC power sup	oply			Tfer ID	01416			
					Slope	1.0	0000 Int	ercept	0.00000
					Cert Date	1/8/	2013 Co	rrCoff	1.00000
DAS 1:		DAS 2:		L	Cal Factor Z	ero	0.3	32	
A Avg % Diff:	A Max % Di	A Avg %I	Dif A Max	: % Di	Cal Factor F	ull Scale	5	.9	
1.13%	1.26%				Rotometer R	eading:	4	.3	
UseDescription:	Test type:	Input l/m:	Input STP:	MfcDisp.:	OutputSignal:	Output S E: 1	InputUnit:	OutputSigna	llPctDifference:
primary	pump off	0.000	0.000	-0.34	-0.2790	0.01	l/m	l/m	
primary	leak check	0.000	0.000	-0.32	-0.2560	0.03	l/m	l/m	
primary	test pt 1	0.000	2.963	2.40	2.4030	3.00	l/m	l/m	1.26%
primary	test pt 2	0.000	2.965	2.40	2.4030	3.00	l/m	l/m	1.18%
primary	test pt 3	0.000	2.972	2.40	2.4030	3.00	l/m	l/m	0.95%
Sensor Compo	nent Leak Tes	t		Conditio	n		Status	s pass	
Sensor Compo	Filter Azir	muth		Conditio	<mark>n</mark> 90 deg		Status	pass	
Sensor Compo	Filter Dep	oth		Conditio	n - 1.0 cm		Status	Fail	
Sensor Compo	nent Filter Pos	sition		Conditio	n Poor		Status	Fail	
Sensor Compo	Moisture	Present		Conditio	n No moisture pr	resent	Status	pass	
Sensor Compo	Rotomete	er Condition		Conditio	n Clean and dry		Status	pass	
Sensor Compo	onent System M	lemo		Conditio	n See comments	3	Status	pass	
Sensor Compo	onent Tubing C	ondition		Conditio	n Good		Status	pass	
Sensor Compo	Filter Dist	tance		Conditio	n 5.0 cm		Status	pass	

Ozone Data Form

Mfg	Serial Number Ta	Site	Te	chnician		Site Vis	it Date	Parame	eter	Owner I	D
ThermoElectron Inc	49C-520012-328	LAV410	E	ric Hebert		05/07/2	013	Ozone		90834	
Slope: 0.98219 Slope: 0.000 Intercept 1.20291 Intercept 0.000 CorrCoff 0.99999 CorrCoff 0.000		0.0000	0 0	Mfg Serial N	umber	ThermoElectron IncPa517112175Tr		Inc Pa	rameter o er Desc. C	zone)zone primary	∕ stan
				Tfer ID		01111					
DAS 1:	DAS 2:			Slope			0.9972	0 Inter	rcept	0.18	3428
A Avg % Diff: A N	Max % Di A Avg	6 Dif A Max	% Di	Cert Da	ite		1/2/201	3 Corr	Coff	1.00	0000
1.0%	2.1%								Con		
UseDescription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	e Unit:	PctDi	fference:	
primary	1	0.18	0.	00	1.	29	ppb				
primary	2	29.23	29	.12	29.	.72	ppb			2.06%	
primary	3	50.74	50	.69	51	.10	ppb			0.81%	
primary	4	82.58	82	.62	82.	.05	ppb			-0.69%	
primary	5	115.13	115	5.26	114	.60	ppb			-0.57%	
Sensor Compone	nt Cell B Noise		Conditi	on Not te	sted			Status	pass		
Sensor Compone	nt Cell B Tmp.		Conditi	on				Status	pass		
Sensor Compone	nt Fullscale Voltage		Conditi	on Not te	sted			Status	pass		
Sensor Compone	nt Inlet Filter Condition	on	Conditi	on Clean				Status	pass		
Sensor Compone	nt Line Loss		Conditi	on Not te	sted			Status	pass		
Sensor Compone	nt Offset		Conditi	on 0.000				Status	pass		
Sensor Compone	nt Span		Conditi	on 1.002				Status	pass		
Sensor Compone	nt Cell B Freq.		Condition	on 67 kH	Z			Status	Fail		
Sensor Compone	nt System Memo		Condition	on See c	omments			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		Condition	on 0.63 l	om			Status	pass		
Sensor Compone	nt Cell A Tmp.		Conditi	on 34.4 (Status	pass		
Sensor Compone	nt Cell A Pressure		Conditi	on 608 m	nmHg			Status	pass		
Sensor Compone	nt Cell A Noise		Conditi	on Not te	sted			Status	pass		
Sensor Compone	nt Cell A Freq.		Conditi	on 64 kH	Z			Status	Fail		
Sensor Compone	Cell A Flow		Conditi	on 0.63 l	om			Status	pass		
Sensor Compone	nt Battery Backup		Condition	on N/A				Status	pass		
Sensor Compone	nt Zero Voltage		Conditi	on Not te	sted			Status	pass		

Wind Speed Data Form

Sensor Component Sensor Plumb

Sensor Component Sensor Heater

Sensor Component Condition

Sensor Component Torque

Sensor Component Prop or Cups Condition

Mfg	Serial Numbe	er Ta Site	Т	echnician	Site Visit Date	Parameter	Owner ID			
Climatronics	4265	LAV410	E	ric Hebert	05/07/2013	Wind Speed	90843			
Mfg C SN/Owner ID ur	limatronics hknown (00853		Mfg Serial Number	RM Young	Paramete	er wind speed			
Parameter F4	460 translator			Tfer ID	01262					
Prop or Cups SN	573			Slope	1.000	1.00000 Intercept 0.00				
Prop or Cups Tor Prop Correction I	rque 0 Fact N/A	0.3 to	0.3	Cert Date	1/13/20	10 CorrCoff	1.00000			
1				Mfg	RM Young	Paramete	er wind speed			
				Serial Number		Tfer Des	c. wind speed motor (I			
				Tfer ID	01261					
				Slope	1.000	00 Intercept	0.00000			
				Cert Date	1/13/20	1.00000				
DA	S 1:	D	AS 2:							
Lo	w Range Hig	gh Range L	ow Range I	High Range						
Abs Avg Err	0.01	0.10%								
Abs Max Er	0.03	0.25%								
UseDescription:	InputDevice:	Input RPM:	Input m/s:	Output V:	DAS m/s:	Diff/ %Diff:	Difference:			
primary	none	0	0.20	0.0000	0.2		0.00			
primary	01261	50	1.40	0.0000	1.4		0.00			
primary	01261	100	2.57	0.0000	2.6		0.03			
primary	01261	170	4.22	0.0000	4.2		-0.02			
primary	01261	250	6.10	0.0000	6.1	0.00%				
primary	01262	500	11.97	0.0000	12.0	0.25%				
primary	01262	800	19.02	0.0000	19.0	-0.11%				
primary	01262	2000	47.22	0.0000	47.2	-0.04%				
Sensor Compone	ent System Men	no	Conditi	on See comment	S	Status pass				

Condition Plumb

Condition Poor

Condition Fair

Condition Good

Condition Functioning

Status pass

Status pass

Status Fail

Status pass

Status pass

Wind Direction Data Form

Mfg Serial Number Ta Site Technician Site Vis	sit Date Parameter Owner ID	
Climatronics 1494 LAV410 Eric Hebert 05/07/2	2013 Wind Direction 90831	
Mfg Climatronics Mfg Ushikata	a Parameter wind direction	
SN/Owner ID unknown 00853 Serial Number 190037	Tfer Desc. transit	
Parameter F460 translator Tfer ID 01265		
Vane SN: 3946 C. A. Align. deg. true: Slope	1.00000 Intercept 0.00000	
VaneTorque 5 to 10 0 Cert Date	1/4/2011 CorrCoff 1.00000	
Mfg RM You	Ing Parameter wind direction	
Serial Number	Tfer Desc. wind direction whe	el
Tfer ID 01266		

	DAS 1:		DA	AS 2:					
	Orientation	Linearity	r: Oı	rientation	Linearity:				
Abs Avg Err	3.3		2.0						
Abs Max Er	5		4						
UseDescriptio	on: TferID	: Inp	out Raw:	Linearity	Output V:	Output Deg.:	Difference:	Change:	Error:
primary	01266		0		0.0000	2	2	41	-4
primary	01266		45	✓	0.0000	46	1	44	-1
primary	01266		90		0.0000	92	2	46	1
primary	01266		135	✓	0.0000	138	3	46	1
primary	01266		180		0.0000	184	4	46	1
primary	01266		225		0.0000	226	1	42	-3
primary	01266		270		0.0000	275	5	49	4
primary	01266		315		0.0000	321	6	46	1
primary	01265		0		0.0000	2	2		2
primary	01265		90		0.0000	92	2		2
primary	01265		180		0.0000	184	4		4
primary	01265		270		0.0000	275	5		5
Sensor Com	ponent Mast			Condi	tion Good		Status	pass	
Sensor Com	ponent Condition	on		Condi	tion Poor		Status	Fail	
Sensor Com	ponent Sensor	Heater		Condi	tion Functioni	ing	Status	pass	
Sensor Component Sensor Plumb			Condi	tion Plumb		Status	pass		
Sensor Component Torque		Condi	tion Good		Status	pass			
Sensor Component Vane Condition		Condi	dition Good			pass			
Sensor Com	ponent System	Memo		Condi	tion See com	ments	Status	pass	

Temperature Data Form

Mfg		Serial Nun	ıber Ta	n Site		Т	echr	nician	Site V	isit Date	Param	eter	Owner II)
Climatronics		ARS101		LAV410		E	ric H	lebert	05/07	//2013	Temper	ature	03794	
Mfg	Clim	natronics					Μ	fg	Extect	า	Pa	rameter Te	mperature	
SN/Owner ID	398		0362	29			Se	rial Number	H2326	679	Tf	er Desc. R	D	
Parameter	Ten	nperature T	ranslato	or			Tf	er ID	01228	;				
DAS 1:			DAS 2	:			SI	ope		1.0073	2 Inte	rcept	-0.123	380
Abs Avg Err	Abs	Max Er	Abs Av	vg Err Abs	Max	Er	Co	ert Date		1/12/201	3 Cor	rCoff	1.000	000
0.15		0.34												
UseDesc.:		Test type:	Ir	nputTmpRaw	Inpu	tTmpC	orr.:	OutputTmpS	ignal:	OutputSig	nalEng:	OSE Unit:	Difference:	
primary	Temp	Low Range	;	0.05		0.17		0.0000		0.2	2	С	0.04	
primary	Temp	Mid Range		20.25		20.23		0.0000		20.	2	С	-0.08	
primary	Temp	High Rang	e	47.91		47.68		0.0000		47.	3	С	-0.34	
Sensor Com	ponen	t Shield				Conditi	on	Clean			Status	pass]
Sensor Com	ponen	t Blower St	atus Sv	witch		Conditi	on	N/A			Status	pass]
Sensor Com	ponen	t Blower				Conditi	on	Functioning			Status	pass]
Sensor Com	ponen	t System M	1emo			Conditi	on				Status	pass]

Humidity Data Form

Mfg	Serial Nu	mber Ta Site	•	Technician		Site Visi	it Date	Para	meter	Owner ID
Rotronic	52062	LA	V410	Eric Hebert		05/07/2	013	Relat	tive Humidity	none
				Mfg Serial Nu Tfer ID Slope	ımber	Rotronic 124432 01225	1.00000) In	Parameter Rel Tfer Desc. Hyg ntercept	ative Humidity groclip
	DAS 1:		DAS 2:	Cert Dat	e	1	/29/201:	3 Co	orrCoff	1.00000
Abs Avg Err Abs Max Er	Low Range 8.0 11.4	High Range 1.0	Low Range	High Rang	e					
UseDesc.:	Test type:	Device:	Input RH:	GTL Raw:	RH C	Corr.:	DAS Vo	olts:	DAS %RH:	Difference:
primary	RH Low Range	Hygroclip	32.8	39.3	32	.8	0.373	5	37.4	4.6
primary	RH Low Range	Hygroclip	52.9	58.7	52	.9	0.642	7	64.3	11.4
primary	RH High Range	Hygroclip	93.6	89.4	93	.6	0.946	4	94.6	1.0
Sensor Com	ponent System	Memo	Con	dition				Statı	us pass	
Sensor Com	ponent Blower		Con	dition Functio	ning			Statı	us pass	
Sensor Com	ponent Blower S	Status Switch	Con	dition N/A				Statı	us pass	
Sensor Com	ponent RH Filte	r	Con	dition Clean				Statu	us pass	
Sensor Com	ponent Shield		Con	dition Clean				Statu	us pass	

Solar Radiation Data Form

Sensor Component System Memo

Mfg	5	Serial Nun	ıber Ta	Site	Т	[echn	nician	Site Visit Date	Param	eter	Owner ID	
Licor		PY49113		LAV410		Eric ⊦	Hebert	05/07/2013	Solar R	adiation	none	
Mfg	Clim	atronics				M	fg	Eppley	Pa	arameter	solar radiation	
SN/Owner ID	391		none			Se	erial Number	10765	Tf	fer Desc.	SR transfer trans	lat
Parameter	Sola	r Radiation	Translate	or		Tf	fer ID	01246				
DAS 1:			DAS 2:			Slo	ope	1.0000	0 Inte	rcept	0.0000	0
% Diff of Avg	%Di	ff of Max	%Diff of	f Avg %Di	iff of Max	Ce	ert Date	1/6/201	0 Cor	rCoff	1.0000	0
						M	fg	Eppley	Pa	arameter	solar radiation	
						Se	erial Number	34341F3	Tf	fer Desc.	SR transfer sense	or
						Tf	fer ID	01245				
						Slo	ope	1.0000	0 Inte	rcept	0.0000	0
						Ce	ert Date	12/16/201	0 Cor	rCoff	1.0000	0
9.7%		11.4%		0.0%	0.0%							
UseDescription	: M	leasure Dat	e Mea	sureTime	Tfer Co	rr:	DAS w/n	n2: PctDiff	erence:			
primary		5/7/2013		11:00	359		400		11.4%			
primary		5/7/2013		12:00	157		173		10.2%			
primary		5/7/2013		13:00	100		108		8.0%			
primary		5/7/2013		14:00	80		87		8.8%			
primary		5/7/2013		15:00	75		81		8.0%			
primary		5/7/2013		16:00	73		77		5.5%			
Sensor Compo	onen	t Sensor L	evel		Condit	tion	1/2 bubble off le	evel	Status	pass		
Sensor Compo	onen	t Sensor C	lean		Condit	tion	Clean		Status	pass		
Sensor Compo	onen	Properly	Sited		Condit	tion	Properly sited		Status	pass		

Condition

Status pass

Precipitation Data Form

Mfg	Serial 1	Number Ta	Site	Т	echnician		Site	Visit Date	Paramet	er	Owner ID
Texas Electror	nics 20895	-398	LAV410	E	Fric Hebert		05/0	07/2013	Precipitat	ion	none
					Mfg		PMF)	Par	ameter Pr	ecipitation
DAS 1:		DAS 2:			Serial Nun	ıber	EW-	06134-50	Tfe	Desc. 25	0ml graduate
A Avg % Diff	f: A Max % I	Di A Avg %	Dif A N	Aax % Di	Tfer ID		0125	50			
3.0%	4.0	0%								F	
					Slope			1.0000	0 Interc	ept	0.00000
					Cert Date			9/5/200	5 Corr(Coff	1.00000
	1	1				1					
UseDesc.	Test type:	TferVolume:	Iteration:	TimePerTip:	Eq.Ht:	DAS	eng:	Eq.HtUnit:	OSE Unit	: TferUnit	s:PctDifference
primary	tip check	10 manual	1	2 sec	5.00	1.0	0	mm	mm	ml	2.0%
primary	test 2	231.5	2	10 sec	5.00	4.8	30	mm	mm	ml	-4.0%
Sensor Com	ponent Syste	em Memo	1	Conditi	ion See com	ments			Status P	ass	
Sensor Com	ponent Sens	or Heater		Conditi	ion Functioni	ng			Status P	ass	
Sensor Com	ponent Prop	erly Sited		Conditi	ion See com	ments			Status P	ass	
Sensor Com	ponent Gaug	ge Drain Scree	'n	Conditi	ion Installed				Status P	ass	
Sensor Com	ponent Leve	I		Conditi	ion 1/2 bubb	e off le	evel		Status P	ass	
Sensor Com	ponent Gaug	ge Clean		Conditi	ion Clean				Status P	ass	
Sensor Com	ponent Funn	el Clean		Conditi	ion Moderate	ely clea	an		Status P	ass	
Sensor Com	ponent Conc	lition		Conditi	ion Good				Status P	ass	
Sensor Com	ponent Gaug	ge Screen		Conditi	ion Installed				Status P	ass	

Infrastructure Data For

Site ID	LAV410	Technician Eric He	Dert Site Visit Date 05/07/2013
Shelter M	lake	Shelter Model	Shelter Size
			1150 cuft
111 March Wester			

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	Installed	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	Rotometer	Condition	Installed	Status	pass
Sensor Component	Conduit	Condition	N/A	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	Fair	Status	pass
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Shelter Door	Condition	Good	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ARS	003	LAV410	Eric Hebert	05/07/2013	Shelter Temperatur	e none
DAS 1:	DAS 2:	East Also Mass Est	Mfg	Extech	Parameter St	nelter Temperatur
Abs Avg Err Abs	S Max Er Abs Avg 1.68	Err Abs Max Er	Serial Number	H232679	Tfer Desc. R	ГD
			Tfer ID	01228		
			Slope	1.0073	2 Intercept	-0.12380
			Cert Date	1/12/201	3 CorrCoff	1.00000

UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	21.48	21.45	0.000	22.7	С	1.2
primary	Temp Mid Range	21.61	21.58	0.000	22.5	С	0.93
primary	Temp Mid Range	20.90	20.87	0.000	22.6	С	1.68
Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard Problem	
Flow Rate	LAV410	Eric Hebert	05/07/2013	Filter Position	Tylan	1345		\checkmark
The filter attachment orientation.	plate is mounted	too low in the enclos	sure resulting in t	the filter being expos	sed to wind-driven	rain and in the	standard ge	eometric
Ozone	LAV410	Eric Hebert	05/07/2013	Cell B Freq.	ThermoElectron	1344		
This analyzer diagno	stic check is outsi	de the manufacturer'	s recommended	value.				
Ozone	LAV410	Eric Hebert	05/07/2013	Cell A Freq.	ThermoElectron	1344		\checkmark
This analyzer diagno	ostic check is outsid	de the manufacturer'	s recommended	value.				
Precipitation	LAV410	Eric Hebert	05/07/2013	System Memo	Texas Electronic	1339		\checkmark
The edge of the tippi	ng bucket funnel r	rests on the pipe that	supports the rair	n gauge. This causes	the funnel to be o	out of level.		
Precipitation	LAV410	Eric Hebert	05/07/2013	Properly Sited	Texas Electronic	1339		
Objects violate the 4	5 degree rule for th	he tipping bucket rai	n gage.					
Wind Direction	LAV410	Eric Hebert	05/07/2013	Condition	Climatronics	3135		\checkmark
The upper and lower	sections of the wi	nd sensor body are l	oose. This cond	ition will cause prem	nature failure of the	e sensor and car	n affect dat	a accuracy.
Wind Speed	LAV410	Eric Hebert	05/07/2013	Prop or Cups Con	Climatronics	2759		\checkmark
Both set screws are s	tripped.							

Field Systems Comments

1 Parameter: SiteOpsProcedures

The ozone inlet filter is changed and the sample line conditioned every two weeks.

2 Parameter: DocumentationCo

The most recent calibration and verification results are not available on-site.

3 Parameter: SitingCriteriaCom

The site is located at the end of a park service facility parking lot, in a fire station. The tree line is near the building, but the prevailing wind direction is from the clearing. Tree height above the sample inlet is not twice as far away as it is high above the inlet.

4 Parameter: ShelterCleanNotes

The inside equipment is located in room within the fire station, clean, neat, and organized.

5 Parameter: MetSensorComme

The rain gauge funnel is contacting the tipping bucket mounting post causing it to be 1/2 bubble off level. Objects violate the 45 degree rule.

6 Parameter: MetOpMaintCom

The signal cables are showing signs of wear.

Site ID LAV410		Technician Eric Hebert	Site Visit Date 05/	07/2013
Site Sponsor (agency)	NPS		USGS Map	Manzanita Lake
Operating Group	NPS		Map Scale	
AQS#			Map Date	
Meteorological Type	Climatron	ics		
Air Pollutant Analyzer	Ozone, IN	IPROVE	QAPP Latitude	40.5403
Deposition Measurement	dry, wet		QAPP Longitude	-121.5764
Land Use	woodland	- evergreen	QAPP Elevation Meters	1756
Terrain	complex		QAPP Declination	
Conforms to MLM	Marginally	/	QAPP Declination Date	
Site Telephone	(530) 335	-7214	Audit Latitude	40.53999
Site Address 1	38050 Hw	vy 36E	Audit Longitude	-121.57646
Site Address 2			Audit Elevation	175
County	Shasta		Audit Declination	14.5
City, State	Mineral, C	CA CARACTERISTIC	Present	
Zip Code	96063		Fire Extinguisher	Out for service
Time Zone	Pacific		First Aid Kit	
Primary Operator			Safety Glasses	
Primary Op. Phone #			Safety Hard Hat	
Primary Op. E-mail			Climbing Belt	
Backup Operator			Security Fence	
Backup Op. Phone #			Secure Shelter	
Backup Op. E-mail			Stable Entry Step 🗹	
Shelter Working Room	Make		Model	Shelter Size 1150 cuft
Shelter Clean	Notes	The inside equipment is loc	ated in room within the fire static	n, clean, neat, and organized.
Site OK	Notes			
Driving Directions ontc behi equi	n Redding ta route 89. T nd the fire st pment.	ke route 44 east for approxi urn right at the first road into ation at the end of the parki	mately 45 miles. At the park, ar o the fire station and maintenanc ng lot. One room in the fire stati	nd intersection of 44 and 89, turn right be area. Take the first left, the site is on houses the climate controlled

Field Systems Data Form

LAV410

F-02058-1500-S2-rev001

Site ID

Technician Eric Hebert

Site Visit Date 05/07/2013

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	25 m	
Tree line	50 m	10 m	
Obstacles to wind	10 times obstacle height		

Siting Distances OK

Siting Criteria Comment

The site is located at the end of a park service facility parking lot, in a fire station. The tree line is near the building, but the prevailing wind direction is from the clearing. Tree height above the sample inlet is not twice as far away as it is high above the inlet.

Fie	eld Sy	stems Data Fo	orm			F-02058-1500-S3-rev001				
Site	e ID	LAV410	Technician	Eric Hebert		Site Visit Date 05/07/2013				
1	Are win being in	id speed and direction ifluenced by obstructio	sensors sited so ons?	as to avoid						
2 Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)										
3	Are the	tower and sensors plu	mb?							
4	Are the avoid ra	temperature shields p adiated heat sources su	ointed north or Ich as buildings,	positioned to walls, etc?						
5	5 Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)									
6	Is the so	olar radiation sensor p	lumb?			1/2 bubble off level				
7	Is it site light?	d to avoid shading, or	any artificial or	reflected						
8	Is the ra	ain gauge plumb?				1/2 bubble off level (pic)				
9	Is it site towers,	d to avoid sheltering e etc?	ffects from build	dings, trees,		45 degree rule violation				
10	Is the su facing r	ırface wetness sensor s orth?	ited with the gr	id surface		N/A				
11	Is it inc	lined approximately 3	0 degrees?			N/A				

The rain gauge funnel is contacting the tipping bucket mounting post causing it to be 1/2 bubble off level. Objects violate the 45 degree rule.

Field	Systems Data	Form			F-02058-1500-S4-rev00				
Site ID	LAV410	Technician	Eric Hebert		Site Visit Date 05/07/20)13]		
1 Do	all the meterological so	ensors appear to be	intact, in good			1. 25			
cor 2 Are	idition, and well maint e all the meteorological porting data?	ained? sensors operational	l online, and						
3 Are	e the shields for the ten	operature and RH se	ensors clean?						
4 Are	e the aspirated motors	working?							
5 Is t	he solar radiation sens atches?	or's lens clean and f	ree of						
6 Is t	he surface wetness sen	sor grid clean and u	ndamaged?		N/A				
7 Are	e the sensor signal and idition, and well maint	power cables intact, ained?	, in good		Signs of wear				
8 Are	e the sensor signal and m the elements and we	power cable connec ll maintained?	tions protected						
Paramo	eter	Manufacturer	Model		S/N	Cli	ient ID		
Shield (10 meter)	Climatronics	100325	1000.000	1290	01	199		
Wind Sp	beed	Climatronics	100075		4265	908	343		
Wind Di	rection	Climatronics	100076		1494	908	331		
Solar R	adiation	Licor	LI-200		PY49113	noi	ne		
Met tow	er	Rohn	unknown		none	noi	ne		
Relative	Humidity	Rotronic	MP 601A	*******	52062	noi	าย		
Precipit	ation	Texas Electronics	TR-525i-H	IT	20895-398	noi	ne		
Temper	ature	Climatronics	100093	5755765	ARS101	03	794		

The signal cables are showing signs of wear.

Fi	eld Systems	Data Fo	rm			F-02058 -	1500-S5-rev001				
Site	LAV410		Technician E	ric Hebert		Site Visit Date 05/07/2013					
	Siting Criteria: A	re the polluta	nt analyzers and	deposition ec	<u>uipn</u>	ment sited in accordance with 40 CF	<u>R 58, Appendix E</u>				
1	Do the sample inl unrestricted airfl	ets have at lea ow?	st a 270 degree a	arc of							
2	Are the sample in	ilets 3 - 15 met	ers above the gr	ound?							
3	Are the sample in and 20 meters from	nlets > 1 meter om trees?	from any major	obstruction,		< 10 meters					
	Pollutant analyzers and deposition equipment operations and maintenance										
1	Do the analyzers condition and we	and equipmen ll maintained?	t appear to be ir	ı good							
2	Are the analyzers reporting data?	s and monitors	operational, on	-line, and							
3	Describe ozone sa	imple tube.				1/4 teflon by 10 meters					
4	Describe dry dep	sample tube.				3/8 teflon by 10 meters					
5	Are in-line filters indicate location)	used in the oz	one sample line:	? (if yes		At inlet only					
6	Are sample lines obstructions?	clean, free of k	inks, moisture,	and							
7	Is the zero air suj	oply desiccant	unsaturated?								
8	Are there moistu	re traps in the	sample lines?			Flow line only					
9	Is there a rotome clean?	ter in the dry o	leposition filter	line, and is it		Clean and dry					
Par	rameter	Mar	ufacturer	Model		S/N	Client ID				

Parameter	Manufacturer	Model	S/IN	Chent ID	
Sample Tower	Aluma Tower	В	AT-5324-F6-O	923314	
Ozone	ThermoElectron Inc	49C	49C-520012-328	90834	
Filter pack flow pump	Thomas	107CA18	0688001767	00253	
MFC power supply	Tylan	RO-32	FP9404003	03684	
Zero air pump	Werther International	PC70/4	434533	none	

Fie	eld Sy	ystems Data F	orm			F-02058-1500-S6-rev001				
Site	ID	LAV410	Technician	Eric Hebert		Site Visi	t Date 05/07	/2013]	
	DAS, so	ensor translators, and	peripheral equi	oment operation	<u>ns and</u>	<u>l maintena</u>	nce			
1	Do the well ma	DAS instruments app aintained?	ear to be in good	condition and						
2	Are all modem	the components of the , backup, etc)	e DAS operation							
3	Do the lightnir	analyzer and sensor sing protection circuitry	ignal leads pass t ?							
4	Are the signal connections protected from the weather and well maintained?									
5	Are the	signal leads connecte	d to the correct l	DAS channel?						
6	Are the ground	DAS, sensor translate	ors, and shelter j	oroperly						
7	Does th	e instrument shelter h	nave a stable pow	er source?						
8	Is the in	nstrument shelter tem	perature control	led?						
9	Is the n	net tower stable and g	rounded?			Stable		Grounded		
10	Is the s	ample tower stable an	d grounded?							
11	Tower	comments?								

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Gateway	Solo	B52500251350	0019275982
DAS	Environmental Sys Corp	8816	2026	90535
F460 translator	Climatronics	100163	unknown	00853
Mainframe	Climatronics	100081	1377	none
Mainframe power supply	Climatronics	101074	858	none
Modem	US Robotics	56k	unknown	none
Printer	Hewlett Packard	842C	unknown	none
Solar Radiation Translator	Climatronics	100144	391	none
Temperature Translator	Climatronics	100088-2	398	03629

Field System	is Data Fo	orm				F-02	058-	1500-S7-rev001		
Site ID LAV4	0	Те	chnician	Eric Hebert	Site Visit Date	05/07/2013				
Documentation										
Does the site hav	e the required in	<u>nstrur</u>	nent and	equipment manual	<u>s?</u>					
	Yes	N	o N/4	A		Yes	No	N/A		
Wind speed sensor				Data log	ger					
Wind direction sens	or 🗹			Data log	ger					
Temperature sensor	· 🔽			Strip ch	art recorder					
Relative humidity s	ensor			Comput	er					
Solar radiation sens	or 🗹			Modem						
Surface wetness sen	sor			Printer						
Wind sensor transla	itor	-		Zero an	· pump					
Temperature transi	ator \checkmark			Filter II	ow pump					
Humidity sensor tra				Surge p	rotector					
Solar radiation tran	slator 🔽			UPS						
Orono onelwar				Lignum	ig protection device	,				
Ozone analyzer	tusllar 🗹			Shelter	neater					
Filter pack How con				Sheller	air conditioner					
ritter pack wire po	wer supply									
Does the site ha	Does the site have the required and most recent QC documents and report forms?									
	Pro	esent				Currer	ıt			
Station Log			DataVie	ew2						
SSRF										
Site Ops Manual			July 201	12						
HASP										
Field Ops Manual										
Calibration Reports			Not curi	rent						
Ozone z/s/p Control	Charts									
Preventive mainten	ance schedul									
1 Is the station lo	og properly com	pleted	l during o	every site visit? 🔽						
2 Are the Site Sta current?	atus Report For	ms be	ing comp	oleted and 🛛 🗸						
3 Are the chain- sample transfe	of-custody form r to and from la	s prop ıb?	perly used	d to document 🔽						
4 Are ozone z/s/p current?	control charts	prope	erly comp	leted and	Control charts not u	ised				
Provide any additio natural or man-mao	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 most recent calib	ration and verific	cation I	results are	e not available on-site	Э.		- A March &			
								Sector Sector		

Fi	eld Sy	stems Data	Form			F-02058-1500-S8-rev001			
Sit	e ID	LAV410	Technician	Eric Hebert	5525	Site Visit Date 05/07/2013			
1	Site op Has th course	eration procedures e site operator atter ? If yes, when and v	i nded a formal CAS who instructed?	TNET training][Informal training provided by ARS during maintenance visits			
2	Has th trainin	e backup operator g course? If yes, wl	attended a formal (hen and who instru	CASTNET					
3	Is the standard	ite visited regularly e?	on the required T	uesday 🔽					
4	Are the flollow	standard CASTNI ed by the site opera	ET operational pro tor?	cedures being					
5	Is the states the req	ite operator(s) know uired site activities	wledgeable of, and ? ? (including docum	able to perform • entation)					

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

OC Check Performed

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

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

QC Check Performed

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

- 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?

Frequency ~ \checkmark Monthly and semiannually ~ ~ Daily < ~ Every 2 weeks \checkmark \checkmark Daily ~ As needed ✓ ~ Alarm values only ~ ~ Every 2 weeks V \square

~

Dataview

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

The ozone inlet filter is changed and the sample line conditioned every two weeks.

Compliant

Fie	eld Systems Data Form	-		F-02058-1500-S9-rev001				
Site	ID LAV410 Tec	hnician Eric Hebert		Site Visit Dat	e 05/07/2013			
	Site operation procedures							
1	Is the filter pack being changed ever	y Tuesday as scheduled		Filter changed 80%	% in morining			
2	Are the Site Status Report Forms be correctly?	ing completed and filed						
3	Are data downloads and backups be scheduled?	ing performed as		No longer required				
4	Are general observations being made	e and recorded? How?		SSRF, dataview				
5	Are site supplies on-hand and replen fashion?	ished in a timely						
6	Are sample flow rates recorded? Ho	w?		SSRF				
7	Are samples sent to the lab on a regu fashion?	ılar schedule in a timely						
8	Are filters protected from contamina and shipping? How?	ation during handling		Clean gloves on and off				
9	Are the site conditions reported regulations manager or staff?	llarly to the field						
QC	Check Performed	Frequency			Compliant			
M	Iulti-point MFC Calibrations	Semiannually						
F	low System Leak Checks	Veekly	10000					
F	ilter Pack Inspection							
F	low Rate Setting Checks	✓ Weekly						
V	isual Check of Flow Rate Rotometer	✓ Weekly	20230			The state of the		
Ir	1-line Filter Inspection/Replacement	✓ As needed	20102223					
S	ample Line Check for Dirt/Water		1525					
Provi natu	ide any additional explanation (photo al or man-made, that may affect the	ograph or sketch if neces monitoring parameters:	sary	7) 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
OXF	122-Sandy	Grenville-05/08/2013				
1	5/8/2013	Computer	Dell	000246	D520	unknown
2	5/8/2013	DAS	Campbell	000425	CR3000	2528
3	5/8/2013	Elevation	Elevation	None	1	None
4	5/8/2013	Filter pack flow pump	Thomas	04924	107CAB18	100300020817
5	5/8/2013	Flow Rate	Арех	000547	AXMC105LPMDPCV	50743
6	5/8/2013	Infrastructure	Infrastructure	none	none	none
7	5/8/2013	Modem	Raven	06468	H4222-C	0808310523
8	5/8/2013	Ozone	ThermoElectron Inc	000693	49i A1NAA	1030244806
9	5/8/2013	Ozone Standard	ThermoElectron Inc	000199	49i A3NAA	0607315737
10	5/8/2013	Sample Tower	Aluma Tower	000018	В	AT-61152-A-H8-E
11	5/8/2013	Shelter Temperature	Campbell	none	107-L	10755-148
12	5/8/2013	Siting Criteria	Siting Criteria	None	1	None
13	5/8/2013	Temperature	RM Young	02823	41342	illegible
14	5/8/2013	UPS	APC	05072	RS800	unknown
15	5/8/2013	Zero air pump	Werther International	06911	PC70/4	000829167

DAS Data Form

DAS Time Max Error: 0.02

Mfg	Serial	Number Site	e T	echnician	Site Visit Date	Parameter	Use Desc.
Campbell	2528	OX	(F122	Sandy Grenville	05/08/2013	DAS	Primary
Das Date: Das Time:	5 /8 /2013 11:10:01	Audit Date Audit Time	5 /8 /2013 11:10:00	Mfg	Datel	Parameter	DAS
Das Day:	128	Audit Day	128	Serial Number	15510194	Tfer Desc.	Source generator (D
Low Channe	el:	High Channe	el:	Tfer ID	01320		
Avg Diff:	Max Diff:	Avg Diff:	Max Diff:	Slope	1.0000	0 Intercept	0.00000
0.000	0.0	0.000	0 0.0001	Cert Date	2/13/201	2 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	1/26/201	3 CorrCoff	1.00000
Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference	
7	0.0000	0.0000	0.0000	V	V	0.0000	
7	0.1000	0.0999	0.1000	V	V	0.0001	
7	0.3000	0.2998	0.2999	V	V	0.0001	
7	0.5000	0.4997	0.4997	V	V	0.0000	
7	0.7000	0.6996	0.6996	V	V	0.0000	
7	0.9000	0.8995	0.8995	V	V	0.0000	
7	1.0000	0.9995	0.9994	V	V	-0.0001	

Flow Data Form

Mfg	Serial Nun	ıber Ta	Site	Tec	hnician	Site Visit D	ate Param	eter	Owner ID
Apex	50743		OXF122	Sa	ndy Grenville	05/08/2013	Flow Ra	ate	000547
				Γ	Mfa	BIOS	Pe	arameter El	ow Rate
					a the t	400.474			
					Serial Number	103471	Ti	fer Desc. ne	xus
					Tfer ID	01420			
					Slope	1.(00000 Inte	rcept	0.00000
					Cert Date	6/13	3/2012 Cor	rCoff	1.00000
					Mfg	BIOS	Pa	arameter Flo	ow Rate
					Serial Number	103424	T	fer Desc. Bl	OS cell
					Tfer ID	01410			
					Clana	1 (0.0000
					Slope	1.0			0.00000
					Cert Date	1/27	72012 Cor	rCoff	1.00000
DAS 1:		DAS 2:			Cal Factor Z	ero	-0.03	2	
A Avg % Diff:	A Max % Di	A Avg %	Dif A Max	: % Di	Cal Factor F	ull Scale	0.96	6	
0.12%	0.20%				Rotometer R	eading:	1.	5	
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	0.013	-0.02	1/m	l/m	
primary	leak check	0.000	0.000	0.01	0.005	-0.03	l/m	l/m	0.000/
primary	test pt 1	1.539	1.499	1.54	1.533	1.50	1/m	l/m	-0.08%
primary	test pt 2	1.544	1.500	1.54	1.532	1.50	1/m 1/m	1/m	-0.20%
primary	lest pt 5	1.545	1.499	1.34	1.555	1.30	1/111	1/111	0.07%
Sensor Compo	nent Leak res	t			n		Status	pass	
Sensor Compo	nent Filter Azir	nuth		Conditio	n 360 deg		Status	pass	
Sensor Compo	ment Filter Dep	oth		Conditio	n 6.4 cm		Status	pass	
Sensor Compo	ment Filter Pos	ition		Conditio	n Good		Status	pass	
Sensor Compo	ment Moisture	Present		Conditio	n No moisture p	resent	Status	pass	
Sensor Compo	nent Rotomete	er Conditio	n	Conditio	Clean and dry		Status	pass	
Sensor Compo	ment System N	1emo		Conditio	n		Status	pass	
Sensor Comp	ment Tubing C	ondition		Conditio	Good		Status	pass	
Sensor Compo					2 om		Status		
Sensor Compo	onent Fliter Dist	ance		Conditio	n 3 cm		Status	pass	

Ozone Data Form

Mfg	:	Serial Number Ta	Site	Te	chnician		Site Visi	t Date	Parame	eter	Owner I	D
ThermoElectro	on Inc	1030244806	OXF122	Sa	andy Gre	nville	05/08/20	013	Ozone		000693	
Slope	0	.99852 Slope:	0.0000	0	Mfg		ThermoE	Electron	Inc Pa	rameter oz	one	
Intercept	0	.14735 Intercept	0.0000	0	Serial N	Jumber	49C-731	04-373	Tf	er Desc 07	one transfer	
CorrCoff	0	.99992 CorrCoff	0.0000	0		umber]
					Tfer ID		01100					
DAS 1:		DAS 2:			Slope			1.0030	8 Inter	cept	-0.17	961
A Avg % Dif	f: A M	ax % Di A Avg %	6 Dif A Max	% Di	Cert De	ate		4/2/201	3 Corr	Coff	1.00	000
0.7%	6	1.7%								Con		
UseDescri	iption:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	e Unit:	PctDiff	ference:	
prima	iry	1	-0.50	-0.	31	0.3	30	ppb				
prima	ry	2	30.57	30.	65	30.	12	ppb			-1.73%	
prima	ry	3	49.19	49.	21	49.	02	ppb			-0.39%	
prima	iry	4	80.49	80.	42	81.	00	ppb			0.72%	
prima	ry	5	100.76	100	.62	100	.50	ppb			-0.12%	
Sensor Con	nponen	t Cell B Noise		Conditio	on 2.9 p	b			Status	pass		
Sensor Con	nponen	t Cell B Tmp.		Conditio	on				Status	pass		
Sensor Con	nponen	t Fullscale Voltage		Conditio	n N/A				Status	pass		
Sensor Con	nponen	t Inlet Filter Condition	on	Conditio	on Clear	1			Status	pass		
Sensor Con	nponen	t Line Loss		Conditio	on < 1 %)			Status	pass		
Sensor Con	nponen	t Offset		Conditio	on 0.10				Status	pass		
Sensor Con	nponen	t Span		Conditio	n 1.023				Status	pass		
Sensor Con	nponen	t Cell B Freq.		Conditio	n 126.9	kHz			Status	fail		
Sensor Con	nponen	t System Memo		Conditio	on See c	omments			Status	pass		
Sensor Con	nponen	t Sample Train		Conditio	on Good				Status	pass		
Sensor Con	nponen	t Cell B Pressure		Conditio	on				Status	pass		
Sensor Con	nponen	t Cell B Flow		Conditio	on 0.72	pm			Status	pass		
Sensor Con	nponen	t Cell A Tmp.		Conditio	on 33.4 (C			Status	pass		
Sensor Con	nponen	t Cell A Pressure		Conditio	on 713 n	nmHg			Status	pass		
Sensor Con	nponen	t Cell A Noise		Conditio	on 2.9 pp	ob			Status	pass		
Sensor Con	nponen	t Cell A Freq.		Conditio	98.3 I	кНz			Status	pass		
Sensor Con	nponen	t Cell A Flow		Conditio	on 0.72	pm			Status	pass		
Sensor Con	nponen	t Battery Backup		Conditio	Funct	ioning			Status	pass		
Sensor Con	nponen	t Zero Voltage		Conditio	N/A				Status	pass		

Temperature Data Form

Mfg	i	Serial Nun	nber Ta	Site		Tech	nician	Site Visit Date	Param	eter	Owner ID	
RM Young		illegible		OXF122		Sano	dy Grenville	05/08/2013	Tempe	rature	02823	
						N	ſſg	Extech	Pa	arameter Te	mperature]
						S	erial Number	H232734	T	fer Desc. R	ſD	
						Т	fer ID	01227				
DAS 1:			DAS 2:			S	lope	1.004	35 Inte	ercept	-0.08480	
Abs Avg Err	Abs	Max Er	Abs Av	g Err Abs	Max Er	C	Cert Date	1/12/20	13 Cor	rCoff	1.00000	
0.44		0.97]						
UseDesc.:		Test type:	In	putTmpRaw	InputTm	oCorr	.: OutputTmpS	ignal: OutputSi	gnalEng:	OSE Unit:	Difference:	
primary	Temp	Low Range	e	0.90	0.9	8	0.000	0	.0	С	-0.97	
primary	Temp	Mid Range	;	24.50	24.4	8	0.000	24	.6	С	0.12	
primary	Temp	High Rang	e	48.70	48.5	57	0.000	48	8.8	С	0.23	
Sensor Com	ponen	t Shield			Cond	lition	Clean		Status	pass		
Sensor Com	ponen	t Blower S	tatus Sw	itch	Cond	lition	N/A		Status	pass		
Sensor Com	ponen	t Blower			Cond	lition	N/A		Status	pass		
Sensor Com	ponen	t System N	/lemo		Cond	lition			Status	pass		

Infrastructure Data For

Site ID	OXF122	Technician Sandy G	irenville Site Visit Date 05/08/2013
Shelter M	Make	Shelter Model	Shelter Size
Ekto		8810 (s/n 2107-4)	640 cuft

Sensor Component	Shelter Roof	Condition	Poor	Status	Fail
Sensor Component	Sample Tower Type	Condition	Туре В	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	Conduit	Condition	N/A	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	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	10755-148	OXF122	Sandy Grenville	05/08/2013	Shelter Temperatu	renone
DAS 1:	DAS 2:		Mfg	Extech	Parameter S	helter Temperatur
Abs Avg ErrAb0.45	0.52 Abs Avg	Err Abs Max Er	Serial Number	H232734	Tfer Desc. R	TD
			Tfer ID	01227		
			Slope	1.0043	5 Intercept	-0.08480
			Cert Date	1/12/201	3 CorrCoff	1.00000

UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	23.20	23.18	0.000	23.7	С	0.52
primary	Temp Mid Range	23.10	23.08	0.000	23.5	С	0.42
primary	Temp Mid Range	23.40	23.38	0.000	23.8	С	0.42

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Ozone	OXF122	Sandy Grenville	05/08/2013	Cell B Freq.	ThermoElectron	3365		
This analyzer diagnostic of	check is outside t	he manufacturer's r	ecommended va	alue.				

