2013 – 3rd Quarter Report Support for Conducting Systems & Performance Audits of CASTNET Sites and NADP Monitoring Stations

EPA Contract No. EPW12019

Prepared for:

U. S. Environmental Protection Agency

Prepared by:



1128 NW 39th Drive Gainesville, FL 32605

August 2014

Table of Contents

1.0 CAS	TNE	T Quarterly Report	1-1
1.1	Intro	duction	1-1
1.2	Proje	ect Objectives	1-1
1.3	CAS	TNET Sites Visited Third Quarter 2013	1-4
1.4	Audi	t Results	1-5
2.0 NAD	P Qu	uarterly Report	2-1
2.1	Intro	duction	2-1
2.2	Proje	ect Objectives	2-1
2.3	Sites	Visited Third Quarter 2013	2-2
2.4	Surv	ey Results	2-3
List of A Appendia Appendia Appendia	x A x B	CASNTET Audit Report Forms CASTNET Site Spot Report Forms CASTNET Ozone Performance Evaluation Forms	
List of Ta	ables		
Table 1.	Pe	rformance Audit Challenge and Acceptance Criteria	1-2
Table 2.	Sit	e Audit Visits	1-4
Table 3.	Sit	te Ozone PE Visits	1-5
Table 4.	Sit	tes Surveyed – Third Quarter 2013	2-2

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 that are operated by

AMEC continue to operate meteorological sensors. Those sites are BEL116, BVL30, CHE185, and PAL190. Four new sites sponsored by EPA and operated by the BLM in WY also operate meteorological sensors and are BAS601, NEC602, BUF603, and SHE604.

Some or all of the additional monitored variables, NOy, CO, and SO₂ have been added to the EPA sponsored sites BVL130, HWF187, and BEL116. Those variables were audited at the BVL130 station during third quarter 2013. All results except the lowest concentration challenge for CO were found to be within acceptance criteria. The preliminary report of those results were delivered following the audit, however the results are not included in this report.

Table 1. Performance Audit Challenge and Acceptance Criteria

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

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

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

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

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

1.3 CASTNET Sites Visited Third Quarter 2013

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

Table 2. Site Audit Visits

Side ID	Audit Type	Sponsor	Site Visit Date	Station Name
GLR468	with met	NPS	7/18/2013	Glacier NP
BAS601	with met	EPA / BLM	7/22/2013	Basin
SHE604	Flow & met	EPA / BLM	7/23/2013	Sheridan
BUF603	Flow & met	EPA / BLM	7/25/2013	Buffalo
NEC602	with met	EPA / BLM	7/29/2013	Newcastle
BVL130	with met	EPA	7/31/2013	Bondville
BVL130	NOy	EPA	8/1/2013	Bondville
BVL130	СО	EPA	8/1/2013	Bondville
BVL130	SO2	EPA	8/1/2013	Bondville
VIN140	without met	EPA	8/23/2013	Vincennes
ALH157	without met	EPA	8/24/2013	Alhambra
PRK134	without met	EPA	9/4/2013	Perkinstown
VOY413	with met	NPS	9/5/2013	Voyageurs NP
THR422	with met	NPS	9/9/2013	Theodore Roosevelt NP
WNC429	with met	NPS	9/11/2013	Wind Cave NP
STK138	without met	EPA	9/19/2013	Stockton

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).

Table 3. Site Ozone PE Visits

Side ID	Audit Type	Sponsor	Site Visit Date	Station Name
UVL124	Ozone PE	EPA	8/30/2013	Unionville
HOX148	Ozone PE	EPA	8/30/2013	Hoxeyville
ANA115	Ozone PE	EPA	9/17/2013	Ann Arbor
MKG113	Ozone PE	EPA	9/17/2013	MK Goddard
KEF112	Ozone PE	EPA	9/20/2013	Kane Exp. Forest
PSU106	Ozone PE	EPA	9/24/2013	Penn State
SAL133	Ozone PE	EPA	9/28/2013	Salamonie Reservoir

1.4 Audit Results

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

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

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

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

2.0 NADP Quarterly Report

2.1 Introduction

The National Atmospheric Deposition Program (NADP) operates three precipitation chemistry networks and two atmospheric concentration networks. The National Trends Network (NTN) has been measuring acidic precipitation since 1978. The network currently has more than 200 sites. The Atmospheric Integrated Research Monitoring Network (AIRMoN) began operation in 1992 and currently measures event based precipitation events at 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 Third Quarter 2013

This report covers the results from the NADP sites surveyed during the third quarter (July through September) of 2013. The station names and dates of the audits are presented in Table 4.

Table 4. Sites Surveyed – Thied Quarter 2013

Side ID	Network	Survey Date	Station Name
CA28	NTN	7/9/2013	Kings River Experimental Watershed
ID02	NTN	7/22/2013	Priest River Experimental Forest
ID03	NTN / AMoN	7/23/2013	Craters of the Moon National Monument
ID11	NTN	7/15/2013	Reynolds Creek
IN22	NTN	8/23/2013	Southwest Purdue Agriculture Center
IN41	NTN	9/16/2013	Agronomy Center for Research and Extension
MI99	NTN	8/29/2013	Chassell
MN23	MDN / NTN	8/22/2013	Camp Ripley
MN28	NTN	8/22/2013	Grindstone Lake
MN32	NTN	9/5/2013	Voyageurs National Park-Sullivan Bay
MT00	NTN	7/22/2013	Little Bighorn Battlefield National Monument
MT05	MDN / NTN	7/18/2013	Glacier National Park-Fire Weather Station
NC29	NTN	7/11/2013	Hofmann Forest
NC35	NTN	7/11/2013	Clinton Crops Research Station
NC36	NTN	7/10/2013	Jordan Creek
ND00	NTN	9/9/2013	Theodore Roosevelt National Park-Painted Canyon
NY10	NTN	9/19/2013	Chautauqua
OR09	NTN	7/16/2013	Silver Lake Ranger Station
OR10	NTN	7/17/2013	H. J. Andrews Experimental Forest
OR18	NTN	7/18/2013	Starkey Experimental Forest
OR97	NTN	7/17/2013	Hyslop Farm
PA13	MDN / NTN	9/24/2013	Allegheny Portage Railroad National Hist. Site
PA18	NTN	9/21/2013	Young Woman's Creek
PA29	NTN MDN / AMoN	9/19/2013	Kane Experimental Forest
PA30	MDN / NTN	9/18/2013	Erie
PA42	MDN / NTN	9/24/2013	Leading Ridge
PA47	MDN / NTN	9/23/2013	Millersville

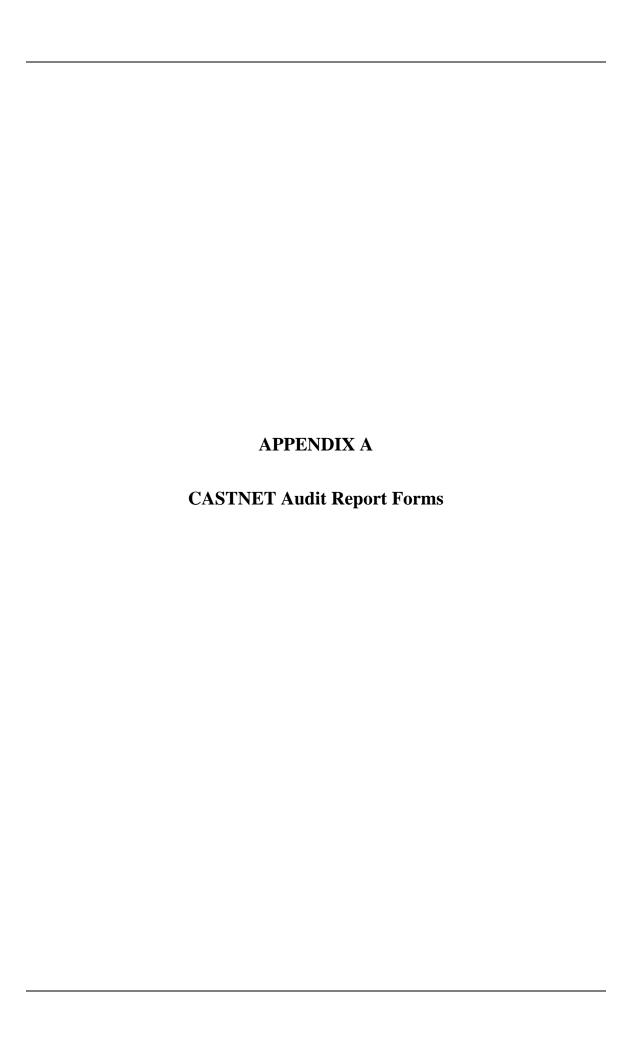
Side ID	Network	Survey Date	Station Name		
PA52	MDN	9/22/2013	Little Pine State Park		
PA60	MDN	9/23/2013	Valley Forge		
PA90	MDN	9/20/2013	Hills Creek State Park		
SC05	MDN / NTN / AMoN	7/12/2013	Cape Romain National Wildlife Refuge		
SC06	NTN	7/8/2013	Santee National Wildlife Refuge		
SC19	MDN	7/9/2013	Congaree Swamp		
SD04	NTN	9/11/2013	Wind Cave National Park-Elk Mountain		
UT97	MDN / AMoN	7/5/2013	Salt Lake City		
WI08	MDN	8/27/2013	Brule River		
WI25	NTN	9/3/2013	Suring		
WI36	MDN / NTN	8/28/2013	Trout Lake		

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.



Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number			
GLF	GLR468-Eric Hebert-07/18/2013								
1	7/18/2013	DAS	Environmental Sys Corp	90653	8816	2566			
2	7/18/2013	Elevation	Elevation	None	1	None			
3	7/18/2013	Flow Rate	Millipore	none	LR250	766			
4	7/18/2013	Infrastructure	Infrastructure	none	none	none			
5	7/18/2013	Modem	US Robotics	none	56k	unknown			
6	7/18/2013	Ozone	ThermoElectron Inc	none	49i A3NAA	1023943901			
7	7/18/2013	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	CM08460050			
8	7/18/2013	Precipitation	Climatronics	none	100508-2	illegible			
9	7/18/2013	Printer	Hewlett Packard	none	842C	unknown			
10	7/18/2013	Relative Humidity	Rotronic	none	MP 601A	80496			
11	7/18/2013	Sample Tower	Aluma Tower	none	В	none			
12	7/18/2013	Shelter Temperature	ARS	77	none	none			
13	7/18/2013	Siting Criteria	Siting Criteria	None	1	None			
14	7/18/2013	Solar Radiation	Licor	none	LI-200	illegible			
15	7/18/2013	Solar Radiation Translator	RM Young	03729	70101-X	none			
16	7/18/2013	Temperature	RM Young	none	41342	17625			
17	7/18/2013	Wind Direction	RM Young	02844	AQ05103-5	none			
18	7/18/2013	Wind Speed	RM Young	02844	AQ05103-5	none			
19	7/18/2013	Zero air pump	Werther International	none	PC70/4	000756725			

DAS Data Form

DAS Time Max Error:

0.72

Mfg	Serial Number	Site	Technician	Site Visit Date Parameter		Use Desc.
Environmental Sys	2566	GLR468	Eric Hebert	07/18/2013	DAS	Primary
	9/2013 Audit D 2:43:00 Audit T	ime 12:42:17	Mfg Serial Number	Datel 4000392	Parameter Tfor Dogo	DAS Source generator (D
Das Day: Low Channel:	200 Audit D High Ch		Tfer ID	01321	Tiel Desc.	podrice generator (D)
8	ax Diff: Avg Diff		Slope	1.0000	0 Intercept	0.00000
0.0002	0.0003 0	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	
2	0.0000	0.0000	0.0003	V	V	0.0003	
2	0.1000	0.1000	0.0998	V	V	-0.0002	
2	0.3000	0.3000	0.2999	V	V	-0.0001	
2	0.5000	0.4999	0.4998	V	V	-0.0001	
2	0.7000	0.6999	0.6998	V	V	-0.0001	
2	0.9000	0.8999	0.8998	V	V	-0.0001	
2	1.0000	0.9999	0.9997	V	V	-0.0002	
9	0.0000	0.0000	-0.0002	V	V	-0.0002	ĺ
9	0.1000	0.1000	0.0999	V	V	-0.0001	ĺ
9	0.3000	0.3000	0.3000	V	V	0.0000	ĺ
9	0.5000	0.5000	0.5001	V	V	0.0001	
9	0.7000	0.7000	0.7002	V	V	0.0002	
9	0.9000	0.9000	0.9002	V	V	0.0002	
9	1.0000	1.0000	1.0003	V	V	0.0003	

Flow Data Form

Mfg	Se	erial Num	ber Ta	Site	Tec	hnician Site Visit Date		Date Param	eter	Owner ID
Millipore	7	66		GLR468	Eri	ric Hebert 07/18/2013		Flow R	ate	none
						Mfg	BIOS	P	arameter Fl	ow Rate
						Serial Number	122974	Т	fer Desc. Bl	OS 220-H
						Tfer ID	01416			
						Slope	1	00000 Inte	ercept	0.00000
						•			-	
						Cert Date	1/3	8/2013 Cor	rCoff	1.00000
DAS 1:]	DAS 2:			Cal Factor Z	ero	0.34	17	
A Avg % Diff:	A Max	x % Di	A Avg %I	Dif A Max	% Di	Cal Factor F	ull Scale	11.3	33	
1.13%		1.26%				Rotometer R	eading:	3.0)5	
UseDescription:	Tes	st type:	Input l/m:	Input STP:	MfcDisp.:	OutputSignal:	Output S E:	InputUnit:	OutputSigna	llPctDifference
primary	pump	off	0.000	0.000	-0.06	-0.1370	0.05	1/m	l/m	
primary	leak c	heck	0.000	0.000	-0.06	-0.1370	0.05	1/m	1/m	
primary	test pt	t 1	0.000	3.032	2.37	1.2070	3.00	1/m	1/m	-1.04%
	test pt		0.000	3.033	2.37	1.2070	3.00	1/m	1/m	-1.08%
primary	test pt	t 3	0.000	3.038	2.37	1.2070	3.00	1/m	1/m	-1.26%
Sensor Compo	nent	Leak Test			Conditio	n		Status	pass	
Sensor Compo	nent	Filter Azim	nuth		Conditio	n 360 deg		Status	pass	
Sensor Compo	nent	Filter Dept	Filter Depth			dition -1.5 cm		Status Fail		
Sensor Compo	nent	Filter Posi	tion		Conditio	Poor		Status Fail		
Sensor Compo	nent	Moisture F			Conditio	tion No moisture present		Status pass		
Sensor Compo	nent	Rotomete	r Condition		Conditio	n Clean and dry		Status Pass		
Sensor Component System Memo		Conditio	ition See comments		Status pass					
Sensor Component Tubing Condition		Conditio	tion Good		Status	pass				
Sensor Component Filter Distance			Conditio	1.5 cm		Status	pass			

Ozone Data Form

Mfg Se	erial Number Ta	Site	Te	chnician		Site Vis	it Date	Parame	eter	Owner ID
ThermoElectron Inc 1	023943901	GLR468	Er	ric Hebert		07/18/2	013	Ozone		none
Intercept 0.1	Slope: 5050 Intercept 19993 CorrCoff	0.00000)	Mfg Serial N Tfer ID	umber			rameter ozone er Desc. Ozone primary stan		
DAS 1:	DAS 2:			Slope			0.9972	0 Inter	cept	0.18428
A Avg % Diff: A Mar 2.5%	3.3% A Avg %	6Dif A Max 6	% Di	Cert Da	te		1/2/201	3 Corr	·Coff	1.00000
UseDescription:	ConcGroup:	Tfer Raw:	Tfer (Si			Unit:	PctDif	ference:
primary	1	-0.71	-0.		-0.		ppb			2.450
primary	2	30.44	30.		31.		ppb			2.47%
primary primary	3 4	53.94 83.45	53. 83.		55. 85.		ppb ppb			2.49% 1.83%
primary	5	111.83	111		115		ppb			3.26%
Sensor Component		111.00		0.8 pp			PPO	Status	pass	3.2070
Sensor Component	Cell B Tmp.		Conditio	on				Status	pass	
Sensor Component	Fullscale Voltage		Conditio	on 1.000	2			Status	pass	
Sensor Component	Inlet Filter Condition	n	Conditio	on Clean				Status	pass	
Sensor Component	Line Loss		Condition	on < 1 %				Status	pass	
Sensor Component	Offset		Condition	0.8				Status	pass	
Sensor Component	Span		Conditio	on 1.028				Status	pass	
Sensor Component	Cell B Freq.		Condition	on 76.8 k	Hz			Status	Fail	
Sensor Component	System Memo		Conditio	on				Status	pass	
Sensor Component	Sample Train		Conditio	on Good				Status	pass	
Sensor Component	Cell B Pressure		Conditio	on				Status	pass	
Sensor Component	Cell B Flow		Conditio	on 0.62 l	om			Status	pass	
Sensor Component	Cell A Tmp.		Conditio	on 33.2 (;			Status	pass	
Sensor Component	Cell A Pressure		Condition	on 670 m	mHg			Status	pass	
Sensor Component	Cell A Noise		Condition	0.7 pp	b			Status	pass	
Sensor Component	Cell A Freq.		Condition	on 75.2 k	Hz			Status	Fail	
Sensor Component	Cell A Flow		Condition	on 0.62 l	om			Status	pass	
Sensor Component	Battery Backup		Conditio	on N/A				Status	pass	
Sensor Component	Zero Voltage		Condition	on 0.000	3			Status	pass	

Wind Speed Data Form Mfg Serial Number Ta **Technician** Site Visit Date Parameter Owner ID GLR468 Wind Speed 02844 RM Young Eric Hebert 07/18/2013 none Parameter wind speed Mfg RM Young Tfer Desc. wind speed motor (h Serial Number 01262 Tfer ID 0.00000 1.00000 **Slope Intercept** 59816 Prop or Cups SN 0.3 **to** 0.3 **Prop or Cups Torque Cert Date** 1/13/2010 CorrCoff 1.00000 **Prop Correction Fact** 0.0512 Parameter wind speed Mfg RM Young Tfer Desc. wind speed motor (I **Serial Number** 01261 Tfer ID 1.00000 0.00000 Slope **Intercept** 1/13/2010 1.00000 **Cert Date** CorrCoff **DAS 1: DAS 2:** Low Range **High Range** Low Range **High Range** 0.05 0.00% Abs Avg Err 0.20 0.00% Abs Max Er UseDescription: InputDevice: Input RPM: Output V: Diff/ % Diff: Difference: Input m/s: DAS m/s: none 0 0.20 0.0000 0.0 -0.20 primary 01262 200 1.02 0.0000 1.0 0.00 primary primary 01262 400 2.05 0.0000 2.1 0.00 4.10 4.1 0.00 01262 800 0.0000 primary 6.1 primary 01262 1200 6.14 0.0000 0.00% 12.29 0.0000 12.3 0.00% primary 01262 2400 01262 4000 20.48 0.0000 20.5 0.00% primary 48.1 primary 01262 9400 48.13 0.0000 0.00% Sensor Component | System Memo Status pass **Condition** 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 **Status** pass Condition

Wind Direction Data Form

Sensor Component Vane Condition

Sensor Component System Memo

Mfg	Serial Number	Ta Site		Technician	Site Visit	t Date Paran	neter	Owner ID
RM Young	none	GLR468		Eric Hebert	07/18/20)13 Wind [Direction	02844
				Mfg	Ushikata		_	wind direction
				Serial Nun	nber 190037	T	fer Desc.	transit
				Tfer ID	01265			
Vane SN: N/A		C. A. Align. de	eg. true:	Slope		1.00000 Into	ercept	0.00000
	12 to 12		3	Cert Date		1/4/2011 Co	rrCoff	1.00000
				Mfg	RM Youn	na P	arameter	wind direction
							_	
				Serial Nun		T	fer Desc.	wind direction wheel
				Tfer ID	01266			
DA	AS 1:	D	AS 2:					
			AS 2: rientation	Linearity:				
Abs Avg Err	1.5	1.0	Tentation	Linearity.				
Abs Max Er	3	2			_			
UseDescription:	TferID:	Input Raw:	Linearity	Output V:	Output Deg.:	Difference:	Change:	Error:
primary	01266	0	V	0.0000	0	0	44	-1
primary	01266	45	✓	0.0000	45	0	45	0
primary	01266	90	✓	0.0000	91	1	46	1
primary	01266	135	✓	0.0000	138	3	47	2
primary	01266	180	✓	0.0000	182	2	44	-1
primary	01266	225	~	0.0000	227	2	45	0
primary	01266	270	~	0.0000	273	3	46	1
primary	01266	315	✓	0.0000	316	1	43	-2
primary	01265	3		0.0000	0	3		3
primary	01265	93		0.0000	91	2		2
primary	01265	183		0.0000	182	1		1
primary	01265	273		0.0000	273	0		0
Sensor Compon	nent Mast		Cond	ition Good		Status	pass	
Sensor Compon	Condition		Cond	ition Good		Status	pass	
Sensor Component Sensor Heater		Cond	ition N/A		Status	pass		
Sensor Component Sensor Plumb		Cond	ition Plumb		Status	pass		
Sensor Compon	Torque		Cond	ition		Status	pass	

Condition Good

Condition

Status pass

Status pass

Temperature Data Form Serial Number Tag Site **Technician** Site Visit Date Parameter **Owner ID** Mfg 17625 GLR468 Eric Hebert 07/18/2013 Temperature RM Young none **Parameter** Temperature Mfg Extech Tfer Desc. RTD H232679 **Serial Number** 01228 Tfer ID 1.00732 -0.12380 **Slope Intercept DAS 1: DAS 2:** 1/12/2013 1.00000 Abs Avg Err Abs Max Er Abs Avg Err Abs Max Er **Cert Date** CorrCoff 0.09 0.13 InputTmpRaw | InputTmpCorr.: | OutputTmpSignal: | OutputSignalEng: | OSE Unit: | Difference: UseDesc.: Test type: Temp Low Range primary 0.01 0.13 0.00000.3 C 0.13 26.70 $\overline{\mathbf{C}}$ -0.06 primary Temp Mid Range 26.77 0.0000 26.6 Temp High Range 48.90 0.0000 49.0 C 0.08 primary 49.13 Sensor Component | Shield Condition Clean Status pass Sensor Component Blower Status Switch **Condition** N/A **Status** pass **Sensor Component** Blower **Condition** Functioning **Status** pass Sensor Component System Memo **Condition** See comments **Status** pass

Humidity Data Form Technician Site Visit Date Parameter **Owner ID** Mfg Serial Number Tag Site Relative Humidity Rotronic 80496 GLR468 Eric Hebert 07/18/2013 none Mfg Rotronic Parameter Relative Humidity Tfer Desc. Hygroclip 124432 **Serial Number** 01225 Tfer ID 1.00000 0.00000 Slope **Intercept** 1/29/2013 1.00000 **Cert Date** CorrCoff **DAS 1: DAS 2: High Range** Low Range **High Range** Low Range 1.3 Abs Avg Err 4.5 2.2 4.5 Abs Max Er UseDesc.: Test type: Device: Input RH: GTL Raw: RH Corr.: DAS Volts: DAS %RH: Difference: RH Low Range primary Hygroclip 32.8 33.0 32.8 0.0000 32.5 -0.3-2.2 primary RH Low Range Hygroclip 52.9 53.2 52.9 0.000050.7 primary RH High Range Hygroclip 93.6 89.9 93.6 0.0000 89.1 -4.5 **Sensor Component** System Memo Status pass **Condition** Sensor Component Blower **Condition** Functioning Status pass Sensor Component Blower Status Switch **Condition** N/A Status pass Sensor Component | RH Filter **Condition** Clean **Status** pass Sensor Component | Shield **Condition** Moderately clean **Status** pass

Solar Radiation Data Form Serial Number Tag Site Owner ID Mfg **Technician** Site Visit Date Parameter Solar Radiation illegible GLR468 Eric Hebert 07/18/2013 Licor none Mfg Eppley Parameter solar radiation RM Young Mfg Tfer Desc. SR transfer translat 10765 **Serial Number** 03729 **SN/Owner ID** none 01246 Tfer ID **Parameter** Solar Radiation Translator 1.00000 0.00000 **Slope Intercept DAS 1: DAS 2:** 1/6/2010 1.00000 % Diff of Avg %Diff of Max %Diff of Avg %Diff of Max **Cert Date** CorrCoff Parameter solar radiation Mfg Eppley Tfer Desc. SR transfer sensor **Serial Number** 34341F3 01245 Tfer ID 1.00000 0.00000 **Slope Intercept Cert Date** 12/16/2010 CorrCoff 1.00000 0.0% 2.8% 0.1% 0.0% Measure Date MeasureTime Tfer Corr: PctDifference: UseDescription: DAS w/m2: primary 7/18/2013 13:00 831 832 0.1% 2.0% 7/18/2013 14:00 698 712 primary primary 7/18/2013 15:00 738 757 2.6% 4.8% 7/18/2013 16:00 580 608 primary 7/18/2013 17:00 377 409 8.5% primary primary 7/18/2013 18:00 62 61 -1.6% **Condition** Level Sensor Component | Sensor Level **Status** pass Sensor Component | Sensor Clean **Condition** Clean **Status** pass Sensor Component | Properly Sited **Condition** Properly sited Status pass Sensor Component | System Memo **Status** pass Condition

Precipitation Data Form

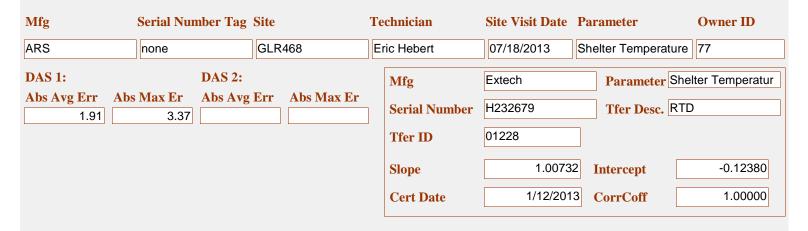
Mfg	S	erial N	Number Ta	Site		Tec	chnician		Site	Visit Date	Parame	eter		Owner ID
Climatronics	il	llegible)	GLR468		Er	ic Hebert		07/	18/2013	Precipita	ation		none
DAC1.			DAC 2.				Mfg PMP Serial Number EW-0			06134-50				ecipitation Oml graduate
DAS 1: DAS 2: A Avg % Diff: A Max % Di					Max % Di		Tfer ID	nber	012			er Des	sc. 25	omi graduate
										1.0000	0 Inter	rcept		0.00000
							Cert Date			9/5/200	05 Corr	Coff		1.00000
UseDesc.	Test t	ype:	TferVolume:	Iteration:	TimePerTi	ip:	Eq.Ht:	DAS	eng:	Eq.HtUnit:	OSE Un	it: Tfe	rUnits	s:PctDifference
primary	tip chec	k	10 manual	1	2 sec		1.00	1.0		mm	mm		ml	
primary	test 1		231.5	1	8 sec		5.00	4.	90	mm	mm		ml	-2.0%
primary	test 2		231.5	2	8 sec		5.00	4.	80	mm	mm		ml	-4.0%
Sensor Com	ponent	Syste	m Memo		Cond	itio	See com	ments			Status	pass		
Sensor Com	ponent	Senso	or Heater		Cond	itio	Functioning				Status	pass		
Sensor Com	ponent	Prope	erly Sited		Cond	itio	See com	ments	;		Status	pass		
Sensor Com	ponent	Gaug	e Drain Scree	n	Cond	itio	Not insta	lled			Status	Fail		
Sensor Com	ponent	Level			Cond	itio	Level				Status	pass		
Sensor Com	ponent	Gaug	e Clean		Cond	itio	Clean				Status	pass		
Sensor Com	ponent	Funne	el Clean		Cond	itio	Clean				Status	pass		
Sensor Component Condition		Cond	itio	Good				Status	pass					
Sensor Com	ponent	Gaug	e Screen		Cond	itio	n Installed				Status	pass		

Infrastructure Data For

Si	te ID	GLR468	Technician	Eric Hebert	Site Visit Date	07/18/2013	
	Shelter Ma	ake	Shelter Model	She	elter Size		
	Ekto		8810 (s/n 2149-	20) 640) cuft		
	NEWSTERN STREET	DESCRIPTION DATE OF THE PROPERTY OF THE PROPER	AND ASSESSMENT OF THE PARTY OF	DESCRIPTION OF THE PARTY OF THE	NOT STATE OF THE PARTY OF THE P		

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	Not 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	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



UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	20.94	20.91	0.000	23.0	С	2.11
primary	Temp Mid Range	22.83	22.79	0.000	23.0	С	0.24
primary	Temp Mid Range	19.77	19.75	0.000	23.1	C	3.37

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Flow Rate	GLR468	Eric Hebert	07/18/2013	Filter Position	Millipore	3790		✓
The filter attachment plorientation.	late is mounted	too low in the enclos	sure resulting in	the filter being expo	sed to wind-drive	en rain and in the	standard ge	eometric
Precipitation	GLR468	Eric Hebert	07/18/2013	Properly Sited	Climatronics	3789		✓
Objects violate the 45 d	degree rule for the	he tipping bucket rais	n gage.					
Shelter Temperature	GLR468	Eric Hebert	07/18/2013	Accuracy Mid Ra	ARS	2870		✓
The shelter temperature	e is going outsid	le CFR requirements	for pollutant mo	onitor operation.				
Temperature	GLR468	Eric Hebert	07/18/2013	System Memo	RM Young	3786		✓
The temperature sensor	is mounted dire	ectly above the shelt	er roof.					

Field Systems Comments

1 Parameter: SitingCriteriaCom

The site is located in a small clearing within 100 meters of a horse stable. There is a plywood and aluminum processing plant within 20 km of the site.

2 Parameter: ShelterCleanNotes

The shelter is in good condition, clean, neat, and well organized. Evidence of repairs to roof leaks attempted.

3 Parameter: PollAnalyzerCom

The tygon dry deposition filter flow tubing has been replaced with Teflon since the previous audit visit.

4 Parameter: MetSensorComme

The temperature and relative humidity sensors are mounted directly above the metal shelter roof.

5 Parameter: MetOpMaintCom

The signal cables are showing signs of wear.

Field Systems Data Form

F-02058-1500-S1-rev001

Site ID GLR468	Technician Eric Hebert	Site Visit Date 07/1	8/2013
Site Sponsor (agency)	NPS	USGS Map	Lake McDonald West
Operating Group	NPS	Map Scale	
AQS#	30-029-8001	Map Date	
Meteorological Type	R.M. Young		
Air Pollutant Analyzer	Ozone, IMPROVE	QAPP Latitude	48.5103
Deposition Measurement	dry, wet, Hg	QAPP Longitude	-113.9956
Land Use	woodland - mixed	QAPP Elevation Meters	976
Terrain	complex	QAPP Declination	18
Conforms to MLM	No	QAPP Declination Date	12/27/2004
Site Telephone	(406) 888-7983	Audit Latitude	48.510301
Site Address 1	Horse Stables	Audit Longitude	-113.996807
Site Address 2	Quarter Circle Bridge Rd	Audit Elevation	964
County	Flathead	Audit Declination	14.1
City, State	West Glacier, MT	Present	
Zip Code	59936	Fire Extinguisher	Inspected June 2011
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	odel 8810 (s/n 2149-20)	Shelter Size 640 cuft
Shelter Clean	Notes The shelter is in good condition attempted.	n, clean, neat, and well organiz	red. Evidence of repairs to roof leaks
Site OK	Notes		
Park.	Kalispell proceed north on route 2 to Wes Proceed approximately 0.2 miles past the ight at the fork and continue through the	e entrance and fee station, and	I turn left toward the horse stables.

Field Systems Data Form

F-02058-1500-S2-rev001

Site ID GLR468 Technician Eric Hebert Site Visit Date 07/18/2013

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

Siting Distances OK

Siting Criteria Comment

The site is located in a small clearing within 100 meters of a horse stable. There is a plywood and aluminum processing plant within 20 km of the site.

Fi	el	d S	Sys	ten	ns I	Da	ta	Fo	rm

F-02058-1500-S3-rev001

Site	ID	GLR468	Technician Eric Hebert		Site Visit Date 07/18/2013
1		nd speed and directi nfluenced by obstru	ion sensors sited so as to avoid ctions?	✓	
2	(i.e. wir	nd sensors should be	so as to minimize tower effects a mounted atop the tower or on m >2x the max diameter of the wind)		
3		tower and sensors		~	
4			ls pointed north or positioned t s such as buildings, walls, etc?	0	
5	condition surface	ons? (i.e. ground be	sensors sited to avoid unnatural low sensors should be natural ped. Ridges, hollows, and areas avoided)		Temperature and RH over shelter
6	Is the so	olar radiation senso	or plumb?	~	
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,		ng effects from buildings, trees,	✓	
10	Is the straining r		or sited with the grid surface	~	N/A
11	Is it in	clined approximate	ly 30 degrees?	✓	N/A
	THE RESERVE OF THE PARTY OF THE		ntion (photograph or sketch if n y affect the monitoring parame		y) regarding conditions listed above, or any other features,
The	tempera	ature and relative hun	nidity sensors are mounted directl	y above	the metal shelter roof.

ield S	ystems Da	ta Form			F-	02058-1500-S4-r	ev00
ite ID	GLR468	Technician	Eric Hebert		Site Visit Date 07/18/2	2013	
	the meterologica ion, and well ma	ll sensors appear to be i intained?	ntact, in good	V			
	l the meteorologi ting data?	cal sensors operational	online, and	~			
Are the shields for the temperature and RH sensors clean?							
Are th	ne aspirated moto	ors working?		~			
Is the scrate		ensor's lens clean and fi	ree of	V			
Is the	surface wetness	sensor grid clean and u	ndamaged?	✓ 1	N/A		
	ne sensor signal a ion, and well ma	nd power cables intact, intained?	in good	✓ 5	Signs of wear		
		nd power cable connect well maintained?	ions protected	V			
arameter		Manufacturer	Model		S/N	Client ID	
nd Direc	tion	RM Young	AQ05103-	5	none	02844	
nd Spee	d	RM Young	AQ05103-	5	none	02844	
mperatu	re	RM Young	41342	A DECEMBER	17625	none	
elative Humidity Rotronic MP 601A		NEWS COLUMN	80496	none			
olar Radiation Licor LI-200			illegible	none			
ecipitatio	n	Climatronics	100508-2	-michaeli	illegible	none	

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

The signal cables are showing signs of wear.

Field Systems Data Form F-02058-1500-S5-rev001 GLR468 Site Visit Date 07/18/2013 Site ID Technician Eric Hebert Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E **V** Do the sample inlets have at least a 270 degree arc of unrestricted airflow? **V** Are the sample inlets 3 - 15 meters above the ground? ~ Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees? Pollutant analyzers and deposition equipment operations and maintenance ~ Do the analyzers and equipment appear to be in good condition and well maintained? ~ Are the analyzers and monitors operational, on-line, and reporting data? Describe ozone sample tube. 1/4 teflon by 15 meters Describe dry dep sample tube. 3/8 Teflon by 12 meters At inlet only Are in-line filters used in the ozone sample line? (if ves indicate location) **V** Are sample lines clean, free of kinks, moisture, and obstructions? **V** 7 Is the zero air supply desiccant unsaturated? Are there moisture traps in the sample lines? Clean and dry Is there a rotometer in the dry deposition filter line, and is it clean? Manufacturer **Parameter** Model S/N Client ID Sample Tower Aluma Tower В none none ThermoElectron Inc 49i A3NAA 1023943901 Ozone none Werther International PC70/4 000756725 none Zero air pump 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 tygon dry deposition filter flow tubing has been replaced with Teflon since the previous audit visit.

Field Systems Data Form

F-02058-1500-S6-rev001

Site	Site ID GLR468 Technician Eric Hebert					Site Visi	it Date 07/	18/2013		
	DAS, se	nsor translators	, and peripheral equi	pment operatio	ns a	nd maintena	<u>nce</u>			
1		OAS instruments intained?	s appear to be in good	l condition and	~					
2		he components backup, etc)	of the DAS operation	al? (printers,	✓					
3		nalyzer and sen g protection circ	sor signal leads pass touitry?	through	✓	Met sensors	only			
4		signal connection intained?	ons protected from the	e weather and	✓					
5	Are the	signal leads con	nected to the correct	DAS channel?	✓					
6	Are the grounde		nslators, and shelter	properly	~					
7	Does the	e instrument she	elter have a stable pov	ver source?	✓					
8	Is the in	strument shelte	r temperature control	lled?	✓					
9	Is the m	et tower stable a	and grounded?			Stable		Ground	led	
10	Is the sa	mple tower stab	ole and grounded?			V	- -	✓		
11	Tower o	omments?				V				
Par	ameter		Manufacturer	Model		S/N			Client ID	
DAS	S		Environmental Sys	Corp 8816	22200	2566			90653	
Mod	dem		US Robotics	56k		unkno	own		none	
Prin	nter		Hewlett Packard	842C	2000	unkno	own		none	
Sola	ar Radiati	on Translator	RM Young	70101-X	energe.	none			03729	
Provide any additional explanation (photograph or sketch if necessary) regard								s listed above,	or any other	r features,
nat	ural or n	nan-made, that r	nay affect the monito	ring parameter	s:					
					2512					

Field Systems Data Form

F-02058-1500-S7-rev001

Site ID GLR468		Tech	nician	Eric Hebert	Site Visit D	o7/18/2	013						
Dogumentation													
<u>Documentation</u>													
Does the site have the required instrument and equipment manuals? Yes No N/A Yes No N/A													
Wind speed sensor	Yes	No 🗸	IV/	A Data l	ngger	Yes ✓		100 KI B C 100 KI	N/A				
Wind direction sensor			-	Data l					✓				
Temperature sensor	~				chart recorder				V				
Relative humidity sensor				Comp			v						
Solar radiation sensor	✓			Mode			V						
Surface wetness sensor			<u></u>				v						
Wind sensor translator			✓		ir pump	✓							
Temperature translator			✓		flow pump		V	7					
Humidity sensor translator			✓		protector				V				
Solar radiation translator		V		UPS					V				
Tipping bucket rain gauge	V			Lightı	ing protection de	vice \Box			V				
Ozone analyzer	✓			Shelte	r heater		Ū	7					
Filter pack flow controller		✓		Shelte	r air conditioner	✓	Ĺ						
Filter pack MFC power supply			V										
Does the site have the requi	ired a	nd mo	ost rece	nt OC documents	and report forms	?							
	Pres						rrent						
Station Log			Data				✓ ·						
SSRF		<u> </u>	Datavie	ew			✓						
Site Ops Manual		/	Jan 20	ne			✓						
HASP			Jan 200	J0			Ť						
Field Ops Manual													
Calibration Reports		_	Nov 20	12			ă.						
Ozone z/s/p Control Charts			1407 20	12									
Preventive maintenance schedu	d [
			1000										
1 Is the station log properly	comp	leted	during	every site visit?	Dataview				404.042.103				
2 Are the Site Status Report current?	Form	ıs beiı	ng com	pleted and									
3 Are the chain-of-custody for sample transfer to and from			rly use	d to document									
4 Are ozone z/s/p control chacurrent?	Control charts r	not used											
Provide any additional explana					ary) regarding co	nditions list	ed abo	ve, or	any				
natural or man-made, that may	affec	t the	monito	ring parameters:									

Field Systems Data Form F-02058-1500-S8-rev001 GLR468 Site Visit Date 07/18/2013 Site ID Technician Eric Hebert Site operation procedures Has the site operator attended a formal CASTNET training course? If yes, when and who instructed? Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday ~ schedule? V Are the standard CASTNET operational procedures being flollowed by the site operator? 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 V** ~ Semiannually **Multipoint Calibrations** ~ ~ Weekly **Visual Inspections** ~ N/A **Translator Zero/Span Tests (climatronics)** V ~ **Manual Rain Gauge Test** Monthly V **V** Weekly **Confirm Reasonableness of Current Values** ~ ~ N/A **Test Surface Wetness Response** Are regular operational QA/QC checks performed on the ozone analyzer? **OC Check Performed Compliant** Frequency **Multi-point Calibrations** V **V** Monthly and semiannually ~ ~ **Automatic Zero/Span Tests** Daily ~ ~ Every 2 weeks Manual Zero/Span Tests **V** Daily **Automatic Precision Level Tests Manual Precision Level Test** ~ Alarm values only **Analyzer Diagnostics Tests V** Every 2 weeks **In-line Filter Replacement (at inlet)** ~ N/A In-line Filter Replacement (at analyze Sample Line Check for Dirt/Water ~ ~ **Zero Air Desiccant Check** Weekly Unknown Do multi-point calibration gases go through the complete sample train including all filters? V Do automatic and manual z/s/p gasses go through the complete sample train including all filters? Dataview 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:

Field Systems Data Form F-02058-1500-S9-rev001 Site ID GLR468 Technician Eric Hebert Site Visit Date 07/18/2013 Site operation procedures Is the filter pack being changed every Tuesday as scheduled? ✓ Filter changed morinings 80% - 90% Are the Site Status Report Forms being completed and filed correctly? No longer required Are data downloads and backups being performed as scheduled? V Dataview Are general observations being made and recorded? How? V Are site supplies on-hand and replenished in a timely fashion? SSRF Are sample flow rates recorded? How? Are samples sent to the lab on a regular schedule in a timely fashion? Clean gloves on and off Are filters protected from contamination during handling and shipping? How? Are the site conditions reported regularly to the field operations manager or staff? Compliant **QC Check Performed** Frequency ~ ✓ Semiannually **Multi-point MFC Calibrations** V Weekly Flow System Leak Checks **Filter Pack Inspection** ~ ✓ Weekly **Flow Rate Setting Checks** V ✓ Weekly **Visual Check of Flow Rate Rotometer** ✓ As needed V **In-line Filter Inspection/Replacement** Sample Line Check for Dirt/Water Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features,

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

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number							
BAS601-Eric Hebert-07/22/2013													
1	7/22/2013	DAS	Campbell	none	CR1000	unknown							
2	7/22/2013	elevation	Elevation	none	none	none							
3	7/22/2013	Filter pack flow pump	Thomas	none	107CAB18	061200041881							
4	7/22/2013	Flow Rate	Omega	none	FMA6518ST-RS232	318559-1							
5	7/22/2013	Infrastructure	Infrastructure	none	none	none							
6	7/22/2013	Met tower	unknown	none	unknown	none							
7	7/22/2013	Ozone	ThermoElectron Inc	L0534684	49i A1NAA	1214552973							
8	7/22/2013	Ozone Standard	ThermoElectron Inc	none	49i E3CAA	1214552971							
9	7/22/2013	Precipitation	Met One	none	385	J7547							
10	7/22/2013	Relative Humidity	Vaisala	none	HMP45A	Z3210006							
11	7/22/2013	Shelter Temperature	unknown	none	unknown	none							
12	7/22/2013	siting criteria	Siting Criteria	none	none	None							
13	7/22/2013	Solar Radiation	Licor	none	LI-200	PY47987							
14	7/22/2013	Temperature	Vaisala	none	HMP45A	Z3210006							
15	7/22/2013	Wind Direction	Climatronics	none	102780	622							
16	7/22/2013	Wind Speed	Climatronics	none	102780	622							
17	7/22/2013	Zero air pump	Thomas	none	107CAB18	100800031636							

Flow Data Form

Mfg	Serial Num	ber Ta	Site	Tec	chnician		ate Param	eter	Owner ID	
Omega	318559-1		BAS601	Eri	c Hebert	07/22/2013	Flow R	ate	none	
	Mfg BIOS Parameter Flow Rate Serial Number 122974 Tfer Desc. BIOS 220						ow Rate			
					Serial Number	122974 Tf		fer Desc. BIOS 220-H		
					Tfor ID	01416				
					Slope	1.	00000 Inte	ercept	0.00000	
					Cert Date	1/8	3/2013 Cor	rCoff	1.00000	
DAS 1:]	DAS 2:			Cal Factor Z	ero	0.2	22		
A Avg % Diff: A	Max % Di	A Avg %I	Dif A Max	% Di	Cal Factor F	ull Scale		1		
0.93%	1.31%				Rotometer R	eading:		0		
UseDescription:	Test type:	Input l/m:	Input STP:	MfcDisp.:	OutputSignal:	Output S E:	InputUnit:	OutputSignal	PctDifference:	
primary pu	ımp off	0.000	0.000	0.00	0.000	0.00	1/m	1/m		
primary lea	ak check	0.000	0.000	0.00	0.000	0.22	l/m	1/m		
	-								-0.34%	
	-								-1.13%	
			3.263	0.00	0.000	3.22	1/m	1/m	-1.31%	
Sensor Compone	Leak Test			Conditio	n		Status	pass		
Sensor Compone	ent Filter Azim	nuth		Conditio	n 360 deg		Status	pass		
Sensor Compone	ent Filter Dept	th		Conditio	n - 3.0 cm		Status	Status Fail		
Sensor Compone	ent Filter Posi	tion		Conditio	n Poor	Status	Fail			
				Conditio	n No moisture pr	Status	pass			
			1	_						
				_						
				_						
Sensor Compone	Tubing Co	ndition		Conditio	n Good		Status	pass		
Sensor Compone	Filter Dista	ance		Conditio	n 5.0 cm		Status	pass		

Ozone Data Form

Mfg S	erial Number Ta	Site	Te	chnician		Site Visit	Date Param	eter	Owner ID
ThermoElectron Inc 1	214552973	BAS601	Er	ic Hebert		07/22/20	13 Ozone		L0534684
Slope: 0.9	97762 Slope:	0.00000		Mfg		ThermoEl	ectron Inc Pa	arameter 0	zone
Intercept 0.8	39641 Intercept	0.00000)	Serial N	umber	51711217	5 T	fer Desc.	zone primary star
CorrCoff 0.9	O9997 CorrCoff	0.00000)	Tfer ID		01111			
Digi	DAGA			TICI ID					
DAS 1: A Avg % Diff: A Ma	DAS 2: x % Di	6Dif A Max %	/, D ;	Slope		(0.99720 Inte	rcept	0.18428
0.9%	1.3% A Avg /	oDii A wax /	70 D1	Cert Da	te	1	/2/2013 Cor	rCoff	1.00000
UseDescription:	ConcGroup:	Tfer Raw:	Tfer (Corr:	Si	te:	Site Unit:	PctDi	fference:
primary	1	-0.55	-0.		0.		pb		
primary	2	27.30	27.		27		pb		-0.29%
primary	3	53.45	53.				pb		-0.90%
primary primary	5	80.45 114.80	80. 114		79	-	pb		-1.34% -1.20%
	<u> </u>	114.00				р	pb	nace	-1.20%
Sensor Component	Cell B Noise		Conditio	1.4 pp	טט		Status	pass	
Sensor Component	Cell B Tmp.		Conditio	on			Status	pass	
Sensor Component	Fullscale Voltage		Conditio	n N/A			Status	pass	
Sensor Component	Inlet Filter Condition	n	Conditio	Clean			Status	pass	
Sensor Component	Line Loss		Conditio	on			Status	pass	
Sensor Component	Offset		Conditio	on -0.4			Status	pass	
Sensor Component	Span		Conditio	0.995			Status	pass	
Sensor Component	Cell B Freq.		Condition	86.3 k	Hz		Status	pass	
Sensor Component	System Memo		Conditio	on			Status	pass	
Sensor Component	Sample Train		Conditio	Good			Status	pass	
Sensor Component	Cell B Pressure		Conditio	on			Status	pass	
Sensor Component	Cell B Flow		Conditio	o.67 lp	om		Status	pass	
Sensor Component	Cell A Tmp.		Conditio	34.4 C	;		Status	pass	
Sensor Component	Cell A Pressure		Conditio	on 643 m	mHg		Status	pass	
Sensor Component	Cell A Noise		Conditio	1.3 pp	b		Status	pass	
Sensor Component	Cell A Freq.		Conditio	9 83.2 k	Hz		Status	pass	
Sensor Component	Cell A Flow		Conditio	0.64 lp	om		Status	pass	
Sensor Component	Battery Backup		Conditio	n N/A			Status	pass	
Sensor Component	Zero Voltage		Condition	n N/A			Status	pass	

Temperature Data Form Serial Number Tag Site **Technician** Site Visit Date Parameter **Owner ID** Mfg Z3210006 BAS601 Eric Hebert Temperature Vaisala 07/22/2013 none **Parameter** Temperature Mfg Extech Tfer Desc. RTD H232679 **Serial Number** 01228 Tfer ID 1.00732 -0.12380 **Slope Intercept DAS 1: DAS 2:** 1/12/2013 1.00000 Abs Avg Err Abs Max Er Abs Avg Err **Abs Max Er Cert Date** CorrCoff 2.09 6.41 InputTmpRaw | InputTmpCorr.: | OutputTmpSignal: | OutputSignalEng: | OSE Unit: | Difference: UseDesc.: Test type: primary 6.90 6.97 0.000 13.4 C 6.41 28.99 28.90 0.000 C 1.08 30.0 primary 0.000 30.2 C -0.05 primary 30.34 30.24 C primary 30.83 30.73 0.00029.9 -0.8846.14 45.93 0.000 43.9 -2.03 primary Sensor Component | Shield **Condition** Clean **Status** pass **Sensor Component** Blower Status Switch **Condition** N/A **Status** pass Sensor Component Blower **Condition** N/A **Status** pass

Condition

Status pass

Sensor Component System Memo

Humidity Data Form Serial Number Tag Site **Technician** Site Visit Date Parameter **Owner ID** Mfg Relative Humidity Vaisala Z3210006 BAS601 Eric Hebert 07/22/2013 none Mfg Rotronic Parameter Relative Humidity Tfer Desc. Hygroclip 124432 **Serial Number** 01225 Tfer ID 1.00000 0.00000 Slope **Intercept** 1/29/2013 1.00000 **Cert Date** CorrCoff **DAS 1: DAS 2:** Low Range **High Range** Low Range **High Range** Abs Avg Err 1.1 4.1 1.2 4.1 Abs Max Er UseDesc.: Test type: Device: Input RH: GTL Raw: RH Corr.: DAS Volts: DAS %RH: Difference: RH Low Range 0.000 primary Hygroclip 32.8 0.0 32.8 34.1 1.2 primary RH Low Range Hygroclip 52.9 0.0 52.9 0.000 53.9 1.0 primary RH High Range Hygroclip 93.6 0.0 93.6 0.000 89.5 -4.1 **Sensor Component** System Memo Status pass **Condition** Sensor Component Blower **Condition** N/A Status pass Sensor Component Blower Status Switch **Condition** N/A Status pass Sensor Component | RH Filter **Condition** Clean **Status** pass Sensor Component | Shield **Condition** Clean **Status** pass

Solar Radiation Data Form Serial Number Tag Site **Technician** Site Visit Date Parameter Owner ID Mfg PY47987 Eric Hebert Solar Radiation Licor BAS601 07/22/2013 none Mfg Eppley Parameter solar radiation Tfer Desc. SR transfer translat 10765 **Serial Number** 01246 Tfer ID 1.00000 0.00000 **Slope Intercept DAS 1: DAS 2:** 1/6/2010 1.00000 % Diff of Avg %Diff of Max %Diff of Avg %Diff of Max **Cert Date** CorrCoff Parameter solar radiation Mfg Eppley Tfer Desc. SR transfer sensor **Serial Number** 34341F3 01245 Tfer ID 1.00000 0.00000 **Slope Intercept** CorrCoff **Cert Date** 12/16/2010 1.00000 1.0% 0.0% 0.0% 0.1% UseDescription: Measure Date MeasureTime Tfer Corr: DAS w/m2: PctDifference: 7/24/2013 10:00 primary 764 767 0.4% 799 0.1% 7/24/2013 11:00 800 primary primary 7/24/2013 12:00 755 762 0.9% 2.5% 7/24/2013 13:00 697 714 primary Sensor Component | Sensor Level **Condition** Level Status pass Sensor Component | Sensor Clean Condition Clean **Status** pass Sensor Component Properly Sited Condition Properly sited Status pass **Sensor Component** System Memo **Status** pass Condition

Precipitation Data Form

Mfg	Serial Number Ta	Site	Te	echnician	Site Visit Date	Parameter	Owner ID
Met One	J7547	BAS601	E	ric Hebert	07/22/2013	Precipitation	none
				Mfg	PMP	Parameter	Precipitation
DAS 1:	DAS 2:			Serial Number	EW-06134-50	Tfer Desc. 2	250ml graduate
A Avg % Diff		6Dif A Max	x % Di	Tfer ID	01250		
	51515			Slope	1.0000	0 Intercept	0.00000
				Cert Date	9/5/200	CorrCoff	1.00000
UseDesc.	Test type: TferVolume: test 1 500	Iteration: Ti	mePerTip:		S eng: Eq.HtUnit:	OSE Unit: TferUn	nits:PctDifference
Sensor Com	ponent System Memo		Conditi	on		Status pass	
Sensor Com	ponent Sensor Heater		Conditi	Not tested		Status pass	
Sensor Com	ponent Properly Sited		Conditi	45 degree rule	1	Status pass	
Sensor Com	ponent Gauge Drain Scree	en	Conditi	Installed		Status pass	
Sensor Com	ponent Level		Conditi	Level		Status pass	
Sensor Com	ponent Gauge Clean		Conditi	on Dirty		Status Fail	
Sensor Com	ponent Funnel Clean		Conditi	on Dirty		Status Fail	
Sensor Com	ponent Condition		Conditi	on Fair		Status pass	
Sensor Com	ponent Gauge Screen		Conditi	on Installed		Status pass	

Infrastructure Data For

Site ID BAS601 Technician Eric Hebert Site Visit Date 07/22/2013

g g	Chalter Doof		NI/A	G	
Sensor Component	Shelter Rool	Condition	IN/A	Status	pass
Sensor Component	Sample Tower Type	Condition	Pole type	Status	pass
Sensor Component	Met Tower	Condition	Fair	Status	pass
Sensor Component	Moisture Trap	Condition	Not installed	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	Rotometer	Condition	Not installed	Status	Fail
Sensor Component	Conduit	Condition	N/A	Status	pass
Sensor Component	Sample Tower	Condition	Fair	Status	pass
Sensor Component	Shelter Condition	Condition	N/A	Status	pass
Sensor Component	Shelter Floor	Condition	N/A	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	N/A	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

Shelter Temperature Data For

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
unknown	none	BAS601	Eric Hebert	07/22/2013	Shelter Temperature	none
DAS 1:	DAS 2:		Mfg	Extech	Parameter She	ter Temperatur
Abs Avg Err Abs	2.23 Abs Avg	Err Abs Max Er	Serial Number	H232679	Tfer Desc. RTD)
			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	23.76	23.71	0.000	25.6	С	1.86
primary	Temp Mid Range	23.24	23.19	0.000	25.4	C	2.23
primary	Temp Mid Range	28.89	28.80	0.000	28.2	C	-0.63

Field Systems Comments

1 Parameter: SiteOpsProcComm

The proper completion of the filter chain-of-custody form was discussed with the site operator. The proper observation of the site vegetation and completion of the SSRF was discussed with the site operator. There are no clean spare filter caps or Ziploc filter bags on site. The bag and caps for the received filter are being used to send the removed filter back to the lab.

2 Parameter: ShelterCleanNotes

The shelter houses the ozone, DAS, and MFC only.

3 Parameter: MetSensorComme

Some objects violate the 45 degree rule for the tipping bucket rain gage. The Temperature shield is mounted on the south side of the tower.

4 Parameter: MetOpMaintCom

The site utilizes a Climatronics AIO all-in-one weather sensor for wind direction, wind speed, and temperature. The sensor was not audited. A separate sensor for humidity and temperature was audited.

