2014 – 1st Quarter Report Support for Conducting Systems & Performance Audits of CASTNET Sites and NADP Monitoring Stations

EPA Contract No. EPW12019

Prepared for:

U. S. Environmental Protection Agency

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May 2016

Table of Contents

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

List of Appendices

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

List of Tables

Table 1.	Performance Audit Challenge and Acceptance Criteria	1-2
Table 2.	Site Audit Visits	1-4
Table 3.	Sites Ozone PE Visits	1-4
Table 4.	Sites Surveyed	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 May 2016, the network is comprised of 94 active rural sampling sites across the Untied States and Canada, cooperatively operated by the Environmental Protection Agency (EPA), the National Park Service (NPS), the Bureau of Land Management (BLM), 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 and BLM sponsored sites.

1.2 Project Objectives

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

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

and PAL190. Five sites sponsored by EPA and operated by the BLM in WY also operate meteorological sensors and are BAS601, NEC602, BUF603, SHE604, and FOR605.

Some or all of the additional monitored variables, NOy, CO, and SO_2 have been added to the EPA sponsored sites BVL130, HWF187, PND165, PNF126, and BEL116. No sites that measure these variables were audited in first quarter 2014.

Sensor Parameter Audit Chal		Audit Challenge	Acceptance Criteria	
Precipitation	Response	10 manual tips	1 DAS count per tip	
Precipitation	Accuracy	2 introductions of known amounts of water	$\leq \pm 10.0\%$ of input amount	
Relative Humidity	Accuracy	Compared to reference instrument or standard solution	$\leq \pm 10.0\%$ RH	
Solar Radiation	Accuracy	Compared to WRR traceable standard	$\leq \pm 10.0\%$ of daytime average	
Surface Wetness	Response	Distilled water spray mist	Positive response	
Surface Wetness	Sensitivity	1% decade resistance	N/A	
Temperature	Accuracy	Comparison to 3 NIST measured baths (~ 0° C, ambient, ~ full-scale)	$\leq \pm 0.5^{\circ} \mathrm{C}$	
Temperature Difference	Accuracy	Comparison to station temperature sensor	$\leq \pm 0.50^{\circ} \mathrm{C}$	
Wind Direction	Orientation Accuracy	Parallel to alignment rod/crossarm, or sighted to distant point	$\leq \pm 5^{\circ}$ from degrees true	
Wind Direction	Linearity	Eight cardinal points on test fixture	$\leq \pm 5^{\circ}$ mean absolute error	
Wind Direction	Response Threshold	Starting torque tested with torque gauge	< 10 g-cm Climatronics; < 20 g-cm R.M. Young	
Wind Speed	Accuracy	Shaft rotational speed generated and measured with certified synchronous motor	$\leq \pm 0.5$ mps below 5.0 mps input; $\leq \pm 5.0\%$ of input at or above 5.0 mps	
Wind Speed	Starting Threshold	Starting torque tested with torque gauge < 0.5 g-cm		
Mass Flow Controller	Flow Rate	Comparison with Primary Standard	$\leq \pm 5.0\%$ of designated rate	
Ozone	Slope	Linear regression of multi-	$0.9000 \le m \le 1.1000$	

 Table 1. Performance Audit Challenge and Acceptance Criteria

Sensor	Parameter	Audit Challenge	Acceptance Criteria
Ozone	Intercept	point test gas concentration as measured with a certified	-5.0 ppb ≤b ≤5.0 ppb
Ozone	Correlation Coefficient	transfer standard	$0.9950 \le r$
DAS	Accuracy	Comparison with certified standard	$\leq \pm 0.003 \text{ VDC}$

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

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

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

1.3 CASTNET Sites Visited First Quarter 2014

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

Table 2. Site Audit Visits

Site ID	Audit Type	Sponsor Agency	Site Location	Visit dates
IRL141	Without met	EPA	Indian River Lagoon	2/13/2014
SUM156	Without met	EPA	Sumatra	2/11/2014
GAS153	Without met	EPA	Georgia Station	3/4/2014
SND152	Without met	EPA	Sand Mountain	3/5/2014
SPD111	Without met	EPA	Speedwell	3/31/2014
COW137	Without met	EPA	Coweeta	3/26/2014
ESP127	Without met	EPA	Edgar Evins	3/27/2014