Field Systems Comments

1 Parameter: SiteOpsProcComm

Due to the high operator turn-over rate, the operators are unfamiliar with some minor aspects of site operation.

2 Parameter: DasComments

The met tower is operated by the university and the temperature sensor has been moved to the sample tower in a naturally aspirated shield.

3 Parameter: SitingCriteriaCom

The site is located in university agriculture research facility.

4 Parameter: ShelterCleanNotes

The shelter roof is in poor condition with several leaks.

Field Systems Da	ata Form		F-02058-1500-S1-rev001
Site ID OXF122	Technician Sandy Grenvi	lle Site Visit Date 05/0	08/2013
		USCS Man	Oxford
Site Sponsor (agency)	EPA		
Operating Group	Miami University	Map Scale	
AQS #	39-017-9991	Map Date	
Meteorological Type	Climatronics		
Air Pollutant Analyzer	Ozone	QAPP Latitude	39.5314
Deposition Measurement	dry, wet	QAPP Longitude	-84.7231
Land Use	agriculture, woodland - mixed	QAPP Elevation Meters	284
Terrain	gently rolling	QAPP Declination	5.2
Conforms to MLM	Yes	QAPP Declination Date	2/23/2007
Site Telephone	(513) 523-6912	Audit Latitude	39.531115
Site Address 1	Ecological Research Center	Audit Longitude	-84.723547
Site Address 2	Somerville Rd.	Audit Elevation	284
County	Butler	Audit Declination	-5.6
City, State	Oxford, OH	Present	
Zip Code	45056	Fire Extinguisher 🗹	Inspected Nov 1992
Time Zone	Eastern	First Aid Kit	
Primary Operator		Safety Glasses	
Primary Op. Phone #		Safety Hard Hat	
Primary Op. E-mail		Climbing Belt	
Backup Operator		Security Fence	
Backup Op. Phone #		Secure Shelter	
Backup Op. E-mail		Stable Entry Step 🗹	
Shelter Working Room	Make Ekto	Viodel 8810 (s/n 2107-4)	Shelter Size 640 cuft
Shelter Clean	Notes The shelter roof is in poor co	ndition with several leaks.	
Site OK	Notes		
Driving Directions appro buildin	Oxford proceed north on route 732. Justician J	st outside of town bear right onto gn for the Ecological Research (the tree line. The site is in the	o Somerville Road. Continue Center. Stay on the dirt road past the field on the right.

Field Systems Data Form

OXF122

F-02058-1500-S2-rev001

Site ID

Technician Sandy Grenville

Site Visit Date 05/08/2013

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	25 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 university agriculture research facility.

Field Systems Data Form						F-02058-1500-S3-rev001
Site	eD [OXF122	Technician	Sandy Grenville		Site Visit Date 05/08/2013
1	Are wind being infl	speed and direction luenced by obstruction	sensors sited so ons?	as to avoid		N/A
2	Are wind (i.e. wind horizonta tower int	sensors mounted so sensors should be m ally extended boom > o the prevailing wind	as to minimize t ounted atop the 2x the max dian	ower effects? tower or on a neter of the		N/A
3	Are the to	ower and sensors plu	mb?			N/A
4	Are the to avoid rad	emperature shields p liated heat sources su	ointed north or Ich as buildings,	positioned to walls, etc?		
5	Are temp condition surface a standing	perature and RH sens is? (i.e. ground below nd not steeply sloped water should be avoi	ors sited to avoi sensors should . Ridges, hollow ded)	d unnatural be natural s, and areas of		
6	Is the sola	ar radiation sensor p	lumb?			N/A
7	Is it sited light?	to avoid shading, or	any artificial or	reflected		N/A
8	Is the rai	n gauge plumb?				N/A
9	Is it sited towers, et	to avoid sheltering e tc?	ffects from build	lings, trees,		N/A
10	Is the sur facing no	face wetness sensor s rth?	sited with the gri	d surface		N/A
11	Is it incli	ned approximately 3	0 degrees?			N/A
Dre	wide onv e	dditional avalanatio	n (nhotograph o	r skatah if nagas	cor	x) regarding conditions listed above or any other features

Field Systems Data Form				F-02058-1500-S4-rev0				
Site	D OXF122	Technician	Sandy Grenville		Site Visit Date 05/08/	2013		
1	Do all the meterologic condition, and well ma	al sensors appear to be i	ntact, in good					
2	Are all the meteorolog reporting data?	gical sensors operational	online, and					
3	Are the shields for the	temperature and RH se	ensors clean?					
4	Are the aspirated mot	ors working?		1 🔽	I/A			
5	Is the solar radiation s scratches?	sensor's lens clean and fi	ree of	1 🔽	I/A			
6	Is the surface wetness	sensor grid clean and ur	ndamaged?	1 🔽	I/A			
7	Are the sensor signal a condition, and well ma	and power cables intact, aintained?	in good					
8	Are the sensor signal a from the elements and	and power cable connect I well maintained?	ions protected					
Para	meter	Manufacturer	Model		S/N		Client ID	
Restaura R								
Tem Provio natur	perature de any additional expl al or man-made, that	RM Young anation (photograph or may affect the monitorin	41342 sketch if necess 1g parameters:	ary) I	egarding conditions list	ted above, o	02823	
Tem Provio natur	perature de any additional expl al or man-made, that	RM Young anation (photograph or may affect the monitorin	41342 sketch if necess 1g parameters:	ary) i	illegible regarding conditions list	ted above, o	02823 or any other features,	
Tem Provio natur	perature de any additional expl al or man-made, that	RM Young anation (photograph or may affect the monitorin	41342 sketch if necess 1g parameters:	ary) 1	illegible	ted above, o	02823 or any other features,	
Tem Provie natur	perature de any additional expl al or man-made, that	RM Young anation (photograph or may affect the monitorin	41342 sketch if necess 1g parameters:	ary)	illegible regarding conditions list	ted above, o	02823 or any other features,	
Tem Provio natur	perature de any additional expl al or man-made, that	RM Young anation (photograph or may affect the monitorin	41342 sketch if necess 1g parameters:	ary) 1	illegible regarding conditions list	ted above, o	02823 or any other features,	
Tem Provio natur	perature de any additional expl al or man-made, that	RM Young anation (photograph or may affect the monitorin	41342 sketch if necess ng parameters:	ary) 1	illegible regarding conditions list	ted above, o	02823 or any other features,	
Tem Provio natur	perature de any additional expl al or man-made, that	RM Young anation (photograph or may affect the monitorin	41342 sketch if necess ng parameters:	ary) I	illegible regarding conditions list	ted above, o	02823 or any other features,	
Tem Provio natur	perature de any additional expl al or man-made, that	RM Young anation (photograph or may affect the monitorin	41342 sketch if necess 1g parameters:	ary) I	illegible regarding conditions list	ted above, o	02823 or any other features,	
Tem Provio natur	perature de any additional expl al or man-made, that	RM Young anation (photograph or may affect the monitorin	41342 sketch if necess ng parameters:	ary) 1	illegible regarding conditions list	ted above, (02823 or any other features,	
Tem Provio natur	perature de any additional expl al or man-made, that	RM Young anation (photograph or may affect the monitorin	41342 sketch if necess ng parameters:	ary) 1	illegible regarding conditions list	ted above, o	02823 or any other features,	
Tem Provio natur	perature de any additional expl al or man-made, that	RM Young anation (photograph or may affect the monitorin	41342 sketch if necess ng parameters:	ary) 1	illegible regarding conditions list	ted above, (02823 or any other features,	
Tem Provio natur	perature de any additional expl al or man-made, that	RM Young anation (photograph or may affect the monitorin	41342 sketch if necess 1g parameters:	ary) 1	Illegible	ted above, (02823 or any other features,	

Fie	ield Systems Data Form					F-02058-1500-S5-rev001
Site	ID O	XF122	Technician	Sandy Grenville		Site Visit Date 05/08/2013
	Siting Crite	eria: Are the pollu	<u>itant analyzers a</u>	nd deposition eq	<u>luipr</u>	ment sited in accordance with 40 CFR 58, Appendix E
1	Do the sam unrestricted	ple inlets have at d airflow?	least a 270 degre	e arc of		
2	Are the san	nple inlets 3 - 15 1	neters above the	ground?		
3	Are the san and 20 met	nple inlets > 1 me ers from trees?	ter from any maj	or obstruction,		
	Pollutant a	nalyzers and depo	osition equipmen	t operations and	l mai	<u>intenance</u>
1	Do the anal condition a	lyzers and equipn nd well maintaine	nent appear to be ed?	in good		
2	Are the ana reporting d	alyzers and monit ata?	ors operational, o	on-line, and		
3	Describe oz	one sample tube.				1/4 teflon by 15 meters
4	Describe dr	ry dep sample tub	e.			3/8 teflon by 15 meters
5	Are in-line indicate loc	filters used in the ation)	ozone sample lin	e? (if yes		At inlet only
6	Are sample obstruction	lines clean, free (s?	of kinks, moistur	e, and		
7	Is the zero a	air supply desicca	int unsaturated?			
8	Are there n	noisture traps in (the sample lines?			
9	Is there a roclean?	otometer in the d	ry deposition filte	er line, and is it		
Par	ameter	N	Ianufacturer	Model		S/N Client ID
Sam	nle Tower		luma Tower	B		AT-61152-A-H8-E

Sample Tower	Aluma Tower	В	AT-61152-A-H8-E	000018	Store a
Ozone	ThermoElectron Inc	49i A1NAA	1030244806	000693	
Filter pack flow pump	Thomas	107CAB18	100300020817	04924	
Zero air pump	Werther International	PC70/4	000829167	06911	

Fie	eld Sy	stems Data Fo				F-020	58-15	500-S6-re	v001		
Site	D	OXF122	Technician	Sandy Grenville		Site Vis	it Date 0	5/08/2013			
	DAS, se	nsor translators, and 1	peripheral equi	pment operation	<u>ns ai</u>	<u>ıd maintena</u>	unce				
1	Do the I well ma	DAS instruments appe intained?	ar to be in good	condition and							
2	Are all t modem,	he components of the backup, etc)	DAS operation	al? (printers,							
3	Do the a lightnin	nalyzer and sensor sig g protection circuitry?	gnal leads pass (hrough		Met sensors	s only				
4	Are the well ma	signal connections pro intained?	otected from the	e weather and							
5	Are the	signal leads connected	to the correct	DAS channel?							
6	Are the grounde	DAS, sensor translato ed?	rs, and shelter j	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		G	rounded		
10	Is the sa	mple tower stable and	grounded?								
11	Tower c	omments?									

Parameter	Manufacturer	Model	S/N	Client ID	
Computer	Dell	D520	unknown	000246	
DAS	Campbell	CR3000	2528	000425	
Modem	Raven	H4222-C	0808310523	06468	
UPS	APC	RS800	unknown	05072	

The met tower is operated by the university and the temperature sensor has been moved to the sample tower in a naturally aspirated shield.

Field Systems Data F	Form				F-	02058-	1500-S7-rev001
Site ID OXF122	Tecl	hnician [Sandy Grenville	Site Visit Date	e 05/08/20	013	the second second
Documentation							
Does the site have the required	l instrum	ent and a	equipment man	uals?			
Y	es No	N/A			Yes	No	N/A
Wind speed sensor			Data	logger			
Wind direction sensor			Data	logger			
Temperature sensor			Strip	chart recorder			
Relative humidity sensor			Comj	outer			
Solar radiation sensor			Mode	m			
Surface wetness sensor			Print	er			
Wind sensor translator			Zero	air pump			
Temperature translator			Filter	flow pump			
Humidity sensor translator			Surge	e protector			
Solar radiation translator			UPS				
Tipping bucket rain gauge			Light	ning protection devic	e 🗌		
Ozone analyzer			Shelt	er heater			
Filter pack flow controller			Shelt	er air conditioner			
Filter pack MFC power supply							
Does the site have the require	ed and m	ost recen	t QC document	s and report forms?			
I	Present				Cu	rrent	
Station Log							
SSRF						✓	
Site Ops Manual		Oct 2007	1				
HASP		Nov 200	9				
Field Ops Manual		July 199	0				
Calibration Reports							
Ozone z/s/p Control Charts							
Preventive maintenance schedul							
1 Is the station log properly co	mpleted	during e	very site visit?	✓	13. M.		
2 Are the Site Status Report F current?	`orms bei	ng comp	leted and				
3 Are the chain-of-custody for sample transfer to and from	ms prop lab?	erly used	to document				
4 Are ozone z/s/p control char current?	ts proper	ly compl	eted and	Control charts not	used		
Provide any additional explanation natural or man-made, that may a	on (photo affect the	ograph or monitori	r sketch if necess ing parameters:	sary) regarding condi	itions liste	ed above,	or any other features,
	The first of the first of the first						

Fie	ield Systems Data Form						F-02058-1500-S8-r	
Site	e ID	OXF122	Technician	Sandy Grenville		Site Visit Date	05/08/2013	
1	Site op Has th course	eration procedures e site operator attende ? If yes, when and who	ed a formal CAS o instructed?	TNET training	; 🗆 [Trained onsite by pr	evious site operator	r
2	Has th trainin	e backup operator atte g course? If yes, when	ended a formal (and who instru	CASTNET cted?				
3	Is the si schedul	te visited regularly on e?	the required T	ıesday				
4	Are the flollowe	standard CASTNET d by the site operator	operational pro ?	cedures being				
5	Is the si the requ	te operator(s) knowle uired site activities? (in	dgeable of, and a network of the second s	able to perform entation)				
	Are reg	ular operational QA/(OC checks perfo	rmed on meteo	rolog	ical instruments?		
QC	Check I	Performed		Frequency			Complian	nt
122	Contraction of the			NU/A	00000000			

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	~	I.

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

SSRF, call-in

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

•

 \checkmark

Fie	eld Sy	stems Data Fo	rm						F-02058-15	500-S9-rev001
Site	e ID	OXF122	Tech	nician	Sandy Grenville		Site Visit Dat	te 🖸	05/08/2013]
	Site ope	ration procedures								
1	Is the fil	ter pack being changed	d every	Tuesda	ay as scheduled	?▼	Filter changed mo	orini	ngs	
2	Are the correctly	Site Status Report For y?	ms bein	g comj	oleted and filed					
3	Are data schedule	a downloads and backu ed?	ıps bein	g perfo	ormed as		No longer require	ed		
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 sam	ple flow rates recorded	d? How	?			SSRF, logbook, c	call-i	'n	
7	Are sam fashion?	ples sent to the lab on	a regula	ar sche	dule in a timely					
8	Are filte and ship	ers protected from cont oping? How?	taminati	ion dui	ing handling		One set of gloves	s on	ly	
9	Are the operation	site conditions reported ons manager or staff?	d regula	arly to	the field					
QC	Check Po	erformed		Free	luency				Compliant	
N	Aulti-poir	nt MFC Calibrations	•	Sem	iannually			[✓	
F	'low Syste	em Leak Checks	•	✓ Wee	kly			[✓	
F	ilter Pac	k Inspection	d da l					<u> </u>		
F	low Rate	Setting Checks	•	✓ Wee	kly				✓	
V	isual Ch	eck of Flow Rate Rotor	meter	✓ Wee	kly			[✓	
I	n-line Fil	ter Inspection/Replace	ment .	Sem	iannually			[✓	
S	ample Li	ne Check for Dirt/Wat	ter [Wee	kly			[
Prov	ide any a	dditional explanation (nhotog	ranh o	r sketch if neces	sarv) regarding cond	itio	ns listed above, or a	ny other features

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

Due to the high operator turn-over rate, the operators are unfamiliar with some minor aspects of site operation.

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
QAK	172-Sandy	Grenville-05/09/2013				
1	5/9/2013	Computer	Dell	000456	D530	unknown
2	5/9/2013	DAS	Campbell	000418	CR3000	2518
3	5/9/2013	Elevation	Elevation	None	1	None
4	5/9/2013	Filter pack flow pump	Thomas	02357	107CAB18	1089005314
5	5/9/2013	flow rate	Tylan	05094	FC280V	AW801210
6	5/9/2013	Infrastructure	Infrastructure	none	none	none
7	5/9/2013	MFC power supply	MACTEC	05037	none	none
8	5/9/2013	Modem	Raven	06467	V4221-V	0808338316
9	5/9/2013	Ozone	ThermoElectron Inc	000739	49i A1NAA	1105347318
10	5/9/2013	Ozone Standard	ThermoElectron Inc	000511	49i A3NAA	0922236888
11	5/9/2013	Sample Tower	Aluma Tower	666368	В	AT-5107-E-4-8
12	5/9/2013	Shelter Temperature	Campbell	60712	107-L	230826
13	5/9/2013	Siting Criteria	Siting Criteria	None	1	None
14	5/9/2013	Temperature	RM Young	06540	41342	14801
15	5/9/2013	UPS	APC	06798	RS900	unknown
16	5/9/2013	Zero air pump	Werther International	06870	PC70/4	000814278

DAS Data Form

DAS Time Max Error:

0

Mfg	Seria	l Number Site	e T	echnician	Site Visit Date	Parameter	Use Desc.
Campbell	2518	QA	K172	Sandy Grenville	05/09/2013	DAS	Primary
Das Date: Das Time: Das Day: Low Chann Avg Diff: 0.000	5 /9 /2013 13:34:03 129 el: Max Diff: 01 0.0	Audit Date Audit Time Audit Day High Channe Avg Diff: 0001 0.000	5 /9 /2013 13:34:03 129 el: Max Diff: 1 0.0001	Mfg Serial Number Tfer ID Slope Cert Date Mfg Serial Number Tfer ID	Datel 15510194 01320 1.0000 2/13/201 Fluke 95740135 01311	Parameter Tfer Desc. Intercept CorrCoff Parameter Tfer Desc.	DAS Source generator (D 0.00000 1.00000 DAS DVM
				Slope	1.0000	0 Intercept	0.00000
				Cert Date	1/26/201	3 CorrCoff	1.00000
Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference	
7	0.0000	0.0000	0.0001	V	V	0.0001	
7	0.1000	0.0999	0.1000	V	V	0.0001	
7	0.3000	0.2998	0.2998	V	V	0.0000	
7	0.5000	0.4997	0.4998	V	V	0.0001	
7	0.7000	0.6997	0.6997	V	V	0.0000	
7	0.9000	0.8996	0.8996	V	V	0.0000	
7	1.0000	0.9995	0.9996	V	V	0.0001	

Flow Data Form

Mfg	Serial Nun	ıber Ta	Site	Тес	chnician	Site Visit Date	e Param	eter	Owner ID
Tylan	AW801210)	QAK172	Sa	ndy Grenville	05/09/2013	flow rat	te	05094
Mfg	MACTEC				Mfg	BIOS	P	arameter Flo	ow Rate
SN/Owner ID	none	05037			Serial Number	103471	Т	fer Desc. ne	xus
Parameter	MFC power sup	oply			Tfer ID	01420			
					Slope	1.000	00 Inte	ercept	0.00000
					Cert Date	6/13/20	012 Cor	rCoff	1.00000
					Mfg	BIOS	P	arameter Flo	ow Rate
					Serial Number	103424	Т	fer Desc. Blo	OS cell
					Tfer ID	01410			
					Slope	1.000	00 Inte	ercept	0.00000
					Cert Date	1/27/20	012 Cor	rCoff	1.00000
DAS 1:		DAS 2:		L	Cal Factor Z	ero	0.0	12	
A Avg % Diff:	A Max % Di	A Avg %	Dif A Max	: % Di	Cal Factor F	ull Scale	0.6	6	
2.43%	2.47%				Rotometer R	eading:	1.	.5	
UseDescription:	Test type:	Input l/m	: Input STP:	MfcDisp.:	OutputSignal:	Output S E: In	outUnit:	OutputSignal	PctDifference:
primary	pump off	0.000	0.000	-0.02	-0.001	0.01	l/m	l/m	
primary	leak check	0.000	0.000	-0.01	-0.002	0.02	l/m	l/m	
primary	test pt 1	1.585	1.538	2.32	2.320	1.50	l/m	l/m	-2.47%
primary	test pt 2	1.585	1.537	2.32	2.323	1.50	l/m	l/m	-2.41%
primary	test pt 3	1.585	1.537	2.32	2.322	1.50	l/m	l/m	-2.41%
Sensor Compo	onent Leak Tes	t		Conditio	n		Status	pass	
Sensor Comp	onent Filter Azi	muth		Conditio	n 360 deg		Status	pass	
Sensor Comp	onent Filter Dep	oth		Conditio	n 5.0 cm		Status	pass	
Sensor Comp	onent Filter Pos	ition		Conditio	n Good		Status	pass	
Sensor Comp	onent Moisture	Present		Conditio	n No moisture pr	esent	Status	pass	
Sensor Comp	nent Rotomete	er Conditio	n	Conditio	n Clean and dry		Status	pass	
Sensor Comp	onent System N	lemo		Conditio	n		Status	pass	
Sensor Comp	onent Tubing C	ondition		Conditio	n Good		Status	pass	
Sensor Comp	nent Filter Dist	ance		Conditio	n 4.2 cm		Status	pass	

Ozone Data Form

Mfg	Se	rial Number Ta	Site	Te	chnician		Site Visi	t Date	Parame	eter	Owner ID	
ThermoElectron Ir	nc 11	105347318	QAK172	Sa	andy Grei	nville	05/09/20	013	Ozone		000739	
Slope: Intercept CorrCoff	0.99	2551Slope:1213Intercept2997CorrCoff	0.0000	0 0	Mfg Serial N	lumber	ThermoE 49C-731	Electron 04-373	Inc Pa	rameter ozoi er Desc. Ozo	ne ne transfer]
DAS 1: A Avg % Diff: A 0.8%	A Max	DAS 2: 3 % Di A Avg % 1.3%	bDif A Max	% Di	Tfer ID Slope Cert Da	ıte	01100	1.00308 4/2/201	8 Inter 3 Corr	cept Coff	-0.17961 1.00000	
UseDescriptio	on:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	Unit:	PctDiffe	rence:	
primary		1	0.00	0.	17	0.2	78	ppb				
primary		2	29.94	30.	.02	30.	.40	ppb			1.27%	
primary		3	50.24	50.	.26	50.	.59	ppb			0.66%	
primary		4	80.13	80.	.06	80.	.80	ppb			0.92%	
primary	-	5	100.20	100	0.07	99.	.90	ppb			-0.17%	
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 < 1 %				Status	pass		
Sensor Compo	nent	Offset		Conditio	on -0.80				Status	pass		
Sensor Compo	nent	Span		Conditio	on 1.026				Status	pass		
Sensor Compo	nent	Cell B Freq.		Conditio	on 99.2 k	Hz			Status	pass		
Sensor Compo	nent	System Memo		Conditio	on				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 0.71 l	pm			Status	pass		
Sensor Compo	nent	Cell A Tmp.		Conditio	on 32.4 (2			Status	pass		
Sensor Compo	nent	Cell A Pressure		Conditio	on 701 m	nmHg			Status	pass		
Sensor Compo	nent	Cell A Noise		Conditio	on 0.6 pp	b			Status	pass		
Sensor Compo	nent	Cell A Freq.		Conditio	on 113.7	kHz			Status	pass		
Sensor Compo	nent	Cell A Flow		Conditio	on 0.68 l	pm			Status	pass		
Sensor Compo	nent	Battery Backup		Conditio	Funct	ioning			Status	pass		
Sensor Compo	nent	Zero Voltage		Conditio	on N/A				Status	pass		

Temperature Data Form

Mfg		Serial Nun	ıber Ta	Site		Tec	hni	cian	Site V	isit Date	Param	eter	Owner I	D
RM Young		14801		QAK172		Sar	ndy	Grenville	05/09	/2013	Temper	rature	06540	
]	Mf	g	Extech	1	Pa	arameter Te	emperature	
						:	Ser	ial Number	H2327	'34	Tf	fer Desc. RT	ſD	
							Tfe	r ID	01227					
DAS 1:			DAS 2:			:	Slo	ре		1.0043	5 Inte	rcept	-0.08	480
Abs Avg Err	Abs	Max Er	Abs Av	g Err Abs	Max Er		Cei	rt Date		1/12/201	3 Cor	rCoff	1.00	000
0.17		0.22]								
UseDesc.:		Test type:	Inp	outTmpRaw	InputTmp	oCor	r.:	OutputTmpS	ignal:	OutputSig	nalEng:	OSE Unit:	Difference:	
primary	Temp	Low Range	9	-0.10	-0.0	2		0.000		0.2	2	С	0.22	
primary	Temp	Mid Range	;	24.90	24.8	88		0.000		24.	8	С	-0.08	
primary	Temp	High Rang	e	47.20	47.0)8		0.000		47.	3	С	0.22	
Sensor Com	ponen	t Shield			Cond	litio	n C	lean			Status	pass		
Sensor Com	ponen	t Blower S	tatus Swi	tch	Cond	litio	n F	unctioning			Status	pass		
Sensor Com	ponen	t Blower			Cond	litio	n F	unctioning			Status	pass		
Sensor Com	ponen	t System N	/lemo		Cond	litio	n 🗌				Status	pass		

Infrastructure Data For

Site ID	QAK172	Technician Sandy G	irenville Site Visit Date 05/09/2013
Shelter	Make	Shelter Model	Shelter Size
Ekto		8810 (s/n 2625-2)	640 cuft

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	Installed	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	Rotometer	Condition	Installed	Status	pass
Sensor Component	Conduit	Condition	N/A	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	Good	Status	pass

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	230826	QAK172	Sandy Grenville	05/09/2013	Shelter Temperatur	re 60712
DAS 1:	DAS 2:		Mfg	Extech	Parameter S	helter Temperatur
Abs Avg ErrAb0.61	<u>s Max Er Abs Avg</u> 0.81	Err Abs Max Er	Serial Number	H232734	Tfer Desc. R	TD
			Tfer ID	01227		
			Slope	1.0043	5 Intercept	-0.08480
			Cert Date	1/12/201	3 CorrCoff	1.00000

UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	20.10	20.10	0.000	20.9	С	0.8
primary	Temp Mid Range	21.30	21.29	0.000	22.1	С	0.81
primary	Temp Mid Range	21.20	21.19	0.000	21.4	С	0.21
Field Systems Comments

1 Parameter: SiteOpsProcComm

The site operator is doing an excellent job maintaining the site.

2 Parameter: ShelterCleanNotes

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

rield Systems D			r-02030-1300-31-revou
Site ID QAK172	Technician Sandy Grenville	Site Visit Date 05/0	09/2013
Site Sponsor (agency)	EPA	USGS Map	Quaker City
Operating Group	Private	Map Scale	
AQS#	39-121-9991	Map Date	
Meteorological Type	R.M. Young		
Air Pollutant Analyzer	Ozone, IMPROVE	QAPP Latitude	39.9431
Deposition Measurement	dry	QAPP Longitude	-81.3378
Land Use	woodland - mixed, agriculture	QAPP Elevation Meters	372
Terrain	rolling	QAPP Declination	7.9
Conforms to MLM	Yes	QAPP Declination Date	2/22/2006
Site Telephone	(740) 679-3345	Audit Latitude	39.942714
Site Address 1	58163 St. Johns Road	Audit Longitude	-81.337914
Site Address 2		Audit Elevation	371
County	Noble	Audit Declination	-8.2
City, State	Quaker City, OH	Present	
Zip Code	43773	Fire Extinguisher ☑	Inspected May 1993
Time Zone	Eastern	First Aid Kit	
Primary Operator		Safety Glasses	
Primary Op. Phone #		Safety Hard Hat	
Primary Op. E-mail		Climbing Belt	
Backup Operator		Security Fence	
Backup Op. Phone #		Secure Shelter	
Backup Op. E-mail		Stable Entry Step 🔽	
Shelter Working Room ✓	Make Ekto Ma	odel 8810 (s/n 2625-2)	Shelter Size 640 cuft
Shelter Clean	Notes The shelter is in good condition Notes Image: Condition of the shelter is in good condition	n. It is clean, well organized, a	and well maintained.
Driving Directions From miles John the s	a I-70 take exit 193, route 513 south to Qua and turn left onto CR943. Continue appro s Road). Continue approximately 1.5 miles ite.	aker City. At the 4-way stop to oximately 2 miles and turn righ s and turn left onto a dirt road	Irn right and continue approximately 0.8 It onto Noble County Rd 34 (also St. which is the driveway up a steep hill to

Field Systems Data Form

QAK172

F-02058-1500-S2-rev001

Site ID

Technician Sandy Grenville

Site Visit Date 05/09/2013

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

Siting Distances OK

Siting Criteria Comment

Fi	eld Systems Data Form		F-02058-1500-S3-rev00			
Site	e ID QAK172 Technician	Sandy Grenville	Site Visit Date 05/09/2013			
1	Are wind speed and direction sensors sited so a being influenced by obstructions?	as to avoid 🛛 🗹	N/A			
2	Are wind sensors mounted so as to minimize to (i.e. wind sensors should be mounted atop the horizontally extended boom >2x the max diam tower into the prevailing wind)	ower effects?	N/A			
3	Are the tower and sensors plumb?		N/A			
4	Are the temperature shields pointed north or p avoid radiated heat sources such as buildings,	positioned to valls, etc?				
5	Are temperature and RH sensors sited to avoid conditions? (i.e. ground below sensors should be surface and not steeply sloped. Ridges, hollows standing water should be avoided)	d unnatural be natural s, and areas of				
6	Is the solar radiation sensor plumb?		N/A			
7	Is it sited to avoid shading, or any artificial or light?	reflected 🔽	N/A			
8	Is the rain gauge plumb?		N/A			
9	Is it sited to avoid sheltering effects from build towers, etc?	lings, trees,	N/A			
10	Is the surface wetness sensor sited with the gri facing north?	d surface 🔽	N/A			
11	Is it inclined approximately 30 degrees?		N/A			
Dro	wide any additional evaluation (photograph o	r skatch if nacessar	() regarding conditions listed above or any other features			

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

Field	l Systems Da	ta Form			F	-02058-:	1500-S4-rev001
Site II	QAK172	Technician Sa	andy Grenville		Site Visit Date 05/09/	2013	
							1 1 1 1 1 TTS
I Do	o all the meterologica ondition, and well ma	I sensors appear to be int intained?	tact, in good				
2 Aire	re all the meteorologi porting data?	ical sensors operational o	nline, and				
3 A	re the shields for the	temperature and RH sens	sors clean?				
4 A	re the aspirated moto	ors working?					
5 Is	the solar radiation s	ensor's lens clean and fre	e of		N/A		
S IS SC	ratches?						
6 Is	the surface wetness s	sensor grid clean and und	lamaged?		N/A		
7 A	re the sensor signal a indition, and well ma	nd power cables intact, in intained?	ı good		N/A		
8 A	re the sensor signal a	nd power cable connectio	ons protected		N/A		
fr D	om the elements and	well maintained?	A CAL				
Paran	leter	Manufacturer	Model		S/IN		Client ID
atural	or man-made, that n	nation (photograph or sk nay affect the monitoring	etch if necess parameters:	ary)	regarding conditions list	ted above, o	r any other features,
atural	any additional expla or man-made, that n	nation (photograph or sk nay affect the monitoring	etch if necess parameters:	ary)	regarding conditions list	ted above, o	r any other features,
atural	any additional expla or man-made, that n	nation (photograph or sk nay affect the monitoring	etch if necess parameters:	ary)	regarding conditions list	ted above, or	r any other features,
atural	any additional expla or man-made, that n	nation (photograph or sk nay affect the monitoring	etch if necess parameters:	ary)	regarding conditions list	ted above, o	r any other features,
atural	any additional expla or man-made, that n	nation (photograph or sk nay affect the monitoring	eetch if necess parameters:	ary)	regarding conditions list	ted above, o	r any other features,
	any additional expla or man-made, that n	nation (photograph or sk nay affect the monitoring	eetch if necess parameters:	ary)	regarding conditions list	ted above, o	r any other features,
	any additional expla or man-made, that n	nation (photograph or sk nay affect the monitoring	eetch if necess parameters:	ary)	regarding conditions list	ted above, or	r any other features,
atural	any additional expla or man-made, that n	nation (photograph or sk nay affect the monitoring	tetch if necess parameters:	ary)	regarding conditions list	ted above, o	r any other features,
rovide atural	any additional expla or man-made, that n	nation (photograph or sk nay affect the monitoring	tetch if necess parameters:	ary)	regarding conditions list	ted above, or	r any other features,
atural	any additional expla or man-made, that n	nation (photograph or sk nay affect the monitoring	tetch if necess parameters:	ary)	regarding conditions list	ted above, o	r any other features,
rovide hatural	any additional expla or man-made, that n	nation (photograph or sk nay affect the monitoring	tetch if necess parameters:	ary)	regarding conditions list	ted above, o	r any other features,
rovide	any additional expla or man-made, that n	nation (photograph or sk nay affect the monitoring	eetch if necess parameters:	ary)	regarding conditions list	ted above, o	r any other features,
rovide	any additional expla or man-made, that n	ination (photograph or sk nay affect the monitoring	tetch if necess parameters:	ary)	regarding conditions list	ted above, or	r any other features,
rovide	any additional expla or man-made, that n	nation (photograph or sk nay affect the monitoring	tetch if necess parameters:	ary)	regarding conditions list	ted above, or	r any other features,

Fie	eld Systems Data Form		F-02058-1500-S5-rev001
Site	ID QAK172 Technician Sandy Grenville	9 9	Site Visit Date 05/09/2013
	Siting Criteria: Are the pollutant analyzers and deposition e	quip	ment sited in accordance with 40 CFR 58, Appendix E
1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?		
2	Are the sample inlets 3 - 15 meters above the ground?		
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?		
	Pollutant analyzers and deposition equipment operations an	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 12 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)		At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?		
7	Is the zero air supply desiccant unsaturated?		
8	Are there moisture traps in the sample lines?		
9	Is there a rotometer in the dry deposition filter line, and is it clean?		clean and dry
Par	ameter Manufacturer Model		S/N Client ID

Parameter	Manufacturer	Model	S/N	Client ID	
Sample Tower	Aluma Tower	В	AT-5107-E-4-8	666368	
MFC power supply	MACTEC	none	none	05037	
Ozone	ThermoElectron Inc	49i A1NAA	1105347318	000739	
Filter pack flow pump	Thomas	107CAB18	1089005314	02357	
Zero air pump	Werther International	PC70/4	000814278	06870	

Field Systems Data Form							F	-02058-	1500-	S6-rev001
Site	Site ID QAK172 Technician Sandy Grenville			27122	Site Visi	t Date 05/09	/2013			
	DAS, se	nsor translators, and 1	peripheral equi	oment operation	<u>15 a</u>	<u>nd maintena</u>	nce			
1	Do the l well ma	DAS instruments appe intained?	ar to be in good	condition and						
2	Are all modem,	the components of the , backup, etc)	DAS operation	al? (printers,						
3	Do the a lightnin	analyzer and sensor sig g protection circuitry?	gnal leads pass f	hrough		Met sensors	only			
4	Are the well ma	signal connections pro intained?	otected from the	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	oroperly						
7	Does the	e instrument shelter ha	ave a stable pov	er source?						
8	Is the in	strument shelter temp	erature control	led?						
9	Is the m	et tower stable and gr	ounded?			Stable		Ground	led	
10	Is the sa	mple tower stable and	l grounded?							
11	11 Tower comments?				~					
				·				50404-01-0259035275		

Parameter	Manufacturer	Model	S/N	Client ID	
Computer	Dell	D530	unknown	000456	
DAS	Campbell	CR3000	2518	000418	
Modem	Raven	V4221-V	0808338316	06467	
UPS	APC	RS900	unknown	06798	

Field Systems Data l	Form				F-02	058-	1500-S7-rev001
Site ID QAK172	Те	chnician	Sandy Grenville	Site Visit Date	05/09/2013		
Documentation							
Does the site have the require	d instru	ment and	equipment mar	mals?			
	les N	lo N/A			Yes	No	N/A
Wind speed sensor			Data	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	ge 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 1	<u>most recei</u>	nt QC documen	ts and report forms?			
	Present				Curre	nt	
Station Log				the state of the second se			
SSRF							
Site Ops Manual		Oct 200	1				
HASP		Oct 201	1				
Field Ops Manual		8					
Calibration Reports							
Ozone z/s/p Control Charts							
Preventive maintenance schedul							
		Sec. 1					
1 Is the station log properly c	omplete	d during e	every site visit?				
2 Are the Site Status Report I current?	Forms bo	eing comp	leted and				
3 Are the chain-of-custody for sample transfer to and from	rms proj v lob?	perly used	l to document				
4 Are ozone z/s/p control chai	cts prope	erly comp	leted and	Control charts not us	ed		
current?		, some					
Provide any additional explanation natural or man-made, that may a	on (phot affect th	tograph o e monitor	r sketch if neces ing parameters	ssary) regarding condition: :	ons listed a	above, o	or any other features,
						*	

Field Systems Data Form						F-02058-1	500-S8-rev001	
Site	ID	QAK172	Technician	Sandy Grenville		Site Visit Date	05/09/2013	
1	Site ope Has the course?	e <u>ration procedures</u> site operator attendec If yes, when and who	l a formal CAS instructed?	TNET training		Site operator refresh	ner training July 2006	;
2	 Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? 				Site operator refresh	er training July 2006		
3	Is the sit schedule	te visited regularly on the second seco	the required T	uesday				
4	Are the flollowe	standard CASTNET o d by the site operator?	perational pro	cedures being				
5	Is the sit the requ	te operator(s) knowled lired site activities? (in	geable of, and cluding docum	able to perform entation)				
	Are reg	ular operational QA/Q	C checks perfo	rmed on meteor	olo	gical instruments?		

QC Check Performed	Frequency	Co
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	

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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	Comj
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?
- 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:

~

 \checkmark

SSRF, logbook, call-in

oliant

npliant

Field Systems Data Form						F-02058-1500-S9-rev001					
Site	ID	QAK172	Tech	nician	Sandy Grenville		Site Visit Dat	te [05/09/2013]	
	Site ope	eration procedures									
1	Is the fi	lter pack being change	d every '	Tuesda	ay as scheduled:		Filter changed morinings				
2	Are the correct	Site Status Report For ly?	ms bein	g comj	pleted and filed		records MFC disp	olay	as DAS flow value		
3	Are data downloads and backups being performed as scheduled?						No longer required				
4	Are general observations being made and recorded? How?						SSRF, logbook				
5	5 Are site supplies on-hand and replenished in a timely fashion?										
6	5 Are sample flow rates recorded? How?						SSRF, logbook, c	all-	in		
7	Are san fashion	nples sent to the lab on ?	a regula	r sche	dule in a timely						
8	Are filt and shi	ers protected from cont pping? How?	taminati	on dui	ring handling		Clean gloves on and off				
9	Are the operation	site conditions reporte ons manager or staff?	d regula	rly to	the field						
QC	Check P	erformed		Free	quency				Compliant		
M	Iulti-poi	nt MFC Calibrations		Sem	niannually	- 16 - 5 ⁻ 5					
F	Flow System Leak Checks										
Fi	Filter Pack Inspection										
F	Flow Rate Setting Checks Veekly										
v	Visual Check of Flow Rate Rotometer 🗹 Weekly										
Ir	In-line Filter Inspection/Replacement Semiannually										
S	ample L	ine Check for Dirt/Wat	ter	Vee Wee	ekly	and a second					
Provi	ide any a	additional explanation	(photogi	aph o	r sketch if neces	sary) regarding cond	itio	ons listed above, or a	ny other features,	

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

The site operator is doing an excellent job maintaining the site.