F-02058-1500-S1-rev001

Site ID BAS601	Technician Eric Hebert	Site Visit Date 07/	22/2013
Site Sponsor (agency)	EPA	USGS Map	
Operating Group	BLM	Map Scale	
AQS#	56-003-0002	Map Date	
Meteorological Type			
Air Pollutant Analyzer		QAPP Latitude	
Deposition Measurement		QAPP Longitude	
Land Use		QAPP Elevation Meters	
Terrain		QAPP Declination	
Conforms to MLM		QAPP Declination Date	
Site Telephone		Audit Latitude	44.279947
Site Address 1		Audit Longitude	-108.04082
Site Address 2		Audit Elevation	1241
County	Big Horn	Audit Declination	10.7
City, State	Basin, WY	Present	
Zip Code	82410	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 Shelter One Me	AR 263648	Shelter Size 24 cuft
Shelter Clean	Notes The shelter houses the ozone,	DAS, and MFC only.	
Site OK	Notes		
Driving Directions			

F-02058-1500-S2-rev001

Site ID BAS601 Technician Eric Hebert Site Visit Date 07/22/2013

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		V
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	100 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 Comp	nent

Field S	ystems	Data	Form
colding but be a property of the condi-	All rest to the state of the st	and the late the late of	Control of the last transfer

F-02058-1500-S3-rev001

Site	: ID	BAS601	Technician	Eric Hebert		Site Visit Date 07/22/2013	
1				as to avoid	✓		
2	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc? 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 standing water should be avoided) Is the solar radiation sensor plumb? Is it sited to avoid shading, or any artificial or reflected light? Is the rain gauge plumb?		tower or on a	V			
3	Are th	e tower and sensors	plumb?		✓		
4		e wind speed and direction sensors sited so as to aving influenced by obstructions? e wind sensors mounted so as to minimize tower effect, wind sensors should be mounted atop the tower or rizontally extended boom >2x the max diameter of ever into the prevailing wind) e the tower and sensors plumb? e the temperature shields pointed north or position old radiated heat sources such as buildings, walls, effect and not steeply sloped. Ridges, hollows, and a anding water should be avoided) the solar radiation sensor plumb? it sited to avoid shading, or any artificial or reflected the rain gauge plumb? it sited to avoid sheltering effects from buildings, trivers, etc? the surface wetness sensor sited with the grid surfacing north? it inclined approximately 30 degrees?				Pointing south	
5	conditi	ions? (i.e. ground be and not steeply slo	low sensors should ped. Ridges, hollow	be natural	V		
6	Is the	solar radiation senso	or plumb?		✓		
7		ed to avoid shading	, or any artificial or	reflected	✓		
8	Is the	rain gauge plumb?			✓		
9			ng effects from build	lings, trees,		45 degree rule violation	
10			or sited with the gri	d surface	✓	N/A	
11	Is it in	clined approximate	ly 30 degrees?		✓	N/A	
						y) regarding conditions listed above, or any other features,	
Son	ne objed	cts violate the 45 degr	ee rule for the tipping	bucket rain gag	e. Ti	he Temperature shield is mounted on the south side of the tower	

ield S	ystems Dat	a Form			F-0	02058-1	1500-S4-re	v00
ite ID	BAS601	Technician [Eric Hebert		Site Visit Date 07/22/20	013		
	the meterological ion, and well mair	sensors appear to be intained?	ntact, in good	✓ [
	I the meteorologicing data?	al sensors operational	online, and	✓				
Are th	e shields for the to	emperature and RH se	nsors clean?	✓				
Are th	Are the aspirated motors working? Is the solar radiation sensor's lens clean and free of			•	N/A			
scratches?			ee of	V				
Is the surface wetness sensor grid clean and undamaged?				✓	N/A			
	e sensor signal an ion, and well mair	d power cables intact, ntained?	in good	✓				
	e sensor signal an he elements and v	d power cable connect vell maintained?	ions protected	✓				
rameter		Manufacturer	Model		S/N	(Client ID	
et tower		unknown	unknown		none	r	none	
lar Radia	ation	Licor	LI-200		PY47987	r	none	
mperatu	е	Vaisala	HMP45A		Z3210006	r	none	
lative Hu	ımidity	Vaisala	HMP45A		Z3210006	r	none	
ecipitatio	n	Met One	385	e ataloga e	J7547	r	none	
nd Direc	tion	Climatronics	102780	esmadad	622	r	none	
nd Spee	d	Climatronics	102780	mental (1888)	622	r	none	
		nation (photograph or s ay affect the monitorin		sary)	regarding conditions liste	d above, or	any other featu	res,

Field Systems Data Form F-02058-1500-S5-rev001 **BAS601** Site Visit Date 07/22/2013 Site ID Technician Eric Hebert Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E **V** Do the sample inlets have at least a 270 degree arc of unrestricted airflow? ~ Are the sample inlets 3 - 15 meters above the ground? ~ Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees? Pollutant analyzers and deposition equipment operations and maintenance ~ Do the analyzers and equipment appear to be in good condition and well maintained? ~ Are the analyzers and monitors operational, on-line, and reporting data? Describe ozone sample tube. 1/4 teflon by 10 meters Describe dry dep sample tube. 3/8 teflon by 10 meters **V** Are in-line filters used in the ozone sample line? (if ves indicate location) ~ Are sample lines clean, free of kinks, moisture, and obstructions? Not present 7 Is the zero air supply desiccant unsaturated? Not present Are there moisture traps in the sample lines? Not present Is there a rotometer in the dry deposition filter line, and is it clean? Manufacturer Model S/N Client ID **Parameter** Ozone ThermoElectron Inc 49i A1NAA 1214552973 L0534684 107CAB18 061200041881 Filter pack flow pump Thomas none 107CAB18 Zero air pump Thomas 100800031636 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:

F-02058-1500-S6-rev001

Site	ID	BAS601	Technician	Eric Hebert		Site Visit	Date 07/22/2013		
	DA	S, sensor translator	s, and peripheral equi	pment operation	ns a	nd maintenan	<u>ce</u>		
1	Do well	the DAS instrument I maintained?	ts appear to be in good	l condition and	✓				
2		all the components dem, backup, etc)	of the DAS operation	al? (printers,	✓				
3		the analyzer and senting protection cir	nsor signal leads pass t cuitry?	through		Not present			
4		the signal connection that the signal connection is the signal connection that the signal connection is the signal connection.	ons protected from the	e weather and	✓				
5	Are	the signal leads cor	nnected to the correct	DAS channel?	✓				
6		the DAS, sensor tra unded?	anslators, and shelter j	properly	✓				
7	Doe	es the instrument sh	elter have a stable pov	ver source?	✓				
8	Is tl	he instrument shelte	er temperature control	lled?	✓				
9	Is tl	he met tower stable	and grounded?			Stable 🗸	Grou		
10	Is tl	he sample tower sta	ble and grounded?			✓	V]	
11	Tov	ver comments?							
Par	ame	ter	Manufacturer	Model		S/N		Clie	ent ID
DAS	S		Campbell	CR1000		unknov	wn1	non	е
			lanation (photograph of may affect the monitor			ry) regarding	conditions listed above	e, or a	nny other features,

F-02058-1500-S7-rev001

Site ID BAS601		Techi	nician	Eric Hebert		Site Visit Dat	te 07/22/20	013		
Documentation										
Does the site have the requir	od inc	.	nt and	aguinment m	onnola?					
	eu ms Yes	No No	nt and N/A		anuais:		Yes		No	N/A
Wind speed sensor		V	1\\/I		ita logge				V	IN/A
Wind direction sensor		V			ita logge					<u></u>
Temperature sensor			_ _			recorder				V
Relative humidity sensor		V			mputer					V
Solar radiation sensor		V			odem				✓	
Surface wetness sensor			✓	Pri	inter					V
Wind sensor translator			✓	Ze	ro air pu	ımp			✓	
Cemperature translator			✓	Fil	ter flow	pump			✓	
Humidity sensor translator			✓	Su	rge prot	ector				V
Solar radiation translator			✓	UP	PS					~
Fipping bucket rain gauge		V		Lig	ghtning _J	protection devi	ice \Box			~
Ozone analyzer		✓		Sh	elter hea	iter			✓	
Filter pack flow controller		✓		Sh	elter air	conditioner			✓	
ilter pack MFC power supply			✓							
Does the site have the requi	ired a	nd mo	st rece	nt QC docume	ents and	report forms?				
	Pres	ent					Cui	rrent		
tation Log			Not pre	sent						
SRF			vot pre-					<u> </u>		
ite Ops Manual			Not pre	sent						
ASP		_	Not pre							
ield Ops Manual			Not pre			3				
alibration Reports			Not pre							
zone z/s/p Control Charts						9				
reventive maintenance schedu	ıl [
		_								
1 Is the station log properly	compl	leted d	luring (every site visit	? 🗌 No	ot present				
2 Are the Site Status Report current?	Form	s bein	g comp	oleted and						
3 Are the chain-of-custody for sample transfer to and from			ly used	d to document	CI	hain-of-custody	not used			
4 Are ozone z/s/p control chacurrent?	arts pi	coperly	у сотр	leted and	C	ontrol charts not	t used			
	dian (sho4a		w alvotal- if			1848 on a 1854	.11		
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:										
								Control of the Contro		

Field Systems Data Form F-02058-1500-S8-rev001 **BAS601** Site Visit Date 07/22/2013 Site ID Technician Eric Hebert Site operation procedures Has the site operator attended a formal CASTNET training course? If yes, when and who instructed? Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday ~ schedule? V Are the standard CASTNET operational procedures being flollowed by the site operator? 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** V ~ Semiannually **Multipoint Calibrations** ~ ~ Weekly **Visual Inspections** ~ N/A **Translator Zero/Span Tests (climatronics)** П Not performed **Manual Rain Gauge Test** V **V** Weekly **Confirm Reasonableness of Current Values** ~ N/A **Test Surface Wetness Response** Are regular operational QA/QC checks performed on the ozone analyzer? **OC Check Performed Compliant** Frequency **Multi-point Calibrations** ~ **V** Semiannually ~ ~ **Automatic Zero/Span Tests** Daily Manual Zero/Span Tests **Automatic Precision Level Tests Manual Precision Level Test Analyzer Diagnostics Tests V** ~ Monthly **In-line Filter Replacement (at inlet)** In-line Filter Replacement (at analyze Sample Line Check for Dirt/Water **Zero Air Desiccant Check** Unknown Do multi-point calibration gases go through the complete sample train including all filters? V 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 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:

F-02058-1500-S9-rev001

Site	ID	BAS601	Tech	nician	Eric Hebert		Site Visit Dat	e 07/22/2013			
	Site o	peration procedures									
1	Is the	filter pack being chang	ged every	Tuesda	y as scheduled?	✓	Filter changed var	rious times			
2	Are the	ne Site Status Report Fo ctly?	orms bei	ng comp	oleted and filed	✓					
3	Are da	ata downloads and bacluled?	kups bei	ng perfo	ormed as		No longer required	d			
4	Are go	eneral observations bei	ng made	and rec	corded? How?		Not present				
5	Are si fashio	te supplies on-hand and n?	l repleni	shed in	a timely	✓					
6	Are sa	ample flow rates record	ed? How	?		✓	SSRF				
7	Are sa fashio	amples sent to the lab or n?	n a regul	ar sche	dule in a timely	✓					
8		Iters protected from conipping? How?	ntamina	ion dur	ing handling	✓	One set of gloves only				
9		ne site conditions report tions manager or staff?	MARKET BATCHER TO SERVICE	arly to	the field						
QC	Check	Performed		Free	quency			Compliant			
N	Iulti-po	oint MFC Calibrations		Sem	iannually	704		✓			
F	low Sy	stem Leak Checks		Wee	kly	100.00		V			
F	ilter Pa	ack Inspection				248 HZU	,				
		te Setting Checks		Wee	REPORT OF THE PROPERTY OF THE PARTY.	- The Carlo	//////////////////////////////////////	V			
		Check of Flow Rate Rot		Market State Co.	present	2777/1					
		Filter Inspection/Replac		Sem	iannually	2012/27/3					
S	ample	Line Check for Dirt/W	ater			653					
		y additional explanatior nan-made, that may af	THE RESERVE OF THE PERSON NAMED IN	ACCUSED FOR STANK		50.0001001) regarding condi	tions listed above, or a	any other features,		
and c	omplet	completion of the filter chains of the SSRF was disc	cussed wi	th the si	te operator. The	re ar	e no clean spare fi				
and c	aps for	the received filter are be	ing used	to send	tne removed filte	r ba	ck to the lab.				

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
SHI	E604-Eric H	lebert-07/23/2013				
1	7/23/2013	DAS	Campbell	49923	CR1000	Unknown2
2	7/23/2013	elevation	Elevation	none	none	none
3	7/23/2013	Flow Rate	Omega	none	FMA6518ST-RS232	32433-2
4	7/23/2013	Infrastructure	Infrastructure	none	none	none
5	7/23/2013	Precipitation	Met One	N8139	8"	370C
6	7/23/2013	Relative Humidity	Vaisala	none	HMP45AC	C2410080
7	7/23/2013	Sample Tower	Unknown	none	Unknown	None
8	7/23/2013	siting criteria	Siting Criteria	none	none	None
9	7/23/2013	Solar Radiation	Licor	none	LI-200	illegible
10	7/23/2013	Temperature	Vaisala	none	HMP45AC	C2410080
11	7/23/2013	Wind Direction	Met One	illegible	Illegible	k5192
12	7/23/2013	Wind Speed	Met One	J2228	014	12208

Flow Data Form

Mfg	Seri	ial Numb	er Ta S	ite	Tec	hnician	Site Visit I	Date Paran	neter	Owner ID
Omega	324	133-2	5	SHE604	Eri	c Hebert	07/23/2013	Flow F	Rate	none
						Mfg	BIOS	F	arameter FI	ow Rate
						Serial Number	122974	1	fer Desc. Bl	OS 220-H
						Tfer ID	01416			
						Slope	1.	00000 Int	ercept	0.00000
						Cert Date	1/8		rrCoff	1.00000
DAS 1:		D	AS 2:			Cal Factor Z	ero	0.	15	
A Avg % Diff:	A Max	% Di A	Avg %D	oif A Max	% Di	Cal Factor F	ull Scale	1.0	01	
3.50%	;	3.56%				Rotometer R	eading:		0	
JseDescription:	Test	type: I	nput l/m:	Input STP:	MfcDisp.:	OutputSignal:	Output S E:	InputUnit:	OutputSigna	ll PctDifference:
primary	pump o	ff	0.000	0.000	0.00	0.000	0.15	l/m	l/m	
primary	leak che	eck	0.000	0.000	0.00	0.000	0.15	l/m	l/m	
primary	test pt 1		0.000	3.070	0.00	0.000	3.18	l/m	1/m	3.45%
primary	test pt 2	2	0.000	3.069	0.00	0.000	3.18	l/m	1/m	3.44%
primary	test pt 3	3	0.000	3.073	0.00	0.000	3.18	l/m	l/m	3.56%
primary	test pt 4	-	0.000	3.072	0.00	0.000	3.18	l/m	l/m	3.56%
Sensor Compo	onent Le	eak Test			Condition	n		Status	pass	
Sensor Compo	onent Fi	ilter Azimu	uth		Condition	n Not tested		Status	pass	
Sensor Compo	onent Fi	ilter Depth	1		Condition	1.0 cm		Status	pass	
Sensor Compo	onent Fi	ilter Positi	on		Condition	Good		Status	pass	
Sensor Compo	onent M	loisture Pr	resent		Condition	No moisture pr	resent	Status	pass	
Sensor Compo	onent R	otometer	Condition		Condition	n N/A		Status	pass	
Sensor Compo	onent S	ystem Me	mo		Condition	See comments	3	Status	pass	
Sensor Compo	onent T	ubing Con	ndition		Condition	Good		Status	pass	
Sensor Compo	Sensor Component Filter Distance		Condition	2.0 cm		Status	pass			

Wind Speed Data Form Mfg Serial Number Ta **Technician** Site Visit Date Parameter Owner ID Wind Speed J2228 Met One 12208 SHE604 Eric Hebert 07/23/2013 Parameter wind speed Mfg RM Young Tfer Desc. wind speed motor (h Serial Number 01262 Tfer ID 1.00000 0.00000 **Slope Intercept** Illegable Prop or Cups SN 0.8 **to** 8.0 **Prop or Cups Torque Cert Date** 1/13/2010 CorrCoff 1.00000 **Prop Correction Fact** N/A RM Young Parameter wind speed Mfg Tfer Desc. wind speed motor (I **Serial Number** 01261 Tfer ID 1.00000 0.00000 Slope **Intercept** 1.00000 1/13/2010 **Cert Date** CorrCoff **DAS 1: DAS 2:** Low Range **High Range** Low Range **High Range** 0.13 0.43% Abs Avg Err 0.50 0.87% Abs Max Er UseDescription: InputDevice: Input RPM: Output V: Diff/ % Diff: Difference: Input m/s: DAS m/s: primary 00000 0 0.50 0.000 0.0 -0.50 01261 30 1.25 0.000 1.3 0.00 primary primary 01261 60 2.05 0.000 2.1 0.00 3.65 3.7 0.00 01261 120 0.000 primary 5.7 primary 01262 200 5.78 0.000 -0.87% 400 11.11 11.2 0.54% primary 01262 0.000 01262 800 21.78 0.000 21.7 -0.28% primary primary 01262 1800 48.44 0.000 48.5 0.02% Sensor Component | System Memo **Status** pass **Condition** Sensor Component | Sensor Plumb Condition Plumb **Status** pass Sensor Component | Sensor Heater **Condition** N/A Status pass Sensor Component Prop or Cups Condition Status pass **Condition** Good Sensor Component | Condition **Condition** Good Status pass **Condition** Poor Sensor Component | Torque **Status** Fail

Wind Direction Data Form Technician Owner ID Mfg Serial Number Ta Site Visit Date Parameter SHE604 Eric Hebert Wind Direction Met One k5192 07/23/2013 illegible Mfg Ushikata Parameter wind direction 190037 Tfer Desc. transit **Serial Number** 01265 Tfer ID Slope 1.00000 **Intercept** 0.00000 N/A Vane SN: C. A. Align. deg. true: 20 **to** 14.5 30 VaneTorque 1/4/2011 1.00000 **Cert Date** CorrCoff Parameter wind direction RM Young Mfg Tfer Desc. wind direction wheel **Serial Number** 01266 Tfer ID **DAS 1: DAS 2: Orientation Linearity:** Orientation **Linearity:** 2.3 Abs Avg Err 3 Abs Max Er UseDescription: TferID: Input Raw: Linearity Output V: Output Deg.: Difference: Change: Error: 3 01265 0.000 primary 4 01265 94 0.000 92 2 2 primary 01265 184 0.000 183 1 1 primary 01265 274 0.000 271 3 3 primary Sensor Component | Mast **Condition** Good **Status** pass Sensor Component | Condition **Condition** Good **Status** pass Sensor Component | Sensor Heater **Condition** N/A **Status** pass Sensor Component | Sensor Plumb Status pass **Condition** Plumb

Condition Fair

Condition Good

Condition

Sensor Component Torque

Sensor Component Vane Condition

Sensor Component | System Memo

Status pass

Status pass

Status pass

Temperature Data Form Serial Number Tag Site **Technician** Site Visit Date Parameter **Owner ID** Mfg SHE604 Eric Hebert Temperature Vaisala C2410080 07/23/2013 none **Parameter** Temperature Mfg Extech Tfer Desc. RTD H232679 **Serial Number** 01228 Tfer ID 1.00732 -0.12380 **Slope Intercept DAS 1: DAS 2:** 1/12/2013 1.00000 Abs Avg Err Abs Max Er Abs Avg Err **Abs Max Er Cert Date** CorrCoff 2.10 4.65 InputTmpRaw | InputTmpCorr.: | OutputTmpSignal: | OutputSignalEng: | OSE Unit: | Difference: UseDesc.: Test type: 1.44 primary Temp Mid Range 28.39 28.31 0.000 29.8 C 31.20 0.000 $\overline{\mathbf{C}}$ 1.33 primary Temp Mid Range 31.10 32.4 Temp Low Range 4.91 0.000 9.6 C 4.65 primary 4.82 C -0.98 primary Temp High Range 42.40 42.21 0.000 41.2 34.05 0.000 36.2 2.1 primary Temp Mid Range 34.18 Sensor Component | Shield **Condition** Clean **Status** pass **Sensor Component** Blower Status Switch **Condition** N/A Status pass

Condition N/A

Condition See comments

Status pass

Status pass

Sensor Component Blower

Sensor Component System Memo

Humidity Data Form Serial Number Tag Site **Technician** Site Visit Date Parameter **Owner ID** Mfg SHE604 Relative Humidity Vaisala C2410080 Eric Hebert 07/23/2013 none Mfg Rotronic Parameter Relative Humidity Tfer Desc. Hygroclip 124432 **Serial Number** 01225 Tfer ID 1.00000 0.00000 Slope **Intercept** 1/29/2013 1.00000 **Cert Date** CorrCoff **DAS 1: DAS 2:** Low Range **High Range** Low Range **High Range** Abs Avg Err 1.6 6.0 6.0 3.1 Abs Max Er UseDesc.: Test type: Device: Input RH: GTL Raw: RH Corr.: DAS Volts: DAS %RH: Difference: RH Low Range 0.000 primary Hygroclip 32.8 0.0 32.8 32.7 -0.1-3.1 primary RH Low Range Hygroclip 52.9 0.0 52.9 0.000 49.8 primary RH High Range Hygroclip 93.6 0.0 93.6 0.000 87.6 -6.0 **Sensor Component** System Memo Status pass **Condition** Sensor Component Blower **Condition** N/A Status pass Sensor Component Blower Status Switch **Condition** N/A Status pass Sensor Component | RH Filter **Condition** Clean **Status** pass Sensor Component | Shield **Condition** Clean **Status** pass

Solar Radiation Data Form Serial Number Tag Site **Technician** Site Visit Date Parameter Owner ID Mfg Eric Hebert Solar Radiation Licor illegible SHE604 07/23/2013 none Mfg Eppley Parameter solar radiation Tfer Desc. SR transfer translat 10765 **Serial Number** 01246 Tfer ID 1.00000 0.00000 **Slope Intercept DAS 1: DAS 2:** 1/6/2010 1.00000 % Diff of Avg %Diff of Max %Diff of Avg %Diff of Max **Cert Date** CorrCoff Parameter solar radiation Mfg Eppley Tfer Desc. SR transfer sensor **Serial Number** 34341F3 01245 Tfer ID 1.00000 0.00000 **Slope Intercept Cert Date** 12/16/2010 CorrCoff 1.00000 0.0% 0.0% 3.1% 2.9% UseDescription: Measure Date MeasureTime Tfer Corr: DAS w/m2: PctDifference: -2.2% primary 7/23/2013 10:00 801 783 -2.9% 7/23/2013 11:00 888 862 primary 7/23/2013 12:00 808 774 -4.2% primary Sensor Component | Sensor Level **Condition** Level **Status** pass Sensor Component | Sensor Clean Condition Clean Status pass Sensor Component Properly Sited **Condition** Properly sited **Status** pass **Sensor Component** System Memo Status pass Condition

Precipitation Data Form

Mfg		Serial N	Number Ta	Site	,	Teo	chnician		Site	Visit Date	Param	eter		Owner ID
Met One		370C		SHE604		Er	ic Hebert		07/2	23/2013	Precipit	ation		N8139
							Mfg		PMF)	Pa	aramet	ter Pre	ecipitation
DAS 1:	0 1 3 5	0 (70	DAS 2:	(D10) 1			Serial Nur	nber	EW-	06134-50	Ti	fer Des	c. 250	Oml graduate
A Avg % Diff		ax % L 7.1		oDif A	Max % Di		Tfer ID		0125	50				
					J.		Slope			1.0000	0 Inte	rcept		0.00000
							Cert Date			9/5/200	5 Cor	rCoff		1.00000
UseDesc.	Test	type:	TferVolume:	Iteration:	TimePerTi	p:	Eq.Ht:	DAS	eng:	Eq.HtUnit:	OSE Ur	nit: Tfe	rUnits	:PctDifference
primary	tip che	eck	10 manual	1	2 sec		0.10	0.	10	in	in		ml	
primary	test 1		231.5	1	8 sec		0.28	0.3	30	in	in		ml	7.1%
primary	test 2		231.5	2	10 sec		0.28	0.3	30	in	in		ml	7.1%
Sensor Com	ponen	Syste	m Memo		Cond	itio	on				Status	pass		
Sensor Com	ponen	Senso	or Heater		Cond	itio	N/A				Status	pass		
Sensor Com	ponen	Prope	erly Sited		Cond	itio	See com	ments	;		Status	pass		
Sensor Com	ponen	Gaug	e Drain Scree	en	Cond	itio	Installed				Status	pass		
Sensor Com	ponen	Level			Cond	itio	Level				Status	pass		
Sensor Com	ponen	Gaug	e Clean		Cond	itio	Clean				Status	pass		
Sensor Com	ponen	Funne	el Clean		Cond	itio	Clean				Status	pass		
Sensor Com	ponen	Cond	ition		Cond	itio	Good				Status	pass		
Sensor Com	ponen	Gaug	e Screen		Cond	itio	n Installed				Status	pass		

Infrastructure Data For

Site ID SHE604 Technician Eric Hebert Site Visit Date 07/23/2013

	0 1 5 1		N1/A		
Sensor Component	Shelter Roof	Condition	N/A	Status	pass
Sensor Component	Sample Tower Type	Condition	Pole type	Status	pass
Sensor Component	21.1			Status	
Sensor Component	Met Tower	Condition	Fair	Status	pass
Sensor Component	Moisture Trap	Condition	Not installed	Status	pass
				Diatus	
Sensor Component	Power Cables	Condition	Fair	Status	pass
Sensor Component	Rotometer	Condition	Not installed	Status	Fail
				Diatus	
Sensor Component	Conduit	Condition	N/A	Status	pass
Sensor Component	Sample Tower	Condition	Fair	Status	pass
Sensor Component	Shelter Condition	Condition	N/A	Status	pass
Sensor Component	Shelter Floor	Condition	N/A	Status	pass
	'			Status	
Sensor Component	Shelter Temp Control	Condition	N/A	Status	pass
Sensor Component	Signal Cable	Condition	Fair	Status	pass
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Shelter Door	Condition	N/A	Status	pass
				Status	
Sensor Component	Sample Train	Condition	Good	Status	pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Flow Rate	SHE604	Eric Hebert	07/23/2013	System Memo	Omega	3819		
An excessive amount	nt of fluctuation in	the signal recorded	by the DAS for the	his variable was obs	served during th	e audit.		
Precipitation	SHE604	Eric Hebert	07/23/2013	Properly Sited	Met One	3816		✓
Objects violate the	45 degree rule for the	ne tipping bucket ra	in gage.					
Temperature	SHE604	Eric Hebert	07/23/2013	System Memo	Vaisala	3815		
Additional details c	an be found in the h	nardcopy of the site	audit report.					

Field Systems Comments

1 Parameter: SiteOpsProcComm

The site operator uses the caps and bag from the received filter to seal and send back the removed filter. A spare set of caps and bag should be sent to the site. Although gloves are used to handle the filter, the site operator put the gloves on while in his truck and touched many things prior to handling the filter. The gloves were not changed prior to installing the new filter.

2 Parameter: DasComments

The site power source is solar with battery storage. The NEMA enclosure has a cooling fan.

3 Parameter: SitingCriteriaCom

The site is located in range land. There is an active rail line with coal trains within one kilometer of the site.

4 Parameter: ShelterCleanNotes

NEMA enclosure, solar power

5 Parameter: MetSensorComme

The site is a small footprint solar powered site that has been operating as part of the WARMS network for 10 years. Objects violate the 45 degree rule for the tipping bucket rain gage. Temperature and RH are measured with a combined sensor that cannot be immersed making a temperature audit difficult. The temperature and RH are being measured at 2.5 meters above the ground.

F-02058-1500-S1-rev001

Site ID	SHE604		Technician	Eric Hebert	Site Visit Date	07/23/2013	
Site Sponsor	(agency)	EPA			USGS Map		
Operating G	roup	BLM			Map Scale		
AQS#					Map Date		
Meteorologic	al Type	Climatron	ics				
Air Pollutant	Analyzer				QAPP Latitude		
Deposition M	leasurement				QAPP Longitude		
Land Use					QAPP Elevation Mete	ers	
Terrain					QAPP Declination		
Conforms to	MLM				QAPP Declination Da	te	
Site Telephor	ne				Audit Latitude		44.933601
Site Address	1				Audit Longitude		-106.847161
Site Address	2				Audit Elevation		1141
County		Sheridan			Audit Declination	10.2	
City, State		Sheridan,	WY		Prese	ent	
Zip Code		82801			Fire Extinguisher		
Time Zone		Mountain			First Aid Kit		
Primary Ope	erator				Safety Glasses		
Primary Op.	Phone #				Safety Hard Hat		
Primary Op.	E-mail				Climbing Belt		
Backup Oper	rator				Security Fence		
Backup Op.	Phone #				Secure Shelter		
Backup Op.	E-mail				Stable Entry Step		
Shelter Work	king Room	Make		M	odel	Shelter Size	
Shelter Clear	ı 🗆	Notes	NEMA enclosu	ıre, solar power			
Site OK		Notes					
Driving Direction	ctions						

F-02058-1500-S2-rev001

Site ID SHE604 Technician Eric Hebert Site Visit Date 07/23/2013

Potential Interferent	Minimum Distance From Dis Measurement Apparatus	tance Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km	<u> </u>
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	V
Secondary road, heavily traveled	500 m	V
Secondary road, lightly traveled	200 m	✓
Feedlot operations	500 m	✓
Intensive agricultural ops (including aerial spraying)	500 m	✓
Limited agricultural operations	200 m	
Large parking lot	200 m	✓
Small parking lot	100 m	✓
Tree line	50 m	✓
Obstacles to wind	10 times obstacle height	✓

Siting Distances OK ✓

Siting Criteria Comment

The site is located in range land. There is an active rail line with coal trains within one kilometer of the site.

	a			
Field	Sys	tems	Data	Form

F-02058-1500-S3-rev001

Site	ID	SHE604	Technician Eric	Hebert	Site Visit Date 07/23/2013
1		nd speed and dire nfluenced by obst	ection sensors sited so as to ructions?	o avoid	
2	(i.e. win	nd sensors should	ed so as to minimize towe be mounted atop the tow oom >2x the max diamete g wind)	er or on a r of the	
3	Are the	e tower and senso	rs plumb?	V	
4		Control of the Contro	elds pointed north or posi rces such as buildings, wal	lls, etc?	
5	conditi surface	ons? (i.e. ground	H sensors sited to avoid un below sensors should be n sloped. Ridges, hollows, an e avoided)	natural	
6	Is the s	olar radiation sen	nsor plumb?	V	
7	Is it site light?	ed to avoid shadir	ng, or any artificial or ref	lected	
8	Is the r	ain gauge plumb	?	<u> </u>	
9	Is it site towers,		ring effects from building	s, trees,	45 degree rule violation
10	Is the s		nsor sited with the grid su	ırface 🔽	N/A
11	Is it in	clined approxima	itely 30 degrees?	V	N/A
Pro	vide an	y additional expla	nation (photograph or sk	etch if necessa	ry) regarding conditions listed above, or any other features,

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

The site is a small footprint solar powered site that has been operating as part of the WARMS network for 10 years. Objects violate the 45 degree rule for the tipping bucket rain gage. Temperature and RH are measured with a combined sensor that cannot be immersed making a temperature audit difficult. The temperature and RH are being measured at 2.5 meters above the ground.

	ystems Da						
ite ID	SHE604	Technician [Eric Hebert		Site Visit Date 07/23/2	013	
	the meterologica on, and well ma	Il sensors appear to be intained?	ntact, in good	V			
	the meteorologi ng data?	cal sensors operational	online, and	V			
Are the	e shields for the	temperature and RH se	nsors clean?	V			
Are the	e aspirated moto	ors working?		✓ N	/A		
Is the s		ensor's lens clean and fr	ree of	✓			
Is the s	urface wetness s	sensor grid clean and ur	ndamaged?	✓ N	/A		
	e sensor signal a	nd power cables intact, intained?	in good	V			
		nd power cable connect well maintained?	ions protected	V			
arameter		Manufacturer	Model		S/N	Client ID	
Wind Direction Met		Met One	Illegible		k5192	illegible	
olar Radia	tion	Licor	LI-200		illegible	none	
Relative Humidity		Vaisala	HMP45AC		C2410080	none	
Temperature		Vaisala	HMP45AC		C2410080	none	
emperatur		Met One	8"		370C	N8139	
ecipitation	Vind Speed Met One		014		12208	J2228	

Field Systems Data Form F-02058-1500-S5-rev001 SHE604 Technician Eric Hebert Site Visit Date 07/23/2013 Site ID Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E **V** Do the sample inlets have at least a 270 degree arc of unrestricted airflow? ~ Are the sample inlets 3 - 15 meters above the ground? ~ Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees? Pollutant analyzers and deposition equipment operations and maintenance ✓ N/A Do the analyzers and equipment appear to be in good condition and well maintained? ~ N/A Are the analyzers and monitors operational, on-line, and reporting data? Describe ozone sample tube. N/A Describe dry dep sample tube. 3/8 teflon by 10 meters **V** N/A Are in-line filters used in the ozone sample line? (if ves indicate location) **V** Are sample lines clean, free of kinks, moisture, and obstructions? **V** N/A 7 Is the zero air supply desiccant unsaturated? Not present Are there moisture traps in the sample lines? Is there a rotometer in the dry deposition filter line, and is it Not present clean? **Parameter** Manufacturer Model S/N **Client ID** Sample Tower Unknown Unknown 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:

F-02058-1500-S6-rev001

Site	e ID	SHE604	Technician	Eric Hebert		Site Visit I	Date 07/23/2013		
	DAS	, sensor translator	s, and peripheral equi	pment operation	ıs aı	nd maintenanc	<u>e</u>		
1	Do the well	he DAS instrument maintained?	ts appear to be in good	l condition and	✓				
2		all the components em, backup, etc)	of the DAS operation	al? (printers,	✓				
3		he analyzer and sen ning protection cir	nsor signal leads pass reuitry?	through		Not present			
4		the signal connection maintained?	ons protected from the	e weather and	✓				
5	Are	the signal leads cor	nnected to the correct	DAS channel?	✓				
6		the DAS, sensor tranded?	anslators, and shelter	properly	✓				
7	Does	s the instrument sh	elter have a stable pov	ver source?	✓				
8	Is th	e instrument shelte	er temperature control	lled?		Marginally			
9	Is th	e met tower stable	and grounded?			Stable	Groun	ded	
10	Is th	e sample tower sta	ble and grounded?						
11	Tow	er comments?							
Pai	ramet	er	Manufacturer	Model		S/N		Client ID	
DA	S		Campbell	CR1000		Unknow	m2	49923	
nat	ural o	or man-made, that	lanation (photograph omay affect the monitour with battery storage.	ring parameters	s:		onditions listed above,	or any other	features,

F-02058-1500-S7-rev001

Site ID SHE604		Techi	nician	Eric Hebert		Site Visit Dat	e 07/23/201	3	
Documentation									
Does the site have the requir		THE REAL PROPERTY.			anuals?		•7	NT	NT/A
Wind speed sensor	Yes	No 🗸	N/A Data logge		r	Yes	No 🗸	N/A	
Wind direction sensor			ata logge				V		
Temperature sensor		V				t recorder			✓
Relative humidity sensor		V			mputer				✓
Solar radiation sensor		✓		M	odem				✓
Surface wetness sensor			✓	Pr	inter				✓
Wind sensor translator			✓	Ze	ero air p	ump			✓
Temperature translator			✓	Fil	lter flow	pump		✓	
Humidity sensor translator			✓	Su	ırge prot	tector			✓
Solar radiation translator			✓	UI	PS				✓
Tipping bucket rain gauge		✓		Li	ghtning	protection devi	THE RESIDENCE OF THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TO THE PERSON		✓
Ozone analyzer			✓	Sh	elter he	ater			✓
Filter pack flow controller		V		Sh	elter air	conditioner			✓
Filter pack MFC power supply			✓						
Does the site have the requ	ired a	nd mos	st rece	nt QC docum	ents and	report forms?			
	Pres	ent					Curr	ent	
Station Log	Ĺ		Not pre	sent					
SSRF	[•				✓		
Site Ops Manual			Not present						
HASP	Ĺ	Not present							
Field Ops Manual		Not present							
Calibration Reports] [Not pre	sent					
Ozone z/s/p Control Charts									
Preventive maintenance schedu	ıl [
1 Is the station log properly	comp	leted d	uring (every site visit	t? □ N	lot performed			
2 Are the Site Status Report current?	Form	s bein	g comp	oleted and	✓				
3 Are the chain-of-custody f sample transfer to and fro			ly used	d to document	t 🗸				
4 Are ozone z/s/p control chacurrent?	Are ozone z/s/p control charts properly completed and current?					/A			
Provide any additional explana natural or man-made, that may						regarding cond	litions listed	above,	or any
	eryzens	Selection .		entrante de la company	S. Webber		ggs, exportence	C15-35-50.10	90000000

Field Systems Data Form F-02058-1500-S8-rev001 SHE604 Site Visit Date 07/23/2013 Site ID Technician Eric Hebert Site operation procedures Has the site operator attended a formal CASTNET training course? If yes, when and who instructed? Has the backup operator attended a formal CASTNET П training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday ~ schedule? Are the standard CASTNET operational procedures being flollowed by the site operator? 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** V ~ Semiannually **Multipoint Calibrations** ~ ~ Weekly **Visual Inspections** П N/A **Translator Zero/Span Tests (climatronics)** П Not performed **Manual Rain Gauge Test** V **V** Weekly **Confirm Reasonableness of Current Values** N/A **Test Surface Wetness Response** Are regular operational QA/QC checks performed on the ozone analyzer? **OC Check Performed Compliant** Frequency **Multi-point Calibrations V** N/A ~ N/A **Automatic Zero/Span Tests** ~ N/A Manual Zero/Span Tests **V** N/A **Automatic Precision Level Tests** ~ N/A **Manual Precision Level Test** ~ N/A **Analyzer Diagnostics Tests** ~ N/A **In-line Filter Replacement (at inlet)** ~ N/A In-line Filter Replacement (at analyze **V** N/A Sample Line Check for Dirt/Water **V** N/A **Zero Air Desiccant Check V** N/A 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 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:

✓ N/A

complete sample train including all filters?

reported? If yes, how?

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

Field Systems Data Form F-02058-1500-S9-rev001 SHE604 Technician Eric Hebert Site Visit Date 07/23/2013 Site ID Site operation procedures Is the filter pack being changed every Tuesday as scheduled? Filter changed mornings 90% Are the Site Status Report Forms being completed and filed correctly? No longer required Are data downloads and backups being performed as scheduled? V Are general observations being made and recorded? How? V Are site supplies on-hand and replenished in a timely fashion? SSRF Are sample flow rates recorded? How? Are samples sent to the lab on a regular schedule in a timely lacksquarefashion? Are filters protected from contamination during handling and shipping? How? Are the site conditions reported regularly to the field operations manager or staff? **QC Check Performed** Frequency **Compliant** ~ ✓ Semiannually **Multi-point MFC Calibrations** V Weekly Flow System Leak Checks **Filter Pack Inspection** ~ **✓** Weekly **Flow Rate Setting Checks** Not present

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:

✓ Semiannually

V

Visual Check of Flow Rate Rotometer

In-line Filter Inspection/Replacement Sample Line Check for Dirt/Water

The site operator uses the caps and bag from the received filter to seal and send back the removed filter. A spare set of caps and bag should be sent to the site. Although gloves are used to handle the filter, the site operator put the gloves on while in his truck and touched many things prior to handling the filter. The gloves were not changed prior to installing the new filter.

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
BU	F603-Eric H	lebert-07/25/2013				
1	7/25/2013	DAS	Campbell	49917	CR1000	43073
2	7/25/2013	elevation	Elevation	none	none	none
3	7/25/2013	Filter pack flow pump	Thomas	none	107CA18	0191007231
4	7/25/2013	Flow Rate	Omega	none	FMA6518ST-RS232	315688-1
5	7/25/2013	Infrastructure	Infrastructure	none	none	none
6	7/25/2013	MFC power supply	Sceptre	none	FMA65PWC	295106-12
7	7/25/2013	Precipitation	Met One	none	370C	N8140
8	7/25/2013	Relative Humidity	Vaisala	none	HMP45AC	E3720077
9	7/25/2013	Sample Tower	Unknown	none	Unknown	None
10	7/25/2013	siting criteria	Siting Criteria	none	none	None
11	7/25/2013	Solar Radiation	Licor	none	LI-200	PY14330
12	7/25/2013	Temperature	Vaisala	none	HMP45AC	E3720077
13	7/25/2013	Wind Direction	Met One	none	024	1505
14	7/25/2013	Wind Speed	Met One	none	014	M23214

Flow Data Form

Mfg	Serial Number Ta Site Technician Site Visit D		Date Paran	neter	Owner ID						
Omega	3	315688-1		BUF603	Erio	c Hebert	07/25/201	3 Flow R	tate	none	
Mfg	Scep	tre				Mfg	BIOS	P	arameter Flo	w Rate	
SN/Owner ID	N/Owner ID 295106-12 none			Serial Number	122974	Т	fer Desc. BIC	OS 220-H			
Parameter	MEC	power sup	only		1	Tfer ID	01416				
	0	po 1101 001				GI.	1	00000	, [0.0000	
						Slope			ercept	0.0000	
						Cert Date	1/	8/2013 Co	rrCoff	1.0000	
DAS 1:			DAS 2:			Cal Factor Z	ero	0.19	91		
A Avg % Diff:	A Ma	x % Di	A Avg %	Dif A Max	x % Di	Cal Factor F	ull Scale		1		
1.43%		1.64%				Rotometer R	eading:		0		
UseDescription:	Te	st type:	Input l/m:	Input STP:	MfcDisp.:	OutputSignal:	Output S E:	InputUnit:	OutputSignal	PctDifference	
primary	pump	off	0.000	0.000	0.00	0.000	0.19	1/m	1/m		
primary	leak o	check	0.000	0.000	0.00	0.000	0.19	1/m	1/m		
primary	test p	t 1	0.000	3.242	0.00	0.000	3.19	l/m	l/m	-1.64%	
primary	test p	t 2	0.000	3.253	0.00	0.000	3.20	l/m	l/m	-1.64%	
primary	test p	t 3	0.000	3.223	0.00	0.000	3.19	l/m	1/m	-1.01%	
Sensor Comp	onent	Leak Tes	t		Condition	n		Status	pass		
Sensor Compo	onent	Filter Aziı	muth		Condition	n 180 deg		Status	pass		
Sensor Comp	onent	Filter Dep	oth		Condition	7.5 cm		Status	Status pass		
Sensor Comp	onent	Filter Pos	ition		Condition	n Fair		Status	pass		
Sensor Comp	onent	Moisture	Present		Condition	No moisture p	Status	pass			
Sensor Comp	onent	Rotomete	er Condition	า	Condition	n N/A		Status	pass		
Sensor Component System M		/lemo		Condition	See comments	3	Status	pass			
Sensor Comp	onent	Tubing C	ondition		Condition	Good		Status	s pass		
Sensor Compo	onent	Filter Dist	tance		Condition	4.5 cm		Status	pass		

Wind Speed Data Form Mfg Serial Number Ta Site **Technician** Site Visit Date Parameter Owner ID BUF603 Wind Speed Met One M23214 Eric Hebert 07/25/2013 none Parameter wind speed Mfg RM Young Tfer Desc. wind speed motor (h Serial Number 01262 Tfer ID 1.00000 0.00000 **Slope Intercept** N/A Prop or Cups SN 0.9 **to** 0.9 **Prop or Cups Torque Cert Date** 1/13/2010 CorrCoff 1.00000 **Prop Correction Fact** N/A RM Young Parameter wind speed Mfg Tfer Desc. wind speed motor (I **Serial Number** 01261 Tfer ID 1.00000 0.00000 Slope **Intercept** 1.00000 1/13/2010 **Cert Date** CorrCoff **DAS 1: DAS 2:** Low Range **High Range** Low Range **High Range** 0.11 0.52% Abs Avg Err 0.45 1.21% Abs Max Er UseDescription: InputDevice: Input RPM: Output V: Diff/ % Diff: Difference: Input m/s: DAS m/s: primary 00000 0 0.45 0.000 0.0 -0.45 01261 30 1.25 0.000 1.3 0.00 primary primary 01261 60 2.05 0.000 2.1 0.00 120 3.65 3.7 0.00 01261 0.000 primary 5.9 primary 01262 200 5.78 0.000 1.21% 400 11.11 11.1 -0.54% primary 01262 0.000 01262 800 21.78 0.000 21.9 0.32% primary primary 01262 1800 48.44 0.000 48.5 0.02% Sensor Component | System Memo Status pass **Condition** 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 Technician Mfg Serial Number Ta Site Visit Date Parameter Owner ID BUF603 Eric Hebert Wind Direction Met One 1505 07/25/2013 none Mfg Ushikata Parameter wind direction 190037 Tfer Desc. transit **Serial Number** 01265 Tfer ID Slope 1.00000 **Intercept** 0.00000 N/A Vane SN: C. A. Align. deg. true: 20 **to** 20 VaneTorque 1/4/2011 1.00000 **Cert Date** CorrCoff Parameter wind direction RM Young Mfg **Serial Number** Tfer Desc. wind direction wheel 01266 Tfer ID **DAS 1: DAS 2: Orientation Linearity:** Orientation **Linearity:** 2.3 Abs Avg Err Abs Max Er 4 UseDescription: TferID: Input Raw: Linearity Output V: Output Deg.: Difference: Change: Error: 2 0.000 primary 01265 88 90 01265 178 0.000 180 2 2 primary 01265 268 0.000 269 1 1 primary 01265 358 0.000 2 4 4 primary Sensor Component | Mast **Condition** Good **Status** pass Sensor Component | Condition **Condition** Good **Status** pass Sensor Component | Sensor Heater **Condition** N/A **Status** pass Sensor Component | Sensor Plumb Status pass **Condition** Plumb Condition Fair Status pass **Sensor Component** Torque Sensor Component Vane Condition Condition Good Status pass

Condition

Status pass

Sensor Component | System Memo

Temperature Data Form Serial Number Tag Site **Technician** Site Visit Date Parameter **Owner ID** Mfg BUF603 Eric Hebert Temperature Vaisala E3720077 07/25/2013 none **Parameter** Temperature Mfg Extech Tfer Desc. RTD H232679 **Serial Number** 01228 Tfer ID 1.00732 -0.12380 **Slope Intercept DAS 1: DAS 2:** 1/12/2013 1.00000 Abs Avg Err Abs Max Er Abs Avg Err **Abs Max Er Cert Date** CorrCoff 0.50 0.93 InputTmpRaw | InputTmpCorr.: | OutputTmpSignal: | OutputSignalEng: | OSE Unit: | Difference: UseDesc.: Test type: primary Temp Mid Range 27.59 27.51 0.000 27.9 C 0.37 0.000 $\overline{\mathbf{C}}$ 0.42 primary Temp Mid Range 26.23 26.16 26.6 Temp Low Range 2.55 0.000 3.5 C 0.93 primary 2.44 C primary Temp High Range 38.02 37.87 0.00038.1 0.2 43.19 0.000 43.8 0.59 primary Temp High Range 43.38 Sensor Component | Shield **Condition** Clean **Status** pass **Sensor Component** Blower Status Switch **Condition** N/A Status pass Sensor Component Blower **Condition** N/A **Status** pass

Condition

Status pass

Sensor Component System Memo

Humidity Data Form Serial Number Tag Site **Technician** Site Visit Date Parameter **Owner ID** Mfg BUF603 Relative Humidity Vaisala E3720077 Eric Hebert 07/25/2013 none Mfg Rotronic Parameter Relative Humidity Tfer Desc. Hygroclip 124432 **Serial Number** 01225 Tfer ID 1.00000 0.00000 Slope **Intercept** 1/29/2013 1.00000 **Cert Date** CorrCoff **DAS 1: DAS 2:** Low Range **High Range** Low Range **High Range** Abs Avg Err 2.1 3.4 3.4 4.1 Abs Max Er UseDesc.: Test type: Device: Input RH: GTL Raw: RH Corr.: DAS Volts: DAS %RH: Difference: RH Low Range 0.000 primary Hygroclip 32.8 0.0 32.8 36.9 4.1 0.0 primary RH Low Range Hygroclip 52.9 0.0 52.9 0.000 52.9 primary RH High Range Hygroclip 93.6 0.0 93.6 0.000 90.2 -3.4 **Sensor Component** System Memo **Status** pass **Condition** Sensor Component Blower **Condition** N/A Status pass Sensor Component Blower Status Switch **Condition** N/A Status pass **Sensor Component** RH Filter **Condition** Clean **Status** pass Status pass Sensor Component | Shield **Condition** Clean

Solar Radiation Data Form Serial Number Tag Site **Technician** Site Visit Date Parameter Owner ID Mfg PY14330 BUF603 Eric Hebert Solar Radiation Licor 07/25/2013 none Mfg Eppley Parameter solar radiation Tfer Desc. SR transfer translat 10765 **Serial Number** 01246 Tfer ID 1.00000 0.00000 **Slope Intercept DAS 1: DAS 2:** 1/6/2010 1.00000 % Diff of Avg %Diff of Max %Diff of Avg %Diff of Max **Cert Date** CorrCoff Parameter solar radiation Mfg Eppley Tfer Desc. SR transfer sensor **Serial Number** 34341F3 01245 Tfer ID 1.00000 0.00000 **Slope Intercept** CorrCoff **Cert Date** 12/16/2010 1.00000 13.7% 14.4% 0.0% 0.0% UseDescription: Measure Date MeasureTime Tfer Corr: DAS w/m2: PctDifference: 7/25/2013 -13.0% primary 11:00 872 758 -13.9% 950 7/25/2013 12:00 818 primary primary 7/25/2013 13:00 953 816 -14.4% 497 7/25/2013 14:00 430 -13.4% primary Sensor Component | Sensor Level **Condition** Level Status pass Sensor Component | Sensor Clean Condition Clean **Status** pass Sensor Component Properly Sited Condition Properly sited Status pass **Sensor Component** System Memo **Status** pass Condition

Precipitation Data Form

Mfg	Se	erial N	Number Ta	Site		Te	chnician		Site	Visit Date	Paramo	eter		Owner ID
Met One	N	N8140		BUF603		Er	ic Hebert		07/	25/2013	Precipita	ation		none
							Mfg		PMF)	Pa	rame	ter Pro	ecipitation
DAS 1:			DAS 2:				Serial Nu	nber	EW-	06134-50	Tf	er De	sc. 25	0ml graduate
A Avg % Diff		x % D 3.3		Dif A N	Max % Di		Tfer ID		012	50				
				Slope			1.0000	0 Inter	rcept		0.00000			
							Cert Date			9/5/200	6 Cori	rCoff		1.00000
UseDesc.	Test t	ype:	TferVolume:	Iteration:	TimePerTi	p:	Eq.Ht:	DAS	eng:	Eq.HtUnit:	OSE Un	it: Tf	erUnit	s:PctDifference
primary	tip chec	k	10 manual	1	2 sec		0.10	0.	10	in	in		ml	
primary	test 1		231.5	1	10 sec		0.30	0.	29	in	in		ml	-3.3%
primary	test 2		231.5	2	10 sec		0.30	0.	29	in	in		ml	-3.3%
Sensor Com	ponent	Syste	m Memo		Cond	itio	See com	ments	i		Status	pass		
Sensor Com	ponent	Senso	or Heater		Cond	itio	n N/A				Status	pass		
Sensor Com	ponent	Prope	erly Sited		Cond	itio	See com	ments	i		Status	pass		
Sensor Com	ponent	Gaug	e Drain Scree	n	Cond	itio	Installed				Status	pass		
Sensor Com	ponent	Level			Cond	itio	Level				Status	pass		
Sensor Com	ponent	Gaug	e Clean		Cond	itio	Clean				Status	pass		
Sensor Com	ponent	Funne	el Clean		Cond	itio	Clean				Status	pass		
Sensor Com	ponent	Condi	tion		Cond	itio	Good				Status	pass		
Sensor Com	ponent	Gaug	e Screen		Cond	itio	Installed				Status	pass		

Infrastructure Data For

Site ID BUF603 Technician Eric Hebert Site Visit Date 07/25/2013

Sensor Component	Shelter Roof	Condition	Ν/Δ	Status	nace
Sensor Component	Cheiter 1700i	Condition	IV/A	Status	разз
Sensor Component	Sample Tower Type	Condition	Pole type	Status	pass
Sensor Component	Met Tower	Condition	Fair	Status	pass
Sensor Component	Moisture Trap	Condition	Not installed	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	Rotometer	Condition	Not installed	Status	Fail
Sensor Component	Conduit	Condition	N/A	Status	pass
Sensor Component	Sample Tower	Condition	Fair	Status	pass
Sensor Component	Shelter Condition	Condition	N/A	Status	pass
Sensor Component	Shelter Floor	Condition	N/A	Status	pass
Sensor Component	Shelter Temp Control	Condition	N/A	Status	pass
Sensor Component	Signal Cable	Condition	Fair	Status	pass
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Shelter Door	Condition	N/A	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazaı	rd Problem
Flow Rate	BUF603	Eric Hebert	07/25/2013	Filter Position	Omega	3827		\checkmark
The filter attachmer geometric orientation	1	too high in the enclo	sure resulting in	the filter being rec	essed in the enc	closure and not expo	osed in the	estandard
Precipitation	BUF603	Eric Hebert	07/25/2013	Properly Sited	Met One	3825		✓
Objects violate the	45 degree rule for the	he tipping bucket rai	n gage.					

Field Systems Comments

1 Parameter: SiteOpsProcComm

The site operator uses the caps and bag from the received filter to seal and send back the removed filter. A spare set of caps and bag should be sent to the site. Although gloves are used to handle the filter, the site operator put the gloves on while in his truck and touched many things prior to handling the filter. The gloves were not changed prior to installing the new filter.

2 Parameter: DasComments

The NEMA enclosure has a cooling fan.

3 Parameter: ShelterCleanNotes

NEMA enclosure, solar power

4 Parameter: MetSensorComme

The temperature and RH are measured using a combined sensor which cannot be immersed making a temperature audit difficult. The temperature and RH are measured at 2.5 meters above the ground.

Field Systems Data Form

F-02058-1500-S1-rev001

Site ID	BUF603		Technician	Eric Hebert	Site Visit Date	07/25/2013	
Site Sponsor	(agency)	EPA			USGS Map		
Operating G	roup	BLM			Map Scale		
AQS#					Map Date		
Meteorologic	al Type						
Air Pollutant	Analyzer				QAPP Latitude		
Deposition M					QAPP Longitude		
Land Use					QAPP Elevation Meter	S	
Terrain					QAPP Declination		
Conforms to	MLM				QAPP Declination Date	e	
Site Telephor	ne		PANCES SEE		Audit Latitude		44.144135
Site Address	1			The Control of March 1999	Audit Longitude		-106.108771
Site Address	2				Audit Elevation		1320
County		Johnson			Audit Declination	9.7	
City, State		Buffalo, V	VY		Presen	ıt .	
Zip Code		82834			Fire Extinguisher		
Time Zone		Mountain			First Aid Kit		
Primary Ope	erator				Safety Glasses		
Primary Op.	Phone #				Safety Hard Hat		A2 WEST LOSS OF THE SECTION OF THE S
Primary Op.	E-mail				Climbing Belt		
Backup Open	rator				Security Fence		
Backup Op.	Phone #				Secure Shelter		
Backup Op.	E-mail				Stable Entry Step		The form of the two sections of the section of the
Shelter Work	king Room□	Make		M	odel	Shelter Size	
Shelter Clear	1	Notes	NEMA enclos	ure, solar power			
Site OK		Notes					
Driving Direction	ctions	CONTRACTOR OF THE STATE OF THE					

Field Systems Data Form

F-02058-1500-S2-rev001

Site ID BUF603 Eric Hebert Site Visit Date 07/25/2013

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		V
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	27	
Limited agricultural operations	200 m		V
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 Commen

Field S	ystems l	Data	Form
and the barbon beautiful and "			Control State Control State Control

F-02058-1500-S3-rev001

Site	ID	BUF603	Technician Eri	ic Hebert		Site Visit Date 07/25/2013
1		d speed and direction of the speed and direction of the speed by obstruction of the speed and direction of the speed and directio	on sensors sited so as tions?	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 plumb?				✓	
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?				✓	
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)				✓	
6	Is the so	olar radiation sensor	plumb?		✓	
7	Is it site light?	ed to avoid shading, o	or any artificial or re	eflected	>	
8	Is the ra	ain gauge plumb?		-[✓	
9	Is it site towers,		g effects from buildin	ngs, trees,		45 degree rule violation
10	Is the su facing n		r sited with the grid	surface	✓	N/A
11	Is it inc	clined approximately	30 degrees?		✓	N/A
	THE RESERVE OF THE PARTY OF THE		ion (photograph or s affect the monitorin		sary	y) regarding conditions listed above, or any other features,
			sured using a combined at 2.5 meters above		cai	nnot be immersed making a temperature audit difficult. The

	Systems Da						
ite ID	BUF603	Technician E	ric Hebert		Site Visit Date 07/25/2	2013	
	the meterologication, and well ma	al sensors appear to be in intained?	itact, in good	V			
	ll the meteorolog ting data?	ical sensors operational o	online, and	V			
Are th	ne shields for the	temperature and RH ser	nsors clean?	✓			
Are th	ne aspirated moto	ors working?		•	N/A		
Is the scrate		ensor's lens clean and fr	ee of	V			
Is the surface wetness sensor grid clean and undamaged?					N/A		
	ne sensor signal a tion, and well ma	nd power cables intact, i	n good	✓			
	NAME AND ADDRESS OF THE OWNER, WHEN PARTY OF T	nd power cable connecti well maintained?	ons protected	✓			
arametei	•	Manufacturer	Model		S/N	C	lient ID
ind Direc	ction	Met One	024		1505	no	one
ind Spee	ed	Met One	014		M23214	no	one
ria opco	ation	Licor	LI-200		PY14330	no	one
	elative Humidity Vaisala HMF		HMP45AC		E3720077	no	one
olar Radia	umidity			NEWSTAND	E3720077	no	one
olar Radia		Vaisala	HMP45AC	May and the same	CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR	WEST STREET, S	3110

Field Systems Data Form F-02058-1500-S5-rev001 BUF603 Technician Eric Hebert Site Visit Date 07/25/2013 Site ID Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E **V** Do the sample inlets have at least a 270 degree arc of unrestricted airflow? ~ Are the sample inlets 3 - 15 meters above the ground? ~ Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees? Pollutant analyzers and deposition equipment operations and maintenance ✓ N/A Do the analyzers and equipment appear to be in good condition and well maintained? ~ N/A Are the analyzers and monitors operational, on-line, and reporting data? Describe ozone sample tube. N/A Describe dry dep sample tube. 3/8 teflon by 10 meters **V** N/A Are in-line filters used in the ozone sample line? (if ves indicate location) **V** Are sample lines clean, free of kinks, moisture, and obstructions? **V** N/A 7 Is the zero air supply desiccant unsaturated? Not present Are there moisture traps in the sample lines? Not present Is there a rotometer in the dry deposition filter line, and is it clean? Manufacturer S/N **Client ID Parameter** Model Filter pack flow pump Thomas 107CA18 0191007231 none Unknown Sample Tower Unknown None none MFC power supply Sceptre FMA65PWC 295106-12 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:

~		property of the second	
	ratoma	Doto	Orm
Field S	voicino	Data	ATT A TIME OF THE

F-02058-1500-S6-rev001

Site	ID	BUF603	Technician	Eric Hebert	200	Site Visit Date 07/25/20)13	
	DAS,	sensor translatoi	s, and peripheral equi	oment operation	ns aı	nd maintenance		
1		e DAS instrumen	its appear to be in good	condition and	✓			
2		l the component n, backup, etc)	s of the DAS operation	al? (printers,	✓			
3		e analyzer and se ing protection ci	ensor signal leads pass treuitry?	hrough		Not present		
4		e signal connect naintained?	ions protected from the	weather and	✓			
5	Are th	e signal leads co	nnected to the correct	DAS channel?	✓			
6	Are th		anslators, and shelter p	oroperly	✓			
7	Does t	he instrument sl	nelter have a stable pov	ver source?	✓			
8	Is the	instrument shelt	er temperature control	led?	✓	Marginally		
9	Is the	met tower stable	and grounded?			Stable	Grounded	
10	Is the	sample tower sta	ble and grounded?				<u> </u>	and the second
11	Tower	comments?				<u> </u>		
Par	ameter		Manufacturer	Model		S/N	Clie	ent ID
DAS	3		Campbell	CR1000		43073	499	17
			lanation (photograph o			ry) regarding conditions list	ed above, or a	nny other features,
The	NEMA	enclosure has a	cooling fan.					

Field Systems Data Form

F-02058-1500-S7-rev001

Site ID BUF603		Technicia	Eric Hebert		Site Visit Date	07/25/2013		
Documentation								
Does the site have the requir				manuals?		•7	N	NT/A
Wind speed sensor	Yes	No ✓	N/A	Data logg	er	Yes	No 🗸	N/A
Wind direction sensor		<u></u>		Data logg Data logg				✓
Temperature sensor		_ _			rt recorder			
Relative humidity sensor		<u></u>		Compute:				
Solar radiation sensor		<u></u>		Modem				✓
Surface wetness sensor			AND SHARE OF SHARE SHARE	Printer				V
Wind sensor translator				Zero air p	oump			V
Temperature translator				Filter flov	THE RESERVE OF THE RE		✓	
Humidity sensor translator				Surge pro				V
Solar radiation translator				UPS				V
Tipping bucket rain gauge		V			protection device	e \square		✓
Ozone analyzer				Shelter he				V
Filter pack flow controller		✓		Shelter ai	r conditioner			V
Filter pack MFC power supply			✓					
Does the site have the requi	ired a	nd most ro	ecent OC docu	ments and	d report forms?			
	Preso					Curre	nf	
Station Log		_	present		le l			
SSRF			present		-	✓		
Site Ops Manual			present					
HASP			present					
Field Ops Manual			present					
Calibration Reports		Market Comment	present					
Ozone z/s/p Control Charts		N/A				✓		
Preventive maintenance schedu	1 [present					
1 Is the station log properly	compl	leted duri	ng every site vi	isit? 🔲 🛭	Not present			
2 Are the Site Status Report current?	Form	is being co	mpleted and	~				
3 Are the chain-of-custody for sample transfer to and from			ised to docume	ent 🗸				
4 Are ozone z/s/p control chacurrent?	arts pi	roperly co	mpleted and	1	N/A			
Provide any additional explana	tion (1	photograp	h or sketch if 1	necessary)	regarding condi	tions listed a	bove, or	any
natural or man-made, that may								
	restaura resolu							emares).