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

Site ID	Sponsor Agency	Site Location	Visit dates
ALC188	EPA	Alabama-Coushatta	3/12/2014
BBE401	NPS	Big Bend NP	3/20/2014
CAD150	EPA	Caddo Valley	2/25/2014
CDZ171	EPA	Cadiz	3/28/2014
CHE185	EPA	Cherokee Nation	2/26/2014
CKT136	EPA	Crockett	3/31/2014
CVL151	EPA	Coffeeville	2/28/2014
MAC426	NPS	Mammoth Cave NP	3/28/2014
MCK131	EPA	Mackville	3/30/2014
MCK231	EPA	Mackville (precision site)	3/30/2014
PAL190	EPA	Palo Duro	3/25/2014

Table 3. Site Ozone PE Visits

1.4 Audit Results

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

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

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

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

2.0 NADP Quarterly Report

2.1 Introduction

The National Atmospheric Deposition Program (NADP) operates three precipitation chemistry networks and two atmospheric concentration networks. The National Trends Network (NTN) has been measuring acidic precipitation since 1978. The network currently has more than 250 sites. The Atmospheric Integrated Research Monitoring Network (AIRMoN) began operation in 1992 and currently measures event based precipitation events at 6 sites. The Mercury Deposition Network (MDN) measures total mercury in precipitation samples from more than 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 Eurofins, and the network equipment depot (NED).

2.2 **Project Objectives**

The objective of this project is to perform independent and unbiased evaluations of the site instruments and 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 NADP Sites Visited First Quarter 2014

This report covers the results from the NADP sites surveyed during the first quarter (January through March) of 2014. The station names and dates of the surveys are presented in Table 4.

Side ID	Network	Survey Date	Station Name	
AL03	MDN/NTN	2/24/2014	Centreville	
AL10	NTN	2/24/2014	Black Belt Research & Extension Center	
AR02	NTN	2/25/2014	Warren 2WSW	
AR03	NTN/AMoN	2/25/2014	Caddo Valley	
AR16	NTN	2/27/2014	Buffalo National River-Buffalo Point	
AR27	NTN	2/26/2014	Fayetteville	
LA30	NTN	2/18/2014	Southeast Research Station	
MS22	MDN	2/20/2014	Oak Grove	
MS30	NTN/AMoN	2/28/2014	Coffeeville	
OK99	MDN	2/27/2014	Cherokee Nation	
AL99	AMoN/NTN	3/5/2014	Sand Mountain Research & Extension Center	
GA41	AMoN/NTN	3/4/2014	Georgia Station	
MS10	NTN	3/8/2014	Clinton	
MS19	NTN	3/6/2014	Newton	
TX02	NTN	3/24/2014	Muleshoe National Wildlife Refuge	
TX03	NTN	3/17/2014	Beeville	
TX04	NTN	3/20/2014	Big Bend National Park	
TX10	NTN	3/13/2014	Attwater Prairie Chicken	
TX16	NTN	3/18/2014	Sonora	
TX21	MDN	3/11/2014	Longview	
TX21	NTN	3/11/2014	Longview	
TX43	AMoN/NTN	3/25/2014	Canonceta	
TX56	NTN	3/10/2014	LBJ Grassland	

Table 4.	Sites	Surveyed
Lable 4.	DICO	Surveyeu

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 NADP site survey results are included in this report.

APPENDIX A

CASTNET Audit Report Forms

Site Inventory by Site Visit

Site V	isit Date/	Parameter	Mfg	Owner ID	Model Number	Serial Number			
SUM	SUM156-Eric Hebert-02/11/2014								
1	2/11/2014	Computer	Dell	000323	D520	unknown			
2	2/11/2014	DAS	Campbell	000335	CR3000	2114			
3	2/11/2014	Elevation	Elevation	None	1	None			
4	2/11/2014	Filter pack flow pump	Thomas	00235	107CA18	00688001783			
5	2/11/2014	Flow Rate	Apex	000665	AXMC105LPMDPCV	54762			
6	2/11/2014	Infrastructure	Infrastructure	none	none	none			
7	2/11/2014	Ozone	ThermoElectron Inc	000724	49i A1NAA	1105347328			
8	2/11/2014	Ozone Standard	ThermoElectron Inc	000447	49i A3NAA	CM08200023			
9	2/11/2014	Sample Tower	Aluma Tower	03542	А	none			
10	2/11/2014	Shelter Temperature	Campbell	none	107-L	none			
11	2/11/2014	Siting Criteria	Siting Criteria	None	1	None			
12	2/11/2014	Temperature	RM Young	05043	41342VO	9639			
13	2/11/2014	UPS	APC	06792	RS900	unknown			
14	2/11/2014	Zero air pump	Werther International	06876	C 70/4	000814286			