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
PND	165-Eric H	lebert-05/12/2013				
1	5/12/2013	Computer	Dell	000258	D520	unknown
2	5/12/2013	DAS	Campbell	000403	CR3000	2516
3	5/12/2013	Elevation	Elevation	None	1	None
4	5/12/2013	Filter pack flow pump	Thomas	03631	107CAB18	049400004449
5	5/12/2013	flow rate	Tylan	02135	FC280V	AW901290
6	5/12/2013	Infrastructure	Infrastructure	none	none	none
7	5/12/2013	MFC power supply	Tylan	01695	RO-32	FP902019
8	5/12/2013	Modem	Raven	06474	H4222-C	0808311240
9	5/12/2013	Ozone	ThermoElectron Inc	000627	49i A1NAA	1009241772
10	5/12/2013	Ozone Standard	ThermoElectron Inc	000208	49i A3NAA	0611416461
11	5/12/2013	Sample Tower	Aluma Tower	000055	В	AT-81213-J12
12	5/12/2013	Shelter Temperature	Campbell	none	107-L	none
13	5/12/2013	Siting Criteria	Siting Criteria	None	1	None
14	5/12/2013	Temperature	RM Young	06539	41342	14800
15	5/12/2013	Zero air pump	Werther International	06926	PC70/4	000836218

DAS Data Form

DAS Time Max Error: 0.08

Mfg	Serial Nu	mber Site	7	Fechnician	Site Visit Date	Parameter	Use Desc.
Campbell	2516	PND	0165	Eric Hebert	05/12/2013	DAS	Primary
Das Date:	5 /13/2013	Audit Date	5 /13/2013 9:00:05	Mfg	Datel	Parameter	DAS
Das Day:	as Day: 133 Audit E		133	Serial Number	4000392	Tfer Desc.	Source generator (D
Low Channe	el:	High Channel	l:	Tfer ID	01321		
Avg Diff:	Max Diff:	Avg Diff:	Max Diff:	Slope	1.0000	0 Intercept	0.00000
0.000	0.0003	0.0001	0.0003	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	1/27/201	3 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	0.0999	V	V	-0.0001	
7	0.3000	0.3000	0.2999) V	V	-0.0001	
7	0.5000	0.5000	0.4999	V	V	-0.0001	
7	0.7000	0.7000	0.6999	v v	V	-0.0001	
7	0.9000	0.9001	0.8998	s v	V	-0.0003	
7	1.0000	1.0001	0.9998	s v	V	-0.0003	

Flow Data Form

Mfg	Serial Nun	iber Ta S	Site	Tec	hnician	Site Visit Da	te Parar	neter	Owner ID
Tylan	AW901290)	PND165	Erio	c Hebert	05/12/2013	flow ra	ate	02135
Mfg	Tylan				Mfg	BIOS	I	Parameter Flo	ow Rate
SN/Owner ID	FP902019	01695			Serial Number	122974]	Ifer Desc. Bl	OS 220-H
Parameter	MFC power sup	oply			Tfer ID	01416			
					Slope	1.00	000 Int	ercept	0.00000
					Cert Date	1/8/2	013 Co	rrCoff	1.00000
DAS 1:		DAS 2:		L	Cal Factor Z	ero	-0.	09	
A Avg % Diff:	A Max % Di	A Avg %I	Dif A Max	: % Di	Cal Factor F	ull Scale		1	
1.02%	1.36%				Rotometer R	eading:	3.	95	
UseDescription:	Test type:	Input l/m:	Input STP:	MfcDisp.:	OutputSignal:	Output S E: In	putUnit:	OutputSignal	IPctDifference:
primary	pump off	0.000	0.000	0.03	0.000	-0.04	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	2.975	2.82	0.000	3.00	l/m	l/m	0.83%
primary	test pt 2	0.000	2.975	2.82	0.000	3.00	l/m	l/m	0.86%
primary	test pt 3	0.000	2.970	2.83	0.000	3.01	l/m	l/m	1.36%
Sensor Compo	nent Leak Tes	t		Condition	n		Statu	s pass	
Sensor Compo	Filter Azi	muth		Condition	n 180 deg		Statu	s pass	
Sensor Compo	Filter Dep	oth		Condition	1 2.0 cm		Statu	s pass	
Sensor Compo	Filter Pos	sition		Condition	Good		Statu	s pass	
Sensor Compo	Moisture	Present		Condition	No moisture pr	resent	Statu	s pass	
Sensor Compo	Rotomete	er Condition		Condition	Clean and dry		Statu	s pass	
Sensor Compo	onent System N	lemo		Condition	n		Statu	s pass	
Sensor Compo	nent Tubing C	ondition		Condition	Good		Statu	s pass	
Sensor Compo	Filter Dist	tance		Condition	1 5.5 cm		Statu	s pass	

Ozone Data Form

Mfg	Se	erial Number Ta	Site	Te	chnician		Site Vis	it Date	Parame	eter	Owner I	D
ThermoElec	ctron Inc 1	009241772	PND165	Er	ic Heber	t	05/12/2	013	Ozone		000627	
Slope: 0.95790 Slope: 0.000 Intercept 0.02026 Intercept 0.000 CorrCoff 0.99999 CorrCoff 0.000			0.0000	0 Mfg 0 Serial Number 0 Tfer ID			ThermoElectron Inc P 517112175 T 01111 T		Inc Pa	rameter 02 er Desc. O	zone zone primary	y stan
DAS 1:		DAS 2:			Slope			0.9972	0 Inter	cent	0.18	3428
A Avg % D 4.1	Diff: A Max	x % Di A Avg % 4.4%	6Dif A Max	% Di	Cert Da	nte		1/2/201	3 Cori	Coff	1.00)000
UseDes	cription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	Unit:	PctDif	fference:	
prin	nary	1	0.35	0.	16	0.	06	ppb				
prin	nary	2	28.90	28.	.79	27	.59	ppb			-4.17%	
prin	nary	3	49.75	49.	.70	47	.73	ppb			-3.96%	
prin	nary	4	79.85	79.	.88	76	.77	ppb			-3.89%	
prin	nary	5	109.80	109	.92	105	5.10	ppb			-4.39%	
Sensor Co	omponent	Cell B Noise		Conditio	on 0.9 pp	ob			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	n	Conditio	on Clear	1			Status	pass		
Sensor Co	omponent	Line Loss		Conditio	on Not te	ested			Status	pass		
Sensor Co	omponent	Offset		Conditio	on -0.10				Status	pass		
Sensor Co	omponent	Span		Conditio	on 1.003				Status	pass		
Sensor Co	omponent	Cell B Freq.		Conditio	on 83.5 k	kHz			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 0.63 I	pm			Status	pass		
Sensor Co	omponent	Cell A Tmp.		Conditio	on 37.0 (0			Status	pass		
Sensor Co	omponent	Cell A Pressure		Conditio	on 569 m	nmHg			Status	pass		
Sensor Co	omponent	Cell A Noise		Conditio	on 0.6 pr	ob			Status	pass		
Sensor Co	omponent	Cell A Freq.		Conditio	on 84.1 k	κHz			Status	pass		
Sensor Co	omponent	Cell A Flow		Conditio	on 0.61 l	pm			Status	pass		
Sensor Co	omponent	Battery Backup		Conditio	on N/A				Status	pass		
Sensor Co	omponent	Zero Voltage		Conditio	on N/A				Status	pass		

Temperature Data Form

Mfg	Serial Number	Ta Site		Fechn i	ician	Site Visit Da	te Param	eter	Owner ID
RM Young	14800	PND165		Eric H	ebert	05/12/2013	Tempe	rature	06539
				Mf	g	Extech	Pa	arameter Te	emperature
				Ser	rial Number	H232679	T	fer Desc. R	TD
				Tfe	er ID	01228			
DAS 1.	DAS	2.		Slo	pe	1.00)732 Inte	ercept	-0.12380
Abs Avg Err	Abs Max Er Abs	Avg Err Abs	Max Er	Ce	rt Date	1/12/2	2013 Cor	rCoff	1.00000
0.05	0.14								
UseDesc.:	Test type:	InputTmpRaw	InputTmp	Corr.:	OutputTmpS	ignal: Output	SignalEng:	OSE Unit:	Difference:
primary	Temp Low Range	-0.09	0.03		0.000		0.0	C	0
primary	Temp Mid Range	26.06	25.99)	0.000		26.0	С	0.02
primary	Temp High Range	42.11	41.93	3	0.000		42.1	С	0.14
Sensor Com	ponent Shield		Condi	tion	Clean		Status	pass	
Sensor Com	ponent Blower Status	Switch	Condi	tion F	Functioning		Status	pass	
Sensor Com	ponent Blower		Condi	tion F	Functioning		Status	pass	
Sensor Com	ponent System Memo	•	Condi	tion			Status	pass	

Infrastructure Data For

Site ID	PND165	Technician Eric Heb	ert Site Visit Date 05/12/2013
Shelter	Make	Shelter Model	Shelter Size
Ekto		8810 (s/n 2149-22)	640 cuft

Sensor Component	Shelter Roof	Condition	Fair	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	Installed	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	Rotometer	Condition	Installed	Status	pass
Sensor Component	Conduit	Condition	N/A	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	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	PND165	Eric Hebert	05/12/2013	Shelter Temperatu	renone
DAS 1:	DAS 2:	Em Aba Mara Em	Mfg	Extech	Parameter S	helter Temperatur
Abs Avg ErrA1.43	2.26	Err Abs Max Er	Serial Number	H232679	Tfer Desc.	TD
			Tfer ID	01228]	
			Slope	1.0073	2 Intercept	-0.12380
			Cert Date	1/12/201	3 CorrCoff	1.00000

UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	24.20	24.15	0.000	26.4	С	2.26
primary	Temp Mid Range	25.28	25.22	0.000	26.6	С	1.4
primary	Temp Mid Range	25.74	25.68	0.000	26.3	С	0.63

Field Systems Comments

1 Parameter: SiteOpsProcComm

The site operator uses the filter bag received with the new filter to send the filter removed from the tower back to the lab. There is no bag for the sample filter on site for storing the filter when it is removed from the tower.

2 Parameter: DasComments

Both the heat and the air conditioner are running simultaneously.

3 Parameter: DocumentationCo

General site observations are not being recorded on the SSRF. The purpose for recording the general observations was discussed with the site operator.

4 Parameter: ShelterCleanNotes

The shelter is well maintained.

Site ID PND165	Technician Eric Hebert	Site Visit Date 05/	12/2013
		Site visit Date 00,	
Site Sponsor (agency)	EPA	USGS Map	Fremont Lake South
Operating Group	Private / BLM	Map Scale	
AQS #	56-035-9991	Map Date	
Aeteorological Type	R.M. Young		
Air Pollutant Analyzer	Ozone	QAPP Latitude	42.9214
Peposition Measurement	dry, wet	QAPP Longitude	-109.7900
Land Use	range	QAPP Elevation Meters	2388
Ferrain	complex	QAPP Declination	12.75
Conforms to MLM	Marginally	QAPP Declination Date	2/22/2006
Site Telephone	(307) 367-6584	Audit Latitude	42.9290
Site Address 1	Skyline Drive	Audit Longitude	-109.78775
Site Address 2	Fremont Lake Rd.	Audit Elevation	238
County	Sublette	Audit Declination	11.4
City, State	Pinedale, WY	Present	
Zip Code	82941	Fire Extinguisher	No inspection date
lime Zone	Mountain	First Aid Kit	
rimary Operator		Safety Glasses	
rimary 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 🔽	
helter Working Room ☑	Make Ekto	Model 8810 (s/n 2149-22)	Shelter Size 640 cuft
helter Clean	Notes The shelter is well maintaine	d.	
ite OK	Notes		

Continue approximately 6.5 miles on the main road, past Fremont Lake. The road changes site is visible on a ridge on the right. There is a dirt access road to the site in the summer.

Field	ST	151	tems	Π	91	19	F	orm
I ICIU	\mathbf{J}	D.			<u>a</u>	Let -		

PND165

F-02058-1500-S2-rev001

Site ID

Technician Eric Hebert

Site Visit Date 05/12/2013

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

Siting Distances OK

Siting Criteria Comment

Fi	eld Sys	stems Dat	ta Form		F-02058-1500-S3-rev001				
Site	D	PND165	Technician Er	ic Hebert		Site Visit Date 05/12/2013			
1	Are wind being inf	l speed and dir luenced by obs	ection sensors sited so as structions?	s 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 t	ower and sense	ors plumb?	6	<	N/A			
4	Are the t avoid rad	emperature sh liated heat sou	ields pointed north or po rces such as buildings, w	ositioned to alls, etc?	•				
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)				~				
6	Is the sol	ar radiation se	ensor plumb?	Ŀ	~	N/A			
7	Is it sited light?	l to avoid shad	ing, or any artificial or ro	eflected	•	N/A			
8	Is the rai	in gauge pluml)?	[~	N/A			
9	Is it sited towers, e	l to avoid shelt tc?	ering effects from buildin	ngs, trees,	•	N/A			
10	Is the sur facing no	rface wetness s orth?	ensor sited with the grid	surface	~	N/A			
11	Is it incl	ined approxim	ately 30 degrees?	e e e e e e e e e e e e e e e e e e e	~	N/A			
D		additional and	bustion (abotes and on	ale stale 'f an an a					

L IC	eld Systems I	Data Form			F-02	058-1	500-S4-rev001
Site	ID PND165	Technician Eric H	Hebert	150	Site Visit Date 05/12/2013		
						Con C	1
1	Do all the meterolog condition, and well	gical sensors appear to be intact maintained?	t, in good				
2	Are all the meteoro reporting data?	logical sensors operational onlin	ne, and				
3	Are the shields for 1	he temperature and RH sensor	s clean?				
4	Are the aspirated m	notors working?					
-	In the color redictio	n governin lang aloon and furs of			N/A		
3	scratches?	n sensor's lens clean and free of	L				
6	Is the surface wetne	ess sensor grid clean and undam	naged?		N/A		
7	Are the sensor signa	al and power cables intact, in go	bod				
8	Are the sensor sign:	al and power cable connections	protected				
	from the elements a	nd well maintained?	1. S. S.				
Par	ameter	Manufacturer	Model		S/N	С	lient ID
	ral or man-made, th	at may affect the monitoring pa	ch if necessa rameters:	ary)	regarding conditions listed al	oove, or	any other features,
	ral or man-made, th	at may affect the monitoring pa	ch if necessa irameters:	ary)	regarding conditions listed al	oove, or	any other features,
	ral or man-made, th	at may affect the monitoring pa	ch if necessa irameters:	ary)	regarding conditions listed al	oove, or	any other features,
	ral or man-made, th	at may affect the monitoring pa	ch if necessa irameters:	ary)	regarding conditions listed al	oove, or	any other features,
	ral or man-made, th	at may affect the monitoring pa	ch if necessa irameters:	ary)	regarding conditions listed al	oove, or	any other features,
	ral or man-made, th	at may affect the monitoring pa	ch if necessa irameters:	ary)	regarding conditions listed al	oove, or	any other features,
	ral or man-made, th	at may affect the monitoring pa	ch if necessa irameters:	ary)	regarding conditions listed al	oove, or	any other features,
	ral or man-made, th	at may affect the monitoring pa		ary)	regarding conditions listed al	ove, or	any other features,
	ral or man-made, th	at may affect the monitoring pa	ch if necessa irameters:	ary)	regarding conditions listed al	oove, or	any other features,
	ral or man-made, th	at may affect the monitoring pa		ary)	regarding conditions listed al	Dove, or	any other features,
	ral or man-made, the	at may affect the monitoring pa		ary)	regarding conditions listed al	oove, or	any other features,
	ral or man-made, the	at may affect the monitoring pa		ary)	regarding conditions listed al	ove, or	any other features,
	ral or man-made, the	at may affect the monitoring pa		ary)	regarding conditions listed al	ove, or	any other features,
	ral or man-made, the	at may affect the monitoring pa		ary)	regarding conditions listed al	Dove, or	any other features,

Fi	eld Sy	stems Data	a Form		F-02058 -	1500-S5-rev001
Site	e ID	PND165	Technician Eric Hebe	ert	Site Visit Date 05/12/2013	
	Siting C	Criteria: Are the	pollutant analyzers and deposi	tion equipn	ent sited in accordance with 40 CF	<u>R 58, Appendix E</u>
1	Do the sunrestri	ample inlets hav icted airflow?	e at least a 270 degree arc of			
2	Are the	sample inlets 3 -	15 meters above the ground?			
3	Are the and 20 m	sample inlets > 1 neters from tree	meter from any major obstrus?	iction, 🗹		
	Pollutar	nt analyzers and	deposition equipment operation	ons and mai	<u>ntenance</u>	
1	Do the a conditio	nalyzers and equation and well main	uipment appear to be in good tained?			
2	Are the reportir	analyzers and m 1g data?	onitors operational, on-line, a	nd 🔽		
3	Describ	e ozone sample t	ube.		1/4 teflon by 12 meters	
4	Describ	e dry dep sample	e tube.		3/8 teflon by 12 meters	
5	Are in-l indicate	ine filters used in location)	1 the ozone sample line? (if yes		At inlet only	
6	Are san obstruct	uple lines clean, f tions?	ree of kinks, moisture, and			
7	Is the ze	ero air supply de	siccant unsaturated?			
8	Are the	re moisture traps	s in the sample lines?			
9	Is there clean?	a rotometer in t	he dry deposition filter line, an	d is it 🗹	Clean and dry	
Par	ramatar		Manufacturar Ma	dol	S/N	Client ID

Parameter	Manufacturer	Model	S/N	Client ID	
Sample Tower	Aluma Tower	В	AT-81213-J12	000055	
Ozone	ThermoElectron Inc	49i A1NAA	1009241772	000627	
Filter pack flow pump	Thomas	107CAB18	049400004449	03631	
MFC power supply	Tylan	RO-32	FP902019	01695	
Zero air pump	Werther International	PC70/4	000836218	06926	

Fie	eld S	ystems Data Fo	orm			F-02058-1500-S6-rev001				
Site	ID	PND165	Technician	Eric Hebert		Site Visit Date	05/12/2013			
	DAS, s	ensor translators, and j	peripheral equi	oment operation	<u>ns ar</u>	ud maintenance				
1	Do the well m	DAS instruments appe aintained?	ar to be in good	condition and						
2	Are all moden	the components of the a, backup, etc)	DAS operation	al? (printers,						
3	Do the lightni	analyzer and sensor signs of the sensor sign of the	gnal leads pass t	hrough		Met sensors only				
4	Are the well m	e signal connections pro aintained?	otected from the	weather and						
5	Are the	e signal leads connected	to the correct	DAS channel?						
6	Are the ground	e DAS, sensor translato led?	rs, and shelter	properly						
7	Does tl	he instrument shelter h	ave a stable pov	ver source?						
8	Is the i	instrument shelter temp	erature control	led?		Heat and a/c runnin	g simultaneously			
9	Is the 1	met tower stable and gr	ounded?			Stable	Grounder	a		
10	Is the s	sample tower stable and	l grounded?					- Arth		
11	Tower	comments?								
Par	ameter	M	anufacturer	Model		S/N	C	ient ID		

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D520	unknown	000258
DAS	Campbell	CR3000	2516	000403
Modem	Raven	H4222-C	0808311240	06474

Both the heat and the air conditioner are running simultaneously.

Field System	ms Data I	For	m					F-02	058-	1500-8	57-rev001
Site ID PND	0165		Tech	nician [Eric Hebert	Site Visit I	Date 05	/12/2013			
								SEL			
Documentation											
Does the site ha	we the required	d inst	trume	nt and e	equipment manua	als?					
	Y	7 es	No	N/A				Yes	No	N/A	
Wind speed senso	r				Data le	ogger					
Wind direction set	nsor				Data le	ogger					
Temperature sens	or				Strip c	hart recorder					
Relative humidity	sensor				Comp	uter					
Solar radiation set	nsor				Moder	n					
Surface wetness se	ensor				Printe	r					
Wind sensor trans	slator				Zero a	ir pump					
Temperature tran	slator				Filter	flow pump					
Humidity sensor t	ranslator				Surge	protector					
Solar radiation tra	anslator				UPS						
Tipping bucket ra	in gauge				Lightn	ing protection de	evice				
Ozone analyzer					Shelter	r heater	S. Sala				
Filter pack flow co	ontroller				Shelter	r air conditioner					
Filter pack MFC	power supply										
Does the site h	nave the requir	ed ar	nd mo	st recen	t QC documents	and report form	<u>is?</u>				
	1	Prese	ent					Curre	nt		
Station Log		•	•								
SSRF	1. 1. 1 .		•								
Site Ops Manual				Oct 2001	1		1.11				
HASP				Nov 2009	9						
Field Ops Manual				July 1990	0						
Calibration Repor	rts]								
Ozone z/s/p Contr	ol Charts]								
Preventive mainte	nance schedul										
				6236							
1 Is the station	log properly co	ompl	eted d	uring ev	very site visit? 🔽						
2 Are the Site S current?	Status Report H	Form	s bein	g compl	leted and	General observ	vations n	iot comp	lete		
3 Are the chair sample trans	3 Are the chain-of-custody forms properly used to document sample transfer to and from lab? ✓										
4 Are ozone z/s current?	/p control char	rts pr	operly	y comple	eted and	Control charts	not used	l			
Provide any addit natural or man-m	ional explanati ade, that may a	ion (p affect	hotog t the n	raph or nonitori	• sketch if necessa ing parameters:	ary) regarding co	ondition	s listed a	above, o	or any oth	er features,
General site observ site operator.	ations are not b	eing i	record	ed on the	e SSRF. The purp	oose for recording	the gen	eral obse	ervation	s was disc	ussed with the
			1350								

Fi	eld Sy	ystems Data	a Form	F-02058-1500-S8-rev00			
Site	e ID	PND165	Technician	Eric Hebert	Site Visit Date	05/12/2013	
1 2	Site of Has th course Has th trainin	peration procedur le site operator at ? If yes, when an le backup operato lng course? If yes,	r <u>es</u> tended a formal CAS d who instructed? or attended a formal when and who instru	TNET training			
3	Is the s schedu	ite visited regular le?	ly on the required T	uesday 🗸			
4	Are the flollow	e standard CAST ed by the site oper	NET operational pro rator?	cedures being 🔽			
5	Is the sthe req	ite operator(s) kn uired site activiti	owledgeable of, and es? (including docum	able to perform 🗹 entation)			

Are regular operational QA/QC checks performed on meteorological 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?

C	C	Che	ck	Per	for	mer
N.		CIII	UN	IUI	101	muu

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	
Weekly	
Every 2 weeks	
Weekly	
Weekly	

oliant

- 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

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

SSRF, call-in

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

Field Systems Data Form									F-02058-1	500-S9-rev001		
Site	ID	PND165	Techni	cian	Eric Hebert		Site Visit Dat	te 05	/12/2013			
	Site ope	ration procedures										
1	Is the fil	ter pack being changed	l every T	uesda	y as scheduled		Filter changed afternoons approximately 80%					
2	Are the correctl	Site Status Report For y?	ms being	comp	oleted and filed		General observations are not recorded					
3	Are data downloads and backups being performed as scheduled?						No longer required					
4	Are general observations being made and recorded? How?											
5	Are site supplies on-hand and replenished in a timely fashion?											
6	Are sample flow rates recorded? How?						SSRF, call-in					
7	Are sam fashion?	pples sent to the lab on a	a regular	schee	dule in a timely							
8	Are filte and ship	ers protected from cont oping? How?	aminatio	n dur	ing handling		One set of gloves	only				
9	Are the operation	site conditions reported ons manager or staff?	l regular	ly to f	the field							
QC	Check P	erformed		Freq	luency			Co	ompliant			
N	Iulti-poir	nt MFC Calibrations		Sem	iannually			 Image: A start of the start of]			
F	low Syste	em Leak Checks		Wee	kly			✓				
F	ilter Pac	k Inspection										
F	Flow Rate Setting Checks Weekly					✓						
V	Visual Check of Flow Rate Rotometer 🗹 Weekly				kly			✓]			
Iı	In-line Filter Inspection/Replacement Semiannually					4723						
S	ample Li	ne Check for Dirt/Wat	er 🔽	Wee	kly	EL HEAD AND						
Prov	ide anv a	dditional explanation (photogra	ph or	sketch if neces	sary	y) regarding condi	itions	s listed above, or a	any other features.		

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

The site operator uses the filter bag received with the new filter to send the filter removed from the tower back to the lab. There is no bag for the sample filter on site for storing the filter when it is removed from the tower.

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
CNT	169-Eric H	lebert-05/14/2013				
1	5/14/2013	Computer	Dell	000241	D520	unknown
2	5/14/2013	DAS	Campbell	000417	CR3000	2515
3	5/14/2013	Elevation	Elevation	None	1	None
4	5/14/2013	Filter pack flow pump	Thomas	02753	107CAB18	1192001900
5	5/14/2013	flow rate	Tylan	000086	FC280SAV	AW99013049
6	5/14/2013	Infrastructure	Infrastructure	none	none	none
7	5/14/2013	MFC power supply	MACTEC	05031	none	none
8	5/14/2013	Modem	Raven	06600	V4221-V	0844349098
9	5/14/2013	Ozone	ThermoElectron Inc	000682	49i A1NAA	1030244796
10	5/14/2013	Ozone Standard	ThermoElectron Inc	000369	49i A3NAA	0726124690
11	5/14/2013	Sample Tower	Aluma Tower	000179	В	unknown
12	5/14/2013	Shelter Temperature	Campbell	none	107-L	none
13	5/14/2013	Siting Criteria	Siting Criteria	None	1	None
14	5/14/2013	Temperature	RM Young	06559	41342	illegible
15	5/14/2013	Zero air pump	Werther International	06925	P 70/4	000836220

DAS Data Form

DAS Time Max Error:

0

Mfg	Serial Nu	mber Site	r	Fechnician	Site Visit Date	Parameter	Use Desc.
Campbell	2515	CN	T169	Eric Hebert	05/14/2013	DAS	Primary
Das Date:	5 /14/2013	Audit Date	5 /14/2013	Mfg	Datel	Parameter	DAS
Das Time:	134	Audit Time_ Audit Day	134	Serial Number	4000392	Tfer Desc.	Source generator (D
Low Channe	l:	High Channe	d:	Tfer ID	01321		
Avg Diff:	Max Diff:	Avg Diff:	Max Diff:	Slope	1.0000	0 Intercept	0.00000
0.000	0.0002	0.0001	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	1/27/201	3 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	0.5000	0.4999) V	V	-0.0001	
7	0.7000	0.7001	0.7000) V	V	-0.0001	
7	0.9000	0.9001	0.9000) V	V	-0.0001	
7	1.0000	1.0001	0.9999	V	V	-0.0002	

Flow Data Form

Mfg	Serial Num	ber Ta S	Site	Тес	hnician	Site Visit D	ate Paran	neter	Owner ID
Tylan	AW990130	49	CNT169	Eri	c Hebert	05/14/2013	flow ra	ite	000086
Mfg	MACTEC				Mfg	BIOS	P	Parameter Flo	ow Rate
SN/Owner ID	none	05031			Serial Number	122974	Г	fer Desc. BI	OS 220-H
Parameter	MFC power sup	ply			Tfer ID	01416			
					Slope	1.0	00000 Int	ercept	0.00000
					Cert Date	1/8	3/2013 Co	rrCoff	1.00000
DAS 1:		DAS 2:		L	Cal Factor Z	ero		0	
A Avg % Diff:	A Max % Di	A Avg %I	Dif A Max	x % Di	Cal Factor F	ull Scale		0	
5.76%	6.13%				Rotometer R	eading:	3	8.5	
UseDescription:	Test type:	Input l/m:	Input STP:	MfcDisp.:	OutputSignal:	Output S E:	InputUnit:	OutputSigna	IPctDifference:
primary	pump off	0.000	0.000	-0.02	0.000	0.00	l/m	l/m	
primary	leak check	0.000	0.000	-0.02	0.000	0.01	l/m	l/m	
primary	test pt 1	0.000	2.842	2.58	0.000	3.00	l/m	l/m	5.56%
primary	test pt 2	0.000	2.841	2.58	0.000	3.00	l/m	l/m	5.59%
primary	test pt 3	0.000	2.827	2.58	0.000	3.00	l/m	l/m	6.13%
Sensor Compo	nent Leak Test	t		Conditio	n		Status	s pass	
Sensor Compo	nent Filter Azin	nuth		Conditio	n 360 deg		Status	s pass	
Sensor Compo	nent Filter Dep	th		Conditio	n 1.5 cm		Status	s pass	
Sensor Compo	nent Filter Pos	ition		Conditio	Good		Status	s pass	
Sensor Compo	ment Moisture I	Present		Conditio	n No moisture pr	esent	Status	s pass	
Sensor Compo	nent Rotomete	r Condition		Conditio	Clean and dry		Status	s pass	
Sensor Compo	onent System M	lemo		Conditio	n		Status	pass	
Sensor Compo	nent Tubing Co	ondition		Conditio	Good		Status	pass	
Sensor Compo	nent Filter Dist	ance		Conditio	n 5.5 cm		Status	s pass	

Ozone Data Form

Mfg	S	erial Number Ta	Site	Te	chnician		Site Visi	t Date	Parame	eter	Owner I	D
ThermoElec	tron Inc	1030244796	CNT169	Er	ic Hebert	:	05/14/20	013	Ozone		000682	
Slope: [Intercept [CorrCoff [pe: 0.95862 Slope: 0.0000 ercept 0.26392 Intercept 0.0000 rrCoff 0.999999 CorrCoff 0.0000			0 Mfg 0 Serial Number		ThermoE 5171121 01111	ThermoElectron Inc P: 517112175 T1 01111 111		er Desc. O	cone zone primary	/ stan	
DAS 1:		DAS 2:			Slope			0 9972	0 Into	recont	0.18	128
A Avg % D) iff: A Ma	x % Di A Avg %	6Dif A Max 9	% Di	Slope			0.3372		rcept	0.10	420
3.5	5%	4.1%			Cert Da	ite		1/2/201	3 Cori	Coff	1.00	1000
UseDesc	cription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	Unit:	PctDif	ference:	
prim	nary	1	0.41	0.2	22	0.	32	ppb				
prim	nary	2	29.72	29.	61	28.	.66	ppb			-3.21%	
prim	nary	3	50.00	49.	95	48.	.32	ppb			-3.26%	
prim	nary	4	80.25	80.	29	77.	.42	ppb			-3.57%	
prim	nary	5	110.20	110	.32	105	.80	ppb			-4.10%	
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 Clean	1			Status	pass		7
Sensor Co	omponent	Line Loss		Conditio	n Not te	ested			Status	pass		7
Sensor Co	omponent	Offset		Conditio	0.3				Status	pass		
Sensor Co	omponent	Span		Conditio	1 012				Status	pass		
Sensor Co				Conditio		/U-7			Status	pass		
Sensor Co	omponent			Conditio)n 99.0 r				Status	pass		
Sensor Co	omponent	System Memo		Conditio	on See c	omments			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 0.51 l	pm			Status	pass		
Sensor Co	omponent	Cell A Tmp.		Conditio	on 40.9 (0			Status	Fail		
Sensor Co	omponent	Cell A Pressure		Conditio	on 502 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 98.9 k	κHz			Status	pass		
Sensor Co	omponent	Cell A Flow		Conditio	on 0.52 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		

Temperature Data Form

Mfg		Serial Nun	ıber Ta	Site		Tecł	nnician	Site Visit Date	e Param	eter	Owner ID	
RM Young		illegible		CNT169		Eric	Hebert	05/14/2013	Tempe	rature	06559	
						I	Mfg	Extech	Pa	arameter Te	mperature	
						S	Serial Number	H232679	Т	fer Desc. RT	D	
						1	lfer ID	01228				
DAS 1:			DAS 2:			5	Slope	1.007	32 Inte	ercept	-0.1238	90
Abs Avg Err	Abs	Max Er	Abs Av	g Err Abs	Max Er	(Cert Date	1/12/20	13 Cor	rCoff	1.0000	0
0.10		0.17]						
UseDesc.:		Test type:	Inj	outTmpRaw	InputTm	oCori	r.: OutputTmpS	Signal: OutputS	ignalEng:	OSE Unit:	Difference:	
primary	Temp	Low Range	•	-0.13	-0.0	1	0.000	-().1	С	-0.05	
primary	Temp	Mid Range		28.44	28.3	6	0.000	2	3.4	C	0.07	
primary	Temp	High Rang	e	44.20	44.0	0	0.000	4.	4.2	С	0.17	
Sensor Com	ponen	t Shield			Cond	lition	Clean		Status	pass		
Sensor Com	ponen	t Blower S	tatus Swi	itch	Cond	lition	N/A		Status	pass		
Sensor Com	ponen	t Blower			Cond	lition	N/A		Status	pass		
Sensor Com	ponen	t System N	lemo		Cond	lition	ı		Status	pass		

Infrastructure Data For

Site ID	CNT169	Technician Eric Hebe	ert Site Visit Date 05/14/2013
Shelter 1	Make	Shelter Model	Shelter Size
Ekto		8810 (s/n 2149-19)	640 cuft

Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Sample Tower Type	Condition	Туре В	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	Conduit	Condition	N/A	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	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	CNT169	Eric Hebert	05/14/2013	Shelter Temperatu	renone
DAS 1:	DAS 2:		Mfg	Extech	ParameterS	helter Temperatur
Abs Avg ErrA0.69	Abs Max Er Abs Avg 0.99	Err Abs Max Er	Serial Number	H232679	Tfer Desc.	TD
			Tfer ID	01228		
			Slope	1.0073	2 Intercept	-0.12380
			Cert Date	1/12/201	3 CorrCoff	1.00000

UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	23.39	23.34	0.000	24.3	С	0.99
primary	Temp Mid Range	24.35	24.30	0.000	24.9	С	0.55
primary	Temp Mid Range	24.64	24.58	0.000	25.1	С	0.52

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem			
Ozone	CNT169	Eric Hebert	05/14/2013	Cell A Tmp.	ThermoElectron	3483					
his analyzer diagnostic check is outside the manufacturer's recommended value.											

Field Systems Comments

1 Parameter: DasComments

The sample tower has been replaced and the met tower removed since the previous site audit visit.

2 Parameter: SiteOpsProcedures

The ozone inlet filter is changed once each month and the ozone sample line is leak tested every two weeks.

3 Parameter: ShelterCleanNotes

The shelter is dirty. Some floor tiles have been repaired since the previous audit visit.
Site ID CNT169	Technician Eric Hebert	Site Visit Date 05/	14/2013
Site Sponsor (agency)	EPA	USGS Map	Centennial
Operating Group	Forest Service	Map Scale	
AQS#	56-001-9991	Map Date	
Meteorological Type	R.M. Young		
Air Pollutant Analyzer	Ozone	QAPP Latitude	41.3722
Deposition Measurement	dry, wet	QAPP Longitude	-106.2422
Land Use	woodland - evergreen	QAPP Elevation Meters	3178
Terrain	complex	QAPP Declination	10.9
Conforms to MLM	Marginally	QAPP Declination Date	12/28/2004
Site Telephone	(307) 742-7229	Audit Latitude	41.36453
Site Address 1	Brooklyn Lake Guard Station	Audit Longitude	-106.2400
Site Address 2	Medicine Bow National Forest	Audit Elevation	317
County	Albany	Audit Declination	9.5
City, State	Centennial, WY	Present	
Zip Code	82055	Fire Extinguisher 🔽	No inspection date
Time Zone	Mountain	First Aid Kit	
Primary Operator		Safety Glasses	
Primary Op. Phone #		Safety Hard Hat	
Primary Op. E-mail		Climbing Belt	
Backup Operator		Security Fence	
Backup Op. Phone #		Secure Shelter	
Backup Op. E-mail		Stable Entry Step 🗹	
Shelter Working Room	Make Ekto	Iodel 8810 (s/n 2149-19)	Shelter Size 640 cuft
Shelter Clean	Notes The shelter is dirty. Some flo	or tiles have been repaired sind	ce the previous audit visit.
Driving Directions Turn miles 200 n	Laramie take route 130 west to Centenn right near the summit onto a dirt road at to Little Brooklyn Lake. There will be a s neters up the hill past the chapel to the s	ial. Continue through town and the sign for Brooklyn Lake Cam small chapel on the right. Park ite.	d into the Medicine Bow National Forest. pground. Continue approximately 1.5 at the chapel and walk approximately

FOR SALES

Field Systems Data Form

CNT169

F-02058-1500-S2-rev001

Site ID

Technician Eric Hebert

Site Visit Date 05/14/2013

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

Siting Distances OK

Siting Criteria Comment

Field Systems Data Form					F-02058-1500-S3-rev00				
Site	D	CNT169	Technician	Eric Hebert	Site Visit Date 05/14/2013				
1	Are wi being i	nd speed and dir nfluenced by obs	ection sensors sited so tructions?	as to avoid	N/A				
2	Are wi (i.e. wi horizon	nd sensors moun nd sensors should ntally extended b	ted so as to minimize t d be mounted atop the oom >2x the max dian	ower effects? tower or on a neter of the	N/A				
3	Are the	e tower and sense	ors plumb?		N/A				
4	Are the avoid r	e temperature sh adiated heat sou	ields pointed north or rces such as buildings	positioned to walls, etc?					
5	Are ter conditi surface standir	nperature and R ons? (i.e. ground e and not steeply 1g water should I	H sensors sited to avoid below sensors should sloped. Ridges, hollow be avoided)	id unnatural be natural 's, and areas of					
6	Is the s	olar radiation se	nsor plumb?		N/A				
7	Is it sit light?	ed to avoid shadi	ing, or any artificial or	reflected	N/A				
8	Is the r	ain gauge plumb	0?		N/A				
9	Is it sit towers	ed to avoid shelto , etc?	ering effects from buil	dings, trees,	N/A				
10	Is the s facing	surface wetness so north?	ensor sited with the gr	id surface	N/A				
11	Is it in	clined approxim	ately 30 degrees?		N/A				
Dre	vide en	v additional ovul	anation (nhotograph a	n skotah if nasas	l				

a la compañía	d Systems Da	ta Form		F-0 2	2058-1500-S4-rev001
Site I	D CNT169	Technician Eric Hebert	29.02	Site Visit Date 05/14/201	3
					Sector Sector
1 I c	Do all the meterologica condition, and well ma	l sensors appear to be intact, in good intained?			
2 A r	Are all the meteorologi reporting data?	cal sensors operational online, and			
3 A	Are the shields for the	temperature and RH sensors clean?			
4 A	Are the aspirated moto	ors working?		N/A	
5 I.	s the solar radiation so cratches?	ensor's lens clean and free of		N/A	
6 I	s the surface wetness s	sensor grid clean and undamaged?		N/A	
7 A c	Are the sensor signal a condition, and well ma	nd power cables intact, in good intained?			
8 A fi	Are the sensor signal a rom the elements and	nd power cable connections protected well maintained?			
Para	meter	Manufacturer Model		S/N	Client ID
Temp	perature	RM Young 41342	<u></u>	illegible	06559

Fie	eld Systems Data Form		F-02058-1500-S5-rev001
Site	ID CNT169 Technician Eric Hebert		Site Visit Date 05/14/2013
	Siting Criteria: Are the pollutant analyzers and deposition eq	<u>uip</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?		
	Pollutant analyzers and deposition equipment operations and	l 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?		
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
-		15.578	

Parameter	Manufacturer	Model	S/N	Client ID	
MFC power supply	MACTEC	none	none	05031	
Ozone	ThermoElectron Inc	49i A1NAA	1030244796	000682	
Filter pack flow pump	Thomas	107CAB18	1192001900	02753	
Zero air pump	Werther International	P 70/4	000836220	06925	
Sample Tower	Aluma Tower	В	unknown	000179	

Fie	eld Sy	stems Data Fo	orm			F-02058-1500-S6-rev001					01
Site	ID	CNT169	Technician	Eric Hebert	29129	Site Visit Date	05/14/2013]. : :		
	DAS, se	nsor translators, and j	peripheral equi	pment operation	<u>ns ai</u>	<u>nd maintenance</u>					
1	Do the I well ma	DAS instruments appe intained?	ar to be in good	l condition and							
2	Are all t modem,	he components of the backup, etc)	DAS operation	al? (printers,							
3	Do the a lightnin	nalyzer and sensor sig g protection circuitry	gnal leads pass (?	through		Met sensors only					and a local
4	Are the well ma	signal connections pro intained?	otected from the	e weather and							
5	Are the	signal leads connected	to the correct	DAS channel?							12.000
6	Are the grounde	DAS, sensor translato ed?	rs, and shelter	properly							
7	Does the	e instrument shelter h	ave a stable pov	ver source?							
8	Is the in	strument shelter temp	erature control	lled?							1000
9	Is the m	et tower stable and gr	ounded?			Stable	Gro	ounded			
10	Is the sa	mple tower stable and	l grounded?								
11	Tower c	comments?									
							A REAL PROPERTY AND				Concession of the

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D520	unknown	000241
DAS	Campbell	CR3000	2515	000417
Modem	Raven	V4221-V	0844349098	06600

The sample tower has been replaced and the met tower removed since the previous site audit visit.

Field Systems Data	Fo	rm	l			F-02	2058-	1500-S7-rev001
Site ID CNT169		Te	chnician	Eric Hebert	Site Visit Date	05/14/2013	3	
Documentation								
Decide the baselines								
Does the site have the requir	ea m	<u>istru</u>	ment and	equipment	<u>manuais:</u>	Ver	No	NUA
Wind speed sensor					Data logger			
Wind direction sensor					Data logger			
Temperature sensor				S	Strip chart recorder			
Relative humidity sensor					Computer			
Solar radiation sensor		[N	Iodem			
Surface wetness sensor				I see all	Printer			
Wind sensor translator				7	Cero air pump			
Temperature translator				I	Filter flow pump			
Humidity sensor translator				S	Surge protector			
Solar radiation translator				J	JPS			
Tipping bucket rain gauge				I	Lightning protection device			
Ozone analyzer				5	Shelter heater			
Filter pack flow controller				5	Shelter air conditioner			
Filter pack MFC power supply								
Does the site have the requ	ired a	and	most rece	nt QC docur	nents and report forms?			
	Pre	sent				Curre	ent	
Station Log								
SSRF								
Site Ops Manual								
HASP								
Field Ops Manual			July 199	90				
Calibration Reports								
Ozone z/s/p Control Charts								and the second second
Preventive maintenance schedu	d							
1 Is the station log properly	comj	plete	d during o	every site vis	sit? 🔽			
2 Are the Site Status Report current?	For	ms b	eing comp	oleted and				
3 Are the chain-of-custody f sample transfer to and fro	orms m lal	s pro b?	perly used	l to docume	nt 🔽			
4 Are ozone z/s/p control cha current?	arts p	prop	erly comp	leted and	Control charts not us	ed		
							Server Server	
Provide any additional explana natural or man-made, that may	tion affe	(pho ect th	tograph o e monitor	r sketch if n ring parame	ecessary) regarding condition ters:	ons listed	above,	or any other features,

Field	Systems Data	ı Form	F-02058	-1500-S8-rev001	
Site ID	CNT169	Technician Eric Heb	pert	Site Visit Date 05/14/2013	
1 Hi co 2 Hi tr	te operation procedury as the site operator att urse? If yes, when and as the backup operato aining course? If yes, y	<u>es</u> ended a formal CASTNET t l who instructed? r attended a formal CASTNF when and who instructed?	raining 🗆 🏾		
3 Is sch	the site visited regular redule?	ly on the required Tuesday			
4 Ar flo	e the standard CASTN llowed by the site oper	NET operational procedures ator?	being		
5 Is the	the site operator(s) known of the site operator (s) known of the site activities of the site activities of the site activities of the site	owledgeable of, and able to p s? (including documentation	erform 🗹		

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

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

SSRF, call-in

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

~

The ozone inlet filter is changed once each month and the ozone sample line is leak tested every two weeks.