Field Systems Data Form F-02058-1500-S8-rev001 BUF603 Site Visit Date 07/25/2013 Site ID Technician Eric Hebert Site operation procedures Has the site operator attended a formal CASTNET training course? If yes, when and who instructed? Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday ~ schedule? V Are the standard CASTNET operational procedures being flollowed by the site operator? 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** V ~ Semiannually **Multipoint Calibrations** ~ ~ Weekly **Visual Inspections** ~ N/A **Translator Zero/Span Tests (climatronics)** П Not performed **Manual Rain Gauge Test** V **V** Weekly **Confirm Reasonableness of Current Values** ~ N/A **Test Surface Wetness Response** Are regular operational QA/QC checks performed on the ozone analyzer? **OC Check Performed Compliant** Frequency **Multi-point Calibrations V** N/A ~ N/A **Automatic Zero/Span Tests** ~ N/A Manual Zero/Span Tests **V** N/A **Automatic Precision Level Tests** ~ N/A **Manual Precision Level Test** ~ N/A **Analyzer Diagnostics Tests** ~ N/A **In-line Filter Replacement (at inlet)** ~ N/A In-line Filter Replacement (at analyze **V** N/A Sample Line Check for Dirt/Water **V** N/A **Zero Air Desiccant Check V** N/A 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 ✓ 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:

reported? If yes, how?

Field Systems Data Form F-02058-1500-S9-rev001 BUF603 Technician Eric Hebert Site Visit Date 07/25/2013 Site ID Site operation procedures Is the filter pack being changed every Tuesday as scheduled? ✓ Filter changed afternoons Are the Site Status Report Forms being completed and filed correctly? No longer required Are data downloads and backups being performed as scheduled? V Are general observations being made and recorded? How? V Are site supplies on-hand and replenished in a timely fashion? Are sample flow rates recorded? How? SSRF Are samples sent to the lab on a regular schedule in a timely lacksquarefashion?

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

Are filters protected from contamination during handling

Are the site conditions reported regularly to the field

and shipping? How?

operations manager or staff?

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 uses the caps and bag from the received filter to seal and send back the removed filter. A spare set of caps and bag should be sent to the site. Although gloves are used to handle the filter, the site operator put the gloves on while in his truck and touched many things prior to handling the filter. The gloves were not changed prior to installing the new filter.

Site Inventory by Site Visit

	visii Daie	Parameter	Mfg	Owner ID	Model Number	Serial Number
NEC	'602-Eric H	lebert-07/29/2013				
1	7/29/2013	DAS	Campbell	none	CR1000	41007
2	7/29/2013	elevation	Elevation	none	none	none
3	7/29/2013	Filter pack flow pump	Thomas	none	107CAB18	061200041880
4	7/29/2013	Flow Rate	Omega	none	FMA6518ST-RS232	324333-1
5	7/29/2013	Infrastructure	Infrastructure	none	none	none
6	7/29/2013	MFC power supply	Sceptre	none	FMA65PWC	295106-8
7	7/29/2013	Ozone	ThermoElectron Inc	none	49i A1NAA	1214552974
8	7/29/2013	Ozone Standard	ThermoElectron Inc	L0534683	49i E3CAA	1214552972
9	7/29/2013	Precipitation	Met One	none	099C-1	J3064
10	7/29/2013	Relative Humidity	Vaisala	none	HMP45A	Z3210005
11	7/29/2013	Sample Tower	Unknown	none	Unknown	None
12	7/29/2013	Shelter Temperature	ARS	none	Thermocouple	none
13	7/29/2013	siting criteria	Siting Criteria	none	none	None
14	7/29/2013	Solar Radiation	Licor	none	LI-200	PY18362
15	7/29/2013	Temperature	Vaisala	none	HMP45A	Z3210005
16	7/29/2013	Zero air pump	ThermoElectron Inc	none	107CAB18	106580-00

Flow Data Form

Mfg		Serial Nun	nber Ta	Site	Tecl	hnician	Site Visit	Date Parar	neter	Owner ID
Omega		324333-1		NEC602	Eric	Hebert	07/29/201	3 Flow F	Rate	none
Mfg	Sce	ptre]	Mfg	BIOS	I	Parameter Flo	w Rate
SN/Owner ID	295°	106-8	none			Serial Number	122974 T 1		Tfer Desc. BIC	S 220-H
Parameter	MFC	power su	pply		, , , , , , , , , , , , , , , , , , ,	Гfer ID	01416			
						Slope	1	.00000 Int	ercept	0.0000
						Cert Date			rrCoff	1.0000
								l l		
DAS 1: A Avg % Diff:	A M	ov % Di	DAS 2: A Avg %	Dif A Ma	x % Di	Cal Factor Z Cal Factor F			0.2 03	
1.86%	AWI	1.86%	A Avg 701	DII A Ma	X 70 D1	Rotometer R			0	
UseDescription:	T	est type:	Input 1/m:	Input STP:	MfcDisp.:	OutputSignal:		InputUnit:		PctDifference
primary	_	p off	0.000	0.000	0.00	0.000	0.20	l/m	1/m	
primary	leak	check	0.000	0.000	0.00	0.000	0.20	1/m	1/m	
primary	test	pt 1	0.000	3.230	0.00	0.000	3.29	l/m	1/m	1.86%
Sensor Compo	onen	t Leak Tes	st		Condition	1		Statu	pass	
Sensor Comp	onen	t Filter Azi	muth		Condition	360 deg		Statu	s pass	
Sensor Compo	onen	t Filter Dep	oth		Condition	0.0 cm		Statu	s pass	
Sensor Comp	onen	t Filter Pos	sition		Condition	Fair		Statu	s pass	
Sensor Comp	onen	Moisture	Present		Condition	No moisture pr	resent	Statu	s pass	
Sensor Comp	onen	Rotomete	er Condition	າ	Condition	N/A		Statu	pass	
Sensor Comp	onen	t System N	Memo		Condition	ı		Statu	spass	
Sensor Comp	onen	t Tubing C	ondition		Condition	Good		Statu	spass	
Sancar Comp	onen	t Filter Dis	tance		Condition	3.5 cm		Statu	s pass	

Ozone Data Form

Mfg Se	erial Number Ta	Site	Tec	hnician		Site Visi	it Date	Parame	ter	Owner ID
ThermoElectron Inc 1	214552974	NEC602	Eri	c Hebert		07/29/20	013	Ozone		none
Intercept 0.9	Slope: 17691 Intercept 19991 CorrCoff	0.00000	0	Mfg Serial N Tfer ID		ThermoE 5171121 01111			rameter ozo	ne primary stan
DAS 1: A Avg % Diff: A Ma: 2.0%	DAS 2: x % Di	6Dif A Max (Slope Cert Da	nte		0.9972		•	0.18428 1.00000
UseDescription:	ConcGroup:	Tfer Raw:	Tfer C		Si			Unit:	PctDiffe	erence:
primary	1	-0.20	-0.3		0.0		ppb			0.150/
primary	2	26.10	25.9		25.		ppb			-0.15%
primary	3	53.25	53.2 83.0		52. 80.		ppb			-0.71%
primary primary	5	83.05 108.85	108.		104		ppb ppb			-3.27% -3.76%
	-	108.83				.07	ppo			-3.70%
Sensor Component	Cell B Noise		Conditio	1.4 pp	ob do			Status	pass	
Sensor Component	Cell B Tmp.		Conditio	n				Status	pass	
Sensor Component	Fullscale Voltage		Conditio	n N/A				Status	pass	
Sensor Component	Inlet Filter Condition	n	Conditio	n Clean	l			Status	pass	
Sensor Component	Line Loss		Conditio	n Not te	ested			Status	pass	
Sensor Component	Offset		Conditio	n -0.60				Status	pass	
Sensor Component	Span		Conditio	n 1.013				Status	pass	
Sensor Component	Cell B Freq.		Conditio	n 78.1 k	кHz			Status	Fail	
Sensor Component	System Memo		Conditio	n				Status	pass	
Sensor Component	Sample Train		Conditio	n Good				Status	pass	
Sensor Component	Cell B Pressure		Conditio	n				Status	pass	
Sensor Component	Cell B Flow		Conditio	0.64 l	pm			Status	pass	
Sensor Component	Cell A Tmp.		Conditio	35.8 C	0			Status	pass	
Sensor Component	Cell A Pressure		Conditio	n 624 m	nmHg			Status	pass	
Sensor Component	Cell A Noise		Conditio	n 0.9 pp	ob			Status	pass	
Sensor Component	Cell A Freq.		Conditio	n 101.2	kHz			Status	pass	
Sensor Component	Cell A Flow		Conditio	n 0.63 l	pm			Status	pass	
Sensor Component	Battery Backup		Conditio	n N/A				Status	pass	
Sensor Component	Zero Voltage		Conditio	n N/A				Status	pass	

Temperature Data Form Serial Number Tag Site **Technician** Site Visit Date Parameter **Owner ID** Mfg Z3210005 NEC602 Eric Hebert Temperature Vaisala 07/29/2013 none **Parameter** Temperature Mfg Extech Tfer Desc. RTD H232679 **Serial Number** 01228 Tfer ID 1.00732 -0.12380 **Slope Intercept DAS 1: DAS 2:** 1/12/2013 1.00000 Abs Avg Err Abs Max Er Abs Avg Err Abs Max Er **Cert Date** CorrCoff 1.81 5.00 InputTmpRaw | InputTmpCorr.: | OutputTmpSignal: | OutputSignalEng: | OSE Unit: | Difference: UseDesc.: Test type: primary Temp Mid Range 28.12 28.04 0.000 27.9 \mathbf{C} -0.130.000 C primary Temp Low Range 1.52 1.63 6.6 Temp High Range 47.43 0.000 46.2 C -1.21 primary 47.65 45.9 C -0.9 primary Temp High Range 47.00 46.78 0.000Condition Clean Sensor Component | Shield **Status** pass Sensor Component Blower Status Switch **Condition** N/A **Status** pass Sensor Component Blower **Condition** N/A Status pass

Condition See comments

Status pass

Sensor Component | System Memo

Humidity Data Form Serial Number Tag Site **Technician** Site Visit Date Parameter **Owner ID** Mfg NEC602 Relative Humidity Vaisala Z3210005 Eric Hebert 07/29/2013 none Mfg Rotronic Parameter Relative Humidity Tfer Desc. Hygroclip 124432 **Serial Number** 01225 Tfer ID 1.00000 0.00000 Slope **Intercept** 1/29/2013 1.00000 **Cert Date** CorrCoff **DAS 1: DAS 2:** Low Range **High Range** Low Range **High Range** 4.9 Abs Avg Err 0.6 0.9 4.9 Abs Max Er UseDesc.: Test type: Device: Input RH: GTL Raw: RH Corr.: DAS Volts: DAS %RH: Difference: RH Low Range 0.000 primary Hygroclip 32.8 0.0 32.8 31.9 -0.9 0.2 primary RH Low Range Hygroclip 52.9 0.0 52.9 0.000 53.1 primary RH High Range Hygroclip 93.6 0.0 93.6 0.000 88.7 -4.9 **Sensor Component** System Memo Status pass **Condition** Sensor Component Blower **Condition** N/A Status pass Sensor Component Blower Status Switch **Condition** N/A Status pass Sensor Component | RH Filter **Condition** Clean **Status** pass Sensor Component | Shield **Condition** Clean **Status** pass

Solar Radiation Data Form Serial Number Tag Site **Technician** Site Visit Date Parameter Owner ID Mfg PY18362 Eric Hebert Solar Radiation NEC602 07/29/2013 Licor none Mfg Eppley Parameter solar radiation Tfer Desc. SR transfer translat 10765 **Serial Number** 01246 Tfer ID 1.00000 0.00000 **Slope Intercept DAS 1: DAS 2:** 1/6/2010 1.00000 % Diff of Avg %Diff of Max %Diff of Avg %Diff of Max **Cert Date** CorrCoff Parameter solar radiation Mfg Eppley Tfer Desc. SR transfer sensor **Serial Number** 34341F3 01245 Tfer ID 1.00000 0.00000 **Slope Intercept Cert Date** 12/16/2010 CorrCoff 1.00000 0.0% 0.0% 9.5% 10.5% UseDescription: Measure Date MeasureTime Tfer Corr: DAS w/m2: PctDifference: -10.5% primary 7/29/2013 11:00 889 795 -10.4% 7/29/2013 12:00 892 800 primary primary 7/29/2013 13:00 915 819 -10.5% 7/29/2013 14:00 846 764 -9.6% primary 7/29/2013 15:00 670 613 -8.5% primary primary 7/29/2013 16:00 596 561 -5.8% **Condition** Level Sensor Component | Sensor Level **Status** pass Sensor Component | Sensor Clean **Condition** Clean **Status** pass Sensor Component Properly Sited Condition Properly sited Status pass Sensor Component | System Memo Status pass Condition

Precipitation Data Form

Mfg	Seri	al Number Ta	Site	7	Fechnician		Site \	Visit Date	Parame	eter		Owner ID
Met One	J30	64	NEC602		Eric Hebert		07/2	9/2013	Precipita	ation		none
					Mfg		РМР		Pa	ramete	r Pred	cipitation
DAS 1:		DAS 2:			Serial Nu	nber	EW-0	06134-50	Tf	er Desc	250	ml graduate
A Avg % Diff 5.0%		6.7% A Avg	%Dif A	Max % Di	Tfer ID		0125	0				
					Slope			1.0000	0 Inter	rcept		0.00000
					Cert Date			9/5/200	O5 Corr	Coff		1.00000
UseDesc.	Test type	e: TferVolume	: Iteration:	TimePerTip	_	DAS	eng:	Eq.HtUnit:	OSE Un	it: Tfer	Units:	PctDifference
primary	test 1	231.5	1	10 sec	0.30	0.2		in	in	_	nl	-6.7%
	test 2	231.5	2	10 sec	0.30	0.2		in	in	r	nl	-3.3%
Sensor Com	ponent Sy	stem Memo		Condi	tion See con	ments			Status	pass		
Sensor Com	ponent Se	ensor Heater		Condi	tion N/A				Status	pass		
Sensor Com	ponent Pr	operly Sited		Condi	tion See con	ments			Status	pass		
Sensor Com	ponent Ga	auge Drain Scre	en	Condi	tion Installed				Status	pass		
Sensor Com	ponent Le	vel		Condi	tion Level				Status	pass		
Sensor Com	ponent Ga	auge Clean		Condi	tion Moderat	ely clea	an		Status	pass		
Sensor Com	ponent Fu	innel Clean		Condi	tion Moderat	ely clea	an		Status	pass		
Sensor Com	ponent Co	ondition		Condi	tion Good				Status	pass		
Sensor Com	ponent Ga	auge Screen		Condi	tion Installed				Status	pass		

Infrastructure Data For

Site ID NEC602 Technician Eric Hebert Site Visit Date 07/29/2013

g g 4	Chalter Boof	C 1141	NI/Λ	Gt t	2000
Sensor Component	Sheller Rooi	Condition	IN/A	Status	pass
Sensor Component	Sample Tower Type	Condition	Pole type	Status	pass
Sensor Component	Met Tower	Condition	Fair	Status	pass
Sensor Component	Moisture Trap	Condition	Not installed	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	Rotometer	Condition	Not installed	Status	Fail
Sensor Component	Conduit	Condition	N/A	Status	pass
Sensor Component	Sample Tower	Condition	Fair	Status	pass
Sensor Component	Shelter Condition	Condition	N/A	Status	pass
Sensor Component	Shelter Floor	Condition	N/A	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	N/A	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

Shelter Temperature Data For

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
ARS	none	NEC602	Eric Hebert	07/29/2013	Shelter Temperature	none
DAS 1:	DAS 2:	D 41 M D	Mfg	Extech	Parameter Sh	elter Temperatur
Abs Avg Err Abs	Max Er Abs Avg 0.30	Err Abs Max Er	Serial Number	H232679	Tfer Desc. RT	D
			Tfer ID	01228		
			Slope	1.00732	2 Intercept	-0.12380
			Cert Date	1/12/2013	3 CorrCoff	1.00000

UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	27.06	26.99	0.000	27.3	С	0.29
primary	Temp Mid Range	26.43	26.36	0.000	26.7	C	0.3
primary	Temp Mid Range	28.53	28.45	0.000	28.4	C	-0.02

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard Problem
Precipitation	NEC602	Eric Hebert	07/29/2013	Properly Sited	Met One	3832	
Objects violate the 45 d	egree rule for the	tipping bucket rain	n gage.				

Field Systems Comments

1 Parameter: SiteOpsProcComm

The site operator is doing a good job with filter change and filter handling.

2 Parameter: DocumentationCo

The purpose and procedure to complete the chain-of-custody and observations section of the SSRF was discussed with the operator during the audit.

3 Parameter: SitingCriteriaCom

The site is located approximately 2 km northeast of Newcastle WY which has a population of approximately 3500. There is an oil refinery in Newcastle. A heavily traveled road is approximately 100m west of the site.

4 Parameter: ShelterCleanNotes

The shelter houses the ozone, DAS, and MFC only.

5 Parameter: MetSensorComme

Some objects violate the 45 degree rule for the tipping bucket rain gage.

6 Parameter: MetOpMaintCom

The site utilizes a Climatronics AIO all-in-one weather sensor for wind direction, wind speed, and temperature. The sensor was not audited

A separate sensor for humidity and temperature was audited.

Field Systems Data Form

F-02058-1500-S1-rev001

Site ID NEC602	Technician Eric Hebert	Site Visit Date 07/2	29/2013
Site Sponsor (agency)	EPA	USGS Map	
Operating Group	BLM	Map Scale	
AQS#		Map Date	
Meteorological Type	Climatronics		
Air Pollutant Analyzer		QAPP Latitude	
Deposition Measuremen	ıt.	QAPP Longitude	
Land Use		QAPP Elevation Meters	
Terrain		QAPP Declination	
Conforms to MLM		QAPP Declination Date	
Site Telephone		Audit Latitude	43.8731
Site Address 1		Audit Longitude	-104.192009
Site Address 2		Audit Elevation	1469
County	Weston	Audit Declination	8.5
City, State	Newcastle, WY	Present	
Zip Code	82701	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 Shelter One	Model AR 263648	Shelter Size 24 cuft
Shelter Clean	Notes The shelter houses the ozor	ne, DAS, and MFC only.	
Site OK	Notes		
Driving Directions			

Field Systems Data Form

F-02058-1500-S2-rev001

Site ID NEC602 Technician Eric Hebert Site Visit Date 07/29/2013

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		V
Major industrial complex	10 to 20 km	< 10 km	
City > 50,000 population	40 km		✓
City 10,000 to 50,000 population	10 km		V
City 1,000 to 10,000 population	5 km	2 km	
Major highway, airport or rail yard	2 km		✓
Secondary road, heavily traveled	500 m	100 m	
Secondary road, lightly traveled	200 m		V
Feedlot operations	500 m		✓
Intensive agricultural ops (including aerial spraying)	500 m		V
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 approximately 2 km northeast of Newcastle WY which has a population of approximately 3500. There is an oil refinery in Newcastle. A heavily traveled road is approximately 100m west of the site.

Field Sy	veteme	Data	Form
riciu 5	Stellis.	Data.	

F-02058-1500-S3-rev001

Site	ID	NEC602	Technician Eric Hebert		Site Visit Date 07/29/2013		
1 Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?		✓					
2 Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)							
3			✓	5 (0) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1			
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)		of				
6	Is the so	olar radiation senso	or plumb?	✓			
7	Is it site light?	ed to avoid shading,	, or any artificial or reflected	~			
8	Is the ra	ain gauge plumb?		✓			
9	Is it site towers,		ng effects from buildings, trees,		45 degree rule violation		
10	Is the st facing r		or sited with the grid surface	V	N/A		
11	Is it inc	clined approximate	ly 30 degrees?	V	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:							
Some objects violate the 45 degree rule for the tipping bucket rain gage.							

				200		100	0.00	
Fiel	7 EQ	wate	mc		ot	. I	Γ_{α}	rm
riei	uo	VDU		L	au	a 1	U	

F-02058-1500-S4-rev001

Site	ID	NEC602	Technician	Eric Hebert		Site Visit Date	07/29/2013	
1		he meterological so on, and well maint	ensors appear to be	intact, in good	✓			
2	Are all		sensors operationa	l online, and	✓			
3	Are the	shields for the ten	perature and RH s	sensors clean?	✓			
4	Are the	aspirated motors	working?		V	N/A		
5	Is the so		or's lens clean and l	free of	✓			
6	Is the su	ırface wetness sen	sor grid clean and u	ındamaged?	✓	N/A		
7		sensor signal and on, and well mainta	power cables intact ained?	, in good	✓			
8		sensor signal and e elements and we	power cable connec ll maintained?	ctions protected	✓			
Par	ameter		Manufacturer	Model		S/N	Cli	ent ID
Sola	ar Radiati	ion	Licor	LI-200	in room	PY18362	noi	ne
Rela	ative Hun	nidity	Vaisala	HMP45A	es es	Z3210005	noi	ne
Ten	nperature		Vaisala	HMP45A	NISANI	Z3210005	noi	ne
Pre	cipitation		Met One	099C-1	2000	J3064	noi	ne

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 utilizes a Climatronics AIO all-in-one weather sensor for wind direction, wind speed, and temperature. The sensor was not audited. A separate sensor for humidity and temperature was audited.

Field Systems Data Form F-02058-1500-S5-rev001 NEC602 Site Visit Date 07/29/2013 Site ID Technician Eric Hebert Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E **V** Do the sample inlets have at least a 270 degree arc of unrestricted airflow? ~ Are the sample inlets 3 - 15 meters above the ground? ~ Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees? Pollutant analyzers and deposition equipment operations and maintenance **V** Do the analyzers and equipment appear to be in good condition and well maintained? ~ Are the analyzers and monitors operational, on-line, and reporting data? Describe ozone sample tube. 1/4 teflon by 10 meters Describe dry dep sample tube. 3/8 teflon by 10 meters **V** Are in-line filters used in the ozone sample line? (if ves indicate location) ~ Are sample lines clean, free of kinks, moisture, and obstructions? 7 Is the zero air supply desiccant unsaturated? Are there moisture traps in the sample lines? Not present Is there a rotometer in the dry deposition filter line, and is it clean? Manufacturer Model S/N **Client ID Parameter** Sample Tower Unknown Unknown None none ThermoElectron Inc 49i A1NAA Ozone 1214552974 none Thomas 107CAB18 061200041880 none Filter pack flow pump MFC power supply Sceptre FMA65PWC 295106-8 none ThermoElectron Inc 107CAB18 106580-00 Zero air pump 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:

~		property of the second	
	ratoma	Doto	Orm
Field S	voicino	Data	ATT A TIME OF THE

F-02058-1500-S6-rev001

Site	e ID	NEC602	Technician	Eric Hebert		Site Visit Date 07	7/29/2013	
	DAS, s	sensor translators,	and peripheral equi	pment operation	ns ai	nd maintenance		
1	Do the well m	DAS instruments aintained?	appear to be in good	l condition and	✓			
2		the components on, backup, etc)	f the DAS operation	al? (printers,	✓			
3		analyzer and sens	sor signal leads pass uitry?	through		Not present		
4		e signal connection aintained?	ns protected from the	e weather and	✓			
5	Are th	e signal leads conn	nected to the correct	DAS channel?	V			
6	Are th		nslators, and shelter	properly	✓			
7	Does th	he instrument shel	ter have a stable pov	ver source?	V			
8	Is the i	instrument shelter	temperature control	lled?	✓			
9	Is the	met tower stable a	nd grounded?			Stable	Grounded	
10	Is the	sample tower stabl	le and grounded?					
11	Tower	comments?				✓		
Pai	ameter		Manufacturer	Model		S/N	Clie	nt ID
DA	S		Campbell	CR1000		41007	none	9
			nation (photograph on the monito			y) regarding conditio	ns listed above, or a	ny other features,

F-02058-1500-S7-rev001

Site ID NEC602		Techn	ician Eric He	ebert Site Visi	it Date 07/29/2013	
<u>Documentation</u>						
Does the site have the requir	ed ins	<u>trumen</u>	t and equipr	nent manuals?		
	Yes	No	N/A		Yes No	N/A
Wind speed sensor		V		Data logger		
Wind direction sensor		V		Data logger		✓
Temperature sensor		V		Strip chart recorder		V
Relative humidity sensor		V		Computer		✓
Solar radiation sensor		V		Modem		V
Surface wetness sensor			✓	Printer		V
Wind sensor translator			V	Zero air pump		
Temperature translator			V	Filter flow pump		
Humidity sensor translator			V	Surge protector		✓✓
Solar radiation translator			V	UPS		
Tipping bucket rain gauge	✓			Lightning protection	device	
Ozone analyzer		✓		Shelter heater		
Filter pack flow controller			<u> </u>	Shelter air condition	er 🗀 💟	
Filter pack MFC power supply						
Does the site have the requi	ired aı	nd mos	t recent QC	documents and report for	<u>rms?</u>	
	Prese	ent			Current	
Station Log	Ĺ] N	ot present			
SSRF	v				✓	
Site Ops Manual	Ţ	□ N	ot present			
HASP		N	ot present			
Field Ops Manual		□ N	ot present			
Calibration Reports		□ N	ot present			
Ozone z/s/p Control Charts		N	ot present			
Preventive maintenance schedu	ıl [□ N	ot present			
1 Is the station log properly	compl	leted du	iring every s	ite visit? Not present		
				<u> </u>		
2 Are the Site Status Report	Form	s being	completed a	and \square		
current?						
3 Are the chain-of-custody for sample transfer to and from			y used to do	cument		
4 Are ozone z/s/p control chacurrent?	arts pr	coperly	completed a	nd Control char	ts not used	
Provide any additional explana natural or man-made, that may					conditions listed above, o	r any other features,
The purpose and procedure to co					of the SSRF was discussed	with the operator durir
the audit.	W. Len	CENTRAL CONTRACTOR				

Field Systems Data Form F-02058-1500-S8-rev001 NEC602 Site Visit Date 07/29/2013 Site ID Technician Eric Hebert Site operation procedures Has the site operator attended a formal CASTNET training course? If yes, when and who instructed? Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday ~ schedule? V Are the standard CASTNET operational procedures being flollowed by the site operator? 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 V** ~ Semiannually **Multipoint Calibrations** ~ ~ Weekly **Visual Inspections** ~ N/A **Translator Zero/Span Tests (climatronics)** П **Manual Rain Gauge Test** Not performed V **V** Weekly **Confirm Reasonableness of Current Values** ~ N/A **Test Surface Wetness Response** Are regular operational QA/QC checks performed on the ozone analyzer? **OC Check Performed Compliant** Frequency **Multi-point Calibrations** ~ **V** Semiannually ~ ~ **Automatic Zero/Span Tests** Daily ~ Manual Zero/Span Tests **V** Daily **Automatic Precision Level Tests** ~ **Manual Precision Level Test Analyzer Diagnostics Tests V** ~ Monthly **In-line Filter Replacement (at inlet)** ~ N/A In-line Filter Replacement (at analyze Sample Line Check for Dirt/Water **Zero Air Desiccant Check** Unknown Do multi-point calibration gases go through the complete sample train including all filters? V 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

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:

reported? If yes, how?

F-02058-1500-S9-rev001

Site	NEC602 Tec	chnician Eric Hebert		Site Visit Date	07/29/2013
	Site operation procedures				
1	Is the filter pack being changed ever	y Tuesday as scheduled	?✔	Filter changed varie	ous times
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 mad	e and recorded? How?	~	SSRF	
5	Are site supplies on-hand and repler fashion?	nished in a timely	✓		
6	Are sample flow rates recorded? Ho	w?	~	SSRF	
7	Are samples sent to the lab on a regularity fashion?	ular schedule in a timely	, v		
8	Are filters protected from contamina and shipping? How?	ation during handling	~	Clean gloves on ar	nd off
9	Are the site conditions reported regularities operations manager or staff?	ularly to the field			
QC	Check Performed	Frequency			Compliant
N	Multi-point MFC Calibrations	Semiannually			
	low System Leak Checks	Weekly	of toxics i		
	ilter Pack Inspection				
	low Rate Setting Checks	Weekly	TORUS AND THE		
	isual Check of Flow Rate Rotometer	Not present	mareno		
	n-line Filter Inspection/Replacement	Semiannually	and the state of t		
	ample Line Check for Dirt/Water ide any additional explanation (photo	ograph or sketch if neces	ssarv	v) regarding condit	ions listed above, or any other features,
natu	ral or man-made, that may affect the	monitoring parameters		// - v 8 · · · · · · · · · · · · · · · · · ·	
The	site operator is doing a good job with filte	er change and filter handli	ng.		
	化医生物 医神经神经				

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
BVL	130-Eric H	lebert-07/31/2013				
1	7/31/2013	Computer	Dell	000297	D520	8SFNHB1
2	7/31/2013	DAS	Campbell	000424	CR3000	2539
3	7/31/2013	Elevation	Elevation	None	1	None
4	7/31/2013	Filter pack flow pump	Thomas	06019	107CAB18	050400022576
5	7/31/2013	Flow Rate	Apex	000651	AXMC105LPMDPCV	illegible
6	7/31/2013	Infrastructure	Infrastructure	none	none	none
7	7/31/2013	Met tower	Climatronics	02738	14 inch taper	none
8	7/31/2013	Modem	Raven	06610	H4223-C	0844355827
9	7/31/2013	Ozone	ThermoElectron Inc	000625	49i A1NAA	1009241797
10	7/31/2013	Precipitation	Climatronics	810899	100508-2	illegible
11	7/31/2013	Relative Humidity	Vaisala	06008	HMP50UA	A2410001
12	7/31/2013	Sample Tower	Aluma Tower	000182	В	unknown
13	7/31/2013	Shelter Temperature	Campbell	none	107-L	unknown
14	7/31/2013	Shield (10 meter)	Climatronics	02042	100325	1494
15	7/31/2013	Shield (2 meter)	Climatronics	05015	100325	missing
16	7/31/2013	Siting Criteria	Siting Criteria	None	1	None
17	7/31/2013	Solar Radiation	Licor	04566	LI-200	PY10653
18	7/31/2013	Solar Radiation Translator	RM Young	04340	70101-X	none
19	7/31/2013	Temperature	Climatronics	06690	100093	none
20	7/31/2013	Temperature2meter	Climatronics	06689	100093	none
21	7/31/2013	Wind Direction	Climatronics	03709	100076	3217
22	7/31/2013	Wind Speed	Climatronics	01029	100075	illegible
23	7/31/2013	Zero air pump	Teledyne	000759	701H	576

DAS Data Form 0.02 **DAS Time Max Error:** Serial Number Site **Technician** Site Visit Date Parameter Use Desc. Mfg Campbell 2539 BVL130 Eric Hebert 07/31/2013 DAS Primary Das Date: 7 /31/2013 **Audit Date** 7 /31/2013 Datel **Parameter** DAS Mfg 15:05:01 15:05:00 Das Time: **Audit Time** 4000392 Tfer Desc. Source generator (D **Serial Number** Das Day: 212 **Audit Day** 212 Tfer ID 01321 **Low Channel: High Channel: Avg Diff: Max Diff: Avg Diff: Max Diff:** 1.00000 0.00000 Slope **Intercept** 0.0001 0.0003 0.0001 0.0003 2/13/2012 1.00000 **Cert Date** CorrCoff Fluke **Parameter** DAS Mfg **Serial Number** 86590148 Tfer Desc. DVM 01310 Tfer ID 1.00000 0.00000 Slope **Intercept** 1/27/2013 1.00000 **Cert Date** CorrCoff Channel Input **DVM** Output **DAS** Output InputUnit OutputUnit Difference 0.0000 0.0000 0.0000 0.0000 V V 7 0.1000 0.1000 0.1000 0.00007 0.3000 0.3000 0.3000 V V 0.0000 7 0.5000 0.4999 V V -0.0001 0.5000 7 0.7000 V V -0.0001 0.7000 0.6999 V V 7 0.9000 0.9001 0.8998 -0.0003 7 V V -0.0003 1.0000 1.0001 0.9998

Flow Data Form

Mfg	Serial Nun	nber Ta	Site	Teo	chnician Site Visit Dat		Date Param	eter	Owner ID
Apex	illegible		BVL130	Eri	c Hebert	07/31/2013	Flow R	ate	000651
					Mfg	BIOS	P	arameter Flo	ow Rate
					Serial Number	122974	Т	fer Desc. Blo	OS 220-H
					Tfer ID	01416			
					Slope	1	00000 Inte	ercept	0.00000
					•			-	
					Cert Date	1/8	8/2013 Co	rCoff	1.00000
DAS 1:		DAS 2:			Cal Factor Z	ero	0.0)1	
A Avg % Diff:	A Max % Di	A Avg %I	Dif A Max	% Di	Cal Factor F	ull Scale	1.0)2	
2.78%	2.82%				Rotometer R	eading:	1.4	1 5	
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	0.028	0.04	l/m	1/m	
primary	leak check	0.000	0.000	0.01	0.038	0.05	1/m	1/m	
primary	test pt 1	0.000	1.553	1.48	1.490	1.51	1/m	1/m	-2.74%
primary	test pt 2	0.000	1.553	1.48	1.490	1.51	1/m	1/m	-2.78%
primary	test pt 3	0.000	1.554	1.48	1.490	1.51	1/m	1/m	-2.82%
Sensor Compo	onent Leak Tes	st		Conditio	n		Status	pass	
Sensor Compo	onent Filter Azi	muth		Conditio	n 200 deg		Status	pass	
Sensor Compo	onent Filter Dep	oth		Conditio	n 2.5 cm		Status	pass	
Sensor Compo	onent Filter Pos	sition		Conditio	n Good		Status	pass	
Sensor Compo	onent Moisture	Present		Conditio	No moisture p	resent	Status	pass	
Sensor Compo	Rotomete	er Condition	1	Conditio	n Clean and dry		Status	pass	
Sensor Compo	onent System M	Лето		Conditio	n		Status	pass	
Sensor Compo	onent Tubing C	ondition		Conditio	n Good		Status	pass	
Sensor Compo	onent Filter Dis	tance		Conditio	n 2.5 cm		Status	pass	

Ozone Data Form

Mfg S	erial Number Ta	Site	Tech	nician	Site Visit Date	Paramo	eter	Owner ID
ThermoElectron Inc 1	009241797	BVL130	Eric	Hebert	07/31/2013	Ozone		000625
Intercept 0.7	Slope: Tight Slope	0.00000 0.00000 0.00000	S		ThermoElectror 517112175		er Desc. Ozo	ne primary stan
			1	fer ID	01111			
DAS 1:	DAS 2:		S	lope	0.9972	20 Inter	rcept	0.18428
A Avg % Diff: A Ma		6Dif A Max %		Cert Date	1/2/20	13 Cori	·Coff	1.00000
3.4%	4.2%							
UseDescription:	ConcGroup:	Tfer Raw:	Tfer Co	orr: Si	te: Sit	e Unit:	PctDiffe	erence:
primary	1	-0.22	-0.40		1.1			
primary	2	28.39	28.28	3 27.	.70 ppb			-2.05%
primary	3	52.48	52.44	1 50.	.71 ppb			-3.30%
primary	4	75.47	75.49		11			-4.17%
primary	5	107.30	107.4	1 103	.10 ppb			-4.01%
Sensor Component	Cell B Noise		Condition	Not tested		Status	pass	
Sensor Component	Cell B Tmp.		Condition			Status	pass	
Sensor Component	Fullscale Voltage		Condition	N/A		Status	pass	
Sensor Component	Inlet Filter Condition	n	Condition	Clean		Status	pass	
Sensor Component	Line Loss		Condition	Not tested		Status	pass	
Sensor Component	Offset		Condition	-0.40		Status	pass	
Sensor Component	Span		Condition	1.012		Status	pass	
Sensor Component	Cell B Freq.		Condition	74.7 kHz		Status	Fail	
Sensor Component	System Memo		Condition			Status	pass	
Sensor Component	Sample Train		Condition	Good		Status	pass	
Sensor Component	Cell B Pressure		Condition			Status	pass	
Sensor Component	Cell B Flow		Condition	0.73 lpm		Status	pass	
Sensor Component	Cell A Tmp.		Condition	33.7 C		Status	pass	
Sensor Component	Cell A Pressure		Condition	713 mmHg		Status	pass	
Sensor Component	Cell A Noise		Condition	Not tested		Status	pass	
Sensor Component	Cell A Freq.		Condition	77.4 kHz		Status	Fail	
Sensor Component	Cell A Flow		Condition	0.74 lpm		Status	pass	
Sensor Component	Battery Backup		Condition	N/A		Status	pass	
Sensor Component	Zero Voltage		Condition	N/A		Status	pass	

Wind Speed Data Form Mfg Serial Number Ta Site **Technician** Site Visit Date Parameter Owner ID Wind Speed 01029 illegible BVL130 Eric Hebert 07/31/2013 Climatronics Parameter wind speed Mfg RM Young Tfer Desc. wind speed motor (I Serial Number 01261 Tfer ID 1.00000 0.00000 **Slope Intercept** 1434 Prop or Cups SN 0.3 **to** 0.4 **Prop or Cups Torque Cert Date** 1/13/2010 CorrCoff 1.00000 **Prop Correction Fact** N/A RM Young Parameter wind speed Mfg Tfer Desc. wind speed motor (h **Serial Number** 01262 Tfer ID 1.00000 0.00000 Slope **Intercept** 1/13/2010 1.00000 **Cert Date** CorrCoff **DAS 1: DAS 2:** Low Range **High Range** Low Range **High Range** 0.02 0.00% Abs Avg Err 0.05 0.00% Abs Max Er UseDescription: InputDevice: Input RPM: Output V: Diff/ % Diff: Difference: Input m/s: DAS m/s: none 0 0.20 0.000 0.2 0.02 primary 01261 50 1.40 0.000 1.4 0.00 primary primary 01261 100 2.57 0.000 2.6 0.05 4.22 4.2 01261 170 0.000 0.00primary 6.1 primary 01261 250 6.10 0.000 0.00% 11.97 12.0 0.00% primary 01262 500 0.000 01262 800 19.02 0.000 19.0 0.00% primary primary 01262 2000 47.22 0.000 47.2 0.00% Sensor Component | Condition Status pass **Condition** Fair Sensor Component | Sensor Plumb Condition Plumb **Status** pass **Sensor Component** Torque **Condition** Good Status pass Sensor Component | Sensor Heater **Condition** Not functioning **Status** Fail Sensor Component Prop or Cups Condition **Condition** Good Status pass Sensor Component | System Memo **Status** pass Condition

Wind Direction Data Form

Sensor Component Vane Condition

Sensor Component System Memo

Mfg	Serial Number	er Ta Site		Technician	Site V	isit Date Para	ameter	Owner ID
Climatronics	3217	BVL130		Eric Hebert	07/31	/2013 Wind	d Direction	03709
				Mfg Serial Nur	Ushika		Parameter Tfer Desc.	wind direction
				Tfer ID	01265	<u>'</u>	Her Desc.	папоп
Vane SN: 5	58	C. A. Align. de	g. true:	Slope		1.00000 I	ntercept	0.00000
VaneTorque _	8 to 1	0	358	Cert Date		1/4/2011	CorrCoff	1.00000
				Mfg	RM Yo	oung	Parameter	wind direction
				Serial Nur	nber		Tfer Desc.	wind direction wheel
				Tfer ID	01266			
	DAS 1: Orientation Lin		AS 2:	Linearity:				
Abs Avg Err	2.3	1.8						
Abs Max Er	4	7						
UseDescription		Input Raw:	Linearity	Output V:	Output Deg	.: Difference:		Error:
primary	01266	0	V	0.000	1		1 47	2
primary	01266	45	✓	0.000	39		5 38	-7
primary primary	01266 01266	90	V	0.000	84 129		5 45 6 45	0
primary	01266	180	V	0.000	176		4 47	2
primary	01266	225	<u> </u>	0.000	222		3 46	1
primary	01266	270	V	0.000	268		2 46	1
primary	01266	315	✓	0.000	314		1 46	1
primary	01265	88		0.000	84	4	4	4
primary	01265	178		0.000	176		2	2
primary	01265	268		0.000	268)	0
primary	01265	358	Ш	0.000	1		3	3
Sensor Comp				ition Good			pass	
Sensor Comp	Condition		Cond	ition Poor		Stat	Fail	
Sensor Comp	onent Sensor Hea	iter	Cond	ition Not func	tioning	Stat	Fail	
Sensor Comp	Sensor Plur	mb	Cond	ition Plumb		Stat	pass	
Sensor Comp	ponent Torque		Cond	ition Good		Stat	pass	

Condition Good

Condition See comments

Status pass

Status pass

Temperature Data Form Serial Number Tag Site **Technician** Site Visit Date Parameter **Owner ID** Mfg BVL130 Eric Hebert 07/31/2013 Temperature 06690 Climatronics none **Parameter** Temperature Mfg Extech Tfer Desc. RTD H232679 **Serial Number** 01228 Tfer ID 1.00732 -0.12380 **Slope Intercept DAS 1: DAS 2:** 1/12/2013 1.00000 Abs Avg Err Abs Max Er Abs Avg Err Abs Max Er **Cert Date** CorrCoff 0.14 0.25 InputTmpRaw | InputTmpCorr.: | OutputTmpSignal: | OutputSignalEng: | OSE Unit: | Difference: UseDesc.: Test type: 0.29 primary Temp Low Range 0.17 0.000 0.54 C 0.25 24.59 24.53 0.000 $\overline{\mathbf{C}}$ 0.12 primary Temp Mid Range 24.65 Temp High Range 46.06 0.00045.79 C -0.06 primary 45.85 Condition Moderately clean Sensor Component | Shield Status pass Sensor Component Blower Status Switch **Condition** N/A **Status** pass **Sensor Component** Blower **Condition** Functioning **Status** pass Sensor Component System Memo Condition **Status** pass

2 Meter Temperature Data For Calc. Difference **Technician** Site Visit Date Parameter Mfg Serial Number Ta Site **Owner ID** BVL130 Climatronics Eric Hebert 07/31/2013 Temperature2meter 06689 none Mfg Extech **Parameter** Temperature Tfer Desc. RTD H232679 **Serial Number** 01228 Tfer ID **Slope** 1.00732 **Intercept** -0.12380 **DAS 1: DAS 2: Cert Date** 1/12/2013 1.00000 CorrCoff Abs Avg Err Abs Max Er Abs Avg Err **Abs Max Er** 0.31 0.47 InputTmpRaw | InputTmpCorrected: | OutputTmpSignal: | OutputSignalEng: | OSE Unit: | Difference: UseDescription: Test type: 0.000 0.49 C primary Temp Low Rang 0.05 0.17 0.32 Temp Mid Rang 24.59 0.000 24.66 C 0.13 primary 24.53 -0.47 primary Temp High Ran 45.98 45.77 0.000 45.30 C Sensor Component Blower Status Switch **Condition** N/A **Status** pass Sensor Component System Memo **Condition Status** pass **Sensor Component** Blower **Condition** Functioning **Status** pass Sensor Component | Properly Sited Condition Properly sited Status pass Sensor Component | Shield **Condition** Moderately clean **Status** pass

Humidity Data Form Serial Number Tag Site **Technician** Site Visit Date Parameter **Owner ID** Mfg BVL130 Relative Humidity Vaisala A2410001 Eric Hebert 07/31/2013 06008 Rotronic Mfg Parameter Relative Humidity Tfer Desc. Hygroclip 124432 **Serial Number** 01225 Tfer ID 1.00000 0.00000 Slope **Intercept** 1/29/2013 1.00000 **Cert Date** CorrCoff **DAS 1: DAS 2:** Low Range **High Range** Low Range **High Range** Abs Avg Err 1.9 8.0 2.0 8.0 Abs Max Er UseDesc.: Test type: Device: Input RH: GTL Raw: RH Corr.: DAS Volts: DAS %RH: Difference: RH Low Range primary Hygroclip 32.8 0.0 32.8 0.308 30.8 -2.0-1.7 primary RH Low Range Hygroclip 52.9 0.0 52.9 0.512 51.2 primary RH High Range Hygroclip 93.6 0.0 93.6 0.928 92.8 -0.8 **Sensor Component** System Memo **Status** pass **Condition** Sensor Component Blower **Condition** Functioning Status pass Sensor Component Blower Status Switch **Condition** N/A Status pass Sensor Component | RH Filter **Condition** Moderately clean **Status** pass Sensor Component | Shield **Condition** Moderately clean **Status** pass

Precipitation Data Form

Mfg	Ser	ial Number Ta	Site	Т	echnician		Site Visi	it Date	Paramet	er	Owner ID
Climatronics	ille	gible	BVL130	E	ric Hebert		07/31/2	013	Precipita	tion	810899
					Mfg		PMP				recipitation
DAS 1: A Avg % Diff 4.0%		DAS 2: M Di A Avg 9 4.0%	∕₀Dif A]	Max % Di	Serial Nur Tfer ID		EW-061: 01250	34-50	Tfe	r Desc. 2	50ml graduate
					Slope			1.0000	0 Inter	cept	0.00000
					Cert Date			9/5/200	5 Corr	Coff	1.00000
UseDesc.	Test typ	e: TferVolume	: Iteration:	TimePerTip	: Eq.Ht:	DAS	eng: Eq.	HtUnit:	OSE Uni	t: TferUni	ts:PctDifference
primary	test 1	231.5	1	10 sec	0.50	0.4		in	in	ml	-4.0%
primary	test 2	231.5	2	10 sec	0.50	0.4	18	in	in	ml	-4.0%
Sensor Com	ponent S	ystem Memo		Condit	ion See com	ments			Status	oass	
Sensor Com	ponent S	ensor Heater		Condit	ion Function	ing			Status	oass	
Sensor Com	ponent	roperly Sited		Condit	ion See com	ments			Status	oass	
Sensor Com	ponent	Sauge Drain Scre	en	Condit	ion Not insta	lled			Status	-ail	
Sensor Com	ponent L	evel		Condit	ion Level				Status	ass	
Sensor Com	ponent G	Sauge Clean		Condit	ion Moderat	ely clea	ın		Status	oass	
Sensor Com	nponent F	unnel Clean		Condit	ion Moderat	ely clea	ın		Status	oass	
Sensor Com	ponent C	Condition		Condit	ion Fair				Status	ass	
Sensor Com	ponent	Sauge Screen		Condit	ion Installed				Status	oass	

Infrastructure Data For

Site ID	BVL130	Technician	Eric Hebert	Site Visit Date	07/31/2013

Shelter Make	Shelter Model	Shelter Size
Ekto	8810 (s/n 2140-1)	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	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	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	Fair	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

Shelter Temperature Data For

Mfg	Ifg Serial Number Tag Site T		Technician	Site Visit Date	Parameter	Owner ID
Campbell unknown BVL130 E		Eric Hebert	07/31/2013	Shelter Temperature	none	
DAS 1:	DAS 2:		Mfg	Extech	Parameter Sho	elter Temperatur
Abs Avg Err Abs 0.36	S Max Er Abs Avg 0.47	Err Abs Max Er	Serial Number	H232679	Tfer Desc. RT	D
			Tfer ID	01228		
			Slope	1.00732	2 Intercept	-0.12380
			Cert Date	1/12/2013	B CorrCoff	1.00000

UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	23.20	23.15	0.000	23.6	С	0.43
primary	Temp Mid Range	23.90	23.85	0.000	24.3	С	0.47
primary	Temp Mid Range	24.72	24.66	0.000	24.5	C	-0.17

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	d Problem
Precipitation Objects violate the 45 c	BVL130 egree rule for the	Eric Hebert e tipping bucket rain	07/31/2013 n gage.	Properly Sited	Climatronics	3422		✓
Wind Direction The upper and lower se	BVL130 ctions of the win	Eric Hebert	07/31/2013	Condition	Climatronics mature failure of t	3062 he sensor and car	affect dat	a accuracy.

Field Systems Comments

1 Parameter: DasComments

The tower pin which prevents the tower from tilting is missing from the leg of the tower.

2 Parameter: SiteOpsProcedures

Ozone sample line leak-checks are performed every 2 weeks.

3 Parameter: SitingCriteriaCom

The site is located in an agricultural and atmospheric research center. There are crops within 50 meters.

4 Parameter: ShelterCleanNotes

The shelter is clean and well organized.

5 Parameter: MetSensorComme

The tipping bucket rain gage is mounted near the towers and in violation of the 45 degree rule.

6 Parameter: MetOpMaintCom

The wind sensor crossarm signal cable is showing signs of wear. The wind sensor heaters are not functioning.

F-02058-1500-S1-rev001

Site ID BVL130	Technician Eric Hebert	Site Visit Date 07/31/2013						
Site Sponsor (agency)	EPA	USGS Map	Bondville					
Operating Group	ISWS	Map Scale						
AQS#	17-019-1001	Map Date						
Meteorological Type	Climatronics							
Air Pollutant Analyzer	Ozone, IMPROVE	QAPP Latitude	40.0520					
Deposition Measurement	dry, wet, Hg	QAPP Longitude	-88.3725					
Land Use	agricultural	QAPP Elevation Meters	212					
Terrain	flat	QAPP Declination	-2.1					
Conforms to MLM	Yes	QAPP Declination Date	9/16/2005					
Site Telephone	(217) 863-2602	Audit Latitude	40.052021					
Site Address 1	Bondville Road Research Station	Audit Longitude	-88.372481					
Site Address 2		Audit Elevation	213					
County	Champaign	Audit Declination	-2.9					
City, State	Seymour, IL	Present						
Zip Code	61875	Fire Extinguisher	No inspection date					
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 <a>✓	Make Ekto M	odel 8810 (s/n 2140-1)	Shelter Size 640 cuft					
Shelter Clean	Notes The shelter is clean and well o	rganized.						
Site OK	Notes							
(north								

F-02058-1500-S2-rev001

Site ID BVL130 Technician Eric Hebert Site Visit Date 07/31/2013

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km	7775 dis 1,774 (1,157) 1 (V
Major industrial complex	10 to 20 km		✓
City > 50,000 population	40 km		✓
City 10,000 to 50,000 population	10 km		V
City 1,000 to 10,000 population	5 km		V
Major highway, airport or rail yard	2 km		V
Secondary road, heavily traveled	500 m		✓
Secondary road, lightly traveled	200 m		V
Feedlot operations	500 m		✓
Intensive agricultural ops (including aerial spraying)	500 m		
Limited agricultural operations	200 m	50 m	
Large parking lot	200 m		
Small parking lot	100 m		
Tree line	50 m		V
Obstacles to wind	10 times obstacle height		✓

Siting Distances OK ✓

Siting Criteria Comment

The site is located in an agricultural and atmospheric research center. There are crops within 50 meters.

Field S	ystems	Data	Form
	, Declar	- utu	

F-02058-1500-S3-rev001

Site	e ID		BVL130	Technician	Eric Hebert		Site Visit Date 07/31/2013	
1			l speed and dire luenced by obst	ction sensors sited s ructions?	so as to avoid	✓		
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)				ne tower or on a	V		
3 Are the tower and sensors plumb?		V						
4 Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?			✓					
5	conc	ditior face a	ns? (i.e. ground	I sensors sited to av below sensors shoul loped. Ridges, hollo e avoided)	d be natural	V		
6	Is th	he sol	ar radiation ser	sor plumb?		~		
7	Is it ligh		l to avoid shadii	ng, or any artificial	or reflected	V		
8	Is th	he rai	in gauge plumb'			✓		
9		t sited vers, e		ring effects from bu	ildings, trees,		Violation of 45 degree rule	
10		he sui		nsor sited with the	grid surface	✓		
11	Is it	t incl	ined approxima	tely 30 degrees?		✓		
nat	ural	or m	an-made, that n	nay affect the monit	oring parameter	s:	y) regarding conditions listed above, or	any other features,
The	tippi	ing bu	ıcket rain gage is	mounted near the to	wers and in violati	on of	the 45 degree rule.	

Field Sy	vstems	Data	Form
	DECTION	- uu	

F-02058-1500-S4-rev001

Site II	BVL130	Technician	Eric Hebert		Site Visit Date 07/31/20)13	
	o all the meterologic ondition, and well m	cal sensors appear to be aintained?	intact, in good	V	64 (SEE) (1970) (1970) (1970) (1970) (1970) (1970) (1970) (1970) (1970) (1970) (1970) (1970) (1970) (1970) (19		
	re all the meteorolog porting data?	gical sensors operationa	l online, and	✓			
3 A	re the shields for the	e temperature and RH s	sensors clean?	✓			
4 Aı	Are the aspirated motors working?						
	Is the solar radiation sensor's lens clean and free of scratches?						
6 Is the surface wetness sensor grid clean and undamaged?				✓			
co	ndition, and well m	and power cables intact aintained? and power cable connec			Wind crossarm heater and s	signal wire	
	om the elements and	d well maintained?					
Paran	ieter	Manufacturer	Model		S/N	Clie	ent ID
Met to	wer	Climatronics	14 inch ta	oer	none	027	38
Shield	(10 meter)	Climatronics	100325		1494	020	42
Shield	(2 meter)	Climatronics	100325		missing	050	15
Tempe	erature	Climatronics	100093		none	066	90
Tempe	erature2meter	Climatronics	100093		none	066	89
Wind E	Direction	Climatronics	100076		3217	037	09
Precipi	tation	Climatronics	100508-2		illegible	810	899
Solar F	Radiation	Licor	LI-200		PY10653	045	66
Relativ	e Humidity	Vaisala	HMP50UA	1	A2410001	060	08
Wind S	Speed	Climatronics	100075	*******	illegible	010	29
atural	or man-made, that	may affect the monitor	ing parameters:		regarding conditions listed		y other features,
ne win	u sensor crossann sig	grial cable is showing sign	is of weat. The w	iiiu se	nsor neaters are not junctio	ımıy.	

F-02058-1500-S5-rev001

Site	· ID	BVL130	Technician	Eric Hebert		Site Visit Date	7/31/2013		
	Siting (Criteria: Are the p	ollutant analyzers a	nd deposition ed	uipme	ent sited in accord	ance with 40 CFR :	58. Appendix E	
1	Do the		at least a 270 degre		V				
2	Are the	e sample inlets 3 - 1	5 meters above the	ground?					
3		e sample inlets > 1 meters from trees	meter from any ma ?	jor obstruction,	V				
	Polluta	nt analyzers and d	eposition equipmen	t operations and	main	tenance			
1	Do the analyzers and equipment appear to be in good condition and well maintained?					e por establishment out and a second of the			
2	Are the analyzers and monitors operational, on-line, and reporting data?								
3	Describe ozone sample tube.					/4 teflon by 12 meter	ers		
4	Describ	oe dry dep sample	tube.		3.	/8 teflon by 12 meter	ers		
5	Are in-line filters used in the ozone sample line? (if yes indicate location)				At inlet only				
6	Are sar		ee of kinks, moistur	e, and	V				
7	Is the z	ero air supply desi	ccant unsaturated?		V				
8	Are the	ere moisture traps	in the sample lines?		V				
9	Is there clean?	e a rotometer in the	e dry deposition filt	er line, and is it	✓ C	lean and dry			
Par	ameter		Manufacturer	Model		S/N	Cl	ient ID	
Ozo	one		ThermoElectron In	c 49i A1NA	NEDWINE	1009241797	00	0625	
Filte	er pack fl	low pump	Thomas	107CAB18		050400022576	06	019	
San	nple Tow	ver	Aluma Tower	В	(Alabarata)	unknown	00	0182	
Zer	Zero air pump Teledyne 701H			701H		576 000759			
			tion (photograph or affect the monitor		ary) r	egarding condition	ns listed above, or a	nny other feature	es,
STA									

F-02058-1500-S6-rev001

Site	ID	BVL130	Technician	Eric Hebert		Site Visit	Date 07/3	31/2013		
	DAS, se	ensor translators	s, and peripheral equip	ment operatio	ns ai	nd maintenan	<u>ce</u>			
1		DAS instrument intained?	s appear to be in good	condition and	✓					
2		the components , backup, etc)	of the DAS operationa	l? (printers,	✓					
3		analyzer and ser g protection cir	nsor signal leads pass tl cuitry?	hrough	✓	Met sensors o	only			
4		signal connection intained?	ons protected from the	weather and	V					
5	Are the	signal leads con	nected to the correct D	OAS channel?	✓					000000000000000000000000000000000000000
6	Are the ground		nnslators, and shelter p	roperly	✓					STORY BUTTON
7	Does th	e instrument she	elter have a stable pow	er source?	✓					
8	Is the in	strument shelte	r temperature controll	ed?	✓					000000000000000000000000000000000000000
9	Is the m	net tower stable	and grounded?			Stable 🗸		Grounde	ed	
10	Is the sa	ample tower stal	ble and grounded?			V		V		
11	Tower	comments?								A CONTRACTOR OF THE PARTY OF TH
Par	ameter		Manufacturer	Model		S/N		C	lient ID	
Cor	nputer		Dell	D520	20022000	8SFNH	IB1	0	00297	
DAS	3		Campbell	CR3000	2220000	2539		0	00424	
Mod			Raven	H4223-C	mesen	084435		0	6610	
Sola	ar Radiat	ion Translator	RM Young	70101-X		none		0-	4340	
			anation (photograph o may affect the monitor			y) regarding	condition	s listed above, o	r any other features,	
The	tower pi	n which prevents	the tower from tilting is r	nissing from the	leg	of the tower.				