DAS Data Form

DAS Time Max Error: 0.02

Mfg	Serial N	umber Site	ï	Fechnician	Site Visit Date	Parameter	Use Desc.
Campbell	2114	SUN	M156	Eric Hebert	02/11/2014	DAS	Primary
Das Date:	2 /11/2014	Audit Date	2 /11/2014	Mfg	Datel	Parameter	DAS
Das Time:	11:25:54 42	Audit Time	11:25:53 42	Serial Number	15510194	Tfer Desc.	Source generator (D
Das Day:		Audit Day _		Tfer ID	01320		
Low Channe		High Channe					
Avg Diff:	Max Diff:	Avg Diff:	Max Diff:				
0.000	0.000	0.0001	0.0002				
				Mfg	Fluke	Parameter	DAS
				Serial Number	86590148	Tfer Desc.	DVM
				Tfer ID	01310		
				Slope	1.0000	0 Intercept	0.00000
				Cert Date	12/28/201	3 CorrCoff	1.00000
Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference	
7	0.0000	0.0000	0.0000	V	V	0.0000	
7	0.1000	0.1000	0.1000	V	V	0.0000	
7	0.3000	0.3000	0.3000		V	0.0000	
7	0.5000	0.5001	0.5000	V	V	-0.0001	
7	0.7000	0.7001	0.6999		V	-0.0002	
7	0.9000	0.9001	0.8999		V	-0.0002	
7	1.0000	1.0002	1.0000	V	V	-0.0002	

Flow Data Form

Mfg	Serial Nun	nber Ta 🖇	Site	Tec	hnician	Site Visit D	ate Paran	neter	Owner ID
Apex	54762		SUM156	Eric	Hebert	02/11/2014	Flow R	late	000665
				:	Мfg Serial Number Гfer ID	BIOS 122974 01416		aramete r Flov 'fer Desc. BIC	
DAS 1:		DAS 2:		L	Cal Factor Z	lero	-0.00)3	
A Avg % Diff: A		A Avg %l	Dif A Max	x % Di	Cal Factor F	ull Scale	0.99		
2.34%	2.37%				Rotometer R			.3	
UseDescription:	Test type:	_	Input STP:	MfcDisp.:	OutputSignal:	-	<u>^</u>	· ·	PctDifference:
	pump off	0.000	0.000	0.00	0.000	0.00	l/m	l/m	
1 2	leak check	0.000	0.000	0.01	0.000	0.00	l/m	l/m	
	test pt 1	0.000	1.535	0.00	0.000	1.50	l/m	l/m	-2.31%
	test pt 2 test pt 3	0.000	1.536 1.536	0.00	0.000	1.50 1.50	1/m 1/m	l/m l/m	-2.33%
		1	1.550			1.30			-2.3770
Sensor Compo	nent Leak res	il		Condition	1		Status	pass	
Sensor Compo	nent Filter Azi	muth		Condition	270 deg		Status	pass	
Sensor Compo	nent Filter Dep	oth		Condition	1.5 cm		Status	pass	
Sensor Compo	nent Filter Pos	sition		Condition	Good		Status	pass	
Sensor Compo	ment Moisture	Present		Condition	See comments	5	Status	pass	
Sensor Component Rotometer Condition		Condition	Clean and dry		Status	pass			
Sensor Compo	nent System N	/lemo		Condition	1		Status	pass	
Sensor Compo	nent Tubing C	ondition		Condition	Good		Status	pass	
Sensor Compo	nent Filter Dist	tance		Condition	5.0 cm		Status	pass	