Fi	Field Systems Data Form						F-02058-15	00-S9-rev001
Site	e ID	CNT169 Te	chni	cian Eric Hebert		Site Visit Date	05/14/2013	
	Site ope	eration procedures						
1	Is the fi	lter pack being changed eve	ry Ti	uesday as scheduled		filter changed after	noons, 80% of the time	
2	Are the Site Status Report Forms being completed and filed correctly?							
3	3 Are data downloads and backups being performed as scheduled?					No longer required		
4	Are gen	eral observations being mac	le an	d recorded? How?		SSRF, logbook		
5	5 Are site supplies on-hand and replenished in a timely fashion?							
6	Are san	nple flow rates recorded? Ho	ow?			SSRF, call-in		
7	Are san fashion	nples sent to the lab on a reg ?	ular	schedule in a timely	✓			
8	Are filt and shi	ers protected from contamin pping? How?	atio	n during handling		One set of gloves only		
9	Are the operation	site conditions reported reg ons manager or staff?	ularl	y to the field				
QC	Check P	erformed		Frequency			Compliant	
N	Aulti-poi	nt MFC Calibrations		Semiannually				
F	Flow Syst	em Leak Checks		Weekly				
F	Filter Pac	k Inspection						
F	Flow Rate Setting Checks							
1	Visual Check of Flow Rate Rotometer Veekly							
I	In-line Filter Inspection/Replacement Semiannually							
S	Sample Line Check for Dirt/Water Weekly				at the second			
Prov natu	vide any a ral or ma	additional explanation (phot an-made, that may affect the	ogra e moi	ph or sketch if neces nitoring parameters:	sary	y) regarding condi	tions listed above, or a	ny other features,

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
YEL	408-Eric H	ebert-06/06/2013				
1	6/6/2013	Computer	Gateway	none	Solo	2500251339
2	6/6/2013	DAS	Environmental Sys Corp	90647	8816	2560
3	6/6/2013	Elevation	Elevation	None	1	None
4	6/6/2013	F460 translator	Climatronics	none	100163	686
5	6/6/2013	Filter pack flow pump	Thomas	none	107CA18	099800009748
6	6/6/2013	flow rate	Tylan	none	FC280SAV	AW9710138
7	6/6/2013	Infrastructure	Infrastructure	none	none	none
8	6/6/2013	Mainframe	Climatronics	none	100081	1380
9	6/6/2013	Mainframe power supply	Climatronics	none	101074	688
10	6/6/2013	Met tower	Climatronics	01362	14 inch taper	illegible
11	6/6/2013	MFC power supply	Tylan	03687	RO-32	FP9403014
12	6/6/2013	Modem	US Robotics	none	56k fax modem	unknown
13	6/6/2013	Ozone	ThermoElectron Inc	90714	49C	49C-66828-354
14	6/6/2013	Ozone Standard	ThermoElectron Inc	none	49C	0425208056
15	6/6/2013	Precipitation	Climatronics	02531	100508-2	illegible
16	6/6/2013	Printer	Hewlett Packard	none	840C	unknown
17	6/6/2013	Relative Humidity	Rotronic	none	MP 601A	75277
18	6/6/2013	Sample Tower	Aluma Tower	illegible	В	none
19	6/6/2013	Shelter Temperature	ARS	none	none	none
20	6/6/2013	Shield (10 meter)	Climatronics	01050	100325	1235
21	6/6/2013	Siting Criteria	Siting Criteria	None	1	None
22	6/6/2013	Solar Radiation	Licor	none	LI-200	PY18097
23	6/6/2013	Solar Radiation Translator	Climatronics	none	100144	381
24	6/6/2013	Temperature	Climatronics	ARS100	100093	none
25	6/6/2013	Temperature Translator	Climatronics	03626	100088-2	396
26	6/6/2013	Wind Direction	Climatronics	90876	100076	222
27	6/6/2013	Wind Speed	Climatronics	90881	100075	1697
28	6/6/2013	Zero air pump	Werther International	none	PC70/4	531393

DAS Data Form

0.52 DAS Time Max Error:

Mfg		Serial Nu	mber S	ite	Technician	Site Visit Date	Parameter	Use Desc.
Environment	al Sys	2560		YEL408	Eric Hebert	06/06/2013	DAS	Primary
Das Date: Das Time: Das Day:	6 /6 9	5 /2013 1:55:00 157	Audit Dat Audit Tin Audit Day	te 6 /6 /2013 ne 9:55:31 y 157	Mfg Serial Number	Datel 4000392	Parameter Tfer Desc.	DAS Source generator (D
Low Chann	el:		High Chai	mel:	Tfer ID	01321		
Avg Diff:	Ma	x Diff:	Avg Diff:	Max Diff:	Slope	1.0000	0 Intercept	0.00000
0.000	01	0.0002	0.0	0.0005	5 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	1/27/201	3 CorrCoff	1.00000
Channel	Inp	out D	VM Output	DAS Output	InputUnit	OutputUnit	Difference	
2	2 (0.0000	0.000	0.00	00 V	V	0.0000	
2	2 ().1000	0.100	0 0.09	99 V	V	-0.0001	
2	2 ().3000	0.300	0 0.29	98 V	V	-0.0002	
2	2 ().5000	0.500	0 0.50	00 V	V	0.0000	
2	2 ().7000	0.700	0.70	01 V	V	0.0000	
2	2 ().9000	0.900	0.90	01 V	V	0.0000	
2	2 1	0000.	1.000	1 1.00	00 V	V	-0.0001	
16	5 (0.0000	0.000	0.00	00 V	V	0.0000	
16	5 ().1000	0.100	0 0.10	00 V	V	0.0000	
16	5 ().3000	0.300	0 0.30	02 V	V	0.0002	
16	5 (0.5000	0.500	0 0.50	03 V	V	0.0003	
16	5 (0.7000	0.700	0 0.70	04 V	V	0.0004	
16	5 ().9000	0.900	0.90	05 V	V	0.0004	
16	5 1	1.0000	1.000	1 1.00	06 V	V	0.0005	

Flow Data Form

Mfg	Ifg Serial Number Ta Site		Тес	chnician	Site Visit Date Para		meter Owner ID		
Tylan	AW971013	38	YEL408	Eri	c Hebert	06/06/2013	3 flow ra	te	none
Mfg	Tylan				Mfg	BIOS	Р	arameter Flo	ow Rate
SN/Owner ID	FP9403014	03687			Serial Number	122974	Т	fer Desc. Blo	OS 220-H
Parameter	MFC power sup	oply			Tfer ID	01416			
					Slope	1.	00000 Inte	ercept	0.00000
					Cert Date	1/8	8/2013 Col	rrCoff	1.00000
DAS 1:		DAS 2:		L	Cal Factor Z	ero	0	.4	
A Avg % Diff:	A Max % Di	A Avg %	Dif A Max	x % Di	Cal Factor F	ull Scale	5	.8	
0.49%	0.87%				Rotometer R	eading:	3	.6	
UseDescription:	Test type:	Input l/m:	Input STP:	MfcDisp.:	OutputSignal:	Output S E:	InputUnit:	OutputSignal	PctDifference:
primary	pump off	0.000	0.000	-0.35	-0.3250	0.05	l/m	l/m	
primary	leak check	0.000	0.000	-0.35	-0.3250	0.05	l/m	l/m	
primary	test pt 1	0.000	2.999	2.40	2.4130	3.00	l/m	l/m	0.05%
primary	test pt 2	0.000	3.016	2.40	2.4130	3.00	l/m	l/m	-0.54%
primary	test pt 3	0.000	3.036	2.40	2.4130	3.01	l/m	l/m	-0.87%
Sensor Compo	nent Leak Tes	t		Conditio	n		Status	pass	
Sensor Compo	nent Filter Azi	muth		Conditio	<mark>n</mark> 90 deg		Status	pass	
Sensor Compo	nent Filter Dep	oth		Conditio	n - 1.0 cm		Status	Fail	
Sensor Compo	nent Filter Pos	sition		Conditio	n Poor		Status	Fail	
Sensor Compo	Moisture	Present		Conditio	n No moisture pr	resent	Status	pass	
Sensor Compo	Sensor Component Rotometer Condition		1	Conditio	n Clean and dry		Status	pass	
Sensor Compo	onent System N	lemo		Conditio	n See comments	3	Status	pass	
Sensor Component Tubing Condition		Conditio	n Good		Status	pass			
Sensor Component Filter Distance			Conditio	n 5.5 cm		Status	pass		

Ozone Data Form

Mfg	Serial Number Ta Site Technician			Site Vis	it Date	Parame	eter Owner ID		D		
ThermoElectron Inc	49C-66828-354	YEL408	Er	ic Hebert		06/06/2	013	Ozone		90714	
Slope: Intercept CorrCoff	1.02906 Slope: 0.33928 Intercept 0.99998 CorrCoff	0.0000	0	Mfg Serial N	umber	Thermol 5171121	Electron 75	Inc Pa	rameter ozone		' stan
DAS 1: A Avg % Diff: A N 2.0%	DAS 2: fax % Di A Avg % 2.8%	%Dif A Max	% Di	Slope Cert Da	te		0.9972 1/2/201	0 Inter 3 Corr	·cept ·Coff	0.18	428 000
UseDescription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	e Unit:	PctDif	ference:	
primary	1	0.40	0.2	21	0.	19	ppb				
primary	2	30.41	30.	.31	30.	.48	ppb			0.56%	
primary	3	50.00	49.	.95	50.	.86	ppb			1.82%	
primary	4	79.43	79.	79.46 81.67		.67 ppb			2.78%		
primary	5	110.00	110).12	113	.00	ppb			2.62%	
Sensor Compone	nt Cell B Noise		Conditio	on 0.7 pp	b			Status	pass		
Sensor Compone	nt Cell B Tmp.		Condition					Status	pass		
Sensor Compone	nt Fullscale Voltage		Conditio	on 1.000	3	Status P			pass		
Sensor Compone	nt Inlet Filter Condition	ิงท	Conditio	on Clean				Status	pass		
Sensor Compone	nt Line Loss		Conditio	on Not te	sted			Status	pass		
Sensor Compone	nt Offset		Conditio	on 1.6				Status	pass		
Sensor Compone	nt Span		Conditio	on 1.045				Status	pass		
Sensor Compone	nt Cell B Freq.		Conditio	on 83.0 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 0.67 lj	om			Status	pass		
Sensor Compone	nt Cell A Tmp.		Conditio	on 34.7 ()			Status	pass		
Sensor Compone	nt Cell A Pressure		Conditio	on 561 m	imHg			Status	pass		
Sensor Compone	nt Cell A Noise		Conditio	on 0.8 pp	b			Status	pass		
Sensor Compone	nt Cell A Freq.		Conditio	on 107 kl	Hz			Status	pass		
Sensor Compone	Cell A Flow		Conditio	on 0.66 l	om			Status	pass		
Sensor Compone	nt Battery Backup		Conditio	on N/A				Status	pass		
Sensor Component Zero Voltage			Condition 0.0005			Status			IS pass		

Wind Speed Data Form

Mfg	Serial Num	nber Ta Site	Tec	hnician	Site Visit Date	Parameter	Owner ID
Climatronics	1697	YEL408	3 Eric	c Hebert	06/06/2013	Wind Speed	90881
Mfg SN/Owner ID		none		Mfg Serial Number	RM Young	Paramete Tfer Des	er wind speed
Parameter	F460 translator			Tfer ID	01262		
Prop or Cups SN	1968		:	Slope	1.0000	00 Intercept	0.00000
Prop or Cups To Prop Correction	Fact N/A	0.3 to	0.3	Cert Date	1/13/201	10 CorrCoff	1.00000
•]	Mfg	RM Young	Paramet	er wind speed
			:	Serial Number		Tfer Des	c. wind speed motor (I
				Tfer ID	01261		
			:	Slope	1.0000	00 Intercept	0.00000
				Cert Date	1/13/20	10 CorrCoff	1.00000
D	AS 1:	D	DAS 2:				
L	ow Range	High Range L	ow Range Hi	igh Range			
Abs Avg Err	0.09	1.09%					
Abs Max Er	0.13	1.64%					
UseDescription:	InputDevice	: Input RPM:	Input m/s:	Output V:	DAS m/s:	Diff/ %Diff:	Difference:
primary	none	0	0.20	0.0000	0.3		0.13
primary	01261	50	1.40	0.0000	1.5		0.06
primary	01261	100	2.57	0.0000	2.6		0.06
primary	01261	170	4.22	0.0000	4.3		0.09
primary	01261	250	6.10	0.0000	6.2	1.64%	
primary	01262	500	11.97	0.0000	12.1	1.17%	
primary	01262	800	19.02	0.0000	19.2	0.79%	
primary	01262	2000	47.22	0.0000	47.6	0.74%	
Sensor Compo	nent System M	/lemo	Condition	n See comment	ts	Status pass	

1 2						i
Sensor Component	System Memo	Condition	See comments	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	Good	Status	pass	٦

Wind Direction Data Form

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Climatronics	222	YEL408	Eric Hebert	06/06/2013	Wind Direction	90876
Mfg	Climatronics		Mfg	Ushikata	Parameter wir	nd direction
SN/Owner ID	686 none		Serial Number	190037	Tfer Desc. tra	nsit
Parameter	F460 translator		Tfer ID	01265		
Vane SN: 11	49 C. A	. Align. deg. true:	Slope	1.0000	0 Intercept	0.00000
VaneTorque	8 to 8	180	Cert Date	1/4/201	1 CorrCoff	1.00000
			Mfg	RM Young	Parameter wir	nd direction
			Serial Number		Tfer Desc. wir	nd direction wheel
			Tfer ID	01266		

	DAS 1:			DAS 2	:					
	Orientation	Line	earity:	Orient	ation	Linearity:				
Abs Avg Err	9.5		1.3							
Abs Max Er	13		5							
UseDescriptio	on: TferII):	Input Rav	v: Li	nearity	Output V:	Output Deg.:	Difference:	Change:	Error:
primary	0126	5	0		\checkmark	0.0000	352	8	45	0
primary	0126	5	45		\checkmark	0.0000	36	9	44	-1
primary	0126	5	90		\checkmark	0.0000	80	10	44	-1
primary	0126	5	135		\checkmark	0.0000	125	10	45	0
primary	0126	5	180		\checkmark	0.0000	168	12	43	-2
primary	0126	5	225		\checkmark	0.0000	218	7	50	5
primary	0126	5	270		\checkmark	0.0000	263	7	45	0
primary	0126	5	315		\checkmark	0.0000	307	8	44	-1
primary	0126	5	90			0.0000	80	10		10
primary	0126	5	136			0.0000	123	13		13
primary	0126	5	180			0.0000	173	7		7
primary	0126	5	360			0.0000	352	8		8
Sensor Com	ponent Mast				Cond	ition Good		Status	pass	
Sensor Com	ponent Condit	ion			Cond	ition Good		Status	pass	
Sensor Com	ponent Senso	r Heate	r		Cond	ition Functioni	ng	Status	pass	
Sensor Com	ponent Senso	r Plumt)		Cond	ition Plumb		Status	pass	
Sensor Com	ponent Torque)			Cond	ition Good		Status	pass	
Sensor Com	ponent Vane	Conditio	on		Cond	ition Good		Status	pass	
Sensor Com	ponent Syster	n Memo	C		Cond	ition		Status	pass	

Temperature Data Form

Mfg	Serial Number Ta Site Technician S		Site V	isit Date	Param	eter	Owner II)						
Climatronics		none		YEL408		E	ric ⊦	lebert	06/06	/2013	Temper	ature	ARS100	
Mfg	Clim	natronics					M	fg	Extech	1	Pa	rameter Te	mperature	
SN/Owner ID	SN/Owner ID 396 03626			6			Se	rial Number	H2326	579	Tf	er Desc. RT	D	
Parameter	Ten	nperature Ti	anslator	•			Tf	er ID	01228					
DAS 1:			DAS 2:				Sl	ope		1.0073	2 Inte	rcept	-0.123	380
Abs Avg Err	Abs	Max Er	Abs Av	g Err Abs	Max	Er	Ce	ert Date		1/12/201	3 Cor	rCoff	1.000	000
0.05		0.11												
UseDesc.:		Test type:	In	putTmpRaw	Inpu	tTmpC	orr.:	OutputTmpS	ignal:	OutputSig	nalEng:	OSE Unit:	Difference:	
primary	Temp	Low Range	;	0.01		0.13		0.0000		0.2	2	С	0.11	
primary '	Тетр	Mid Range		24.00		23.95		0.0000		23.	9	С	-0.04	
primary '	Temp	High Range	e	49.56		49.32		0.0000		49.	3	С	-0.01	
Sensor Com	ponen	t Shield			0	Conditi	on	Clean			Status	pass]
Sensor Com	ponen	t Blower St	atus Sw	itch		Conditi	on	N/A			Status	pass]
Sensor Com	ponen	t Blower				Conditi	on	Functioning			Status	pass]
Sensor Com	Sensor Component System Memo				Conditi	on				Status	pass]	

Humidity Data Form

Mfg Serial Number Ta		mber Ta Si	te	Technician	echnician		isit Date Parai		meter	Owner ID
Rotronic	75277	Y	EL408	Eric Hebert		06/06/20	013	Relati	ive Humidity	none
				Mfg Serial Nu Tfer ID	ımber	Rotronic 124432 01225		; ;	Parameter Rel Tfer Desc. Hyg	ative Humidity
	DAS 1:		DAS 2:	Slope Cert Dat	e		1.00000 /29/201:	D In 3 Co	tercept prrCoff	0.00000
Abs Avg Err	Low Range 2.2	High Range	9	High Rang	e					
	Test type:	Device	Input RH·	GTL Raw:	RHC	orr · 1		lte	DAS % PH	Difference:
primary	RH Low Range	Hygroclip	32.8	32.8	32	.8	0.356	1	35.6	2.8
primary	RH Low Range	Hygroclip	52.9	52.9	52	.9	0.545	0	54.5	1.6
primary	RH High Range	Hygroclip	93.6	93.6	93	.6	0.945	0	94.5	0.9
Sensor Com	ponent System	Memo	Con	ndition				Statu	1s pass	
Sensor Com	ponent Blower		Con	dition Functio	ning			Statu	1s pass	
Sensor Com	ponent Blower S	Status Switch	Con	ndition N/A				Statu	is pass	
Sensor Com	ponent RH Filte	r	Con	dition Clean				Statu	1s pass	
Sensor Com	ponent Shield		Con	dition Clean				Statu	1s pass	

Solar Radiation Data Form

Mfg	Serial Numbe	r Ta Site	Те	echnician	Site Visit Date	Paramet	er Owner ID
Licor	PY18097	YEL408	E	ric Hebert	06/06/2013	Solar Rac	liation none
Mfg	Climatronics			Mfg	Eppley	Para	ameter solar radiation
SN/Owner ID	381 r	none		Serial Number	10765	Tfer	Desc. SR transfer translat
Parameter	Solar Radiation Tra	anslator		Tfer ID	01246		
DAS 1:	DA	NS 2:		Slope	1.0000	0 Interc	ept 0.00000
% Diff of Avg	%Diff of Max %	Diff of Avg %I	Diff of Max	Cert Date	1/6/201	0 CorrC	Coff 1.00000
				Mfg	Eppley	Para	ameter solar radiation
				Serial Number	34341F3	Tfer	Desc. SR transfer sensor
				Tfer ID	01245		
				Slope	1.0000	0 Interc	ept 0.00000
				Cert Date	12/16/201	0 CorrC	Coff 1.00000
1.4%	1.3%	0.0%	0.0%				
UseDescription:	Measure Date	MeasureTime	Tfer Corr	r: DAS w/r	n2: PctDiffe	erence:	
primary	6/6/2013	9:00	753	763		1.3%	
primary	6/6/2013	10:00	680	676		-0.6%	
primary	6/6/2013	11:00	688	689		0.1%	
primary	6/6/2013	12:00	229	740		0.7%	
primary	0/0/2013	13:00	338	309		9.2%	
Sensor Compo	onent Sensor Leve	· I	Conditi	on Level		Status P	ass
Sensor Compo	onent Sensor Clea	n	Conditio	on Clean		Status P	ass
Sensor Compo	Properly Site	d	Conditio	on Properly sited		Status P	ass
Sensor Compo	onent System Men	סו	Conditio	on		Status P	ass

Precipitation Data Form

Mfg Serial Number Ta Site			r	Technician			Site Visit Date Param			eter	Owner ID	
Climatronics	illegibl	e	YEL408		Eric	c Hebert		06/0	06/2013	Precipita	ation	02531
]	Mfg		PMF)	Pa	rameter	Precipitation
DAS 1:		DAS 2:			:	Serial Nun	nber	EW-	06134-50	Tf	er Desc.	250ml graduate
A Avg % Diff	f: A Max % I	Di A Avg %	Dif A I	Max % Di		Tfer ID		0125	50			
3.0%	4.0	0%							4 0000			0.00000
						Slope			1.0000	0 Inter	cept	0.00000
						Cert Date			9/5/200	5 Cori	Coff	1.00000
UsaDasa	Tast type:	TforVolumo	Itoration	TimoDorTi		Ea Ut.	DAS	ong:	Ea UtUnit:	OSE Un	it. Tfor I	nits:PotDifforence
primary	tin check	10 manual	1	2 sec	р.	1 00	DA5	$\frac{\text{eng.}}{10}$	mm	mm	ml	lints.FetDifference
primary	test 1	231.5	1	10 sec		5.00	5.2	20	mm	mm	ml	4.0%
primary	test 2	231.5	2	10 sec		5.00	5.	10	mm	mm	ml	2.0%
Sensor Com	ponent Syste	em Memo		Condi	itio	n See com	ments			Status	pass	
Sensor Com	ponent Sens	or Heater		Condi	lition Functioning					Status	pass	
Sensor Com	ponent Prop	erly Sited		Condi	itioı	n See com	ments			Status	pass	
Sensor Com	ponent Gau	ge Drain Scree	n	Condi	itioı	Not insta	lled			Status	Fail	
Sensor Com	ponent Leve	I		Condi	itio	n Level				Status	pass	
Sensor Component Gauge Clean			Condi	itio	n Clean				Status	pass		
Sensor Component Funnel Clean			Condi	itio	n Clean				Status	pass		
Sensor Com	Sensor Component Condition			Condi	lition Good				Status	pass		
Sensor Com	Sensor Component Gauge Screen				itio	n Installed				Status	pass	

Infrastructure Data For

Site ID	YEL408	Technician Eric Heb	ert Site Visit Date 06/06/2013
Shelter	Make	Shelter Model	Shelter Size
Ekto		8810 (s/n 2880-1)	640 cuft

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	Installed	Status	pass
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 Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ARS	none	YEL408	Eric Hebert	06/06/2013	Shelter Temperatur	e none
DAS 1:	DAS 2:		Mfg	Extech	Parameter S	helter Temperatur
Abs Avg ErrAbs1.68	Abs Avg Err Abs Max Er Abs Avg Err Abs Max Er 1.68 2.06 Image: Comparison of the second		Serial Number	H232679	Tfer Desc. R	TD
			Tfer ID	01228		
			Slope	1.0073	2 Intercept	-0.12380
			Cert Date	1/12/201	3 CorrCoff	1.00000

UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	23.14	23.09	0.000	24.7	С	1.61
primary	Temp Mid Range	23.44	23.39	0.000	24.8	С	1.36
primary	Temp Mid Range	22.63	22.59	0.000	24.7	С	2.06

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem			
Flow Rate	YEL408	Eric Hebert	06/06/2013	Filter Position	Tylan	1647					
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.											
Precipitation	YEL408	Eric Hebert	t 06/06/2013 Properly Si		Climatronics	3766		\checkmark			
Objects violate the 45 de	gree rule for the	e tipping bucket rain	n gage.								
Wind Speed	YEL408	Eric Hebert	06/06/2013	System Memo	Climatronics	2863					
The external heater that	The external heater that wraps around the sensor was found to be impeding the rotation of the sensor shaft. This condition impacts data accuracy. The										

condition was corrected during the sensor audit.

Field Systems Comments

1 Parameter: SiteOpsProcComm

Gloves are no longer used to handle the filter pack.

2 Parameter: SitingCriteriaCom

The site is located at the edge of a tree line. The trees close to the inlet are approximately 5 meters tall. Trees taller than 10 meters are 15 meters from the inlet.

3 Parameter: ShelterCleanNotes

The shelter is organized and well maintained.

4 Parameter: PollAnalyzerCom

The shelter and sample tower are located at the edge of the tree line and mountain slope. Small trees are encroaching on the sample tower. Taller trees are 10 to 15 meters from the sample tower.

Site ID YEL408	Technician Eric Hebert	Site Visit Date 06/	06/2013
Site Sponsor (agency)	NPS	USGS Map	Lake
Operating Group	NPS	Map Scale	
	56-039-1011	Map Date	
Ain Dollutont Analyzon			11 5597
Air Ponutant Analyzer			110 4006
Deposition Measurement			-110.4000
Land Use	woodland - evergreen	QAPP Elevation Meters	2400
Terrain	complex	QAPP Declination	
Conforms to MLM	Marginally	QAPP Declination Date	
Site Telephone	(307) 242-2410	Audit Latitude	44.565356
Site Address 1	Lake Ranger Station	Audit Longitude	-110.400338
Site Address 2	route 14	Audit Elevation	2430
County	Teton	Audit Declination	11.9
City, State	Yellowstone National Park, WY	Present	
Zip Code	82190	Fire Extinguisher	
Time Zone	Mountain	First Aid Kit	
Primary Operator		Safety Glasses	
Primary Op. Phone #		Safety Hard Hat	
Primary Op. E-mail		Climbing Belt	
Backup Operator		Security Fence	
Backup Op. Phone #		Secure Shelter	
Backup Op. E-mail		Stable Entry Step 🗹	
Shelter Working Room ✓	Make Ekto N	Iodel 8810 (s/n 2880-1)	Shelter Size 640 cuft
Shelter Clean	Notes The shelter is organized and	well maintained.	
Site OK	Notes		
Driving Directions From	Jackson take route 191 / 89 north to Ye	llowstone National Park. At Th	umb Junction take 14 east around

Field Systems Data Form

YEL408

F-02058-1500-S2-rev001

Site ID

Technician Eric Hebert

Site Visit Date 06/06/2013

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		
Major industrial complex	10 to 20 km		
City > 50,000 population	40 km		
City 10,000 to 50,000 population	10 km]
City 1,000 to 10,000 population	5 km		
Major highway, airport or rail yard	2 km		
Secondary road, heavily traveled	500 m		
Secondary road, lightly traveled	200 m		
Feedlot operations	500 m	8	
Intensive agricultural ops (including aerial spraying)	500 m]
Limited agricultural operations	200 m		
Large parking lot	200 m		
Small parking lot	100 m		
Tree line	50 m	15 m	
Obstacles to wind	10 times obstacle height		

Siting Distances OK

Siting Criteria Comment

The site is located at the edge of a tree line. The trees close to the inlet are approximately 5 meters tall. Trees taller than 10 meters are 15 meters from the inlet.

Fie	eld Sy	stems Data Fo	rm			F-02058-1500-S3-rev001					
Site	e ID	YEL408	Technician	Eric Hebert		Site Visit Date 06/06/2013					
1	Are wir being ir	nd speed and direction ifluenced by obstruction	sensors sited so ns?	as to avoid							
2 Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)											
3	Are the	tower and sensors plus	nb?								
4 Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?											
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)										
6	Is the so	olar radiation sensor p	umb?								
7	Is it site light?	ed to avoid shading, or	any artificial o	r reflected							
8	Is the ra	ain gauge plumb?									
9	Is it site towers,	ed to avoid sheltering e etc?	fects from bui	ldings, trees,		45 degree rule					
10	Is the su facing r	urface wetness sensor s north?	ited with the g	rid surface		N/A					
11	Is it in	clined approximately 3) degrees?			N/A					
					12016						

Field Sy	stems Data	Form		F-02058-1500-S4-rev001				
Site ID	YEL408	Technician	Eric Hebert		Site Visit Date 06/06/2	2013		
1 Do all t	he meterological sei	nsors appear to be	intact, in good					
conditio	on, and well maintai	ined?	, - 8					
2 Are all the meteorological sensors operational online, and reporting data?								
3 Are the	shields for the temp	perature and RH s	ensors clean?					
4 Are the	aspirated motors w	orking?						
5 Is the solar radiation sensor's lens clean and free of scratches?								
6 Is the s	urface wetness sense	or grid clean and u	ndamaged?		/Α			
7 Are the condition	sensor signal and p on, and well maintai	ower cables intact, ined?	, in good					
8 Are the from th	sensor signal and p e elements and well	ower cable connec maintained?	tions protected					
Parameter		Manufacturer	Model		S/N	Client ID		
Met tower		Climatronics	14 inch tap	ber	illegible	01362		
Temperature		Climatronics	100093		none	ARS100		
Shield (10 m	eter)	Climatronics	100325		1235	01050		
Wind Direction	on	Climatronics	100076		222	90876		
Wind Speed		Climatronics	100075		1697	90881		
Solar Radiat	ion	Licor	LI-200		PY18097	none		
Relative Hur	nidity	Rotronic	MP 601A		75277	none		
Precipitation		Climatronics	100508-2	100000000	illegible	02531		

Fie	eld Sy	stems Data	a Form			F-02058-1500-S5-rev00					
Site	ID	YEL408	Technician	Eric Hebert	1222	Site Visit Date 06/06/2013					
	Siting C	riteria: Are the p	oollutant analyzers an	<mark>id deposition eq</mark>	<u>uipn</u>	nent sited in accordance with 40 CFR	<u>58, Appendix E</u>				
1	Do the s unrestri	ample inlets have cted airflow?	e at least a 270 degree	arc of							
2	Are the	sample inlets 3 -	15 meters above the g	ground?							
3	Are the and 20 r	sample inlets > 1 neters from trees	meter from any majo ?	or obstruction,		10 to 15 meters from trees					
	Pollutar	t analyzers and o	leposition equipment	operations and	mai	<u>intenance</u>					
1	Do the analyzers and equipment appear to be in good condition and well maintained?										
2	Are the reportin	analyzers and mo g data?	onitors operational, o	n-line, and							
3	Describ	e ozone sample tu	ıbe.			1/4 teflon by 12 meters					
4	Describ	e dry dep sample	tube.			3/8 teflon by 9 meters					
5	Are in-l indicate	ine filters used in location)	the ozone sample lin	e? (if yes		At inlet only					
6	Are sam	ple lines clean, fi tions?	ree of kinks, moisture	, and							
7	Is the ze	ro air supply des	iccant unsaturated?								
8	Are there moisture traps in the sample lines?					Flow line only					
9	Is there clean?	a rotometer in th	e dry deposition filte	r line, and is it		Clean and dry					
Par	ameter		Manufacturer	Model		S/N C	lient ID				

Parameter	Manufacturer	Model	S/N	Client ID	
Sample Tower	Aluma Tower	В	none	illegible	
Ozone	ThermoElectron Inc	49C	49C-66828-354	90714	
Filter pack flow pump	Thomas	107CA18	099800009748	none	
MFC power supply	Tylan	RO-32	FP9403014	03687	
Zero air pump	Werther International	PC70/4	531393	none	

The shelter and sample tower are located at the edge of the tree line and mountain slope. Small trees are encroaching on the sample tower. Taller trees are 10 to 15 meters from the sample tower.

Fie	eld Sy	stems Data Fo	orm			F-02058-1500-S6-rev001					
Site	ID	YEL408	Technician	Eric Hebert		Site Visi	it Date 0	6/06/2013			
	DAS, se	nsor translators, and j	peripheral equi	oment operatio	<u>ns an</u>	id maintena	<u>nce</u>				
1	Do the l well ma	DAS instruments appe intained?	ar to be in good	condition and							
2	Are all modem	the components of the , backup, etc)	al? (printers,								
3	Do the a lightnin	analyzer and sensor sig g protection circuitry?		Met sensors	only						
4	Are the signal connections protected from the weather and well maintained?										
5	Are the	signal leads connected	to the correct	DAS channel?							
6	Are the ground	DAS, sensor translato ed?	rs, and shelter j	properly							
7	Does th	e instrument shelter h	ave a stable pov	ver source?							
8	Is the in	strument shelter temp	erature control	led?							
9	Is the n	net tower stable and gr	ounded?			Stable		0	Frounded		
10	Is the sa	ample tower stable and	l grounded?								
11	Tower	comments?									

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Gateway	Solo	2500251339	none
DAS	Environmental Sys Corp	8816	2560	90647
F460 translator	Climatronics	100163	686	none
Mainframe	Climatronics	100081	1380	none
Mainframe power supply	Climatronics	101074	688	none
Modem	US Robotics	56k fax modem	unknown	none
Printer	Hewlett Packard	840C	unknown	none
Solar Radiation Translator	Climatronics	100144	381	none
Temperature Translator	Climatronics	100088-2	396	03626

Field Systems Data	F-02	058-	1500-S7-rev001				
Site ID YEL408	Tec	hnician Eric F	Hebert	Site Visit Date	06/06/2013		- Aller
Documentation							
Deep the site hore the require							
Does the site have the require	Vos No	$\frac{1 \text{ ent and equip}}{N/A}$	oment manuals		Vos	No	N/A
Wind speed sensor			Data log	ger	V		
Wind direction sensor			Data log	ger			
Temperature sensor			Strip cha	art recorder			
Relative humidity sensor			Comput	er			
Solar radiation sensor			Modem				
Surface wetness sensor			Printer				
Wind sensor translator			Zero air	pump			
Temperature translator			Filter flo	w pump			
Humidity sensor translator			Surge pr	otector			
Solar radiation translator			UPS				
Tipping bucket rain gauge			Lightnin	g protection device			
Ozone analyzer			Shelter h	leater			
Filter pack flow controller			Shelter a	ir conditioner	V		
Filter pack MFC power supply							
Does the site have the requi	red and m	lost recent QC	documents an	nd report forms?			
	Present				Curre	nt	
Station Log		DataView2					
SSRF							
Site Ops Manual		Jan 2006					
HASP							
Field Ops Manual							
Calibration Reports		Not current					
Ozone z/s/p Control Charts							
Preventive maintenance schedu			200364 NG NEEDY				
1 Is the station log properly of	completed	during every	site visit? 🔽	Dataview		20100.10	
2 Are the Site Status Report current?	Forms be	ng completed	and 🔽				
3 Are the chain-of-custody for sample transfer to and from	orms prop n lab?	erly used to do	ocument 🔽				
4 Are ozone z/s/p control cha current?	irts prope	rly completed a	and 🗌	Control charts not us	ed		
Provide any additional explanat natural or man-made, that may	tion (photo affect the	ograph or sket monitoring pa	tch if necessar; arameters:	y) regarding condition	ons listed :	above, o	or any other features,
						ana ana	

Fi	eld Sy	stems Dat	a Form			1993) 1993 - 1993 1994 - 1994	F-02058	8-1500-S8-rev001
Site	Site ID YEL408 Technician		Eric Hebert S		Site Visit Date	06/06/2013		
1	Site op Has the course	eration procedu e site operator at ? If yes, when an	<u>res</u> tended a formal CAS d who instructed?	TNET training	✓ [Frained by ARS on a	site	
2	2 Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?							
3	Is the si schedul	ite visited regular e?	rly on the required T	iesday	•			
4	Are the standard CASTNET operational procedures being flollowed by the site operator?				✓ [
5	Is the si the requ	ite operator(s) kr uired site activiti	nowledgeable of, and es? (including docum	able to perform entation)				
	Contraction of			a state of the second second second	1000			

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

OC Chook Donformod

QC Check Performed	Frequency	Compliant
Multipoint Calibrations	Semiannually	
Visual Inspections	Weekly	
Translator Zero/Span Tests (climatronics)	Weekly	
Manual Rain Gauge Test	Monthly	
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

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
Monthly and semiannually	
Daily	
Every 2 weeks	
Daily	
Alarm values only	
Every 2 weeks	
N/A	
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?
- Are the automatic and manual z/s/p checks monitored and 3 reported? If yes, how?

~ Dataview

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

~

~

Fie	eld Sy	stems Data Fo	orm				F-02058-1500-S9-rev001					
Site	ID	YEL408	Techni	cian	Eric Hebert		Site Visit Da	te	06/06/2013			
	Site oper	ration procedures										
1	Is the fil	ter pack being change	d every T	uesda	y as scheduled		Filter changed mo	orin	ings			
2	Are the correctly	Site Status Report For y?	ms being	comp	oleted and filed							
3	Are data downloads and backups being performed as scheduled?						No longer required					
4	Are general observations being made and recorded? How?						Dataview, SSRF					
5	Are site supplies on-hand and replenished in a timely fashion?											
6	6 Are sample flow rates recorded? How?					SSRF						
7	Are sam fashion?	ples sent to the lab on	a regular	sche	dule in a timely							
8	Are filte and ship	ers protected from com oping? How?	taminatio	n dur	ing handling							
9	Are the operatio	site conditions reporte ons manager or staff?	d regular	ly to 1	the field							
QC	Check Pe	erformed		Freq	luency				Compliant			
N	Iulti-poir	nt MFC Calibrations		Sem	iannually							
F	low Syste	em Leak Checks		Wee	kly							
F	ilter Pacl	k Inspection										
F	low Rate	Setting Checks		✓ Weekly								
V	isual Ch	eck of Flow Rate Roto	meter 🗹	Wee	kly							
Б	n-line Filt	ter Inspection/Replace	ment 🗆			20000						
S	ample Li	ne Check for Dirt/Wa	ter 🗌									
Prov	ide any a	dditional explanation	(nhotogra	nho	r sketch if neces	sars) regarding cond	itio	ons listed above or an	v other features		

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

Gloves are no longer used to handle the filter pack.

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number			
ROM	ROM206-Eric Hebert-06/10/2013								
1	6/10/2013	Computer	Dell	000454	D530	unknown			
2	6/10/2013	DAS	Campbell	000415	CR3000	2510			
3	6/10/2013	Elevation	Elevation	None	1	None			
4	6/10/2013	Filter pack flow pump	Thomas	04986	107CA18	040400022185			
5	6/10/2013	Flow Rate	Арех	000598	AXMC105LPMDPCV	unknown			
6	6/10/2013	Infrastructure	Infrastructure	none	none	none			
7	6/10/2013	Modem	Raven	06473	V4221-V	0808311135			
8	6/10/2013	Ozone	ThermoElectron Inc	000734	49i A1NAA	1105347317			
9	6/10/2013	Ozone Standard	ThermoElectron Inc	000437	49i A3NAA	CM08200013			
10	6/10/2013	Sample Tower	Aluma Tower	666369	В	illegible			
11	6/10/2013	Shelter Temperature	Campbell	none	107-L	none			
12	6/10/2013	Siting Criteria	Siting Criteria	None	1	None			
13	6/10/2013	Temperature	RM Young	02679	41342	none			
14	6/10/2013	Zero air pump	Werther International	06900	PC70/4	000821894			

DAS Data Form

DAS Time Max Error: 0.02

Mfg	Serial Number Site		e 1	Technician	Site Visit Date	Parameter	Use Desc.		
Campbell	2510	RO	M206	Eric Hebert	06/10/2013	DAS	Primary		
Das Date:	6 /10/2013	Audit Date 6 /10/2013		Mfg	Datel	Datel Parameter			
Das Day:	161	Audit Day 161		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	0.0003	3 <u>0.000</u>	0.0003	Cert Date	2/13/201	2 CorrCoff	1.00000		
				Mfg	Fluke	Parameter	DAS		
				Serial Number	Number 86590148		DVM		
				Tfer ID	01310				
				Slope	1.0000	0 Intercept	0.00000		
				Cert Date	1/27/201	3 CorrCoff	1.00000		
Channel	Input I	OVM 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	V	-0.0001			
7	0.5000	0.5000	0.4999	V	V	-0.0001			
7	0.7000	0.7001	0.6999	V	V	-0.0002			
7	0.9000	0.9001	0.8998	V	V	-0.0003			
7	1.0000	1.0001	0.9998	V	V	-0.0003			

Flow Data Form

Mfg	Serial Nun	nber Ta	Site	Тес	hnician	Site Visit Date	e Paran	neter	Owner ID	
Apex	unknown		ROM206	Eri	c Hebert	06/10/2013	Flow F	Rate	000598	
				Mfg	BIOS		Parameter Flo	w Rate		
					Serial Number	122974]	fer Desc. Bl	DS 220-H	
					Tfer ID	01416				
					Slone	1 000	00 Int	oreent	0.0000	
					Slope	1.000		ercept	0.00000	
					Cert Date	1/8/20	013 Co	rrCoff	1.00000	
DAS 1:		DAS 2:			Cal Factor Z	ero	-0.0	06		
A Avg % Diff: A	A Max % Di	A Avg %	Dif A Max	: % Di	Cal Factor F	ull Scale	0.9	95		
0.78%	0.94%				Rotometer R	eading:	3.	75		
UseDescription:	Test type:	Input l/m:	Input STP:	MfcDisp.:	OutputSignal:	Output S E: Inp	outUnit:	OutputSignal	PctDifference:	
primary	pump off	0.000	0.000	0.01	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	2.976	3.00	0.000	3.00	l/m	1/m	0.81%	
primary	test pt 2	0.000	2.982	3.00	0.000	3.00	l/m	l/m	0.60%	
primary	test pt 3	0.000	2.972	3.00	0.000	3.00	l/m	l/m	0.94%	
Sensor Compo	nent Leak Tes	t		Conditio	n		Statu	s pass	pass	
Sensor Compo	nent Filter Azir	muth		Conditio	n 90 deg		Status		pass	
Sensor Compo	nent Filter Dep	oth		Conditio	n 4.0 cm		Statu	s pass		
Sensor Compo	nent Filter Pos	ition		Conditio	n Good		Statu	s pass		
Sensor Compo	ment Moisture	Present		Conditio	n No moisture p	resent	Statu	s pass		
Sensor Compo	nent Rotomete	er Conditior	ו	Conditio	n Clean and dry		Statu	s pass		
Sensor Compo	ment System M	lemo		Conditio	n		Statu	s pass	pass	
Sensor Compo	nent Tubing C	ondition		Conditio	n Good		Status			
Sensor Compo	nent Filter Dist	tance		Conditio	n 5.0 cm		Statu	s pass		

Ozone Data Form

Mfg	S	Serial Number Ta Site		Technician		Site Visit Date		Parameter		Owner I	D	
ThermoElec	tron Inc 1	nc 1105347317 ROM206		Er	ric Hebert	:	06/10/2	06/10/2013 Ozo			000734	
Slope: [Intercept [CorrCoff [0.9 0.3 0.9	99603Slope:31352Intercept99998CorrCoff	Mfg 0 Serial Number 0 Tfer ID			ThermoElectron Inc Pa 517112175 Tf 01111 111			rameter 02 er Desc. 03	zone zone primary	/ stan	
DAS 1:		DAS 2:			Slope			0 0072	0 Into	t	0.18	128
A Avg % D) iff: A Ma	x%Di AAvg%	6Dif A Max 9	% Di	Slope			0.3372		cept	0.10	420
0.5	5%	0.8%			Cert Da	ite		1/2/201	3 Corr	Coff	1.00	000
UseDesc	cription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	e Unit:	PctDif	ference:	
prim	nary	1	0.59	0.4	40	0.	82	ppb				
prim	nary	2	30.46	30	.36	30.	.15	ppb			-0.69%	
prim	nary	3	50.29	50.	.24	50.	.64	ppb			0.80%	
prim	nary	4	79.97	80.	.00	80.	.10	ppb			0.12%	
prim	nary	5	110.40	110).52	110	0.30	ppb			-0.20%	
Sensor Co	omponent	Cell B Noise		Conditio	on 0.9 pp	b			Status	pass		
Sensor Co	omponent	Cell B Tmp.		Conditi	on				Status	pass		
Sensor Co	omponent	Fullscale Voltage		Conditi	on N/A				Status	pass		
Sensor Co	omponent	Inlet Filter Condition	on	Condition	on Clean	1			Status	pass		
Sensor Co	omponent	Line Loss		Condition Not tested				Status	pass		-	
Sensor Co	omponent	Offset		Condition -0.30					Status	pass		-
Sensor Co	omponent	Span		Condition 1.036					Status	pass		
Sensor Co	omponent	Cell B Freq.		Condition 105.5 kHz				Status	pass		-	
Sensor Co	omponent	System Memo		Condition See comments				Status	pass			
Sensor Co	omponent	Sample Train		Condition	on Good				Status	pass		
Sensor Co	omponent	Cell B Pressure		Conditio	on				Status	pass		
Sensor Co	omponent	Cell B Flow		Conditio	on 0.34	pm			Status	Fail		
Sensor Co	omponent	Cell A Tmp.		Conditio	on 37.8 (Status	pass		
Sensor Co	omponent	Cell A Pressure		Conditi	on 542 m	- mHa			Status	pass		
Sonsor Co	mponent			Conditi	on 13 pr				Status	nass		
	omponent			Conditio					Status	2222		
Sensor Co	omponent			Conditio	on 92.1 k				Status			
Sensor Co	omponent	Cell A Flow		Condition	on 0.36 l	pm			Status	⊦ail		
Sensor Co	omponent	Battery Backup		Condition	on N/A				Status	pass		
Sensor Co	omponent	Zero Voltage		Condition N/A					Status	pass		
Temperature Data Form

Mfg		Serial Nun	nber Ta	Site		Technician		Site Visit Date	Param	eter	Owner ID	
RM Young		none		ROM206		Eric	Hebert	06/10/2013	Temper	rature	02679	
						N	vlfg	Extech	Pa	arameter Te	mperature	
						S	Serial Number	H232679	Tí	fer Desc. RT	D	
						ſ	lfer ID	01228				
DAS 1:			DAS 2:			S	Slope	1.0073	32 Inte	rcept	-0.123	80
Abs Avg Err	Abs	Max Er	Abs Av	g Err Abs	Max Er	0	Cert Date	1/12/20	1/12/2013 Corr		1.000	00
0.08		0.12]						
UseDesc.:		Test type:	In	putTmpRaw	InputTm	utTmpCorr.: OutputTmpS		gnal: OutputSignalEng:		OSE Unit:	Difference:	
primary	Temp	Low Range	e	-0.08	0.04	0.04 0.000		-0.1		С	-0.1	
primary	Temp	Mid Range	;	24.80	24.7	'4	0.000	24	.7	С	-0.01	
primary	Temp	High Rang	e	45.68	45.4	7	0.000	45	.6	С	0.12	
Sensor Com	ponen	t Shield			Cond	lition	Clean		Status	pass		
Sensor Component Blower Status Switch		Cond	lition	N/A		Status	pass					
Sensor Component Blower			Cond	Condition N/A			Status	s pass				
Sensor Com	ponen	t System N	/lemo		Cond	Condition			Status	s pass		

Infrastructure Data For

Site ID	ROM206	Technician Eric Heb	ert Site Visit Date 06/10/2013
Shelter	Make	Shelter Model	Shelter Size
Ekto		8810 (s/n 2182-1)	640 cuft

Sensor Component	Shelter Roof	Condition	Fair	Status	pass
Sensor Component	Sample Tower Type	Condition	Туре В	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	Conduit	Condition	N/A	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	Poor	Status	Fail
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	ROM206	Eric Hebert	06/10/2013	Shelter Temperatur	renone
DAS 1:	DAS 2:		Mfg	Extech	Parameter S	helter Temperatur
Abs Avg Err Ab	bs Avg Err Abs Max Er Abs Avg Err A 0.52 0.54		Serial Number	H232679	Tfer Desc. R	TD
			Tfer ID	01228		
			Slope	1.0073	2 Intercept	-0.12380
			Cert Date	1/12/201	3 CorrCoff	1.00000

UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	24.83	24.77	0.000	25.3	С	0.48
primary	Temp Mid Range	23.78	23.73	0.000	24.3	С	0.54
primary	Temp Mid Range	26.34	26.27	0.000	25.7	С	-0.54

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Ozone This analyzer diagnostic	ROM206 check is outside t	Eric Hebert the manufacturer's r	06/10/2013 recommended va	Cell B Flow alue.	ThermoElectron	3593		
Ozone This analyzer diagnostic	ROM206 check is outside t	Eric Hebert the manufacturer's r	06/10/2013 recommended va	Cell A Flow alue.	ThermoElectron	3593		

Field Systems Comments

1 Parameter: ShelterCleanNotes

The shelter is clean, neat, and well organized. There are signs of previous roof leaks, but they have been repaired. The floor and counter top have been replaced.