F-02058-1500-S7-rev001

BVL130		Tech	nician Er	ic Hebert	207 1300	Site Visit Da	te 07/31/2	013		
Downwartsting										
<u>Documentation</u>										
Does the site have the required instrument and equipment manuals?										
Vind speed sensor	Yes 🗸	No	N/A	Date	a logg	er	Yes		No ✓	N/A
Vind direction sensor	✓		H		a logg					✓
'emperature sensor	✓		H			rt recorder			Ä	✓
elative humidity sensor		<u>✓</u>	H	STATE OF THE STATE	npute		✓			
olar radiation sensor			H	Mod	5000000				✓	Ē
urface wetness sensor		✓		Prin					<u></u> ✓	
Vind sensor translator	H		✓			oump			✓	
emperature translator			✓		204/05/2017	w pump			✓	
lumidity sensor translator			✓			otector				
olar radiation translator		✓		UPS	100 (100)				✓	
ipping bucket rain gauge	✓					g protection devi	ice \square			✓
zone analyzer	V				lter h				✓	
ilter pack flow controller		✓		Shel	lter ai	r conditioner			✓	
lter pack MFC power supply	, 🗆	✓								
Does the site have the requ	iired a	nd mo	st recent (OC documen	its an	d report forms?				
	Prese	A Vest						rren		
ation Log		/				1	Cu			
SRF		<u> </u>						✓		
te Ops Manual			Oct 2011					✓		
ASP			Oct 2011					✓		
eld Ops Manual			0012011							
llibration Reports						<u> </u>				
zone z/s/p Control Charts										
eventive maintenance schedu	al [
Is the station log properly	compl	leted d	luring eve	ery site visit?	✓					
2 Are the Site Status Report	t Form	ıs bein	g complet	ted and	V					
current?										
current?		3 Are the chain-of-custody forms properly used to document sample transfer to and from lab? ✓								
Are the chain-of-custody f			rly used to	document	•					
3 Are the chain-of-custody f	om lab	?				Control charts no	t used			
Are the chain-of-custody f sample transfer to and fro Are ozone z/s/p control chacurrent?	om labʻ ıarts pı	? roperl	y complet	ed and				ed al	nove	or any
Are the chain-of-custody f sample transfer to and fro Are ozone z/s/p control ch current?	om lab narts pr ation (p	? roperl; photog	y complet graph or s	ed and ketch if nece	ssary			ed at	oove,	or any
3 Are the chain-of-custody f sample transfer to and fro 4 Are ozone z/s/p control chacurrent? rovide any additional explana	om lab narts pr ation (p	? roperl; photog	y complet graph or s	ed and ketch if nece	ssary			ed al	oove,	or any
3 Are the chain-of-custody f sample transfer to and fro 4 Are ozone z/s/p control ch	om lab narts pr ation (p	? roperl; photog	y complet graph or s	ed and ketch if nece	ssary			ed al	00ve,	or any (

F-02058-1500-S8-rev001

Site ID	BVL130	Technician	Eric Hebert	Site Visit Date	07/31/2013	
Cito c	operation procedures					
1 Has t	the site operator attended se? If yes, when and who i		NET training 🗸	at ESE in 1986		
2 Has t	the backup operator atten ing course? If yes, when a	nded a formal C	AND THE PROPERTY OF STREET, BUT DO SHOULD BE S			
	site visited regularly on t					
	he standard CASTNET opwed by the site operator?	perational proc	edures being 🔽			
5 Is the the re	site operator(s) knowledgequired site activities? (inc		ar to the contract of the cont			
Are re	egular operational QA/Q0	C checks perfor	med on meteorolo	gical instruments?		
QC Check	x Performed		Frequency		Compliant	
Multipoin	t Calibrations	~	Semiannually		✓	
Visual Ins		~	Daily		V	
Translato	r Zero/Span Tests (climat	tronics)	N/A	H. 5200091 100 HO. 1200 LO SE SE	V	
Manual R	tain Gauge Test	✓	Weekly	PRODUCTION OF CHILD AND AN ARCHITECTURE	✓	
Confirm I	Reasonableness of Curren	nt Values	Weekly		✓	
Test Surfa	ace Wetness Response	✓	Weekly		V	
Arer	egular operational QA/Q0	C checks perfor	med on the ozone	analyzer?		
QC Check	k Performed		Frequency		Compliant	
		✓				
Multi-poir	nt Calibrations	∨	Semiannually		✓	
Multi-poin	nt Calibrations c Zero/Span Tests	✓ ✓ ✓	Semiannually Daily			
Multi-poir Automatic Manual Z	nt Calibrations c Zero/Span Tests ero/Span Tests	V	Semiannually Daily As needed		✓ ✓	
Multi-poin Automatic Manual Z Automatic	nt Calibrations c Zero/Span Tests tero/Span Tests c Precision Level Tests	∨	Semiannually Daily			
Multi-poin Automatic Manual Z Automatic Manual P	nt Calibrations c Zero/Span Tests dero/Span Tests c Precision Level Tests drecision Level Test	✓✓✓	Semiannually Daily As needed Daily As needed			
Multi-poin Automatic Manual Z Automatic Manual P Analyzer	nt Calibrations c Zero/Span Tests dero/Span Tests c Precision Level Tests derecision Level Test Diagnostics Tests		Semiannually Daily As needed Daily			
Multi-poin Automatic Manual Z Automatic Manual P Analyzer I In-line Fil	nt Calibrations c Zero/Span Tests dero/Span Tests c Precision Level Tests drecision Level Test		Semiannually Daily As needed Daily As needed Weekly			
Multi-poin Automatic Manual Z Automatic Manual P Analyzer I In-line Fil	nt Calibrations c Zero/Span Tests dero/Span Tests c Precision Level Tests recision Level Test Diagnostics Tests lter Replacement (at inlet)	v v v	Semiannually Daily As needed Daily As needed Weekly Every 2 weeks			
Multi-poin Automatic Manual Z Automatic Manual P Analyzer In-line Fil In-line Fil Sample Li	nt Calibrations c Zero/Span Tests dero/Span Tests c Precision Level Tests derecision Level Test Diagnostics Tests derecision Level Test derecision Level Test	v v v	Semiannually Daily As needed Daily As needed Weekly Every 2 weeks N/A			
Multi-poin Automatic Manual Z Automatic Manual P Analyzer I In-line Fil In-line Fil Sample Li Zero Air I 1 Do manual	nt Calibrations c Zero/Span Tests dero/Span Tests dero/Deschool Level Test dero/Deschool Level Test dero/Deschool Level Test dero/Span Tests dero/Deschape dero/	yze ss go through these?	Semiannually Daily As needed Daily As needed Weekly Every 2 weeks N/A Weekly Weekly	Unknown		
Multi-poin Automatic Manual Z Automatic Manual P Analyzer In-line Fil In-line Fil Sample Li Zero Air I 1 Do my sample 2 Do au	nt Calibrations c Zero/Span Tests dero/Span Tests dero/Dero/Span Tests dero/Dero/Span Tests dero/Dero/Dero/Dero/Dero/Dero/Dero/Dero/D	yze es go through the se? gasses go through the ses?	Semiannually Daily As needed Daily As needed Weekly Every 2 weeks N/A Weekly Weekly	Unknown		
Multi-poin Automatic Manual Z Automatic Manual P Analyzer I In-line Fil In-line Fil Sample Li Zero Air I 1 Do m sampl 2 Do au compl 3 Are th	nt Calibrations c Zero/Span Tests dero/Span Tests dero/Deschool Level Test dero/Deschool Level Test dero/Deschool Level Test dero/Span Tests dero/Deschape dero/	yze es go through thes? gasses go through gall filters?	Semiannually Daily As needed Daily As needed Weekly Every 2 weeks N/A Weekly Weekly Weekly Ite complete	Unknown SSRF, call-in		
Multi-poin Automatic Manual Z Automatic Manual P Analyzer In-line Fil In-line Fil Sample Li Zero Air I 1 Do ma sampl 2 Do au compl 3 Are th report	nt Calibrations c Zero/Span Tests cero/Span Level Test cero/Span Test cero/Sp	yze ss go through the service of the monitoring of the service of	Semiannually Daily As needed Daily As needed Weekly Every 2 weeks N/A Weekly Weekly weekly It complete Ingh the Sketch if necessaring parameters:	SSRF, call-in		any other features,

F-02058-1500-S9-rev001

Site	e ID	BVL130	Tecl	nnician	Eric Hebert		Site Visit Dat	te 07/31/2013			
	Site op	eration procedures									
1	Is the f	ilter pack being change	d every	Tuesda	ay as scheduled	? '	Filter changed mo	prinings			
2	Are the	e Site Status Report For tly?	ms bei	ng comj	pleted and filed	✓					
3	Are da schedu	ta downloads and backt led?	ıps bei	ng perfo	ormed as		No longer required	d			
4	Are ge	neral observations being	g made	and red	corded? How?	✓	SSRF				
5	Are sit	e supplies on-hand and	repleni	shed in	a timely	✓					
6	Are sa	mple flow rates recorded	d? Hov	v?		✓	SSRF, call-in				
7	Are sa	mples sent to the lab on 1?	a regu	lar sche	dule in a timely	✓					
8	Are filters protected from contamination during handling and shipping? How?						Clean gloves on and off				
9											
QC	Check l	Performed		Free	quency			Compliant			
N	Aulti-po	int MFC Calibrations		✓ Sem	iannually	(A) (A)					
F	low Sys	tem Leak Checks		Wee	ekly						
F	ilter Pa	ck Inspection				H400 II Z4					
		te Setting Checks		Wee	SERVICE CONTRACTOR OF THE PROPERTY OF THE PROP	e manera					
		heck of Flow Rate Rotor		Wee	PERSONAL PROPERTY OF THE PROPE	120000					
		ilter Inspection/Replace		CTP/OLC	niannually	2000,7770					
S	ample I	ine Check for Dirt/Wat	er	Wee	ekly	629	V				
		additional explanation (an-made, that may affe					y) regarding condi	itions listed above, or any other features,			

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
VIN	140-Sandy	Grenville-08/23/2013				
1	8/23/2013	Computer	Dell	000246	D520	unknown
2	8/23/2013	DAS	Campbell	000358	CR3000	2136
3	8/23/2013	Elevation	Elevation	None	1	None
4	8/23/2013	Filter pack flow pump	Thomas	04920	107CAB18	060300019956
5	8/23/2013	Flow Rate	Apex	000657	AXMC105LPMDPCV	54772
6	8/23/2013	Infrastructure	Infrastructure	none	none	none
7	8/23/2013	Modem	Raven	06461	V4221-V	0808338875
8	8/23/2013	Ozone	ThermoElectron Inc	000630	49i A1NAA	1009241798
9	8/23/2013	Ozone Standard	ThermoElectron Inc	000435	49i A3NAA	CM08200011
10	8/23/2013	Sample Tower	Aluma Tower	000137	В	none
11	8/23/2013	Shelter Temperature	Campbell	none	107-L	none
12	8/23/2013	Siting Criteria	Siting Criteria	None	1	None
13	8/23/2013	Temperature	Climatronics	06686	100093	none
14	8/23/2013	Zero air pump	Werther International	06906	C 70/4	000821908

DAS Data Form 0 **DAS Time Max Error:** Serial Number Site **Technician** Site Visit Date Parameter Use Desc. Mfg Campbell 2136 VIN140 Sandy Grenville 08/23/2013 DAS Primary Das Date: 8 /23/2013 **Audit Date** 8 /23/2013 Datel **Parameter** DAS Mfg 13:24:04 13:24:04 Das Time: **Audit Time** 15510194 Tfer Desc. Source generator (D **Serial Number** Das Day: 235 **Audit Day** 235 Tfer ID 01320 **Low Channel: High Channel: Avg Diff: Max Diff: Avg Diff: Max Diff:** 1.00000 0.00000 Slope **Intercept** 0.0001 0.0001 0.0001 0.0001 2/13/2012 1.00000 **Cert Date** CorrCoff Fluke **Parameter** DAS Mfg **Serial Number** 95740135 Tfer Desc. DVM 01311 Tfer ID 1.00000 0.00000 Slope **Intercept** 1/26/2013 1.00000 **Cert Date** CorrCoff Channel Input **DVM** Output **DAS** Output InputUnit OutputUnit Difference 0.0000 -0.0002 -0.0002 0.0000 V V 4 0.1000 0.0997 0.0998 0.0001

0.2996

0.4996

0.6995

0.8994

0.9993

V

V

V

V

V

V

V

V

V

V

0.0000

0.0001

0.0001

0.0001

0.0001

4

4

4

4

4

0.3000

0.5000

0.7000

0.9000

1.0000

0.2996

0.4995

0.6994

0.8993

0.9992

Flow Data Form

Apex	54772								
			VIN140	Sa	andy Grenville	08/23/2013	Flow R	ate	000657
					Mfg	BIOS	P	arameter Fl	ow Rate
					Serial Number	103471	Т	fer Desc. ne	exus
					Tfer ID	01420			
					Slope	1.	00000 Inte	ercept	0.00000
					Cert Date	6/13	3/2012 Cor	rCoff	1.00000
					Mfg	BIOS	P	arameter Fl	ow Rate
					Serial Number	103424	T	fer Desc. Bl	OS cell
					Tfer ID	01410			
					Slope	1.	00000 Inte	ercept	0.00000
					Cert Date			rCoff	1.00000
DAS 1:		DAS 2:		0.4 = 4	Cal Factor Z		-0.0		
A Avg % Diff: A		A Avg %	Dif A Max	x % Di	Cal Factor F		0.9	=	
0.99%	0.99%				Rotometer R			.5	
UseDescription:	Test type:	•	n: Input STP:	MfcDisp.					ll PctDifference
	pump off	0.000	0.000	0.03	0.026	-0.02	1/m	1/m	
primary	leak check	0.000	0.000	0.05	0.052	0.01	1/m	l/m	
primary	test pt 1	1.538	1.515	1.54	1.537	1.50	1/m	1/m	-0.99%
primary	test pt 2	1.540	1.515	1.54	1.535	1.50	1/m	1/m	-0.99%
primary	test pt 3	1.539	1.515	1.54	1.537	1.50	1/m	1/m	-0.99%
Sensor Compo	nent Leak Tes	t		Condition	on		Status	pass	
Sensor Compo	nent Filter Azir	muth		Conditio	105 deg		Status	pass	
Sensor Compo	nent Filter Dep	oth		Condition	2.8 cm		Status	pass	
Sensor Compo	nent Filter Pos	sition		Conditio	Good		Status	pass	
Sensor Compo	nent Moisture	Present		Condition	No moisture p	resent	Status	pass	
Sensor Compo	nent Rotomete	er Conditio	on	Condition	Clean and dry		Status	pass	
Sensor Compo				Condition			Status		
Sensor Compo				Condition			Status		
Sensor Compo				_	5.0 cm		Status		

Ozone Data Form

Mfg S	erial Number Ta	Site	Tec	chnician		Site Visi	t Date P	Parame	eter	Owner ID
ThermoElectron Inc 1	1009241798	VIN140	Sa	andy Grer	ville	08/23/20)13 C	Dzone		000630
Slope: 1.0)4434 Slope:	0.00000		Mfg		ThermoE	lectron In	c Pa	rameter 0	zone
Intercept 0.0	7624 Intercept	0.00000)	Serial N	umber	49C-731	04-373	Tfe	er Desc.	zone transfer
CorrCoff 0.9	Opposition CorrCoff	0.00000)	Tfer ID		01100				
DAS 1:	DAS 2:						4.00000	. .		0.47004
A Avg % Diff: A Ma		6Dif A Max %	% Di	Slope			1.00308	Inter	•	-0.17961
4.6%	6.1%			Cert Da	te		4/2/2013	Corr	Coff	1.00000
UseDescription:	ConcGroup:	Tfer Raw:	Tfer (Si	te:	Site U	Jnit:	PctDi	fference:
primary	1	0.05	0.2				ppb			
primary	2	31.25	31.				ppb			4.31%
primary	3	50.30	50.				ppb			6.06%
primary	4	80.48	80.				ppb			2.35%
primary	5	103.06	102			3.60	ppb			5.52%
Sensor Component	Cell B Noise		Conditio	0.7 pp	b		S	Status	pass	
Sensor Component	Cell B Tmp.		Conditio	on				Status	pass	
Sensor Component	Fullscale Voltage		Conditio	n N/A			S	Status	pass	
Sensor Component	Inlet Filter Condition	n	Conditio	Clean			S	Status	pass	
Sensor Component	Line Loss		Condition About 3%			S	Status	pass		
Sensor Component	Offset		Condition 0.4			S	Status	pass		
Sensor Component	Span		Condition 1.066			S	Status	pass		
Sensor Component	Cell B Freq.		Condition 88.2 kHz			S	Status	pass		
Sensor Component	System Memo		Conditio	on		Status		pass		
Sensor Component	Sample Train		Conditio	Good		Status F			pass	
Sensor Component	Cell B Pressure		Conditio	on			S	Status	pass	
Sensor Component	Cell B Flow		Conditio	0.68 lp	om			Status	pass	
Sensor Component	Cell A Tmp.		Conditio	36.3 C	;			Status	pass	
Sensor Component	Cell A Pressure		Conditio	723.8	mmHg		S	Status	pass	
Sensor Component	Cell A Noise		Conditio	1.0 pp	b			Status	pass	
Sensor Component	Cell A Freq.		Conditio	83.9 k	Hz		S	Status	pass	
Sensor Component	Cell A Flow		Conditio	0.68 lp	om		S	Status	pass	
Sensor Component	Battery Backup		Conditio	N/A				Status	pass	
Sensor Component	Zero Voltage		Conditio	N/A			S	Status	pass	

Temperature Data Form Serial Number Tag Site **Technician** Site Visit Date Parameter **Owner ID** Mfg VIN140 Sandy Grenville Temperature 06686 Climatronics none 08/23/2013 **Parameter** Temperature Mfg Extech Tfer Desc. RTD H232734 **Serial Number** 01227 Tfer ID 1.00435 -0.08480 **Slope Intercept DAS 1: DAS 2:** 1/12/2013 1.00000 Abs Avg Err Abs Max Er Abs Avg Err Abs Max Er **Cert Date** CorrCoff 0.21 0.37 InputTmpRaw | InputTmpCorr.: | OutputTmpSignal: | OutputSignalEng: | OSE Unit: | Difference: UseDesc.: Test type: 0.37 primary 0.80 0.88 0.000 1.3 C 23.47 23.45 0.000 23.5 $\overline{\mathbf{C}}$ 0.02 primary 49.70 49.57 0.00049.8 C 0.24 primary Condition Moderately clean Sensor Component | Shield Status pass Sensor Component Blower Status Switch **Condition** N/A **Status** pass **Condition** Not functioning **Sensor Component** Blower **Status** Fail Sensor Component System Memo Condition **Status** pass

Infrastructure Data For

Si	te ID	VIN140	Technician	Sandy Grenville	Site Visit Date	08/23/2013	
	Shelter Ma	ake	Shelter Model	She	elter Size		
	Ekto		8810 (s/n 2116-	1) 640) cuft		
	NACESTA DE SAN				ne samenastienasian		

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	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 Tag Site Technician** Site Visit Date Parameter **Owner ID** Sandy Grenville Campbell VIN140 08/23/2013 Shelter Temperature none none **DAS 1: DAS 2:** Mfg Parameter Shelter Temperatur Extech **Abs Avg Err Abs Avg Err** Abs Max Er Abs Max Er Tfer Desc. RTD H232734 **Serial Number** 0.17 0.17 01227 Tfer ID -0.08480 1.00435 **Slope Intercept Cert Date** 1/12/2013 CorrCoff 1.00000 InputTmpRaw InputTmpCorr.: OutputTmpSignal: OutputSignalEng: OSE Unit: Difference: UseDesc.: Test type: primary Temp Mid Range 25.62 25.59 0.000 25.4 -0.17 \mathbf{C}

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	d Problem
Temperature	VIN140	Sandy Grenville	08/23/2013	Blower	Climatronics	2914		✓
The forced-air blower fo	r the shield is no	t functioning.						

Field Systems Comments

1 Parameter: SitingCriteriaCom

The site is in an agricultural research center with farm activities adjacent to the site. A train track is approximately 200 meters to the north.

2 Parameter: ShelterCleanNotes

The shelter is in good condition and well maintained, however rot is beginning to form at the bottom of the walls.

3 Parameter: MetOpMaintCom

The temperature sensor blower is not functioning.

F-02058-1500-S1-rev001

Site ID VIN140	Technician Sandy Grenville	Site Visit Date 08/2	3/2013
Site Sponsor (agency)	EPA	USGS Map	Fritchton
	Purdue University	Map Scale	
Operating Group	Fuldue Offiversity	Map Date	
AQS#		Wap Date	
Meteorological Type	Climatronics		
Air Pollutant Analyzer	Ozone	QAPP Latitude	38.7406
Deposition Measurement	dry, wet	QAPP Longitude	-87.4844
Land Use	agriculture	QAPP Elevation Meters	134
Terrain	flat	QAPP Declination	4.25
Conforms to MLM	Yes	QAPP Declination Date	2/23/2006
Site Telephone		Audit Latitude	38.740792
Site Address 1	Southwest Purdue Agricultural Center	Audit Longitude	-87.484923
Site Address 2	4669 North Purdue Road	Audit Elevation	136
County	Knox	Audit Declination	-2.7
City, State	Vincennes, IN	Present	
Zip Code	47591	Fire Extinguisher 🔽	No inspection date
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 Ekto M	odel 8810 (s/n 2116-1)	Shelter Size 640 cuft
Shelter Clean	Notes The shelter is in good condition of the walls.	n and well maintained, howeve	r rot is beginning to form at the bottom
Site OK	Notes		
	Vincennes go approximately 3 miles northultural Center. The site is just over the hill		sign for the Southwest Purdue
- Ignoc		a a sure right	

F-02058-1500-S2-rev001

Site ID VIN140 Technician Sandy Grenville Site Visit Date 08/23/2013

Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
20 to 40 km		V
10 to 20 km		~
40 km		✓
10 km		✓
5 km		✓
2 km		✓
500 m		✓
200 m		✓
500 m		✓
500 m	200 m	
200 m	10 m	
200 m		~
100 m		✓
50 m		✓
10 times obstacle height		~
	Measurement Apparatus 20 to 40 km 10 to 20 km 40 km 10 km 5 km 2 km 500 m 200 m 500 m 200 m 100 m 500 m	Measurement Apparatus 20 to 40 km 10 to 20 km 40 km 10 km 5 km 2 km 500 m 200 m 500 m 200 m 10 m 200 m 10 m 50 m 500 m

Siting Distances OK

Siting Criteria Comment

The site is in an agricultural research center with farm activities adjacent to the site. A train track is approximately 200 meters to the north.

F-02058-1500-S3-rev001

Site	ID	VIN140	Technician [Sandy Grenville		Site Visit Date 08/23/2013
1		nd speed and direction in the second second in the second	ction sensors sited so a ructions?	as to avoid	✓	N/A
2	(i.e. win	nd sensors should	ed so as to minimize to be mounted atop the om >2x the max diam wind)	tower or on a	✓	N/A
3	Are the	e tower and sensor	s plumb?		✓	N/A
4			elds pointed north or p ces such as buildings,		✓	
5	conditi surface	ons? (i.e. ground l	I sensors sited to avoicelow sensors should loped. Ridges, hollows avoided)	be natural	V	
6	Is the s	olar radiation sen	sor plumb?		✓	N/A
7	Is it sit light?	ed to avoid shadin	g, or any artificial or	reflected	✓	N/A
8	Is the r	ain gauge plumb?			✓	N/A
9	Is it sit towers,		ring effects from build	lings, trees,	✓	N/A
10	Is the s		nsor sited with the gri	d surface	✓	N/A
11	Is it in	clined approximat	tely 30 degrees?		✓	N/A
			nation (photograph o ay affect the monitor			y) regarding conditions listed above, or any other features,

iciu L	Systems Data	a Form				F-02058-1	1500-S4-rev00
Site ID	VIN140	Technician S	andy Grenville		Site Visit Date 08/2	23/2013	
	l the meterological ition, and well main	sensors appear to be in	ntact, in good	✓			
	all the meteorologicating data?	al sensors operational (online, and	V			
Are t	he shields for the te	emperature and RH ser	nsors clean?	V			
Are t	he aspirated motor	s working?					
Is the		nsor's lens clean and fr	ee of	✓	N/A		
Is the	e surface wetness se	nsor grid clean and un	damaged?	✓	N/A		
	he sensor signal and ition, and well main	d power cables intact, i	n good	V	N/A		
	he sensor signal and the elements and w	d power cable connectivell maintained?	ons protected	V	N/A		
'aramete	r	Manufacturer	Model		S/N		Client ID
		Climatronics	100093	ON NOVO	none		06686
emperati	ure	Climationics		U (a			
ovide an	y additional explan	nation (photograph or say affect the monitoring		sary)		listed above, or	any other features,
ovide an tural or	y additional explan	nation (photograph or s ay affect the monitorin		sary)		listed above, or	r any other features,
ovide an tural or	y additional explan man-made, that ma	nation (photograph or s ay affect the monitorin		sary)		listed above, or	r any other features,
ovide an tural or	y additional explan man-made, that ma	nation (photograph or s ay affect the monitorin		sary)		listed above, or	r any other features,
ovide an tural or	y additional explan man-made, that ma	nation (photograph or s ay affect the monitorin		sary)		listed above, or	r any other features,
ovide an tural or	y additional explan man-made, that ma	nation (photograph or s ay affect the monitorin		sary)		listed above, or	r any other features,
ovide an tural or	y additional explan man-made, that ma	nation (photograph or s ay affect the monitorin		sary)		listed above, or	r any other features,
ovide an tural or	y additional explan man-made, that ma	nation (photograph or s ay affect the monitorin		sary)		listed above, or	r any other features,
ovide an tural or	y additional explan man-made, that ma	nation (photograph or s ay affect the monitorin		eary)		listed above, or	r any other features,
tural or	y additional explan man-made, that ma	nation (photograph or s ay affect the monitorin		eary)		listed above, or	r any other features,
ovide an tural or	y additional explan man-made, that ma	nation (photograph or s ay affect the monitorin		eary)		listed above, or	r any other features,

F-02058-1500-S5-rev001

Site	ID	VIN140	Technician Sai	ndy Grenville		Site Visit Date 08/23/20	13]	
	Siting (Criteria: Are the	pollutant analyzers and o	deposition eq	uipn	ient sited in accordance wi	th 40 CFR 5	8, Appendix E	
1		sample inlets hav	e at least a 270 degree a	ce of	✓				
2	Are the	e sample inlets 3 -	15 meters above the gro	und?	✓				
3	Are the sample inlets > 1 meter from any major obstruction and 20 meters from trees?								
	Polluta	nt analyzers and	deposition equipment op	erations and	mai	ntenance			
1		analyzers and eq on and well main	uipment appear to be in tained?	good	✓	ACCRECATE NO SHALL DAY SHOULD BE			
2		e analyzers and m	onitors operational, on-l	ine, and	✓				
3	Describ	oe ozone sample t	ube.			1/4 teflon by 18 meters			
4	4 Describe dry dep sample tube.					3/8 teflon by 18 meters			
5	5 Are in-line filters used in the ozone sample line? (if yes indicate location)				At inlet only				
6	Are sar		ree of kinks, moisture, a	ınd	✓				
7	Is the z	ero air supply de	siccant unsaturated?		✓				
8	Are the	ere moisture traps	s in the sample lines?		✓				
9	Is there clean?	e a rotometer in t	he dry deposition filter li	ne, and is it	✓	Clean and dry			
Par	ameter		Manufacturer	Model		S/N	Cli	ent ID	
San	nple Tow	ver	Aluma Tower	В	25000000	none	000	0137	
Ozo	ne		ThermoElectron Inc	49i A1NAA	NI CALLED	1009241798	000	0630	
Filte	er pack fl	low pump	Thomas	107CAB18	Manager 1	060300019956	049	920	
Zero	air pum	np	Werther International	C 70/4		000821908 06906			
			ation (photograph or sko ny affect the monitoring		ary)	regarding conditions listed	l above, or a	ny other feature	es,

F-02058-1500-S6-rev001

Site	ID	VIN140	Technician	Sandy Grenville		Site Visit Dat	e 08/23/2013		
	DAS, se	nsor translators, and j	peripheral equi	pment operation	ns and	maintenance			
		DAS instruments appeintained?	ar to be in good	d 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?					✓ Me	et sensors only			
		signal connections pro intained?	otected from the	e weather and					
5	Are the	signal leads connected	to the correct	DAS channel?	✓				
	Are the grounde	DAS, sensor translatoed?	rs, and shelter	properly	✓				
7	Does the	e instrument shelter ha	ave a stable pov	wer source?	✓				
8	Is the in	strument shelter temp	erature contro	lled?	V				
9	Is the m	et tower stable and gr				Stable 🗸	G	rounded	
			l grounded?						
10	Is the sa	imple tower stable and	grounded:			✓		✓	
		ample tower stable and comments?	grounded:					V	
11		comments?	anufacturer	Model		S/N			nt ID
11 Para	Tower o	comments?	anufacturer	Model D520					
Para Com	Tower of	comments? Mi	anufacturer III			S/N		Clie	246
Para Com	Tower of	omments? M: De	anufacturer	D520	9-2011 5-3	S/N unknown	5	Clie	246
Para Com	Tower of	omments? M: De	anufacturer	D520 CR3000		S/N unknown 2136	5	Clie 0002 0003	246
Para Com DAS Mod	Tower of ameter aputer em	omments? M: De	anufacturer III Impbell Iven In (photograph	D520 CR3000 V4221-V or sketch if nece		S/N unknown 2136 080833887		O002 0003 00646	246 358 31
Para Com DAS Mod	Tower of ameter aputer em	comments? Mi De Ca Ra additional explanation	anufacturer III Impbell Iven In (photograph	D520 CR3000 V4221-V or sketch if nece		S/N unknown 2136 080833887		O002 0003 00646	246 358 31
Para Com DAS Mod	Tower of ameter aputer em	comments? Mi De Ca Ra additional explanation	anufacturer III Impbell Iven In (photograph	D520 CR3000 V4221-V or sketch if nece		S/N unknown 2136 080833887		O002 0003 00646	246 358 31
Para Com DAS Mod	Tower of ameter aputer em	comments? Mi De Ca Ra additional explanation	anufacturer III Impbell Iven In (photograph	D520 CR3000 V4221-V or sketch if nece		S/N unknown 2136 080833887		O002 0003 00646	246 358 31
Para Com DAS Mod	Tower of ameter aputer em	comments? Mi De Ca Ra additional explanation	anufacturer III Impbell Iven In (photograph	D520 CR3000 V4221-V or sketch if nece		S/N unknown 2136 080833887		O002 0003 00646	246 358 31

F-02058-1500-S7-rev001 **Field Systems Data Form** Site ID VIN140 Technician Sandy Grenville Site Visit Date 08/23/2013 **Documentation** Does the site have the required instrument and equipment manuals? N/A Yes No No N/A Yes **V** V Wind speed sensor **Data logger** V V Wind direction sensor Data logger ~ V Temperature sensor Strip chart recorder \Box ~ V Relative humidity sensor Computer ~ \Box П V Solar radiation sensor Modem V П \Box ~ П **Printer** Surface wetness sensor V П V П Wind sensor translator Zero air pump ~ **Temperature translator** V Filter flow pump ~ ~ **Humidity sensor translator** Surge protector П ~ **V UPS** Solar radiation translator П **V** ~ Lightning protection device Tipping bucket rain gauge **V V** П Shelter heater Ozone analyzer V **V** \Box Filter pack flow controller Shelter air conditioner **V** Filter pack MFC power supply Does the site have the required and most recent QC documents and report forms? Present Current **Station Log** V **V** SSRF **V V** Site Ops Manual **V** Oct 2001

Ozone z/s/p Control (Charts		
Preventive maintenar	nce schedul		
1 Is the station log	properly completed during ev	ery site visit? 🗸	Minimal information
	us Report Forms being comple	eted and	
current?			
	-custody forms properly used t	o document 🗸	
sample transfer	to and from lab?		
4 Are ozone z/s/p o	control charts properly comple	ted and	Control charts not used
current?			

~

V

V

Oct 2011

July 1990

HASP

Field Ops Manual

Calibration Reports

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

F-02058-1500-S8-rev001

Site 1	VIN140	Technician	Sandy Grenville	Site Visit Date	08/23/2013	
	Site operation procedures					
	Has the site operator attended a course? If yes, when and who in		TNET training	Trained by the previous	ous site operator	
	Has the backup operator attend training course? If yes, when an		AND AND THE PROPERTY OF THE PROPERTY OF THE PARTY OF THE			
	is the site visited regularly on the schedule?	e required T	uesday		Control of the Contro	
	Are the standard CASTNET operator?	erational pro	cedures being			
5 1	s the site operator(s) knowledge the required site activities? (included)	eable of, and a	able to perform sentation)			
<u>.</u>	Are regular operational QA/QC	checks perfo	rmed on meteoro	logical instruments?		
QC (Check Performed		Frequency		Compliant	
Mult	ipoint Calibrations	<u> </u>	Semiannually			
Visu	al Inspections	<u> </u>	N/A		V	
Tran	slator Zero/Span Tests (climatro	onics)	N/A		V	
Man	ual Rain Gauge Test	✓	N/A		V	
Conf	irm Reasonableness of Current	Values	N/A		V	
Test	Surface Wetness Response	<u> </u>	N/A		V	
4	Are regular operational OA/OC	checks perfo	rmed on the ozon	e analyzer?		
QC	Check Performed		Frequency		Compliant	
	Check Performed i-point Calibrations	V			Compliant ✓	
Mult		V	Semiannually			
Mult Auto	i-point Calibrations		Semiannually Daily		<u> </u>	
Mult Auto Man	i-point Calibrations matic Zero/Span Tests	V	Semiannually Daily As needed		✓ ✓	
Multi Auto Man Auto	i-point Calibrations matic Zero/Span Tests ual Zero/Span Tests	<u> </u>	Semiannually Daily As needed Daily			
Multi Auto Man Auto Man	i-point Calibrations matic Zero/Span Tests ual Zero/Span Tests matic Precision Level Tests		Semiannually Daily As needed Daily As needed Weekly			
Multi Auto Man Auto Man Anal	i-point Calibrations matic Zero/Span Tests ual Zero/Span Tests matic Precision Level Tests ual Precision Level Test	\tag{\tau}	Semiannually Daily As needed Daily As needed Weekly			
Multi Auto Man Auto Man Anal In-lin	i-point Calibrations matic Zero/Span Tests ual Zero/Span Tests matic Precision Level Tests ual Precision Level Test yzer Diagnostics Tests	\rightarrow \right	Semiannually Daily As needed Daily As needed Weekly Every 2 weeks			
Multi Auto Man Auto Man Anal In-lii	i-point Calibrations matic Zero/Span Tests ual Zero/Span Tests matic Precision Level Tests ual Precision Level Test yzer Diagnostics Tests ne Filter Replacement (at inlet)	\rightarrow \right	Semiannually Daily As needed Daily As needed Weekly Every 2 weeks			
Multi Auto Man Auto Man Anal In-lin Sam	i-point Calibrations matic Zero/Span Tests ual Zero/Span Tests matic Precision Level Tests ual Precision Level Test yzer Diagnostics Tests ne Filter Replacement (at inlet) ne Filter Replacement (at analyz		Semiannually Daily As needed Daily As needed Weekly Every 2 weeks N/A Weekly			
Multi Auto Man Auto Man Anal In-lin Sam Zero	i-point Calibrations matic Zero/Span Tests ual Zero/Span Tests matic Precision Level Tests ual Precision Level Test yzer Diagnostics Tests ne Filter Replacement (at inlet) ne Filter Replacement (at analyz ple Line Check for Dirt/Water Air Desiccant Check Do multi-point calibration gases sample train including all filters	go through t	Semiannually Daily As needed Daily As needed Weekly Every 2 weeks N/A Weekly Weekly Weekly	Unknown		
Multi Auto Man Auto Man Anal In-lin Sam Zero	i-point Calibrations matic Zero/Span Tests ual Zero/Span Tests matic Precision Level Tests ual Precision Level Test yzer Diagnostics Tests ne Filter Replacement (at inlet) ne Filter Replacement (at analyz ple Line Check for Dirt/Water Air Desiccant Check Do multi-point calibration gases	go through t?	Semiannually Daily As needed Daily As needed Weekly Every 2 weeks N/A Weekly Weekly Weekly	Unknown		
Multi Auto Man Auto Man Anal In-lin In-lin Sam Zero	i-point Calibrations matic Zero/Span Tests ual Zero/Span Tests matic Precision Level Tests ual Precision Level Test yzer Diagnostics Tests ne Filter Replacement (at inlet) ne Filter Replacement (at analyz ple Line Check for Dirt/Water Air Desiccant Check Do multi-point calibration gases sample train including all filters: Do automatic and manual z/s/p g	go through t?	Semiannually Daily As needed Daily As needed Weekly Every 2 weeks N/A Weekly Weekly Weekly	Unknown		
Multi Auto Man Auto Man Anal In-lin In-lin Sam Zero 1	i-point Calibrations matic Zero/Span Tests ual Zero/Span Tests matic Precision Level Tests ual Precision Level Test yzer Diagnostics Tests ne Filter Replacement (at inlet) ne Filter Replacement (at analyz ple Line Check for Dirt/Water Air Desiccant Check Do multi-point calibration gases sample train including all filters Do automatic and manual z/s/p g complete sample train including Are the automatic and manual z	go through t? gasses go through tilters? /s/p checks m	Semiannually Daily As needed Daily As needed Weekly Every 2 weeks N/A Weekly Weekly weekly he complete ough the complete	Unknown SSRF, call-in		eatures,
Multi Auto Man Auto Man Anal In-lin In-lin Sam Zero 1	i-point Calibrations matic Zero/Span Tests ual Zero/Span Tests matic Precision Level Tests ual Precision Level Test ual Precision Level Test yzer Diagnostics Tests ne Filter Replacement (at inlet) ne Filter Replacement (at analyz ple Line Check for Dirt/Water Air Desiccant Check Do multi-point calibration gases sample train including all filters Do automatic and manual z/s/p g complete sample train including Are the automatic and manual z reported? If yes, how? de any additional explanation (p	go through t? gasses go through tilters? /s/p checks m	Semiannually Daily As needed Daily As needed Weekly Every 2 weeks N/A Weekly Weekly weekly he complete ough the complete	Unknown SSRF, call-in		eatures,

F-02058-1500-S9-rev001

Site	e ID	VIN140 T	chnic	ian Sandy Grenville		Site Visit Date	e 08/23/2013	
	Site	operation procedures						
1	Is th	e filter pack being changed evo	ry Tu	esday as scheduled?	✓	Filter changed mo	rinings	
2		the Site Status Report Forms bectly?	eing c	completed and filed	✓			
3						No longer required	1	
4	Are	general observations being ma	de and	l recorded? How?	✓	SSRF, logbook		
5	Are s	site supplies on-hand and reploon?	nishe	d in a timely	✓			
6	Ares	sample flow rates recorded? H	ow?		✓	SSRF, logbook, ca	all-in	
7	Are s	samples sent to the lab on a re-	gular s	schedule in a timely	✓			
8 Are filters protected from contamination during handling and shipping? How?					One set of gloves	only		
9		the site conditions reported reg ations manager or staff?	ularly	v to the field	✓			
QC	Checl	k Performed		Frequency			Compliant	
N	Aulti- _J	point MFC Calibrations	✓	Semiannually	26.00			
F	low S	ystem Leak Checks	✓	Weekly	10,457			
		Pack Inspection			14000000			
		Rate Setting Checks		Weekly	BHEX.705		▽	
		Check of Flow Rate Rotomete		Weekly	are to			
		Filter Inspection/Replacemen	GEOGRAPHICAL CO.	Semiannually	CENS.757/3	V		
		e Line Check for Dirt/Water		Weekly	691		✓	
		ny additional explanation (pho man-made, that may affect th				y) regarding condi	tions listed above, or any other features,	

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
ALI	H157-Sandy	Grenville-08/24/2013				
1	8/24/2013	Computer	Dell	000299	D520	unknown
2	8/24/2013	DAS	Campbell	000405	CR3000	2522
3	8/24/2013	Elevation	Elevation	None	1	None
4	8/24/2013	Filter pack flow pump	Thomas	06285	107CA18	0990007057
5	8/24/2013	Flow Rate	Apex	000647	AXMC105LPMDPCV	54749
6	8/24/2013	Infrastructure	Infrastructure	none	none	none
7	8/24/2013	Modem	Raven	06605	H4222-C	0844355805
8	8/24/2013	Ozone	ThermoElectron Inc	000703	49i A1NAA	1030244805
9	8/24/2013	Ozone Standard	ThermoElectron Inc	000449	49i A3NAA	CM08200025
10	8/24/2013	Sample Tower	Aluma Tower	illegible	В	none
11	8/24/2013	Shelter Temperature	Campbell	none	107-L	none
12	8/24/2013	Siting Criteria	Siting Criteria	None	1	None
13	8/24/2013	Temperature	RM Young	02489	41342	none
14	8/24/2013	Zero air pump	Werther International	06910	C 70/4	000829160

DAS Data Form 0.07 **DAS Time Max Error:** Serial Number Site **Technician** Site Visit Date Parameter Use Desc. Mfg Campbell 2522 ALH157 Sandy Grenville 08/24/2013 DAS Primary Das Date: 8 /24/2013 **Audit Date** 8 /24/2013 Datel Parameter DAS Mfg 17:08:04 17:08:00 Das Time: **Audit Time** 15510194 Tfer Desc. Source generator (D **Serial Number** Das Day: 236 **Audit Day** 236 Tfer ID 01320 **Low Channel: High Channel: Avg Diff: Max Diff: Avg Diff:** Max Diff: 1.00000 0.00000 Slope **Intercept** 0.0001 0.0002 0.0001 0.0002 2/13/2012 1.00000 **Cert Date** CorrCoff Fluke **Parameter** DAS Mfg **Serial Number** 95740135 Tfer Desc. DVM 01311 Tfer ID 1.00000 0.00000 Slope **Intercept** 1/26/2013 1.00000 **Cert Date** CorrCoff Channel Input **DVM** Output **DAS** Output InputUnit OutputUnit Difference 0.0000 0.0001 0.0001 0.0000 V V 7 0.1000 0.1000 0.1000 0.00007 0.3000 0.2999 0.2998 V V -0.0001 7 0.5000 0.4996 V V -0.0001 0.4997 7 0.7000 V V -0.0001 0.6997 0.6996 V V 7 0.9000 0.8996 0.8994 -0.00027 0.9994 0.9993 V V -0.0001 1.0000

Flow Data Form

Mfg BIOS	echnician Site Visit Date Parameter Owner ID
Serial Number 103471	Sandy Grenville 08/24/2013 Flow Rate 0000647
Tfer ID	Mfg BIOS Parameter Flow Rate
Slope	Serial Number 103471 Tfer Desc. nexus
Cert Date 6/13/2012 CorrCoff	Tfer ID 01420
Mfg BIOS Parameter Flow Serial Number 103424 Tfer Desc. BIOS	Slope 1.00000 Intercept 0.00000
Serial Number 103424 Tfer Desc. BIOS	Cert Date 6/13/2012 CorrCoff 1.00000
Serial Number 103424 Tfer Desc. BIOS	Mfg BIOS Parameter Flow Rate
Slope	Serial Number 103424 Tfer Desc. BIOS cell
Cert Date 1/27/2012 CorrCoff	Tfer ID 01410
Cert Date 1/27/2012 CorrCoff	Slope 1.00000 Intercept 0.00000
DAS 1: DAS 2: Cal Factor Zero -0.03 A Avg % Diff: A Max % Di 2.47% Cal Factor Full Scale 0.97 Rotometer Reading: 1.5 UseDescription: Test type: Input I/m: Input STP: MfcDisp.: OutputSignal: Output S E: InputUnit: OutputSignal Poprimary pump off 0.000 0.000 0.01 0.012 -0.02 I/m I/m I/m primary leak check 0.000 0.000 0.01 0.029 -0.01 I/m I/m primary test pt 1 1.564 1.534 1.53 1.524 1.50 I/m I/m primary test pt 2 1.567 1.538 1.53 1.533 1.50 I/m I/m primary test pt 3 1.568 1.538 1.53 1.526 1.50 I/m I/m Sensor Component Leak Test Condition Status pass Sensor Component Filter Azimuth Condition Good Status pass Sensor Component Filter Position Condition Conditi	
A Avg % Diff: A Max % Di A Avg % Diff: A Max % Di Cal Factor Full Scale 0.97 2.39% 2.47% Rotometer Reading: 1.5 UseDescription: Test type: Input I/m: Input STP: MfcDisp.: OutputSignal: Output S E: InputUnit: OutputSignall Perprimary pump off 0.000 0.000 0.01 0.012 -0.02 I/m	
2.39% 2.47%	
UseDescription: Test type: Input I/m: Input STP: MfcDisp.: OutputSignal: Output S E: InputUnit: OutputSignal Pc primary pump off 0.000 0.000 0.01 0.012 -0.02 I/m I/m I/m primary leak check 0.000 0.000 0.01 0.029 -0.01 I/m I/m I/m primary test pt 1 1.564 1.534 1.53 1.524 1.50 I/m I/m I/m primary test pt 2 1.567 1.538 1.53 1.533 1.50 I/m I/m I/m primary test pt 3 1.568 1.538 1.53 1.526 1.50 I/m I/m I/m Sensor Component Filter Azimuth Condition Status Status pass Sensor Component Filter Position Condition Good Status pass	
primary pump off 0.000 0.000 0.01 0.012 -0.02 I/m I/m primary leak check 0.000 0.000 0.01 0.029 -0.01 I/m I/m primary test pt 1 1.564 1.534 1.53 1.524 1.50 I/m I/m primary test pt 2 1.567 1.538 1.53 1.533 1.50 I/m I/m primary test pt 3 1.568 1.538 1.53 1.526 1.50 I/m I/m Sensor Component Leak Test Condition Status pass Sensor Component Filter Azimuth Condition 2.4 cm Status pass Sensor Component Filter Position Condition Good Status pass	
primary leak check 0.000 0.000 0.01 0.029 -0.01 I/m I/m primary test pt 1 1.564 1.534 1.53 1.524 1.50 I/m I/m primary test pt 2 1.567 1.538 1.53 1.533 1.50 I/m I/m primary test pt 3 1.568 1.538 1.53 1.526 1.50 I/m I/m Sensor Component Leak Test Condition Status pass Sensor Component Filter Azimuth Condition 2.4 cm Status pass Sensor Component Filter Position Condition Good Status pass	
primary test pt 1 1.564 1.534 1.53 1.524 1.50 I/m I/m primary test pt 2 1.567 1.538 1.53 1.533 1.50 I/m I/m primary test pt 3 1.568 1.538 1.53 1.526 1.50 I/m I/m Sensor Component Leak Test Condition Status pass Sensor Component Filter Azimuth Condition 2.4 cm Status pass Sensor Component Filter Position Condition Good Status pass	
primary test pt 2 1.567 1.538 1.53 1.533 1.50 1/m 1/m primary test pt 3 1.568 1.538 1.53 1.526 1.50 1/m 1/m Sensor Component Leak Test Condition Status pass Sensor Component Filter Azimuth Condition 2.4 cm Status pass Sensor Component Filter Depth Condition Good Status pass	
primary test pt 3 1.568 1.538 1.53 1.526 1.50 1/m 1/m Sensor Component Leak Test Condition Status pass Sensor Component Filter Azimuth Condition 360 deg Status pass Sensor Component Filter Depth Condition 2.4 cm Status pass Sensor Component Filter Position Condition Good Status pass	1.524 1.50 l/m l/m -2.22%
Sensor Component Leak Test Condition Status pass Sensor Component Filter Azimuth Condition 360 deg Status pass Sensor Component Filter Depth Condition 2.4 cm Status pass Sensor Component Filter Position Condition Good Status pass	1.533 1.50 l/m l/m -2.47%
Sensor Component Filter Azimuth Condition 360 deg Status pass Sensor Component Filter Depth Condition 2.4 cm Status pass Sensor Component Filter Position Condition Good Status pass	1.526 1.50 1/m 1/m -2.47%
Sensor Component Filter Depth Condition 2.4 cm Status pass Sensor Component Filter Position Condition Good Status pass	ion Status pass
Sensor Component Filter Position Condition Good Status pass	ion 360 deg Status pass
	ion 2.4 cm Status pass
Sensor Component Moisture Present Condition See comments Status pass	ion Good Status pass
	ion See comments Status pass
Sensor Component Rotometer Condition Clean and dry Status pass	ion Clean and dry Status pass
Sensor Component System Memo Condition See comments Status pass	
Sensor Component Tubing Condition Condition Good Status pass	
Sensor Component Filter Distance Condition 1.7 cm Status pass	

Ozone Data Form

Mfg Se	erial Number Ta	Site	Teo	chnician		Site Vis	it Date	Parame	eter	Owner ID
ThermoElectron Inc 1	030244805	ALH157	Sa	ındy Grer	rville	08/24/2	013	Ozone		000703
Intercept -0.3	1760 Slope: 8879 Intercept 9997 CorrCoff	0.00000 0.00000 0.00000	0	Mfg Serial N		Thermol			rameter Ozo	one transfer
B.164	D.1.0.4			Tfer ID		01100				
DAS 1: A Avg % Diff: A Mar	DAS 2: x % Di	6Dif A Max 9		Slope			1.0030		_	-0.17961
0.9%	1.6%			Cert Da	te		4/2/201	3 Corr	Coff	1.00000
UseDescription:	ConcGroup:	Tfer Raw:	Tfer (Si			Unit:	PctDiff	erence:
primary	1	0.31	0.4		0.3		ppb			
primary	2	31.08	31.		31.		ppb			0.48%
primary	3	49.33	49	-	49.		ppb			-0.02%
primary	4	81.31	81.		82.		ppb			1.32%
primary	5	100.04	99.		101	.50	ppb			1.59%
Sensor Component	Cell B Noise		Conditio	0.8 pp	b			Status	pass	
Sensor Component	Cell B Tmp.		Conditio	on				Status	pass	
Sensor Component	Fullscale Voltage		Conditio	n N/A				Status	pass	
Sensor Component	Inlet Filter Condition	n	Conditio	Clean				Status	pass	
Sensor Component	Line Loss		Conditio	on < 1 %				Status	pass	
Sensor Component	Offset		Conditio	0.50				Status	pass	
Sensor Component	Span		Conditio	1.031				Status	pass	
Sensor Component	Cell B Freq.		Conditio	91.0 k	Hz			Status	pass	
Sensor Component	System Memo		Conditio	on				Status	pass	
Sensor Component	Sample Train		Conditio	Good				Status	pass	
Sensor Component	Cell B Pressure		Conditio	on				Status	pass	
Sensor Component	Cell B Flow		Conditio	0.72 lj	om			Status	pass	
Sensor Component	Cell A Tmp.		Conditio	36.0 C)			Status	pass	
Sensor Component	Cell A Pressure		Conditio	732.3	mmHg			Status	pass	
Sensor Component	Cell A Noise		Conditio	1.1 pp	b			Status	pass	
Sensor Component	Cell A Freq.		Conditio	83.2 k	Hz			Status	pass	
Sensor Component	Cell A Flow		Conditio	0.68 lp	om			Status	pass	
Sensor Component	Battery Backup		Conditio	n N/A				Status	pass	
Sensor Component	Zero Voltage		Conditio	N/A				Status	pass	

Temperature Data Form Serial Number Tag Site **Technician** Site Visit Date Parameter **Owner ID** Mfg ALH157 Sandy Grenville Temperature 02489 RM Young none 08/24/2013 **Parameter** Temperature Mfg Extech Tfer Desc. RTD H232734 **Serial Number** 01227 Tfer ID 1.00435 -0.08480 **Slope Intercept DAS 1: DAS 2:** 1/12/2013 1.00000 Abs Avg Err Abs Max Er Abs Avg Err Abs Max Er **Cert Date** CorrCoff 0.08 0.11 InputTmpRaw | InputTmpCorr.: | OutputTmpSignal: | OutputSignalEng: | OSE Unit: | Difference: UseDesc.: Test type: 0.07 0.03 primary Temp Low Range -0.01 0.000 0.1 C 48.98 48.85 0.000 48.9 $\overline{\mathbf{C}}$ 0.09 primary Temp High Range Temp Mid Range 26.01 25.98 0.000 26.1 C 0.11 primary Sensor Component | Shield **Condition** Clean Status pass Sensor Component Blower Status Switch **Condition** N/A **Status** pass **Sensor Component** Blower **Condition** N/A **Status** pass Sensor Component System Memo Condition **Status** pass

Infrastructure Data For

Sit	e ID	ALH157	Technician	Sandy Grenville	Site Visit Date	08/24/2013	
	Shelter Ma	ake	Shelter Model	She	lter Size		
	Ekto		8810 (2149-7)	640	cuft		
	MANAGEM NAMES OF THE OWNER, THE O			DESCRIPTION OF THE PROPERTY OF			

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	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



UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	25.85	25.82	0.000	25.9	С	0.11
primary	Temp Mid Range	25.71	25.68	0.000	25.9	C	0.17
primary	Temp Mid Range	25.19	25.17	0.000	25.6	C	0.41

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem
Flow Rate	ALH157	Sandy Grenville	08/24/2013	System Memo	Apex	3864		
The filter sample tubing	has drops of mo	isture in low section	s outside the sh	elter.				

Field Systems Comments

1 Parameter: DasComments

The shelter heat and air conditioner run simultaneously.

2 Parameter: SitingCriteriaCom

The site is located in a corn field on a privately operated farm.

3 Parameter: MetSensorComme

Met tower removed, temperature mounted in naturally aspirated shield on sample tower.

F-02058-1500-S1-rev001

Site ID ALH157	Technician Sandy Grenville	Site Visit Date 08/2	24/2013
Site Sponsor (agency)	EPA	USGS Map	Pocahontas
Operating Group	private	Map Scale	
AQS#	17-119-9991	Map Date	
	Climatronics		
Meteorological Type			00.0000
Air Pollutant Analyzer	Ozone	QAPP Latitude	38.8690
Deposition Measurement	dry, wet	QAPP Longitude	-89.6229
Land Use	agricultural	QAPP Elevation Meters	164
Terrain	flat	QAPP Declination	0.9
Conforms to MLM	Yes	QAPP Declination Date	1/28/2004
Site Telephone		Audit Latitude	38.869001
Site Address 1	Fairview Road	Audit Longitude	-89.622815
Site Address 2		Audit Elevation	164
County	Madison	Audit Declination	-1.1
City, State	Pocahontas, IL	Present	
Zip Code	62275	Fire Extinguisher 🔽	No inspection date
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 Ekto Me	odel 8810 (2149-7)	Shelter Size 640 cuft
		THE RESERVE OF THE PARTY OF THE	A STATE OF THE CONTROL OF THE CONTRO
Site OK	Notes		
appro After t	I-70 take exit 36 (Pokey Road) north to the ximately 1.5 miles. Turn left (south) onto the road turns left 90 degrees, turn at the funder the power lines.	CR 5. At the first intersection	turn right (west) onto Meffert road.

F-02058-1500-S2-rev001

Site ID ALH157 Technician Sandy Grenville Site Visit Date 08/24/2013

Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
20 to 40 km		V
10 to 20 km		✓
40 km		✓
10 km		✓
5 km		~
2 km		✓
500 m		~
200 m		~
500 m		✓
500 m	20 m	
200 m		✓
200 m		✓
100 m		✓
50 m		✓
10 times obstacle height		✓
	Measurement Apparatus 20 to 40 km 10 to 20 km 40 km 10 km 5 km 2 km 500 m 200 m 500 m 200 m 200 m 500 m 500 m	Measurement Apparatus 20 to 40 km 10 to 20 km 40 km 10 km 5 km 2 km 500 m 200 m 500 m 200 m 200 m 200 m 200 m 200 m 200 m 500 m 200 m 20

Siting	Distances OK	
--------	---------------------	--

Siting Criteria Comment

The site is located in a corn field on a privately operated farm.

F-02058-1500-S3-rev001

Site	ID	ALH157	Technician [5	Sandy Grenville		Site Visit Date 08/24/2013
1	Are wi	nd speed and dire	ection sensors sited so a	as to avoid	✓	N/A
		nfluenced by obs				
2	(i.e. wi	nd sensors should	ted so as to minimize to d be mounted atop the oom >2x the max diam g wind)	tower or on a	✓	N/A
3		e tower and senso			✓	N/A
4			ields pointed north or pressuch as buildings,		V	
5	conditi surface	ons? (i.e. ground	H sensors sited to avoic below sensors should l sloped. Ridges, hollows be avoided)	be natural	✓	
6	Is the s	solar radiation se	nsor plumb?		✓	N/A
7	Is it sit light?	ed to avoid shadi	ng, or any artificial or	reflected	✓	N/A
8	Is the 1	ain gauge plumb	?		✓	N/A
9	Is it sit towers		ering effects from build	lings, trees,	V	N/A
10	Is the s facing		ensor sited with the gri	d surface	✓	N/A
11	Is it in	clined approxima	ately 30 degrees?		✓	N/A
	THE COLD ON THE SECOND		anation (photograph or may affect the monitor			y) regarding conditions listed above, or any other features,
Met	tower re	emoved, temperatu	ure mounted in naturally	aspirated shield	on s	sample tower.