Ozone Data Form

Mfg	Serial Number Ta	Site	Te	chnician		Site Visit Date		Parameter		Owner I	D
ThermoElectron Inc	1105347328	SUM156	Er	ic Hebert	:	02/11/2	014	Ozone		000724	
Intercept -(D.98734 Slope: D.66673 Intercept 1.00000 CorrCoff	0.0000	0	Mfg Serial N Tfer ID		ThermoE 5171121 01111			rameter 02 er Desc. 0	zone zone primary	/ stan
DAS 1: A Avg % Diff: A M 2.7%	DAS 2: fax % Di A Avg % 4.0%	6Dif A Max	% Di	Slope Cert Da			1.0056 1/8/201			0.21	
UseDescription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	e Unit:	PctDif	ference:	
primary	1	0.27	0.0	04	-0.	56	ppb				
primary	2	25.88	25.	.51	24.	.48	ppb			-4.04%	
primary	3	52.47	51.	.95	50.	.60	ppb			-2.60%	
primary	4	84.83	84.		82.		ppb			-2.18%	
primary	5	110.60	109	.76	107	.80	ppb			-1.79%	
Sensor Compone	nt Cell B Noise		Conditio	on 0.9 pp	b			Status	pass		
Sensor Compone	nt Cell B Tmp.		Conditio	on				Status	pass		
Sensor Compone	nt Fullscale Voltage		Conditio	on N/A				Status	pass		
Sensor Compone	nt Inlet Filter Condition	on	Conditio	on Clean	1			Status	pass		
Sensor Compone	nt Line Loss		Conditio	on Not te	ested			Status	pass		
Sensor Compone	nt Offset		Conditio	on 0.30				Status	pass		
Sensor Compone	nt Span		Conditio	on 0.999				Status	pass		
Sensor Compone	nt Cell B Freq.		Condition 110.0 kHz				Status	pass			
Sensor Compone	nt System Memo		Condition				Status	pass			
Sensor Compone	nt Sample Train		Condition Good				Status	pass			
Sensor Compone	nt Cell B Pressure		Conditio	on				Status	pass		
Sensor Compone	nt Cell B Flow		Conditio	on 0.71 l	pm			Status	pass		
Sensor Compone	nt Cell A Tmp.		Conditio	on 34.4 (2			Status	pass		
Sensor Compone	nt Cell A Pressure		Conditio	on 736 m	nmHg			Status	pass		
Sensor Compone	nt Cell A Noise		Conditio	on 0.9 pp	b			Status	pass		
Sensor Compone	Cell A Freq.		Conditio	on 101.9	kHz			Status	pass		
Sensor Compone	Cell A Flow		Conditio	on 0.71 l	pm			Status	pass		
Sensor Compone	nt Battery Backup		Conditio	ion Functioning				Status	pass		
Sensor Compone	omponent Zero Voltage		Conditio	tion N/A				Status	pass		

Temperature Data Form

Mfg	i	Serial Nun	nber Ta	Site		Tec	hni	cian	Site V	isit Date	Param	eter	Owner II)
RM Young		9639		SUM156		Eri	c He	ebert	02/11	/2014	Tempe	rature	05043	
							Mfg	g	Extec	า	Pa	arameter Te	emperature	
							Ser	ial Number	H2326	679	Tí	fer Desc. R	ſD	
							Tfe	r ID	01228					
DAS 1:			DAS 2:				Sloj	ре		1.0049	6 Inte	rcept	-0.230	009
Abs Avg Err	Abs	Max Er	Abs Av		Max Er		Cer	rt Date		1/8/201	4 Cor	rCoff	1.000	000
0.07		0.13]								
UseDesc.:		Test type:	In	putTmpRaw	InputTm	pCor	rr.:	OutputTmpS	ignal:	OutputSig	nalEng:	OSE Unit:	Difference:	
primary	Temp	Low Range	e	-0.10	0.1	3		0.000		0.3	;	С	0.13	
primary	Temp	Mid Range	;	20.58	20.7	71		0.000		20.	7	С	-0.02	
primary	Temp	High Rang	e	47.86	47.8	35		0.000		47.	8	C	-0.07	
Sensor Com	ponen	t Shield			Cond	litio	n N	loderately clea	an		Status	pass]
Sensor Com	ponen	t Blower S	tatus Sw	itch	Cond	litio	n N	I/A			Status	pass]
Sensor Com	ponen	t Blower			Cond	litio	n N	I/A			Status	pass]
Sensor Com	ponen	t System N	/lemo		Cond	litio	n 🗌				Status	pass]