2 Parameter: MetSensorComme

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

Field Systems D	ata Form	F-02058-1500-S1-rev001				
Site ID ROM206	Technician Eric Hebert	Site Visit Date 06/	10/2013			
	the second second					
Site Sponsor (agency)	EPA	USGS Map	Longs Peak			
Operating Group	ting Group private					
AQS#	08-069-9991	Map Date				
Meteorological Type	R.M. Young					
Air Pollutant Analyzer	Ozone, IMPROVE	QAPP Latitude	40.2778			
Deposition Measurement	dry	QAPP Longitude	-105.5453			
Land Use	woodland - mixed	QAPP Elevation Meters	2743			
Terrain	complex	QAPP Declination	10.3			
Conforms to MLM	Marginally	QAPP Declination Date	2/22/2006			
Site Telephone	(970) 586-2598	Audit Latitude	40.278129			
Site Address 1	High Peak Camp	Audit Longitude	-105.545635			
Site Address 2	Route 7	Audit Elevation	2742			
County	Larimer	Audit Declination	9.0			
City, State	Estes Park, CO	Present				
Zip Code	80517	Fire Extinguisher	Inspected April 2001			
Time Zone	Mountain	First Aid Kit				
Primary Operator		Safety Glasses				
Primary Op. Phone #		Safety Hard Hat 🔽				
Primary Op. E-mail		Climbing Belt				
Backup Operator		Security Fence				
Backup Op. Phone #		Secure Shelter				
Backup Op. E-mail		Stable Entry Step 🗹				
Shelter Working Room ✓	Make Ekto M	lodel 8810 (s/n 2182-1)	Shelter Size 640 cuft			
Shelter Clean	Notes The shelter is clean, neat, and been repaired. The floor and	d well organized. There are sig counter top have been replace	gns of previous roof leaks, but they have d.			
Site OK	Notes					
Driving Directions From sign	Estes Park take route 7 south approxima for High Peak Camp operated by the Salv	tely 8.5 miles. Turn right onto ation Army. The site is approx	Preservation Road (dirt road) at the imately 100 meters on the left.			

Field	ST	151	tems	Π	91	19	F	orm
I ICIU	\mathbf{J}	D.			<u>a</u>	Let -		

ROM206

F-02058-1500-S2-rev001

Site ID

Technician Eric Hebert

Site Visit Date 06/10/2013

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

Siting Distances OK

Siting Criteria Comment

Fi	eld Sy	stems Dat	a Form			F-02058-1500-S3-rev001				
Site	D	ROM206	Technician	Eric Hebert		Site Visit Date 06/10/2013				
1	Are wir being ir	1d speed and dir 1fluenced by obs	ection sensors sited so tructions?	as to avoid 🛛 🗹	2	N/A				
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)					N/A				
3	Are the tower and sensors plumb?					N/A				
4	Are the avoid ra	e temperature shi adiated heat sou	ields pointed north or rces such as buildings,	positioned to valls, etc?	2					
5	Are ten conditio surface standin	nperature and R ons? (i.e. ground and not steeply g water should b	H sensors sited to avoid below sensors should sloped. Ridges, hollow be avoided)	id unnatural be natural s, and areas of						
6	Is the s	olar radiation se	nsor plumb?		2	N/A				
7	Is it site light?	ed to avoid shadi	ng, or any artificial or	reflected	2	N/A				
8	Is the r	ain gauge plumb	?		2	N/A				
9	Is it site towers,	ed to avoid shelte etc?	ering effects from build	dings, trees, 🛛		N/A				
10	Is the st facing r	urface wetness so 10rth?	ensor sited with the gr	id surface 🔽		N/A				
11	Is it in	clined approxim:	ately 30 degrees?			N/A				
Pro	ovide any	additional expl	anation (photograph o	r sketch if necessa	ary) regarding conditions listed above, or any other features,				

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

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

Field S	ystems Dat	a Form			Γ-υ	2030-1	
Site ID	ROM206	Technician	Eric Hebert		Site Visit Date 06/10/20	13	- All Area
1 Do all conditi	the meterological ion, and well main	sensors appear to be in ntained?	ntact, in good				
2 Are all report	l the meteorologic ing data?	al sensors operational	online, and				
3 Are th	e shields for the t	emperature and RH se	nsors clean?				
4 Are th	4 Are the aspirated motors working?				N/A		
5 Is the s	solar radiation se hes?	nsor's lens clean and fr	ee of		N/A		
6 Is the	surface wetness so	ensor grid clean and un	ndamaged?		N/A		
7 Are th	e sensor signal an	d power cables intact,	in good				
8 Are th from t	ion, and well mail e sensor signal an he elements and v	ntained ? d power cable connecti vell maintained?	ions protected				
Parameter		Manufacturer	Model		S/N		Client ID
		Manufacturer	Model		D/IN	AN ASSAULT	
Temperatur Provide any natural or n	e additional explai 1an-made, that m	RM Young nation (photograph or s ay affect the monitorin	41342 sketch if necess ng parameters:	sary)	none regarding conditions listed	above, or	2679 any other features,
Temperatur Provide any natural or n	e additional explai 1an-made, that m	RM Young nation (photograph or s ay affect the monitorin	41342 sketch if necess ig parameters:	sary)	none regarding conditions listed	above, or	22679 • any other features,
Temperatur Provide any natural or n	e additional explai 1an-made, that m	RM Young nation (photograph or s ay affect the monitorin	41342 sketch if necess ig parameters:	sary)	none regarding conditions listed	above, or	02679 • any other features,
Temperatur Provide any latural or n	e additional explan nan-made, that m	RM Young nation (photograph or s ay affect the monitorin	41342 sketch if necess ag parameters:	sary)	none regarding conditions listed	above, or	02679 • any other features,
Temperatur Provide any natural or n	e additional explan nan-made, that m	RM Young nation (photograph or s ay affect the monitorin	41342 sketch if necess og parameters:	sary)	none regarding conditions listed	l above, or	02679 • any other features,
Temperatur Provide any natural or n	e additional explan nan-made, that m	RM Young nation (photograph or s ay affect the monitorin	41342 sketch if necess ig parameters:	sary)	none regarding conditions listed	above, or	02679 • any other features,
Temperatur Provide any natural or n	e additional explan nan-made, that m	RM Young nation (photograph or s ay affect the monitorin	41342 sketch if necess ag parameters:	ary)	none regarding conditions listed	l above, or	02679 • any other features,
Temperatur Provide any natural or n	e additional explan nan-made, that m	RM Young nation (photograph or s ay affect the monitorin	41342 sketch if necess ig parameters:	aary)	none regarding conditions listed	above, or	22679 • any other features,
Temperatur Provide any natural or n	e additional explan nan-made, that m	RM Young nation (photograph or s ay affect the monitorin	41342 sketch if necess ag parameters:	ary)	none regarding conditions listed	l above, or	D2679
Temperatur Provide any natural or n	e additional explan nan-made, that m	RM Young nation (photograph or s ay affect the monitorin	41342 sketch if necess ig parameters:	ary)	none regarding conditions listed	L above, or	22679 • any other features,
Temperatur Provide any natural or n	e additional explan nan-made, that m	RM Young nation (photograph or s ay affect the monitorin	41342 sketch if necess ag parameters:	aary)	none regarding conditions listed	l above, or	22679
Temperatur Provide any natural or n	e additional explan nan-made, that m	RM Young nation (photograph or s ay affect the monitorin	41342 sketch if necess ag parameters:	sary)	none regarding conditions listed	L above, or	D2679
Temperatur Provide any hatural or n	e additional explan nan-made, that m	RM Young nation (photograph or s ay affect the monitorin	41342 sketch if necess ig parameters:	ary)	none regarding conditions listed	L above, or	22679

Fie	eld Sy	stems Dat	a Form		F-02058-1500-S5-rev001
Site	ID	ROM206	Technician Eric Hebert	t	Site Visit Date 06/10/2013
	Siting C	Criteria: Are the	pollutant analyzers and depositi	ion equipn	nent sited in accordance with 40 CFR 58, Appendix E
1	Do the sunrestri	sample inlets hav icted airflow?	ve at least a 270 degree arc of		
2	Are the	sample inlets 3	15 meters above the ground?		
3	Are the and 20 m	sample inlets > meters from tree	1 meter from any major obstruc s?	tion, 🗹	
	Pollutar	nt analyzers and	deposition equipment operation	is and mai	<u>ntenance</u>
1	Do the a condition	analyzers and eq on and well main	uipment appear to be in good tained?		
2	Are the reportin	analyzers and n ng data?	nonitors operational, on-line, and	d 🔽	
3	Describ	e ozone sample (ube.		1/4 teflon by 12 meters
4	Describ	e dry dep sampl	e tube.		3/8 teflon by 12 meters
5	Are in-l indicate	line filters used i location)	n the ozone sample line? (if yes		At inlet only
6	Are san obstruc	nple lines clean, tions?	free of kinks, moisture, and		
7	Is the 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	is it 🗹	Clean and dry
Par	ameter	4 . S. S.	Manufacturer Mod	el	S/N Client ID

Sample Tower	Aluma Tower	В	illegible	666369	
Ozone	ThermoElectron Inc	49i A1NAA	1105347317	000734	
Zero air pump	Werther International	PC70/4	000821894	06900	
Filter pack flow pump	Thomas	107CA18	040400022185	04986	

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	orm				F-0 2	2058-15	500-S6-rev001
Site	ID	ROM206	Technician	Eric Hebert	2122	Site Visit Da	te 06/10/201	3	
	DAS, se	nsor translators, and j	peripheral equip	ment operation	<u>s ar</u>	nd maintenance			
1	Do the l well ma	DAS instruments appe intained?	ar to be in good	condition and					
2	Are all modem	the components of the , backup, etc)	DAS operationa	l? (printers,					
3	Do the a lightnin	analyzer and sensor sig g protection circuitry	<mark>gnal lead</mark> s pass t ?	hrough		Met sensors only			
4	Are the well ma	signal connections pro intained?	otected from the	weather and					
5	Are the signal leads connected to the correct DAS channel?								
6	Are the ground	DAS, sensor translato ed?	rs, and shelter p	oroperly					
7	Does the	e instrument shelter h	ave a stable pow	er source?					
8	Is the in	strument shelter temp	oerature control	led?					
9	Is the m	et tower stable and gr	ounded?			Stable		Grounded	Ĩ
10	Is the sa	umple tower stable and	l grounded?						
11	Tower o	comments?							
		Street Street		and the second					

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D530	unknown	000454
DAS	Campbell	CR3000	2510	000415
Modem	Raven	V4221-V	0808311135	06473

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	For	m			F-02	058-	1500-S7-rev001
Site ID ROM206		Technicia	Eric Hebert	Site Visit Date	06/10/2013		
Documentation							
Does the site have the requir	ed ins	trument an	<u>d equipment :</u>	<u>manuals?</u>			
Wind speed sensor	Yes		/A	Data logger	Yes	No	N/A
Wind direction sensor				Data logger			
Temperature sensor				Strip chart recorder			
Relative humidity sensor				Computer			
Solar radiation sensor				Modem			
Surface wetness sensor			/	Printer			
Wind sensor translator				Zero air pump			
Temperature translator			/	Filter flow pump			
Humidity sensor translator			2	Surge protector			
Solar radiation translator			2 1	JPS			
Tipping bucket rain gauge			7 1	Lightning protection device			
Ozone analyzer			\$	Shelter heater			
Filter pack flow controller]	Shelter air conditioner			
Filter pack MFC power supply							
Does the site have the requ	ired a	nd most red	ent QC docu	ments and report forms?			
	Prese	ent			Curre	nt	
Station Log							
SSRF	V						
Site Ops Manual	v	Oct 2	001				
HASP	v	Oct 2	011				
Field Ops Manual							
Calibration Reports							
Ozone z/s/p Control Charts							
Preventive maintenance schedu	ıl 🔽						
1 Is the station log properly	compl	eted during	g every site vi	sit? 🔽			
2 Are the Site Status Report current?	Form	s being con	pleted and				
3 Are the chain-of-custody f sample transfer to and fro	orms j m labʻ	properly us ?	ed to docume	nt 🗸			
4 Are ozone z/s/p control ch current?	arts pr	operly con	pleted and	Control charts not use	ed		
Provide any additional explana natural or man-made, that may	tion (p / affec	ohotograph t the monit	or sketch if n oring parame	ecessary) regarding condition ters:	ons listed a	lbove, a	or any other features,
	Citing 1						

Fie	eld Sy	stems Data Fo	orm				F-02058-	1500-S8-rev001
Site	ID	ROM206	Technician	Eric Hebert		Site Visit Date	06/10/2013	
1	Site ope Has the course?	eration procedures e site operator attended ' If yes, when and who	d a formal CAS instructed?	STNET training		Trained on site by MA	ACTEC employee of	during site installation
2	2 Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?					Trained by site opera	itor	
3	Is the sit	te visited regularly on e?	the required T	uesday				
4	Are the flollowe	standard CASTNET of by the site operator?	perational pro	cedures being				
5	Is the sit the requ	te operator(s) knowled lired site activities? (in	geable of, and cluding docum	able to perform entation)				
	Are reg	ular operational QA/Q	C checks perfo	ormed on meteor	<u>olo</u> ;	gical instruments?		
OC	Check P	erformed		Frequency			Complian	t

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 analyze** Sample Line Check for Dirt/Water Zero Air Desiccant Check

Frequency	Comp
Semiannually	
Daily	
Daily	
Weekly	
Every 2 weeks	
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?

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:

~

✓

SSRF, call-in

liant

Field S	Systems Data Form	n		F-02058-1500-S9-rev00						
Site ID	ROM206	Fechnician Eric Hebert		Site Visit Date	06/10/2013					
Site o	peration procedures									
1 Is the	filter pack being changed e	very Tuesday as scheduled	2	Filter changed morir	nings 50% of the time					
2 Are t corre	he Site Status Report Forms ctly?	being completed and filed								
3 Are d sched	lata downloads and backups uled?	being performed as		No longer required						
4 Are g	eneral observations being m	ade and recorded? How?		SSRF, logbook						
5 Are s fashio	ite supplies on-hand and rep on?	lenished in a timely								
6 Are s	ample flow rates recorded?	How?		SSRF, call-in						
7 Are s fashio	amples sent to the lab on a r on?	egular schedule in a timely								
8 Are f and s	ilters protected from contam hipping? How?	ination during handling		one set of gloves on	ly					
9 Are t opera	he site conditions reported retions manager or staff?	egularly to the field								
QC Check	Performed	Frequency			Compliant					
Multi-p	oint MFC Calibrations	Semiannually	2012-107		\checkmark					
Flow Sy	stem Leak Checks	✓ Weekly								
Filter P	ack Inspection									
Flow R	ate Setting Checks	Veekly	Philade							
Visual	Check of Flow Rate Rotomet	er 🗹 Weekly				Salar Barra				
In-line	Filter Inspection/Replaceme	nt 🗹 N/A	THE REAL							
Sample	Line Check for Dirt/Water	Weekly	1,5993							
rovide an atural or	y additional explanation (ph man-made, that may affect t	otograph or sketch if neces he monitoring parameters	sary	y) regarding condition	ons listed above, or an	y other features,				

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
RON	1406-Eric H	Hebert-06/10/2013				
1	6/10/2013	Computer	Toshiba	none	Terca	unknown
2	6/10/2013	DAS	Environmental Sys Corp	90535	8816	2025
3	6/10/2013	Elevation	Elevation	None	1	None
4	6/10/2013	Filter pack flow pump	Thomas	02978	107CAB18	0493002494
5	6/10/2013	flow rate	Tylan	03393	FC280AV	AW9403024
6	6/10/2013	Infrastructure	Infrastructure	none	none	none
7	6/10/2013	Met tower	Rohn	none	unknown	none
8	6/10/2013	MFC power supply	Tylan	none	RO-32	illegible
9	6/10/2013	Modem	US Robotics	none	33.6 fax modem	unknown
10	6/10/2013	Ozone	ThermoElectron Inc	none	49i A3NAA	1030745086
11	6/10/2013	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	1130450194
12	6/10/2013	Precipitation	Climatronics	01620	100508-2	illegible
13	6/10/2013	Printer	Hewlett Packard	none	842C	unknown
14	6/10/2013	Relative Humidity	Rotronic	none	MP 601A	56091
15	6/10/2013	Sample Tower	Aluma Tower	illegible	В	none
16	6/10/2013	Shelter Temperature	ARS	none	none	none
17	6/10/2013	Shield (10 meter)	RM Young	none	unknown	none
18	6/10/2013	Shield (2 meter)	RM Young	none	unknown	none
19	6/10/2013	Siting Criteria	Siting Criteria	None	1	None
20	6/10/2013	Solar Radiation	Licor	none	LI-200	PY19983
21	6/10/2013	Solar Radiation Translator	RM Young	none	70101-X	none
22	6/10/2013	Temperature	RM Young	none	41342	17079
23	6/10/2013	Temperature2meter	RM Young	none	41342	17078
24	6/10/2013	Wind Direction	RM Young	none	AQ05103-5	89123wdr
25	6/10/2013	Wind Speed	RM Young	none	AQ05103-5	89123wsp
26	6/10/2013	Zero air pump	Werther International	none	PC70/4	531391

DAS Data Form

12

1.0000

1.0001

DAS Time Max Error: 0.4

Mfg	1	Serial Nu	mber	Site		Те	echnician	Site Visi	Site Visit Date		Parameter		esc.
Environment	ental Sys 2025 ROM406 E		E	ric Hebert	06/10/20	06/10/2013 D		6	Primary	y			
Das Date:	6 /10/	2013 30:00	Audit Da	ate	6 /10/2013		Mfg	Datel			Parameter	DAS	
Das Day:	12.0	161	Audit Da	nv	161		Serial Number	4000392	4000392 Tfer Desc.		Tfer Desc.	Source	generator (D
Low Chann	el:		High Cha	nnel	:		Tfer ID	01321					
Avg Diff:	Max	Diff:	Avg Diff:		Max Diff:	1	Slope		1.0000	0	ntercept		0.00000
0.000	00	0.0001	0.0	0001	0.0002		Cert Date	2	/13/201	2 (CorrCoff		1.00000
							Mfg	Fluke			Parameter	DAS	
							Serial Number	8659014	В		Tfer Desc.	DVM	
							Tfer ID	01310					
							Slope		1.0000	0	ntercept		0.00000
							Cert Date	1	/27/201	3 (CorrCoff		1.00000
Channel	Inpu	t D	VM Output		DAS Output		InputUnit	OutputU	nit	Di	fference		
2	0.	0000	0.00	00	0.000	0	V		V		0.0000		
2	0.	1000	0.10	00	0.100	0	V		V		0.0000		
2	0.	3000	0.30	00	0.300	0	V		V		0.0000		
2	0.	5000	0.50	00	0.499	9	V		V		-0.0001		
2	0.	7000	0.70	00	0.700	0	V		V		0.0000		
2	0.	9000	0.90	00	0.899	9	V		V		-0.0001		
2	1.	0000	1.00	01	1.000	0	V		V		-0.0001		
12	0.	0000	0.00	00	0.000	0	V		V		0.0000		
12	0.	1000	0.10	00	0.099	8	V		V		-0.0002		
12	0.	3000	0.30	00	0.300	0	V		V		0.0000		
12	0.	5000	0.50	00	0.500	0	V		V		0.0000		
12	0.	7000	0.70	00	0.699	9	V		V		-0.0001		
12	0.	9000	0.90	00	0.900	00	V		V		0.0000		

V

1.0000

V

-0.0001

Flow Data Form

Mfg	Serial Nun	nber Ta	Site	Tee	chnician	Site Visit l	Site Visit Date Parame		eter Owner ID	
Tylan	AW940302	24	ROM406	Er	ic Hebert	06/10/201	3 flow ra	ite	03393	
Mfg	Tylan				Mfg	BIOS	Ι	Parameter FI	ow Rate	
SN/Owner ID	illegible	none			Serial Number	122974]	fer Desc. B	er Desc. BIOS 220-H	
Parameter	MFC power sup	oply			Tfer ID	01416				
					Slope	1.	.00000 Int	ercept	0.00000	
					Cert Date	1/	8/2013 Co	rrCoff	1.00000	
DAS 1:		DAS 2:		L	Cal Factor Z	ero	0.	04		
A Avg % Diff:	A Max % Di	A Avg %	Dif A Max	x % Di	Cal Factor F	ull Scale	5.	46		
0.32%	0.35%				Rotometer R	eading:	3.	95		
UseDescription:	Test type:	Input l/m:	Input STP:	MfcDisp.:	OutputSignal:	Output S E:	InputUnit:	OutputSigna	llPctDifference:	
primary	pump off	0.000	0.000	-0.05	-0.0150	0.02	l/m	l/m		
primary	leak check	0.000	0.000	-0.05	-0.0150	0.02	l/m	l/m		
primary	test pt 1	0.000	2.998	3.05	2.7380	3.01	l/m	l/m	0.32%	
primary	test pt 2	0.000	2.998	3.05	2.7380	3.01	l/m	l/m	0.35%	
primary	test pt 3	0.000	3.000	3.05	2.7380	3.01	l/m	l/m	0.28%	
Sensor Compo	onent Leak Tes	t		Conditio	n		Statu	s pass		
Sensor Compo	Filter Azi	muth		Conditio	n 180 deg		Statu	s pass		
Sensor Compo	Filter Dep	oth		Conditio	n - 1.0 cm		Statu	s fail		
Sensor Compo	nent Filter Pos	sition		Conditio	n Poor		Statu	s fail		
Sensor Compo	Moisture	Present		Conditio	n No moisture p	resent	Statu	s pass		
Sensor Compo	nent Rotomete	er Conditior	1	Conditio	Clean and dry		Statu	s pass		
Sensor Component System Memo				Conditio	n See comments	6	Statu	s pass		
Sensor Component Tubing Condition					n Good	Statu	s pass			
Sensor Compo	Filter Dist	tance		Conditio	n 5.5 cm		Statu	s pass		

Ozone Data Form

Mfg	Serial Number Ta	Site	Technician			Site Visit Date		Parameter		Owner I	D
ThermoElectron Inc	1030745086	ROM406	Er	ic Hebert		06/10/2	013	Ozone		none	
Slope: Intercept CorrCoff	0.99341 Slope: 0.32985 Intercept 0.99999 CorrCoff	99341 Slope: 0.0000 32985 Intercept 0.0000 99999 CorrCoff 0.0000			Mfg O Serial Number			Inc Pa	rameter ozone		/ stan
DAS 1:	DAS 2:			Slowe			0.0072			0.19	129
A Avg % Diff: A N	Max % Di A Avg 9	%Dif A Max	% Di	Slope			0.9972		cept	0.18	428
0.4%	0.6%			Cert Da	ite		1/2/201	3 Corr	Coff	1.00	000
UseDescription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	Unit:	PctDi	fference:	
primary	1	0.32	0.	13	0.:	50	ppb				
primary	2	31.40	31.	.30	31.	12	ppb			-0.58%	
primary	3	49.81	49.	.76	50.	.02	ppb			0.52%	
primary	4	80.17	80.	.21	80.	.14	ppb			-0.09%	
primary	5	110.10	110	.22	109	.70	ppb			-0.47%	
Sensor Compone	nt Cell B Noise		Conditio	0.9 pp	b			Status	pass		
Sensor Compone	nt Cell B Tmp.		Conditio	on				Status	pass		
Sensor Compone	nt Fullscale Voltage		Conditio	on 0.999	5			Status	pass		
Sensor Compone	nt Inlet Filter Condition	on	Conditio	on Clean				Status	pass		
Sensor Compone	nt Line Loss		Conditio	on Not te	sted			Status	pass		
Sensor Compone	nt Offset		Conditio	on 0.000				Status	pass		
Sensor Compone	nt Span		Conditio	on 1.008				Status	pass		
Sensor Compone	nt Cell B Freq.		Conditio	on 73.6 k	Hz			Status	Fail		
Sensor Compone	nt System Memo		Conditio	on See c	omments			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 0.58 l	om			Status	pass		
Sensor Compone	nt Cell A Tmp.		Conditio	on 34.0 (2			Status	pass		
Sensor Compone	nt Cell A Pressure		Conditio	on 538 m	mHg			Status	pass		
Sensor Compone	nt Cell A Noise		Conditio	on 0.8 pp	b			Status	pass		
Sensor Compone	nt Cell A Freq.		Conditio	on 66.1 k	Hz			Status	Fail		
Sensor Compone	nt Cell A Flow		Conditio	on 0.57 l	om			Status	pass		
Sensor Compone	nt Battery Backup		Conditio	on N/A				Status	pass		
Sensor Compone	nt Zero Voltage		Conditio	on -0.000)2			Status	pass		

Wind Speed Data Form

RM Young 89123wsp ROM406 Eric Hebert 06/10/2013 Wind Speed no Mfg RM Young Parameter wind speed Serial Number Tfer Desc. wind speed Tfer ID 01262	one peed peed motor (h
Mfg RM Young Parameter wind sp Serial Number Tfer Desc. wind sp Tfer ID 01262	peed
Serial Number Tfer Desc. wind sp	peed motor (h
Tfer ID 01262	
Prop or Cups SN 68464 Slope 1.00000 Intercept	0.00000
Prop or Cups Torque 0.3 to 0.3 Cert Date 1/13/2010 CorrCoff	1.00000
Prop Correction Fact 0.0512	
Mfg RM Young Parameter wind sp	peed
Serial Number Tfer Desc. wind sp	peed motor (I
Tfer ID 01261	
Slope 1 00000 Intercent	0.0000
Stope	0.00000
Cert Date 1/13/2010 CorrCoff	1.00000
DAS 1: DAS 2:	
Low Range High Range Low Range High 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: Differe	ence:
primary none 0 0.20 0.0000 0.0	-0.20
primary 01262 200 1.02 0.0000 1.0	0.00
primary 01262 400 2.05 0.0000 2.1	0.00
primary 01262 800 4.10 0.0000 4.1	0.00
primary 01262 1200 6.14 0.0000 6.1 0.00%	
primary 01262 2400 12.29 0.0000 12.3 0.00%	
primary 01262 4000 20.48 0.0000 20.5 0.00%	
primary 01262 9400 48.13 0.0000 48.1 0.00%	
Sensor Component System Memo Condition Status pass	
Sensor Component Sensor Plumb Condition Plumb Status pass	
Sensor Component Sensor Heater Condition N/A Status pass	
Sensor Component Prop or Cups Condition Condition Good Status pass	
Sensor Component Condition Good Status pass	
Sensor Component Torque Condition Good Status pass	

Wind Direction Data Form

Mfg	Serial N	umber Ta	Site		Technician	Site Visi	it Date Para	meter	Owner II)
RM Young	89123w	dr	ROM406	6	Eric Hebert	06/10/2	013 Wind	Direction	none	
Vane SN: _ VaneTorque _	I/A 12 to	C. A 15	A. Align. d	<mark>eg. true:</mark> 276	Mfg Serial Nur Tfer ID Slope Cert Date	Ushikata nber 190037 01265	1.00000 In 1/4/2011 Ce	Parameter Tfer Desc. [tercept orrCoff	wind direction transit 0.000	000
					Mfg	RM You	ng	Parameter	wind direction	
					Serial Nu	nber		Tfer Desc.	wind direction v	vheel
					Tfer ID	01266				
	DAS 1:		D	AS 2:	L					
	Orientation	Lineari	ty: O	rientation	Linearity:					
Abs Avg Err	9.7	7	10.8							
Abs Max Er	13		43							
UseDescriptio	n: TferII	D: II	nput Raw:	Linearity	Output V:	Output Deg.:	Difference:	Change:	Error:	
primary	01260	5	0		0.0000	26	26	88	43	
primary	01260	5	45	\checkmark	0.0000	60	15	34	-11	
primary	01260	5	90		0.0000	101	11	41	-4	
primary	01260	5	135		0.0000	140	5	39	-6	
primary	01260	5	180		0.0000	180	0	40	-5	
primary	01260	5	225		0.0000	220	5	40	-5	
primary	01260	5	270		0.0000	258	12	38	-7	
primary	01260	-	315		0.0000	298	17	40	-5	
primary	0126	5	90		0.0000	104	8		8	
primary	0126	5	230		0.0000	228	13		13	
Sensor Comj	ponent Mast		210	Con	dition Good	205	Statu	IS pass	10]
Sensor Comj	ponent Condit	ion		Con	dition Poor		Statu	IS Fail]
Sensor Comj	ponent Senso	r Heater		Con	dition N/A		Statı	I <mark>s</mark> pass]
Sensor Comj	ponent Senso	r Plumb		Con	dition Plumb		Statu	Is pass]
Sensor Comj	ponent Torque	9		Con	dition Good		Statu	IS pass]
Sensor Comj	ponent Vane (Condition		Con	dition Good		Statu	IS pass]
Sensor Comj	ponent System	n Memo		Con	dition See com	iments	Statu	IS pass]

Temperature Data Form

Mfg	Serial Number	Ta Site	,	Techn	ician	Site Visit Dat	e Param	eter	Owner ID	
RM Young	17079	ROM406		Eric H	ebert	06/10/2013	Tempe	rature	none	
				Mf	g	Extech	Pa	arameter Te	mperature	
				Ser	rial Number	H232679	T	fer Desc. RT	D	
				Tfe	er ID	01228				
DAS 1.	DAS	\$ 2.		Slo	pe	1.007	'32 Inte	rcept	-0.1238	0
Abs Avg Err	Abs Max Er Abs	Avg Err Abs	Max Er	Ce	rt Date	1/12/20	013 Cor	rCoff	1.0000	0
0.10	0.10									
UseDesc.:	Test type:	InputTmpRaw	InputTmp	Corr.:	OutputTmpS	ignal: OutputS	ignalEng:	OSE Unit:	Difference:	
primary	Temp Low Range	0.13	0.25	i	0.0000	0	.16	С	-0.09	
primary	Temp Mid Range	25.40	25.34	4	0.0000	25	5.44	C	0.1	
primary	Temp High Range	48.65	48.42	2	0.0000	48	3.52	C	0.1	
Sensor Com	ponent Shield		Condi	ition C	Clean		Status	pass		
Sensor Com	ponent Blower Status	Switch	Condi	ition 🕨	I/A		Status	pass		
Sensor Com	ponent Blower		Condi	ition F	Functioning		Status	pass		
Sensor Com	ponent System Memo)	Condi	ition			Status	pass		

2 Meter Temperature Data For

Calc. Difference

Mfg	Serial Numbe	er Ta Site	Те	chnician	Si	ite Visit Date	Paramet	er	Owner ID
RM Young	17078	ROM406	Er	ic Hebert	0	6/10/2013	Temperat	ture2meter	none
				Mfg	E	xtech	Para	ameter Tem	perature
				Serial Nu	mber H	232679	Tfei	r Desc. RTD)
				Tfer ID	01	1228			
DAS 1:	D	AS 2:		Slope		1.0073	2 Interc	ept	-0.12380
Abs Avg Err A	bs Max Er Al	os Avg Err Ab	s Max Er	Cert Date		1/12/201	3 CorrC	Coff	1.00000
0.11	0.2								
UseDescription:	Test type:	InputTmpRaw	InputTmpCorr	ected: Out	putTmpSi	ignal: OutputS	ignalEng:	OSE Unit:	Difference:
primary	Temp Low Rang	0.13		0.25	0.	.0000	0.45	С	0.2
primary	Temp Mid Rang	25.40		25.34	0.	.0000	25.48	С	0.14
primary	Temp High Ran	48.65		48.42	0.	.0000	48.42	С	0
Sensor Compor	ent Blower Statu	is Switch	Conditio	n N/A			Status P	ass	
Sensor Compor	ent System Men	no	Conditio	on			Status P	ass	
Sensor Compor	ent Blower		Conditio	Function	ning		Status P	ass	
Sensor Compor	Properly Site	ed	Conditio	Properly	v sited		Status P	ass	
Sensor Compor	ent Shield		Conditio	n Clean			Status P	ass	

Humidity Data Form

Mfg	5	Serial Nun	nber Ta	Site		Т	echnician		Site Vi	sit Date	Para	meter	Owner ID
Rotronic		56091		ROM	406	E	ric Hebert		06/10/	2013	Relat	tive Humidity	none
							Mfg Serial Nu Tfer ID	mber	Rotron 124432 01225	ic 2		Parameter Re	lative Humidity
	DAS	1:			DAS 2:		Slope Cert Date	è		1.0000 1/29/201	0 In 3 C	orrCoff	0.00000
Abs Avg Err Abs Max Er		Range 0.8 1.0	High Ranş	<mark>ge</mark> 4.2 4.2	Low Range	[] [] [High Rango						
UseDesc.:	Те	st type:	Device	e:	Input RH:	G	TL Raw:	RHC	Corr.:	DAS V	olts:	DAS %RH:	Difference:
primary	RH Lo	w Range	Hygroc	lip	32.8		0.0	32	8	0.337	'5	33.8	1.0
primary	RH Lo	w Range	Hygroc	lip	52.9		0.0	52	9	0.523	32	52.3	-0.6
primary	RH Hi	gh Range	Hygroc	lip	93.6		0.0	93	.6	0.893	5	89.4	-4.2
Sensor Com	ponent	t System N	/lemo		Con	diti	on				State	us pass	
Sensor Com	ponent	Blower			Con	diti	on Function	ning			Stat	us pass	
Sensor Com	ponent	Blower S	tatus Switc	h	Con	diti	on N/A				Stat	us pass	
Sensor Com	ponent	RH Filter			Con	diti	on Clean				State	us pass	
Sensor Com	ponent	Shield			Con	diti	on Clean				State	us pass	

Solar Radiation Data Form

Mfg	Serial Number T	'a Site	Te	chnician	Site Visit Date	Parameter	Owner ID
Licor	PY19983	ROM406	Er	ic Hebert	06/10/2013	Solar Radiation	none
Mfg	RM Young			Mfg	Eppley	Paramete	r solar radiation
SN/Owner ID	none non	e		Serial Number	10765	Tfer Desc	SR transfer translat
Parameter	Solar Radiation Trans	lator		Tfer ID	01246		
DAS 1:	DAS	2:		Slope	1.0000	0 Intercept	0.00000
% Diff of Avg	%Diff of Max %Dif	f of Avg %Di	ff of Max	Cert Date	1/6/201	0 CorrCoff	1.00000
				Mfg	Eppley	Paramete	r solar radiation
				Serial Number	34341F3	Tfer Desc	SR transfer sensor
				Tfer ID	01245		
				Slope	1.0000	0 Intercept	0.00000
				Cert Date	12/16/201	0 CorrCoff	1.00000
3.1%	7.1%	0.0%	0.0%				
UseDescription	Measure Date N	AeasureTime	Tfer Corr	: DAS w/r	n2: PctDiffe	erence:	

UseDescription:	Measure Date	MeasureTime	Ther Corr:	DAS W/m2:	PctDifference:	
primary	6/10/2013	12:00	871	869	-0.2%	
primary	6/10/2013	13:00	483	478	-1.0%	
primary	6/10/2013	14:00	628	621	-1.1%	
primary	6/10/2013	16:00	399	405	1.5%	
primary	6/11/2013	5:00	47	50	6.4%	
primary	6/11/2013	6:00	290	285	-1.7%	
primary	6/11/2013	7:00	513	503	-1.9%	
primary	6/11/2013	8:00	707	683	-3.4%	
primary	6/11/2013	10:00	1001	938	-6.3%	
primary	6/11/2013	11:00	1070	994	-7.1%	
Sensor Compo	nent Sensor Leve		Condition	evel	Status	pass
Sensor Compo	nent Sensor Clea	n	Condition	Clean	Status	pass
Sensor Compo	nent Properly Site	ed	Condition	Properly sited	Status	pass
Sensor Compo	nent System Men	0	Condition		Status	pass

Precipitation Data Form

Mfg	Serial	Number Ta	Site	T	[echnic	ian		Site	Visit Date	Parame	ter	Owner ID
Climatronics	illegibl	e	ROM406		Eric Het	bert		06/	10/2013	Precipita	ation	01620
					Mfg			PMF)	Pa	rameter	recipitation
DAS 1:		DAS 2:			Seria	al Nun	nber	EW-	06134-50	Tf	er Desc. 2	50ml graduate
A Avg % Diff	f: A Max % I	Di A Avg %	Dif A I	Max % Di	Tfer	ID		0125	50			
0.0%	0.0	0%			Clan				1 0000	0 Inter		0.0000
					Slop	e			1.0000		cept	0.00000
					Cert	Date			9/5/200	5 Corr	Coff	1.00000
UseDesc	Test type:	TferVolume.	Iteration:	TimePerTir	v Fa	Ht	DAS	eng.	Ea HtUnit [.]	OSE Un	it TferUn	its PctDifference
primary	tip check	10 manual	1	2 sec	<u>, Lq</u> 1.	.00	1.0)0	mm	mm	ml	
primary	test 1	231.5	1	8 sec	5.	.00	5.0)0	mm	mm	ml	0.0%
primary	test 2	231.5	2	10 sec	5.	.00	5.0)0	mm	mm	ml	0.0%
Sensor Com	ponent Syste	em Memo		Condi	tion Se	e com	ments			Status	pass	
Sensor Com	ponent Sens	or Heater		Condi	t <mark>ion</mark> Fu	nctioni	ing			Status	pass	
Sensor Com	ponent Prop	erly Sited		Condi	tion Se	e com	ments			Status	pass	
Sensor Com	ponent Gaug	ge Drain Scree	n	Condi	tion No	ot insta	lled			Status	Fail	
Sensor Com	ponent Leve	I		Condi	tion Le	vel				Status	pass	
Sensor Com	ponent Gaug	ge Clean		Condi	tion Cle	ean				Status	pass	
Sensor Com	ponent Funn	el Clean		Condi	tion Cle	ean				Status	pass	
Sensor Com	ponent Conc	lition		Condi	tion Go	ood				Status	pass	
Sensor Com	ponent Gaug	ge Screen		Condi	tion No	ot insta	lled			Status	Fail	

Infrastructure Data For

Site ID	ROM406	Technician Eric Heb	ert Site Visit Date 06/10/2013
Shelter	Make	Shelter Model	Shelter Size
Ekto		8814 (s/n 3062-1)	896 cuft

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	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	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
ARS	none	ROM406	Eric Hebert	06/10/2013	Shelter Temperatur	renone
DAS 1:	DAS 2:		Mfg	Extech	Parameter S	helter Temperatur
Abs Avg ErrAbs2.58	4.47	Err Abs Max Er	Serial Number	H232679	Tfer Desc. R	TD
			Tfer ID	01228		
			Slope	1.0073	2 Intercept	-0.12380
			Cert Date	1/12/201	3 CorrCoff	1.00000

UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	19.11	19.09	0.000	22.0	С	2.91
primary	Temp Mid Range	21.38	21.35	0.000	21.7	С	0.37
primary	Temp Mid Range	17.22	17.22	0.000	21.7	С	4.47

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Flow Rate	ROM406	Eric Hebert	06/10/2013	Filter Position	Tylan	1578		
The filter attachment plot orientation.	late is mounted t	too low in the enclos	ure resulting in t	the filter being expos	sed to wind-driven	rain and in the	standard ge	ometric
Ozone	ROM406	Eric Hebert	06/10/2013	Cell B Freq.	ThermoElectron	3779		
This analyzer diagnosti	ic check is outsid	de the manufacturer's	s recommended	value.				
Ozone	ROM406	Eric Hebert	06/10/2013	Cell A Freq.	ThermoElectron	3779		
This analyzer diagnosti	ic check is outsid	le the manufacturer's	s recommended	value.				
Precipitation	ROM406	Eric Hebert	06/10/2013	Properly Sited	Climatronics	3769		
Objects violate the 45 c	legree rule for th	ie tipping bucket rai	n gage.					
Shelter Temperature	ROM406	Eric Hebert	06/10/2013	Accuracy Mid Ra	ARS	2274		
The shelter temperature	e is going outsid	e CFR requirements	for pollutant mo	nitor operation.				

Field Systems Comments

1 Parameter: SiteOpsProcComm

The site operator is doing a very good job performing the site duties and expressed an interest in trying to improve any deficiencies. The sample flow rate systems for both the dry deposition and ozone sample trains were explained during the audit at the request of the site operator.