Do all the meterological sensors appear to be intact, in good condition, and well maintained? Are all the meteorological sensors operational online, and reporting data? Are the shields for the temperature and RH sensors clean? Are the aspirated motors working? Are the aspirated motors working? Is the solar radiation sensor's lens clean and free of scratches? Is the surface wetness sensor grid clean and undamaged? Are the sensor signal and power cables intact, in good condition, and well maintained? Are the sensor signal and power cable connections protected from the elements and well maintained? Manufacturer Model S/N Client ID									
Are the sapirated motors working? Is the solar radiation sensor's lens clean and free of scratches? Is the surface wetness sensor grid clean and undamaged? Are the sensor signal and power cables intact, in good condition, and well maintained? Are the sensor signal and power cable connections protected from the elements and well maintained? Manufacturer Model S/N Client ID	ID	ALH157	Technician S	Sandy Grenville	1576	Site Visit Date 08/24	/2013		
Are the shields for the temperature and RH sensors clean? Are the aspirated motors working? Is the solar radiation sensor's lens clean and free of scratches? Is the surface wetness sensor grid clean and undamaged? Are the sensor signal and power cables intact, in good condition, and well maintained? Are the sensor signal and power cable connections protected from the elements and well maintained? Manufacturer Model S/N Client ID	Do all tl	ne meterological	l sensors appear to be i	ntact, in good	✓				
reporting data? Are the shields for the temperature and RH sensors clean? Are the aspirated motors working? Is the solar radiation sensor's lens clean and free of scratches? Is the surface wetness sensor grid clean and undamaged? Are the sensor signal and power cables intact, in good condition, and well maintained? Are the sensor signal and power cable connections protected from the elements and well maintained? Are the sensor signal and power cable connections protected from the elements and well maintained? Manufacturer Model S/N Client ID	conditio	n, and well mai	ntained?						
Are the aspirated motors working? Is the solar radiation sensor's lens clean and free of scratches? Is the surface wetness sensor grid clean and undamaged? Are the sensor signal and power cables intact, in good condition, and well maintained? Are the sensor signal and power cable connections protected from the elements and well maintained? Manufacturer Model S/N Client ID			cal sensors operational	online, and	✓				
Is the solar radiation sensor's lens clean and free of scratches? Is the surface wetness sensor grid clean and undamaged? Are the sensor signal and power cables intact, in good condition, and well maintained? Are the sensor signal and power cable connections protected from the elements and well maintained? Are the sensor signal and power cable connections protected from the elements and well maintained? Manufacturer Model S/N Client ID	Are the	shields for the t	emperature and RH se	nsors clean?	✓				
Is the surface wetness sensor grid clean and undamaged? Are the sensor signal and power cables intact, in good condition, and well maintained? Are the sensor signal and power cable connections protected from the elements and well maintained? Manufacturer Model S/N Client ID	Are the	aspirated motor	rs working?		✓	N/A			
Are the sensor signal and power cables intact, in good condition, and well maintained? Are the sensor signal and power cable connections protected from the elements and well maintained? Manufacturer Model S/N Client ID			nsor's lens clean and fi	ree of	✓	N/A			
condition, and well maintained? Are the sensor signal and power cable connections protected from the elements and well maintained? Ameter Manufacturer Model S/N Client ID	Is the su	ırface wetness s	ensor grid clean and ur	ndamaged?	✓	N/A			
from the elements and well maintained? Tameter Model S/N Client ID		THE PERSON NAMED IN COLUMN TWO IS NOT THE OWNER.		in good	✓	N/A			
				ions protected	✓	N/A			
nperature RM Young 41342 none 02489	ameter		Manufacturer	Model		S/N		Client ID	
The state of the s	perature		RM Young	41342	865.1	none		02489	

F-02058-1500-S5-rev001

Site	ID	ALH157	Technician	Sandy Grenville		Site Visit Date	08/24/2013		
	Siting (Criteria: Are the	pollutant analyzers ar	nd deposition eq	uip	ment sited in accord	lance with 40 CFI	R 58, Appendix E	
1		sample inlets hav	ve at least a 270 degree	e arc of	✓				
2	Are the	sample inlets 3 -	• 15 meters above the	ground?	✓				
3		sample inlets > 1 meters from tree	1 meter from any maj s?	or obstruction,	✓				BOOM OF THE REAL PROPERTY.
	Polluta	nt analyzers and	deposition equipment	operations and	ma	<u>intenance</u>			
1		analyzers and eq on and well main	uipment appear to be tained?	in good	✓				
2		analyzers and m	nonitors operational, o	on-line, and	✓				
3	NEWS STATE	oe ozone sample t	ube.			1/4 teflon by 15 met	ers		
4	Describ	e dry dep sample	e tube.			3/8 teflon by 12 met	ers		
5		line filters used in e location)	n the ozone sample lin	e? (if yes	✓	At inlet only			
6	Are san		free of kinks, moisture	e, and	✓				
7	Is the z	ero air supply de	siccant unsaturated?		✓				
8	Are the	ere moisture trap	s in the sample lines?		✓				
9	Is there clean?	e a rotometer in t	he dry deposition filte	er line, and is it	~				
Par	ameter		Manufacturer	Model		S/N		Client ID	
San	nple Tow	er	Aluma Tower	В		none		illegible	
Ozo	ne		ThermoElectron Inc	49i A1NAA	861.Y	1030244805		000703	
Filte	er pack fl	ow pump	Thomas	107CA18	Bisto	0990007057		06285	
Zer	o air pum	ıp	Werther International	al C 70/4	9959	000829160		06910	
			nation (photograph or ay affect the monitori		ary)) regarding condition	ns listed above, o	r any other features,	

F-02058-1500-S6-rev001

Site 1	ID .	ALH157	Technician	Sandy Grenville		Site Visit Date	08/24/2013		
	DAS, se	ensor translators, an	ıd peripheral equi	pment operation	s and n	naintenance			
		DAS instruments apaintained?	ppear to be in good	l condition and	✓				
		the components of t , backup, etc)	he DAS operation	al? (printers,	✓				
		analyzer and sensor ng protection circuit		through	Me	sensors only			
		esignal connections jointained?	protected from the		✓				
5 A	Are the	signal leads connec	ted to the correct	DAS channel?					
	Are the ground	e DAS, sensor transleed?	ators, and shelter p	properly	✓				
7]	Does th	e instrument shelter	r have a stable pov	ver source?	✓				
8]	ls the ii	nstrument shelter te	mperature control	lled?	✓				
9 1	ls the n	net tower stable and	grounded?			Stable	Gro	ounded	
10 l	s the s	ample tower stable a	and grounded?						
		ample tower stable a	and grounded?			✓		V	
11 7		comments?	and grounded? Manufacturer	Model	12.3	S/N		Client	ID.
11 7	Fower of the control	comments?		Model D520				3583(31)(G)	
Para Comp	Fower of meter	comments?	Manufacturer			S/N unknown 2522		Client 000299	9
Para Comp	rower of the second sec	comments?	Manufacturer Dell	D520		S/N unknown 2522		Client 000299	9
Para Comp DAS Mode	meter puter em	y additional explana man-made, that may	Manufacturer Dell Campbell Raven tion (photograph of affect the monito	D520 CR3000 H4222-C or sketch if necestring parameters	ssary) 1	S/N unknown 2522 0844355805		Client 000298 000408 06605	5
Para Comp DAS Mode	meter puter em	comments?	Manufacturer Dell Campbell Raven tion (photograph of affect the monito	D520 CR3000 H4222-C or sketch if necestring parameters	ssary) 1	S/N unknown 2522 0844355805		Client 000298 000408 06605	5
Para Comp DAS Mode	meter puter em	y additional explana man-made, that may	Manufacturer Dell Campbell Raven tion (photograph of affect the monito	D520 CR3000 H4222-C or sketch if necestring parameters	ssary) 1	S/N unknown 2522 0844355805		Client 000298 000408 06605	5
Para Comp DAS Mode	meter puter em	y additional explana man-made, that may	Manufacturer Dell Campbell Raven tion (photograph of affect the monito	D520 CR3000 H4222-C or sketch if necestring parameters	ssary) 1	S/N unknown 2522 0844355805		Client 000298 000408 06605	5

F-02058-1500-S7-rev001

Site ID	ALH157		Tech	nician	Sandy Grenville)	Site Visit Date	08/24/2013	3		
<u>Docume</u>	ntation										
Does the site have the required instrument and equipment manuals?											
Yes No N/A Yes No N/A Yes No N/A											
Wind speed				1\/ <i>1</i>		a logg	ger		V	IN/A	
Wind direc				✓		a logg				V	
Temperatu	re sensor	✓					rt recorder			✓	
Relative hu	midity sensor			✓	Con	npute	r	✓			
Solar radia	tion sensor			✓	Mod	lem			✓		
Surface we	tness sensor			✓	Prin	iter				V	
Wind senso	r translator			✓	Zer	o <mark>air</mark> j	pump		~		
Temperatu	re translator			✓	Filte	er flo	w pump		✓	C	
Humidity s	ensor translator			✓	Sur	ge pro	otector			V	
Solar radia	tion translator			✓	UPS	3				V	
Tipping bu	cket rain gauge			✓	Ligl	ntning	g protection device	CONTROL DE CONTROL		V	
Ozone anal			V		She	lter h	eater		V	L	
	flow controller	Ц	✓		She	lter ai	ir conditioner	~			
Filter pack	MFC power supply	Ш		V							
Does th	e site have the requi	ired a	nd mo	ost rece	nt QC documer	its an	d report forms?				
		Pres	ent					Curre	ent		
Station Log			7			19875-0307-0749		✓			
SSRF		•	/					✓			
Site Ops M	anual	ŀ	/	Oct 200)1						
HASP											
Field Ops N				July 199	90						
Calibration			/					V			
	Control Charts							Щ			
Preventive	maintenance schedu	1 [15500000000000000000000000000000000000						
	station log properly						Minimal information				
2 Are th curren	e Site Status Report t?	Forn	ıs beiı	ng comp	oleted and	V					
	e chain-of-custody for e transfer to and from			rly used	l to document	✓					
4 Are oz	one z/s/p control cha t?	arts p	roper	ly comp	leted and		Control charts not us	sed			
	y additional explanat nan-made, that may) regarding conditi	ions listed	above, o	r any	
		2000000	No.			Naga Na		STATISTICS OF THE	15.35° 14		

F-02058-1500-S8-rev001

Site	ID ALH157	Technician	Sandy Grenville	Site Visit Date	08/24/2013	
	G*/ /* 3					
1	Site operation procedures Has the site operator attended course? If yes, when and who		TNET training	1987 at ESE in FL		
2	Has the backup operator atterraining course? If yes, when					
	Is the site visited regularly on schedule?	the required Tu	iesday	2	One (London Section Salama), Any Espain & Makelet (N 195 NB-04 ASSERTED TO A SECTION OF THE SECTION OF
	Are the standard CASTNET of flollowed by the site operator?		cedures being	/		
5	Is the site operator(s) knowled the required site activities? (in	geable of, and a cluding docume	able to perform [entation]			
	Are regular operational QA/Q	C checks perfo	rmed on meteoro	ological instruments?		
QC	Check Performed		Frequency		Compliant	
Mul	tipoint Calibrations	✓	N/A	**************************************	✓	
Visu	ial Inspections		N/A		✓	
Trai	nslator Zero/Span Tests (clima		N/A		✓	
Man	nual Rain Gauge Test	~	N/A		V	
Con	firm Reasonableness of Curren		N/A			
Test	Surface Wetness Response	~	N/A		✓	
	Are regular operational OA/O	C checks perfo	rmed on the ozo	ne analyzer?		
			T.		Compliant	
QC	Check Performed		Frequency		Comphant	
	Check Performed lti-point Calibrations	✓	Semiannually		V	
Mul		✓				
Mul Auto	ti-point Calibrations	✓	Semiannually			
Mul Auto Man	lti-point Calibrations omatic Zero/Span Tests		Semiannually			
Mul Auto Man Auto	lti-point Calibrations omatic Zero/Span Tests nual Zero/Span Tests		Semiannually Daily Daily			
Mult Auto Man Auto Man	lti-point Calibrations omatic Zero/Span Tests nual Zero/Span Tests omatic Precision Level Tests		Semiannually Daily Daily			
Mul Auto Man Auto Man Ana	tti-point Calibrations omatic Zero/Span Tests nual Zero/Span Tests omatic Precision Level Tests nual Precision Level Test		Semiannually Daily Daily Weekly Every 2 weeks	5		
Mul Auto Man Auto Man Ana In-li	Iti-point Calibrations omatic Zero/Span Tests nual Zero/Span Tests omatic Precision Level Tests nual Precision Level Test llyzer Diagnostics Tests		Semiannually Daily Daily Weekly Every 2 weeks	3		
Mul Auto Man Auto Man Ana In-li In-li	tti-point Calibrations omatic Zero/Span Tests nual Zero/Span Tests omatic Precision Level Tests nual Precision Level Test tlyzer Diagnostics Tests ine Filter Replacement (at inlet	y v v v v v v v v v v v v v v v v v v v	Semiannually Daily Daily Weekly Every 2 weeks	5		
Mul Auto Man Auto Man Ana In-li In-li Sam	Iti-point Calibrations omatic Zero/Span Tests nual Zero/Span Tests omatic Precision Level Tests nual Precision Level Test llyzer Diagnostics Tests ine Filter Replacement (at inlet	y v v v v v v v v v v v v v v v v v v v	Semiannually Daily Daily Weekly Every 2 weeks	3		
Mul Auto Man Auto Man Ana In-li In-li Sam Zero	Iti-point Calibrations omatic Zero/Span Tests nual Zero/Span Tests omatic Precision Level Tests nual Precision Level Test dyzer Diagnostics Tests ine Filter Replacement (at inlet ine Filter Replacement (at anal uple Line Check for Dirt/Water o Air Desiccant Check Do multi-point calibration gas sample train including all filter	y	Semiannually Daily Daily Weekly Every 2 weeks N/A Weekly	Unknown		
Mul Auto Man Auto Man Ana In-li In-li Sam Zero	Iti-point Calibrations omatic Zero/Span Tests nual Zero/Span Tests omatic Precision Level Tests nual Precision Level Test dyzer Diagnostics Tests ine Filter Replacement (at inlet ine Filter Replacement (at anal ple Line Check for Dirt/Water o Air Desiccant Check Do multi-point calibration gas sample train including all filter Do automatic and manual z/s/p	es go through thrs?	Semiannually Daily Daily Weekly Every 2 weeks N/A Weekly			
Mul Auto Man Auto Man Ana In-li In-li Sam Zero 1	Iti-point Calibrations omatic Zero/Span Tests nual Zero/Span Tests omatic Precision Level Tests nual Precision Level Test dyzer Diagnostics Tests ine Filter Replacement (at inlet ine Filter Replacement (at anal uple Line Check for Dirt/Water o Air Desiccant Check Do multi-point calibration gas sample train including all filter	es go through the rs? p gasses go through all filters?	Semiannually Daily Daily Weekly Every 2 week: N/A Weekly he complete	Unknown		
Mul Auto Man Auto Man Ana In-li In-li Sam Zero 1 2 3	Iti-point Calibrations omatic Zero/Span Tests nual Zero/Span Tests omatic Precision Level Tests nual Precision Level Test dyzer Diagnostics Tests ine Filter Replacement (at inlet ine Filter Replacement (at anal aple Line Check for Dirt/Water o Air Desiccant Check Do multi-point calibration gas sample train including all filter Do automatic and manual z/s/j complete sample train includir Are the automatic and manual	es go through thrs? p gasses go throng all filters? l z/s/p checks m	Semiannually Daily Daily Weekly Every 2 weeks N/A Weekly he complete ough the onitored and	Unknown SSRF, call-in		my other features,

F-02058-1500-S9-rev001

Site	e ID	ALH157	Tec	hnician	Sandy Grenville		Site Visit Dat	e 08/24/2013			
	Site op	eration procedures									
1	Is the f	ilter pack being cha	nged ever	y Tuesda	ay as scheduled?		Filter changed mo	rinings			
2	Are the	e Site Status Report ly?	Forms bei	ng comj	oleted and filed	✓					
3	Are da schedu	ta downloads and ba	ackups bei	ng perfo	ormed as		No longer required				
4	Are ger	neral observations b	eing made	and red	corded? How?	✓	SSRF				
5	Are site supplies on-hand and replenished in a timely fashion?										
6	Are sample flow rates recorded? How?						SSRF, call-in				
7	Are sai	mples sent to the lab	on a regu	lar sche	dule in a timely	✓					
8		ers protected from opping? How?	contamina	tion dur	ring handling	✓	Clean gloves on a	nd off			
9		e site conditions repo ons manager or staf		larly to	the field	✓					
QC	Check I	Performed		Free	quency			Compliant			
N	Aulti-po	int MFC Calibration	ns	Sem	iannually	ni-m		✓			
F	low Sys	tem Leak Checks		Wee	kly	10.00					
F	ilter Pa	ck Inspection				4461123					
		e Setting Checks		Wee	A PRODUCTION OF STREET WAS A STREET WAS A STREET						
		heck of Flow Rate R		Wee	NAME OF TAXABLE PARTY.	are even					
		lter Inspection/Repl		OCT THOUGH	iannually	DENGANA	market of the contract of the				
		Line Check for Dirt/		Wee		6.0					
		additional explanati an-made, that may a					y) regarding condi	tions listed above, or a	ny other features,		

Site Inventory by Site Visit

Site V	isit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
PRK1	34-Eric H	lebert-09/04/2013				
1	9/4/2013	Computer	Dell	000275	D520	unknown
2	9/4/2013	DAS	Campbell	000411	CR3000	2509
3	9/4/2013	Elevation	Elevation	None	1	None
4	9/4/2013	Filter pack flow pump	Thomas	03633	107CAB18	049400004507
5	9/4/2013	Flow Rate	Mykrolis	000175	FC2805	AW04423007
6	9/4/2013	Infrastructure	Infrastructure	none	none	none
7	9/4/2013	MFC power supply	MACTEC	06265	none	none
8	9/4/2013	Modem	Raven	06609	H4223-C	0844356221
9	9/4/2013	Ozone	ThermoElectron Inc	000690	49i A1NAA	1030244800
10	9/4/2013	Ozone Standard	ThermoElectron Inc	000446	49i A3NAA	CM08200022
11	9/4/2013	Sample Tower	Aluma Tower	03518	Α	none
12	9/4/2013	Shelter Temperature	Campbell	none	107-L	unknown
13	9/4/2013	Siting Criteria	Siting Criteria	None	1	None
14	9/4/2013	Temperature	RM Young	06306	41342VC	12545
15	9/4/2013	UPS	APC	none	RS800	OB 0332131201
16	9/4/2013	Zero air pump	Werther International	06905	C 70/4	000821907

Flow Data Form

Mfg	S	erial Nun	iber Ta	Site	Tec	chnician	Site Visit I	Date Paran	neter	Owner ID		
Mykrolis		AW044230	007	PRK134	Eri	c Hebert	09/04/201	3 Flow R	ate	000175		
Mfg	MAC	TEC				Mfg		Parameter Flow Rate				
SN/Owner ID	none		06265			Serial Number	122974	T	fer Desc. BIG	OS 220-H		
Parameter	MFC	power sup	oply			Tfer ID	01416					
						Slope	1.	.00000 Inte	ercept	0.0000		
						Cert Date	1/	8/2013 Co	rCoff	1.0000		
DAS 1:			DAS 2:		L	Cal Factor Z	ero	0.0)2			
A Avg % Diff:	A Ma	x % Di	A Avg %l	Dif A Max	: % Di	Cal Factor F	ull Scale	0.0	97			
1.55%		1.64%				Rotometer R	eading:	1	.6			
UseDescription	: Te	st type:	Input 1/m:	Input STP:	MfcDisp.:	OutputSignal:	Output S E:	InputUnit:	OutputSignal	PctDifference		
primary	pump		0.000	0.000	-0.03	-0.020	0.00	l/m	1/m			
primary	leak o	check	0.000	0.000	-0.02	-0.018	0.00	l/m	l/m			
primary	test p	t 1	0.000	1.522	1.55	1.552	1.50	l/m	1/m	-1.46%		
primary	test p	t 2	0.000	1.524	1.55	1.552	1.50	l/m	l/m	-1.56%		
primary	test p	t 3	0.000	1.525	1.55	1.552	1.50	l/m	l/m	-1.64%		
Sensor Comp	onent	Leak Tes	t		Conditio	n		Status	pass			
Sensor Comp	onent	Filter Azir	muth		Conditio	n 235 deg		Status	pass			
Sensor Comp	onent	Filter Dep	oth		Conditio	n 2.5 cm		Status	pass			
Sensor Comp	onent	Filter Pos	sition		Conditio	n Good	Status	pass				
Sensor Comp	onent	Moisture	Present		Conditio	n No moisture p	esent	Status	pass			
Sensor Comp	onent	Rotomete	er Condition	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	Status pass				
Sensor Comp	onent	Filter Dist	tance		Conditio	n 6.0 cm		Status	pass			

Ozone Data Form

Mfg Se	erial Number Ta	Site	Teo	chniciai	1	Site Visi	it Date	Parame	ter	Owner ID
ThermoElectron Inc 1	030244800	PRK134	Eri	ic Heber	t	09/04/20	013	Ozone		000690
Intercept 1.0	Slope: 10502 Intercept 109996 CorrCoff	0.00000	0	Mfg Serial l	Number	ThermoE 5171121 01111			rameter ozo	one primary stan
DAS 1: A Avg % Diff: A Mar 1.7%	DAS 2: x % Di	6Dif A Max (Slope Cert D	ate		0.9972		-	0.18428 1.00000
UseDescription:	ConcGroup:	Tfer Raw:	Tfer (Corr:	Si	te:	Site	Unit:	PctDiff	erence:
primary	1	0.01	-0.1		0.0		ppb			
primary	2	27.84	27.		27.		ppb			0.25%
primary	3	57.13	57.		56.		ppb			-1.47%
primary	4	84.51	84.:		83.		ppb			-1.84%
primary	5	104.64	104.		101	.50	ppb			-3.09%
Sensor Component	Cell B Noise		Conditio	0.8 p	pb			Status	pass	
Sensor Component	Cell B Tmp.		Conditio	n				Status	pass	
Sensor Component	Fullscale Voltage		Conditio	n N/A				Status	pass	
Sensor Component	Inlet Filter Condition	n	Conditio	Clea	n			Status	pass	
Sensor Component	Line Loss		Conditio	Not t	ested			Status	pass	
Sensor Component	Offset		Conditio	Not t	ested			Status	pass	
Sensor Component	Span		Conditio	n Not t	ested			Status	pass	
Sensor Component	Cell B Freq.		Conditio	87.3	kHz			Status	pass	
Sensor Component	System Memo		Conditio	n				Status	pass	
Sensor Component	Sample Train		Conditio	Good	i			Status	pass	
Sensor Component	Cell B Pressure		Conditio	on				Status	pass	
Sensor Component	Cell B Flow		Conditio	0.73	lpm			Status	pass	
Sensor Component	Cell A Tmp.		Conditio	35.0	С			Status	pass	
Sensor Component	Cell A Pressure		Conditio	700.6	6 mmHg			Status	pass	
Sensor Component	Cell A Noise		Conditio	0.6 p	pb			Status	pass	
Sensor Component	Cell A Freq.		Conditio	92.9	kHz			Status	pass	
Sensor Component	Cell A Flow		Conditio	0.73	lpm			Status	pass	
Sensor Component	Battery Backup		Conditio	Not f	unctioning			Status	Fail	
Sensor Component	Zero Voltage		Conditio	N/A				Status	pass	

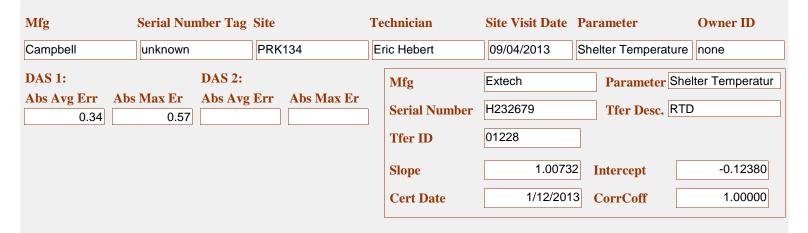
Temperature Data Form Serial Number Tag Site **Technician** Site Visit Date Parameter **Owner ID** Mfg 12545 PRK134 Eric Hebert Temperature 06306 RM Young 09/04/2013 **Parameter** Temperature Mfg Extech Tfer Desc. RTD H232679 **Serial Number** 01228 Tfer ID 1.00732 -0.12380 **Slope Intercept DAS 1: DAS 2:** 1/12/2013 1.00000 Abs Avg Err Abs Max Er Abs Avg Err Abs Max Er **Cert Date** CorrCoff 0.10 0.15 InputTmpRaw | InputTmpCorr.: | OutputTmpSignal: | OutputSignalEng: | OSE Unit: | Difference: UseDesc.: Test type: primary Temp Low Range -0.05 0.07 0.000 0.0 C -0.1120.12 0.000 20.1 $\overline{\mathbf{C}}$ -0.05 primary Temp Mid Range 20.14 Temp High Range 44.77 44.57 0.000 44.7 C 0.15 primary Sensor Component | Shield **Condition** Clean Status pass Sensor Component Blower Status Switch **Condition** Functioning **Status** pass **Sensor Component** Blower **Condition** Functioning **Status** pass Sensor Component System Memo **Condition** See comments **Status** pass

Infrastructure Data For

Si	te ID	PRK134	Technician	Eric Hebert	Site Visit Date	09/04/2013	
	Shelter Ma	ake	Shelter Model	Shel	lter Size		
	Ekto		8810 (s/n 2116-	11) 640	cuft		
		MEDAUGYN MAN HERWYD RYCH		DESCRIPTION OF THE PROPERTY OF	VESTIMATE DE L'ANDERS DE L'ANDRE D		

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



UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	24.57	24.51	0.000	24.4	С	-0.14
primary	Temp Mid Range	23.83	23.78	0.000	24.1	С	0.32
primary	Temp Mid Range	23.15	23.10	0.000	23.7	С	0.57

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard Problem	
Temperature	PRK134	Eric Hebert	09/04/2013	System Memo	RM Young	3850		✓

The temperature probe is a short style and it is mounted in a housing with an extension designed for a long style probe.

Field Systems Comments

1 Parameter: DasComments

The tower guy wires are rusted and should be replaced. The sample tower is damaged at the hinge point and bent. Both of these items were observed during the previous audit visit.

2 Parameter: SitingCriteriaCom

Clover and Barley have been planted for hay within 20m of the site starting in 2008.

3 Parameter: ShelterCleanNotes

The shelter is clean, neat, and well organized. The counter top and corners of the wall are beginning to rot.

F-02058-1500-S1-rev001

Site ID PR	K134		Technician	Eric Hebert	Site Visit	t Date 09/0	04/2013		
av a		EDA			USGS Map		Perkinstown		
Site Sponsor (age		EPA					- Charlote Wil		
Operating Group		Private		90021800577957	Map Scale			ESUD.	
AQS#		55-119-9	991		Map Date				
Meteorological T	ype	R.M. You	ıng	W-W-W-W-W-W-W-W-W-W-W-W-W-W-W-W-W-W-W-					
Air Pollutant Ana	alyzer	Ozone, F	PM2.5		QAPP Latitude	45.2066			
Deposition Measu	ırement	dry, wet			QAPP Longitud	QAPP Longitude -90.5972			
Land Use		woodland	d - mixed		QAPP Elevation	n Meters	472		
Terrain		gently ro	lling		QAPP Declinati	ion	1.6		
Conforms to ML	M	Yes			QAPP Declinati	ion Date	2/22/2006		
Site Telephone					Audit Latitude		45.2065	525	
Site Address 1		W 10776	СТН М		Audit Longitud	e	-90.5972	209	
Site Address 2					Audit Elevation		4	162	
County		Taylor			Audit Declination	on	-1.3		
City, State		Medford,	WI			Present			
Zip Code		54451			Fire Extinguish	er 🗸	No inspection date		
Time Zone		Central		S. 15 (B. 1987) (M. 1987) (M. 1987)	First Aid Kit	✓			
Primary Operato	r				Safety Glasses		The state of the s		
Primary Op. Pho	one#				Safety Hard Ha	t 🗸			
Primary Op. E-m	ail				Climbing Belt	✓			
Backup Operator					Security Fence				
Backup Op. Pho	ne#				Secure Shelter	V			
Backup Op. E-m	ail			THE CONTRACT OF STREET	Stable Entry St	ep 🗸			
Shelter Working	Room	Make	Ekto	IV.	lodel 8810 (s/n 21	16-11)	Shelter Size 640 cuft		
Shelter Clean	V	Notes	The shelter is c		d well organized. Th	ne counter to	op and corners of the wall are	The state of	
Site OK	✓	Notes	239	· Constitution (Constitution Constitution Co	el sobritano ha la biblio de sobrida de servicio de la composicio de la composicio de la composicio de la comp				
Driving Direction	From appro	Medford oximately 1	3 miles. Before	reaching Perk	instown, and just aft		st) onto county route M. Continue a small creek and two sharp curves,		
	the si	te will be v	risible behind the	landowners h	ouse on the right.			100	

F-02058-1500-S2-rev001

Site ID PRK134 Technician Eric Hebert Site Visit Date 09/04/2013

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		V
Major industrial complex	10 to 20 km		V
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	20 m	
Large parking lot	200 m		✓
Small parking lot	100 m		✓
Tree line	50 m		✓
Obstacles to wind	10 times obstacle height		✓

Siting Distances OK ✓

Siting Criteria Comment

Clover and Barley have been planted for hay within 20m of the site starting in 2008.

		A STATE OF THE PARTY OF THE PAR
Field Sy		
	Data	

F-02058-1500-S3-rev001

	Site Visit Date 09/04/2013		Technician Eric Hebert	ID PRK134	Site				
	N/A	V [
	IVA			Are wind speed and direction being influenced by obstruction	1				
	N/A	✓	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)						
	N/A	V [Are the tower and sensors plumb?						
		✓		Are the temperature shields p avoid radiated heat sources su	4				
		>	v sensors should be natural d. Ridges, hollows, and areas of	Are temperature and RH sens conditions? (i.e. ground below surface and not steeply sloped standing water should be avoi	5				
And British and William & All	N/A		olumb?	Is the solar radiation sensor p	6				
	N/A	✓	any artificial or reflected	Is it sited to avoid shading, or light?	7				
	N/A	✓ 1		Is the rain gauge plumb?	8				
	N/A	V	effects from buildings, trees,	Is it sited to avoid sheltering e towers, etc?	9				
	N/A		sited with the grid surface	Is the surface wetness sensor s facing north?	10				
	N/A	✓ I	30 degrees?	Is it inclined approximately 3	11				
other features,	y) regarding conditions listed above, or any other fea		on (photograph or sketch if nece ffect the monitoring parameters						
otl	N/A	✓ [30 degrees? on (photograph or sketch if nece	Is the surface wetness sensor s facing north? Is it inclined approximately 3 vide any additional explanation	11 Pro				

	Systems D					02000 10	00-S4-rev0(
te ID	PRK134	Technician	Eric Hebert	1279	Site Visit Date 09/04	/2013	
D	. 11 41 4 1			✓			
	all the meterolog	gical sensors appear to b maintained?	e intact, in good	·			
	all the meteorol orting data?	logical sensors operation	nal online, and	V			
Are	the shields for t	he temperature and RH	sensors clean?	✓			
Are	the aspirated m	otors working?		✓			
	he solar radiatio atches?	n sensor's lens clean and	l free of		N/A		
Is t	he surface wetne	ss sensor grid clean and	undamaged?		N/A		
	the sensor signa dition, and well	al and power cables inta maintained?	ct, in good		N/A		
		al and power cable conn nd well maintained?	ections protected	>	N/A		
rame	ter	Manufacturer	Model		S/N	Clie	nt ID
mpera	ature	RM Young	41342VC		12545	0630	16
		xplanation (photograph at may affect the monito		sary)	regarding conditions lis	sted above, or an	y other features,

9860					100	200	
R	PIC	Sv	ster	ns I)ats	a R	orm
al de			Stc.		Juli		

F-02058-1500-S5-rev001

Site ID	PRK134	Technician Eric	c Hebert		Site Visit Date 09/04/2013				
Siting	Criteria: Are the J	pollutant analyzers and o	deposition equ	<u>ıipn</u>	ent sited in accordance with	40 CFR <u>5</u>	58, Appendix E		
	e sample inlets hav tricted airflow?	e at least a 270 degree ar	ce of	✓					
2 Are tl	ne sample inlets 3 -	15 meters above the gro	und?	✓					
	ne sample inlets > 1 0 meters from trees	meter from any major o s?	obstruction,	✓					
Pollut	ant analyzers and	deposition equipment op	erations 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 Descr	ibe ozone sample to	ube.			1/4 teflon by 15 meters				
4 Descr	ibe dry dep sample	tube.			3/8 teflon by 15 meters				
	n-line filters used in te location)	the ozone sample line?	(if yes	✓	At inlet only				
	ample lines clean, fuctions?	ree of kinks, moisture, a	ınd	✓					
7 Is the	zero air supply des	siccant unsaturated?		✓					
8 Are tl	nere moisture traps	s in the sample lines?		v					
9 Is the clean		ne dry deposition filter li	ne, and is it	✓	Clean and dry				
Paramete	r	Manufacturer	Model		S/N	Cl	ient ID		
Sample To	ower	Aluma Tower	A	SERVI	none	03	518		
MFC power	er supply	MACTEC	none	maril.	none	06	265		
Ozone		ThermoElectron Inc	49i A1NAA	1602E	1030244800	00	0690		
Filter pack	flow pump	Thomas	107CAB18	(C)	049400004507	03	633		
Zero air pu	ımp	Werther International	C 70/4		000821907	06	905		
		ation (photograph or sko y affect the monitoring		ry)	regarding conditions listed al	ove, or a	ny other features,		

F-02058-1500-S6-rev001

Site	ID	PRK134	Technician	Eric Hebert	es verses	Site Visit Date	09/04/201	3	
	DAS,	, sensor translators, an	d peripheral equi	pment operation	ıs aı	nd maintenance			
1		ne DAS instruments apmaintained?	pear to be in good	l condition and	✓				
2		all the components of them, backup, etc)	he DAS operation	al? (printers,	~				
3		ne analyzer and sensor ning protection circuit		through	✓	Met sensors only			
4		he signal connections pmaintained?	protected from the	e weather and	✓				
5	Are t	he signal leads connec	ted to the correct	DAS channel?	✓				
6		he DAS, sensor translanded?	ntors, and shelter	properly	✓				
7	Does	the instrument shelter	have a stable pov	ver source?	V				
8	Is the	e instrument shelter te	mperature control	lled?	✓				
9	Is the	e met tower stable and	grounded?			Stable 🗸		Grounded	
10	Is the	e sample tower stable a	nd grounded?			V			
11	Towe	er comments?							
Par	amete	er	Manufacturer	Model		S/N		Clie	nt ID
Con	nputer		Dell	D520		unknown		000	275
DAS			Campbell	CR3000	Marian Marian	2509		000	411
Mod			Raven	H4223-C	28500	084435622		066	
UPS	S CHARLES THE		APC	RS800	112525	OB 033213	1201	none	Э
		ny additional explana r man-made, that may				y) regarding cond	itions listed	d above, or a	ny other features,

The tower guy wires are rusted and should be replaced. The sample tower is damaged at the hinge point and bent. Both of these items were observed during the previous audit visit.

F-02058-1500-S7-rev001 **Field Systems Data Form** Site ID PRK134 Technician Eric Hebert Site Visit Date 09/04/2013 **Documentation** Does the site have the required instrument and equipment manuals? N/A Yes No No N/A Yes **V** V Wind speed sensor **Data logger** V Wind direction sensor V **Data logger** V ~ Temperature sensor Strip chart recorder \Box V V Relative humidity sensor Computer П ~ \Box ~ Solar radiation sensor Modem V \Box ~ П Surface wetness sensor **Printer** V ~ Wind sensor translator Zero air pump ~ **Temperature translator** V Filter flow pump ~ ~ **Humidity sensor translator** Surge protector П ~ ~ **UPS** Solar radiation translator П **V** ~ Lightning protection device Tipping bucket rain gauge **V** П V П **Shelter heater** Ozone analyzer V V Filter pack flow controller Shelter air conditioner V Filter pack MFC power supply Does the site have the required and most recent QC documents and report forms? **Present** Current **Station Log** V **V**

Site	Ops Manual	✓	Feb 2001					
HA	SP	V	Oct 2011					
Fiel	d Ops Manual	✓	July 1990					
Cal	ibration Reports							
Ozo	one z/s/p Control Charts							
Pre	ventive maintenance schedul							
1 2	Is the station log properly com Are the Site Status Report For current?	ms be	ing completed and	>				
3	Are the chain-of-custody form sample transfer to and from la	2015 2000	perly used to document	✓				
4	Are ozone z/s/p control charts current?	prope	rly completed and		Control charts no	ot used		

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features,

~

~

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

SSRF

F-02058-1500-S8-rev001

Site	ID	PRK134	Technician	Eric Hebert		Site Visit Date 09/04/2	013		
		eration procedures	6 1010						
1		site operator attended a If yes, when and who in		SINE I training					
2		backup operator attend		CASTNET					
		g course? If yes, when an			Ц				
3 Is the site visited regularly on the required Tuesday schedule?									
4 Are the standard CASTNET operational procedures being flollowed by the site operator?									
5	Is the sit the requ	e operator(s) knowledge ired site activities? (inclu	eable of, and uding docum	able to perform entation)	✓				
	Are regi	ılar operational QA/QC	checks perfo	rmed on meteo	<u>rolo</u>	gical instruments?			
OC (Check P	erformed		Frequency			Compliant		
		Calibrations	V				✓		
	al Inspe		✓	MESS CONTRACTOR OF THE PARTY OF	THE PARTY	Water and the control of the control	✓		
		cuons Zero/Span Tests (climatro		Contract of the second	MESSAGE		✓		
		n Gauge Test	omes)	The state of the s	S CONTRACTOR OF THE PARTY OF TH		<u>✓</u>		
		asonableness of Current		No. Co.	1500		_ _		
		Wetness Response	√ alucs	STATE OF THE PARTY	ECENTRIC .		✓		
	Are regi	ılar operational QA/QC	checks perfo	ormed on the ozo	one	analyzer?			
QC	Check P	erformed		Frequency			Compliant		
Mult	ti-point	Calibrations	V	Semiannuall	V		✓		
Auto	or borre			A STATE OF THE PARTY OF THE PAR	DIE STORY		~		
		ero/Span Tests	V	Daily		1999			
Man	omatic Z	ero/Span Tests o/Span Tests	<u> </u>	SSESSION OF THE PROPERTY OF THE PARTY OF THE	e e e e e		✓		
	omatic Z	ero/Span Tests o/Span Tests recision Level Tests		As needed					
Auto	omatic Z nual Zero omatic P	o/Span Tests	V	As needed Daily			✓		
Auto Man	omatic Z nual Zer omatic P nual Pred	o/Span Tests recision Level Tests	V	As needed Daily As needed			✓		
Auto Man Anal	omatic Z nual Zero omatic P nual Pred lyzer Dia	o/Span Tests recision Level Tests cision Level Test	✓ ✓	As needed Daily As needed Weekly	ks				
Auto Man Anal In-lii	omatic Z nual Zero omatic P nual Pred lyzer Dia ne Filter	o/Span Tests recision Level Tests rision Level Test agnostics Tests		As needed Daily As needed Weekly Every 2 wee	ks				
Auto Man Anal In-lii	omatic Z nual Zero omatic P nual Pred lyzer Dia ne Filten	o/Span Tests recision Level Tests cision Level Test agnostics Tests Replacement (at inlet)		As needed Daily As needed Weekly Every 2 wee	ks				
Auto Man Anal In-lii In-lii Sam	omatic Z nual Zero matic P nual Pred lyzer Dia ne Filter ne Filter	o/Span Tests recision Level Tests rision Level Test agnostics Tests Replacement (at inlet) Replacement (at analyz	v v v	As needed Daily As needed Weekly Every 2 wee N/A Weekly	ks				
Auto Man Anal In-lii In-lii Sam Zero	omatic Z nual Zero omatic P nual Pred lyzer Dia ne Filter ne Filter ple Line o Air De	o/Span Tests recision Level Tests rision Level Test agnostics Tests Replacement (at inlet) Replacement (at analyz Check for Dirt/Water siccant Check i-point calibration gases	go through t	As needed Daily As needed Weekly Every 2 wee N/A Weekly Weekly	ks				
Auto Man Anal In-lii Sam Zero	omatic Z nual Zero omatic P nual Pred lyzer Dia ne Filter ne Filter ple Line o Air Des Do mult sample to	o/Span Tests recision Level Tests cision Level Test agnostics Tests Replacement (at inlet) Replacement (at analyz Check for Dirt/Water siccant Check i-point calibration gases rain including all filters; matic and manual z/s/p g	go through t	As needed Daily As needed Weekly Every 2 wee N/A Weekly Weekly Weekly					
Auto Man Anal In-lii Sam Zero	omatic Z tual Zero omatic P tual Pred lyzer Dia ne Filter ple Line o Air Des Do mult sample to complet	o/Span Tests recision Level Tests recision Level Test agnostics Tests Replacement (at inlet) Replacement (at analyz Check for Dirt/Water siccant Check i-point calibration gases rain including all filters matic and manual z/s/p ge e sample train including	go through to sasses go through all filters?	As needed Daily As needed Weekly Every 2 wee N/A Weekly Weekly Weekly the complete	<!--</th--><th></th><th></th><th></th>				
Auto Man Anal In-lii In-lii Sam Zero	omatic Z nual Zero matic P nual Pred lyzer Dia ne Filter ple Line o Air Des Do mult sample t Do auto complet Are the	o/Span Tests recision Level Tests cision Level Test agnostics Tests Replacement (at inlet) Replacement (at analyz Check for Dirt/Water siccant Check i-point calibration gases rain including all filters; matic and manual z/s/p g	go through to sasses go through all filters?	As needed Daily As needed Weekly Every 2 wee N/A Weekly Weekly Weekly the complete	✓	SSRF, logbook, call-in			
Auto Man Anal In-lii In-lii Sam Zero 1	omatic Z nual Zero omatic P nual Pred lyzer Dia ne Filter ne Filter ple Line o Air De Do mult sample (Do auto complet Are the reported	o/Span Tests recision Level Tests recision Level Test agnostics Tests Replacement (at inlet) Replacement (at analyz Check for Dirt/Water siccant Check i-point calibration gases rain including all filters; matic and manual z/s/p g e sample train including automatic and manual z/s !? If yes, how?	go through t? gasses go thrall filters? /s/p checks n	As needed Daily As needed Weekly Every 2 wee N/A Weekly Weekly weekly the complete ough the nonitored and	✓ ✓	SSRF, logbook, call-in y) regarding conditions list		ny other features,	
Auto Man Anal In-li In-li Sam Zero 1	omatic Z nual Zero omatic P nual Pred lyzer Dia ne Filter ne Filter ple Line o Air De Do mult sample (Do auto complet Are the reported	o/Span Tests recision Level Tests recision Level Test agnostics Tests Replacement (at inlet) Replacement (at analyz Check for Dirt/Water siccant Check i-point calibration gases rain including all filters; matic and manual z/s/p ge e sample train including automatic and manual z/s/p ge	go through t? gasses go thrall filters? /s/p checks n	As needed Daily As needed Weekly Every 2 wee N/A Weekly Weekly weekly the complete ough the nonitored and	✓ ✓			ny other features,	

F-02058-1500-S9-rev001

Site	e ID	PRK134 T	echni	cian Eric Hebert		Site Visit Dat	te	09/04/2013	
	Site o	operation procedures							
1	Is the	e filter pack being changed evo	ry T	uesday as scheduled?	✓	Filter changed mo	orii	nings	
2	Are t	he Site Status Report Forms l	eing	completed and filed	~				
3	Are c	lata downloads and backups l luled?	eing	performed as		No longer required			
4	Are g	general observations being ma	de ar	nd recorded? How?	V	SSRF, logbook			
5	Are s	ite supplies on-hand and replon?	enish	ed in a timely	✓				
6	Are s	ample flow rates recorded? H	ow?		✓	SSRF, logbook, ca	all	-in	
7	Are s	amples sent to the lab on a re	gular	schedule in a timely	✓				
8	Are f	ilters protected from contami hipping? How?	natio	n during handling	✓	Clean gloves on a	and	d off	
9	Are t	he site conditions reported rentions manager or staff?	gular	ly to the field	V				
QC	Check	: Performed		Frequency				Compliant	
N	Aulti-p	ooint MFC Calibrations	✓	Semiannually	Ole CO				
F	low S	ystem Leak Checks	✓	Weekly	a posterior				
		Pack Inspection			e491123				
		ate Setting Checks	1000	Weekly	BHELOVE				
		Check of Flow Rate Rotomete			2000				
		Filter Inspection/Replacemen		Semiannually Weekly	E E FEATA				
		Line Check for Dirt/Water							
		y additional explanation (pho man-made, that may affect th				y) regarding condi	iti	ons listed above, or any other features,	

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
VO	7413-Eric H	lebert-09/05/2013				_
1	9/5/2013	DAS	Environmental Sys Corp	none	8816	4059
2	9/5/2013	Elevation	Elevation	None	1	None
3	9/5/2013	F460 translator	Climatronics	none	100163	211
4	9/5/2013	Filter pack flow pump	Thomas	none	107CAB18	120000014367
5	9/5/2013	flow rate	Tylan	none	FC280SAV	AW9806012
6	9/5/2013	Infrastructure	Infrastructure	none	none	none
7	9/5/2013	MFC power supply	Tylan	none	RO-32	FP9806001
8	9/5/2013	Ozone	ThermoElectron Inc	90730	49C	49C-70522-366
9	9/5/2013	Ozone Standard	ThermoElectron Inc	90717	49C	49C-66823-354
10	9/5/2013	Precipitation	Climatronics	02140	100508-2	illegible
11	9/5/2013	Printer	Hewlett Packard	none	842C	unknown
12	9/5/2013	Relative Humidity	Rotronic	none	MP 601A	56080
13	9/5/2013	Sample Tower	Aluma Tower	none	В	AT-51159-11-G
14	9/5/2013	Shelter Temperature	ARS	none	none	none
15	9/5/2013	Siting Criteria	Siting Criteria	None	1	None
16	9/5/2013	Solar Radiation	Licor	none	LI-200	PY28976
17	9/5/2013	Solar Radiation Translator	Climatronics	none	100144	347
18	9/5/2013	Temperature	Climatronics	none	100093	7967
19	9/5/2013	Temperature Translator	Climatronics	00593	100088-2	258
20	9/5/2013	Wind Direction	Climatronics	90838	100076	1832
21	9/5/2013	Wind Speed	Climatronics	90940	100075	1489
22	9/5/2013	Zero air pump	Twin Tower Engineering	90719	TT70/E4	526294

DAS Data Form

DAS Time Max Error:

1.77

Mfg		Serial N	umber	Site	Technician	Site Visit Date	Parameter	Use Desc.
Environmenta	al Sys	4059		VOY413	Eric Hebert	09/05/2013	DAS	Primary
Das Date: Das Time: Das Day:		/2013 :07:14 249	Audit D Audit T Audit D	ime 10:09:00	Mfg Serial Number	Datel 4000392	Parameter Tfer Desc.	DAS Source generator (D
Low Channe	el:		High Ch		Tfer ID	01321		
Avg Diff: 0.000		x Diff: 0.000	Avg Diff	: Max Diff: 0.0000	Slope	1.0000	0 Intercept	0.00000
0.000	0	0.000	1	0.0000	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	Inn	11t 1	NM Outpu	t DAS Output	InputUnit	OutputUnit	Difference	

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	0.3000	0.3000	V	V	0.0000
2	0.5000	0.5000	0.5000	V	V	0.0000
2	0.7000	0.7000	0.7000	V	V	0.0000
2	0.9000	0.9000	0.8999	V	V	-0.0001
2	1.0000	1.0001	1.0000	V	V	-0.0001
16	0.0000	0.0000	0.0000	V	V	0.0000
16	0.1000	0.1000	0.1000	V	V	0.0000
16	0.3000	0.3000	0.3000	V	V	0.0000
16	0.5000	0.5000	0.5000	V	V	0.0000
16	0.7000	0.7000	0.7000	V	V	0.0000
16	0.9000	0.9000	0.9000	V	V	0.0000
16	1.0000	1.0000	1.0000	V	V	0.0000

Flow Data Form

Mfg	Serial Nun	nber Ta S	Site	Tec	hnician	Site Visit I	Date Paran	neter	Owner ID
Гуlan	AW98060	12	VOY413	Eri	c Hebert	09/05/2013	flow ra	te	none
Mfg	Tylan				Mfg	BIOS		'arameter Flo	
SN/Owner ID	FP9806001	none			Serial Number	122974	T	fer Desc. Blo	OS 220-H
Parameter	MFC power su	pply			Tfer ID	01416			
					Slope	1.	00000 Inte	ercept	0.00000
					Cert Date	1/8	8/2013 Co	rCoff	1.00000
DAS 1:		DAS 2:		L	Cal Factor Z	ero	0.1	12	
A Avg % Diff:	A Max % Di	A Avg %I	Dif A Max	% Di	Cal Factor F	ull Scale	5.5	52	
1.29%	1.68%				Rotometer R	eading:	3	.3	
UseDescription:	Test type:	Input 1/m:	Input STP:	MfcDisp.:	OutputSignal:	Output S E:	InputUnit:	OutputSignal	PctDifference
primary	pump off	0.000	0.000	-0.14	-0.1015	0.01	1/m	1/m	
primary	leak check	0.000	0.000	-0.14	-0.1015	0.01	1/m	l/m	
primary	test pt 1	0.000	3.015	2.66	2.6633	2.99	1/m	1/m	-0.81%
primary	test pt 2	0.000	3.021	2.66	2.6633	2.99	l/m	1/m	-1.03%
primary	test pt 3	0.000	3.041	2.66	2.6633	2.99	l/m	1/m	-1.68%
primary	test pt 4	0.000	3.040	2.66	2.6633	2.99	l/m	1/m	-1.64%
Sensor Compo	onent Leak Tes	st		Condition	n		Status	pass	
Sensor Compo	onent Filter Azi	muth		Condition	Not tested		Status	pass	
Sensor Compo	onent Filter De	pth		Condition	-1.0 cm		Status	Fail	
Sensor Compo	onent Filter Pos	sition		Condition	Poor		Status	Fail	
Sensor Compo	onent Moisture	Present		Condition	No moisture pr	esent	Status	pass	
Sensor Compo	onent Rotomete	er Condition		Condition	Clean and dry		Status	pass	
Sensor Component System Memo		Condition	See comments	3	Status	pass			
Sensor Compo	onent Tubing C	Condition		Condition	Good		Status	pass	
Sensor Compo	onent Filter Dis	tance		Condition	5.5 cm		Status	pass	

Ozone Data Form

Mfg S	erial Number Ta	Site	Te	chnician		Site Visi	it Date	Parame	eter	Owner ID
ThermoElectron Inc 4	19C-70522-366	VOY413	Er	ric Hebert		09/05/2	013	Ozone		90730
Intercept 0.7	98970 Slope: 73068 Intercept 19998 CorrCoff	0.00000 0.00000 0.00000		Mfg Serial N		ThermoE 5171121 01111			rameter o	zone zone primary stan
DAS 1:	DAS 2:			Slope			0.9972	0 Inter	cept	0.18428
A Avg % Diff: A Ma 0.6%	x % Di 1.8% A Avg %	6Dif A Max %	% Di	Cert Da	nte		1/2/201		•	1.00000
UseDescription:	ConcGroup:	Tfer Raw:	Tfer		Si			Unit:	PctDi	fference:
primary	1	0.41	0.2		1.0		ppb			1.750
primary	2	30.24		.14	30.		ppb			1.76%
primary	3 4	49.77 79.80	79.	.72	49. 79.		ppb			-0.54%
primary primary	5	110.30	110		110		ppb ppb			-0.34%
Sensor Component				on Not te		.50	PPO	Status	pass	0.117.0
Sensor Component	Cell B Tmp.		Condition	on				Status	pass	
Sensor Component	Fullscale Voltage		Condition	on Not te	sted			Status	pass	
Sensor Component	Inlet Filter Condition	n	Condition	on Clean				Status	pass	
Sensor Component	Line Loss		Condition	on Not te	sted			Status	pass	
Sensor Component	Offset		Condition	on Not te	sted			Status	pass	
Sensor Component	Span		Condition	on Not te	sted			Status	pass	
Sensor Component	Cell B Freq.		Condition	on Not te	sted			Status	pass	
Sensor Component	System Memo		Condition	on				Status	pass	
Sensor Component	Sample Train		Condition	on Good				Status	pass	
Sensor Component	Cell B Pressure		Condition	on				Status	pass	
Sensor Component	Cell B Flow		Condition	on Not te	sted			Status	pass	
Sensor Component	Cell A Tmp.		Condition	on Not te	sted			Status	pass	
Sensor Component	Cell A Pressure		Condition	on Not te	sted			Status	pass	
Sensor Component	Cell A Noise		Condition	on Not te	sted			Status	pass	
Sensor Component	Cell A Freq.		Condition	on Not te	sted			Status	pass	
Sensor Component	Cell A Flow		Condition	on Not te	sted			Status	pass	
Sensor Component	Battery Backup		Condition	on N/A				Status	pass	
Sensor Component	Zero Voltage		Condition	on Not te	sted			Status	pass	

Wind Speed Data Form Mfg Serial Number Ta Site **Technician** Site Visit Date Parameter Owner ID VOY413 Wind Speed 90940 1489 Eric Hebert 09/05/2013 Climatronics Parameter wind speed Mfg RM Young Climatronics Mfg Tfer Desc. wind speed motor (h Serial Number **SN/Owner ID** none 01262 Tfer ID F460 translator **Parameter** 0.00000 1.00000 **Slope Intercept** 2339 Prop or Cups SN 0.4 to 0.5 **Prop or Cups Torque Cert Date** 1/13/2010 CorrCoff 1.00000 **Prop Correction Fact** N/A Parameter wind speed Mfg RM Young Tfer Desc. wind speed motor (I **Serial Number** 01261 Tfer ID 1.00000 0.00000 Slope **Intercept** 1/13/2010 1.00000 **Cert Date** CorrCoff **DAS 1: DAS 2:** Low Range **High Range** Low Range **High Range** 0.01 1.00% Abs Avg Err 0.02 1.06% Abs Max Er UseDescription: InputDevice: Input RPM: Output V: Diff/ % Diff: Difference: Input m/s: DAS m/s: none 0 0.20 0.0000 0.2 0.02 primary 01261 50 1.40 1.4 0.00 primary 0.0000 primary 01261 100 2.57 0.0000 2.6 0.02 4.22 4.2 01261 170 0.0000 0.01 primary 6.2 primary 01261 250 6.10 0.0000 0.98% 11.97 12.1 0.92% primary 01262 500 0.0000 01262 800 19.02 0.0000 19.2 1.05% primary primary 01262 2000 47.22 0.0000 47.7 1.06% Sensor Component | System Memo **Status** pass **Condition** 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 **Status** pass Condition

Wind Direction Data Form

Mfg	Seria	l Numbe	r Ta Site		Technician	Site Vi	sit Date F	Parameter	Owner ID
Climatronics	1832)	VOY4	13	Eric Hebert	09/05/2	2013 V	Vind Direction	90838
Mfg	Climatron	nics			Mfg	Ushikat	a		wind direction
SN/Owner ID	211	r	ione		Serial Nur	nber 190037		Tfer Desc	transit
Parameter	F460 tran	nslator			Tfer ID	01265			
Vane SN: 3	3499		C. A. Align.	deg. true:	Slope		1.00000	Intercept	0.00000
VaneTorque	8 to	10	,	2	Cert Date		1/4/2011	CorrCoff	1.00000
					Mfg	RM You	ıng	Paramete	wind direction
					Serial Nur	nber		Tfer Desc	wind direction wheel
					Tfer ID	01266			
	DAS 1:			DAS 2:					
	Orientatio		•	Orientation	Linearity:				
Abs Avg Err		1.8	2.0						
Abs Max Er		4	7						
UseDescriptio	n: Tfe	erID:	Input Raw		y Output V:	Output Deg.:	Differer	nce: Change:	Error:
primary		266	0	<u> </u>	0.0000	358			15 0
primary		266	45	V	0.0000	40			12 -3
primary		266	90		0.0000	84			14 -1
primary		266	135	<u> </u>	0.0000	136			52 7
primary		266	180 225	<u> </u>	0.0000	179 222			13 -2 13 -2
primary		266	270	<u>✓</u>	0.0000	268			16 1
primary primary		266	315	✓	0.0000	313			15 0
primary		265	88		0.0000	84		4	4
primary		265	90		0.0000	86		4	4
primary		265	178		0.0000	179		1	1
primary		265	268		0.0000	268		0	0
primary		265	358		0.0000	358		0	0
Sensor Comp	ponent Ma	st		Cor	ndition Good			Status pass	
Sensor Comp	ponent Co	ndition		Cor	ndition Poor			Status Fail	
Sensor Comp	ponent Ser	nsor Heat	er	Con	ndition N/A			Status pass	
Sensor Comp	ponent Ser	nsor Plum	b	Con	ndition Plumb			Status pass	
Sensor Comp	ponent Tor	que		Cor	ndition			Status pass	
Sensor Comp	ponent Var	ne Conditi	on	Cor	ndition Good			Status pass	
Sensor Comp	ponent Sys	stem Mem	0	Cor	ndition See com	ments	S	Status pass	

Temperature Data Form Technician Site Visit Date Parameter **Owner ID** Mfg Serial Number Tag Site VOY413 Climatronics 7967 Eric Hebert 09/05/2013 Temperature none **Parameter** Temperature Mfg Extech Climatronics Mfg Tfer Desc. RTD H232679 **Serial Number** 00593 **SN/Owner ID** 01228 Tfer ID **Parameter** Temperature Translator 1.00732 -0.12380 **Slope Intercept DAS 1: DAS 2:** 1/12/2013 1.00000 **Abs Avg Err** Abs Avg Err Abs Max Er **Cert Date** CorrCoff **Abs Max Er** 0.11 0.18 InputTmpRaw InputTmpCorr.: OutputTmpSignal: OutputSignalEng: OSE Unit: Difference: UseDesc.: Test type: primary Temp Low Range -0.06 0.06 0.00000.2 C 0.18 21.6 $\overline{\mathbf{C}}$ 0.02 Temp Mid Range 21.65 21.62 0.0000 primary 46.79 46.57 46.7 C 0.13 primary Temp High Range 0.0000Condition Moderately clean Sensor Component | Shield **Status** pass Sensor Component Blower Status Switch **Condition** N/A **Status** pass **Sensor Component** Blower **Condition** Functioning **Status** pass **Sensor Component** System Memo Condition Status pass

Humidity Data Form Serial Number Tag Site **Technician** Site Visit Date Parameter **Owner ID** Mfg VOY413 Relative Humidity Rotronic 56080 Eric Hebert 09/05/2013 none Mfg Rotronic Parameter Relative Humidity Tfer Desc. Hygroclip 124432 **Serial Number** 01225 Tfer ID 1.00000 0.00000 Slope **Intercept** 1/29/2013 1.00000 **Cert Date** CorrCoff **DAS 1: DAS 2:** Low Range **High Range** Low Range **High Range** Abs Avg Err 2.0 1.9 2.0 1.9 Abs Max Er UseDesc.: Test type: Device: Input RH: GTL Raw: RH Corr.: DAS Volts: DAS %RH: Difference: RH Low Range 0.0000 primary Hygroclip 32.8 0.0 32.8 30.8 -2.0-1.9 primary RH Low Range Hygroclip 52.9 0.0 52.9 0.000051.0 primary RH High Range Hygroclip 93.6 0.0 93.6 0.0000 91.7 -1.9 **Sensor Component** System Memo Status pass **Condition** Sensor Component Blower **Condition** N/A Status pass Sensor Component Blower Status Switch **Condition** N/A Status pass Sensor Component | RH Filter **Condition** Clean **Status** pass Status pass Sensor Component | Shield **Condition** Clean

Solar Radiation Data Form Serial Number Tag Site Mfg **Technician** Site Visit Date Parameter Owner ID VOY413 Solar Radiation PY28976 Eric Hebert 09/05/2013 Licor none Mfg Eppley Parameter solar radiation Climatronics Mfg Tfer Desc. SR transfer translat 10765 **Serial Number** 347 **SN/Owner ID** none 01246 Tfer ID **Parameter** Solar Radiation Translator 1.00000 0.00000 **Slope Intercept DAS 1: DAS 2:** 1/6/2010 1.00000 % Diff of Avg %Diff of Max %Diff of Avg %Diff of Max **Cert Date** CorrCoff Parameter solar radiation Mfg **Eppley** Tfer Desc. SR transfer sensor **Serial Number** 34341F3 Tfer ID 01245 1.00000 0.00000 **Slope Intercept Cert Date** 12/16/2010 CorrCoff 1.00000 0.0% 1.9% 0.1% 0.0% MeasureTime Tfer Corr: PctDifference: UseDescription: Measure Date DAS w/m2: primary 9/6/2013 7:00 136 135 -0.7% 197 -2.4% 9/6/2013 8:00 193 primary primary 9/6/2013 9:00 467 453 -2.9% -4.9% 10:00 623 592 primary 9/6/2013 9/6/2013 11:00 657 634 -3.5% primary primary 9/6/2013 12:00 684 684 0.1% primary 9/6/2013 13:00 530 526 -0.6% 9/6/2013 14:00 417 422 1.1% primary Sensor Component | Sensor Level Status pass **Condition** Level Sensor Component | Sensor Clean **Condition** Clean Status pass

Condition Partially shaded

Condition See comments

Status Fail

Status pass

Sensor Component Properly Sited

Sensor Component | System Memo

Precipitation Data Form

Mfg		Serial I	Number Ta	Site	,	Teo	chnician		Site	Visit Date	Param	eter		Owner ID
Climatronics		illegible)	VOY413		Eri	ic Hebert		09/0	05/2013	Precipit	ation		02140
DAS 1:			DAS 2:				Mfg Serial Nur	nh on	PMF	06134-50				ecipitation Oml graduate
A Avg % Diff		ax % I	Di A Avg %	Dif A	Max % Di		Tfer ID	nber	0125		11]	ier Do	esc. 25	omi graduate
							Slope			1.0000	0 Inte	rcept		0.00000
							Cert Date			9/5/200	5 Cor	rCoff		1.00000
UseDesc.	Test	type:	TferVolume:	Iteration:	TimePerTi	p:	Eq.Ht:	DAS	eng:	Eq.HtUnit:	OSE Ur	nit: Ti	ferUnits	s:PctDifference
primary	tip che	eck	10 manual	1	2 sec		1.00	1.0	00	mm	mm		ml	
primary	test 1		231.5	1	8 sec		5.00	4.9	90	mm	mm		ml	-2.0%
primary	test 2		231.5	2	10 sec		5.00	4.9	90	mm	mm		ml	-2.0%
Sensor Com	iponen	Syste	m Memo		Condi	itio	on				Status	pass	:	
Sensor Com	ponen	t Sens	or Heater		Condi	itio	Function	ing			Status	pass	1	
Sensor Com	iponen	t Prope	erly Sited		Condi	itio	See com	ments	<u> </u>		Status	pass	:	
Sensor Com	iponen	t Gaug	e Drain Scree	n	Condi	itio	Installed				Status	pass	;	
Sensor Com	nponen	t Level			Condi	itio	Level				Status	pass	1	
Sensor Com	iponen	t Gaug	e Clean		Cond	itio	Clean				Status	pass	i	
Sensor Com	ponen	t Funn	el Clean		Condi	itio	Clean				Status	pass		
Sensor Com	ponen	t Cond	ition		Condi	itio	Good				Status	pass		
Sensor Com	ponen	t Gaug	e Screen		Condi	itio	nstalled				Status	pass		

Infrastructure Data For

Si	te ID	VOY413	Technician	Eric Hebert	Site Visit Date	09/05/2013	l
	Shelter M	ake	Shelter Model	Sh	elter Size		
	Ekto		8810 (s/n 2880-	2) 64	0 cuft		
					STOREST AND ASSESSMENT BOY		

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	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 Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
ARS	none	VOY413	Eric Hebert	09/05/2013	Shelter Temperature	none
DAS 1: Abs Avg Err Abs 1.84	DAS 2: Abs Avg 2.79	Err Abs Max Er	Mfg Serial Number Tfer ID Slope	Extech H232679 01228	Parameter Shelt Tfer Desc. RTD 2 Intercept	
			Cert Date	1/12/201	3 CorrCoff	1.00000

UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	20.45	20.42	0.000	20.8	С	0.33
primary	Temp Mid Range	27.10	27.03	0.000	24.2	C	-2.79
primary	Temp Mid Range	23.24	23.19	0.000	20.8	С	-2.4

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	l Problem	
Flow Rate	VOY413	Eric Hebert	09/05/2013	Filter Position	Tylan	1838		✓	
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	VOY413	Eric Hebert	09/05/2013	Properly Sited	Climatronics	1832		✓	
Objects violate the 45 d	legree rule for th	ne tipping bucket rai	n gage.						
Solar Radiation	VOY413	Eric Hebert	09/05/2013	Properly Sited	Licor	1831		✓	
The solar radiation sens	sor is shaded at	times during the day	, and not proper	y sited.					
Wind Direction	VOY413	Eric Hebert	09/05/2013	Condition	Climatronics	1851		✓	
The upper and lower se	ctions of the wi	nd sensor body are l	oose. This cond	ition will cause pre	mature failure of t	he sensor and ca	n affect dat	a accuracy.	