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	SUM156	Eric Hebert	02/11/2014	Shelter Temperature	none
DAS 1:	DAS 2:		Mfg	Extech	Parameter She	Iter Temperatur
Abs Avg ErrAb0.43	os Max Er Abs Avg 0.67	Err Abs Max Er	Serial Number	H232679	Tfer Desc. RTD)
			Tfer ID	01228		
			Slope	1.0049	6 Intercept	-0.23009
			Cert Date	1/8/201	4 CorrCoff	1.00000

UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	24.60	24.71	0.000	25.3	С	0.59
primary	Temp Mid Range	25.62	25.72	0.000	25.7	С	-0.03
primary	Temp Mid Range	26.77	26.87	0.000	26.2	С	-0.67

Infrastructure Data For

Site ID	SUM156	Technician Eric He	ebert Site Visit Date 02/11/2014
Shelter	·Make	Shelter Model	Shelter Size
Ekto		8810	640 cuft

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

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazaro	Problem
Flow Rate	SUM156	Eric Hebert	02/11/2014	Moisture Present	Apex	3534		
The filter sample tubing has drops of moisture in low sections outside the shelter.								

Field Systems Comments

1 Parameter: DasComments

The meteorological tower has been removed. The temperature sensor is mounted in a naturally aspirated shield on the sample tower.

2 Parameter: SitingCriteriaCom

The site is surrounded by pine trees on land managed by the forest service. A few trees are now 17 meters tall and within 17 meters of the sample tower. Most trees are 30 meters from the sample tower.

3 Parameter: ShelterCleanNotes

The shelter is clean and well organized.. The site operator does an excellent job of organizing and maintaining the site.

4 Parameter: PollAnalyzerCom

There is water in the flow tubing outside the shelter. Trees to the north are less than 20 meters from the sample inlets.

Site ID SUM156	Technician Eric Hebert	Site Visit Date 02/1	1/2014		
Site Sponsor (agency)	EPA/USFS	USGS Map	Sumatra		
Operating Group	USFS/private	Map Scale			
AQS#	12-077-9991	Map Date			
Meteorological Type	R.M. Young] •			
Air Pollutant Analyzer	Ozone	QAPP Latitude			
Deposition Measurement	dry, wet	QAPP Longitude			
Land Use	wetlands, woodland - evergreen	OAPP Elevation Meters			
Terrain	flat	QAPP Declination			
Conforms to MLM	Yes	QAPP Declination Date			
Site Telephone	(850) 670-8376	Audit Latitude	30.11022		
Site Address 1	Rt 65	Audit Longitude	-84.9903		
Site Address 2	Apalachicola National Forest	Audit Elevation	1		
County	Liberty	Audit Declination	-3		
City, State	Bristol, FL	Present			
Zip Code	32321	Fire Extinguisher	Inspected Nov 1992		
Time Zone	Eastern	First Aid Kit			
Primary Operator		Safety Glasses			
Primary Op. Phone #		Safety Hard Hat 🔽			
Primary Op. E-mail	none	Climbing Belt			
Backup Operator	none	Security Fence			
Backup Op. Phone #		Secure Shelter			
Backup Op. E-mail		Stable Entry Step 🗹			
Shelter Working Room ☑	Make Ekto M	Iodel 8810	Shelter Size 640 cuft		
Shelter Clean	Notes The shelter is clean and well maintaining the site.	organized The site operator d	oes an excellent job of organizing and		
Site OK	Notes				
Driving Directions From Tallahassee take Hwy 20 west about 25 miles to Hosford. Turn left (south) on Hwy 65 at the intersection in					

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

SUM156

F-02058-1500-S2-rev001

Site ID

Technician Eric Hebert

Site Visit Date 02/11/2014

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		
Major industrial complex	10 to 20 km		
City > 50,000 population	40 km		
City 10,000 to 50,000 population	10 km		
City 1,000 to 10,000 population	5 km		
Major highway, airport or rail yard	2 km		
Secondary road, heavily traveled	500 m		
Secondary road, lightly traveled	200 m		
Feedlot operations	500 m		
Intensive agricultural ops (including aerial spraying)	500 m		
Limited agricultural operations	200 m]
Large parking lot	200 m]
Small parking lot	100 m		
Tree line	50 m	17 m	
Obstacles to wind	10 times obstacle height		

Siting Distances OK

Siting Criteria Comment

The site is surrounded by pine trees on land managed by the forest service. A few trees are now 17 meters tall and within 17 meters of the sample tower. Most trees are 30 meters from the sample tower.