2 Parameter: SiteOpsProcedures

Mercury thermometer was removed from the shelter during the site audit. The site operator has requested additional training from ARS.

3 Parameter: ShelterCleanNotes

The shelter is clean, neat, organized, and well maintained.

4 Parameter: MetSensorComme

The tipping bucket rain gage and solar radiation sensor have been moved to the roof of the shelter since the previous audit visit. Both temperature sensor shields have been replaced with new models.

5 Parameter: MetOpMaintCom

The wind direction sensor is exhibiting the symptoms of potentiometer failure. Wind direction data quality are being impacted by this condition.

	DOMAGE			10/2012	
Site ID	ROM406	Technician Eric Hebert	Site Visit Date 06/	10/2013	
Site Sponso	or (agency)	NPS	USGS Map	Longs Peak	
Operating	Group	NPS	Map Scale		
QS#		08-069-0007	Map Date		
Ieteorolog	gical Type	R.M. Young			
ir Polluta	nt Analyzer	Ozone, IMPROVE	QAPP Latitude	40.2778	
eposition	Measurement	dry	QAPP Longitude	-105.5453	
and Use		woodland - mixed	QAPP Elevation Meters	2743	
errain		complex	QAPP Declination		
onforms	to MLM	Marginally	QAPP Declination Date		
ite Teleph	ione	(970) 586-8520	Audit Latitude	40.2781	
ite Addre	ss 1	High Peak Camp	Audit Longitude	-105.5456	
ite Addre	ss 2	Route 7	Audit Elevation	27	
ounty		Larimer	Audit Declination	9.0	
tity, State		Estes Park, CO	Present		
ip Code		80517	Fire Extinguisher ☑	Inspected July 2012	
ime Zone		Mountain	First Aid Kit		
rimary O	perator		Safety Glasses		
rimary O	p. Phone #		Safety Hard Hat		
rimary O	p. E-mail		Climbing Belt		
ackup Op	oerator		Security Fence		
ackup Op	o. Phone #		Secure Shelter		
ackup Op	o. E-mail		Stable Entry Step 🗹		
helter Wo	orking Room	Make Ekto	Iodel 8814 (s/n 3062-1)	Shelter Size 896 cuft	
helter Cle	an 🗸	Notes The shelter is clean, neat, org	ganized, and well maintained.		
ite OK		Notes			

Field	ST	151	tems	Π	91	19	F	orm
I ICIU	\mathbf{J}	D.			<u>a</u>	Let -		

ROM406

F-02058-1500-S2-rev001

Site ID

Technician Eric Hebert

Site Visit Date 06/10/2013

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

Siting Distances OK

Siting Criteria Comment

Fie	eld Sy	stems Data Fo	orm		F-02058-1500-S3-rev001			
Site	D	ROM406	Technician Eric Hebert		Site Visit Date 06/10/2013			
1	Are win	d speed and direction	sensors sited so as to avoid ns?					
 Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind) 								
3	Are the	tower and sensors plu	mb?					
4	4 Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?							
5	5 Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)							
6	Is the so	olar radiation sensor p	umb?					
7	Is it site light?	d to avoid shading, or	any artificial or reflected					
8	Is the ra	ain gauge plumb?						
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?				45 degree rule			
10	Is the surface wetness sensor sited with the grid surface facing north?				N/A			
11	Is it inc	lined approximately 3	0 degrees?		N/A			

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

The tipping bucket rain gage and solar radiation sensor have been moved to the roof of the shelter since the previous audit visit. Both temperature sensor shields have been replaced with new models.

Field Systems Data Form F-02058-1500-S4-rev001 ROM406 Technician Eric Hebert Site Visit Date 06/10/2013 Site ID Wind direction malfucntion 1 Do all the meterological sensors appear to be intact, in good condition, and well maintained? ~ 2 Are all the meteorological sensors operational online, and reporting data? ~ Are the shields for the temperature and RH sensors clean? 3 ~ Are the aspirated motors working? 4 ~ 5 Is the solar radiation sensor's lens clean and free of scratches? ✓ N/A Is the surface wetness sensor grid clean and undamaged? 6 ~ 7 Are the sensor signal and power cables intact, in good condition, and well maintained? ~ Are the sensor signal and power cable connections protected 8 from the elements and well maintained? **Parameter** Model S/N **Client ID** Manufacturer Met tower Rohn unknown none none Relative Humidity Rotronic MP 601A 56091 none Precipitation Climatronics 100508-2 illegible 01620

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

The wind direction sensor is exhibiting the symptoms of potentiometer failure. Wind direction data quality are being impacted by this condition.

LI-200

41342

41342

unknown

unknown

AQ05103-5

AQ05103-5

PY19983

89123wdr

89123wsp

17079

17078

none

none

none

none

none

none

none

none

none

Solar Radiation

Wind Direction

Wind Speed

Temperature

Temperature2meter

Shield (10 meter)

Shield (2 meter)

Licor

RM Young

RM Young

RM Young

RM Young

RM Young

RM Young

Fi	eld Sy	stems Da	ta Form		F-02058-150	0-S5-rev001
Site	e ID	ROM406	Technician Eric H	lebert	Site Visit Date 06/10/2013	
	Siting C	Criteria: Are the	e pollutant analyzers and de	position equi	ent sited in accordance with 40 CFR 58,	Appendix E
1	Do the sunrestri	ample inlets ha icted airflow?	we at least a 270 degree arc	of		
2	Are the	sample inlets 3	- 15 meters above the groun	nd?		
3	3 Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?					
	Pollutar	nt analyzers and	l deposition equipment oper	cations and m	tenance	
1	Do the a conditio	analyzers and e on and well mai	quipment appear to be in go ntained?	od 🔽		
2	Are the reportin	analyzers and 1 1g data?	monitors operational, on-lin	e, and 🔽		
3	Describ	e ozone sample	tube.		/4 teflon by 12 meters	
4	Describ	e dry dep samp	le tube.		/8 teflon by 12 meters	
5	Are in-l indicate	ine filters used location)	in the ozone sample line? (if	yes 🔽	t inlet only	
6	Are sam	ple lines clean, tions?	free of kinks, moisture, and	d 🔽		
7	Is the ze	ero air supply d	esiccant unsaturated?	V		
8	Are the	re moisture traj	ps in the sample lines?			
9	Is there clean?	a rotometer in	the dry deposition filter line	e, and is it ⊻	Clean and dry	
Pa	rameter	1. 1.	Manufacturer	Model	S/N Clien	t ID

1 ai ainetei	Manufacturer	model	0/11	Chem ID	
Sample Tower	Aluma Tower	В	none	illegible	
Filter pack flow pump	Thomas	107CAB18	0493002494	02978]
Zero air pump	Werther International	PC70/4	531391	none	
MFC power supply	Tylan	RO-32	illegible	none]
Ozone	ThermoElectron Inc	49i A3NAA	1030745086	none	

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

ا

Parameter	Manufacturer	Model S/N		Client ID
Computer	Toshiba	Terca	unknown	none
DAS	Environmental Sys Corp	8816	2025	90535
Modem	US Robotics	33.6 fax modem	unknown	none
Printer	Hewlett Packard	842C	unknown	none
Solar Radiation Translator	RM Young	70101-X	none	none

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

Field Systems Data	For	m				F-02	058-	1500-S7-rev001
Site ID ROM406		Techn	ician	Eric Hebert	Site Visit Da	te 06/10/2013	C.D.C.N	Trent No.
Documentation								
Does the site have the requir	ed ins	trumen	t and	equipment mar	uals?			
Wind another	Yes	No	N/A	1 Det		Yes	No	N/A
Wind speed sensor				Data	logger			
Tomporature sensor				Data	logger			
Relative humidity sensor				Suij	nuter			
Solar radiation sensor				Mod	em			
Surface wetness sensor				Prin	ter			
Wind sensor translator				Zero	air numn			
Temperature translator				Filte	r flow pump			
Humidity sensor translator				Surg	e protector			
Solar radiation translator				UPS				
Tipping bucket rain gauge				Ligh	tning protection dev	ice 🗌		
Ozone analyzer				Shel	ter heater			
Filter pack flow controller				Shel	ter air conditioner			
Filter pack MFC power supply								
Does the site have the requ	ired a	nd mos	t recei	nt OC documen	ts and report forms?			
	Pres	ent				Curre		
Station Log			ata\/io	w2	1			
SSRF				VV2				
Site Ops Manual			une 20	00				
HASP								
Field Ops Manual	-							
Calibration Reports			ot curi	ent				
Ozone z/s/p Control Charts								
Preventive maintenance schedu	մ [
1 Is the station log properly	comp	leted di	uring o	every site visit?	Dataview			
2 Are the Site Status Report current?	t Form	ıs being	; comp	leted and	Flow and observa	ation sections		
3 Are the chain-of-custody f sample transfer to and fro	orms j m lab	properl ?	y usec	l to document				
4 Are ozone z/s/p control cha current?	arts pi	roperly	comp	leted and	Control charts no	ot used		
Provide any additional explana natural or man-made, that may	ition (j y affec	photogr t the m	aph o onitor	r sketch if neces ing parameters	ssary) regarding cone :	ditions listed a	bove,	or any other features,
Fi	eld Sy	stems Data	Form		F-02058-1	500-S8-rev001		
-----	-----------------------	--	--	------------------------------	--	---------------		
Sit	e ID	ROM406	Technician	Eric Hebert	Site Visit Date 06/10/2013			
	<u>Site op</u>	eration procedure	<u>s</u>					
1	Has th course	e site operator atte ? If yes, when and	ended a formal CAS who instructed?	TNET training	Trained by ARS on site			
2	Has th trainin	e backup operator g course? If yes, w	attended a formal hen and who instru	CASTNET	Trained by operator and by ARS on site			
3	Is the si schedul	ite visited regularly e?	y on the required T	uesday				
4	Are the flollowe	standard CASTN d by the site opera	ET operational pro itor?	cedures being				
5	Is the si the requ	ite operator(s) kno uired site activities	wledgeable of, and ? (including docum	able to perform entation)				

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	Monthly	
Confirm Reasonableness of Current Values	Weekly	
Test Surface Wetness Response	N/A	

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

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

- **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?

Dataview

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

~

 \checkmark

Mercury thermometer was removed from the shelter during the site audit. The site operator has requested additional training from ARS.

Field S	ystems Data Fo	rm					F-02058- 1	1500-S9-rev00		
Site ID	ROM406	Technie	cian Eric H	ebert		Site Visit Da	te 06/10/2013			
Site of	peration procedures									
1 Is the	filter pack being changed	every T	uesday as so	cheduled?		Filter changed va	rious times			
2 Are th correct	e Site Status Report Forr tly?	ns being	completed a	and filed						
3 Are da sched	ata downloads and backu iled?	ps being	performed	as		no longer required				
4 Are g	eneral observations being	made an	d recorded	? How?		SSRF				
5 Are si fashio	te supplies on-hand and r n?	eplenishe	ed in a time	ly						
6 Are sa	mple flow rates recorded	? How?				SSRF				
7 Are sa fashio	imples sent to the lab on a n?	ı regular	schedule in	a timely						
8 Are fi and sl	iters protected from conta hipping? How?	aminatio	n during ha	ndling		Clean gloves on a	and off			
9 Are thopera	e site conditions reported tions manager or staff?	l regularl	ly to the fiel	ld						
QC Check	Performed		Frequency				Compliant			
Multi-p	oint MFC Calibrations		Semiannua	lly						
Flow Sy	stem Leak Checks		Weekly							
Filter Pa	ack Inspection									
Flow Ra	te Setting Checks		Weekly		10001123					
Visual C	sual Check of Flow Rate Rotometer 🗹 Weekly				NICK TWO					
In-line I	-line Filter Inspection/Replacement Semiannually				47205					
Sample	mple Line Check for Dirt/Water									

The site operator is doing a very good job performing the site duties and expressed an interest in trying to improve any deficiencies. The sample flow rate systems for both the dry deposition and ozone sample trains were explained during the audit at the request of the site operator.

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
GTH	161-Eric H	lebert-06/12/2013				
1	6/12/2013	Computer	Dell	000251	D520	5HFNHB1
2	6/12/2013	DAS	Campbell	000416	CR3000	2513
3	6/12/2013	Elevation	Elevation	None	1	None
4	6/12/2013	Filter pack flow pump	Thomas	02751	107CAB18	1192001884
5	6/12/2013	flow rate	Tylan	000171	FC280SAV	AW04423004
6	6/12/2013	Infrastructure	Infrastructure	none	none	none
7	6/12/2013	MFC power supply	MACTEC	06044	none	none
8	6/12/2013	Modem	Raven	06589	H4223-C	0844321356
9	6/12/2013	Ozone	ThermoElectron Inc	000744	49i A1NAA	1105347324
10	6/12/2013	Ozone Standard	ThermoElectron Inc	000443	49i A3NAA	CM08200019
11	6/12/2013	Sample Tower	Aluma Tower	03564	A	none
12	6/12/2013	Shelter Temperature	Campbell	none	107-L	none
13	6/12/2013	Siting Criteria	Siting Criteria	None	1	None
14	6/12/2013	Temperature	RM Young	06120	41342VC	11742
15	6/12/2013	Zero air pump	Werther International	06927	P 70/4	000836211

DAS Data Form

0 DAS Time Max Error:

Mfg	Serial	Number Site	e T	echnician	Site Visit Date	Parameter	Use Desc.
Campbell	2513	GT	⁻ H161 E	Eric Hebert	06/12/2013	DAS	Primary
Das Date:	6 /13/2013	Audit Date	6 /13/2013 8:56:10	Mfg	Datel	Parameter	DAS
Das Time: Das Day:	164	Audit Day	164	Serial Number	4000392	Tfer Desc.	Source generator (D
Low Channe	el:	High Chann	el:	Tfer ID	01321		
Avg Diff:	Max Diff:	Avg Diff:	Max Diff:	Slope	1.0000	0 Intercept	0.00000
0.000	0.0	0.000	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	1/27/201	3 CorrCoff	1.00000
Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference	
7	0.0000	0.0000	0.0000	V	V	0.0000	
7	0.1000	0.1000	0.0999	V	V	-0.0001	
7	0.3000	0.3000	0.3000	V	V	0.0000	
7	0.5000	0.5000	0.5000	V	V	0.0000	
7	0.7000	0.7001	0.6999	V	V	-0.0002	
7	0.9000	0.9001	0.8999	V	V	-0.0002	
7	1.0000	1.0001	0.9999	V	V	-0.0002	

Flow Data Form

Mfg	Serial Num	ber Ta	Site	Тес	chnician	Site Visit D	ate Paran	neter	Owner ID
Tylan	AW044230	04	GTH161	Eri	c Hebert	06/12/2013	flow ra	te	000171
Mfg	Afg MACTEC				Mfg	BIOS	BIOS		ow Rate
SN/Owner ID	none	06044			Serial Number	122974 T		fer Desc. Bl	OS 220-H
Parameter	MFC power sup	ply			Tfer ID	01416			
					Slope	1.0	00000 Int	ercept	0.00000
					Cert Date	1/8	/2013 Co	rrCoff	1.00000
DAS 1:		DAS 2:		L	Cal Factor Z	ero	-0.0	09	
A Avg % Diff:	A Max % Di	A Avg %l	Dif A Max	: % Di	Cal Factor F	ull Scale	1.0	01	
2.16%	2.23%				Rotometer R	eading:	3	.6	
UseDescription:	Test type:	Input l/m:	Input STP:	MfcDisp.:	OutputSignal:	Output S E:	InputUnit:	OutputSigna	IPctDifference:
primary	pump off	0.000	0.000	0.05	0.046	-0.04	l/m	l/m	
primary	leak check	0.000	0.000	0.05	0.046	-0.04	l/m	l/m	
primary	test pt 1	0.000	2.936	2.81	2.808	3.00	l/m	l/m	2.17%
primary	test pt 2	0.000	2.935	2.81	2.808	3.00	l/m	l/m	2.23%
primary	test pt 3	0.000	2.939	2.81	2.808	3.00	l/m	l/m	2.07%
Sensor Compo	nent Leak Test	t		Conditio	n		Statu	pass	
Sensor Compo	nent Filter Azin	nuth		Conditio	n 180 deg		Statu	pass	
Sensor Compo	nent Filter Dep	th		Conditio	n 1.5 cm		Status	pass	
Sensor Compo	nent Filter Pos	ition		Conditio	n Good		Statu	pass	
Sensor Compo	ment Moisture I	Present		Conditio	n No moisture pr	esent	Statu	pass	
Sensor Component Rotometer Condition					n Clean and dry		Statu	pass	
Sensor Component System Memo				Conditio	n		Statu	pass	
Sensor Component Tubing Condition				Conditio	n Good		Statu	pass	
Sensor Compo	nent Filter Dist	ance		Conditio	n 5.5 cm		Statu	pass	

Ozone Data Form

Mfg	S	erial Number Ta	Site	Te	chnician		Site Vis	it Date	Parame	ter	Owner I	D
ThermoElec	ctron Inc	1105347324	GTH161	Er	ic Hebert	:	06/12/2	013	Ozone		000744	
Slope: 0.93953 Slope: 0.000 Intercept 0.44137 Intercept 0.000 CorrCoff 0.99997 CorrCoff 0.000				0 Mfg 0 Serial Number 0 Tfor ID			ThermoElectron Inc P: 517112175 T) 01111		Inc Pa	rameter 0: er Desc. 0	zone Dzone primary	y stan
DAS 1:		DAS 2:			Slope			0 0072	0 Inter	nont [0.15	2428
A Avg % D	Diff: A Ma	ax % Di A Avg %	6Dif A Max	% Di	Slope			0.9972		cept	0.10	0420
5.4	4%	5.8%			Cert Da	ite		1/2/201	3 Corr	Coff	1.00	0000
UseDes	cription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	e Unit:	PctDi	fference:	
prin	nary	1	0.03	-0.	15	0.4	43	ppb				
prin	nary	2	29.75	29	.64	27.	.94	ppb			-5.74%	
prin	nary	3	49.75	49.	.70	47.	.16	ppb			-5.11%	
prin	nary	4	79.85	79.	.88	75.	.90	ppb			-4.98%	
prin	nary	5	109.80	109	.92	103	5.50	ppb			-5.84%	
Sensor C	omnonent	Cell B Noise		Conditi	on 1.5 pr	b b			Status	pass		
Sensor Co	omponent	Cell B Tmp.		Conditio	on				Status	pass		
Sensor C	omponent	Fullscale Voltage		Conditi	on N/A				Status	pass		
Sensor C	omponent	Inlet Filter Condition	n	Conditio	on Clean	1			Status	pass		
Sensor C	omponent	Line Loss		Conditi	on 3 %				Status	pass		
Sensor C	omponent	Offset		Conditio	on 0.000				Status	pass		
Sensor C	omponent	Span		Conditi	on 0.988				Status	pass		
Sensor C	omponent	Cell B Freq.		Conditi	on 99.0 k	κHz			Status	pass		
Sensor C	omponent	System Memo		Conditi	on				Status	pass		
Sensor C	omponent	Sample Train		Conditi	on Good				Status	pass		
Sensor C	omponent	Cell B Pressure		Conditio	on				Status	pass		
Sensor C	omponent	Cell B Flow		Conditio	on 0.59 l	pm			Status	pass		
Sensor C	omponent	Cell A Tmp.		Conditio	on 33.3 (2			Status	pass		
Sensor C	omponent	Cell A Pressure		Conditio	on 522 m	nmHg			Status	pass		
Sensor C	omponent	Cell A Noise		Conditio	on 1.1 pp	b			Status	pass		
Sensor C	omponent	Cell A Freq.		Conditio	on 90.9 k	κHz			Status	pass		
Sensor C	omponent	Cell A Flow		Conditio	on 0.57 l	pm			Status	pass		
Sensor C	omponent	Battery Backup		Conditio	n N/A				Status	pass		
Sensor C	omponent	Zero Voltage		Conditio	on N/A				Status	pass		

Temperature Data Form

Mfg	1	Serial Nun	nber Ta	Site		Tec	hni	cian	Site V	isit Date	Param	eter	Owner I	D
RM Young		11742		GTH161		Eri	c He	ebert	06/12	/2013	Temper	ature	06120	
							Mf	g	Extect	ו	Pa	rameter Te	emperature	
							Ser	ial Number	H2326	679	Tf	er Desc. R	ſD	
							Tfe	er ID	01228					
DAS 1:			DAS 2:				Slo	ре		1.0073	2 Inte	rcept	-0.12	380
Abs Avg Err	Abs	Max Er	Abs Av	g Err Abs	Max Er		Cei	rt Date		1/12/201	3 Cor	rCoff	1.00	000
0.13		0.21]								
UseDesc.:		Test type:	Inj	outTmpRaw	InputTm	pCor	rr.:	OutputTmpS	ignal:	OutputSig	nalEng:	OSE Unit:	Difference:	
primary	Temp	Low Range	e	-0.04	0.0	8		0.000		0.3	;	С	0.21	
primary	Temp	Mid Range	;	23.81	23.7	76		0.000		23.	8	С	0.03	
primary	Temp	High Rang	e	45.88	45.6	57		0.000		45.	5	С	-0.14	
Sensor Com	ponen	t Shield			Cond	litio	n C	Clean			Status	pass		
Sensor Com	ponen	t Blower S	tatus Swi	tch	Cond	litio	n N	I/A			Status	pass		
Sensor Com	ponen	t Blower			Cond	litio	n N	I/A			Status	pass		
Sensor Com	ponen	t System N	/lemo		Cond	litio	n 🗌				Status	pass		

Infrastructure Data For

Site ID	GTH161	Technician Eric Hebe	ert Site Visit Date 06/12/2013
Shelter	Make	Shelter Model	Shelter Size
Ekto		8810 (s/n 2149-12)	640 cuft

Sensor Component	Shelter Roof	Condition	Fair	Status	pass
Sensor Component	Sample Tower Type	Condition	Туре А	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	Conduit	Condition	N/A	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	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	GTH161	Eric Hebert	06/12/2013	Shelter Temperatur	enone
DAS 1:	DAS 2:		Mfg	Extech	Parameter St	nelter Temperatur
Abs Avg Err Abs 0.47	S Max Er Abs Avg	Err Abs Max Er	Serial Number	H232679	Tfer Desc. R	ГD
			Tfer ID	01228		
			Slope	1.0073	2 Intercept	-0.12380
			Cert Date	1/12/201	3 CorrCoff	1.00000

UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	19.94	19.92	0.000	21.0	С	1.11
primary	Temp Mid Range	21.94	21.90	0.000	21.8	С	-0.12
primary	Temp Mid Range	22.72	22.68	0.000	22.5	С	-0.19

Field Systems Comments

1 Parameter: SiteOpsProcComm

Due to the remote location of the site, it can take up to a week to return the filter sample to the lab after it is removed from the tower in the winter. The site operator is transferring the filter bag and caps from the new filter to the removed filter. There are no clean bags and spare caps on-site. It was discussed that the bags and caps are intended to stay with each filter and not be transferred from one to the next.

2 Parameter: DasComments

There is a new sample tower on-site to be installed in the near future.

3 Parameter: SiteOpsProcedures

The site operator is new and has not received formal training. He has been provided with written instructions prepared by the previous site operator. Site operation has improved since the previous site audit visit.

4 Parameter: ShelterCleanNotes

Some floor tiles are damaged.

5 Parameter: MetSensorComme

The temperature sensor has been moved to the sample tower and mounted in a naturally aspirated shield facing south and over the shelter roof. The met tower has been removed.

Field Systems	Data Form	A. A.	F-02058-1500-S1-rev001
Site ID GTH161	Technician Eric Hebert	Site Visit Date 06/	12/2013
S'4 S (EDA	USGS Man	Gothic
Site Sponsor (agency)		Man Scale	
Operating Group		Man Date	
AQS#	08-051-9991		
Meteorological Type	R.M. Young		
Air Pollutant Analyzer	Ozone	QAPP Latitude	38.9573
Deposition Measureme	ent dry, wet	QAPP Longitude	-106.9854
Land Use	mountain meadow, woodland - mixed	QAPP Elevation Meters	2926
Terrain	complex	QAPP Declination	10.75
Conforms to MLM	No	QAPP Declination Date	2/23/2006
Site Telephone	(970) 349-5691	Audit Latitude	38.95627
Site Address 1	RMBL	Audit Longitude	-106.98587
Site Address 2	Gothic	Audit Elevation	2915
County	Gunnison	Audit Declination	9.6
City, State	Crested Butte, CO	Present	
Zip Code	81224	Fire Extinguisher 🗹	Inspected Nov 1987
Time Zone	Mountain	First Aid Kit	
Primary Operator		Safety Glasses	
Primary Op. Phone #		Safety Hard Hat	
Primary Op. E-mail		Climbing Belt	
Backup Operator		Security Fence	
Backup Op. Phone #		Secure Shelter	
Backup Op. E-mail		Stable Entry Step	
Shelter Working Room	n <mark>✓ Make</mark> Ekto M	lodel 8810 (s/n 2149-12)	Shelter Size 640 cuft
Shelter Clean	Notes Some floor tiles are damaged.		
Site OK	✓ Notes		
Driving Directions F tr a a	rom Gunnison take route 135 north to Creste arough town past the fire station and the road pproximately three miles and park at the visite pproximately 200 meters on the path up the h	d Butte. Continue through tow maintenance facility onto the c or area at the bottom of the hill hill.	n to Mount Crested Butte. Continue lirt road to Gothic. Continue below the site. The site is

Field Systems Data Form

GTH161

F-02058-1500-S2-rev001

Site ID

Technician Eric Hebert

Site Visit Date 06/12/2013

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

Siting Distances OK

Siting Criteria Comment

Fi	eld Systems Data Form		F-02058-1500-S3-rev001
Site	e ID GTH161 Technician Eric Hebert		Site Visit Date 06/12/2013
1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?		N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	√	N/A
3	Are the tower and sensors plumb?		N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?		South
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas o standing water should be avoided))f	Over shelter
6	Is the solar radiation sensor plumb?		N/A
7	Is it sited to avoid shading, or any artificial or reflected light?		N/A
8	Is the rain gauge plumb?		N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?		N/A
10	Is the surface wetness sensor sited with the grid surface facing north?		N/A
11	Is it inclined approximately 30 degrees?		N/A

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

The temperature sensor has been moved to the sample tower and mounted in a naturally aspirated shield facing south and over the shelter roof. The met tower has been removed.

Field S	ystems Data	a Form			F-02	058-15	00-54-161001
Site ID	GTH161	Technician	Eric Hebert		Site Visit Date 06/12/2013	3	
						1	
1 Do all condit	the meterological tion, and well main	sensors appear to be i itained?	ntact, in good	•			
2 Are al report	ll the meteorologica ting data?	al sensors operational	online, and				
3 Are th	ne shields for the te	emperature and RH se	ensors clean?				
4 Are th	ne aspirated motors	s working?			N/A		
5 Is the	solar radiation sen	isor's lens clean and fi	ree of		N/A		
scrate	hes?						
6 Is the	surface wetness se	nsor grid clean and u	ndamaged?		N/A		
7 Are th	ne sensor signal and	d power cables intact, tained?	in good				
8 Are th	ne sensor signal and	d power cable connect	ions protected				
from	the elements and w	ell maintained?					
Parameter	r	Manufacturer	Model		S/N	Cli	ent ID
Temperatu Provide any atural or r	re y additional explan nan-made, that ma	RM Young ation (photograph or ay affect the monitorin	41342VC sketch if necess ng parameters:	sary)	11742 regarding conditions listed a	bove, or a	20 ny other features,
Temperatu Provide any atural or r	re y additional explan nan-made, that ma	RM Young ation (photograph or ay affect the monitorin	41342VC sketch if necess ig parameters:	sary)	11742 regarding conditions listed a	bove, or a	20 ny other features,
Temperatu Provide any atural or r	re y additional explan nan-made, that ma	RM Young ation (photograph or ay affect the monitorin	41342VC sketch if necess ng parameters:	sary)	11742 regarding conditions listed a	06' bove, or a	20 ny other features,
Temperatu Provide any natural or r	re y additional explan nan-made, that ma	RM Young ation (photograph or ay affect the monitorin	41342VC sketch if necess ig parameters:	sary)	11742 regarding conditions listed a	06' bove, or a	20 ny other features,
Temperatu Provide any natural or 1	re y additional explan nan-made, that ma	RM Young ation (photograph or ay affect the monitorin	41342VC sketch if necess ig parameters:	sary)	11742 regarding conditions listed a	06' bove, or a	20 ny other features,
Temperatu Provide any natural or 1	re y additional explan nan-made, that ma	RM Young ation (photograph or ay affect the monitorin	41342VC sketch if necess ng parameters:	sary)	11742 regarding conditions listed a	06' bove, or a	20 ny other features,
Temperatu Provide any natural or r	re y additional explan nan-made, that ma	RM Young ation (photograph or ay affect the monitorin	41342VC sketch if necess ig parameters:	sary)	11742 regarding conditions listed a	06' bove, or a	20 ny other features,
Temperatu Provide any natural or r	re y additional explan nan-made, that ma	RM Young ation (photograph or ay affect the monitorin	41342VC sketch if necess ng parameters:	sary)	11742 regarding conditions listed a	06'	20 ny other features,
Temperatu Provide any natural or r	re y additional explan nan-made, that ma	RM Young ation (photograph or ay affect the monitorin	41342VC sketch if necess ng parameters:	sary)	11742 regarding conditions listed a	06'	20 ny other features,
Temperatu Provide any natural or r	re y additional explan nan-made, that ma	RM Young ation (photograph or ay affect the monitorin	41342VC sketch if necess ig parameters:	sary)	11742 regarding conditions listed a	06'	20 ny other features,
Temperatu Provide any natural or r	re y additional explan nan-made, that ma	RM Young ation (photograph or ay affect the monitorin	41342VC sketch if necess ig parameters:	sary)	11742 regarding conditions listed a	06'	20 ny other features,

Fie	ld Systems Data Form	F-02058-1500-S5-rev001	
Site	ID GTH161 Technician Eric Hebert		Site Visit Date 06/12/2013
	Siting Criteria: Are the pollutant analyzers and deposition ed	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 12 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	ameter Manufacturer Model		S/N Client ID

Parameter	Manufacturer	Model	S/N	Client ID	
Sample Tower	Aluma Tower	A	none	03564	
MFC power supply	MACTEC	none	none	06044	
Ozone	ThermoElectron Inc	49i A1NAA	1105347324	000744	
Filter pack flow pump	Thomas	107CAB18	1192001884	02751	
Zero air pump	Werther International	P 70/4	000836211	06927	

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 Systems Data	Form			F-02058	-1500-S6-rev0()1
Site	GTH161	Technician Eric H	lebert	Site Visit	Date 06/12/2013		
	DAS, sensor translators, ar	d peripheral equipment	operations a	nd maintenan	<u>ce</u>		
1	Do the DAS instruments ap well maintained?	opear to be in good cond	ition and 🔽				
2	Are all the components of t modem, backup, etc)	he DAS operational? (pr	rinters, 🔽				
3	Do the analyzer and sensor lightning protection circuit	signal leads pass throug ry?	gh 🔽	Met sensors of	only		
4	Are the signal connections well maintained?	protected from the weat	her and 🔽				_
5	Are the signal leads connec	ted to the correct DAS c	hannel? 🔽				
6	Are the DAS, sensor transl grounded?	ators, and shelter prope	rly 🔽				
7	Does the instrument shelter	r have a stable power sou	urce?				
8	Is the instrument shelter te	mperature controlled?					
9	Is the met tower stable and	grounded?		Stable	Grou	nded	
10	Is the sample tower stable a	and grounded?					
11	Tower comments?			Tower does n	ot have ground rod but i	s bolted to shelter.	
Par	rameter	Manufacturer	Model	S/N		Client ID	
Cor	nputer	Dell	D520	5HFNI	HB1	000251	
DAS	S	Campbell	CR3000	2513		000416	

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:

H4223-C

0844321356

06589

There is a new sample tower on-site to be installed in the near future.

Raven

Modem

Field Syst	ems Data 1	Fo	rm	1						F-02	058-	150	0-S7-rev001
Site ID G	TH161		Т	echr	ician	Eric Heber	t	Site Visit Da	ate 00	6/12/2013			
Documentatio	<u>on</u>												
Does the site	have the require	ed in	stru	imei	nt and o	equipmen	t manuals?	Contract in the second					
		Yes	I	No	N/A	4.4				Yes	No	N/A	
Wind speed sens	sor	Ц					Data logg	er					
Wind direction	sensor						Data logg	er					
Temperature se	nsor						Strip chai	rt recorder					
Relative humidi	ty sensor						Computer	r dialaharan					
Solar radiation	sensor						Modem						
Surface wetness	sensor						Printer						
Wind sensor tra	nslator						Zero air p	oump					
Temperature tra	anslator	Ц					Filter flov	v pump					
Humidity sensor	r translator						Surge pro	tector					
Solar radiation	translator						UPS						
Tipping bucket	rain gauge						Lightning	protection dev	vice				
Ozone analyzer							Shelter he	eater					
Filter pack flow	controller						Shelter ai	r conditioner					
Filter pack MFG	C power supply												
Does the site	e have the requi	red a	and	mos	st recen	t QC doci	uments and	d report forms:	?				
		Pres	sent							Currei	nt		
Station Log													
SSRF				-									
Site Ops Manua	1			0	$rt 200^{\circ}$	1							
HASP					200 200								
Field Ops Manu	al				lulv 199	0							
Calibration Rep	orts												
Ozone z/s/p Con	trol Charts			-									
Preventive main	tenance schedul			-									
					1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 -		CSI MINIS						
1 Is the static	on log properly c	comp	olete	ed d	uring e	very site v	visit? 🔽 🛚	Minimal informat	tion		43478234 M		
2 Are the Site current?	e Status Report]	Fori	ns b	oein	g comp	leted and							
3 Are the cha sample tran	un-of-custody fo nsfer to and fron	orms n lat	pro p?	oper	ly used	to docum	ent 🔽						
4 Are ozone z current?	z/s/p control cha	rts p	orop	berly	compl	eted and		Control charts no	ot use	d			
Provide any add natural or man-	litional explanat made, that may	ion (affe	(pho ct tł	otog he m	raph oi ionitori	sketch if ing param	necessary) eters:) regarding con	ditio	ns listed a	bove,	or any	other features,
		and a second		1747									
							S. Maria						

Field Systems Data Form						F-02058	-1500-S8-rev001
Site	ID	GTH161	Technician	Eric Hebert	Site Visit Date	06/12/2013	
1	Site op Has th course	eration procedur e site operator at ? If yes, when an	<u>res</u> tended a formal CAS d who instructed?	TNET training	Trained by previous	operator	
2	Has th trainin	e backup operato g course? If yes,	or attended a formal (when and who instru	CASTNET cted?			
3	3 Is the site visited regularly on the required Tuesday schedule?			ıesday			
4	4 Are the standard CASTNET operational procedures being followed by the site operator?						
5 Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)							

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

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

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

QC Check Performed
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

Zero Air Desiccant Check

2

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

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

ze

Unknown

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

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

SSRF, call-in

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

The site operator is new and has not received formal training. He has been provided with written instructions prepared by the previous site operator. Site operation has improved since the previous site audit visit.

Fie	ield Systems Data Form				F-02058-1500-S9-rev001					
Site	ID	GTH161	Techn	ician	Eric Hebert		Site Visit Da	Site Visit Date 06/12/2013		
	Site ope	eration procedures								
1	Is the fi	lter pack being changed	l every T	<mark>ันesd</mark> ะ	y as scheduled	? 🗹	Filter changed m	orini	ngs	
2	Are the correct	Site Status Report For ly?	ms being	comp	pleted and filed					
3	Are data downloads and backups being performed as scheduled?					No longer required				
4	4 Are general observations being made and recorded? How?				SSRF, logbook					
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 san fashion	nples sent to the lab on a ?	a regulai	• sche	dule in a timely					
8	Are filt and shi	ers protected from cont pping? How?	aminatio	on dur	ing handling		Clean gloves on and off			
9	Are the operation	site conditions reported ons manager or staff?	d regular	ly to 1	the field					
QC	Check P	erformed		Free	luency				Compliant	
M	lulti-poi	nt MFC Calibrations		Sem	iannually	10000] [
F	low Syst	em Leak Checks		Wee	kly] [
F	Filter Pack Inspection] [
F	Flow Rate Setting Checks			44444123	and the second] [
V	Visual Check of Flow Rate Rotometer Weekly] [
Ir	n-line Fi	lter Inspection/Replace	ment 🔽	Sem	iannually	121220] [
S	ample L	ine Check for Dirt/Wat	er 🔽	Wee	kly	0.0110.07/1] [
Provi	ide anv a	additional explanation (photogra	aph or	r sketch if nece	ssarv) regarding cond	litio	ns listed above. or	any other features.

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

Due to the remote location of the site, it can take up to a week to return the filter sample to the lab after it is removed from the tower in the winter. The site operator is transferring the filter bag and caps from the new filter to the removed filter. There are no clean bags and spare caps on-site. It was discussed that the bags and caps are intended to stay with each filter and not be transferred from one to the next.

APPENDIX B

CASTNET Site Spot Report Forms

Data Compiled: 7/11/2013 3:02:18 PM

SiteV	isitDate	Site	Technician					
04/01/2013 CHA467			Eric Hebert					
Line Audited Parameter		DAS	Ch. #	Criteria +/-				
1	Ozone Sl	ope	Р	0	1.1			
2	Ozone In	tercept	Р	0	5			

2	Ozone Intercept	Р	0	5	4	0.45247	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
4	Ozone % difference avg	Р	7	10	4	0.3	%	Р
5	Ozone % difference max	Р	7	10	4	0.5	%	Р

Counts QaResult

0.99085

4

Units

unitless

Pass/Fail

Field Performance Comments

1	Parameter:	Ozone	SensorComponent:	System Memo	CommentCode	178
	Stainless steel	fittings are connected to	Teflon fittings on the ozor	ne analyzer. This can caus	se leaks and prematu	re failure of the fittings.
2	Parameter:	Ozone	SensorComponent:	Cell B Freq.	CommentCode	99

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

Data Compiled: 7/11/2013 7:29:05 PM

SiteVisitDate	Site	Technician				
04/02/2013	PET427	Eric Hebert				
Line Audited	d Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult
1 Ozone Sl	ope	Р	0	1.1	4	0.99254
2 Ozone In	tercept	Р	0	5	4	0.63847
3 Ozone co	orrelation	Р	0	0.995	4	1.00000
4 Ozone %	difference avg	Р	7	10	4	0.5

4 Ozone % difference avg

5 Ozone % difference max

Field Performance Comments

1	Parameter:	Ozone	SensorComponent:	Cell B Freq.	CommentCode	99
	This analyzer of	liagnostic check is outsid	le the manufacturer's recor	nmended value.		
2	Parameter:	Ozone	SensorComponent:	Cell A Freq.	CommentCode	99

Р

7

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

Units

unitless

unitless

ppb

%

%

4

10

1.1

Pass/Fail Р

Р

Р

Р

Р

Data Compiled: 7/11/2013 7:39:36 PM

4 Ozone % difference avg

5 Ozone % difference max

SiteV	isitDate Site	Technician				
04/04/2	2013 GRC474	Eric Hebert				
Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult
1	Ozone Slope	Р	0	1.1	4	1.00765
2	Ozone Intercept	Р	0	5	4	-1.00446
3	Ozone correlation	Р	0	0.995	4	1.00000

Field Performance Comments

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

Р

Р

7

7

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

Units

unitless

unitless

ppb

%

%

4

4

10

10

1.1

2.7

Pass/Fail

Р

Р

Р

Р

Р

Data Compiled: 7

iled: 7/11/2013 7:49:36 PM

SiteVisitDate	Site	Technician
04/08/2013	JOT403	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.95679	unitless	Р
2	Ozone Intercept	Р	0	5	4	1.01348	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99982	unitless	Р
4	Ozone % difference avg	Р	7	10	4	2.1	%	Р
5	Ozone % difference max	Р	7	10	4	4.3	%	Р

EEMS Spot Report Data Compiled: 7/11/2013 9:19:49 PM

Data Complica	//11/2013 9.19.49 I M	
SiteVisitDate	Site	Technician
04/11/2013	PIN414	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Wind Speed average error below 5m/s in m/s	Р	3	0.5	4	0.01	m/s	Р
2	Wind Speed max error below 5m/s in m/s	Р	3	0.5	4	0.03	m/s	Р
3	Wind Speed average % difference above 5 m/s	Р	3	5	4	0.3	%	Р
4	Wind Speed max % difference above 5 m/s	Р	3	5	4	0.3	%	Р
5	Wind Speed Torque average error	Р	3	0.5	1	0.45	g-cm	Р
6	Wind Speed Torque max error	Р	3	0.5	1	0.5	g-cm	Fail
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	6	degrees	Fail
9	Wind Direction Linearity average error (deg)	Р	2	5	8	2.2	degrees	Р
10	Wind Direction Linearity max error (deg)	Р	2	5	8	6	degrees	Fail
11	Wind Direction Torque average error	Р	2	20	1	8	g-cm	Р
12	Wind Direction Torque max error	Р	2	20	1	8	g-cm	Р
13	Temperature average error	Р	4	0.5	3	0.08	с	Р
14	Temperature max error	Р	4	0.5	3	0.11	с	Р
15	Relative Humidity average above 85%	Р	6	10	1	4.0	%	Р
16	Relative Humidity max above 85%	Р	6	10	1	4.0	%	Р
17	Relative Humidity average below 85%	Р	6	10	2	2.5	%	Р
18	Relative Humidity max below 85%	Р	6	10	2	4.2	%	Р
19	Solar Radiation % diff of avg	Р	9	10	27	9.42	%	Р
20	Solar Radiation % diff of max STD value	Р	9	10	27	9.00	%	Р
21	Precipitation average % difference	Р	1	10	2	2.0	%	Р
22	Precipitation max % difference	Р	1	10	2	4.0	%	Р
23	Ozone Slope	Р	0	1.1	4	0.98686	unitless	Р
24	Ozone Intercept	Р	0	5	4	0.13471	ppb	Р
25	Ozone correlation	Р	0	0.995	4	0.99998	unitless	Р
26	Ozone % difference avg	Р	7	10	4	1.1	%	Р
27	Ozone % difference max	Р	7	10	4	1.7	%	Р
28	Flow Rate average % difference	Р	10	5	3	0.10	%	Р
29	Flow Rate max % difference	Р	10	5	3	0.14	%	Р
30	DAS Time maximum error	Р	0	5	1	0.67	min	Р
31	DAS Voltage average error	Р	9	0.003	28	0.0001	V	Р
32	DAS Voltage average error	Р	2	0.003	28	0.0003	V	Р
33	Shelter Temperature average error	Р	5	1	9	1.28	c	Fail
34	Shelter Temperature max error	Р	5	1	9	2.09	с	Fail

04/11/2013 PIN414

Eric Hebert

Field Performance Comments

1	Parameter:	Ozone	SensorComponent:	Cell B Freq.	CommentCode	99				
	This analyzer of	liagnostic check is outsid	e the manufacturer's recor	nmended value.						
2	Parameter:	Ozone	SensorComponent:	Cell A Freq.	CommentCode	99				
	This analyzer diagnostic check is outside the manufacturer's recommended value.									
3	Parameter:	Precipitation	SensorComponent:	Properly Sited	CommentCode	193				
	Objects violate	e the 45 degree rule for th	e tipping bucket rain gage	2.						
4	Parameter:	Precipitation	SensorComponent:	Sensor Heater	CommentCode	107				
	The tipping bu	cket rain gauge heater is	not functioning.							
5	Parameter:	Wind Direction	SensorComponent:	Condition	CommentCode	147				

The upper and lower sections of the wind sensor body are loose. This condition will cause premature failure of the sensor and can affect data accuracy.