Field Systems Comments

1 Parameter: SitingCriteriaCom

The site is located at the top of a hill in a forest. There are trees surrounding the site which are below the tower height.

2 Parameter: ShelterCleanNotes

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

3 Parameter: MetSensorComme

Objects violate the 45 degree rule for the tipping bucket rain gage. The solar radiation sensor is shaded during part of the day.

F-02058-1500-S1-rev001

Site ID VOY413	Technician Eric Hebert	Site Visit Date 09/0	5/2013
Site Sponsor (agency)	NPS	USGS Map	Ash River NE
Operating Group	NPS	Map Scale	
AQS#	27-137-0034	Map Date	
Meteorological Type	Climatronics		
Air Pollutant Analyzer	Ozone, IMPROVE	QAPP Latitude	48.4128
Deposition Measurement	dry, wet	QAPP Longitude	-92.8292
Land Use	woodland - mixed	QAPP Elevation Meters	429
Terrain	rolling	QAPP Declination	
Conforms to MLM	Marginally	QAPP Declination Date	
Site Telephone		Audit Latitude	48.412518
Site Address 1	CR 129	Audit Longitude	-92.829225
Site Address 2	Ash River Visitor Center Rd.	Audit Elevation	427
County	St. Louis	Audit Declination	0.5
City, State	Orr, MN	Present	
Zip Code	55771	Fire Extinguisher	
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 Ekto M	odel 8810 (s/n 2880-2)	Shelter Size 640 cuft
Shelter Clean	Notes The shelter is clean, neat, and	well organized. The shelter is	in good condition.
Site OK	Notes		
just no River	Duluth take route 53 north towards Internorth of Orr, turn right (east) on County Roa Visitor Center. Continue approximately 1 ximately 1 mile up the trail from the road.	ad 129. Continue approximate	ly 9.5 miles and turn left toward the Ash

F-02058-1500-S2-rev001

Site ID VOY413 Eric Hebert Site Visit Date 09/05/2013

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		V
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	5 m	
Obstacles to wind	10 times obstacle height		

Siting Distances OK

Siting Criteria Comment

The site is located at the top of a hill in a forest. There are trees surrounding the site which are below the tower height.

Field S	ystems l	Data	Form
and the barbon beautiful and "			Control State Control State Control

F-02058-1500-S3-rev001

Site	ID	VOY413	Technician E	ric Hebert		Site Visit Date 09/05/2013
1	Are wi	nd speed and direc	ction sensors sited so as	s to avoid	✓	
	being in	nfluenced by obstr	ructions?			
2	(i.e. win	nd sensors should	ed so as to minimize too be mounted atop the to om >2x the max diame wind)	ower or on a	✓	
3	Are the	e tower and sensor	s plumb?		✓	2000 2000 2000 2000 2000 2000 2000 200
4			lds pointed north or po		✓	
5	conditi surface	ons? (i.e. ground b	sensors sited to avoid below sensors should be oped. Ridges, hollows, avoided)	e natural	✓	
6	Is the s	olar radiation sens	sor plumb?	[✓	
7	Is it sit light?	ed to avoid shadin	g, or any artificial or r	eflected [✓	Partially shaded
8	Is the r	ain gauge plumb?			✓	
9	Is it sit towers,		ing effects from buildi	ngs, trees,	✓	45 degree rule violation
10	Is the s		nsor sited with the grid	surface	~	N/A
11	Is it in	clined approximat	ely 30 degrees?		>	N/A
			nation (photograph or ay affect the monitorin		ary	y) regarding conditions listed above, or any other features,
Obj	ects viola	ate the 45 degree ru	le for the tipping bucket	rain gage. The	sola	ar radiation sensor is shaded during part of the day.

ield S	ystems Da	ta Form			F -	02058-1500-S4-rev	700
ite ID	VOY413	Technician	Eric Hebert		Site Visit Date 09/05/2	013	
	the meterologica	ll sensors appear to be i intained?	ntact, in good	V			
	Il the meteorologi	cal sensors operational	online, and	•			
Are th	ne shields for the	temperature and RH se	ensors clean?	V			
Are th	ne aspirated moto	ors working?		✓			
Is the scrate		ensor's lens clean and fi	ree of	V			
Is the	surface wetness s	sensor grid clean and u	ndamaged?	✓ 1	N/A		
	ne sensor signal a tion, and well ma	nd power cables intact, intained?	in good	V			
		nd power cable connect well maintained?	ions protected	✓			
arametei	r	Manufacturer	Model		S/N	Client ID	
ecipitatio	n	Climatronics	100508-2		illegible	02140	
ind Direc	tion	Climatronics	100076		1832	90838	
emperatu	re	Climatronics	100093		7967	none	
olar Radia	ation	Licor	LI-200	SPANISH ST	PY28976	none	
ind Spee	d	Climatronics	100075		1489	90940	
CHARLES STORY	umidity	Rotronic	MP 601A	-constant	56080	none	

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

Field Systems Data Form F-02058-1500-S5-rev001 VOY413 Site Visit Date 09/05/2013 Site ID Technician Eric Hebert Siting Criteria: Are the pollutant analyzers and deposition equipment sited in accordance with 40 CFR 58, Appendix E **V** Do the sample inlets have at least a 270 degree arc of unrestricted airflow? ~ Are the sample inlets 3 - 15 meters above the ground? Trees within 5 meters Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees? Pollutant analyzers and deposition equipment operations and maintenance **V** Do the analyzers and equipment appear to be in good condition and well maintained? **V** Are the analyzers and monitors operational, on-line, and reporting data? Describe ozone sample tube. 1/4 teflon by 12 meters Describe dry dep sample tube. 3/8 teflon by 9 meters At inlet only Are in-line filters used in the ozone sample line? (if ves indicate location) ~ Are sample lines clean, free of kinks, moisture, and obstructions? **V** 7 Is the zero air supply desiccant unsaturated? **V** Are there moisture traps in the sample lines? Clean and dry Is there a rotometer in the dry deposition filter line, and is it clean? **Parameter** Manufacturer S/N **Client ID** Model Sample Tower Aluma Tower В AT-51159-11-G none Ozone ThermoElectron Inc 90730 49C 49C-70522-366 Filter pack flow pump Thomas 107CAB18 120000014367 none Zero air pump Twin Tower Engineering TT70/E4 526294 90719 RO-32 FP9806001 Tylan MFC power supply 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:

F-02058-1500-S6-rev001

Site	ID	VOY413	Technician	Eric Hebert	227122	Site Visit Date	09/05/2013	
	DA	S, sensor translators	, and peripheral equip	oment operation	ns ai	nd maintenance		
1	Do		s appear to be in good					
2		e all the components dem, backup, etc)	of the DAS operationa	al? (printers,	✓			
3		the analyzer and sen atning protection circ	sor signal leads pass t	hrough	✓	Met sensors only		
4		the signal connection that the signal connection is the signal connection.	ons protected from the	weather and	✓			
5	Are	e the signal leads con	nected to the correct I	DAS channel?	✓			
6		e the DAS, sensor tra unded?	nslators, and shelter p	oroperly	✓			
7	Doe	es the instrument she	elter have a stable pow	er source?	~			
8	Is tl	he instrument shelte	r temperature control	led?	V			
		he met tower stable a				Stable	Grounded	1
		ver comments?					V	
Par	ame	ter	Manufacturer	Model		S/N	Cli	ient ID
DAS	3		Environmental Sys	Corp 8816		4059	noi	ne
F46	0 tra	ınslator	Climatronics	100163	NEW S	211	noi	ne
Prin	ter		Hewlett Packard	842C	meson	unknown	noi	ne
Sola	ar Ra	adiation Translator	Climatronics	100144	ELEVATOR OF THE PARTY OF THE PA	347	noi	ne
Tem	pera	ature Translator	Climatronics	100088-2		258	008	593
			anation (photograph on the maniton and the moniton and the mon			y) regarding condi	tions listed above, or	any other features,

F-02058-1500-S7-rev001

Site ID	VOY413		Tecl	nician	Eric Hebert		Site Visit Date	09/05/2013		
<u>Documen</u>	<u>tation</u>									
	site have the requir	ed ir	strum	ent and	equipment mar	uals?				
		Yes	No	The state of the state of				Yes	No	N/A
Wind speed		✓				logge	er	✓		
Wind direct	ion sensor	✓			Data	logge	er			✓
Temperatur	e sensor	✓			Strij	char	t recorder			✓
Relative hur	nidity sensor	V			Con	puter			✓	
Solar radiat	ion sensor	✓			Mod	em			✓	
Surface wet	ness sensor			✓	Prin	ter			✓	
Wind sensor	· translator	✓			Zero	air p	ump	V		
Temperatur	e translator	V			Filte	r flow	y pump		✓	
Humidity se	nsor translator			✓	Surg	ge pro	tector			✓
Solar radiat	ion translator	✓			UPS					✓
Tipping buc	ket rain gauge	✓			Ligh	tning	protection device	, .		✓
Ozone analy	zer	✓			Shel	ter he	ater		✓	
Filter pack f	low controller		✓		Shel	ter air	r conditioner		✓	
Filter pack I	MFC power supply		✓							
Does the	e site have the requi	ired	and m	ost rece	nt QC documen	ts and	l report forms?			
		Pre	sent					Curre	nt	
Station Log			✓	Datavie	\\A\		1	✓		
SSRF			✓	Dalavie				✓		
Site Ops Ma	nual		✓	Jan 200	 16		-	✓		
HASP			$\overline{\Box}$	0411 Z00				$\overline{\Box}$		
Field Ops M	anual									
Calibration			✓							
Ozone z/s/p	Control Charts									
	naintenance schedu	d								
1 Is the s	tation log properly	com	pleted	during	every site visit?	V	Dataview			
							-, , , ,			
2 Are the current	Site Status Report ?	For	ms bei	ng comp	oleted and	F	Flow section only			
	chain-of-custody fo transfer to and from			erly used	d to document	✓				
4 Are ozo	one z/s/p control cha?	arts j	proper	ly comp	leted and		Control charts not u	sed		
	1100				1 / 1 / 0					
	additional explana nan-made, that may						regarding condit	ions listed a	ibove, o	or any other
and the	may may				8 Parameters					

Field Systems Data Form F-02058-1500-S8-rev001 Site ID VOY413 Site Visit Date 09/05/2013 Technician Eric Hebert Site operation procedures Has the site operator attended a formal CASTNET training Trained by previous operator course? If yes, when and who instructed? Has the backup operator attended a formal CASTNET П training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday ~ schedule? V Are the standard CASTNET operational procedures being flollowed by the site operator? 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** V ~ Semiannually **Multipoint Calibrations** ~ ~ Weekly **Visual Inspections** П **Translator Zero/Span Tests (climatronics) V** ~ Monthly **Manual Rain Gauge Test Confirm Reasonableness of Current Values Test Surface Wetness Response** Are regular operational QA/QC checks performed on the ozone analyzer? **Compliant OC Check Performed** Frequency **Multi-point Calibrations** V **V** Monthly and semiannually ~ ~ Daily **Automatic Zero/Span Tests** ~ Every 2 weeks Manual Zero/Span Tests **V** Daily **Automatic Precision Level Tests Manual Precision Level Test V** Alarm values only **Analyzer Diagnostics Tests V** Every 2 weeks **In-line Filter Replacement (at inlet)** In-line Filter Replacement (at analyze Sample Line Check for Dirt/Water **Zero Air Desiccant Check V** 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

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:

~

Dataview

complete sample train including all filters?

reported? If yes, how?

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

Field Systems Data Form F-02058-1500-S9-rev001 Site ID VOY413 Technician Eric Hebert Site Visit Date 09/05/2013 Site operation procedures Is the filter pack being changed every Tuesday as scheduled? ✓ Filter changed various times Are the Site Status Report Forms being completed and filed Flow section only correctly? No longer required Are data downloads and backups being performed as scheduled? V SSRF Are general observations being made and recorded? How? V Are site supplies on-hand and replenished in a timely fashion? SSRF Are sample flow rates recorded? How? Are samples sent to the lab on a regular schedule in a timely lacksquarefashion? Are filters protected from contamination during handling and shipping? How? Are the site conditions reported regularly to the field operations manager or staff? **QC Check Performed** Compliant Frequency ~ ✓ Semiannually **Multi-point MFC Calibrations** V Weekly Flow System Leak Checks **Filter Pack Inspection** ~ ✓ Weekly **Flow Rate Setting Checks** V ✓ Weekly **Visual Check of Flow Rate Rotometer** ✓ As needed V **In-line Filter Inspection/Replacement** Sample Line Check for Dirt/Water Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

Site Inventory by Site Visit

Site V	isit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
THR4	122-Eric H	lebert-09/09/2013				_
1	9/9/2013	Computer	Hewlett Packard	none	65606	5CB1520H68
2	9/9/2013	DAS	Environmental Sys Corp	90656	8816	2600
3	9/9/2013	Elevation	Elevation	None	1	None
4	9/9/2013	F460 translator	Climatronics	none	100163	684
5	9/9/2013	Filter pack flow pump	Thomas	03634	107CAB18	049400004441
6	9/9/2013	flow rate	Tylan	none	FC280SAV	AW02213004
7	9/9/2013	Infrastructure	Infrastructure	none	none	none
8	9/9/2013	Mainframe	Climatronics	none	100081	1911
9	9/9/2013	Mainframe power supply	Climatronics	none	101074	unknown
10	9/9/2013	Met tower	Rohn	none	unknown	none
11	9/9/2013	MFC power supply	Tylan	00042	RO-32	FP902022
12	9/9/2013	Modem	US Robotics	none	14.4 fax modem	9244894
13	9/9/2013	Ozone	ThermoElectron Inc	none	49i A3NAA	0632119500
14	9/9/2013	Precipitation	Climatronics	01328	100508-2	illegible
15	9/9/2013	Relative Humidity	Rotronic	none	MP 601A	32736
16	9/9/2013	Sample Tower	Aluma Tower	none	В	AT-81077-J5
17	9/9/2013	Shelter Temperature	ARS	none	none	none
18	9/9/2013	Shield (10 meter)	Climatronics	none	100325	2589
19	9/9/2013	Siting Criteria	Siting Criteria	None	1	None
20	9/9/2013	Solar Radiation	Licor	none	LI-200	PY33503
21	9/9/2013	Solar Radiation Translator	Climatronics	none	100144	662
22	9/9/2013	Temperature	Climatronics	none	100093	7974
23	9/9/2013	Temperature Translator	Climatronics	01545	100088-2	217
24	9/9/2013	Wind Direction	Climatronics	90886	100076	1725
25	9/9/2013	Wind Speed	Climatronics	90925	100075	1489
26	9/9/2013	Zero air pump	Thomas	none	607CA22C	039500000348

DAS Data Form

DAS Time Max Error:

0.27

Mfg	Seria	l Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Environmental S	ys 2600		THR422	Eric Hebert	09/09/2013	DAS	Primary
Das Date: Das Time: Das Day:	9:54:16 253	Audit T	ime 9:54:00	Mfg Serial Number	Datel 4000392	Parameter Tfer Desc.	DAS Source generator (D
Low Channel:		High Ch	annel:	Tfer ID	01321		
Avg Diff: 0.0001	Max Diff 0.0		Max Diff: .0001 0.0003	Slope Cert Date	1.0000 2/13/201		0.00000
				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
Channal	Input	DVM Outpu	t DAS Output	InputI Init	OutputUnit	Difference	

Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference
1	0.0000	0.0000	0.0000	V	V	0.0000
1	0.1000	0.1000	0.1000	V	V	0.0000
1	0.3000	0.3000	0.3001	V	V	0.0001
1	0.5000	0.5000	0.5001	V	V	0.0001
1	0.7000	0.7001	0.7002	V	V	0.0001
1	0.9000	0.9001	0.9003	V	V	0.0002
1	1.0000	1.0001	1.0004	V	V	0.0003
15	0.0000	0.0000	0.0000	V	V	0.0000
15	0.1000	0.1000	0.1000	V	V	0.0000
15	0.3000	0.3000	0.3001	V	V	0.0001
15	0.5000	0.5000	0.5001	V	V	0.0001
15	0.7000	0.7001	0.7002	V	V	0.0001
15	0.9000	0.9001	0.9003	V	V	0.0002
15	1.0000	1.0001	1.0004	V	V	0.0003

Flow Data Form

Mfg	S	erial Nun	ıber Ta	Site	Tec	hnician	Site Visit l	Date Param	eter	Owner ID
Tylan	P	W022130	004	THR422	Erio	c Hebert	09/09/201	3 flow rat	te	none
Mfg	Tylan	l				Mfg	BIOS	P	arameter Flo	w Rate
SN/Owner ID	N/Owner ID FP902022 00042					Serial Number	122974	Т	fer Desc. BIG	OS 220-H
Parameter	MFC	power sup	pply			Tfer ID	01416			
						Slope	1	.00000 Inte	ercept	0.00000
						•			_	1.00000
						Cert Date	17	0/2013 (0)	rCoff	1.00000
DAS 1:			DAS 2:			Cal Factor Z	ero	0.1	6	
A Avg % Diff:	A Ma	x % Di	A Avg %	Dif A Max	x % Di	Cal Factor F	ull Scale	10.7	' 4	
2.03%		2.29%				Rotometer R	eading:	3.2	25	
UseDescription	: Te	st type:	Input 1/m:	Input STP:	MfcDisp.:	OutputSignal:	Output S E:	InputUnit:	OutputSignal	PctDifference
primary	pump	off	0.000	0.000	-0.22	-0.0890	-0.03	l/m	l/m	
primary	leak o	check	0.000	0.000	-0.20	-0.0840	-0.01	1/m	1/m	
primary	test p	t 1	0.000	3.059	2.67	1.3440	3.00	l/m	l/m	-1.94%
primary	test p		0.000	3.070	2.67	1.3440	3.00	l/m	l/m	-2.29%
primary	test p	t 3	0.000	3.057	2.67	1.3440	3.00	l/m	l/m	-1.86%
Sensor Comp	onent	Leak Tes	t		Condition	n		Status	pass	
Sensor Comp	onent	Filter Azir	muth		Condition	Not tested		Status	pass	
Sensor Comp	onent	Filter Dep	oth		Condition	1.0 cm		Status	Fail	
Sensor Comp	onent	Filter Pos	sition		Condition	Poor		Status	Fail	
Sensor Comp	onent	Moisture	Present		Condition	No moisture p	resent	Status	pass	
Sensor Comp	onent	Rotomete	er Condition	າ	Condition	Clean and dry		Status	pass	
Sensor Comp	onent	System M	1emo		Condition	See comments	3	Status	pass	
Sensor Comp	onent	Tubing C	ondition		Condition	Good		Status	pass	
Sensor Comp	onent	Filter Dist	tance		Condition	5.5 cm		Status	pass	

Ozone Data Form

Mfg Se	erial Number Ta	Site	Teo	chnician	ı	Site Vis	it Date	Parame	ter	Owner ID
ThermoElectron Inc 0	632119500	THR422	Eri	ic Heber	t	09/09/2	013	Ozone		none
Intercept -0.5	33488 Slope: 7521 Intercept 9998 CorrCoff	0.00000	0	Mfg Serial I	Number	Thermol 5171121			rameter (ozone Ozone primary stan
DAS 1:	DAS 2:			Slope			0.99720) Inter	cont	0.18428
A Avg % Diff: A Ma		6Dif A Max (_					•	
2.3%	3.3%			Cert Da	ate		1/2/201	3 Corr	Coff	1.00000
UseDescription:	ConcGroup:	Tfer Raw:	Tfer (Corr:	Si	te:	Site	Unit:	PctD	ifference:
primary	1	-0.07	-0.2			.59	ppb			
primary	2	29.54	29.	43	29	.79	ppb			1.22%
primary	3	54.76	54.	72	55	.98	ppb			2.30%
primary	4	85.52	85	57	87	.50	ppb			2.26%
primary	5	119.26	119	.41	123	3.40	ppb			3.34%
Sensor Component	Cell B Noise		Conditio	n 1.9 p	pb			Status	pass	
Sensor Component	Cell B Tmp.		Conditio	on				Status	pass	
Sensor Component	Fullscale Voltage		Conditio	n N/A				Status	pass	
Sensor Component	Inlet Filter Condition	n	Conditio	Clear	า			Status	pass	
Sensor Component	Line Loss		Conditio	on				Status	pass	
Sensor Component	Offset		Conditio	Not to	ested			Status	pass	
Sensor Component	Span		Conditio	Not to	ested			Status	pass	
Sensor Component	Cell B Freq.		Conditio	58.6	kHz			Status	Fail	
Sensor Component	System Memo		Conditio	n				Status	pass	
Sensor Component	Sample Train		Conditio	Good	I			Status	pass	
Sensor Component	Cell B Pressure		Conditio	on				Status	pass	
Sensor Component	Cell B Flow		Conditio	on 0.67	lpm			Status	pass	
Sensor Component	Cell A Tmp.		Conditio					Status	pass	
Sensor Component	Cell A Pressure		Conditio					Status	pass	
Sensor Component	Cell A Noise		Conditio	1.9 p	pb			Status	pass	
Sensor Component			Conditio					Status		
Sensor Component			Conditio		lpm			Status		
Sensor Component			Conditio					Status		
Sensor Component	Zero Voltage		Conditio	n N/A				Status	pass	

Wind Speed Data Form Mfg Serial Number Ta **Technician** Site Visit Date Parameter Owner ID THR422 Wind Speed 90925 1489 Eric Hebert 09/09/2013 Climatronics Parameter wind speed Mfg RM Young Climatronics Mfg Tfer Desc. wind speed motor (h Serial Number **SN/Owner ID** none 01262 Tfer ID F460 translator **Parameter** 0.00000 1.00000 **Slope Intercept** 1984 Prop or Cups SN 0.3 to 0.4 **Prop or Cups Torque Cert Date** 1/13/2010 CorrCoff 1.00000 **Prop Correction Fact** N/A Parameter wind speed Mfg RM Young Tfer Desc. wind speed motor (I **Serial Number** 01261 Tfer ID 1.00000 0.00000 Slope **Intercept** 1/13/2010 1.00000 **Cert Date** CorrCoff **DAS 1: DAS 2:** Low Range **High Range** Low Range **High Range** 0.00 0.19% Abs Avg Err 0.01 0.23% Abs Max Er UseDescription: InputDevice: Input RPM: Diff/ % Diff: Difference: Input m/s: Output V: DAS m/s: none 0 0.20 0.0000 0.2 0.01 primary 01261 50 1.40 1.4 0.00 primary 0.0000 2.6 primary 01261 100 2.57 0.0000 0.00 4.22 4.2 0.00 01261 170 0.0000 primary primary 01261 250 6.10 0.0000 6.1 0.16% 11.97 12.0 0.17% primary 01262 500 0.0000 01262 800 19.02 0.0000 19.1 0.21% primary primary 01262 2000 47.22 0.0000 47.3 0.23% Sensor Component | System Memo Status pass **Condition** 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 Status pass Condition

Wind Direction Data Form

Mfg	Serial Nu	mber Ta Site		Technician	Site V	isit Date P	arameter	Owner ID
Climatronics	1725	THR4	-22	Eric Hebert	09/09	9/2013 W	/ind Direction	90886
Mfg SN/Owner ID Parameter	Climatronics 684 F460 translato	none r		Mfg Serial Nur Tfer ID	Ushik nber 19003 01265	37 5	Tfer Desc.	
, date 21 (t	495	C. A. Align		Slope		1.00000	Intercept	0.00000
VaneTorque _	8 to	10	358	Cert Date		1/4/2011	CorrCoff	1.00000
				Mfg	RM Y	oung	Parameter	wind direction
				Serial Nur	nber		Tfer Desc.	wind direction wheel
					01266	2	Tier Beser	
				Tfer ID	01200	,		
	DAC 1.		DAGA.					
	DAS 1: Orientation	Linearity:	DAS 2: Orientation	Linearity:				
Abs Avg Err	1.5	1.5	Orientation	Linearity:				
Abs Max Er	3	5						
				0 1 1 1 1	O 4 7 4 D 1	D:cc	Classic	E
UseDescription primary	n: TferID: 01266	Input Ray	w: Linearity	Output V: 0.0000	Output Deg	g.: Differen	ce: Change:	Error:
primary	01266	45	<u> </u>	0.0000	40		5 41	-4
primary	01266	90	✓	0.0000	85		5 45	
primary	01266	135	✓	0.0000	130		5 45	
primary	01266	180	✓	0.0000	180		0 50	
primary	01266	225	✓	0.0000	224		1 44	
primary	01266	270	✓	0.0000	268		2 44	
primary	01266	315	✓	0.0000	313		2 45	
primary	01265	88		0.0000	85		3	3
primary	01265	178		0.0000	180		2	2
primary	01265	268		0.0000	268		0	0
primary	01265	358		0.0000	359		1	1
Sensor Comp	onent Mast		Cond	ition Good		S	tatus pass	
Sensor Comp	onent Condition	n	Cond	ition Good		S	tatus pass	
Sensor Comp	onent Sensor H	Heater	Cond	ition Function	ing	S	tatus pass	
Sensor Comp	onent Sensor F	Plumb	Cond	ition Plumb		S	tatus pass	
Sensor Comp	onent Torque		Cond	ition		S	tatus pass	
Sensor Comp	onent Vane Co	ondition	Cond	ition Good		S	tatus pass	
Sensor Comp	onent System I	Memo	Cond	ition		S	tatus pass	

Temperature Data Form Technician Site Visit Date Parameter **Owner ID** Mfg Serial Number Tag Site Climatronics 7974 THR422 Eric Hebert 09/09/2013 Temperature none **Parameter** Temperature Mfg Extech Climatronics Mfg Tfer Desc. RTD H232679 **Serial Number** 01545 **SN/Owner ID** 01228 Tfer ID **Parameter** Temperature Translator 1.00732 -0.12380 **Slope Intercept DAS 1: DAS 2:** 1/12/2013 1.00000 **Abs Avg Err** Abs Avg Err Abs Max Er **Cert Date** CorrCoff Abs Max Er 0.04 0.04 InputTmpRaw InputTmpCorr.: OutputTmpSignal: OutputSignalEng: OSE Unit: Difference: UseDesc.: Test type: primary Temp Low Range 0.18 0.30 0.00000.3 C 0.03 23.97 23.9 $\overline{\mathbf{C}}$ -0.04 Temp Mid Range 24.02 0.0000 primary 46.64 0.0000 46.5 C 0.04 primary Temp High Range 46.42 Sensor Component | Shield Condition Clean **Status** pass Sensor Component Blower Status Switch **Condition** N/A **Status** pass **Sensor Component** Blower **Condition** Functioning **Status** pass **Sensor Component** System Memo Condition Status pass

Humidity Data Form Serial Number Tag Site **Technician** Site Visit Date Parameter **Owner ID** Mfg THR422 Relative Humidity Rotronic 32736 Eric Hebert 09/09/2013 none Mfg Rotronic Parameter Relative Humidity Tfer Desc. Hygroclip 124432 **Serial Number** 01225 Tfer ID 1.00000 0.00000 Slope **Intercept** 1/29/2013 1.00000 **Cert Date** CorrCoff **DAS 1: DAS 2:** Low Range **High Range** Low Range **High Range** 1.7 Abs Avg Err 1.6 2.7 1.6 Abs Max Er UseDesc.: Test type: Device: Input RH: GTL Raw: RH Corr.: DAS Volts: DAS %RH: Difference: RH Low Range 0.0000 primary Hygroclip 32.8 0.0 32.8 35.5 2.7 0.7 primary RH Low Range Hygroclip 52.9 0.0 52.9 0.000053.6 primary RH High Range Hygroclip 93.6 0.0 93.6 0.0000 92.0 -1.6 **Sensor Component** System Memo Status pass **Condition** Sensor Component Blower **Condition** Functioning Status pass Sensor Component Blower Status Switch **Condition** N/A Status pass Sensor Component | RH Filter **Condition** Clean **Status** pass

Condition Clean

Status pass

Sensor Component | Shield

Solar Radiation Data Form Serial Number Tag Site Mfg **Technician** Site Visit Date Parameter Owner ID Solar Radiation PY33503 THR422 Eric Hebert 09/09/2013 Licor none Mfg Eppley Parameter solar radiation Climatronics Mfg Tfer Desc. SR transfer translat 10765 **Serial Number** 662 **SN/Owner ID** none 01246 Tfer ID **Parameter** Solar Radiation Translator 1.00000 0.00000 **Slope Intercept DAS 1: DAS 2:** 1/6/2010 1.00000 % Diff of Avg %Diff of Max %Diff of Avg %Diff of Max **Cert Date** CorrCoff Parameter solar radiation Mfg **Eppley** Tfer Desc. SR transfer sensor **Serial Number** 34341F3 Tfer ID 01245 1.00000 0.00000 **Slope Intercept Cert Date** 12/16/2010 CorrCoff 1.00000 0.0% 6.0% 6.5% 0.0% MeasureTime Tfer Corr: PctDifference: UseDescription: Measure Date DAS w/m2: 9/9/2013 11:00 757 708 -6.5% primary -6.9% 9/9/2013 12:00 714 665 primary primary 9/9/2013 13:00 703 656 -6.7% 14:00 480 449 -6.5% primary 9/9/2013 9/9/2013 15:00 272 259 -4.8% primary primary 9/9/2013 16:00 81 80 -1.2% primary 9/9/2013 17:00 79 84 6.3% Sensor Component | Sensor Level Condition Level Status pass Condition Clean Status pass Sensor Component | Sensor Clean Sensor Component | Properly Sited **Condition** Properly sited Status pass Status pass Sensor Component | System Memo Condition

Precipitation Data Form

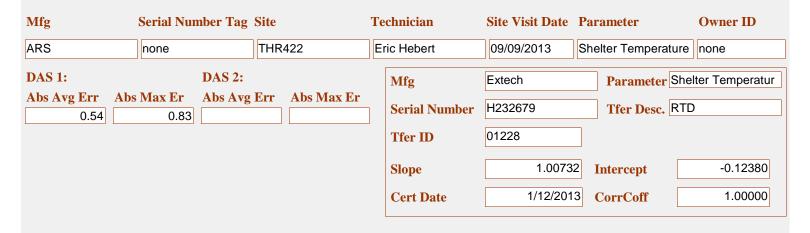
Mfg	Serial I	Number Ta	Site	Т	echnician		Site V	Visit Date	Parame	eter	Owner ID
Climatronics	illegible	Э	THR422	E	Eric Hebert		09/09	9/2013	Precipita	ation	01328
					Mfg		PMP		Pa	rameter F	Precipitation
DAS 1: A Avg % Diffs	· A May % I	DAS 2:	Dif A	Max % Di	Serial Number			06134-50	Tf	er Desc. 2	250ml graduate
2.0%	2.0			vida /0 Di	Tfer ID		01250	0			
					Slope			1.0000	0 Inter	cept	0.00000
					Cert Date			9/5/200	5 Corr	·Coff	1.00000
UseDesc.		TferVolume:	Iteration:	TimePerTip	: Eq.Ht:	DAS	eng: I	Eq.HtUnit:	OSE Un	it: TferUn	its:PctDifference
1 ,	tip check	10 manual	1	2 sec	1.00	1.0		mm	mm	ml	2.00/
	test 1	231.5	1	10 sec	5.00	4.9		mm	mm	ml	-2.0%
Sensor Com	ponent Syste	em Memo		Condit	ion See con	ments	<u> </u>		Status	pass	
Sensor Com	ponent Sens	or Heater		Condit	ion Function	ing			Status	pass	
Sensor Com	ponent Prope	erly Sited		Condit	ion See com	ments	:		Status	pass	
Sensor Com	ponent Gaug	e Drain Scree	en	Condit	ion Not insta	alled			Status	Fail	
Sensor Com	ponent Level			Condit	ion Level				Status	pass	
Sensor Com	ponent Gaug	je Clean		Condit	ion Clean				Status	pass	
Sensor Com	ponent Funn	el Clean		Condit	ion Clean				Status	pass	
Sensor Com	ponent Cond	lition		Condit	ion Good				Status	pass	
Sensor Com	ponent Gaug	e Screen		Condit	ion Not insta	alled			Status	Fail	

Infrastructure Data For

Si	te ID	THR422	Technician	Eric Hebert	Site Visit Date	09/09/2013	
	Shelter Ma	ake	Shelter Model	Sl	nelter Size		
	Ekto		8814 (s/n 3028-	1) 89	96 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	Fair	Status	pass
Sensor Component	Sample Tower	Condition	Good	Status	pass
Sensor Component	Shelter Condition	Condition	Good	Status	pass
Sensor Component	Shelter Floor	Condition	Fair	Status	pass
Sensor Component	Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component	Signal Cable	Condition	Fair	Status	pass
Sensor Component	Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component	Shelter Door	Condition	Good	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

Shelter Temperature Data For



UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	22.78	22.74	0.000	23.0	С	0.26
primary	Temp Mid Range	21.75	21.71	0.000	22.5	C	0.83

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazar	d Problem
Flow Rate	THR422	Eric Hebert	09/09/2013	Filter Position	Tylan	1862		✓
The filter attachment orientation.	nt plate is mounted	too low in the enclos	sure resulting in	the filter being expo	osed to wind-driv	en rain and in the	standard g	geometric
Precipitation	THR422	Eric Hebert	09/09/2013	Properly Sited	Climatronics	3854		✓
Objects violate the	45 degree rule for th	he tipping bucket rai	n gage.					

Field Systems Comments

1 Parameter: SiteOpsProcedures

The ozone sample train does not have a means to introduce test gas at the sample inlet. Results of routine zero, span, precision, and any multipoint calibration checks are maintained by the state personnel who perform the tests.

2 Parameter: SitingCriteriaCom

The site is located 200 meters from an interstate rest area, and 300 meters from interstate 94. The rest area can have parked and idling vehicles for extended periods.

3 Parameter: ShelterCleanNotes

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

4 Parameter: PollAnalyzerCom

The ozone analyzer is operated by the state of North Dakota. The sample train contains a glass manifold. There is no means to introduce on-site generated test gas at the sample inlet. A through-the-probe audit was conducted using the EEMS system.

5 Parameter: MetSensorComme

The temperature shield is pointing south into the prevailing wind. Objects violate the 45 degree rule for the tipping bucket rain gage.

6 Parameter: MetOpMaintCom

The blower for the RH sensor is not functioning.

F-02058-1500-S1-rev001

Site ID THR422	Technician Eric Hebert	Site Visit Date 09/0	09/2013
		Tiggg M	Fryburg NW
Site Sponsor (agency)	NPS	USGS Map	riybuig NW
Operating Group	NPS and state of ND	Map Scale	
AQS#	38-007-0002	Map Date	
Meteorological Type	Climatronics		
Air Pollutant Analyzer	Ozone, SO2, IMPROVE, PM2.5	QAPP Latitude	46.8947
Deposition Measurement	dry, wet	QAPP Longitude	-103.3778
Land Use	prairie	QAPP Elevation Meters	850
Terrain	rolling - complex	QAPP Declination	
Conforms to MLM	Marginally	QAPP Declination Date	
Site Telephone		Audit Latitude	46.894844
Site Address 1	Painted Canyon Visitor Center	Audit Longitude	-103.377719
Site Address 2	Exit 32 Interstate 94	Audit Elevation	840
County	Billings	Audit Declination	8.2
City, State	Medora, ND	Present	
Zip Code	58645	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 $\overline{\checkmark}$	Make Ekto	Model 8814 (s/n 3028-1)	Shelter Size 896 cuft
Shelter Clean	Notes The shelter is in good condit	ion, clean and well organized.	
Site OK	Notes		
	Interstate 94 take exit 32 to the Painted a gravel road.	I Canyon rest area and visitor ce	nter. The site is just east of the parking
, ot on	- g. a. or road.		

F-02058-1500-S2-rev001

Site ID THR422 Technician Eric Hebert Site Visit Date 09/09/2013

Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
20 to 40 km		_
10 to 20 km		~
40 km		~
10 km		~
5 km		V
2 km	300 m	
500 m		✓
200 m		~
500 m		~
500 m		
200 m		~
200 m	200 m	
100 m		✓
50 m		✓
10 times obstacle height		
	Measurement Apparatus 20 to 40 km 10 to 20 km 40 km 10 km 5 km 2 km 500 m 200 m 500 m 200 m 100 m 50 m	Measurement Apparatus 20 to 40 km 10 to 20 km 40 km 10 km 5 km 2 km 300 m 500 m 200 m 500 m 200 m 200 m 200 m 200 m 200 m

Siting Distances OK

Siting Criteria Comment

The site is located 200 meters from an interstate rest area, and 300 meters from interstate 94. The rest area can have parked and idling vehicles for extended periods.

Field S	ystems l	Data	Form
and in the land and the sail?			Control State Control State Control

F-02058-1500-S3-rev001

Site	e ID	THR422	Technician	Eric Hebert		Site Visit Date 09/09/2013
1		ind speed and di influenced by ob	irection sensors sited sostructions?	o as to avoid	✓	
2	Are w (i.e. w horizo	ind sensors mou ind sensors shou	nted so as to minimize lld be mounted atop th boom >2x the max dia	e tower or on a	V	
3	Are th	e tower and sen	sors plumb?		✓	
4			hields pointed north o urces such as building		✓	
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 standing water should be avoided) Is the solar radiation sensor plumb?				✓	
6	Is the	solar radiation s	sensor plumb?		✓	
7	Is it sited to avoid shading, or any artificial or reflected light?		or reflected	V		
8	Is the	rain gauge plum	ıb?		✓	
9	Is it si towers		tering effects from bu	ildings, trees,		45 degree rule violation
10		surface wetness north?	sensor sited with the g	rid surface	V	N/A
11	Is it i	nclined approxir	nately 30 degrees?		V	N/A
			planation (photograph t may affect the monito			y) regarding conditions listed above, or any other features,
The	tempe	rature shield is po	ointing south into the pre	vailing wind. Obj	ects v	violate the 45 degree rule for the tipping bucket rain gage.

ite ID THE	ms Data	10111			. Y	2058-1500-S	110,00
	R422	Technician	Eric Hebert		Site Visit Date 09/09/201	3	
	eterological se nd well maint	ensors appear to be ained?	intact, in good				
Are all the m		sensors operational	online, and	V			
Are the shiel	ds for the ten	nperature and RH so	ensors clean?				
Are the aspin	rated motors	working?					
Is the solar r scratches?	adiation sens	or's lens clean and f	ree of	V			
Is the surface	e wetness sen	sor grid clean and u	ndamaged?	✓ N	/A		
	or signal and nd well maint	power cables intact, ained?	in good	✓ S	gns of wear		
ACCUPATION OF THE PARTY OF THE		power cable connec ll maintained?	tions protected	V			
Parameter		Manufacturer	Model		S/N	Client ID	
emperature		Climatronics	100093		7974	none	
Shield (10 meter)		Climatronics	100325		2589	none	
Vind Speed		Climatronics	100075		1489	90925	
Vind Direction		Climatronics	100076	VM TO PER	1725	90886	
		Licor	LI-200	elzzyszajes	PY33503	none	
olai Naulaliuli		Rotronic	MP 601A		32736	none	
Relative Humidity			100508-2		illegible	01328	
					none	none	STATE OF THE STATE

F-02058-1500-S5-rev001

Site	e ID	THR422	Technician	Eric Hebert	W.E. 1 28 (2.90)	Site Visit Date	09/09/2013		
	au a						1 44 40 CF		
			ollutant analyzers a			nent sited in accor	dance with 40 CF	K 58, Appendix E	
1		ample inlets have cted airflow?	at least a 270 degre	ee arc of	✓				
2	Are the	sample inlets 3 - 1	5 meters above the	ground?	✓				
3		sample inlets > 1 r neters from trees?	neter from any ma	jor obstruction,	✓				
	Pollutan	t analyzers and de	eposition equipmen	t operations and	l mai	intenance			
1		nalyzers and equi n and well mainta	pment appear to be ined?	e in good	✓				
2	Are the reportin		nitors operational,	on-line, and	✓				
3	Describe ozone sample tube.					3/8 teflon by 10 me	ters and glass man	ifold	
4	Describe dry dep sample tube.					3/8 teflon by 12 me	ters		
5		ne filters used in t location)	the ozone sample li	ne? (if yes	✓	At inlet and analyze	er		
6	Are sam		ee of kinks, moistur	e, and	✓				
7	Is the ze	ro air supply desid	ccant unsaturated?		✓				
8	Are then	e moisture traps i	n the sample lines?		✓	Flow line only			
9	Is there clean?	a rotometer in the	dry deposition filt	er line, and is it	V	Clean and dry			
Par	ameter		Manufacturer	Model		S/N		Client ID	
Sar	nple Towe	er	Aluma Tower	В		AT-81077-J5		none	
Ozo	one		ThermoElectron In	c 49i A3NA		0632119500		none	
Filte	er pack flo	w pump	Thomas	107CAB18	3	04940000444	41	03634	
Zer	o air pump)	Thomas	607CA220) Wasan	03950000034	18	none	
MF	C power s	upply	Tylan	RO-32		FP902022		00042	
Prov	vide any additional explanation (photograph or sketch if n			r sketch if neces	sary)	regarding condition	ons listed above, o	r any other features,	

The ozone analyzer is operated by the state of North Dakota. The sample train contains a glass manifold. There is no means to introduce on-site generated test gas at the sample inlet. A through-the-probe audit was conducted using the EEMS system.

F-02058-1500-S6-rev001

Site	ID	THR422	Technician	Eric Hebert		Site Vis	sit Date 09/	09/2013			
	<u>DA</u>	AS, sensor translators	, and peripheral equi	pment operatio	ns ai	nd maintena	ance				
1	Do we	the DAS instrument	s appear to be in good	l condition and	✓						250
2	Ar		of the DAS operation	al? (printers,	✓						
3		the analyzer and sen htning protection circ	sor signal leads pass (cuitry?	through	✓	Met sensors	s only				
4		e the signal connection	ons protected from the	e weather and	✓						
5	Ar	e the signal leads con	nected to the correct	DAS channel?	✓						
6		e the DAS, sensor tra	nslators, and shelter	properly	✓						
7	Do	es the instrument she	elter have a stable pov	ver source?	V						
8	Is t	the instrument shelte	lled?	✓							
9	Is the met tower stable and grounded?					Stable		Ground	led		
		the sample tower stal				V		V			
		wer comments?	70 and grounded.			V		V			
11	10	wer comments:							WANTES.		0.000
Par	amo	eter	Manufacturer	Model		S/N			Client	ID	
Cor	nput	ter	Hewlett Packard	65606	22201	5CB	1520H68		none		
DAS	S		Environmental Sys	Corp 8816		2600			90656		
F46	0 tra	anslator	Climatronics	100163	mesion	684			none		
Mai	nfra	me	Climatronics	100081		1911	INTERNATION PROPERTY		none		
Mai	nfra	me power supply	Climatronics	101074	<u> </u>	unkn	own		none		
Mod	dem		US Robotics	14.4 fax n	node	m 9244	894		none		
Sola	ar R	adiation Translator	Climatronics	100144		662	26594 S200 S250 T51762		none		
Ten	nper	rature Translator	Climatronics	100088-2	MENG	217			01545		
			anation (photograph on ay affect the monito			y) regardin	g condition	s listed above,	or any	other features,	

F-02058-1500-S7-rev001

Documentation Does the site have the required instrument and equipment manuals? Yes No N/A Yes No N Sind speed sensor Ind direction sensor Ind direc
Does the site have the required instrument and equipment manuals? Yes No N/A Yes No N Sind speed sensor ✓ ☐ Data logger ☐ ☐ ☐ Sind direction sensor ✓ ☐ Data logger ☐ ☐ ☐ Emperature sensor ✓ ☐ Strip chart recorder ☐ ☐ ☐ Clative humidity sensor ☐ ✓ ☐ Modem ✓ ☐ Solar radiation sensor ☐ ✓ Printer ☐ ✓ ☐ Sind sensor translator ☐ ✓ ☐ Zero air pump ☐ ✓ Emperature translator ☐ ☐ Filter flow pump ☐ ✓
Yes No N/A Yes No N Ind speed sensor Ind direction sensor Ind
ind speed sensor ind direction sensor Emperature sensor Elative humidity sensor Elative hum
Sind direction sensor Emperature sensor Elative humidity sensor Elat
emperature sensor elative humidity sensor clar radiation sensor lar radiation sensor
elative humidity sensor Computer V Dlar radiation sensor V Inface wetness sensor V Inface wetness sensor V Inface wetne
olar radiation sensor urface wetness sensor
ind sensor translator
emperature translator
emperature translator
umidity sensor translator \square \square Surge protector \square
olar radiation translator 🖳 🔲 🔲 UPS
pping bucket rain gauge 🗹 🗌 🗎 Lightning protection device 🗀 🗎
zone analyzer
lter pack flow controller 🔲 🔽 🔲 Shelter air conditioner 🖳 🗹
lter pack MFC power supply 🔲 🔽 🔲
Does the site have the required and most recent QC documents and report forms?
Present Current
ation Log ✓ Dataview ✓
RF 🗸
te Ops Manual Jan 2006
ASP
eld Ops Manual
dibration Reports
zone z/s/p Control Charts
eventive maintenance schedul
Is the station log properly completed during every site visit? Dataview
Are the Site Status Report Forms being completed and current?
Are the chain-of-custody forms properly used to document sample transfer to and from lab?
Are ozone z/s/p control charts properly completed and Control charts not used current?
Current:
current? covide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or a stural or man-made, that may affect the monitoring parameters:
ovide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or a
ovide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or a

Field Systems Data Form F-02058-1500-S8-rev001 THR422 Site Visit Date 09/09/2013 Site ID Technician Eric Hebert Site operation procedures Has the site operator attended a formal CASTNET training course? If yes, when and who instructed? Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday ~ schedule? V Are the standard CASTNET operational procedures being flollowed by the site operator? 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 V** ~ Semiannually **Multipoint Calibrations** ~ ~ Weekly **Visual Inspections V** ~ Weekly **Translator Zero/Span Tests (climatronics) V** ~ Monthly **Manual Rain Gauge Test** V ~ Weekly **Confirm Reasonableness of Current Values** ~ N/A **Test Surface Wetness Response** Are regular operational QA/QC checks performed on the ozone analyzer? **OC Check Performed Compliant** Frequency **Multi-point Calibrations** ~ ~ Semiannually **V** N/A **Automatic Zero/Span Tests** ~ Every 2 weeks Manual Zero/Span Tests **V** N/A **Automatic Precision Level Tests** ~ **Manual Precision Level Test** Every 2 weeks **V** ~ Semiannually **Analyzer Diagnostics Tests** ~ Quarterly **In-line Filter Replacement (at inlet)** ~ N/A In-line Filter Replacement (at analyze Sample Line Check for Dirt/Water ~ **Zero Air Desiccant Check** Semiannually Not performed 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 Not performed complete sample train including all filters? Are the automatic and manual z/s/p checks monitored and

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:

reported? If yes, how?

The ozone sample train does not have a means to introduce test gas at the sample inlet. Results of routine zero, span, precision, and any multipoint calibration checks are maintained by the state personnel who perform the tests.

Field Systems Data Form F-02058-1500-S9-rev001 Site ID THR422 Technician Eric Hebert Site Visit Date 09/09/2013 Site operation procedures Is the filter pack being changed every Tuesday as scheduled? ✓ Filter changed morinings Are the Site Status Report Forms being completed and filed correctly? No longer required Are data downloads and backups being performed as scheduled? V SSRF Are general observations being made and recorded? How? V Are site supplies on-hand and replenished in a timely fashion? SSRF Are sample flow rates recorded? How? Are samples sent to the lab on a regular schedule in a timely fashion? Clean gloves on and off Are filters protected from contamination during handling and shipping? How? Are the site conditions reported regularly to the field operations manager or staff? **QC Check Performed** Compliant Frequency ~ ✓ Semiannually **Multi-point MFC Calibrations** V Weekly Flow System Leak Checks **Filter Pack Inspection**

Sample Line Check for Dirt/Water

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

✓ Weekly

✓ Weekly

✓ As needed

Flow Rate Setting Checks

Visual Check of Flow Rate Rotometer

In-line Filter Inspection/Replacement

~

V

V

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
WN	C429-Eric I	Hebert-09/11/2013				_
1	9/11/2013	Computer	Hewlett Packard	none	6560 b	5CB1520H5J
2	9/11/2013	DAS	Environmental Sys Corp	missing	8816	4159
3	9/11/2013	Elevation	Elevation	None	1	None
4	9/11/2013	flow rate	Mykrolis	none	FC280SAV-4S	AW902153
5	9/11/2013	Infrastructure	Infrastructure	none	none	none
6	9/11/2013	Met tower	unknown	none	unknown	none
7	9/11/2013	MFC power supply	Tylan	none	RO-32	FP9706002
8	9/11/2013	Modem	US Robotics	none	56k fax modem	unknown
9	9/11/2013	Ozone	ThermoElectron Inc	none	49i A3NAA	0615817056
10	9/11/2013	Ozone Standard	ThermoElectron Inc	none	49i PSA2AB	0807328333
11	9/11/2013	Precipitation	Climatronics	91050	100508-2	illegible
12	9/11/2013	Relative Humidity	Rotronic	none	MP 601	52067
13	9/11/2013	Sample Tower	Aluma Tower	none	В	none
14	9/11/2013	Shelter Temperature	ARS	none	none	none
15	9/11/2013	Shield (10 meter)	RM Young	none	43502	None
16	9/11/2013	Siting Criteria	Siting Criteria	None	1	None
17	9/11/2013	Solar Radiation	Licor	none	LI-200	PY79874
18	9/11/2013	Solar Radiation Translator	RM Young	none	70101-X	none
19	9/11/2013	Temperature	RM Young	none	41342	14264
20	9/11/2013	Wind Direction	RM Young	90853	AQ05103-5	39243wdr
21	9/11/2013	Wind Speed	RM Young	90853	AQ05103-5	39243wsp
22	9/11/2013	Zero air pump	ThermoElectron Inc	none	111	111-78387-388

Flow Data Form

Mfg	S	erial Nun	iber Ta	Site	Teo	chnician	Site Visit I	Date Paran	neter	Owner ID
Mykrolis	P	AW902153	3	WNC429	Eri	c Hebert	09/11/201	3 flow ra	te	none
Mfg SN/Owner ID	Tylan FP97	06002	none			Mfg Serial Number	BIOS 122974		arameter Flo	
Parameter	MFC	power sup	oply			Tfer ID	01416			
						Slope			ercept	0.00000
						Cert Date	1/	8/2013 Coi	rCoff	1.00000
DAS 1: A Avg % Diff: 0.98%	A Ma	x % Di 1.16%	DAS 2: A Avg %I	Dif A Max	x % Di	Cal Factor Z Cal Factor F Rotometer R	ull Scale	0.15 9.6 ² 3. ²	1 5	
UseDescription:	Те	st type:	Input 1/m:	Input STP:	MfcDisp.:	_		InputUnit:	— OutputSignall	PctDifference
primary	pump		0.000	0.000	-0.12	-0.0790	0.01	l/m	l/m	
primary	leak o	check	0.000	0.000	-0.11	-0.0740	0.01	l/m	l/m	
primary	test p	t 1	0.000	3.029	1.50	1.4986	3.00	l/m	l/m	-0.94%
primary	test p	t 2	0.000	3.025	1.50	1.4986	3.00	l/m	l/m	-0.84%
primary	test p	t 3	0.000	3.035	1.50	1.4986	3.00	l/m	l/m	-1.16%
Sensor Comp	onent	Leak Tes	t		Conditio	n		Status	pass	
Sensor Comp	onent	Filter Azir	muth		Conditio	n 90 deg		Status	pass	
Sensor Comp	onent	Filter Dep	oth		Conditio	n -4.0 cm		Status	Fail	
Sensor Comp	onent	Filter Pos	ition		Conditio	n Poor		Status	Fail	
Sensor Comp	onent	Moisture	Present		Conditio	n No moisture pr	esent	Status	pass	
Sensor Comp	onent	Rotomete	er Condition	1	Conditio	n Clean and dry		Status	pass	
Sensor Comp	onent	System N	/lemo		Conditio	n See comments	3	Status	pass	
Sensor Comp	onent	Tubing C	ondition		Conditio	n Good		Status	pass	
Sensor Comp	onent	Filter Dist	tance		Conditio	n 5.5 cm		Status	pass	

Ozone Data Form

Mfg S	erial Number Ta	Site	Tec	chnician		Site Visit	Date Param	eter	Owner ID	
ThermoElectron Inc	0615817056	WNC429	Eri	ic Hebert		09/11/20	13 Ozone		none	
Slope: 0.9	95048 Slope:	0.00000		Mfg		ThermoEl	ectron Inc P	arameter	zone	
_	71139 Intercept	0.00000)	Serial N	umber	51711217	5 T	fer Desc.	Dzone primary st	tan
CorrCoff 0.9	99999 CorrCoff	0.00000		Tfer ID		01111		_		
				Tier ID		01111				
DAS 1:	DAS 2:	/TD:0 4 T # 0	/ D !	Slope		(0.99720 Inte	ercept	0.1842	<u>2</u> 8
A Avg % Diff: A Ma	x % Di 4.4% A Avg %	6Dif A Max %	% D1	Cert Da	te	1	/2/2013 Cor	rCoff	1.0000	00
UseDescription:	ConcGroup:	Tfer Raw:	Tfer (Corr:	Si	te:	Site Unit:	PctDi	fference:	
primary	1	0.09	-0.0				pb			
primary	2	30.42	30.				pb		-1.75%	
primary	3	51.23	51.				pb 1-		-3.20%	
primary primary	5	85.14 111.27	85. 111			-	pb pb		-4.38% -4.30%	
	<u> </u>	111.27).00 p	pb		-4.30%	
Sensor Component	Cell B Noise		Conditio	1.3 pp	D		Status	pass		
Sensor Component	Cell B Tmp.		Conditio	on			Status	pass		
Sensor Component	Fullscale Voltage		Conditio	9.9986	6		Status	pass		
Sensor Component	Inlet Filter Condition	n	Conditio	n N/A			Status	pass		
Sensor Component	Line Loss		Conditio	Not te	sted		Status	pass		
Sensor Component	Offset		Conditio	0.000			Status	pass		
Sensor Component	Span		Conditio	1.303			Status	pass		
Sensor Component	Cell B Freq.		Conditio	62.0 k	Hz		Status	Fail		
Sensor Component	System Memo		Conditio	on			Status	pass		
Sensor Component	Sample Train		Conditio	Good			Status	pass		
Sensor Component	Cell B Pressure		Conditio	on			Status	pass		
Sensor Component	Cell B Flow		Conditio	0.8 lpr	n		Status	pass		
Sensor Component	Cell A Tmp.		Conditio	34.4 C	;		Status	pass		
Sensor Component	Cell A Pressure		Conditio	646 m	mHg		Status	pass		
Sensor Component	Cell A Noise		Conditio	0.7 pp	b		Status	pass		
Sensor Component	Cell A Freq.		Conditio	55.4 k	Hz		Status	Fail		
Sensor Component	Cell A Flow		Conditio	0.64 lp	om		Status	pass		
Sensor Component	Battery Backup		Conditio	N/A			Status	pass		
Sensor Component	Zero Voltage		Conditio	0.0087	7		Status	pass		

Wind Speed Data Form Mfg Serial Number Ta Site **Technician** Site Visit Date Parameter Owner ID WNC429 Wind Speed 90853 RM Young Eric Hebert 09/11/2013 39243wsp Parameter wind speed Mfg RM Young Tfer Desc. wind speed motor (h Serial Number 01262 Tfer ID 0.00000 1.00000 **Slope Intercept** 64425 Prop or Cups SN 0.4 **to** 0.5 **Prop or Cups Torque Cert Date** 1/13/2010 CorrCoff 1.00000 **Prop Correction Fact** 0.0512 Parameter wind speed Mfg RM Young Tfer Desc. wind speed motor (I **Serial Number** 01261 Tfer ID 1.00000 0.00000 Slope **Intercept** 1/13/2010 1.00000 **Cert Date** CorrCoff **DAS 1: DAS 2:** Low Range **High Range** Low Range **High Range** 0.27 1.67% Abs Avg Err 0.35 5.86% Abs Max Er UseDescription: InputDevice: Input RPM: Output V: Diff/ % Diff: Difference: Input m/s: DAS m/s: none 0 0.20 0.0000 0.0 -0.20primary 01262 200 1.02 1.2 0.21 primary 0.0000 primary 01262 400 2.05 0.0000 2.4 0.35 4.10 4.4 0.30 01262 800 0.0000 primary 6.5 primary 01262 1200 6.14 0.0000 5.86% 12.29 0.0000 12.4 primary 01262 2400 0.81% 01262 4000 20.48 0.0000 20.5 0.00% primary primary 01262 9400 48.13 0.0000 48.1 0.00% Sensor Component | System Memo Status pass **Condition** 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

Condition

Status pass

Sensor Component | Torque

Wind Direction Data Form

Mfg	Serial Numb	er Ta Site		Technician	Site Visi	t Date Paran	neter	Owner ID
RM Young	39243wdr	WNC42	29	Eric Hebert	09/11/20	013 Wind I	Direction	90853
				7.50	11-1-11-4-			in a dinastica
				Mfg	Ushikata	ŀ	'arameter W	vind direction
				Serial Nur	nber 190037	7	Ffer Desc. tr	ransit
				Tfer ID	01265			
Vane SN:	I/A	C A Alien	dog two	Slope		1.00000 Int	tercept	0.00000
Vane SN: VaneTorque		C. A. Align.	360	Cert Date			rrCoff	1.00000
					RM Youn			vind direction
				Mfg				
				Serial Nur			lter Desc. w	vind direction whee
				Tfer ID	01266			
	DAS 1:	1	DAS 2:					
			Orientation	Linearity:				
Abs Avg Err	1.0	1.5		Emeurty.				
Abs Max Er	2	3						
			T	0	0 1 1 5	D:cc	CI.	Б
UseDescription		Input Raw	: Linearity	Output V: 0.0000	Output Deg.: 358	Difference:	Change: 42	Error:
primary primary	01266 01266	45	✓	0.0000	46	2	48	-3
	01266	90	<u>✓</u>	0.0000	89		43	-2
primary	01266	135	✓	0.0000	135	0	46	
primary			✓					1
primary	01266	180	<u> </u>	0.0000	180	0	45	0
primary	01266	225	<u> </u>	0.0000	225	0	45	0
primary	01266	270		0.0000	269	1	44	-1
primary	01266	315	V	0.0000	316	1	47	2
primary	01265	90		0.0000	89	1		1
primary	01265	180		0.0000	180	0		0
primary	01265	270		0.0000	269	1		1
primary	01265	360		0.0000	358	2		2
Sensor Comp	onent Mast		Cond	ition Good		Statu	s pass	
Sensor Comp	onent Condition		Cond	ition Good		Statu	s pass	
Sensor Comp	onent Sensor Hea	ater	Cond	ition N/A		Statu	s pass	
Sensor Comp	onent Sensor Plu	mb	Cond	ition Plumb		Statu	pass	
Sensor Comp	onent Torque		Cond	ition		Statu	s pass	
Sensor Comp	onent Vane Cond	lition	Cond	ition Good		Statu	s pass	
Sensor Comp	onent System Me	emo	Cond	ition		Statu	s pass	