Fi	eld Systems Data	Form		F-02058-1500-S3-rev001				
Site	e ID SUM156	Technician Er	ic Hebert	Site Visit Date 02/11/2014				
1	Are wind speed and direct being influenced by obstru		to avoid 🔽	N/A				
2	Are wind sensors mounted (i.e. wind sensors should b horizontally extended boo tower into the prevailing v	l so as to minimize tov e mounted atop the to m >2x the max diamet	wer or on a	N/A				
3	Are the tower and sensors	Contract of the second state of the second state of the		N/A				
4	Are the temperature shield avoid radiated heat source							
5	Are temperature and RH conditions? (i.e. ground be surface and not steeply slo standing water should be a	elow sensors should be oped. Ridges, hollows,	e natural					
6	Is the solar radiation sense	or plumb?		N/A				
7	Is it sited to avoid shading light?	, or any artificial or re	eflected	N/A				
8	Is the rain gauge plumb?			N/A				
9	Is it sited to avoid shelterin towers, etc?	ng effects from buildir	ngs, trees,	N/A				
10	Is the surface wetness sense facing north?	sor sited with the grid	surface 🔽	N/A				
11	Is it inclined approximate	ely 30 degrees?		N/A				
Dre	wide any additional ovulan	ation (nhotograph or)	skatah if nagassar	x) regarding conditions listed above or any other features				

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

Field Systems	Data Form			F-02058-1500-S4-rev001
Site ID SUM156	5 Technician	Eric Hebert	Site Visit Date 02/1	11/2014
				- 1 . S
1 Do all the metero condition, and we	ological sensors appear to be i ell maintained?	intact, in good 🔽		
2 Are all the meteo reporting data?	prological sensors operational	online, and		
	or the temperature and RH se	ensors clean?	Moderately clean	
4 Ano the conjuncted	d motors working?		N/A	
4 Are the aspirated	d motors working?			
5 Is the solar radia scratches?	ntion sensor's lens clean and fr	ree of	N/A	
6 Is the surface we	tness sensor grid clean and ur	ndamaged?	N/A	
7 Are the sensor sig	gnal and power cables intact,	in good	Signs of wear	
condition, and we	ell maintained?			
	gnal and power cable connect ts and well maintained?	ions protected		
Parameter	Manufacturer	Model	S/N	Client ID
Temperature	RM Young	41342VO	9639	05043
	S. Same			

Fi	eld Systems Data Form		F-02058-1500-S5-rev001
Site	EID SUM156 Eric Hebert		Site Visit Date 02/11/2014
	Siting Criteria: Are the pollutant analyzers and deposition of	equip	<u>ment sited in accordance with 40 CFR 58, Appendix E</u>
1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?		
2	Are the sample inlets 3 - 15 meters above the ground?		
3	Are the sample inlets > 1 meter from any major obstruction and 20 meters from trees?	ı, 🗆	Trees 17 meters
	Pollutant analyzers and deposition equipment operations ar	<u>ıd ma</u>	<u>intenance</u>
1	Do the analyzers and equipment appear to be in good condition and well maintained?		
2	Are the analyzers and monitors operational, on-line, and reporting data?		
3	Describe ozone sample tube.		1/4 teflon by 15 meters
4	Describe dry dep sample tube.		3/8 teflon by 15 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)		At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?		Moisture in tubing only
7	Is the zero air supply desiccant unsaturated?		70 % saturated
8	Are there moisture traps in the sample lines?		
9	Is there a rotometer in the dry deposition filter line, and is it clean?	t 🗹	Clean and dry
Pa	rameter Manufacturer Model		S/N Client ID

Parameter	Manufacturer	Model	S/N	Client ID
Sample Tower	Aluma Tower	A	none	03542
Ozone	ThermoElectron Inc	49i A1NAA	1105347328	000724
Filter pack flow pump	Thomas	107CA18	00688001783	00235
Zero air pump	Werther International	C 70/4	000814286	06876

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

There is water in the flow tubing outside the shelter. Trees to the north are less than 20 meters from the sample inlets.