Field Systems Comments

1 Parameter: SiteOpsProcComm

The site operator reported that the flow pump is routinely turned on while the tower is down after the dry deposition filter is installed. She reported that she was instructed by ARS to operate the flow pump while the tower was in the down position to check for proper filter pack installation. It was discussed that this is not a proper check of filter installation since air flow could be going through the connector with the connector completely locked in place. The operator reported that the plastic bag is used to handle the filter and that gloves are not used. The site operator reported that the ozone inlet filter is changed while the dry deposition filter is still installed and exposed on the tower.

2 Parameter: SiteOpsProcedures

The site operator reviews data each week to ensure proper operation of sensors and instruments.

3 Parameter: ShelterCleanNotes

Shelter has some loose tiles and signs of a leak in the SW corner. It is somewhat cluttered with equipment that is unused and some that requires installation. The lighting is poor.

Data Compiled:

7/11/2013 9:31:58 PM

SiteV	isitDate	Site	Technician						
04/16/2	2013	GRB411	Eric Hebert						
Line	Audited	d Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Sl	ope	Р	0	1.1	4	1.0428	unitless	Р
2	Ozone In	tercept	Р	0	5	4	-0.30416	ppb	Р
3	Ozone co	orrelation	Р	0	0.995	4	0.99999	unitless	Р
4	Ozone %	difference avg	Р	7	10	4	3.5	%	Р
5	Ozone %	difference max	Р	7	10	4	4.1	%	Р

Field Performance Comments

1	Parameter:	Ozone	SensorComponent:	Cell B Freq.	CommentCode	99		
	This analyzer of	liagnostic check is outsid	le the manufacturer's recor	nmended value.				
2	Parameter:	Ozone	SensorComponent:	Cell A Freq.	CommentCode	99		
	This analyzer diagnostic check is outside the manufacturer's recommended value.							

Page 1 of 1

Data Compiled: 7/11/2013 9:48:03 PM

SiteV	isitDate Site	Technician				
04/18/2	2013 MEV405	Eric Hebert				
Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult
1	Ozone Slope	Р	0	1.1	4	1.00093
2	Ozone Intercept	Р	0	5	4	-0.68617
3	Ozone correlation	Р	0	0.995	4	0.99998
4	Ozone % difference avg	Р	7	10	4	1.4

5 Ozone % difference max

Field Performance Comments

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

Р

7

10

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

Units

unitless

unitless

ppb

%

%

4

3.2

Pass/Fail Р

Р

Р

Р

Р

Data Compiled: 7/11/2013 10:01:49 PM

SiteVisitDate	e Site	Technician				
04/19/2013	Eric Hebert					
Line Audite	ed Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult
1 Ozone S	Slope	Р	0	1.1	4	0.97307

1	Ozone Slope	Р	0	1.1	4	0.97307	unitless	Р
2	Ozone Intercept	Р	0	5	4	0.93607	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99997	unitless	Р
4	Ozone % difference avg	Р	7	10	4	1.3	%	Р
5	Ozone % difference max	Р	7	10	4	1.9	%	Р

Field Performance Comments

1	Parameter:	Ozone	SensorComponent:	Cell A Tmp.	CommentCode 94
	The cooling fa analyzer tempe	n dust cover for the ozon erature. This could lead t	e analyzer is clogged with to premature failure of cor	dust and restricting air floor nponents including the oz	ow. This is increasing the internal ozone one sample pump.
2	Parameter:	Ozone	SensorComponent:	Cell A Tmp.	CommentCode 99

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

3 Parameter: Ozone **SensorComponent:** Cell B Freq. **CommentCode** 99

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

Units

Pass/Fail

Data Compiled:

7/13/2013 12:19:30 PM

SiteVisitDate Site Technician 04/22/2013 DCP114 Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	12	0.13	с	Р
2	Temperature max error	Р	4	0.5	12	0.15	с	Р
3	Ozone Slope	Р	0	1.1	4	0.99126	unitless	Р
4	Ozone Intercept	Р	0	5	4	0.91544	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	2.4	%	Р
8	Flow Rate average % difference	Р	10	5	2	1.64	%	Р
9	Flow Rate max % difference	Р	10	5	2	1.7	%	Р
10	DAS Time maximum error	Р	0	5	1	0.00	min	Р
11	DAS Voltage average error	Р	7	0.003	28	0.0001	V	Р
12	Shelter Temperature average error	Р	5	1	9	0.11	с	Р
13	Shelter Temperature max error	Р	5	1	9	0.12	с	Р

04/22/2013 DCP114

Technician

Sandy Grenville

Field Performance Comments

1 Parameter: Temperature SensorComponent: Blower

CommentCode 26

The forced-air blower for the shield is not functioning.

Field Systems Comments

1 Parameter: SiteOpsProcComm

The site operator is following procedures and doing a very good job with filter handling.

2 Parameter: DasComments

One leg of the meteorological sensor tower is damaged and has a hole near the midpoint of the tower.

3 Parameter: SiteOpsProcedures

The ozone inlet filter is replaced and the sample line is leak-tested every two weeks.

4 Parameter: SitingCriteriaCom

The site is located in a wooded thicket within a state park. The area surrounding the park is almost completely intensive agriculture. The site may not be regionally representative.

5 Parameter: ShelterCleanNotes

The shelter is currently in fair condition. There are loose floor tiles. There are signs of rodent infestation.

6 Parameter: MetOpMaintCom

The blower for the aspirated temperature sensor shield is not functioning. This will affect sensor accuracy and data quality.

Data Compiled: 7/27/2013 12:33:22 PM

SiteVisitDateSiteTechnician04/25/2013SAN189Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	6	0.11	с	Р
2	Temperature max error	Р	4	0.5	6	0.24	с	Р
3	Ozone Slope	Р	0	1.1	4	0.95175	unitless	Р
4	Ozone Intercept	Р	0	5	4	1.21042	ppb	Р
5	Ozone correlation	Р	0	0.995	4	0.99993	unitless	Р
6	Ozone % difference avg	Р	7	10	4	3.0	%	Р
7	Ozone % difference max	Р	7	10	4	3.6	%	Р
8	Flow Rate average % difference	Р	10	5	6	1.12	%	Р
9	Flow Rate max % difference	Р	10	5	6	1.15	%	Р
10	DAS Time maximum error	Р	0	5	1	0.00	min	Р
11	DAS Voltage average error	Р	7	0.003	21	0.0001	v	Р
12	Shelter Temperature average error	Р	5	1	9	0.34	с	Р
13	Shelter Temperature max error	Р	5	1	9	0.65	с	Р

Field Systems Comments

1 Parameter: SiteOpsProcComm

The site operator was observed to be not completely familiar with all aspects of CASTNET site operation. Additional training is recommended. Flow rate leak checks are not performed although they are reported. The initial and final flow rates are not recorded correctly. These observations were reported following the previous audit.

2 Parameter: SiteOpsProcedures

CASTNET procedures including filter pack leak check and filter pack final flow rate are not being performed correctly. Additional training is recommended.

3 Parameter: ShelterCleanNotes

The shelter is in very good condition, however somewhat cluttered.

Data Compiled: 7/27/2013 1:05:28 PM

SiteVisitDate	Site	Technician
04/26/2013	KNZ184	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	3	0.17	с	Р
2	Temperature max error	Р	4	0.5	3	0.19	с	Р
3	Flow Rate average % difference	Р	10	5	2	0.08	%	Р
4	Flow Rate max % difference	Р	10	5	2	0.13	%	Р
5	DAS Time maximum error	Р	0	5	1	0.00	min	Р
6	DAS Voltage average error	Р	7	0.003	28	0.0000	V	Р
7	Shelter Temperature average error	Р	5	1	9	0.93	с	Р
8	Shelter Temperature max error	Р	5	1	9	1.17	с	Fail

Field Systems Comments

1 Parameter: SiteOpsProcComm

One clean glove is used to handle the filter for removal and installation.

2 Parameter: SiteOpsProcedures

Ozone monitor not operating.

3 Parameter: SitingCriteriaCom

The site is located at a Long Term Ecological Research site operated by KSU.

4 Parameter: ShelterCleanNotes

The shelter is very clean, neat, well organized and well maintained.

5 Parameter: PollAnalyzerCom

By request of the Kansas Department of Health and Environment, the site ozone monitor was not operating at the time of the site audit.

EEMS Spot Report Data Compiled: 7/27/2013 3:32:43 PM

Data Complied	//2//2015 5.52.45 I W	
SiteVisitDate	Site	Technician
05/01/2013	YOS404	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Wind Speed average error below 5m/s in m/s	Р	3	0.5	4	0.02	m/s	Р
2	Wind Speed max error below 5m/s in m/s	Р	3	0.5	4	0.03	m/s	Р
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	0.8	%	Р
5	Wind Speed Torque average error	Р	3	0.5	1	0.30	g-cm	Р
6	Wind Speed Torque max error	Р	3	0.5	1	0.3	g-cm	Р
7	Wind Direction Input Deg True average error (de	Р	2	5	4	10.8	degrees	Fail
8	Wind Direction Input Deg True max error (deg)	Р	2	5	4	13	degrees	Fail
9	Wind Direction Linearity average error (deg)	Р	2	5	8	1.5	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	8	g-cm	Р
12	Wind Direction Torque max error	Р	2	20	1	8	g-cm	Р
13	Temperature average error	Р	4	0.5	3	0.05	с	Р
14	Temperature max error	Р	4	0.5	3	0.12	с	Р
15	Relative Humidity average above 85%	Р	6	10	2	2.1	%	Р
16	Relative Humidity max above 85%	Р	6	10	2	2.1	%	Р
17	Relative Humidity average below 85%	Р	6	10	4	3.3	%	Р
18	Relative Humidity max below 85%	Р	6	10	4	4.3	%	Р
19	Solar Radiation % diff of avg	Р	9	10	8	3.82	%	Р
20	Solar Radiation % diff of max STD value	Р	9	10	8	4.8	%	Р
21	Precipitation average % difference	Р	1	10	2	3.0	%	Р
22	Precipitation max % difference	Р	1	10	2	4.0	%	Р
23	Ozone Slope	Р	0	1.1	4	1.00354	unitless	Р
24	Ozone Intercept	Р	0	5	4	-0.98519	ppb	Р
25	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
26	Ozone % difference avg	Р	7	10	4	1.3	%	Р
27	Ozone % difference max	Р	7	10	4	1.9	%	Р
28	Flow Rate average % difference	Р	10	5	6	3.14	%	Р
29	Flow Rate max % difference	Р	10	5	6	3.22	%	Р
30	DAS Time maximum error	Р	0	5	1	1.4	min	Р
31	DAS Voltage average error	Р	15	0.003	21	0.0001	V	Р
32	DAS Voltage average error	Р	6	0.003	21	0.0000	V	Р
33	Shelter Temperature average error	Р	5	1	9	2.83	с	Fail
34	Shelter Temperature max error	Р	5	1	9	3.6	с	Fail

05/01/2013 **YOS404**

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 geometric orientation.									
2	Parameter:	Ozone	SensorComponent:	Cell A Freq.	CommentCode	99			
	This analyzer diagnostic check is outside the manufacturer's recommended value.								
3	Parameter:	Wind Direction	SensorComponent:	Vane Condition	CommentCode	211			
	The wind direction vane is slightly bent and could be causing additional bias in wind direction measurements.								
4	Parameter:	Wind Direction	SensorComponent:	Condition	CommentCode	147			
	The upper and data accuracy.	lower sections of the win	d sensor body are loose.	This condition will cause	premature failure of	the sensor and can affect			
5	Parameter:	Wind Speed	SensorComponent:	Condition	CommentCode	147			

The upper and lower sections of the wind sensor body are loose. This condition will cause premature failure of the sensor and can affect data accuracy.

Field Systems Comments

1 Parameter: ShelterCleanNotes

The site is neat, clean, and well organized.

2 Parameter: PollAnalyzerCom

> The DAS full scale and zero factors for the ozone channel are set to 497 and -3 respectively. The usual settings are 500 and 0. This may not be a problem but it does contribute to the error observed during the ozone accuracy check. It is possible that polled data at the central polling station have different factors.

Data Compiled	:	7/27/2013 4:51:57 PM		
SiteVisitDate	Site		Technician	
05/03/2013	SEK4	30	Eric Hebert	

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Wind Speed average error below 5m/s in m/s	Р	3	0.5	4	0.07	m/s	Р
2	Wind Speed max error below 5m/s in m/s	Р	3	0.5	4	0.19	m/s	Р
3	Wind Speed average % difference above 5 m/s	Р	3	5	4	0.2	%	Р
4	Wind Speed max % difference above 5 m/s	Р	3	5	4	0.5	%	Р
5	Wind Speed Torque average error	Р	3	0.5	1	0.40	g-cm	Р
6	Wind Speed Torque max error	Р	3	0.5	1	0.4	g-cm	Р
7	Wind Direction Input Deg True average error (de	Р	2	5	4	2.8	degrees	Р
8	Wind Direction Input Deg True max error (deg)	Р	2	5	4	5	degrees	Р
9	Wind Direction Linearity average error (deg)	Р	2	5	8	1.8	degrees	Р
10	Wind Direction Linearity max error (deg)	Р	2	5	8	3	degrees	Р
11	Wind Direction Torque average error	Р	2	20	1	14	g-cm	Р
12	Wind Direction Torque max error	Р	2	20	1	14	g-cm	Р
13	Temperature average error	Р	4	0.5	9	0.13	с	Р
14	Temperature max error	Р	4	0.5	9	0.21	с	Р
15	Relative Humidity average above 85%	Р	6	10	1	2.0	%	Р
16	Relative Humidity max above 85%	Р	6	10	1	2.0	%	Р
17	Relative Humidity average below 85%	Р	6	10	2	2.0	%	Р
18	Relative Humidity max below 85%	Р	6	10	2	2.9	%	Р
19	Solar Radiation % diff of avg	Р	9	10	6	1.73	%	Р
20	Solar Radiation % diff of max STD value	Р	9	10	6	2.2	%	Р
21	Precipitation average % difference	Р	1	10	2	4.7	%	Р
22	Precipitation max % difference	Р	1	10	2	5.5	%	Р
23	Ozone Slope	Р	0	1.1	4	0.98730	unitless	Р
24	Ozone Intercept	Р	0	5	4	0.82037	ppb	Р
25	Ozone correlation	Р	0	0.995	4	1.00000	unitless	Р
26	Ozone % difference avg	Р	7	10	4	0.9	%	Р
27	Ozone % difference max	Р	7	10	4	2.4	%	Р
28	Flow Rate average % difference	Р	10	5	6	0.20	%	Р
29	Flow Rate max % difference	Р	10	5	6	0.31	%	Р
30	DAS Time maximum error	Р	0	5	1	0.33	min	Р
31	DAS Voltage average error	Р	9	0.003	28	0.0002	V	Р
32	DAS Voltage average error	Р	2	0.003	28	0.0002	V	Р
33	Shelter Temperature average error	Р	5	1	9	1.42	с	Fail
34	Shelter Temperature max error	Р	5	1	9	1.5	с	Fail
Field Performance Comments

1	Parameter:	Flow Rate	SensorComponent:	Filter Position	CommentCode	71			
	The filter attac geometric orie	hment plate is mounted to ntation.	oo low in the enclosure re	sulting in the filter being e	exposed to wind-driv	ven rain and in the standard			
2	Parameter:	Precipitation	SensorComponent:	Sensor Heater	CommentCode	107			
	The tipping bucket rain gauge heater is not functioning.								
3	Parameter:	Precipitation	SensorComponent:	Properly Sited	CommentCode	193			
	Objects violate	e the 45 degree rule for th	e tipping bucket rain gage	2.					
4	Parameter:	Temperature	SensorComponent:	Blower	CommentCode	26			
	The forced-air blower for the shield is not functioning.								

Field Systems Comments

1 Parameter: SitingCriteriaCom

The site is a wooded area with spaced trees on three sides and a steep drop in elevation on the west side. Although not strictly conforming to siting criteria it is elevated in a wide valley and representative of the area. Some trees have been trimmed since the previous site audit. Trees are still within 5 meters, however none are higher than the CASTNET sample inlets.

2 Parameter: ShelterCleanNotes

The shelter is aging but is in fair condition and kept clean, neat, and well organized.

3 Parameter: MetSensorComme

The rain gauge is mounted near the tower.

4 Parameter: MetOpMaintCom

The temperature sensor aspirated shield blower is not functioning which will impact temperature data accuracy.

EEMS Spot Report Data Compiled: 7/27/2013 11:01:13 PM

Data Complied:	//2//2013 11:01:13 PM	
SiteVisitDate	Site	Technician
05/07/2013	LAV410	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Wind Speed average error below 5m/s in m/s	Р	3	0.5	8	0.01	m/s	Р
2	Wind Speed max error below 5m/s in m/s	Р	3	0.5	8	0.03	m/s	Р
3	Wind Speed average % difference above 5 m/s	Р	3	5	8	0.1	%	Р
4	Wind Speed max % difference above 5 m/s	Р	3	5	8	0.3	%	Р
5	Wind Speed Torque average error	Р	3	0.5	1	0.30	g-cm	Р
6	Wind Speed Torque max error	Р	3	0.5	1	0.3	g-cm	Р
7	Wind Direction Input Deg True average error (de	Р	2	5	8	3.2	degrees	Р
8	Wind Direction Input Deg True max error (deg)	Р	2	5	8	5	degrees	Р
9	Wind Direction Linearity average error (deg)	Р	2	5	16	2.0	degrees	Р
10	Wind Direction Linearity max error (deg)	Р	2	5	16	4	degrees	Р
11	Wind Direction Torque average error	Р	2	20	1	8	g-cm	Р
12	Wind Direction Torque max error	Р	2	20	1	10	g-cm	Р
13	Temperature average error	Р	4	0.5	3	0.15	c	Р
14	Temperature max error	Р	4	0.5	3	0.34	c	Р
15	Relative Humidity average above 85%	Р	6	10	2	1.0	%	Р
16	Relative Humidity max above 85%	Р	6	10	2	1.0	%	Р
17	Relative Humidity average below 85%	Р	6	10	4	8.0	%	Р
18	Relative Humidity max below 85%	Р	6	10	4	11.4	%	Fail
19	Solar Radiation % diff of avg	Р	9	10	18	9.72	%	Р
20	Solar Radiation % diff of max STD value	Р	9	10	18	11.4	%	Fail
21	Precipitation average % difference	Р	1	10	2	3.0	%	Р
22	Precipitation max % difference	Р	1	10	2	4.0	%	Р
23	Ozone Slope	Р	0	1.1	4	0.98219	unitless	Р
24	Ozone Intercept	Р	0	5	4	1.20291	ppb	Р
25	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
26	Ozone % difference avg	Р	7	10	4	1.0	%	Р
27	Ozone % difference max	Р	7	10	4	2.1	%	Р
28	Flow Rate average % difference	Р	10	5	6	1.13	%	Р
29	Flow Rate max % difference	Р	10	5	6	1.26	%	Р
30	DAS Time maximum error	Р	0	5	1	0.15	min	Р
31	DAS Voltage average error	Р	9	0.003	28	0.0001	V	Р
32	DAS Voltage average error	Р	2	0.003	28	0.0000	V	Р
33	Shelter Temperature average error	Р	5	1	9	1.27	c	Fail
34	Shelter Temperature max error	Р	5	1	9	1.68	c	Fail

05/07/2013 LAV410

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.								
2	Parameter:	Ozone	SensorComponent:	Cell B Freq.	CommentCode	99			
	This analyzer diagnostic check is outside the manufacturer's recommended value.								
3	Parameter:	Ozone	SensorComponent:	Cell A Freq.	CommentCode	99			
	This analyzer diagnostic check is outside the manufacturer's recommended value.								
4	Parameter:	Precipitation	SensorComponent:	System Memo	CommentCode	100			
	The edge of the	e tipping bucket funnel re	ests on the pipe that suppo	rts the rain gauge. This ca	auses the funnel to b	e out of level.			
5	Parameter:	Precipitation	SensorComponent:	Properly Sited	CommentCode	193			
	Objects violate	the 45 degree rule for th	e tipping bucket rain gage						
6	Parameter:	Wind Direction	SensorComponent:	Condition	CommentCode	147			
	The upper and data accuracy.	lower sections of the win	nd sensor body are loose.	This condition will cause	premature failure of	the sensor and can affect			
7	Parameter:	Wind Speed	SensorComponent:	Prop or Cups Con	CommentCode	145			
	Both set screw	s are stripped.							

Field Systems Comments

1 Parameter: SiteOpsProcedures

The ozone inlet filter is changed and the sample line conditioned every two weeks.

2 Parameter: DocumentationCo

The most recent calibration and verification results are not available on-site.

3 Parameter: ShelterCleanNotes

The inside equipment is located in room within the fire station, clean, neat, and organized.

4 Parameter: SitingCriteriaCom

The site is located at the end of a park service facility parking lot, in a fire station. The tree line is near the building, but the prevailing wind direction is from the clearing. Tree height above the sample inlet is not twice as far away as it is high above the inlet.

5 Parameter: MetSensorComme

The rain gauge funnel is contacting the tipping bucket mounting post causing it to be 1/2 bubble off level. Objects violate the 45 degree rule.

6 Parameter: MetOpMaintCom

The signal cables are showing signs of wear.

Data Compiled: 7/27/2013 11:52:39 PM

SiteVisitDate Site Technician

05/08/2013 OXF122 Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	6	0.44	с	Р
2	Temperature max error	Р	4	0.5	6	0.97	с	Fail
3	Ozone Slope	Р	0	1.1	4	0.99852	unitless	Р
4	Ozone Intercept	Р	0	5	4	0.14735	ppb	Р
5	Ozone correlation	Р	0	0.995	4	0.99992	unitless	Р
6	Ozone % difference avg	Р	7	10	4	0.7	%	Р
7	Ozone % difference max	Р	7	10	4	1.7	%	Р
8	Flow Rate average % difference	Р	10	5	2	0.12	%	Р
9	Flow Rate max % difference	Р	10	5	2	0.20	%	Р
10	DAS Time maximum error	Р	0	5	1	0.02	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	0.45	с	Р
13	Shelter Temperature max error	Р	5	1	9	0.52	С	Р

Technician

05/08/2013 OXF122

Sandy Grenville

Field Performance Comments

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

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

Field Systems Comments

1 Parameter: SiteOpsProcComm

Due to the high operator turn-over rate, the operators are unfamiliar with some minor aspects of site operation.

2 Parameter: DasComments

The met tower is operated by the university and the temperature sensor has been moved to the sample tower in a naturally aspirated shield.

3 Parameter: SitingCriteriaCom

The site is located in university agriculture research facility.

4 Parameter: ShelterCleanNotes

The shelter roof is in poor condition with several leaks.

Data Compiled: 7/28/2013 12:13:50 AM

SiteVisitDate Site Technician

05/09/2013 QAK172 Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	3	0.17	с	Р
2	Temperature max error	Р	4	0.5	3	0.22	с	Р
3	Ozone Slope	Р	0	1.1	4	0.99551	unitless	Р
4	Ozone Intercept	Р	0	5	4	0.61213	ppb	Р
5	Ozone correlation	Р	0	0.995	4	0.99997	unitless	Р
6	Ozone % difference avg	Р	7	10	4	0.8	%	Р
7	Ozone % difference max	Р	7	10	4	1.3	%	Р
8	Flow Rate average % difference	Р	10	5	6	2.43	%	Р
9	Flow Rate max % difference	Р	10	5	6	2.47	%	Р
10	DAS Time maximum error	Р	0	5	1	0.00	min	Р
11	DAS Voltage average error	Р	7	0.003	28	0.0001	V	Р
12	Shelter Temperature average error	Р	5	1	9	0.61	с	Р
13	Shelter Temperature max error	Р	5	1	9	0.81	с	Р

Field Systems Comments

1 Parameter: SiteOpsProcComm

The site operator is doing an excellent job maintaining the site.

2 Parameter: ShelterCleanNotes

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

Data Compiled:

7/28/2013 12:35:32 AM

SiteVisitDate Site Technician 05/12/2013 PND165 Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	6	0.05	c	Р
2	Temperature max error	Р	4	0.5	6	0.14	с	Р
3	Ozone Slope	Р	0	1.1	4	0.95790	unitless	Р
4	Ozone Intercept	Р	0	5	4	0.02026	ppb	Р
5	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
6	Ozone % difference avg	Р	7	10	4	4.1	%	Р
7	Ozone % difference max	Р	7	10	4	4.4	%	Р
8	Flow Rate average % difference	Р	10	5	6	1.02	%	Р
9	Flow Rate max % difference	Р	10	5	6	1.36	%	Р
10	DAS Time maximum error	Р	0	5	1	0.08	min	Р
11	DAS Voltage average error	Р	7	0.003	28	0.0001	V	Р
12	Shelter Temperature average error	Р	5	1	9	1.43	с	Fail
13	Shelter Temperature max error	Р	5	1	9	2.26	с	Fail

Field Systems Comments

1 Parameter: SiteOpsProcComm

The site operator uses the filter bag received with the new filter to send the filter removed from the tower back to the lab. There is no bag for the sample filter on site for storing the filter when it is removed from the tower.

Parameter: DasComments 2

Both the heat and the air conditioner are running simultaneously.

3 Parameter: DocumentationCo

General site observations are not being recorded on the SSRF. The purpose for recording the general observations was discussed with the site operator.

Parameter: ShelterCleanNotes 4

The shelter is well maintained.

Data Compiled: 7/28/2013 2:48:21 PM

SiteVisitDate	Site	Technician
05/12/2013	PNF126	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	1.06946	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.38181	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99993	unitless	Р
4	Ozone % difference avg	Р	7	10	4	6.6	%	Р
5	Ozone % difference max	Р	7	10	4	7.5	%	Р

Field Performance Comments

1	Parameter:	Ozone	SensorComponent:	Cell B Flow	CommentCode	99
	This analyzer of	liagnostic check is outsid	le the manufacturer's recor	nmended value.		
2	Parameter:	Ozone	SensorComponent:	Cell A Flow	CommentCode	99

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

Data Compiled:

7/28/2013 12:57:44 AM

SiteVisitDate	Site	Technician
05/14/2013	CNT169	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	3	0.10	с	Р
2	Temperature max error	Р	4	0.5	3	0.17	с	Р
3	Ozone Slope	Р	0	1.1	4	0.95862	unitless	Р
4	Ozone Intercept	Р	0	5	4	0.26392	ppb	Р
5	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
6	Ozone % difference avg	Р	7	10	4	3.5	%	Р
7	Ozone % difference max	Р	7	10	4	4.1	%	Р
8	Flow Rate average % difference	Р	10	5	6	5.76	%	Fail
9	Flow Rate max % difference	Р	10	5	6	6.13	%	Fail
10	DAS Time maximum error	Р	0	5	1	0.00	min	Р
11	DAS Voltage average error	Р	7	0.003	28	0.0001	V	Р
12	Shelter Temperature average error	Р	5	1	9	0.69	с	Р
13	Shelter Temperature max error	Р	5	1	9	0.99	с	Р

Field Performance Comments

1	Parameter:	Ozone	SensorComponent:	Cell A Tmp.	CommentCode	99
	This analyzer					

Field Systems Comments

Parameter: DasComments 1

The sample tower has been replaced and the met tower removed since the previous site audit visit.

2 Parameter: SiteOpsProcedures

The ozone inlet filter is changed once each month and the ozone sample line is leak tested every two weeks.

3 Parameter: ShelterCleanNotes

The shelter is dirty. Some floor tiles have been repaired since the previous audit visit.

Data Compiled:

7/28/2013 2:45:14 PM

SiteVisitDate	Site	Technician
05/18/2013	MCK231	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.97219	unitless	Р
2	Ozone Intercept	Р	0	5	4	0.30066	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99970	unitless	Р
4	Ozone % difference avg	Р	7	10	4	2.7	%	Р
5	Ozone % difference max	Р	7	10	4	5.4	%	Р

EEMS Spot Report Data Compiled: 7/28/2013 12:31:17 PM

Data Compiled	7/28/2013 12:31:17 PM	
SiteVisitDate	Site	Technician
06/06/2013	YEL408	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Wind Speed average error below 5m/s in m/s	Р	3	0.5	8	0.08	m/s	Р
2	Wind Speed max error below 5m/s in m/s	Р	3	0.5	8	0.13	m/s	Р
3	Wind Speed average % difference above 5 m/s	Р	3	5	8	1.1	%	Р
4	Wind Speed max % difference above 5 m/s	Р	3	5	8	1.6	%	Р
5	Wind Speed Torque average error	Р	3	0.5	1	0.30	g-cm	Р
6	Wind Speed Torque max error	Р	3	0.5	1	0.3	g-cm	Р
7	Wind Direction Input Deg True average error (de	Р	2	5	8	9.5	degrees	Fail
8	Wind Direction Input Deg True max error (deg)	Р	2	5	8	13	degrees	Fail
9	Wind Direction Linearity average error (deg)	Р	2	5	16	1.2	degrees	Р
10	Wind Direction Linearity max error (deg)	Р	2	5	16	5	degrees	Р
11	Wind Direction Torque average error	Р	2	20	1	8	g-cm	Р
12	Wind Direction Torque max error	Р	2	20	1	8	g-cm	Р
13	Temperature average error	Р	4	0.5	9	0.05	c	Р
14	Temperature max error	Р	4	0.5	9	0.11	c	Р
15	Relative Humidity average above 85%	Р	6	10	2	0.9	%	Р
16	Relative Humidity max above 85%	Р	6	10	2	0.9	%	Р
17	Relative Humidity average below 85%	Р	6	10	4	2.2	%	Р
18	Relative Humidity max below 85%	Р	6	10	4	2.8	%	Р
19	Solar Radiation % diff of avg	Р	9	10	15	1.35	%	Р
20	Solar Radiation % diff of max STD value	Р	9	10	15	1.3	%	Р
21	Precipitation average % difference	Р	1	10	2	3.0	%	Р
22	Precipitation max % difference	Р	1	10	2	4.0	%	Р
23	Ozone Slope	Р	0	1.1	4	1.02906	unitless	Р
24	Ozone Intercept	Р	0	5	4	-0.33928	ppb	Р
25	Ozone correlation	Р	0	0.995	4	0.99998	unitless	Р
26	Ozone % difference avg	Р	7	10	4	1.9	%	Р
27	Ozone % difference max	Р	7	10	4	2.8	%	Р
28	Flow Rate average % difference	Р	10	5	6	0.48	%	Р
29	Flow Rate max % difference	Р	10	5	6	0.87	%	Р
30	DAS Time maximum error	Р	0	5	1	0.52	min	Р
31	DAS Voltage average error	Р	16	0.003	35	0.0003	V	Р
32	DAS Voltage average error	Р	2	0.003	35	0.0001	V	Р
33	Shelter Temperature average error	Р	5	1	12	1.68	с	Fail
34	Shelter Temperature max error	Р	5	1	12	2.06	с	Fail

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.

 2
 Parameter: Precipitation
 SensorComponent: Properly Sited
 CommentCode 193

 Objects violate the 45 degree rule for the tipping bucket rain gage.
 SensorComponent: Properly Sited
 CommentCode 193
 - 3 Parameter: Wind Speed SensorComponent: System Memo CommentCode 212

The external heater that wraps around the sensor was found to be impeding the rotation of the sensor shaft. This condition impacts data accuracy. The condition was corrected during the sensor audit.

Field Systems Comments

1 Parameter: SiteOpsProcComm

Gloves are no longer used to handle the filter pack.

2 Parameter: SitingCriteriaCom

The site is located at the edge of a tree line. The trees close to the inlet are approximately 5 meters tall. Trees taller than 10 meters are 15 meters from the inlet.

3 Parameter: ShelterCleanNotes

The shelter is organized and well maintained.

4 Parameter: PollAnalyzerCom

The shelter and sample tower are located at the edge of the tree line and mountain slope. Small trees are encroaching on the sample tower. Taller trees are 10 to 15 meters from the sample tower.

Data Compiled:

7/28/2013 1:02:30 PM

SiteVisitDateSiteTechnician06/10/2013ROM206Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	9	0.08	с	Р
2	Temperature max error	Р	4	0.5	9	0.12	с	Р
3	Ozone Slope	Р	0	1.1	4	0.99603	unitless	Р
4	Ozone Intercept	Р	0	5	4	0.31352	ppb	Р
5	Ozone correlation	Р	0	0.995	4	0.99998	unitless	Р
6	Ozone % difference avg	Р	7	10	4	0.5	%	Р
7	Ozone % difference max	Р	7	10	4	0.8	%	Р
8	Flow Rate average % difference	Р	10	5	3	0.78	%	Р
9	Flow Rate max % difference	Р	10	5	3	0.94	%	Р
10	DAS Time maximum error	Р	0	5	1	0.02	min	Р
11	DAS Voltage average error	Р	7	0.003	28	0.0001	V	Р
12	Shelter Temperature average error	Р	5	1	9	0.52	с	Р
13	Shelter Temperature max error	Р	5	1	9	0.54	с	Р

Field Performance Comments

1	Parameter:	Ozone	SensorComponent:	Cell B Flow	CommentCode	99
	This analyzer of	liagnostic check is outsid	le the manufacturer's recor	mmended value.		
2	Parameter:	Ozone	SensorComponent:	Cell A Flow	CommentCode	99

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

Field Systems Comments

1 Parameter: ShelterCleanNotes

The shelter is clean, neat, and well organized. There are signs of previous roof leaks, but they have been repaired. The floor and counter top have been replaced.

2 Parameter: MetSensorComme

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

Data Compiled:

7/28/2013 2:01:22 PM

SiteVisitDateSiteTechnician06/10/2013ROM406Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature2meter average error	Р	5	0.5	3	0.11	с	Р
2	Temperature2meter max error	Р	5	0.5	3	0.20	c	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	0.30	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	3	9.7	degrees	Fail
10	Wind Direction Input Deg True max error (deg)	Р	2	5	3	13	degrees	Fail
11	Wind Direction Linearity average error (deg)	Р	2	5	8	10.8	degrees	Fail
12	Wind Direction Linearity max error (deg)	Р	2	5	8	43	degrees	Fail
13	Wind Direction Torque average error	Р	2	20	1	14	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	3	0.10	c	Р
16	Temperature max error	Р	4	0.5	3	0.10	c	Р
17	Relative Humidity average above 85%	Р	6	10	2	4.2	%	Р
18	Relative Humidity max above 85%	Р	6	10	2	4.2	%	Р
19	Relative Humidity average below 85%	Р	6	10	4	0.8	%	Р
20	Relative Humidity max below 85%	Р	6	10	4	1.0	%	Р
21	Solar Radiation % diff of avg	Р	9	10	10	3.05	%	Р
22	Solar Radiation % diff of max STD value	Р	9	10	10	7.1	%	Р
23	Precipitation average % difference	Р	1	10	2	0.0	%	Р
24	Precipitation max % difference	Р	1	10	2	0.0	%	Р
25	Ozone Slope	Р	0	1.1	4	0.99341	unitless	Р
26	Ozone Intercept	Р	0	5	4	0.32985	ppb	Р
27	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
28	Ozone % difference avg	Р	7	10	4	0.4	%	Р
29	Ozone % difference max	Р	7	10	4	0.6	%	Р
30	Flow Rate average % difference	Р	10	5	6	0.32	%	Р
31	Flow Rate max % difference	Р	10	5	6	0.35	%	Р
32	DAS Time maximum error	Р	0	5	1	0.40	min	Р
33	DAS Voltage average error	Р	12	0.003	35	0.0001	V	Р
34	DAS Voltage average error	Р	2	0.003	35	0.0000	V	Р

SiteVi	sitDate	Site	Technician						
06/10/2	013	ROM406	Eric Hebert						
35	Shelter Te	emperature average error	Р	5	1	12	2.58	с	Fail
36	Shelter Te	emperature max error	Р	5	1	12	4.47	с	Fail

Field Performance Comments

1	Parameter:	Flow Rate	SensorComponent:	Filter Position	CommentCode	71
	The filter attac geometric orie	hment plate is mounted to ntation.	oo low in the enclosure re	sulting in the filter being e	exposed to wind-driv	ven rain and in the standard
2	Parameter:	Ozone	SensorComponent:	Cell B Freq.	CommentCode	99
	This analyzer of	liagnostic check is outsid	le the manufacturer's recor	nmended value.		
3	Parameter:	Ozone	SensorComponent:	Cell A Freq.	CommentCode	99
	This analyzer of	liagnostic check is outsid	le the manufacturer's recor	nmended value.		
4	Parameter:	Precipitation	SensorComponent:	Properly Sited	CommentCode	193
	Objects violate	e the 45 degree rule for th	e tipping bucket rain gage).		
5	Parameter:	Shelter Temperatur	SensorComponent:	Accuracy Mid Ran	CommentCode	213

The shelter temperature is going outside CFR requirements for pollutant monitor operation.

Field Systems Comments

1 Parameter: SiteOpsProcComm

The site operator is doing a very good job performing the site duties and expressed an interest in trying to improve any deficiencies. The sample flow rate systems for both the dry deposition and ozone sample trains were explained during the audit at the request of the site operator.

2 Parameter: SiteOpsProcedures

Mercury thermometer was removed from the shelter during the site audit. The site operator has requested additional training from ARS.

3 Parameter: ShelterCleanNotes

The shelter is clean, neat, organized, and well maintained.

4 Parameter: MetSensorComme

The tipping bucket rain gage and solar radiation sensor have been moved to the roof of the shelter since the previous audit visit. Both temperature sensor shields have been replaced with new models.

5 Parameter: MetOpMaintCom

The wind direction sensor is exhibiting the symptoms of potentiometer failure. Wind direction data quality are being impacted by this condition.

Data Compiled:

7/28/2013 2:27:29 PM

SiteVisitDateSiteTechnician06/12/2013GTH161Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	9	0.13	с	Р
2	Temperature max error	Р	4	0.5	9	0.21	с	Р
3	Ozone Slope	Р	0	1.1	4	0.93953	unitless	Р
4	Ozone Intercept	Р	0	5	4	0.44137	ppb	Р
5	Ozone correlation	Р	0	0.995	4	0.99997	unitless	Р
6	Ozone % difference avg	Р	7	10	4	5.4	%	Р
7	Ozone % difference max	Р	7	10	4	5.8	%	Р
8	Flow Rate average % difference	Р	10	5	6	2.15	%	Р
9	Flow Rate max % difference	Р	10	5	6	2.23	%	Р
10	DAS Time maximum error	Р	0	5	1	0.00	min	Р
11	DAS Voltage average error	Р	7	0.003	28	0.0001	V	Р
12	Shelter Temperature average error	Р	5	1	9	0.47	с	Р
13	Shelter Temperature max error	Р	5	1	9	1.11	с	Fail

06/12/2013 GTH161

Field Systems Comments

1 Parameter: SiteOpsProcComm

Due to the remote location of the site, it can take up to a week to return the filter sample to the lab after it is removed from the tower in the winter. The site operator is transferring the filter bag and caps from the new filter to the removed filter. There are no clean bags and spare caps on-site. It was discussed that the bags and caps are intended to stay with each filter and not be transferred from one to the next.

Parameter: DasComments 2

There is a new sample tower on-site to be installed in the near future.

3 Parameter: SiteOpsProcedures

The site operator is new and has not received formal training. He has been provided with written instructions prepared by the previous site operator. Site operation has improved since the previous site audit visit.

Parameter: ShelterCleanNotes 4

Some floor tiles are damaged.

5 Parameter: MetSensorComme

The temperature sensor has been moved to the sample tower and mounted in a naturally aspirated shield facing south and over the shelter roof. The met tower has been removed.

Data Compiled: 7/28/2013 2:47:00 PM

SiteVisitDate	Site	Technician
06/15/2013	DEN417	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.99826	unitless	Р
2	Ozone Intercept	Р	0	5	4	1.06287	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99998	unitless	Р
4	Ozone % difference avg	Р	7	10	4	1.9	%	Р
5	Ozone % difference max	Р	7	10	4	4.1	%	Р

Field Performance Comments

1Parameter:OzoneSensorComponent:Cell B Freq.CommentCode99

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

Data Compiled:

7/28/2013 2:49:22 PM

SiteVisitDate		Site	Techni						
06/17/2	2013	MOR409	Sandy G	renville	9				
Line	Audited	l Parameter	I	DAS	Ch. #	Criteria +/-	Counts	QaResult	
1	Ozone Sl	ope		Р	0	1.1	4	0.97890	
2	Ozone In	tercept		Р	0	5	4	-0.66252	
3	Ozone co	rrelation		Р	0	0.995	4	0.99992	
4	Ozone %	difference avg		Р	7	10	4	3.5	
5	Ozone %	difference max		Р	7	10	4	5.3	

Field Performance Comments

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

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

Units

unitless

unitless

ppb

%

%

Pass/Fail

Р

Р

Р

Р

Р

APPENDIX C

CASTNET Ozone Performance Evaluation Forms

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
CHA	A467-Eric H	lebert-04/01/2013				
1	4/1/2013	Computer	Gateway	none	Solo	B2509462726
2	4/1/2013	DAS	Environmental Sys Corp	90611	8816	2613
3	4/1/2013	Modem	US Robotics	09615	56k	unknown
4	4/1/2013	Ozone	ThermoElectron Inc	none	49i A3NAA	CM08460007
5	4/1/2013	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	1130450193
6	4/1/2013	Printer	Hewlett Packard	none	5610	Unknown
7	4/1/2013	Sample Tower	Aluma Tower	03566	A	none
8	4/1/2013	Zero air pump	Werther International	none	PC70/4	000665785

Ozone Data Form

Mfg	5	Serial Number Ta	Site	Te	chnician		Site Visi	it Date	Parame	eter	Owner I	D
ThermoElec	ctron Inc	CM08460007	CHA467	Er	ic Heber	:	04/01/2	013	Ozone		none	
Slope: Intercept CorrCoff	0. 0. 0.	99085 Slope: 45247 Intercept 99999 CorrCoff	0.00000)))	Mfg Serial N Tfer ID	lumber	Thermol 5171121 01111	Electron 75	Inc Pa	rameter ^{oz} er Desc. O	cone zone primary	y stan
DAS 1:		DAS 2:			Clana			0.0072	0 Testas	-	0.19	2429
A Avg % D	Diff: A M	ax%Di AAvg%	Dif A Max	% Di	Slope			0.9972	U Inter	cept	0.16	9420
0.3	3%	0.6%			Cert Da	ite		1/2/201	3 Corr	Coff	1.00)000
UseDes	cription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	e Unit:	PctDif	ference:	
prin	nary	1	0.03	-0.	15	0.	38	ppb				
prin	nary	2	25.72	25.	.60	25.	.62	ppb			0.08%	
prin	nary	3	56.23	56.	.20	56.	.35	ppb			0.27%	
prin	nary	4	86.17	86.	.22	85.	.75	ppb			-0.55%	
prin	nary	5	107.58	107	.69	107	.20	ppb			-0.46%	
Senson C			I	Conditi	1 1 pr	<u></u>		11	Status	nass		7
Sensor C	omponen	t Cell B Tmp.		Conditio					Status	pass		
6 C				C 114	0.006	0			C4 - 4			
Sensor C	omponen			Conditio	011 0.990	0			Status	pass		
Sensor C	omponen	Inlet Filter Condition	วท	Conditio	on Clear	I			Status	pass		
Sensor Co	omponen	t Line Loss		Conditio	on Not te	ested			Status	pass		
Sensor C	omponen	t Offset		Conditio	on 0.1				Status	pass		
Sensor C	omponen	t Span		Conditio	on 1.055				Status	pass		
Sensor C	omponen	t Cell B Freq.		Conditio	on 78.9 k	κHz			Status	Fail		
Sensor C	omponen	t System Memo		Conditio	on See c	omments			Status	pass		
Sensor C	omponen	t Sample Train		Conditio	on Poor				Status	Fail		
Sensor C	omponen	t Cell B Pressure		Conditio	on				Status	pass		
Sensor Co	omponen	t Cell B Flow		Conditio	on 0.67 I	pm			Status	pass		
Sensor Co	omponen	t Cell A Tmp.		Conditio	on 39.2 (2			Status	pass		
Sensor C	omponen	t Cell A Pressure		Conditio	on 627 m	nmHg			Status	pass		
Sensor C	omponen	t Cell A Noise		Conditio	0.8 pp	b			Status	pass		
Sensor C	omponen	t Cell A Freq.		Conditio	on 81.3 k	κHz			Status	pass		
Sensor C	omponen	t Cell A Flow		Conditio	on 0.71 l	pm			Status	pass		
Sensor C	omponen	t Battery Backup		Conditio	on N/A				Status	pass		
Sensor C	omponen	t Zero Voltage		Conditio	on 0.000	2			Status	pass		

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Ozone	CHA467	Eric Hebert	04/01/2013	System Memo	ThermoElectron	3564		
Stainless steel fittings are	connected to Te	flon fittings on the	ozone analyzer.	This can cause lea	aks and premature	failure of the fitt	ings.	
Ozone	CHA467	Eric Hebert	04/01/2013	Cell B Freq.	ThermoElectron	3564		
This analyzer diagnostic	check is outside	the manufacturer's 1	recommended va	alue.				