Temperature Data Form Serial Number Tag Site **Technician** Site Visit Date Parameter **Owner ID** Mfg WNC429 Eric Hebert Temperature RM Young 14264 09/11/2013 none **Parameter** Temperature Mfg Extech Tfer Desc. RTD H232679 **Serial Number** 01228 Tfer ID 1.00732 -0.12380 **Slope Intercept DAS 1: DAS 2:** 1/12/2013 1.00000 Abs Avg Err Abs Max Er Abs Avg Err Abs Max Er **Cert Date** CorrCoff 0.08 0.21 InputTmpRaw | InputTmpCorr.: | OutputTmpSignal: | OutputSignalEng: | OSE Unit: | Difference: UseDesc.: Test type: primary Temp Low Range -0.07 0.05 0.00000.3 C 0.21 23.99 23.94 23.9 $\overline{\mathbf{C}}$ -0.02 primary Temp Mid Range 0.0000 Temp High Range 44.25 0.0000 44.2 C -0.01 primary 44.45 Sensor Component | Shield Condition Clean Status pass Sensor Component Blower Status Switch **Condition** N/A **Status** pass **Sensor Component** Blower **Condition** Functioning **Status** pass Sensor Component System Memo Condition **Status** pass

Humidity Data Form Serial Number Tag Site **Technician** Site Visit Date Parameter **Owner ID** Mfg WNC429 Relative Humidity Rotronic 52067 Eric Hebert 09/11/2013 none Mfg Rotronic Parameter Relative Humidity Tfer Desc. Hygroclip 124432 **Serial Number** 01225 Tfer ID 1.00000 0.00000 Slope **Intercept** 1/29/2013 1.00000 **Cert Date** CorrCoff **DAS 1: DAS 2:** Low Range **High Range** Low Range **High Range** Abs Avg Err 0.9 3.9 3.9 1.1 Abs Max Er UseDesc.: Test type: Device: Input RH: GTL Raw: RH Corr.: DAS Volts: DAS %RH: Difference: RH Low Range 0.0000 primary Hygroclip 32.8 0.0 32.8 33.4 0.6 -1.1 primary RH Low Range Hygroclip 52.9 0.0 52.9 0.0000 51.8 -3.9 primary RH High Range Hygroclip 93.6 0.0 93.6 0.0000 89.7 **Sensor Component** System Memo Status pass **Condition** Sensor Component Blower **Condition** Functioning Status pass Sensor Component Blower Status Switch **Condition** N/A Status pass Sensor Component | RH Filter **Condition** Clean **Status** pass Sensor Component | Shield **Condition** Clean **Status** pass

Solar Radiation Data Form Serial Number Tag Site Mfg **Technician** Site Visit Date Parameter Owner ID PY79874 WNC429 Solar Radiation Eric Hebert 09/11/2013 Licor none Mfg Eppley Parameter solar radiation RM Young Mfg Tfer Desc. SR transfer translat 10765 **Serial Number SN/Owner ID** none none 01246 Tfer ID **Parameter** Solar Radiation Translator 1.00000 0.00000 **Slope Intercept DAS 1: DAS 2:** 1/6/2010 1.00000 % Diff of Avg %Diff of Max %Diff of Avg %Diff of Max **Cert Date** CorrCoff Parameter solar radiation Mfg **Eppley** Tfer Desc. SR transfer sensor **Serial Number** 34341F3 01245 Tfer ID 1.00000 0.00000 **Slope Intercept Cert Date** 12/16/2010 CorrCoff 1.00000 0.0% 8.4% 6.8% 0.0% Measure Date MeasureTime Tfer Corr: PctDifference: UseDescription: DAS w/m2: primary 9/11/2013 14:00 376 350 -7.0% -19.1% 9/11/2013 15:00 231 187 primary primary 9/12/2013 10:00 518 475 -8.5% -7.0% 11:00 732 681 primary 9/12/2013 primary 9/12/2013 12:00 765 707 -7.7% primary 9/12/2013 13:00 769 717 -6.8% primary 9/12/2013 14:00 317 290 -8.5% 9/12/2013 15:00 328 294 -10.5% primary Sensor Component | Sensor Level Status pass **Condition** Level Sensor Component | Sensor Clean **Condition** Clean Status pass Condition Properly sited Sensor Component Properly Sited Status pass

Condition

Status pass

Sensor Component | System Memo

Precipitation Data Form

Mfg	Sei	rial Number Ta	Site	Т	echnician		Site Visi	t Date	Paramete	er	Owner ID
Climatronics	ille	egible	WNC429	E	Eric Hebert		09/11/20)13	Precipitati	on	91050
					Mfg		PMP				recipitation
DAS 1: A Avg % Diff		DAS 2: % Di		Max % Di	Serial Nui Tfer ID		EW-0613 01250	34-50	Tfer	Desc. 25	50ml graduate
					Slope			1.0000	0 Interc	ept	0.00000
					Cert Date			9/5/200	CorrC	Coff	1.00000
UseDesc.	Test ty	pe: TferVolume	e: Iteration:	TimePerTip	: Eq.Ht:	DAS	eng: Eq.I	HtUnit:	OSE Unit:	TferUnit	ts:PctDifference
primary	tip check			2 sec	1.00	0.0		nm	mm	ml	100.00
primary	test 1	231.5	1	10 sec	5.00	0.0	1 00	nm	mm	ml	-100.0%
Sensor Com	ponent	System Memo		Condit	ion See com	ments			Status P	ass	
Sensor Com	nponent	Sensor Heater		Condit	ion Function	ing			Status P	ass	
Sensor Com	ponent	Properly Sited		Condit	ion Properly	sited			Status p	ass	
Sensor Com	ponent	Gauge Drain Scre	en	Condit	ion Not insta	ılled			Status fa	ail	
Sensor Com	ponent	_evel		Condit	ion Level				Status P	ass	
Sensor Com	ponent	Gauge Clean		Condit	ion Moderat	ely clea	ın		Status P	ass	
Sensor Com	ponent	Funnel Clean		Condit	ion Clean				Status P	ass	
Sensor Com	nponent	Condition		Condit	ion Poor				Status fa	iil	
Sensor Com	ponent	Gauge Screen		Condit	ion Installed				Status p	ass	

Infrastructure Data For

Sit	e ID	WNC429	Technician	Eric Hebert	Site Visit Date	09/11/2013	
	Shelter Ma	ake	Shelter Model	She	elter Size		
	Ekto		8810 (s/n 3034-	1) 640	cuft		

Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Sample Tower Type	Condition	Type B	Status	pass
Sensor Component	Met Tower	Condition	Good	Status	pass
Sensor Component	Moisture Trap	Condition	Not installed	Status	pass
Sensor Component	Power Cables	Condition	Good	Status	pass
Sensor Component	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	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 Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
ARS	none	WNC429	Eric Hebert	09/11/2013	Shelter Temperature	none
DAS 1:	DAS 2:	D 41 M D	Mfg	Extech	Parameter She	Iter Temperatur
Abs Avg Err Abs	1.46 Abs Avg	Err Abs Max Er	Serial Number	H232679	Tfer Desc. RTD)
			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	21.02	20.99	0.000	22.2	С	1.18
primary	Temp Mid Range	19.84	19.82	0.000	21.3	C	1.46
primary	Temp Mid Range	22.45	22.41	0.000	22.4	C	-0.05

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem	
Flow Rate	WNC429	Eric Hebert	09/11/2013	Filter Position	Mykrolis	1887		✓	
The filter attachment pl orientation.	ate is mounted t	oo low in the enclos	sure resulting in	the filter being expo	sed to wind-driven	rain and in the	standard ge	ometric	
Ozone	WNC429	Eric Hebert	09/11/2013	Cell B Freq.	ThermoElectron	3398		✓	
This analyzer diagnostic	c check is outsid	le the manufacturer's	s recommended	value.					
Ozone	WNC429	Eric Hebert	09/11/2013	Cell A Freq.	ThermoElectron	3398		✓	
This analyzer diagnostic check is outside the manufacturer's recommended value.									
Precipitation	WNC429	Eric Hebert	09/11/2013	System Memo	Climatronics	2755		✓	
This measurement syste	em is damaged a	nd not functioning.							
Shelter Temperature	WNC429	Eric Hebert	09/11/2013	Accuracy Mid Ra	ARS	2285		✓	
The shelter temperature is going outside CFR requirements for pollutant monitor operation.									

Field Systems Comments

1 Parameter: SiteOpsProcComm

The purpose for completing the general observations section of the SSRF was discussed with the site operator.

2 Parameter: SiteOpsProcedures

The ozone analyzer is operated by the state of South Dakota. There is no means for introducing test gas at the sample inlet. Audit test gas was introduced through the sample inlet flooding the glass manifold.

3 Parameter: DocumentationCo

Records of the routine checks performed by the state personnel are kept onsite in a logbook.

4 Parameter: ShelterCleanNotes

One shelter houses the gas analyzers and is in good condition and clean. The analyzer sample train is a glass manifold with an exhaust fan. The second shelter houses the flow system, met translator, and IMPROVE. It is older and not climate controlled.

5 Parameter: PollAnalyzerCom

The dry deposition filter is mounted low in the enclosure which changes the particle collection characteristics, and can allow precipitation to enter

6 Parameter: MetOpMaintCom

The tipping bucket rain gage is not functioning.

F-02058-1500-S1-rev001

Site ID WNC429	Technician Eric Hebert	Site Visit Date 09/1	1/2013	
Site Sponsor (agency)	NPS	USGS Map	Wind Cave	
Operating Group	NPS and state of SD	Map Scale		
AQS#	46-033-0132	Map Date		
Meteorological Type	R.M. Young			
Air Pollutant Analyzer	Ozone, SO2, NOx, PM2.5, PM10, IMP	QAPP Latitude	43.5578	
Deposition Measurement	dry, wet	QAPP Longitude	-103.4839	
Land Use	prairie - woodland - evergreen	QAPP Elevation Meters	1292	
Terrain	rolling	QAPP Declination		
Conforms to MLM	Marginally	QAPP Declination Date		
Site Telephone		Audit Latitude	43.557639	
Site Address 1	Visitor Center	Audit Longitude	-103.483856	
Site Address 2	Route 385 Wind Cave National Park	Audit Elevation	1288	
County	Custer	Audit Declination	8.1	
City, State	Hot Springs, SD	Present		
Zip Code	57747	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	Control of the contro	
Backup Op. E-mail		Stable Entry Step 🗹		
Shelter Working Room ✓	Make Ekto N	Iodel 8810 (s/n 3034-1)	Shelter Size 640 cuft	
Shelter Clean		haust fan. The second shelter h	on and clean. The analyzer sample train houses the flow system, met translator,	
Site OK	Notes			
The s	Hot Springs proceed north on 385 into Vite operator's office is in the visitors centoposite side of the parking lot from the visitors.	er. The site is up the gravel acc		

F-02058-1500-S2-rev001

Site ID WNC429 Eric Hebert Site Visit Date 09/11/2013

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		V
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	17	
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

Riel	14 9	Svei	tems	Dat	ta l	Form
			CITIO	Du		UULIII

F-02058-1500-S3-rev001

Site	ı ID		WNC429		Technician	Eric Hebert		Site Visit Date 09/11/2013	
, J. I.] % (12.12.10)	
1 Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?							✓		
2 Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)				e tower or on a	✓				
3							✓		
4 Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?							V		
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)					ensors should Ridges, hollov	be natural	✓		
6	Is th	he so	lar radiation	n sensor plu	mb?		~		
7	Is it ligh		d to avoid sl	nading, or a	ny artificial o	r reflected	~		
8	Is th	he ra	in gauge plu	ımb?			~		
9		t site ers, (neltering eff	ects from bui	ldings, trees,	V		
10			rface wetne orth?	ss sensor sit	ed with the g	rid surface	✓	N/A	
11	Is it	t inc	lined approx	ximately 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:									
							rations.		

Field Systems Data Form F-02058-1500-S4-rev001 WNC429 Technician Eric Hebert Site Visit Date 09/11/2013 Site ID **V** Do all the meterological sensors appear to be intact, in good condition, and well maintained? TB out Are all the meteorological sensors operational online, and reporting data? **V** Are the shields for the temperature and RH sensors clean? 3 **V** Are the aspirated motors working? **V** Is the solar radiation sensor's lens clean and free of scratches? ✓ N/A Is the surface wetness sensor grid clean and undamaged? **V** Are the sensor signal and power cables intact, in good condition, and well maintained? **V** Are the sensor signal and power cable connections protected from the elements and well maintained? Model S/N **Client ID Parameter** Manufacturer Precipitation 100508-2 Climatronics illegible 91050 Wind Direction 90853 RM Young AQ05103-5 39243wdr Wind Speed RM Young AQ05103-5 39243wsp 90853 Relative Humidity Rotronic MP 601 52067 none Solar Radiation PY79874 Licor LI-200 none Temperature RM Young 41342 14264 none Shield (10 meter) RM Young 43502 None none Met tower unknown unknown none none Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters: The tipping bucket rain gage is not functioning.

F-02058-1500-S5-rev001

Site	e ID	WNC429	Technician	Eric Hebert	AT 126519	Site Visit Date	09/11/2013	
	Siting C	riteria: Are the po	llutant analyzers a	nd deposition ed		ment sited in accord	lance with 40 CI	R 58, Appendix E
1		ample inlets have a cted airflow?	at least a 270 degre	e arc of	✓			
2	Are the	sample inlets 3 - 1	5 meters above the	ground?	✓	3 meter glass		
3		sample inlets > 1 n neters from trees?	neter from any maj	or obstruction,	✓			
	Pollutar	t analyzers and de	position equipmen	t operations and	l ma	<u>intenance</u>		
1		nalyzers and equip n and well mainta	pment appear to be ined?	in good	✓			
2	Are the reportin		nitors operational, o	on-line, and	✓			
3	Describ	e ozone sample tub	e.			3 meter glass manif	old and 1/4 inch to	eflon with tee fittings
4	Describe dry dep sample tube.					3/8 teflon by 12 met	ers	
5		ine filters used in t location)	he ozone sample lin	e? (if yes	✓	At analyzer only		
6	Are sam		e of kinks, moisture	e, and	✓			
7	Is the ze	ro air supply desic	cant unsaturated?		✓			
8	Are the	re moisture traps i	n the sample lines?					
9	Is there clean?	a rotometer in the	dry deposition filte	er line, and is it	✓	Clean and dry		
Par	ameter		Manufacturer	Model		S/N		Client ID
San	nple Tow	er	Aluma Tower	В	nenni	none		none
Ozo	one		ThermoElectron Inc	49i A3NA	02000000 \ 11000000	0615817056		none
Zer	o air pum		ThermoElectron Inc	111		111-78387-38	38	none
MF	C power s	upply	Tylan	RO-32		FP9706002	12022043 2328 231 24110 25123	none
			ion (photograph or affect the monitori		sary)	regarding condition	ons listed above,	or any other features,

The dry deposition filter is mounted low in the enclosure which changes the particle collection characteristics, and can allow precipitation to enter.

F-02058-1500-S6-rev001

WNC429	Technician E	ric Hebert		Site Visit Date 0	9/11/2013	
AS, sensor translators	s, and peripheral equipr	nent operatio	ns ai	nd maintenance		
o the DAS instrument rell maintained?	ts appear to be in good o	condition and	✓			
re all the components nodem, backup, etc)	of the DAS operational	? (printers,	✓			
		rough	✓	Met sensors only		
re the signal connection	ons protected from the v	veather and	✓			
re the signal leads cor	nnected to the correct D	AS channel?	✓			
re the DAS, sensor tra	anslators, and shelter pr	operly	~			
oes the instrument sh	elter have a stable powe	r source?	✓			
the instrument shelte	er temperature controlle	e d?	V	Both on		
s the met tower stable	and grounded?			Stable	Grounde	d
				V	V	
ower comments?				<u> ♥ </u>		
neter	Manufacturer	Model		S/N	C	lient ID
uter	Hewlett Packard	6560 b	27.200	5CB1520H5J	nc	one
	Environmental Sys C	orp 8816	Market	4159	m	issing
n	US Robotics	56k fax m	oden	n unknown	nc	one
Radiation Translator	RM Young	70101-X	ESSEL !	none	no	one
de any additional expl	anation (photograph or	sketch if nece				
	AS, sensor translators of the DAS instrument ell maintained? re all the components odem, backup, etc) of the analyzer and senghtning protection cir re the signal connectic ell maintained? re the signal leads con- re the DAS, sensor translator re the instrument shelter the instrument shelter the met tower stable the sample tower stable ower comments? neter Radiation Translator	AS, sensor translators, and peripheral equipment of the DAS instruments appear to be in good cell maintained? re all the components of the DAS operational odem, backup, etc) to the analyzer and sensor signal leads pass the partial protection circuitry? re the signal connections protected from the vell maintained? re the signal leads connected to the correct Dare the DAS, sensor translators, and shelter prounded? the instrument shelter have a stable powe the instrument shelter temperature controlled the met tower stable and grounded? the sample tower stable and grounded? the sample tower stable and grounded? wer comments? Manufacturer ter Manufacturer ter Hewlett Packard Environmental Sys C u US Robotics Radiation Translator RM Young	AS, sensor translators, and peripheral equipment operation of the DAS instruments appear to be in good condition and ell maintained? re all the components of the DAS operational? (printers, odem, backup, etc) to the analyzer and sensor signal leads pass through ghtning protection circuitry? re the signal connections protected from the weather and ell maintained? re the signal leads connected to the correct DAS channel? re the DAS, sensor translators, and shelter properly rounded? oes the instrument shelter have a stable power source? the instrument shelter temperature controlled? the met tower stable and grounded? the sample tower stable and grounded? ower comments? Manufacturer Model ter Manufacturer Model ter Mewlett Packard 6560 b Environmental Sys Corp 8816 to US Robotics 56k fax m Radiation Translator RM Young 70101-X	AS, sensor translators, and peripheral equipment operations and of the DAS instruments appear to be in good condition and ell maintained? re all the components of the DAS operational? (printers, odem, backup, etc) of the analyzer and sensor signal leads pass through ghtning protection circuitry? re the signal connections protected from the weather and ell maintained? re the signal leads connected to the correct DAS channel? re the DAS, sensor translators, and shelter properly counded? oes the instrument shelter have a stable power source? the instrument shelter temperature controlled? the met tower stable and grounded? the sample tower stable and grounded? ower comments? neter Manufacturer Model ter Hewlett Packard 6560 b Environmental Sys Corp 8816 n US Robotics 56k fax moder Radiation Translator RM Young 70101-X	AS, sensor translators, and peripheral equipment operations and maintenance of the DAS instruments appear to be in good condition and ell maintained? re all the components of the DAS operational? (printers, odem, backup, etc) of the analyzer and sensor signal leads pass through eltrining protection circuitry? re the signal connections protected from the weather and ell maintained? re the signal leads connected to the correct DAS channel? re the DAS, sensor translators, and shelter properly ounded? oes the instrument shelter have a stable power source? the instrument shelter temperature controlled? Both on Stable the sample tower stable and grounded? the sample tower stable and grounded? better Manufacturer Model S/N the term Hewlett Packard 6560 b SCB1520H5J Environmental Sys Corp 8816 4159 the Components of the DAS operational explanation (photograph or sketch if necessary) regarding conditions and maintenance de any additional explanation (photograph or sketch if necessary) regarding conditions and maintenance with the sample december of the property of the sample of the sa	AS, sensor translators, and peripheral equipment operations and maintenance of the DAS instruments appear to be in good condition and sell maintained? re all the components of the DAS operational? (printers, oddem, backup, etc) of the analyzer and sensor signal leads pass through shitning protection circuitry? re the signal connections protected from the weather and sell maintained? re the signal leads connected to the correct DAS channel? re the DAS, sensor translators, and shelter properly counded? oes the instrument shelter have a stable power source? the instrument shelter temperature controlled? Stable Grounded the met tower stable and grounded? the sample tower stable and grounded? were comments? The weather than the sample tower stable and grounded? In the met tower stable and grounded? The sample tower

F-02058-1500-S7-rev001

Site ID WNC429	Technicia	n Eric Hebert	Site Visit Date	09/11/2013	
Dogumentotion					
<u>Documentation</u>	4.				
Does the site have the require			<u>4</u>		T. N.T/A
Wind speed sensor		√A Data logg	er		No N/A
Wind direction sensor		Data logs			 _ _
Temperature sensor			rt recorder		
Relative humidity sensor	✓ □	Compute			Z
Solar radiation sensor	V	Modem			
Surface wetness sensor		✓ Printer			Z
Wind sensor translator		Zero air	pump		
Temperature translator		Filter flo	w pump		
Humidity sensor translator		✓ Surge pro	otector		
Solar radiation translator		UPS			
Tipping bucket rain gauge		Lightning	g protection device		
Ozone analyzer		Shelter h	eater	The second secon	
Filter pack flow controller		Shelter a	r conditioner	✓ [
Filter pack MFC power supply					
Does the site have the requi	ired and most re	cent QC documents an	d report forms?		
	Present			Current	
Station Log	✓ Data	/iew		✓	
SSRF	V			✓	
Site Ops Manual	✓ Jan 2	006		✓	
HASP					
Field Ops Manual					
Calibration Reports	V				
Ozone z/s/p Control Charts					
Preventive maintenance schedu	1				
1 Table Mathematica			Dataview		
1 Is the station log properly	completed durin	g every site visit:	Dataview		
2 Are the Site Status Report current?	Forms being con	npleted and			
3 Are the chain-of-custody for sample transfer to and from		sed to document			
4 Are ozone z/s/p control chacurrent?		npleted and	Control charts not us	sed	
current:					
Provide any additional explana natural or man-made, that may) regarding conditi	ons listed abo	ove, or any other feature
Records of the routine checks per	formed by the sta	te personnel are kept on	site in a logbook.		

Field Systems Data Form F-02058-1500-S8-rev001 **WNC429** Site Visit Date 09/11/2013 Site ID Technician Eric Hebert Site operation procedures Has the site operator attended a formal CASTNET training ✓ Trained during site installation course? If yes, when and who instructed? Has the backup operator attended a formal CASTNET Trained by site operator training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday ~ schedule? V Are the standard CASTNET operational procedures being flollowed by the site operator? 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 V** ~ Semiannually **Multipoint Calibrations** ~ ~ Weekly **Visual Inspections** ~ N/A **Translator Zero/Span Tests (climatronics)** ~ ~ **Manual Rain Gauge Test** Monthly **V** ~ Weekly **Confirm Reasonableness of Current Values Test Surface Wetness Response** Are regular operational QA/QC checks performed on the ozone analyzer? **OC Check Performed Compliant** Frequency **Multi-point Calibrations V** ~ Quarterly **Automatic Zero/Span Tests** ~ Every 2 weeks Manual Zero/Span Tests **Automatic Precision Level Tests Manual Precision Level Test** Every 2 weeks **Analyzer Diagnostics Tests In-line Filter Replacement (at inlet)** In-line Filter Replacement (at analyze Sample Line Check for Dirt/Water **Zero Air Desiccant Check** Do multi-point calibration gases go through the complete

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:

sample train including all filters?

reported? If yes, how?

Do automatic and manual z/s/p gasses go through the

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

complete sample train including all filters?

The ozone analyzer is operated by the state of South Dakota. There is no means for introducing test gas at the sample inlet. Audit test gas was introduced through the sample inlet flooding the glass manifold.

V

Logbook

Field Systems Data Form F-02058-1500-S9-rev001 Site ID **WNC429** Technician Eric Hebert Site Visit Date 09/11/2013 Site operation procedures Is the filter pack being changed every Tuesday as scheduled? ✓ Filter changed morinings Are the Site Status Report Forms being completed and filed correctly? no longer required Are data downloads and backups being performed as scheduled? Are general observations being made and recorded? How? V Are site supplies on-hand and replenished in a timely fashion? SSRF Are sample flow rates recorded? How? Are samples sent to the lab on a regular schedule in a timely fashion? Gloves not used Are filters protected from contamination during handling and shipping? How? Are the site conditions reported regularly to the field operations manager or staff? Compliant **QC Check Performed** Frequency ~ ✓ Semiannually **Multi-point MFC Calibrations** V Weekly Flow System Leak Checks **Filter Pack Inspection** ~ ✓ Weekly **Flow Rate Setting Checks** V ✓ Weekly **Visual Check of Flow Rate Rotometer** ✓ As needed V **In-line Filter Inspection/Replacement** Sample Line Check for Dirt/Water Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters: The purpose for completing the general observations section of the SSRF was discussed with the site operator.

Site Inventory by Site Visit

Site \	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
STK	138-Eric H	ebert-09/19/2013				
1	9/19/2013	Computer	Dell	000248	D520	unknown
2	9/19/2013	DAS	Campbell	000349	CR3000	2128
3	9/19/2013	Elevation	Elevation	None	1	None
4	9/19/2013	Filter pack flow pump	Thomas	04923	107CAB18	060300019959
5	9/19/2013	Flow Rate	Mykrolis	000238	FC280SAV	AW06273005
6	9/19/2013	Infrastructure	Infrastructure	none	none	none
7	9/19/2013	MFC power supply	MACTEC	04997	none	none
8	9/19/2013	Modem	Raven	06603	H4223-C	0844356279
9	9/19/2013	Ozone	ThermoElectron Inc	000610	49i A1NAA	1009241778
10	9/19/2013	Ozone Standard	ThermoElectron Inc	000450	49i A3NAA	CM08200026
11	9/19/2013	Sample Tower	Aluma Tower	03554	Α	none
12	9/19/2013	Shelter Temperature	Campbell	none	107-L	unknown
13	9/19/2013	Siting Criteria	Siting Criteria	None	1	None
14	9/19/2013	Temperature	RM Young	06407	41342VC	14040
15	9/19/2013	Zero air pump	Werther International	06915	C 70/4	000829162

DAS Data Form 0.03 **DAS Time Max Error:** Serial Number Site **Technician** Site Visit Date Parameter Use Desc. Mfg Campbell 2128 STK138 Eric Hebert 09/19/2013 DAS Primary Das Date: 9 /19/2013 **Audit Date** 9 /19/2013 Datel **Parameter** DAS Mfg 15:46:00 Das Time: 15:45:58 **Audit Time** 4000392 Tfer Desc. Source generator (D **Serial Number** Das Day: 262 **Audit Day** 262 Tfer ID 01321 **Low Channel: High Channel: Avg Diff: Max Diff: Avg Diff: Max Diff:** 1.00000 0.00000 Slope **Intercept** 0.0001 0.0001 0.0001 0.0001 2/13/2012 1.00000 **Cert Date** CorrCoff Fluke **Parameter** DAS Mfg **Serial Number** 86590148 Tfer Desc. DVM 01310 Tfer ID 1.00000 0.00000 Slope **Intercept** 1/27/2013 1.00000 **Cert Date** CorrCoff Channel Input **DVM** Output **DAS** Output InputUnit OutputUnit Difference 0.0000 0.0000 0.0000 0.0000 V V 7 0.1000 0.1000 0.1000 0.00007 0.3000 0.3000 0.3000 V V 0.0000 7 0.5000 0.4999 V V -0.0001 0.5000 7 0.7000 V V -0.0001 0.7000 0.6999 V V 7 0.9000 0.9000 0.8999 -0.0001 7 0.9999 V V -0.0001 1.0000 1.0000

Flow Data Form

Mfg	Se	erial Num	iber Ta	Site	Tec	hnician	Site Visit l	Date Param	eter	Owner ID
Mykrolis	Δ	W062730	05	STK138	Erio	Hebert	09/19/201	3 Flow R	ate	000238
Mfg	MAC	TEC				Mfg	BIOS	P	arameter Flo	w Rate
SN/Owner ID	none		04997			Serial Number	122974	Т	fer Desc. BIG	OS 220-H
Parameter	MFC	power sup	vla			Tfer ID	01416			
Tarameter		P 0 11 0 1 0 1 1				G1	1	00000	, –	0.0000
						Slope	1	.00000 Inte	ercept	0.00000
						Cert Date	1/	8/2013 Cor	rCoff	1.00000
DAS 1:			DAS 2:		L	Cal Factor Z	ero	-0.1	3	
A Avg % Diff:	A Ma	x % Di	A Avg %l	Dif A Max	w Mi	Cal Factor F	ull Scale	0.9	06	
1.69%		2.11%				Rotometer R	eading:	1.4	-5	
UseDescription	Tes	st type:	Input 1/m:	Input STP:	MfcDisp.:	OutputSignal:	Output S E:	InputUnit:	OutputSignal	PctDifference
primary	pump		0.000	0.000	0.11	0.111	-0.01	l/m	l/m	
primary	leak c	check	0.000	0.000	0.12	0.126	0.00	l/m	l/m	
primary	test p	t 1	0.000	1.520	1.49	1.498	1.50	l/m	l/m	-1.30%
primary	test p	t 2	0.000	1.525	1.49	1.498	1.50	l/m	l/m	-1.67%
primary	test p	t 3	0.000	1.532	1.49	1.498	1.50	l/m	l/m	-2.11%
Sensor Comp	onent	Leak Tes	t		Condition	n	Status	pass		
Sensor Comp	onent	Filter Azir	muth		Condition	270 deg		Status	pass	
Sensor Comp	onent	Filter Dep	oth		Condition	ion 2.0 cm		Status	pass	
Sensor Comp	onent	Filter Pos	ition		Condition	Good		Status	pass	
Sensor Comp	onent	Moisture	Present		Condition	No moisture p	esent	Status	pass	
Sensor Comp	onent	Rotomete	er Condition	1	Condition	Clean and dry		Status	pass	
Sensor Comp	onent	System M	1emo		Condition	n		Status	pass	
Sensor Comp	onent	Tubing Co	ondition		Condition	Good		Status	pass	
Sensor Comp	onent	Filter Dist	ance		Condition	5.0 cm		Status	pass	

Ozone Data Form

Note	Mfg S	erial Number Ta	Site	Teo	chnician		Site Visi	t Date	Parame	eter	Owner I	D
DAS 1:	ThermoElectron Inc 1	009241778	STK138	Eri	ic Hebert		09/19/20	013	Ozone		000610	
Intercept	Slope: 0.9	96544 Slope:	0.00000		Mfg		ThermoE	lectron I	nc Pa	rameter	zone	
DAS 1:		-	0.00000		Serial N	umber	5171121	75	Tfe	er Desc.	zone primary	y stan
DAS 1:	CorrCoff 1.0	00000 CorrCoff	0.00000)	Tfer ID		01111					
A Neg % Diff: A Max % Di	DAS 1:	DAS 2:						0.00720	T4		0.10	120
UseDescription: ConcGroup: Tfer Raw: Trer Corr: Site: Site Unit: PetDifference: primary 1 -0.16 -0.34 -0.23 ppb -2.92% primary 2 23.41 23.29 22.61 ppb -2.92% primary 3 53.57 53.53 51.75 ppb -3.33% primary 4 77.07 77.10 74.34 ppb -3.58% primary 4 77.07 77.10 74.34 ppb -3.58% primary 5 107.51 107.62 104.10 ppb -3.27%			6Dif A Max %	% Di	•				J I	•		
primary	3.3%	3.6%			Cert Dat	te		1/2/2013	Corr	Coff	1.00	0000
primary 2 23.41 23.29 22.61 ppb -2.92% primary 3 53.57 53.53 51.75 pph -3.33% primary 4 77.07 77.10 74.34 ppb -3.28% primary 5 107.51 107.62 104.10 ppb -3.27% Sensor Component Cell B Noise Condition 0.8 ppb Status pass Sensor Component Fullscale Voltage Condition N/A Status pass Sensor Component Inlet Filter Condition	UseDescription:	ConcGroup:	Tfer Raw:					Site	Unit:	PctDi	fference:	
primary 3 53.57 53.53 51.75 ppb -3.33% primary 4 77.07 77.10 74.34 ppb -3.5.8% primary 5 107.51 107.62 104.10 ppb -3.5.8% primary 6 107.51 104.1		1									2.0201	
primary 4 77.07 77.10 74.34 ppb -3.58% primary 5 107.51 107.62 104.10 ppb -3.58% primary 5 107.51 107.62 104.10 ppb -3.27% Sensor Component Cell B Noise Condition 0.8 ppb Status pass Sensor Component Cell B Tmp. Condition M/A Status pass Sensor Component Inlet Filter Condition Condition M/A Status pass Sensor Component Line Loss Condition Not tested Status pass Sensor Component Unite Filter Condition Condition Not tested Status pass Sensor Component Offset Condition 0.30 Status pass Sensor Component Offset Condition 0.997 Status pass Sensor Component Cell B Freq. Condition 84.1 kHz Status pass Sensor Component System Memo Condition Good Status pass Sensor Component Cell B Pressure Condition Status pass Sensor Component Cell B Pressure Condition Status pass Sensor Component Cell B Flow Condition Not Depth Status pass Sensor Component Cell B Flow Condition Not Depth Status pass Sensor Component Cell A Pressure Condition Not Depth Status pass Sensor Component Cell A Pressure Condition Not Depth Status pass Sensor Component Cell A Pressure Condition Not Depth Status pass Sensor Component Cell A Noise Condition Not Depth Status pass Sensor Component Cell A Fleq. Condition Not Depth Status pass Sensor Component Cell A Fleq. Condition Not Depth Status pass Sensor Component Cell A Fleq. Condition Not Depth Status pass Sensor Component Cell A Fleq. Condition Not Depth Status pass Sensor Component Cell A Fleq. Condition Not Depth Status pass Sensor Component Cell A Fleq. Condition Not Depth Status pass Sensor Component Cell A Fleq. Condition Not Depth Status pass Sensor Component Cell A Fleq. Condition Not Depth Status pass Sensor Component Cell A Fleq. Condition Not Status pass Sensor Component Cell A Fleq. Condition Not Status pass Status pass Sensor Component Cell A Fleq. Condition Not Status pass Status pass Sensor Component Cell A Fleq. Condition Not Status pass Status pass Sensor Component Cell A Fleq. Condition Not Status pass Status pass Sensor Component Cell A Fleq. Condition Not Status pass Status pass Sensor C												
Sensor Component Cell B Noise Condition O.8 ppb Status pass		-										
Sensor Component Cell B Noise Condition Sensor Component Fullscale Voltage Condition Sensor Component Fullscale Voltage Condition Sensor Component Fullscale Voltage Condition Condition Sensor Component Inlet Filter Condition Condition Condition Condition Condition Sensor Component Component Condition	•											
Sensor Component Cell B Tmp. Condition Status pass Sensor Component Fullscale Voltage Condition N/A Status pass Sensor Component Inlet Filter Condition Condition Clean Status pass Sensor Component Line Loss Condition Not tested Status pass Sensor Component Offset Condition 0.30 Status pass Sensor Component Span Condition 0.997 Status pass Sensor Component Cell B Freq. Condition 84.1 kHz Status pass Sensor Component System Memo Condition Status pass Sensor Component Sample Train Condition Good Status pass Sensor Component Cell B Pressure Condition Status pass Sensor Component Cell B Flow Condition O.70 lpm Status pass Sensor Component Cell A Tmp. Condition O.70 lpm Status pass Sensor Component Cell A Freq. Condition To			107.51				.10		G		-3.27%	_
Sensor Component Fullscale Voltage Condition N/A Status pass Sensor Component Inlet Filter Condition Condition Clean Status pass Sensor Component Line Loss Condition Not tested Status pass Sensor Component Offset Condition 0.30 Status pass Sensor Component Span Condition 0.997 Status pass Sensor Component Cell B Freq. Condition B4.1 kHz Status pass Sensor Component System Memo Condition Status pass Sensor Component Sample Train Condition Good Status pass Sensor Component Cell B Pressure Condition Status pass Sensor Component Cell B Flow Condition 0.70 lpm Status pass Sensor Component Cell A Tmp. Condition 0.70 lpm Status pass Sensor Component Cell A Pressure Condition 10.70 ppb Status pass Sensor Component Cell A Pressure Condition 10.9pb Status pass Sensor Component Cell A Noise Condition 10.71 lpm Status pass Sensor Component Cell A Freq. Condition 10.71 lpm Status pass Sensor Component Cell A Freq. Condition 10.71 lpm Status pass Sensor Component Cell A Freq. Condition 10.71 lpm Status pass Sensor Component Cell A Freq. Condition 10.71 lpm Status pass	Sensor Component	Cell B Noise		Conditio	0.8 ppi)			Status	pass		
Sensor Component Inlet Filter Condition Condition Clean Status pass Sensor Component Line Loss Condition Not tested Status pass Sensor Component Offset Condition 0.30 Status pass Sensor Component Span Condition 0.997 Status pass Sensor Component Cell B Freq. Condition Status pass Sensor Component System Memo Condition Status pass Sensor Component Sample Train Condition Good Status pass Sensor Component Cell B Pressure Condition Status pass Sensor Component Cell B Flow Condition O.70 lpm Status pass Sensor Component Cell A Tmp. Condition 30.4 C Status pass Sensor Component Cell A Pressure Condition 702 mmHg Status pass Sensor Component Cell A Noise Condition 1.0 ppb Status pass Sensor Component Cell A Freq. Condition 93.4 kHz Status pass Sensor Component Cell A Flow Condition 0.71 lpm Status pass Sensor Component Cell A Flow Condition 0.71 lpm Status pass Sensor Component Cell A Flow Condition 0.71 lpm Status pass Sensor Component Cell A Flow Condition 0.71 lpm Status pass	Sensor Component	Cell B Tmp.		Conditio	on				Status	pass		
Sensor Component Line Loss Condition Not tested Status pass Sensor Component Offset Condition 0.30 Status pass Sensor Component Span Condition 0.997 Status pass Sensor Component Cell B Freq. Condition 84.1 kHz Status pass Sensor Component System Memo Condition Status pass Sensor Component Sample Train Condition Good Status pass Sensor Component Cell B Pressure Condition O.70 lpm Status pass Sensor Component Cell A Tmp. Condition 0.70 lpm Status pass Sensor Component Cell A Pressure Condition 702 mmHg Status pass Sensor Component Cell A Freq. Condition 1.0 ppb Status pass Sensor Component Cell A Flow Condition 0.71 lpm Status pass Sensor Component Battery Backup Condition N/A Status pass	Sensor Component	Fullscale Voltage		Conditio	N/A				Status	pass		
Sensor Component Offset Condition 0.30 Status pass Sensor Component Span Condition 0.997 Status pass Sensor Component Cell B Freq. Condition Status pass Sensor Component System Memo Condition Status pass Sensor Component Cell B Pressure Condition Status pass Sensor Component Cell B Flow Condition 0.70 lpm Status pass Sensor Component Cell A Tmp. Condition 30.4 C Status pass Sensor Component Cell A Pressure Condition 702 mmHg Status pass Sensor Component Cell A Noise Condition 93.4 kHz Status pass Sensor Component Cell A Freq. Condition 0.71 lpm Status pass Sensor Component Battery Backup Condition N/A Status pass	Sensor Component	Inlet Filter Condition	n	Conditio	Clean				Status	pass		
Sensor Component Span Condition 0.997 Status pass Sensor Component Cell B Freq. Condition 84.1 kHz Status pass Sensor Component System Memo Condition Good Status pass Sensor Component Cell B Pressure Condition O.70 lpm Status pass Sensor Component Cell A Tmp. Condition 30.4 C Status pass Sensor Component Cell A Pressure Condition 702 mmHg Status pass Sensor Component Cell A Noise Condition 1.0 ppb Status pass Sensor Component Cell A Freq. Condition 93.4 kHz Status pass Sensor Component Cell A Flow Condition N/A Status pass	Sensor Component	Line Loss		Conditio	Not tes	sted			Status	pass		
Sensor Component Cell B Freq. Condition 84.1 kHz Status pass Sensor Component System Memo Condition Status pass Sensor Component Sample Train Condition Good Status pass Sensor Component Cell B Pressure Condition 0.70 lpm Status pass Sensor Component Cell A Tmp. Condition 30.4 C Status pass Sensor Component Cell A Pressure Condition 702 mmHg Status pass Sensor Component Cell A Noise Condition 1.0 ppb Status pass Sensor Component Cell A Freq. Condition 93.4 kHz Status pass Sensor Component Cell A Flow Condition 0.71 lpm Status pass Sensor Component Battery Backup Condition N/A Status pass	Sensor Component	Offset		Conditio	0.30				Status	pass		
Sensor Component System Memo Condition Status pass Sensor Component Sample Train Condition Good Status pass Sensor Component Cell B Pressure Condition 0.70 lpm Status pass Sensor Component Cell A Tmp. Condition 30.4 C Status pass Sensor Component Cell A Pressure Condition 702 mmHg Status pass Sensor Component Cell A Noise Condition 1.0 ppb Status pass Sensor Component Cell A Freq. Condition 93.4 kHz Status pass Sensor Component Cell A Flow Condition 0.71 lpm Status pass Sensor Component Battery Backup Condition N/A Status pass	Sensor Component	Span		Conditio	0.997				Status	pass		
Sensor Component Sample Train Condition Good Status pass Sensor Component Cell B Pressure Condition 0.70 lpm Status pass Sensor Component Cell A Tmp. Condition 30.4 C Status pass Sensor Component Cell A Pressure Condition 702 mmHg Status pass Sensor Component Cell A Noise Condition 1.0 ppb Status pass Sensor Component Cell A Freq. Condition 93.4 kHz Status pass Sensor Component Cell A Flow Condition 0.71 lpm Status pass Sensor Component Battery Backup Condition N/A Status pass	Sensor Component	Cell B Freq.		Conditio	n 84.1 kł	Нz			Status	pass		
Sensor Component Cell B Pressure Condition Status pass Sensor Component Cell B Flow Condition 0.70 lpm Status pass Sensor Component Cell A Tmp. Condition 30.4 C Status pass Sensor Component Cell A Pressure Condition 702 mmHg Status pass Sensor Component Cell A Noise Condition 1.0 ppb Status pass Sensor Component Cell A Freq. Condition 93.4 kHz Status pass Sensor Component Cell A Flow Condition 0.71 lpm Status pass Sensor Component Battery Backup Condition N/A Status pass	Sensor Component	System Memo		Conditio	on				Status	pass		
Sensor Component Cell B Flow Condition 0.70 lpm Status pass Sensor Component Cell A Tmp. Condition 30.4 C Status pass Sensor Component Cell A Pressure Condition 702 mmHg Status pass Sensor Component Cell A Noise Condition 1.0 ppb Status pass Sensor Component Cell A Freq. Condition 93.4 kHz Status pass Sensor Component Cell A Flow Condition 0.71 lpm Status pass Sensor Component Battery Backup Condition N/A Status pass	Sensor Component	Sample Train		Conditio	Good				Status	pass		
Sensor Component Cell A Tmp. Condition 30.4 C Status pass Sensor Component Cell A Pressure Condition 702 mmHg Status pass Sensor Component Cell A Noise Condition 1.0 ppb Status pass Sensor Component Cell A Freq. Condition 93.4 kHz Status pass Sensor Component Cell A Flow Condition 0.71 lpm Status pass Sensor Component Battery Backup Condition N/A Status pass	Sensor Component	Cell B Pressure		Conditio	on				Status	pass		
Sensor Component Cell A Pressure Condition 702 mmHg Status pass Sensor Component Cell A Noise Condition 1.0 ppb Status pass Sensor Component Cell A Freq. Condition 93.4 kHz Status pass Sensor Component Cell A Flow Condition 0.71 lpm Status pass Sensor Component Battery Backup Condition N/A Status pass	Sensor Component	Cell B Flow		Conditio	0.70 lp	m			Status	pass		
Sensor Component Cell A Noise Condition 1.0 ppb Status pass Sensor Component Cell A Freq. Condition 93.4 kHz Status pass Sensor Component Cell A Flow Condition 0.71 lpm Status pass Sensor Component Battery Backup Condition N/A Status pass	Sensor Component	Cell A Tmp.		Conditio	30.4 C				Status	pass		
Sensor Component Cell A Freq. Condition 93.4 kHz Status pass Sensor Component Cell A Flow Condition 0.71 lpm Status pass Sensor Component Battery Backup Condition N/A Status pass	Sensor Component	Cell A Pressure		Conditio	702 mi	mHg			Status	pass		
Sensor Component Cell A Flow Condition 0.71 lpm Status pass Sensor Component Battery Backup Condition N/A Status pass	Sensor Component	Cell A Noise		Conditio	1.0 ppl)			Status	pass		
Sensor Component Battery Backup Condition N/A Status pass	Sensor Component	Cell A Freq.		Conditio	93.4 kl	Ηz			Status	pass		
	Sensor Component	Cell A Flow		Conditio	0.71 lp	m			Status	pass		
Sensor Component Zero Voltage Condition N/A Status pass	Sensor Component	Battery Backup		Conditio	n N/A				Status	pass		
	Sensor Component	Zero Voltage		Conditio	N/A				Status	pass		

Temperature Data Form Serial Number Tag Site **Technician** Site Visit Date Parameter **Owner ID** Mfg 14040 STK138 Eric Hebert Temperature 06407 RM Young 09/19/2013 **Parameter** Temperature Mfg Extech Tfer Desc. RTD H232679 **Serial Number** 01228 Tfer ID 1.00732 -0.12380 **Slope Intercept DAS 1: DAS 2:** 1/12/2013 1.00000 Abs Avg Err Abs Max Er Abs Avg Err Abs Max Er **Cert Date** CorrCoff 0.07 0.14 InputTmpRaw | InputTmpCorr.: | OutputTmpSignal: | OutputSignalEng: | OSE Unit: | Difference: UseDesc.: Test type: 0.20 0.03 primary Temp Low Range 0.32 0.000 0.4 C 22.26 22.22 0.000 22.3 $\overline{\mathbf{C}}$ 0.04 primary Temp Mid Range Temp High Range 46.23 46.02 0.000 46.2 C 0.14 primary Sensor Component | Shield Condition Clean Status pass Sensor Component Blower Status Switch **Condition** N/A **Status** pass **Sensor Component** Blower **Condition** N/A **Status** pass Sensor Component System Memo Condition **Status** pass

Infrastructure Data For

Sit	te ID	STK138	Technician	Eric Hebert	Site Visit Date	09/19/2013	
	Shelter Ma	ake	Shelter Model	Sh	nelter Size		
	Ekto	MONTH OF THE STREET	8810 (s/n 2149-	21) 64	40 cuft		

Sensor Component	Shelter Roof	Condition	Good	Status	pass
Sensor Component	Sample Tower Type	Condition	Type A	Status	pass
Sensor Component	Met Tower	Condition	N/A	Status	pass
Sensor Component	Moisture Trap	Condition	Installed	Status	pass
Sensor Component	Power Cables	Condition	Fair	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	Good	Status	pass
Sensor Component	Sample Train	Condition	Good	Status	pass

Shelter Temperature Data For

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	unknown	STK138	Eric Hebert	09/19/2013	Shelter Temperature	none
DAS 1:	DAS 2:	T 41 M T	Mfg	Extech	Parameter She	elter Temperatur
Abs Avg Err Abs 0.73	s Max Er Abs Avg 1.12	Err Abs Max Er	Serial Number	H232679	Tfer Desc. RTI)
			Tfer ID	01228		
			Slope	1.00732	Intercept	-0.12380
			Cert Date	1/12/2013	B CorrCoff	1.00000

UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	26.18	26.11	0.000	26.3	С	0.22
primary	Temp Mid Range	24.25	24.20	0.000	25.3	С	1.12
primary	Temp Mid Range	26.07	26.00	0.000	25.1	C	-0.86

Field Systems Comments

1 Parameter: SiteOpsProcedures

The ozone sample train is leak tested every 2 weeks.

2 Parameter: SitingCriteriaCom

The site is located in a hay field on a cattle farm. Clover is planted within 20 meters and will be used as pasture this fall.

3 Parameter: ShelterCleanNotes

The shelter is somewhat dirty and cluttered. There are signs of leaks on the walls and floor rot.

4 Parameter: MetOpMaintCom

The met tower is no longer in use. The temperature sensor is mounted in a naturally aspirated shield on the sample tower.

F-02058-1500-S1-rev001

Site ID STK138	Technician Eric Hebert	Site Visit Date 09/1	9/2013
Site Sponsor (agency)	EPA	USGS Map	Kent
Operating Group	Private	Map Scale	
AQS#	17-085-9991	Map Date	
Meteorological Type	R.M. Young		
Air Pollutant Analyzer	Ozone	QAPP Latitude	42.2872
Deposition Measurement	dry	QAPP Longitude	-89.9998
Land Use	agricultural	QAPP Elevation Meters	274
Terrain	rolling	QAPP Declination	1.3
Conforms to MLM	Yes	QAPP Declination Date	2/22/2006
Site Telephone		Audit Latitude	42.287216
Site Address 1	10939 E. Parker Road	Audit Longitude	-89.99995
Site Address 2		Audit Elevation	281
County	Jo Daviess	Audit Declination	-1.3
City, State	Stockton, IL	Present	
Zip Code	61085	Fire Extinguisher	No inspection date
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	Control Contro	Stable Entry Step	
Shelter Working Room ✓	Make Ekto M	odel 8810 (s/n 2149-21)	Shelter Size 640 cuft
Shelter Clean	Notes The shelter is somewhat dirty a	and cluttered. There are signs	of leaks on the walls and floor rot.
Site OK	Notes		
contin Contir	Stockton go south on 78 (Main Street) for ue straight onto a dirt road. There will be nue through that intersection, the site will l les bearing to the left on dirt roads to the	a stop sign at another dirt road be visible in the distance on a h	d intersection within 100 yards. nill-side to the left. Continue another

F-02058-1500-S2-rev001

Site ID STK138 Technician Eric Hebert Site Visit Date 09/19/2013

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		V
City 1,000 to 10,000 population	5 km		
Major highway, airport or rail yard	2 km		V
Secondary road, heavily traveled	500 m		✓
Secondary road, lightly traveled	200 m		~
Feedlot operations	500 m	7.5	✓
Intensive agricultural ops (including aerial spraying)	500 m		~
Limited agricultural operations	200 m	20 m	
Large parking lot	200 m		V
Small parking lot	100 m		
Tree line	50 m		✓
Obstacles to wind	10 times obstacle height		✓

Siting Distances OK ✓

Siting Criteria Comment

The site is located in a hay field on a cattle farm. Clover is planted within 20 meters and will be used as pasture this fall.