Fie	eld Sy	stems Data Fo			F-020	58-15	500-Se	6-rev001		
Site	e ID	SUM156	Technician	Eric Hebert	CAURS.	Site Visit Date	02/11/2014			
	DAS, se	nsor translators, and	peripheral equip	ment operation	<u>ns ai</u>	nd maintenance				
1	Do the l well ma	DAS instruments appe intained?	ar to be in good	condition and						
2		the components of the , backup, etc)	DAS operationa	l? (printers,						
3		analyzer and sensor sig g protection circuitry		hrough		Met sensors only				
4		signal connections pro intained?	otected from the	weather and						
5	Are the	signal leads connected	l to the correct E	DAS channel?						
6	Are the ground	DAS, sensor translato ed?	ors, and shelter p	roperly						
7	Does th	e instrument shelter h	ave a stable pow	er source?						
8	Is the in	strument shelter temp	perature controll	led?						
9	Is the n	et tower stable and gr	ounded?			Stable	Gr	ounded	I	
10	Is the sa	mple tower stable and	l grounded?							
11	Tower o	comments?								

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D520	unknown	000323
DAS	Campbell	CR3000	2114	000335
UPS	APC	RS900	unknown	06792

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

The meteorological tower has been removed. The temperature sensor is mounted in a naturally aspirated shield on the sample tower.