Site Inventory by Site Visit

Site V	isit Date/	Parameter	Mfg	Owner ID	Model Number	Serial Number
PET4	427-Eric H	ebert-04/02/2013				
1	4/2/2013	Computer	Gateway	none	Solo	B2500212709
2	4/2/2013	DAS	Environmental Sys Corp	90641	8816	2526
3	4/2/2013	Modem	US Robotics	none	56k	unknown
4	4/2/2013	Ozone	ThermoElectron Inc	none	49i A3NAA	1211052490
5	4/2/2013	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	1015543061
6	4/2/2013	Sample Tower	Aluma Tower	none	В	none

Ozone Data Form

Mfg	Serial Number Ta	Site	Te	chnician		Site Visi	it Date	Parame	eter	Owner I	D
ThermoElectron Inc	1211052490	PET427	Er	ic Hebert		04/02/2	013	Ozone		none	
Slope: Intercept CorrCoff	0.99254 Slope: 0.63847 Intercept 1.00000 CorrCoff	0.0000	0	Mfg Serial N Tfer ID	lumber	ThermoE 5171121	Electron 75	Inc Pa	rameter 02 er Desc. 0	zone zone primary	/ stan
DAS 1: A Avg % Diff: A I 0.5%	DAS 2: Max % Di A Avg 9 1.1%	%Dif A Max	% Di	Slope Cert Da	ıte		0.9972 1/2/201	0 Inter 3 Corr	ccept Coff	0.18	428
UseDescription	: ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	e Unit:	PctDif	ference:	
primary	1	0.06	-0.	12	0.4	42	ppb				
primary	2	36.16	36.	.07	36	.48	ppb			1.14%	
primary	3	54.32	54.	.28	54.	.70	ppb			0.77%	
primary	4	77.85	77.	.88	77.	.87	ppb			-0.01%	
primary	5	105.70	105	5.81	105	.60	ppb			-0.20%	
Sensor Compone	ent Cell B Noise		Conditio	on 2.0 pp	b			Status	pass		
Sensor Compone	ent Cell B Tmp.		Conditio	on				Status	pass		
Sensor Compone	ent Fullscale Voltage		Conditio	on 0.999	8			Status	pass		
Sensor Compone	ent Inlet Filter Condition	on	Conditio	on Clean				Status	pass		
Sensor Compone	ent Line Loss		Conditio	on Not te	sted			Status	pass		
Sensor Compone	ent Offset		Conditio	on 0.000				Status	pass		
Sensor Compone	ent Span		Conditio	on 1.033				Status	pass		
Sensor Compone	ent Cell B Freq.		Conditio	on 78.9 k	κHz			Status	Fail		
Sensor Compone	ent System Memo		Conditio	on See c	omments	,		Status	pass		
Sensor Compone	ent Sample Train		Conditio	on Good				Status	pass		
Sensor Compone	ent Cell B Pressure		Conditio	on				Status	pass		
Sensor Compone	ent Cell B Flow		Conditio	on 0.67 l	pm			Status	pass		
Sensor Compone	ent Cell A Tmp.		Conditio	on 36.0 (2			Status	pass		
Sensor Compone	ent Cell A Pressure		Conditio	on 608 m	nmHg			Status	pass		
Sensor Compone	Cell A Noise		Conditio	on 1.9 pp	b			Status	pass		
Sensor Compone	Cell A Freq.		Conditio	on 77.7 k	κHz			Status	Fail		
Sensor Compone	Cell A Flow		Conditio	on 0.66 l	pm			Status	pass		
Sensor Compone	Battery Backup		Conditio	on N/A				Status	pass		
Sensor Compone	ent Zero Voltage		Conditio	on 0.000	1			Status	pass		

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Ozone This analyzer diagnostic o	PET427 check is outside t	Eric Hebert he manufacturer's r	04/02/2013 ecommended va	Cell B Freq. alue.	ThermoElectron	3729		
Ozone This analyzer diagnostic	PET427 check is outside t	Eric Hebert he manufacturer's r	04/02/2013 ecommended va	Cell A Freq. alue.	ThermoElectron	3729		

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
GRO	C474-Eric H	lebert-04/04/2013				
1	4/4/2013	Computer	Gateway	none	Solo	B2500251337
2	4/4/2013	DAS	Environmental Sys Corp	90602	8816	2270
3	4/4/2013	Modem	US Robotics	none	33.6 sportster	unknown
4	4/4/2013	Ozone	ThermoElectron Inc	none	49i A3NAA	1023943902
5	4/4/2013	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	1130450192
6	4/4/2013	Printer	Hewlett Packard	none	842C	unknown
7	4/4/2013	Sample Tower	Aluma Tower	03570	В	none
8	4/4/2013	Zero air pump	Werther International	none	PC70/4	531380

Ozone Data Form

Mfg	:	Serial Number Ta	Site	Te	chnician		Site Visi	t Date	Parame	eter	Owner I	D
ThermoElect	ron Inc	1023943902	GRC474	E	ric Hebert		04/04/20	013	Ozone		none	
Slope: Intercept CorrCoff	1 -1 1	.00765 Slope: .00446 Intercept .00000 CorrCoff	0.0000	0 0 0	Mfg Serial N Tfer ID	lumber	ThermoE 5171121 01111	Electron 75	Inc Pa	rameter 02 er Desc. 0	zone zone primary	/ stan
DAS 1:		DAS 2:			Slope			0 0072	0 Into	recont	0.18	128
A Avg % Di	iff: A M	ax%Di AAvg%	%Dif A Max '	% Di	Slope			0.3372		cept	0.10	420
1.1	%	2.7%			Cert Da	ite		1/2/201	3 Corr	Coff	1.00	000
UseDesc	ription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	e Unit:	PctDif	ference:	
prim	ary	1	0.03	-0.	.15	-1.	17	ppb				
prim	ary	2	27.77	27	.66	26.	.91	ppb			-2.71%	
prim	ary	3	56.06	56	.03	55.	.39	ppb			-1.14%	
prim	ary	4	83.12	83	.16	82.	.85	ppb			-0.37%	
prim	ary	5	107.99	108	3.10	107	.90	ppb			-0.19%	
Sensor Co	mponen	t Cell B Noise		Conditi	on 0.8 pp	b			Status	pass		
Sensor Co	mponen	t Cell B Tmp.		Conditi	on				Status	pass		
Sensor Co	mponen	t Fullscale Voltage		Conditi	on 0.999	9			Status	pass		
Sensor Co	mponen	t Inlet Filter Condition	on	Conditi	on Clear				Status	pass		_
Sensor Co	mponen	t Line Loss		Conditi	on Not te	sted			Status	pass		
Sensor Co	mnonen	t Offset		Conditi	on 1.6				Statue	nass		
	mponen			Conunt	1.040				Status	2000		
Sensor Co	mponen			Conditi	on 1.040				Status	pass		
Sensor Co	mponen	t Cell B Freq.		Conditi	on 103.7	kHz			Status	pass		
Sensor Co	mponen	t System Memo		Conditi	on See c	omments			Status	pass		
Sensor Co	mponen	t Sample Train		Conditi	on Good				Status	pass		
Sensor Co	mponen	t Cell B Pressure		Conditi	on				Status	pass		
Sensor Co	mponen	t Cell B Flow		Conditi	on 0.61 l	pm			Status	pass		
Sensor Co	mponen	t Cell A Tmp.		Conditi	on 40.1 (2			Status	Fail		
Sensor Co	mponen	t Cell A Pressure		Conditi	on 594 m	nmHg			Status	pass		
Sensor Co	mponen	t Cell A Noise		Conditi	on 0.6 pp	b			Status	pass		
Sensor Co	mponen	t Cell A Freq.		Condition	on 114.3	kHz			Status	pass		
Sensor Co	mponen	t Cell A Flow		Conditi	on 0.61 l	pm			Status	pass		
Sensor Co	mponen	t Battery Backup		Conditi	on N/A				Status	pass		
Sensor Co	mponen	t Zero Voltage		Conditi	on 0.000	2			Status	pass		

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem	
Ozone	GRC474	Eric Hebert	04/04/2013	Cell A Tmp.	ThermoElectron	3570			
This analyzer diagnostic check is outside the manufacturer's recommended value.									

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
JOT	403-Eric H	ebert-04/08/2013				
1	4/8/2013	Computer	Hewlett Packard	none	8460p	CNU1360668
2	4/8/2013	DAS	Environmental Sys Corp	90599	8816	2271
3	4/8/2013	Modem	US Robotics	none	56k	unknown
4	4/8/2013	Ozone	ThermoElectron Inc	none	49i A3NAA	CM08460006
5	4/8/2013	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	1211052489
6	4/8/2013	Printer	Hewlett Packard	none	842C	unknown
7	4/8/2013	Sample Tower	Aluma Tower	923310	В	none
8	4/8/2013	Zero air pump	Werther International	none	PC70/4	606491

Ozone Data Form

Mfg	Serial Number Ta	Site	Te	chnician		Site Visi	t Date	Parame	eter	Owner I	D
ThermoElectron Inc	CM08460006	JOT403	E	ric Hebert		04/08/20	013	Ozone		none	
Slope: 0 Intercept 7 CorrCoff 0	lope: 0.95679 Slope: 0.0 ntercept 1.01348 Intercept 0.0 corrCoff 0.99982 CorrCoff 0.0		00 Mfg 00 Serial Number 00 Tfer ID		ThermoElectron Inc 517112175 01111		Inc Pa	Parameter DC Parameter Ozo Tfer Desc. Ozo		one	
DAS 1:	DAS 2:			Slong			0 0072	0 Inter	t	0.19	128
A Avg % Diff: A N	Iax % Di A Avg %	6Dif A Max	% Di	Slope			0.9972	u Inter	cept	0.10	420
2.1%	4.3%			Cert Da	ite		1/2/201	3 Corr	Coff	1.00	000
UseDescription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	e Unit:	PctDi	fference:	
primary	1	0.16	-0.	.02	0.	50	ppb				
primary	2	26.16	26	.04	25	.98	ppb			-0.23%	
primary	3	55.43	55	.40	54	.35	ppb			-1.90%	
primary	4	81.93	81	.97	80	.44	ppb			-1.87%	
primary	5	102.85	102	2.95	98.	.53	ppb			-4.29%	
Sensor Compone	nt Cell B Noise		Conditi	on 0.8 pp	b			Status	pass		
Sensor Compone	nt Cell B Tmp.		Conditi	on				Status	pass		
Sensor Compone	nt Fullscale Voltage		Conditi	on 10.00	18			Status	pass		
Sensor Compone	nt Inlet Filter Condition	n	Conditi	on Clean	1			Status	pass		
Sensor Compone	nt Line Loss		Conditi	on Not te	sted			Status	pass		
Sensor Compone	nt Offset		Conditi	on -0.8				Status	pass		
Sensor Compone	nt Span		Conditi	on 1.001				Status	pass		
Sensor Compone	nt Cell B Freq.		Conditi	on 99.3 k	κHz			Status	pass		
Sensor Compone	nt System Memo		Conditi	on				Status	pass		
Sensor Compone	nt Sample Train		Conditi	on Good				Status	pass		
Sensor Component	nt Cell B Pressure		Conditi	on				Status	pass		
Sensor Compone	nt Cell B Flow		Conditi	on 0.68 l	pm			Status	pass		
Sensor Compone	nt Cell A Tmp.		Conditi	on 31.7 (2			Status	pass		
Sensor Compone	nt Cell A Pressure		Conditi	on 643 m	nmHg			Status	pass		
Sensor Compone	nt Cell A Noise		Conditi	on 1.1 pp	b			Status	pass		
Sensor Compone	nt Cell A Freq.		Conditi	on 101.0	kHz			Status	pass		
Sensor Compone	nt Cell A Flow		Conditi	on 0.72 l	pm			Status	pass		
Sensor Componen	nt Battery Backup		Conditi	on N/A				Status	pass		
Sensor Compone	nt Zero Voltage		Conditi	on -0.000)3			Status	pass		

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
GRE	8411-Eric H	lebert-04/16/2013				
1	4/16/2013	Computer	Gateway	none	Solo	B2500130064
2	4/16/2013	DAS	Environmental Sys Corp	90635	8816	2507
3	4/16/2013	Modem	US Robotics	none	V.92	unknown
4	4/16/2013	Ozone	ThermoElectron Inc	90565	49C	49C-59285-322
5	4/16/2013	Ozone Standard	ThermoElectron Inc	90570	49C	49C-59301-322
6	4/16/2013	Printer	Hewlett Packard	none	842C	unknown
7	4/16/2013	Sample Tower	Aluma Tower	none	В	AT-5381-F9-2
8	4/16/2013	Zero air pump	Werther International	90722	TT70/4E	507782

Ozone Data Form

Mfg	:	Serial Number Ta	Site	Te	chnician		Site Visit		Parame	eter	Owner I	D
ThermoElec	ctron Inc	49C-59285-322	GRB411	Er	ic Heberl		04/16/2	013	Ozone		90565	
Slope: Intercept CorrCoff	1 -0 0	.04280Slope:.30416Intercept.99999CorrCoff	0.0000	0	Mfg Serial Number Tfer ID		ThermoElectron Inc 517112175 01111		Inc Pa	rameter o er Desc. O	zone	
DAS 1:		DAS 2:			Slone			0 0072	0 Inter	aant	0.19	2428
A Avg % D	Diff: A M	ax%Di AAvg%	6 Dif A Max	% Di	Slope			0.9972	o Inter	rcept	0.10	9420
3.5	5%	4.1%			Cert Da	ite		1/2/201	3 Corr	Coff	1.00)000
UseDes	cription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	e Unit:	PctDi	fference:	
prin	nary	1	0.18	0.0	00	-0.	.09	ppb				
prin	nary	2	28.42	28.	.31	28	.98	ppb			2.37%	
prin	nary	3	54.04	54.	.00	55.	.94	ppb			3.59%	
prin	nary	4	81.75	81.	.79	84.	.95	ppb			3.86%	
prin	nary	5	104.98	105	.08	109	0.40	ppb			4.11%	
Senson C				Conditio	1 8 pr	h		11	Status	naee		7
Sensor C	omponen	t Cell B Tmp.		Conditio	on				Status	pass		
	omponen			Continu		-			Status	[
Sensor C	omponen	t Fullscale Voltage		Conditio	on 0.999	5			Status	pass		
Sensor C	omponen	t Inlet Filter Condition	on	Conditio	on Clear	I			Status	pass		
Sensor C	omponen	t Line Loss		Conditio	n Not te	sted			Status	pass		
Sensor C	omponen	t Offset		Conditio	on 0.6				Status	pass		
Sensor C	omponen	t Span		Conditio	on 1.044				Status	pass		
Sensor C	omponen	t Cell B Freq.		Conditio	on 66.4 k	κHz			Status	Fail		
Sensor C	omponen	t System Memo		Conditio	on See c	omments	;		Status	pass		
Sensor C	omponen	t Sample Train		Conditio	on Good				Status	pass		
Sensor C	omponen	t Cell B Pressure		Conditio	on				Status	pass		
Sensor C	omponen	t Cell B Flow		Conditio	on 0.63 l	pm			Status	pass		
Sensor C	omponen	t Cell A Tmp.		Conditio	on 33.3 (2			Status	pass		
Sensor C	omponen	t Cell A Pressure		Conditio	on 573 m	nmHg			Status	pass		
Sensor C	omponen	t Cell A Noise		Conditio	on 1.6 pp	b			Status	pass		
Sensor C	omponen	t Cell A Freq.		Conditio	on 69.3 l	κHz			Status	Fail		
Sensor C	omponen	t Cell A Flow		Conditio	on 0.68 l	pm			Status	pass		
Sensor C	omponen	t Battery Backup		Conditio	on N/A				Status	pass		
Sensor C	omponen	t Zero Voltage		Conditio	on 0.000	8			Status	pass		

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Ozone This analyzer diagnostic (GRB411 check is outside t	Eric Hebert the manufacturer's r	04/16/2013 ecommended va	Cell B Freq. alue.	ThermoElectron	1577		
Ozone This analyzer diagnostic	GRB411 check is outside t	Eric Hebert the manufacturer's r	04/16/2013 ecommended va	Cell A Freq. alue.	ThermoElectron	1577		
Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number		
------	-------------	-------------------	------------------------	-----------	---------------	---------------		
MEV	/405-Eric H	lebert-04/18/2013						
1	4/18/2013	Computer	Gateway	none	450SX4	unknown		
2	4/18/2013	DAS	Environmental Sys Corp	90613	8816	2616		
3	4/18/2013	Modem	US Robotics	none	56k fax modem	unknown		
4	4/18/2013	Ozone	ThermoElectron Inc	none	49C	0425208058		
5	4/18/2013	Ozone Standard	ThermoElectron Inc	none	49C	0425208055		
6	4/18/2013	Printer	Hewlett Packard	none	842C	unknown		
7	4/18/2013	Sample Tower	Aluma Tower	illegible	В	none		
8	4/18/2013	Zero air pump	Werther International	none	PC40/4	526289		

Mfg	S	erial Number Ta	Site	Те	chnician		Site Visi	t Date	Parame	ter	Owner I	D
ThermoElectro	on Inc	0425208058	MEV405	Er	ic Hebert	:	04/18/20	013	Ozone		none	
Slope: Intercept CorrCoff	1.0 -0.0 0.9	Slope:68617Intercept99998CorrCoff	0.00000)))	Mfg Serial N Tfer ID	lumber	ThermoE 5171121 01111	Electron 75	Inc Pa	rameter 02 er Desc. 02	zone zone primary	ı stan
DAS 1:		DAS 2:			Slope			0 9972	0 Inter	cont	0.18	428
A Avg % Dif	f: A Ma	x%Di AAvg%	6Dif A Max 9	% Di	Slope		L	0.0012		cept	0.10	720
1.4%	ó	3.2%			Cert Da	ite		1/2/201	3 Corr	Coff	1.00	000
UseDescri	iption:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	Unit:	PctDif	ference:	
prima	ry	1	0.05	-0.	13	-0.	63	ppb				
prima	ry	2	27.24	27.	.13	26	.27	ppb			-3.17%	
prima	ry	3	52.32	52.	.28	51.	.73	ppb			-1.05%	
prima	ry	4	81.47	81.	.51	80	.57	ppb			-1.15%	
prima	ry	5	108.61	108	.73	108	8.40	ppb			-0.30%	
Sensor Con	nponent	Cell B Noise		Conditio	on 0.7 pp	b			Status	pass		
Sensor Con	nponent	Cell B Tmp.		Conditio	on				Status	pass		
Sensor Con	nponent	Fullscale Voltage		Conditio	on 1.000	3			Status	pass		
Sensor Con	nponent	Inlet Filter Condition	n	Conditio	on Mode	rately clea	an		Status	pass		
Sensor Con	nponent	Line Loss		Conditio	on Not te	ested			Status	pass]
Sensor Con	nponent	Offset		Conditio	on 1.0				Status	pass		_
Sensor Con	nponent	Span		Conditio	on 1.030				Status	pass		7
Sensor Con	nponent	Cell B Freq.		Conditio	on 86.4 k	κHz			Status	pass		7
Sensor Con	nponent	System Memo		Conditio	on See c	omments	;		Status	pass]
Sensor Con	nponent	Sample Train		Conditio	on Good				Status	pass		
Sensor Con	nponent	Cell B Pressure		Conditio	on				Status	pass		
Sensor Con	nponent	Cell B Flow		Conditio	on 0.60 l	pm			Status	pass		
Sensor Con	nponent	Cell A Tmp.		Conditio	on 36.7 (5			Status	pass		
Sensor Con	nponent	Cell A Pressure		Conditio	on 572 m	nmHg			Status	pass		
Sensor Con	nponent	Cell A Noise		Conditio	on 0.5 pp	b			Status	pass		
Sensor Con	nponent	Cell A Freq.		Conditio	on 62.2 k	κHz			Status	Fail		
Sensor Con	nponent	Cell A Flow		Conditio	on 0.70 I	pm			Status	pass		
Sensor Con	nponent	Battery Backup		Conditio	n N/A				Status	pass		
Sensor Con	nponent	Zero Voltage		Conditio	on 0.000	3			Status	pass		

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem		
Ozone	MEV405	Eric Hebert	04/18/2013	Cell A Freq.	ThermoElectron	418				
This analyzer diagnostic check is outside the manufacturer's recommended value.										

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
CAN	1407-Eric H	lebert-04/19/2013				
1	4/19/2013	Computer	Gateway	none	Solo	unknown
2	4/19/2013	DAS	Environmental Sys Corp	09638	8816	2523
3	4/19/2013	Modem	US Robotics	none	56k	unknown
4	4/19/2013	Ozone	ThermoElectron Inc	none	49C	0425208057
5	4/19/2013	Ozone Standard	ThermoElectron Inc	90567	49C	49C-59283-322
6	4/19/2013	Printer	Hewlett Packard	none	842C	unknown
7	4/19/2013	Sample Tower	Aluma Tower	illegible	В	none
8	4/19/2013	Zero air pump	Twin Tower Engineering	none	TT70/4E	526292

Mfg	Serial Number Ta	Site	Te	chnician		Site Visi	t Date	Parame	eter	Owner I	D
ThermoElectron Inc	0425208057	CAN407	Er	ric Hebert		04/19/20	013	Ozone		none	
Slope: 0 Intercept 0 CorrCoff 0	D.97307 Slope: D.93607 Intercept D.99997 CorrCoff	0.0000	0 0 0	Mfg Serial N Tfer ID	lumber	ThermoE 5171121 [°] 01111	lectron	Inc Pa	rameter o er Desc. C	zone Dzone primary	/ stan
DAS 1:	DAS 2:			Slope			0 9972	0 Inter	cont	0.18	428
A Avg % Diff: A N	fax % Di A Avg %	6Dif A Max	% Di	Slope		L	0.9972		rcept	0.10	420
1.3%	1.9%			Cert Da	ite		1/2/201	3 Corr	Coff	1.00	000
UseDescription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	Unit:	PctDi	fference:	
primary	1	-0.02	-0.	20	1.	03	ppb				
primary	2	27.49	27.	.38	27.	.10	ppb			-1.02%	
primary	3	55.52	55.	.49	54	.92	ppb			-1.03%	
primary	4	82.24	82	.28	81	.31	ppb			-1.18%	
primary	5	108.28	108	8.39	106	5.30	ppb			-1.93%	
Sensor Compone	nt Cell B Noise		Conditio	on 1.1 pp	b			Status	pass		
Sensor Compone	nt Cell B Tmp.		Conditio	on				Status	pass		
Sensor Compone	nt Fullscale Voltage		Conditio	on 0.999	6			Status	pass		
Sensor Compone	nt Inlet Filter Condition	งท	Conditio	on Clean				Status	pass		
Sensor Compone	nt Line Loss		Condition	on Not te	sted			Status	pass		
Sensor Compone	nt Offset		Conditio	on 0.000				Status	pass		
Sensor Compone	nt Span		Conditio	on 1.040				Status	pass		
Sensor Compone	nt Cell B Freq.		Condition	on 57.3 k	κHz			Status	Fail		
Sensor Compone	nt System Memo		Condition	on See c	omments	;		Status	pass		
Sensor Compone	nt Sample Train		Condition	on Good				Status	pass		
Sensor Compone	nt Cell B Pressure		Conditio	on				Status	pass		
Sensor Compone	nt Cell B Flow		Conditio	on 0.59 l	pm			Status	pass		
Sensor Compone	nt Cell A Tmp.		Conditio	on 40.3 (2			Status	Fail		
Sensor Compone	nt Cell A Pressure		Conditio	on 615 m	nmHg			Status	pass		
Sensor Compone	nt Cell A Noise		Conditio	on 1.0 pp	b			Status	pass		
Sensor Compone	nt Cell A Freq.		Conditio	on 92.2 k	κHz			Status	pass		
Sensor Compone	nt Cell A Flow		Conditio	on 0.57 l	pm			Status	pass		
Sensor Compone	nt Battery Backup		Conditio	on N/A				Status	pass		
Sensor Compone	nt Zero Voltage		Condition	on -0.000)5			Status	pass		

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Ozone	CAN407	Eric Hebert	04/19/2013	Cell A Tmp.	ThermoElectron	216		
The cooling fan dus temperature This c	t cover for the ozor ould lead to premat	ne analyzer is clogge	d with dust and a ments including	restricting air flow.	This is increasing	the internal ozo	one analyzer	
temperature. This e	ourd roud to promu	une fundre of compe	inentis including	une ozone sumpre p	ump.			
Ozone	CAN407	Eric Hebert	04/19/2013	Cell A Tmp.	ThermoElectron	216		\checkmark
This analyzer diagn	ostic check is outsid	de the manufacturer's	s recommended	value.				
Ozone	CAN407	Eric Hebert	04/19/2013	Cell B Freq.	ThermoElectron	216		\checkmark
This such as a line of the second	actio chapteric outci	do the meanufectured	a magazine magazine da da	valua				

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

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
PNF	126-Sandy	Grenville-05/12/2013				
1	5/12/2013	Computer	Dell	000264	D520	unknown
2	5/12/2013	DAS	Campbell	000346	CR3000	2125
3	5/12/2013	Modem	Raven	06597	V4221-V	0844349884
4	5/12/2013	Ozone	ThermoElectron Inc	000618	49i A1NAA	1009241789
5	5/12/2013	Ozone Standard	ThermoElectron Inc	000512	49i A3NAA	0922236890
6	5/12/2013	Sample Tower	Aluma Tower	000178	В	none
7	5/12/2013	Zero air pump	Werther International	06886	C 70/4	000815259

Mfg	S	erial Number Ta	Site	Te	chnician		Site Visi	t Date	Parame	ter	Owner I	D
ThermoElect	tron Inc 1	009241789	PNF126	Sa	andy Gre	nville	05/12/20	013	Ozone		000618	
Slope: [Intercept [CorrCoff [1.0 -0.3 0.9	06946Slope:08181Intercept09993CorrCoff	0.00000	2 2 2	Mfg Serial N Tfer ID	lumber	ThermoE 49C-731 01100	Electron 04-373	Inc Pa	rameter 02 er Desc. 0	zone zone transfe	:r
DAS 1:		DAS 2:			Clana			1 0020	Q Tratar		0.13	7061
A Avg % Di	iff: A Ma	x % Di A Avg %	6Dif A Max 9	% Di	Slope			1.0030	o Inter	cept	-0.17	901
6.6	%	7.5%			Cert Da	ate		4/2/201	3 Corr	Coff	1.00	0000
UseDesc	ription:	ConcGroup:	Tfer Raw:	Tfer (Corr:	Si	te:	Site	e Unit:	PctDif	ference:	
prim	ary	1	0.00	0.1	17	-0.	54	ppb				
prim	ary	2	29.80	29.	88	32.	.13	ppb			7.53%	
prim	ary	3	50.50	50.	52	53.	.34	ppb			5.58%	
prim	ary	4	81.00	80.	93	86.	.70	ppb			7.13%	
prim	ary	5	100.20	100	.07	106	.20	ppb			6.13%	
Sensor Co	omponent	Cell B Noise		Conditio	n 0.9 p	b			Status	pass		
Sensor Co	mponent	Cell B Tmp.		Conditio	on				Status	pass		
Sensor Co	mponent	Fullscale Voltage		Conditio	n N/A				Status	pass		
Sensor Co	mponent	Inlet Filter Condition	on	Conditio	n Clear	1			Status	pass		
Sensor Co	mponent	Line Loss		Conditio	n Not te	ested			Status	pass		
Sensor Co	mponent	Offset		Conditio	on 0.30				Status	pass		
Sensor Co	mponent	Span		Conditio	n 1.017	,			Status	pass		
Sensor Co	mponent	Cell B Freq.		Conditio	m 93.2 l	κHz			Status	pass		
Sensor Co	mnonent	System Memo		Conditio	n See c	omments			Status	pass		
Sensor Co	mponent	Sample Train		Conditio	n Good				Status	nass		
Sensor Co	mponent			Conditio					Status	pass		
Sensor Co	omponent			Conditio)n				Status	pass		
Sensor Co	omponent	Cell B Flow		Conditio	n 0.000				Status	fail		
Sensor Co	omponent	Cell A Tmp.		Conditio	on 31.9 (C			Status	pass		
Sensor Co	omponent	Cell A Pressure		Conditio	on 642 n	nmHg			Status	pass		
Sensor Co	omponent	Cell A Noise		Conditio	n 0.8 p	b			Status	pass		
Sensor Co	omponent	Cell A Freq.		Conditio	on 82.8	κHz			Status	pass		
Sensor Co	omponent	Cell A Flow		Conditio	n 1.37	pm			Status	fail		
Sensor Co	omponent	Battery Backup		Conditio	n N/A				Status	pass		
Sensor Co	mponent	Zero Voltage		Conditio	n N/A				Status	pass		

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Ozone This analyzer diagnostic	PNF126 check is outside t	Sandy Grenville the manufacturer's r	05/12/2013 recommended va	Cell B Flow alue.	ThermoElectron	3364		
Ozone This analyzer diagnostic	PNF126 check is outside t	Sandy Grenville the manufacturer's r	05/12/2013 recommended va	Cell A Flow alue.	ThermoElectron	3364		

Site V	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
MCK	231-Eric H	Hebert-05/18/2013				
1	5/18/2013	Computer	Dell	000458	D530	unknown
2	5/18/2013	DAS	Campbell	000359	CR3000	2137
3	5/18/2013	Modem	Raven	06476	H4222-C	0808311140
4	5/18/2013	Ozone	ThermoElectron Inc	000723	49i A1NAA	1105347327
5	5/18/2013	Ozone Standard	ThermoElectron Inc	000439	49i A3NAA	CM08200015
6	5/18/2013	Zero air pump	Werther International	06924	C 70/4	000836205

Mfg	S	erial Number Ta	Site	Te	chnician		Site Visi	t Date	Parame	eter	Owner I	D
ThermoElect	tron Inc 1	105347327	MCK231	Er	ric Hebert		05/18/20	013	Ozone		000723	
Slope: [Intercept [CorrCoff [0.9 0.3 0.9	97219Slope:30066Intercept99970CorrCoff	0.00000 0.00000 0.00000		Mfg Serial N Tfer ID	lumber	ThermoE 5171121 01111	Electron 75	Inc Pa	rameter oz er Desc. Oz	cone zone primary	/ stan
DAS 1:		DAS 2:			Slope			0 0072	0 Into	mont [0.18	428
A Avg % D	iff: A Ma	x%Di AAvg%	6Dif A Max 9	% Di	Slope			0.3372		cept	0.10	420
2.7	%	5.4%			Cert Da	ite		1/2/201	3 Corr	Coff	1.00	000
UseDesc	cription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	Unit:	PctDif	ference:	
prim	nary	1	-0.17	-0.	35	-0.	11	ppb				
prim	nary	2	30.01	29.	.90	28.	.30	ppb			-5.35%	
prim	nary	3	54.88	54	.84	55.	.07	ppb			0.42%	
prim	nary	4	83.75	83	.80	82.	.30	ppb			-1.79%	
prim	nary	5	109.06	109	0.18	105	.60	ppb			-3.28%	
Sensor Co	omponent	Cell B Noise		Conditio	on 1.4 pp	b			Status	pass		
Sensor Co	omponent	Cell B Tmp.		Conditio	on				Status	pass		
Sensor Co	omponent	Fullscale Voltage		Conditi	on N/A				Status	pass		
Sensor Co	mponent	Inlet Filter Condition	on	Condition	on Clean				Status	pass		7
Sensor Co	mponent	Line Loss		Conditio	on Not te	sted			Status	pass		
Sensor Co	mponent	Offset		Conditi	on 0.3				Status	pass		7
Sensor Co	mponent	Span		Conditi	on 1.005				Status	pass		7
Sensor Co	mponent	Cell B Freq.		Conditio	on 95.1 k	κHz			Status	pass		7
Sensor Co	mponent	System Memo		Conditio	on				Status	pass		7
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 0.72 l	pm			Status	pass		
Sensor Co	omponent	Cell A Tmp.		Conditio	on 31.8 ()			Status	pass		
Sensor Co	omponent	Cell A Pressure		Conditi	on 703 m	nmHg			Status	pass		
Sensor Co	omponent	Cell A Noise		Conditi	on 0.9 pp	b			Status	pass		
Sensor Co	omponent	Cell A Freq.		Conditio	on 94.8 k	κHz			Status	pass		
Sensor Co	mponent	Cell A Flow		Conditio	on 0.71 l	pm			Status	pass		
Sensor Co	omponent	Battery Backup		Conditio	on N/A				Status	pass		
Sensor Co	omponent	Zero Voltage		Conditio	on N/A				Status	pass		

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
DE!	N417-Sandy	Grenville-06/15/2013				
1	6/15/2013	Computer	Gateway	none	Solo	2500251309
2	6/15/2013	DAS	Environmental Sys Corp	90600	8816	2274
3	6/15/2013	Modem	US Robotics	none	33.6 fax modem	unknown
4	6/15/2013	Ozone	ThermoElectron Inc	90778	49C	49C-77033-384
5	6/15/2013	Ozone Standard	ThermoElectron Inc	90831	49C	0520012325
6	6/15/2013	Printer	Hewlett Packard	none	840C	unknown
7	6/15/2013	Sample Tower	Aluma Tower	none	В	AT-71102-7I-5
8	6/15/2013	Zero air pump	Werther International	none	PC 70/4	626281

Mfg	Serial Number Ta	Site	Teo	chnician		Site Visi	it Date	Parame	eter	Owner I	D
ThermoElectron Inc	49C-77033-384	DEN417	Sa	indy Grei	nville	06/15/2	013	Ozone		90778	
Slope: () Intercept () CorrCoff ()	0.99826 Slope: 1.06287 Intercept 0.99998 CorrCoff	0.0000	0	Mfg Serial N	lumber	ThermoE 49C-731	Electron 04-373	Inc Pa	rameter ozo er Desc. Oz	one one transfei	
			_	Tfer ID		01100					
DAS 1:	DAS 2:			Slope			1.00308	8 Inter	cept	-0.17	961
A Avg % Diff: A N 1.9%	Iax % Di A Avg % 4.1%	%Dif A Max "	% Di	Cert Da	ite		4/2/201	3 Corr	·Coff	1.00	000
UseDescription:	ConcGroup:	Tfer Raw:	Tfer (Corr:	Si	te:	Site	Unit:	PctDiff	erence:	
primary	1	-0.23	-0.0	05	1.0	00	ppb				
primary	2	30.47	30.:	55	31.	.79	ppb			4.06%	
primary	3	49.66	49.	68	50.	.50	ppb			1.65%	
primary	4	80.50	80.4	43	81.	.00	ppb			0.71%	
primary	5	99.95	99.	82	101	.00	ppb			1.18%	
Sensor Component	nt Cell B Noise		Conditio	n 0.6 pp	b			Status	pass		
Sensor Compone	nt Cell B Tmp.		Conditio	on				Status	pass		
Sensor Compone	nt Fullscale Voltage		Conditio	N/A				Status	pass		
Sensor Compone	nt Inlet Filter Condition	on	Conditio	n Clear	I			Status	pass		
Sensor Componen	nt Line Loss		Conditio	n Not te	sted			Status	pass		
Sensor Compone	nt Offset		Conditio	n -0.7				Status	pass		
Sensor Compone	nt Span		Conditio	n 1.021				Status	pass		
Sensor Compone	nt Cell B Freq.		Conditio	n 76.7 k	κHz			Status	Fail		
Sensor Compone	nt System Memo		Conditio	n See c	omments			Status	pass		
Sensor Compone	nt Sample Train		Conditio	n Good				Status	pass		
Sensor Compone	nt Cell B Pressure		Conditio	n				Status	pass		
Sensor Compone	nt Cell B Flow		Conditio	n 0.67 l	pm			Status	pass		
Sensor Compone	nt Cell A Tmp.		Conditio	n 36.8 (C			Status	pass		
Sensor Compone	nt Cell A Pressure		Conditio	n 695 m	nmHg			Status	pass		
Sensor Compone	nt Cell A Noise		Conditio	n 0.9 pp	b			Status	pass		
Sensor Componen	nt Cell A Freq.		Conditio	92.4 H	κHz			Status	pass		
Sensor Componen	nt Cell A Flow		Conditio	0.67 I	pm			Status	pass		
Sensor Componen	nt Battery Backup		Conditio	N/A				Status	pass		
Sensor Compone	nt Zero Voltage		Conditio	N/A				Status	pass		

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard Probler		
Ozone	DEN417	Sandy Grenville	06/15/2013	Cell B Freq.	ThermoElectron	623			
This analyzer diagnostic check is outside the manufacturer's recommended value.									

Site V	isit Date/	Parameter	Mfg	Owner ID	Model Number	Serial Number
MOR	409-Sandy	Grenville-06/17/2013				
1	6/17/2013	DAS	Environmental Sys Corp	90652	8816	2565
2	6/17/2013	Modem	US Robotics	none	14.4 fax modem	7643
3	6/17/2013	Ozone	ThermoElectron Inc	90608	49C	49C-61987-333
4	6/17/2013	Ozone Standard	ThermoElectron Inc	none	49C	49C-74537-376
5	6/17/2013	Sample Tower	Aluma Tower	none	В	none
6	6/17/2013	Zero air pump	Werther International	none	PC70/4	585572

Mfg	Serial Number Ta	Site	Tee	chnician		Site Visi	it Date	Parame	eter	Owner I	D
ThermoElectron Inc	49C-61987-333	MOR409	Sa	indy Gre	nville	06/17/2	013	Ozone		90608	
	07800	0.0000		Mfg		ThermoF	-lectron	Inc Pa	rameter 070	ne	
Slope:	0.97890 Slope:	0.0000									
CorrCoff ().99992 CorrCoff	0.0000		Serial N	umber	49C-731	04-373	Tf	er Desc. Ozo	one transfer	·
		0.0000	0	Tfer ID		01100					
DAS 1:	DAS 2:			Slope			1.0030	8 Inter	cept	-0.17	961
A Avg % Diff: A M	fax % Di A Avg %	6Dif A Max	% Di	Cont De			1/2/201	3 Com	Coff	1.00	000
3.5%	5.3%			Cert Da	ite		4/2/201	5 Corr		1.000	000
UseDescription:	ConcGroup:	Tfer Raw:	Tfer (Corr:	Sit	te:	Site	Unit:	PctDiffe	erence:	
primary	1	0.14	0.3	31	-0.	16	ppb				
primary	2	32.36	32.	43	30.	.71	ppb			-5.30%	
primary	3	52.52	52.	53	51.	.14	ppb			-2.65%	
primary	4	82.40	82.	32	79.	.25	ppb			-3.73%	
primary	5	102.04	101	.90	99.	.55	ppb			-2.31%	
Sensor Componen	nt Cell B Noise		Conditio	n 1.0 pp	b			Status	pass		
Sensor Compone	nt Cell B Tmp.		Conditio	on				Status	pass		
Sensor Compone	nt Fullscale Voltage		Conditio	n N/A				Status	pass]
Sensor Compone	nt Inlet Filter Condition	on	Conditio	n Clear	I			Status	pass		7
Server Commons			Conditio	Not to	eted			States			
Sensor Componei			Conditio		sieu			Status	pass		
Sensor Component Offset			Condition 1.4					Status	pass		
Sensor Componen	nt Span		Conditio	n 1.131				Status	pass		
Sensor Componen	nt Cell B Freq.		Condition 58.9 kHz				Status	Fail			
Sensor Componer	nt System Memo		Conditio	n See c	omments			Status	pass		
Sensor Compone	nt Sample Train		Conditio	Good				Status	pass		
Sensor Compone	nt Cell B Pressure		Conditio	on				Status	pass		
Sensor Componer	nt Cell B Flow		Conditio	n 0.78 l	pm			Status	pass]
Sensor Compone	nt Cell A Tmp.		Conditio	n 34.7 (2			Status	pass		7
Sensor Compone	nt Cell A Pressure		Conditio	n 705 m	nmHg			Status	pass		7
Sensor Componer	nt Cell A Noise		Conditio	n 0.9 pr	b			Status	pass		7
Sensor Compone	nt Cell A Freq.		Conditio	m 89.6 ł	κHz			Status	pass		_ _
Sensor Componen	nt Cell A Flow		Conditio	0.561	om			Status	pass		
Sensor Componer	A Dottom Daskur		Contract	N1/A	F · · ·			Status	P 200		
Sensor Compone	пт вашегу васкир		Conditio	n IN/A				Status	pass		
Sensor Componen	nt Zero Voltage		Conditio	n N/A				Status	pass		

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard Probler		
Ozone	MOR409	Sandy Grenville	06/17/2013	Cell B Freq.	ThermoElectron	1389			
This analyzer diagnostic check is outside the manufacturer's recommended value.									