F-02058-1500-S3-rev001

Site	ID	STK138	Technician [Eric Hebert		Site Visit Date 09/19/2013
1		ind speed and direction influenced by obstruction		as to avoid	V	N/A
2	(i.e. wi	ind sensors mounted a ind sensors should be ntally extended boom into the prevailing wi	mounted atop the >2x the max dian	tower or on a	✓	N/A
3						N/A
4		e temperature shields radiated heat sources		STREET, STREET	✓	
5	condit surfac	mperature and RH so ions? (i.e. ground belo e and not steeply slop ng water should be av	ow sensors should ed. Ridges, hollow	be natural	✓	
6	Is the	solar radiation sensor	plumb?		✓	N/A
7	Is it sit light?	ted to avoid shading,	or any artificial or	reflected	✓	N/A
8	Is the	rain gauge plumb?			✓	N/A
9	Is it sit towers	ted to avoid shelterings, etc?	g effects from build	lings, trees,	✓	N/A
10		surface wetness senso north?	r sited with the gri	id surface	✓	N/A
11	Is it in	nclined approximately	y 30 degrees?		✓	N/A
		y additional explanat man-made, that may				y) regarding conditions listed above, or any other features,

ield	Systems D	ata Form			l P	-02058-1	500-S4-	rev00
te ID	STK138	Technician	Eric Hebert		Site Visit Date 09/19	/2013		
	ll the meterolog	ical sensors appear to be	intact, in good	✓				
Are		ogical sensors operation	al online, and	✓				
Are	the shields for tl	he temperature and RH	sensors clean?	✓				
Are	the aspirated m	otors working?		✓	N/A			
	e solar radiation tches?	n sensor's lens clean and	free of	✓	N/A			
Is th	e surface wetne	ss sensor grid clean and	undamaged?	✓	N/A			
	the sensor signa lition, and well r	l and power cables intac naintained?	t, in good	✓	N/A			
		l and power cable conne nd well maintained?	ctions protected	✓	N/A			
ramet	er	Manufacturer	Model		S/N	C	lient ID	
empera	ture	RM Young	41342VC	80.1	14040	0	6407	
		planation (photograph o it may affect the monitor		ary)	regarding conditions lis	ted above, or	any other fe	atures,
met to	wer is no longer i	in use. The temperature s	ensor is mounted	in a	naturally aspirated shield o	n the sample	ower.	mile videlite

F-02058-1500-S5-rev001

Site ID	S	TK138	Technician Er	ic Hebert		Site	e Visit Date 09/19/2	2013		
<u>Siti</u>	ng Crit	eria: Are	the pollutant analyzers and	deposition eq	uipi	nent si	ted in accordance	with 40 CFR 5	8, Appendix E	
		ple inlets	s have at least a 270 degree a	re of	✓					
2 Are	e the sai	nple inle	ts 3 - 15 meters above the gro	ound?	✓					
		nple inleters from	ts > 1 meter from any major trees?	obstruction,	~					
Pollutant analyzers and deposition equipment operations and maintenance										
			d equipment appear to be in naintained?	good	V					
	the an	UNEXCEDENDED OF THE	nd monitors operational, on-	line, and	✓					
3 Des	scribe o	zone sam	ple tube.			1/4 tef	lon by 18 meters			
4 Des	scribe d	ry dep sa	mple tube.			3/8 tef	lon by 18 meters			
5 Are in-line filters used in the ozone sample line? (if yes indicate location)					~	At inle	t only			
	e sample truction		an, free of kinks, moisture,	and	✓					
7 Is the	he zero	air suppl	ly desiccant unsaturated?		✓					
8 Are	there 1	noisture	traps in the sample lines?		✓					
9 Is the clean		otometer	in the dry deposition filter l	ine, and is it	~	Clean	and dry			
Parame	eter		Manufacturer	Model			S/N	Cli	ient ID	
Sample	Tower		Aluma Tower	Α	wspai	No. Technology	none	035	554	
MFC po	wer sup	ply	MACTEC	none	aspu. Y		none	049	997	
Ozone			ThermoElectron Inc	49i A1NAA	University of the Control of the Con		1009241778	000	0610	
Filter pa	ck flow p	oump	Thomas	107CAB18			060300019959	049	923	
Zero air	pump		Werther International	C 70/4			000829162	069	915	
Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:										,

F-02058-1500-S6-rev001

Site	ID	STK138	Technician	Eric Hebert		Site Visit Date 09/19	/2013	
	DAS	S, sensor translators, a	and peripheral equ	ipment operatio	ns ai	nd maintenance		
1	Do t	the DAS instruments a	appear to be in goo	d condition and	V			
2		all the components of dem, backup, etc)	the DAS operation	nal? (printers,	✓			
3		the analyzer and senso tning protection circu		through	✓	Met sensors only		
4		the signal connections I maintained?	s protected from th	e weather and	✓			
5	Are	the signal leads conne	ected to the correct	DAS channel?	~			
6		the DAS, sensor transunded?	slators, and shelter	properly	✓			
7	Doe	es the instrument shelt	er have a stable po	wer source?	✓			
8	Is th	he instrument shelter t	emperature contro	olled?	✓			
10	Is th	he met tower stable an				Stable ✓	Grounded ✓	
		ver comments?						
Par	ame	ter	Manufacturer	Model		S/N		ent ID
1200	npute	er State of the state of the st	Dell	D520	19543	unknown	DECEMBER 1)248
Mod	enci-	600000000000000000000000000000000000000	Campbell Raven	CR3000 H4223-C	119507	0844356279	066	0349
		any additional explan or man-made, that ma				y) regarding conditions l	listed above, or	any other features,

F-02058-1500-S7-rev001 **Field Systems Data Form** Site ID STK138 Technician Eric Hebert Site Visit Date 09/19/2013 **Documentation** Does the site have the required instrument and equipment manuals? N/A Yes No No N/A Yes **V** V Wind speed sensor **Data logger** V Wind direction sensor V **Data logger** V ~ Temperature sensor Strip chart recorder \Box V V Relative humidity sensor Computer ~ \Box П V Solar radiation sensor Modem V \Box ~ Surface wetness sensor **Printer** V П V П Wind sensor translator Zero air pump ~ **Temperature translator** V Filter flow pump ~ ~ **Humidity sensor translator** Surge protector П V **V UPS** Solar radiation translator П ~ Lightning protection device **V** Tipping bucket rain gauge **V** П V П **Shelter heater** Ozone analyzer V V Filter pack flow controller Shelter air conditioner V Filter pack MFC power supply Does the site have the required and most recent QC documents and report forms? Present Current **Station Log** V **V**

Site Ops Manual		Oct 2010		∠	
HASP	V	Oct 2010		V	
Field Ops Manual	✓	July 1990			
Calibration Reports					
Ozone z/s/p Control Charts					
Preventive maintenance schedul					
1 Is the station log properly con2 Are the Site Status Report For current?	rms be	ing completed and			
3 Are the chain-of-custody form sample transfer to and from la	G14 - 12 12 12 12 12 12 12 12 12 12 12 12 12	erly used to document			
4 Are ozone z/s/p control charts current?	prope	rly completed and	Control charts no	ot used	

Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features,

~

V

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

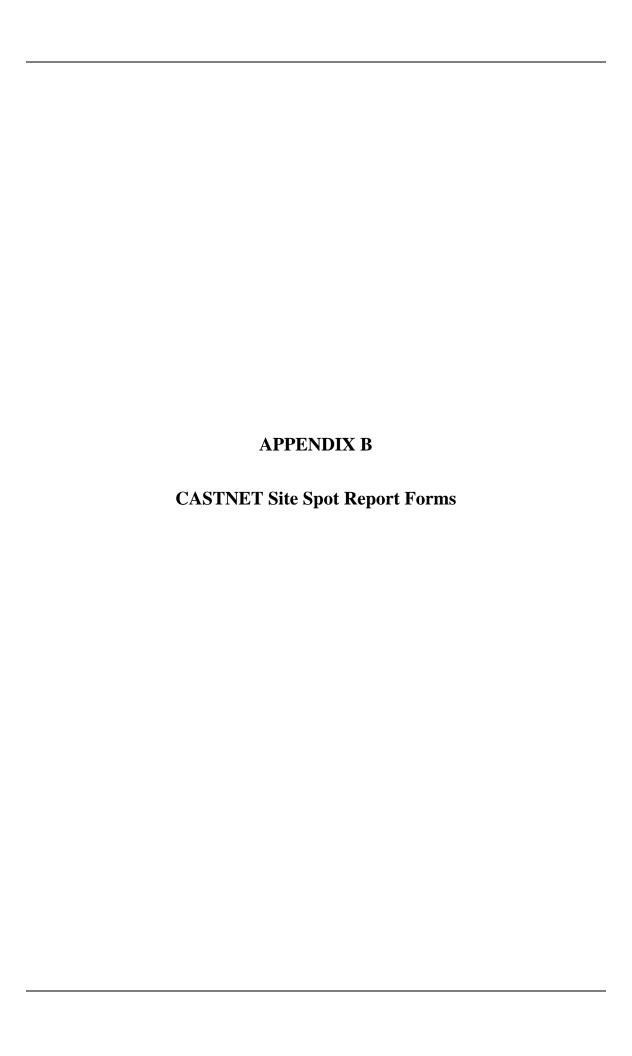
SSRF

F-02058-1500-S8-rev001

Site	ID STK138	Technician	Eric Hebert	Site Visit Date 09/19	9/2013					
4 5	course? If yes, when and who instructed? Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday schedule? Are the standard CASTNET operational procedures being flollowed by the site operator?									
OC	Check Performed		Frequency		Compliant					
			N/A							
	ltipoint Calibrations ual Inspections		N/A							
	nslator Zero/Span Tests (climatr		N/A							
	nual Rain Gauge Test		N/A							
	nfirm Reasonableness of Current	Values	N/A		V					
Test	t Surface Wetness Response		∠ N/A							
	Are regular operational QA/QC	checks perf	ormed on the ozo	ne analyzer?						
QC	Check Performed		Frequency		Compliant					
Mul	lti-point Calibrations		Semiannually		✓					
Aut	omatic Zero/Span Tests		Daily							
Mai	nual Zero/Span Tests	•	As needed							
	nuai Zero/Span Tests									
	omatic Precision Level Tests	5								
Mai	omatic Precision Level Tests nual Precision Level Test	5	As needed		V					
Man Ana	omatic Precision Level Tests nual Precision Level Test nlyzer Diagnostics Tests	<u>.</u>	As needed Weekly							
Man Ana In-l	omatic Precision Level Tests nual Precision Level Test alyzer Diagnostics Tests ine Filter Replacement (at inlet)	<u>.</u> 5	As needed Weekly Monthly							
Mar Ana In-li In-li	omatic Precision Level Tests nual Precision Level Test nlyzer Diagnostics Tests ine Filter Replacement (at inlet) ine Filter Replacement (at analyze	g g ze	As needed Weekly Monthly N/A							
Mar Ana In-li In-li San	omatic Precision Level Tests nual Precision Level Test alyzer Diagnostics Tests ine Filter Replacement (at inlet) ine Filter Replacement (at analyze) uple Line Check for Dirt/Water	ze	As needed Weekly Monthly N/A Weekly							
Man Ana In-li In-li San Zer	omatic Precision Level Tests nual Precision Level Test nlyzer Diagnostics Tests ine Filter Replacement (at inlet) ine Filter Replacement (at analyze	ze go through	As needed Weekly Monthly N/A Weekly Weekly the complete	Unknown						
Mar Ana In-li In-li San Zer 1	omatic Precision Level Tests nual Precision Level Test alyzer Diagnostics Tests ine Filter Replacement (at inlet) ine Filter Replacement (at analyze nple Line Check for Dirt/Water o Air Desiccant Check Do multi-point calibration gases sample train including all filters Do automatic and manual z/s/p complete sample train including	ze go through gasses go this all filters?	As needed Weekly Monthly N/A Weekly Weekly the complete rough the							
Mar Ana In-li In-li San Zer 1	omatic Precision Level Tests nual Precision Level Test alyzer Diagnostics Tests ine Filter Replacement (at inlet) ine Filter Replacement (at analyze) ine Line Check for Dirt/Water o Air Desiccant Check Do multi-point calibration gases sample train including all filters Do automatic and manual z/s/p g	ze go through gasses go this all filters?	As needed Weekly Monthly N/A Weekly Weekly the complete rough the							
Mana Ana In-l In-l San Zer 1 2 3	omatic Precision Level Tests nual Precision Level Test alyzer Diagnostics Tests ine Filter Replacement (at inlet) ine Filter Replacement (at analyze) inple Line Check for Dirt/Water o Air Desiccant Check Do multi-point calibration gases sample train including all filters Do automatic and manual z/s/p g complete sample train including Are the automatic and manual z reported? If yes, how?	ze go through gasses go the gall filters? t/s/p checks photograph t the monito	As needed Weekly Monthly N/A Weekly Weekly the complete rough the monitored and or sketch if necess oring parameters:	SSRF, call-in						
Mana Ana In-l In-l San Zer 1 2 3	omatic Precision Level Tests nual Precision Level Test alyzer Diagnostics Tests ine Filter Replacement (at inlet) ine Filter Replacement (at analyze nple Line Check for Dirt/Water o Air Desiccant Check Do multi-point calibration gases sample train including all filters Do automatic and manual z/s/p g complete sample train including Are the automatic and manual z reported? If yes, how?	ze go through gasses go the gall filters? t/s/p checks photograph t the monito	As needed Weekly Monthly N/A Weekly Weekly the complete rough the monitored and or sketch if necess oring parameters:	SSRF, call-in						

F-02058-1500-S9-rev001

Site	ID	STK138 T	echni	cian Eric Hebert		Site Visit Dat	te	09/19/2013
	Site o	peration procedures						
1	Is the	filter pack being changed eve	ry T	uesday as scheduled?	✓	Filter changed va	ric	ous times
2	Are the	he Site Status Report Forms l ctly?	eing	completed and filed	~			
3	Are d	ata downloads and backups l uled?	eing	performed as		No longer require	d	
4	Are g	eneral observations being ma	de aı	nd recorded? How?	✓	SSRF, logbook		
5	Are si	ite supplies on-hand and replon?	enish	ed in a timely	✓			
6	Are s	ample flow rates recorded? H	ow?		SSRF, call-in			
7	Are sa	amples sent to the lab on a re	gular	schedule in a timely	✓			
8	Are fi	 lters protected from contami hipping? How?	natio	n during handling	~	Clean gloves on a	an	d off
9	Are tl	he site conditions reported retions manager or staff?	gular	ly to the field	✓			
QC	Check	Performed		Frequency				Compliant
N	Iulti-p	oint MFC Calibrations	V	Semiannually	Ok. C			
F	low Sy	stem Leak Checks	V	Weekly	and the same of th			
		ack Inspection			ennuz			
		ate Setting Checks	2000	Weekly	BUCKEYO!			
		Check of Flow Rate Rotomete			200000			
		Filter Inspection/Replacemen		Semiannually Weekly	E 6196,7477A			
		Line Check for Dirt/Water						
		y additional explanation (pho man-made, that may affect th				y) regarding cond	liti	ons listed above, or any other features,
ra cours								



Data Compiled:

1/29/2014 8:16:01 PM

SiteVisitDate	Site	Technician
06/26/2012	ALH157	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	P	0	1.1	4	1.01474	unitless	P
2	Ozone Intercept	P	0	5	4	0.27292	ppb	P
3	Ozone correlation	P	0	0.995	4	1.00000	unitless	P
4	Ozone % difference avg	P	7	10	4	1.8	%	P
5	Ozone % difference max	P	7	10	4	2.1	%	P

BAS601

Data Compiled:

07/22/2013

3/14/2014 3:34:57 PM

SiteVisitDate Site Technician

Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	5	2.09	c	Fail
2	Temperature max error	P	4	0.5	5	6.41	c	Fail
3	Relative Humidity average above 85%	P	6	10	1	4.1	%	P
4	Relative Humidity max above 85%	P	6	10	1	4.1	%	P
5	Relative Humidity average below 85%	P	6	10	2	1.1	%	P
6	Relative Humidity max below 85%	P	6	10	2	1.2	%	P
7	Solar Radiation % diff of avg	P	9	10	4	0.95	%	P
8	Solar Radiation % diff of max STD value	P	9	10	4	0.10	%	P
9	Precipitation average % difference	P	1	10	1	0.0	%	P
10	Precipitation max % difference	P	1	10	1	0.0	%	P
11	Ozone Slope	P	0	1.1	4	0.97762	unitless	P
12	Ozone Intercept	P	0	5	4	0.89641	ppb	P
13	Ozone correlation	P	0	0.995	4	0.99997	unitless	P
14	Ozone % difference avg	P	7	10	4	0.9	%	P
15	Ozone % difference max	P	7	10	4	1.3	%	P
16	Flow Rate average % difference	P	10	5	2	0.93	%	P
17	Flow Rate max % difference	P	10	5	2	1.31	%	P
18	Shelter Temperature average error	P	5	1	3	1.57	c	Fail
19	Shelter Temperature max error	P	5	1	3	2.23	c	Fail

SiteVisitDate Site

Technician

07/22/2013

BAS601

Eric Hebert

Field Systems Comments

1 Parameter: SiteOpsProcComm

The proper completion of the filter chain-of-custody form was discussed with the site operator. The proper observation of the site vegetation and completion of the SSRF was discussed with the site operator. There are no clean spare filter caps or Ziploc filter bags on site. The bag and caps for the received filter are being used to send the removed filter back to the lab.

2 Parameter: ShelterCleanNotes

The shelter houses the ozone, DAS, and MFC only.

3 Parameter: MetSensorComme

Some objects violate the 45 degree rule for the tipping bucket rain gage. The Temperature shield is mounted on the south side of the tower.

4 Parameter: MetOpMaintCom

The site utilizes a Climatronics AIO all-in-one weather sensor for wind direction, wind speed, and temperature. The sensor was not audited. A separate sensor for humidity and temperature was audited.

Data Compiled:

1/29/2014 8:18:23 PM

SiteVisitDate Site Technician 07/31/2013 BVL130

Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature2meter average error	P	5	0.5	3	0.31	c	P
2	Temperature2meter max error	P	5	0.5	3	0.47	c	P
3	Wind Speed average error below 5m/s in m/s	P	3	0.5	4	0.02	m/s	P
4	Wind Speed max error below 5m/s in m/s	P	3	0.5	4	0.05	m/s	P
5	Wind Speed average % difference above 5 m/s	P	3	5	4	0.0	%	P
6	Wind Speed max % difference above 5 m/s	P	3	5	4	0.0	%	P
7	Wind Speed Torque average error	P	3	0.5	1	0.35	g-cm	P
8	Wind Speed Torque max error	P	3	0.5	1	0.4	g-cm	P
9	Wind Direction Input Deg True average error (de	P	2	5	8	2.2	degrees	P
10	Wind Direction Input Deg True max error (deg)	P	2	5	8	4	degrees	P
11	Wind Direction Linearity average error (deg)	P	2	5	16	1.8	degrees	P
12	Wind Direction Linearity max error (deg)	P	2	5	16	7	degrees	Fail
13	Wind Direction Torque average error	P	2	20	1	9	g-cm	P
14	Wind Direction Torque max error	P	2	20	1	10	g-cm	P
15	Temperature average error	P	4	0.5	9	0.14	c	P
16	Temperature max error	P	4	0.5	9	0.25	c	P
17	Relative Humidity average above 85%	P	6	10	4	0.8	%	P
18	Relative Humidity max above 85%	P	6	10	4	0.8	%	P
19	Relative Humidity average below 85%	P	6	10	8	1.8	%	P
20	Relative Humidity max below 85%	P	6	10	8	2.0	%	P
21	Precipitation average % difference	P	1	10	2	4.0	%	P
22	Precipitation max % difference	P	1	10	2	4.0	%	P
23	Ozone Slope	P	0	1.1	4	0.95159	unitless	P
24	Ozone Intercept	P	0	5	4	0.75261	ppb	P
25	Ozone correlation	P	0	0.995	4	0.99999	unitless	P
26	Ozone % difference avg	P	7	10	4	3.4	%	P
27	Ozone % difference max	P	7	10	4	4.2	%	P
28	Flow Rate average % difference	P	10	5	2	2.78	%	P
29	Flow Rate max % difference	P	10	5	2	2.82	%	P
30	DAS Time maximum error	P	0	5	1	0.02	min	P
31	DAS Voltage average error	P	7	0.003	28	0.0001	V	P
32	Shelter Temperature average error	P	5	1	9	0.36	c	P
33	Shelter Temperature max error	P	5	1	9	0.47	c	P

07/31/2013

BVL130

Eric Hebert

Field Performance Comments

1 Parameter: Precipitation SensorComponent: Properly Sited CommentCode 193

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

2 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: DasComments

The tower pin which prevents the tower from tilting is missing from the leg of the tower.

2 Parameter: SiteOpsProcedures

Ozone sample line leak-checks are performed every 2 weeks.

3 Parameter: SitingCriteriaCom

The site is located in an agricultural and atmospheric research center. There are crops within 50 meters.

4 Parameter: ShelterCleanNotes

The shelter is clean and well organized.

5 Parameter: MetSensorComme

The tipping bucket rain gage is mounted near the towers and in violation of the 45 degree rule.

6 Parameter: MetOpMaintCom

The wind sensor crossarm signal cable is showing signs of wear. The wind sensor heaters are not functioning.

Data Compiled:

1/29/2014 4:06:41 PM

SiteVisitDate Site Technician 07/18/2013 GLR468

Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Wind Speed average error below 5m/s in m/s	P	3	0.5	4	0.05	m/s	P
2	Wind Speed max error below 5m/s in m/s	P	3	0.5	4	0.20	m/s	P
3	Wind Speed average % difference above 5 m/s	P	3	5	4	0.0	%	P
4	Wind Speed max % difference above 5 m/s	P	3	5	4	0.0	%	P
5	Wind Speed Torque average error	P	3	0.5	1	0.30	g-cm	P
6	Wind Speed Torque max error	P	3	0.5	1	0.3	g-cm	P
7	Wind Direction Input Deg True average error (de	P	2	5	4	1.5	degrees	P
8	Wind Direction Input Deg True max error (deg)	P	2	5	4	3	degrees	P
9	Wind Direction Linearity average error (deg)	P	2	5	8	1.0	degrees	P
10	Wind Direction Linearity max error (deg)	P	2	5	8	2	degrees	P
11	Wind Direction Torque average error	P	2	20	1	12	g-cm	P
12	Wind Direction Torque max error	P	2	20	1	12	g-cm	P
13	Temperature average error	P	4	0.5	3	0.09	c	P
14	Temperature max error	P	4	0.5	3	0.13	c	P
15	Relative Humidity average above 85%	P	6	10	1	4.5	%	P
16	Relative Humidity max above 85%	P	6	10	1	4.5	%	P
17	Relative Humidity average below 85%	P	6	10	2	1.2	%	P
18	Relative Humidity max below 85%	P	6	10	2	2.2	%	P
19	Solar Radiation % diff of avg	P	9	10	6	2.83	%	P
20	Solar Radiation % diff of max STD value	P	9	10	6	0.10	%	P
21	Precipitation average % difference	P	1	10	2	3.0	%	P
22	Precipitation max % difference	P	1	10	2	4.0	%	P
23	Ozone Slope	P	0	1.1	4	1.02524	unitless	P
24	Ozone Intercept	P	0	5	4	0.15050	ppb	P
25	Ozone correlation	P	0	0.995	4	0.99993	unitless	P
26	Ozone % difference avg	P	7	10	4	2.5	%	P
27	Ozone % difference max	P	7	10	4	3.3	%	P
28	Flow Rate average % difference	P	10	5	2	1.13	%	P
29	Flow Rate max % difference	P	10	5	2	1.26	%	P
30	DAS Time maximum error	P	0	5	1	0.72	min	P
31	DAS Voltage average error	P	9	0.003	35	0.0002	V	P
32	DAS Voltage average error	P	2	0.003	35	0.0002	V	P
33	Shelter Temperature average error	P	5	1	9	1.91	c	Fail
34	Shelter Temperature max error	P	5	1	9	3.37	c	Fail

07/18/2013

GLR468

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.

geometric orientation

2 Parameter: Precipitation SensorComponent: Properly Sited CommentCode 193

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

3 Parameter: Shelter Temperatur SensorComponent: Accuracy Mid Ran CommentCode 213

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

4 Parameter: Temperature SensorComponent: System Memo CommentCode 141

The temperature sensor is mounted directly above the shelter roof.

Field Systems Comments

1 Parameter: SitingCriteriaCom

The site is located in a small clearing within 100 meters of a horse stable. There is a plywood and aluminum processing plant within 20 km of the site.

2 Parameter: ShelterCleanNotes

The shelter is in good condition, clean, neat, and well organized. Evidence of repairs to roof leaks attempted.

3 Parameter: PollAnalyzerCom

The tygon dry deposition filter flow tubing has been replaced with Teflon since the previous audit visit.

4 Parameter: MetSensorComme

The temperature and relative humidity sensors are mounted directly above the metal shelter roof.

5 Parameter: MetOpMaintCom

The signal cables are showing signs of wear.

Data Compiled:

1/29/2014 8:20:49 PM

SiteVisitDate Site **Technician** 07/29/2013 NEC602

Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	4	1.81	c	Fail
2	Temperature max error	P	4	0.5	4	5.00	c	Fail
3	Relative Humidity average above 85%	P	6	10	1	4.9	%	P
4	Relative Humidity max above 85%	P	6	10	1	4.9	%	P
5	Relative Humidity average below 85%	P	6	10	2	0.5	%	P
6	Relative Humidity max below 85%	P	6	10	2	0.9	%	P
7	Solar Radiation % diff of avg	P	9	10	6	9.47	%	P
8	Solar Radiation % diff of max STD value	P	9	10	6	10.5	%	Fail
9	Precipitation average % difference	P	1	10	2	5.0	%	P
10	Precipitation max % difference	P	1	10	2	6.7	%	P
11	Ozone Slope	P	0	1.1	4	0.95697	unitless	P
12	Ozone Intercept	P	0	5	4	0.97691	ppb	P
13	Ozone correlation	P	0	0.995	4	0.99991	unitless	P
14	Ozone % difference avg	P	7	10	4	2.0	%	P
15	Ozone % difference max	P	7	10	4	3.8	%	P
16	Flow Rate average % difference	P	10	5	0	1.86	%	P
17	Flow Rate max % difference	P	10	5	0	1.86	%	P
18	Shelter Temperature average error	P	5	1	3	0.20	c	P
19	Shelter Temperature max error	P	5	1	3	0.30	c	P

07/29/2013

NEC602

Eric Hebert

Field Performance Comments

1 Parameter: Precipitation SensorComponent: Properly Sited CommentCode 193

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

Field Systems Comments

1 Parameter: SiteOpsProcComm

The site operator is doing a good job with filter change and filter handling.

2 Parameter: DocumentationCo

The purpose and procedure to complete the chain-of-custody and observations section of the SSRF was discussed with the operator during the audit.

3 Parameter: SitingCriteriaCom

The site is located approximately 2 km northeast of Newcastle WY which has a population of approximately 3500. There is an oil refinery in Newcastle. A heavily traveled road is approximately 100m west of the site.

4 Parameter: ShelterCleanNotes

The shelter houses the ozone, DAS, and MFC only.

5 Parameter: MetSensorComme

Some objects violate the 45 degree rule for the tipping bucket rain gage.

6 Parameter: MetOpMaintCom

The site utilizes a Climatronics AIO all-in-one weather sensor for wind direction, wind speed, and temperature. The sensor was not audited.

A separate sensor for humidity and temperature was audited.

Data Compiled: 1/29/2014 8:22:37 PM

SiteVisitDate	Site	Technician
09/04/2013	PRK134	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	3	0.10	c	P
2	Temperature max error	P	4	0.5	3	0.15	c	P
3	Ozone Slope	P	0	1.1	4	0.96421	unitless	P
4	Ozone Intercept	P	0	5	4	1.00502	ppb	P
5	Ozone correlation	P	0	0.995	4	0.99996	unitless	P
6	Ozone % difference avg	P	7	10	4	1.7	%	P
7	Ozone % difference max	P	7	10	4	3.1	%	P
8	Flow Rate average % difference	P	10	5	4	1.55	%	P
9	Flow Rate max % difference	P	10	5	4	1.64	%	P
10	Shelter Temperature average error	P	5	1	9	0.34	c	P
11	Shelter Temperature max error	P	5	1	9	0.57	c	P

Field Performance Comments

1 Parameter: Temperature SensorComponent: System Memo CommentCode 55

The temperature probe is a short style and it is mounted in a housing with an extension designed for a long style probe.

Field Systems Comments

1 Parameter: DasComments

The tower guy wires are rusted and should be replaced. The sample tower is damaged at the hinge point and bent. Both of these items were observed during the previous audit visit.

2 Parameter: SitingCriteriaCom

Clover and Barley have been planted for hay within 20m of the site starting in 2008.

3 Parameter: ShelterCleanNotes

The shelter is clean, neat, and well organized. The counter top and corners of the wall are beginning to rot.

Data Compiled: 1/29/2014 8:24:44 PM

SiteVisitDate	Site	Technician
09/19/2013	STK138	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	6	0.07	c	P
2	Temperature max error	P	4	0.5	6	0.14	c	P
3	Ozone Slope	P	0	1.1	4	0.96544	unitless	P
4	Ozone Intercept	P	0	5	4	0.07959	ppb	P
5	Ozone correlation	P	0	0.995	4	1.00000	unitless	P
6	Ozone % difference avg	P	7	10	4	3.3	%	P
7	Ozone % difference max	P	7	10	4	3.6	%	P
8	Flow Rate average % difference	P	10	5	4	1.69	%	P
9	Flow Rate max % difference	P	10	5	4	2.11	%	P
10	DAS Time maximum error	P	0	5	1	0.03	min	P
11	DAS Voltage average error	P	7	0.003	28	0.0001	V	P
12	Shelter Temperature average error	P	5	1	9	0.73	c	P
13	Shelter Temperature max error	P	5	1	9	1.12	c	Fail

Field Systems Comments

1 Parameter: SiteOpsProcedures

The ozone sample train is leak tested every 2 weeks.

2 Parameter: SitingCriteriaCom

The site is located in a hay field on a cattle farm. Clover is planted within 20 meters and will be used as pasture this fall.

3 Parameter: ShelterCleanNotes

The shelter is somewhat dirty and cluttered. There are signs of leaks on the walls and floor rot.

4 Parameter: MetOpMaintCom

The met tower is no longer in use. The temperature sensor is mounted in a naturally aspirated shield on the sample tower.

THR422

Data Compiled:

09/09/2013

1/29/2014 8:26:17 PM

SiteVisitDate Site Technician

Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Wind Speed average error below 5m/s in m/s	P	3	0.5	8	0.00	m/s	P
2	Wind Speed max error below 5m/s in m/s	P	3	0.5	8	0.01	m/s	P
3	Wind Speed average % difference above 5 m/s	P	3	5	8	0.2	%	P
4	Wind Speed max % difference above 5 m/s	P	3	5	8	0.2	%	P
5	Wind Speed Torque average error	P	3	0.5	1	0.35	g-cm	P
6	Wind Speed Torque max error	P	3	0.5	1	0.4	g-cm	P
7	Wind Direction Input Deg True average error (de	P	2	5	8	1.5	degrees	P
8	Wind Direction Input Deg True max error (deg)	P	2	5	8	3	degrees	P
9	Wind Direction Linearity average error (deg)	P	2	5	16	1.5	degrees	P
10	Wind Direction Linearity max error (deg)	P	2	5	16	5	degrees	P
11	Wind Direction Torque average error	P	2	20	1	9	g-cm	P
12	Wind Direction Torque max error	P	2	20	1	10	g-cm	P
13	Temperature average error	P	4	0.5	9	0.04	c	P
14	Temperature max error	P	4	0.5	9	0.04	c	P
15	Relative Humidity average above 85%	P	6	10	2	1.6	%	P
16	Relative Humidity max above 85%	P	6	10	2	1.6	%	P
17	Relative Humidity average below 85%	P	6	10	4	1.7	%	P
18	Relative Humidity max below 85%	P	6	10	4	2.7	%	P
19	Solar Radiation % diff of avg	P	9	10	21	5.99	%	P
20	Solar Radiation % diff of max STD value	P	9	10	21	6.5	%	P
21	Precipitation average % difference	P	1	10	1	2.0	%	P
22	Precipitation max % difference	P	1	10	1	2.0	%	P
23	Ozone Slope	P	0	1.1	4	1.03488	unitless	P
24	Ozone Intercept	P	0	5	4	-0.57521	ppb	P
25	Ozone correlation	P	0	0.995	4	0.99998	unitless	P
26	Ozone % difference avg	P	7	10	4	2.3	%	P
27	Ozone % difference max	P	7	10	4	3.3	%	P
28	Flow Rate average % difference	P	10	5	6	2.03	%	P
29	Flow Rate max % difference	P	10	5	6	2.29	%	P
30	DAS Time maximum error	P	0	5	1	0.27	min	P
31	DAS Voltage average error	P	15	0.003	35	0.0001	V	P
32	DAS Voltage average error	P	1	0.003	35	0.0001	V	P
33	Shelter Temperature average error	P	5	1	8	0.54	c	P
34	Shelter Temperature max error	P	5	1	8	0.83	c	P

09/09/2013

THR422

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: Precipitation SensorComponent: Properly Sited CommentCode 193

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

Field Systems Comments

1 Parameter: SiteOpsProcedures

The ozone sample train does not have a means to introduce test gas at the sample inlet. Results of routine zero, span, precision, and any multipoint calibration checks are maintained by the state personnel who perform the tests.

2 Parameter: SitingCriteriaCom

The site is located 200 meters from an interstate rest area, and 300 meters from interstate 94. The rest area can have parked and idling vehicles for extended periods.

3 Parameter: ShelterCleanNotes

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

4 Parameter: PollAnalyzerCom

The ozone analyzer is operated by the state of North Dakota. The sample train contains a glass manifold. There is no means to introduce on-site generated test gas at the sample inlet. A through-the-probe audit was conducted using the EEMS system.

5 Parameter: MetSensorComme

The temperature shield is pointing south into the prevailing wind. Objects violate the 45 degree rule for the tipping bucket rain gage.

6 Parameter: MetOpMaintCom

The blower for the RH sensor is not functioning.

EEMS Spot Report

Data Compiled:

1/29/2014 8:27:47 PM

SiteVisitDate	Site	Technician
08/23/2013	VIN140	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	P	4	0.5	6	0.21	c	P
2	Temperature max error	P	4	0.5	6	0.37	c	P
3	Ozone Slope	P	0	1.1	4	1.04434	unitless	P
4	Ozone Intercept	P	0	5	4	0.07624	ppb	P
5	Ozone correlation	P	0	0.995	4	0.99967	unitless	P
6	Ozone % difference avg	P	7	10	4	4.6	%	P
7	Ozone % difference max	P	7	10	4	6.1	%	P
8	Flow Rate average % difference	P	10	5	2	0.99	%	P
9	Flow Rate max % difference	P	10	5	2	0.99	%	P
10	DAS Time maximum error	P	0	5	1	0.00	min	P
11	DAS Voltage average error	P	4	0.003	28	0.0001	V	P
12	Shelter Temperature average error	P	5	1	3	0.17	c	P
13	Shelter Temperature max error	P	5	1	3	0.17	c	P

08/23/2013

VIN140

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: SitingCriteriaCom

The site is in an agricultural research center with farm activities adjacent to the site. A train track is approximately 200 meters to the north.

2 Parameter: ShelterCleanNotes

The shelter is in good condition and well maintained, however rot is beginning to form at the bottom of the walls.

3 Parameter: MetOpMaintCom

The temperature sensor blower is not functioning.

EEMS Spot Report

Data Compiled:

1/29/2014 8:29:21 PM

SiteVisitDate Site Technician

09/05/2013 VOY413 Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Wind Speed average error below 5m/s in m/s	P	3	0.5	4	0.01	m/s	P
2	Wind Speed max error below 5m/s in m/s	P	3	0.5	4	0.02	m/s	P
3	Wind Speed average % difference above 5 m/s	P	3	5	4	1.0	%	P
4	Wind Speed max % difference above 5 m/s	P	3	5	4	1.1	%	P
5	Wind Speed Torque average error	P	3	0.5	1	0.45	g-cm	P
6	Wind Speed Torque max error	P	3	0.5	1	0.5	g-cm	Fail
7	Wind Direction Input Deg True average error (de	P	2	5	10	1.8	degrees	P
8	Wind Direction Input Deg True max error (deg)	P	2	5	10	4	degrees	P
9	Wind Direction Linearity average error (deg)	P	2	5	16	2.0	degrees	P
10	Wind Direction Linearity max error (deg)	P	2	5	16	7	degrees	Fail
11	Wind Direction Torque average error	P	2	20	1	9	g-cm	P
12	Wind Direction Torque max error	P	2	20	1	10	g-cm	P
13	Temperature average error	P	5	0.5	6	0.11	c	P
14	Temperature max error	P	5	0.5	6	0.18	c	P
15	Relative Humidity average above 85%	P	6	10	1	1.9	%	P
16	Relative Humidity max above 85%	P	6	10	1	1.9	%	P
17	Relative Humidity average below 85%	P	6	10	2	1.9	%	P
18	Relative Humidity max below 85%	P	6	10	2	2.0	%	P
19	Solar Radiation % diff of avg	P	9	10	24	1.9	%	P
20	Solar Radiation % diff of max STD value	P	9	10	24	0.10	%	P
21	Precipitation average % difference	P	1	10	2	2.0	%	P
22	Precipitation max % difference	P	1	10	2	2.0	%	P
23	Ozone Slope	P	0	1.1	4	0.98970	unitless	P
24	Ozone Intercept	P	0	5	4	0.73068	ppb	P
25	Ozone correlation	P	0	0.995	4	0.99998	unitless	P
26	Ozone % difference avg	P	7	10	4	0.6	%	P
27	Ozone % difference max	P	7	10	4	1.8	%	P
28	Flow Rate average % difference	P	10	5	8	1.29	%	P
29	Flow Rate max % difference	P	10	5	8	1.68	%	P
30	DAS Time maximum error	P	0	5	1	1.77	min	P
31	DAS Voltage average error	P	16	0.003	21	0.0000	V	P
32	DAS Voltage average error	P	2	0.003	21	0.0000	V	P
33	Shelter Temperature average error	P	5	1	12	1.84	c	Fail
34	Shelter Temperature max error	P	5	1	12	2.79	c	Fail

09/05/2013

VOY413

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: Precipitation SensorComponent: Properly Sited CommentCode 193

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

3 Parameter: Solar Radiation SensorComponent: Properly Sited CommentCode 130

The solar radiation sensor is shaded at times during the day, and not properly sited.

4 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: SitingCriteriaCom

The site is located at the top of a hill in a forest. There are trees surrounding the site which are below the tower height.

2 Parameter: ShelterCleanNotes

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

3 Parameter: MetSensorComme

Objects violate the 45 degree rule for the tipping bucket rain gage. The solar radiation sensor is shaded during part of the day.

EEMS Spot Report

WNC429

Data Compiled:

09/11/2013

1/29/2014 8:30:35 PM

SiteVisitDate Site Technician

Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Wind Speed average error below 5m/s in m/s	P	3	0.5	8	0.27	m/s	P
2	Wind Speed max error below 5m/s in m/s	P	3	0.5	8	0.35	m/s	P
3	Wind Speed average % difference above 5 m/s	P	3	5	8	1.7	%	P
4	Wind Speed max % difference above 5 m/s	P	3	5	8	5.9	%	Fail
5	Wind Speed Torque average error	P	3	0.5	1	0.45	g-cm	P
6	Wind Speed Torque max error	P	3	0.5	1	0.5	g-cm	Fail
7	Wind Direction Input Deg True average error (de	P	2	5	8	1.0	degrees	P
8	Wind Direction Input Deg True max error (deg)	P	2	5	8	2	degrees	P
9	Wind Direction Linearity average error (deg)	P	2	5	16	1.5	degrees	P
10	Wind Direction Linearity max error (deg)	P	2	5	16	3	degrees	P
11	Wind Direction Torque average error	P	2	20	1	12	g-cm	P
12	Wind Direction Torque max error	P	2	20	1	15	g-cm	P
13	Temperature average error	P	4	0.5	3	0.08	c	P
14	Temperature max error	P	4	0.5	3	0.21	c	P
15	Relative Humidity average above 85%	P	6	10	2	3.9	%	P
16	Relative Humidity max above 85%	P	6	10	2	3.9	%	P
17	Relative Humidity average below 85%	P	6	10	4	0.9	%	P
18	Relative Humidity max below 85%	P	6	10	4	1.1	%	P
19	Solar Radiation % diff of avg	P	9	10	8	8.37	%	P
20	Solar Radiation % diff of max STD value	P	9	10	8	6.8	%	P
21	Precipitation average % difference	P	1	10	1	100.0	%	Fail
22	Precipitation max % difference	P	1	10	1	100.0	%	Fail
23	Ozone Slope	P	0	1.1	4	0.95048	unitless	P
24	Ozone Intercept	P	0	5	4	0.71139	ppb	P
25	Ozone correlation	P	0	0.995	4	0.99999	unitless	P
26	Ozone % difference avg	P	7	10	4	3.4	%	P
27	Ozone % difference max	P	7	10	4	4.4	%	P
28	Flow Rate average % difference	P	10	5	6	0.98	%	P
29	Flow Rate max % difference	P	10	5	6	1.16	%	P
30	Shelter Temperature average error	P	5	1	12	0.90	c	P
31	Shelter Temperature max error	P	5	1	12	1.46	c	Fail

09/11/2013

WNC429

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 179

This measurement system is damaged and not functioning.

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 purpose for completing the general observations section of the SSRF was discussed with the site operator.

2 Parameter: SiteOpsProcedures

The ozone analyzer is operated by the state of South Dakota. There is no means for introducing test gas at the sample inlet. Audit test gas was introduced through the sample inlet flooding the glass manifold.

3 Parameter: DocumentationCo

Records of the routine checks performed by the state personnel are kept onsite in a logbook.

4 Parameter: ShelterCleanNotes

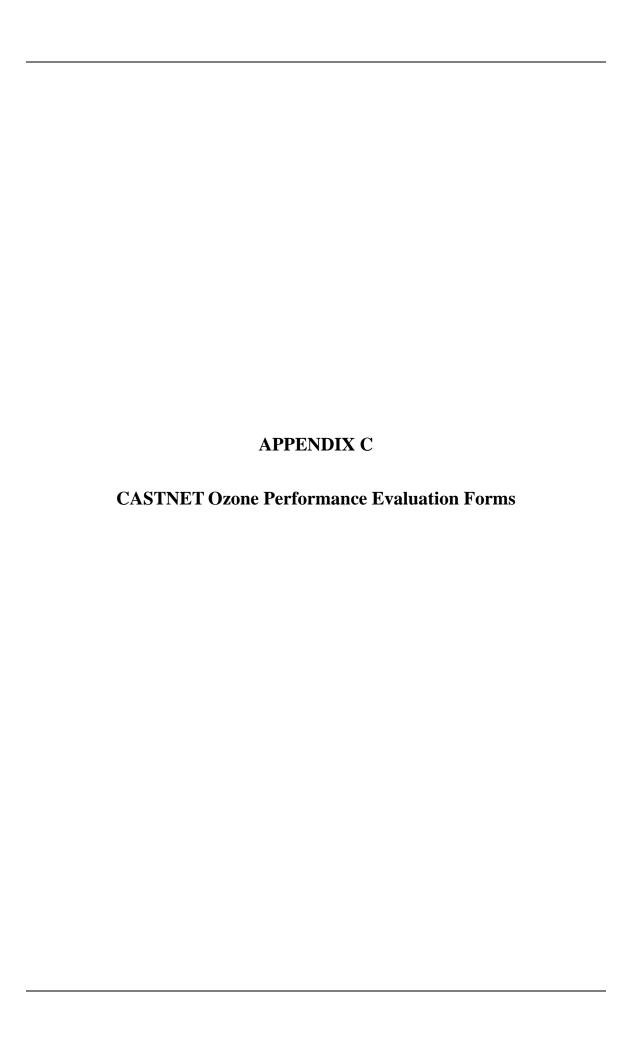
One shelter houses the gas analyzers and is in good condition and clean. The analyzer sample train is a glass manifold with an exhaust fan. The second shelter houses the flow system, met translator, and IMPROVE. It is older and not climate controlled.

5 Parameter: PollAnalyzerCom

The dry deposition filter is mounted low in the enclosure which changes the particle collection characteristics, and can allow precipitation to enter.

6 Parameter: MetOpMaintCom

The tipping bucket rain gage is not functioning.



Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
UVL	124-Eric H	lebert-08/30/2013				
1	8/30/2013	DAS	Campbell	000423	CR3000	2517
2	8/30/2013	Ozone	ThermoElectron Inc	000745	49i A1NAA	1105347310
3	8/30/2013	Ozone Standard	ThermoElectron Inc	000365	49i A3NAA	0726124688
4	8/30/2013	Zero air pump	Werther International	06936	C 70/4	000829169

Mfg S	erial Number Ta	Site	Te	chnician		Site Visi	it Date	Parame	eter	Owner ID
ThermoElectron Inc 1	105347310	UVL124	Er	ric Hebert		08/30/20	013	Ozone		000745
Intercept 0.6	98832 Slope: 10271 Intercept 19996 CorrCoff	0.00000 0.00000 0.00000)	Mfg Serial N	lumber	ThermoE 5171121			rameter o	zone zone primary stan
Correon	Correon	0.0000	<u>'</u>	Tfer ID		01111				
DAS 1:	DAS 2:			Slope			0.99720	Inter	cept	0.18428
A Avg % Diff: A Ma 0.9%	x % Di A Avg % 1.6%	6Dif A Max %	% Di	Cert Da	ite		1/2/201	3 Corr	Coff	1.00000
UseDescription:	ConcGroup:	Tfer Raw:	Tfer		Si			Unit:	PctDi	fference:
primary	1	-0.20	-0.		0.3		ppb			1.620/
primary	3	22.38	22.		22.		ppb			1.62%
primary primary	4	59.62 83.58	59. 83.		58. 83.		ppb ppb			0.22%
primary	5	105.55		5.66	104		ppb			-0.72%
Sensor Component				on 1.1 pp		.,,0	РРО	Status	pass	0.7270
Sensor Component	Cell B Tmp.		Condition	on				Status	pass	
Sensor Component	Fullscale Voltage		Condition	on N/A				Status	pass	
Sensor Component	Inlet Filter Condition	on	Condition	on Clean				Status	pass	
Sensor Component	Line Loss		Condition	on Not te	sted			Status	pass	
Sensor Component	Offset		Condition	on -0.10				Status	pass	
Sensor Component	Span		Condition	on 1.049				Status	pass	
Sensor Component	Cell B Freq.		Condition	on 74.4 k	Hz			Status	Fail	
Sensor Component	System Memo		Condition	on See c	omments	;		Status	pass	
Sensor Component	Sample Train		Condition	on Good				Status	pass	
Sensor Component	Cell B Pressure		Condition	on				Status	pass	
Sensor Component	Cell B Flow		Condition	on 0.69 l	om			Status	pass	
Sensor Component	Cell A Tmp.		Condition	on 34.8 (Status	pass	
Sensor Component	Cell A Pressure		Condition	on 717 m	ımHg			Status	pass	
Sensor Component	Cell A Noise		Condition	0.8 pp	bb			Status	pass	
Sensor Component	Cell A Freq.			on 70.3 k				Status	Fail	
Sensor Component	Cell A Flow		Condition	0.66 l	om			Status	pass	
Sensor Component	Battery Backup		Condition	on N/A				Status	pass	
Sensor Component	Zero Voltage		Condition	on N/A				Status	pass	

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	d Problem
Ozone	UVL124	Eric Hebert	08/30/2013	Cell B Freq.	ThermoElectron	3427		✓
Ozone	UVL124	Eric Hebert	08/30/2013	Cell A Freq.	ThermoElectron	3427		~

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

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
НОХ	X148-Eric I	Hebert-08/30/2013				
1	8/30/2013	DAS	Campbell	000426	CR3000	2533
2	8/30/2013	Ozone	ThermoElectron Inc	000614	49i A1NAA	1009241794
3	8/30/2013	Ozone Standard	ThermoElectron Inc	000432	49i A3NAA	CM08200008
4	8/30/2013	Zero air pump	Werther International	06938	C 70/4	000829164

Mfg S	erial Number Ta	Site	Tech	nician	Site Visit Date	e Param	eter	Owner ID
ThermoElectron Inc 1	009241794	HOX148	Eric	Hebert	08/30/2013	Ozone		000614
Intercept 1.1	96463 Slope: 7379 Intercept 19999 CorrCoff	0.00000 0.00000 0.00000	\mathbf{S}	Mfg Serial Number	ThermoElectro 517112175		arameter ozo	one one primary stan
D.1.0.4	2100		1	ilei ib				
DAS 1:	DAS 2:	Dif A Mass 0		Slope	0.997	20 Inte	rcept	0.18428
A Avg % Diff: A Ma	2.7% A Avg %	6Dif A Max %		Cert Date	1/2/20	013 Cor	rCoff	1.00000
								<u>'</u>
UseDescription:	ConcGroup:	Tfer Raw:	Tfer Co			te Unit:	PctDiff	erence:
primary	1	-0.05	-0.23		68 ppb			1.070/
primary	2	24.98	24.86		1.1			1.97%
primary	3	54.23	54.19					-1.00%
primary	5	83.91 116.37	83.96 116.5		.20 ppb			-2.10% -2.67%
primary					5.40 ppb	1		-2.07%
Sensor Component	Cell B Noise		Condition	Not tested		Status	pass	
Sensor Component	Cell B Tmp.		Condition	1		Status	pass	
Sensor Component	Fullscale Voltage		Condition	N/A		Status	pass	
Sensor Component	Inlet Filter Condition	n	Condition	Clean		Status	pass	
Sensor Component	Line Loss		Condition	Not tested		Status	pass	
Sensor Component	Offset		Condition	-0.50		Status	pass	
Sensor Component	Span		Condition	1.022		Status	pass	
Sensor Component	Cell B Freq.		Condition	82.8 kHz		Status	pass	
Sensor Component	System Memo		Condition	See comments	;	Status	pass	
Sensor Component	Sample Train		Condition	Good		Status	pass	
Sensor Component	Cell B Pressure		Condition	ı		Status	pass	
Sensor Component	Cell B Flow		Condition	0.72 lpm		Status	pass	
Sensor Component	Cell A Tmp.		Condition	32.4 C		Status	pass	
Sensor Component	Cell A Pressure		Condition	703 mmHg		Status	pass	
Sensor Component	Cell A Noise		Condition	Not tested		Status	pass	
Sensor Component	Cell A Freq.		Condition	76.7 kHz		Status	Fail	
Sensor Component	Cell A Flow		Condition	0.72 lpm		Status	pass	
Sensor Component	Battery Backup		Condition	N/A		Status	pass	
Sensor Component	Zero Voltage		Condition	N/A		Status	pass	

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	d Problem
Ozone	HOX148	Eric Hebert	08/30/2013	Cell A Freq.	ThermoElectron	3373		✓

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

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
MKC	G113-Sandy	y Grenville-09/17/2013				
1	9/17/2013	DAS	Campbell	000404	CR3000	2521
2	9/17/2013	Ozone	ThermoElectron Inc	000612	49i A1NAA	1009241776
3	9/17/2013	Ozone Standard	ThermoElectron Inc	000200	49i A3NAA	0607315738
4	9/17/2013	Zero air pump	Werther International	06937	C 70/4	000821896

Mfg S	erial Number Ta	Site	Tec	chnician		Site Visit	Date Para	ame	ter	Owner II)
ThermoElectron Inc 1	1009241776	MKG113	Sa	indy Gren	ville	09/17/20	Ozo	ne		000612	
Slope: 0.9	98679 Slope:	0.00000)	Mfg		ThermoE	lectron Inc	Par	ameter 0	zone	
•	03352 Intercept	0.00000	=	Serial N	umber	49C-7310	04-373	Tfe	er Desc. O	zone transfer	
CorrCoff 0.9	99989 CorrCoff	0.00000			umber			110	T Desc.		
				Tfer ID		01100					
DAS 1:	DAS 2:			Slope			1.00308 I	nter	cept	-0.179) 61
A Avg % Diff: A Ma	2.1% A Avg %	6Dif A Max %	% Di	Cert Dat	te	4	4/2/2013	orr	Coff	1.000	000
UseDescription:	ConcGroup:	Tfer Raw:	Tfer C	Corr:	Si	te:	Site Uni	:	PctDi	fference:	
primary	1	0.09	0.2				opb				
primary	2	31.00	31.0				opb			-0.90%	
primary	3	51.33	51.3				opb			-0.62%	
primary	5	81.33 102.09	81.2 101.			-	opb			-0.55% -2.11%	
primary	<u> </u>	102.09				.00 [opb	. [-2.11%]
Sensor Component	Cell B Noise		Conditio	1.0 pp	D		Sta	tus	pass		
Sensor Component	Cell B Tmp.		Conditio	on			Sta	tus	pass		
Sensor Component	Fullscale Voltage		Conditio	n N/A			Star	tus	pass		
Sensor Component	Inlet Filter Condition	n	Conditio	Clean			Star	tus	pass		
Sensor Component	Line Loss		Conditio	Not tes	sted		Sta	tus	pass		
Sensor Component	Offset		Conditio				Star	tus	pass		
Sensor Component	Span		Conditio	0.996			Sta	tus	pass		
Sensor Component	Cell B Freq.		Conditio	93.4 kl	Hz		Star	tus	pass		
Sensor Component	System Memo		Conditio	on			Sta	tus	pass		
Sensor Component	Sample Train		Conditio	Good			Sta	tus	pass]
Sensor Component	Cell B Pressure		Conditio	on			Star	tus	pass]
Sensor Component	Cell B Flow		Conditio	0.71 lp	m		Sta	tus	pass		
Sensor Component	Cell A Tmp.		Conditio	31.0 C	;		Sta	tus	pass		
Sensor Component	Cell A Pressure		Conditio	706.2	mmHg		Sta	tus	pass		
Sensor Component	Cell A Noise		Conditio	0.5 pp	b		Sta	tus	pass		
Sensor Component	Cell A Freq.		Conditio	84.6 kl	Hz		Sta	tus	pass		
Sensor Component	Cell A Flow		Conditio	0.71 lp	m		Sta	tus	pass		
Sensor Component	Battery Backup		Conditio	n N/A			Star	tus	pass		
Sensor Component	Zero Voltage		Conditio	N/A			Sta	tus	pass		

Site Visit Date		Parameter	Mfg	Owner ID	Model Number	Serial Number
ANA	115-Sandy	Grenville-09/17/2013				
1	9/17/2013	DAS	Campbell	000338	CR3000	2117
2	9/17/2013	Ozone	ThermoElectron Inc	000746	49i A1NAA	1105347315
3	9/17/2013	Ozone Standard	ThermoElectron Inc	000436	49i A3NAA	CM08200012
4	9/17/2013	Zero air pump	Werther International	06933	C 70/4	000836202

Mfg S	erial Number Ta	Site	Tec	chnician		Site Visit	Date Parar	neter	Owner ID
ThermoElectron Inc 1	105347315	ANA115	Sa	andy Grer	ville	09/17/20	13 Ozone)	000746
Slope: 0.9	97477 Slope:	0.00000		Mfg		ThermoEl	ectron Inc	Parameter (ozone
•	8180 Intercept	0.00000		Serial N	umber	49C-7310	4-373	fer Desc.	Ozone transfer
CorrCoff 0.9	99996 CorrCoff	0.00000)		dilloci				
				Tfer ID		01100			
DAS 1:	DAS 2:			Slope			1.00308 Int	ercept	-0.17961
A Avg % Diff: A Ma		6Dif A Max %	% Di	Cert Da	te		1/2/2013 Co	rrCoff	1.00000
2.4%	2.8%			CCITDU					
UseDescription:	ConcGroup:	Tfer Raw:	Tfer (Corr:	Si	te:	Site Unit:	PctD	ifference:
primary	1	0.05	0.2				opb		
primary	2	30.28	30.				ppb		-2.60%
primary	3	51.05	51.				ppb		-2.76%
primary	4	79.80	79.				pb		-1.69%
primary	5	100.66	100			.00 p	ppb		-2.51%
Sensor Component	Cell B Noise		Conditio	0.4 pp	b		Statu	pass	
Sensor Component	Cell B Tmp.		Conditio	on			Statu	pass	
Sensor Component	Fullscale Voltage		Conditio	n N/A			Statu	pass	
Sensor Component	Inlet Filter Condition	n	Conditio	Clean			Statu	pass	
Sensor Component	Line Loss		Condition Not tested		sted	Status pa		pass	
Sensor Component	Offset		Condition 0.10			Status		pass	
Sensor Component	Span		Condition 1.016		Status		pass		
Sensor Component	Cell B Freq.		Condition 87.3 kHz			Status pa		pass	
Sensor Component	System Memo		Condition			Status		pass	
Sensor Component	Sample Train		Conditio	Good		Status		pass	
Sensor Component	Cell B Pressure		Conditio	on			Statu	pass	
Sensor Component	Cell B Flow		Conditio	o.66 կ	om		Statu	pass	
Sensor Component	Cell A Tmp.		Conditio	30.6 C	;		Statu	pass	
Sensor Component	Cell A Pressure		Conditio	715.1	mmHg		Statu	pass	
Sensor Component	Cell A Noise		Conditio	0.6 pp	b		Statu	pass	
Sensor Component	Cell A Freq.		Conditio	87.6 k	Hz		Statu	pass	
Sensor Component	Sensor Component Cell A Flow		Conditio	tion 0.73 lpm			Statu	pass	
Sensor Component Battery Backup		Conditio	ion N/A			Statu	pass		
Sensor Component	Zero Voltage		Conditio	N/A			Statu	pass	

Site Visit Date		Parameter	Mfg	Owner ID	Model Number	Serial Number
KEF	112-Sandy	Grenville-09/20/2013				
1	9/20/2013	DAS	Campbell	000414	CR3000	2537
2	9/20/2013	Ozone	ThermoElectron Inc	000700	49i A1NAA	1030244793
3	9/20/2013	Ozone Standard	ThermoElectron Inc	000438	49i A3NAA	CM08200014
4	9/20/2013	Zero air pump	Werther International	06922	C 70/4	000836217

Mfg	erial Number Ta	Site	Te	chnician		Site Visit	Date Para	meter	Owner ID	
ThermoElectron Inc 1	030244793	KEF112	Sa	andy Grer	nville	09/20/20	13 Ozor	e	000700	
Slope: 1.0)1140 Slope:	0.00000		Mfg		ThermoE	lectron Inc	Parame	terozone	
Intercept -0.2	29229 Intercept	0.00000		Serial N	lumber	49C-7310	04-373	Tfer De	sc. Ozone transfer	
CorrCoff 0.9	99999 CorrCoff	0.00000		Tfer ID		01100				
				Tier in		01100				
DAS 1:	DAS 2:	(D10 1 7 0	· -	Slope			1.00308 Ir	tercept	-0.17961	
A Avg % Diff: A Ma 0.7%	1.1% A Avg %	6Dif A Max 9	% Di	Cert Da	te		4/2/2013 C	orrCoff	1.00000	
UseDescription:	ConcGroup:	Tfer Raw:	Tfer (Corr:	Si	te:	Site Unit	F	PctDifference:	
primary	1	0.04	0.2		0.		opb			
primary	2	30.64	30.				ppb		-0.65%	
primary	3	50.85	50.		51	^	opb		0.43%	
primary	5	81.38 101.22	81. 101		81 102	-	opb		0.62%	
primary		101.22				10	opb		1.07%	
Sensor Component	Cell B Noise		Conditio	0.9 pp	OD		Stat	pass		
Sensor Component	Cell B Tmp.		Conditio	on			Stat	us pass		
Sensor Component	Fullscale Voltage		Conditio	n N/A			Stat	pass		
Sensor Component	Inlet Filter Condition	n	Conditio	on Clean			Stat	pass		
Sensor Component	Line Loss		Condition Not tested			Status pas				
Sensor Component	Offset		Condition 0.30			Status		pass	pass	
Sensor Component	Span		Condition 1.023			Status		pass	pass	
Sensor Component	Cell B Freq.		Condition 80.7 kHz			Stat	pass			
Sensor Component	System Memo		Condition			Status		pass		
Sensor Component	Sample Train		Condition Good			Status		pass		
Sensor Component	Cell B Pressure		Conditio	on			Stat	pass		
Sensor Component	Cell B Flow		Conditio	o.68 lp	om		Stat	us pass		
Sensor Component	Cell A Tmp.		Conditio	35.6 C)		Stat	us pass		
Sensor Component	Cell A Pressure		Conditio	on 685 m	ımHg		Stat	pass		
Sensor Component	Cell A Noise		Conditio	0.9 pp	b		Stat	pass		
Sensor Component	Cell A Freq.		Conditio	91 .9 k	Hz		Stat	pass		
Sensor Component	Sensor Component Cell A Flow		Conditio	tion 0.66 lpm			Stat	pass		
Sensor Component Battery Backup		Conditio	ion N/A			Stat	pass	pass		
Sensor Component	Zero Voltage		Condition	n N/A			Stat	pass		

Site Visit Date		Parameter	Mfg	Owner ID	Model Number	Serial Number	
PSU106-Sandy Grenville-09/24/2013							
1	9/24/2013	DAS	Campbell	000407	CR3000	2512	
2	9/24/2013	Ozone	ThermoElectron Inc	000684	49i A1NAA	1030244795	
3	9/24/2013	Ozone Standard	ThermoElectron Inc	000696	49i A3NAA	1030244812	
4	9/24/2013	UPS	APC	06268	RS900	unknown	
5	9/24/2013	Zero air pump	Werther International	06914	C 70/4	000829156	

Mfg Se	erial Number Ta	Site	Te	chnician		Site Visit	t Date Pa	arame	eter	Owner ID	
ThermoElectron Inc 1	030244795	PSU106	Sa	andy Grer	nville	09/24/20)13 Oz	zone		000684	
Slope: 1.0	3118 Slope:	0.00000		Mfg		ThermoE	lectron Inc	Pa	rameter 0	zone	
*	2420 Intercept	0.00000		Serial N	lumber	49C-7310	04-373	Tfe	er Desc. C	Ozone transfer	
CorrCoff 0.9	9989 CorrCoff	0.00000			dilloci				er Beset _		
				Tfer ID		01100					
DAS 1:	DAS 2:			Slope			1.00308	Inter	cept	-0.1796	1
A Avg % Diff: A Ma:	3.6% A Avg %	6Dif A Max %	% Di	Cert Da	te		4/2/2013	Corr	Coff	1.00000	0
						·	<u>'</u>		'		'
UseDescription:	ConcGroup:	Tfer Raw:	Tfer (te:	Site U	nit:	PctDi	fference:	
primary primary	2	0.42 29.79	0.5 29.				ppb ppb			1.81%	
primary	3	50.49	50.				ppb ppb			1.25%	
primary	4	80.64	80.				ppb ppb			2.40%	
primary	5	100.04	99.				ppb			3.59%	
Sensor Component	Cell B Noise			0.8 pp				tatus	pass		
Sensor Component	Cell B Tmn		Conditio					tatus	nass		
Sensor Component	OCII D TIIIp.		Conunc					tatus	pass		
Sensor Component	Fullscale Voltage		Conditio	n N/A			St	tatus	pass		
Sensor Component	Inlet Filter Condition	n	Conditio	on Clean			St	tatus	pass		
Sensor Component	Line Loss		Condition Not tested			Status pass			pass		
Sensor Component	Offset		Condition 0.000		Status		pass				
Sensor Component	Span		Condition 1.0		023		St	tatus	pass		
Sensor Component	Cell B Freq.		Condition 109.3 kHz			St	tatus	pass			
Sensor Component	System Memo		Condition			Status			pass		
Sensor Component	Sample Train		Condition Good			Status		pass			
Sensor Component	Cell B Pressure		Condition	on			St	tatus	pass		
Sensor Component	Cell B Flow		Conditio	on 0.71 l	om		St	tatus	pass		
Sensor Component	Cell A Tmp.		Conditio	33.7 C	;		St	tatus	pass		
Sensor Component	Cell A Pressure		Conditio	708.4	mmHg		St	tatus	pass		
Sensor Component	Cell A Noise		Conditio	n 1.1 pp	b		St	tatus	pass		
Sensor Component	Cell A Freq.		Conditio	n 102.8	kHz		St	tatus	pass		
Sensor Component	Cell A Flow		Conditio	0.67 lp	om		St	tatus	pass		
Sensor Component	or Component Battery Backup		Conditio	ion Functioning			St	tatus	pass		
Sensor Component	Zero Voltage		Conditio	n N/A			St	tatus	pass		

Site Visit Date		Parameter	Mfg	Owner ID	Model Number	Serial Number		
SAL133-Eric Hebert-09/28/2013								
1	9/28/2013	DAS	Campbell	000351	CR3000	2129		
2	9/28/2013	Ozone	ThermoElectron Inc	000741	49i A1NAA	1105347316		
3	9/28/2013	Ozone Standard	ThermoElectron Inc	000372	49i A3NAA	0726124684		
4	9/28/2013	Zero air pump	Werther International	06935	C 70/4	000829172		

Mfg	erial Number Ta	Site	Te	chnician		Site Visit	Date Param	eter	Owner ID
ThermoElectron Inc 1	105347316	SAL133	Er	ic Hebert		09/28/20	13 Ozone		000741
	98728 Slope: 56200 Intercept	0.00000	_	Mfg		ThermoEl 51711217		arameter	
	99999 CorrCoff	0.00000	_	Serial N	umber		5 T	fer Desc. C	Ozone primary stan
			_	Tfer ID		01111			
DAS 1:	DAS 2:			Slope			0.99720 Inte	ercept	0.18428
A Avg % Diff: A Ma 0.6%	1.0% A Avg %	6Dif A Max %	% Di	Cert Da	te	1	1/2/2013 Con	rCoff	1.00000
UseDescription:	ConcGroup:	Tfer Raw:	Tfer (Corr:	Si	te:	Site Unit:	PctDi	fference:
primary	1	-0.03	-0.2				ppb		
primary	2	24.98	24.			i i	pb		0.80%
primary	3	53.48	53.				pb		0.37%
primary primary	5	76.66 109.32	76. 109				opb opb		-0.42% -0.95%
						5.40 J	ppb	nana	-0.93%
Sensor Component	Cell B Noise		Conditio	0.8 pp	OD		Status	pass	
Sensor Component	Cell B Tmp.		Conditio	on			Status	pass	
Sensor Component	Fullscale Voltage		Conditio	n N/A			Status	pass	
Sensor Component	Inlet Filter Condition	n	Conditio	Clean			Status	pass	
Sensor Component	Line Loss		Condition Not tested		sted	Status		pass	
Sensor Component	Offset		Condition 0.10			Status		pass	
Sensor Component	Span		Condition 1.020			Status		pass	
Sensor Component	Cell B Freq.		Condition 90.8 kHz		Status		pass		
Sensor Component	System Memo		Condition			Status		pass	
Sensor Component	Sample Train		Conditio	Good		Status		pass	
Sensor Component	Cell B Pressure		Conditio	on			Status	pass	
Sensor Component	Cell B Flow		Condition	o.56 lp	om		Status	pass	
Sensor Component	Cell A Tmp.		Conditio	33.9 C)		Status	pass	
Sensor Component	Cell A Pressure		Conditio	728 m	ımHg		Status	pass	
Sensor Component	Cell A Noise		Conditio	0.8 pp	b		Status	pass	
Sensor Component	Cell A Freq.		Conditio	97.7 k	Hz		Status	pass	
Sensor Component	Cell A Flow		Conditio	o.65 lp	om		Status	pass	
Sensor Component	Battery Backup		Conditio	n N/A			Status	pass	
Sensor Component	Zero Voltage		Conditio	n N/A			Status	pass	