Site 10 Sum fee been feeded Descension Yes No Yes No <th>Field Systems Data</th> <th>Form</th> <th></th> <th></th> <th></th> <th>F-02</th> <th>058-</th> <th>1500-S7-rev001</th>	Field Systems Data	Form				F-02	058-	1500-S7-rev001
Desche site have the required instrument and equipment manuab? Visit a point of the sensor Vi	Site ID SUM156	Tec	hnician E	ric Hebert	Site Visit Date)2/11/2014		
Yes No N/A Yes No N/A Wind direction sensor Image: Computer Image: Computer <th>Documentation</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	Documentation							
Yes No N/A Yes No N/A Wind direction sensor Data logger Temperature sensor Strip chart recorder Relative humidity sensor Solar radiation sensor <td< th=""><th>Does the site have the require</th><th>d instrum</th><th>ent and eq</th><th>nuipment manua</th><th>ls?</th><th></th><th></th><th></th></td<>	Does the site have the require	d instrum	ent and eq	nuipment manua	ls?			
Wind speed sensor V Wind direction sensor V Data logger V Computer V Relative humidity sensor V Solar radiation sensor V Vind sensor translator V Sittion Log V Site Ops Manual <t< th=""><th></th><th>STATISTICS CONTRACTOR</th><th></th><th></th><th></th><th>Yes</th><th>No</th><th>N/A</th></t<>		STATISTICS CONTRACTOR				Yes	No	N/A
Temperature sensor Strip etar tecorder Rehative humidity sensor Omputer Solar radiation sensor Modem Surface wetness sensor Printer Wind sensor translator Zero air pump Temperature translator Printer Solar radiation translator Printer Ozone analyzer Printer Solar radiation translator Printer Ozone analyzer Printer Solar radiation translator Printer Solar radiation translator Printer Ozone analyzer Printer Solar radiation translator Printer Ozone analyzer Printer Stripping bucket rain gauge <td< th=""><th>Wind speed sensor</th><th>And a second second</th><th></th><th>Data lo</th><th>gger</th><th></th><th></th><th></th></td<>	Wind speed sensor	And a second		Data lo	gger			
Relative humidity sensor V Computer Solar radiation sensor V Modem Surface wetness sensor V Printer Wind sensor translator V Printer Temperature translator V Pritter flow pump Humidity sensor translator V Printer Solar radiation translator V Printer Gone analyzer V Lightning protection device Jipping backet rain gauge V Lightning protection device Ocone analyzer V Shelter heater Filter pack flow controller V Shelter air conditioner Filter pack MFC power supply V Station Log V I ta the station log property completed during every site visit? 1 ta the station log property completed and current? 2 Are the Site Status Report Forms being completed and curre	Wind direction sensor			Data lo	gger			
Numery number of number o	Temperature sensor			Strip cl	nart recorder			
Surface wetness sensor Surface wetness sensor Wind sensor translator Surface wetness sensor Temperature translator Surface wetness sensor Surface wetness sensor Surface wetness sensor Filter flow pump Surface wetness sensor Solar radiation translator Solar radiation translator Solar radiation translator Surface wetness and report for device Ozone analyzer Filter pack flow controller Sole reside have the required and most recent QC documents and report forms? Present Current Station Log SSRF SRF Site Ops Manual Oct 2010 Field Ops Manual Oct 2010 Site Ops Manual Oct 2010 Site Ops Manual Oct 2010 Field Ops Manual Oct 2010 Site Ops Manual Oct 2010 Site Ops Manual Oct 2010 Field Ops Manual Oct 2010 Field Ops Manual Oct 2010 Field Ops Manual Oct 2010 Site Ops Manual Oct 2010 Field Ops Manual Oct 2010 Field Ops Manual Oct 2010 Field Ops Manual Optic Site Status Report Forms being completed and current? Verentive maintenance schedul I is the station log properly completed during every site visit?	Relative humidity sensor			Compu	ter		CONTRACTOR OF CONTRACTOR	
Wind sensor translator Zero air pump Temperature translator Filter flow pump Humidity sensor translator VIS Solar radiation translator VIS Solar radiation translator VIS Tipping bucket rain gauge Lightning protection device Ozone analyzer Shelter heater Filter pack flow controller Shelter air conditioner Filter pack MPC power supply Shelter air conditioner Cores the site bave the required and most recent QC documents and report forms? Present Current Station Log Y Site Ops Manual Oct 2001 HASP Oct 2010 Field Ops Manual Zefo/2014 Calibration Reports Zefo/2014 Conce z/s/p Control Charts Zefo/2014 Yereventive maintenance schedul Zefo/2014 I Is the station log properly completed and reuring every site visit? Y 2 Are the Site Status Report Forms being completed and current? 3 Are the chain-of-custody forms properly used to document same control charts not used 4 Are core z/s/p control charts properly completed and current?	Solar radiation sensor			Moden				
Temperature translator Image: Filter flow pump Humidity sensor translator Image: Surge protector Sohar radiation translator Image: Surge protector Sohar radiation translator Image: Surge protector Sohar radiation translator Image: Surge protector Tipping bucket rain gauge Image: Surge protector Ozone analyzer Image: Surge protector Filter pack Mow controller Image: Surge protector Filter pack MFC power supply Image: Surge protector Does the site have the required and most recent QC documents and report forms? Present Current Station Log Image: Surge protector Station Log Image: Surge protector Station Log Image: Surge protector Station Reports Image: Surge protector Image: Surge protector Image: Surge protector Image: Surge protector Image: Surge protector Station Reports Image: Surge protector Image: Surge protector Image: Su	Surface wetness sensor			Printer			200 11 200 20	
Immidity sensor translator Solar radiation translator Immidity sensor translator Solar radiation translator Impling bucket rain gauge Impling	Wind sensor translator	Specific Distances	and the second se	Zero ai	r pump			
Solar radiation translator UTS Tipping bucket rain gauge Lightning protection device Ozone analyzer Shelter heater Filter pack flow controller Shelter heater Filter pack MFC power supply Shelter air conditioner Does the site have the required and most recent OC documents and report forms? Present Current Station Log SSRF Site Ops Manual Oct 2001 HASP Oct 2010 Field Ops Manual Calibration Reports 2/5/2014 Ozone z/s/p Control Charts Preventive maintenance schedul I Is the station log properly completed during every site visit? Are the Site Status Report Forms being completed and arrent? Control charts not used Control cha	Temperature translator			Filter f	low pump			
Tipping bucket rain gauge Ighthing protection device Ozone analyzer Shelter heater Filter pack flow controller Shelter heater Filter pack flow controller Shelter air conditioner Station Log Shelter air conditioner Site Ops Manual Oct 2001 HASP Oct 2010 Field Ops Manual Oct 2010 Calibration Reports 2/5/2014 Ozone z/s/p Control Charts 2/5/2014 Ozone z/s/p Control Charts Shelter site site site site site site site site	Humidity sensor translator			Surge I	orotector			
Ozone analyzer Shelter heater Filter pack flow controller Shelter heater Filter pack flow controller Shelter air conditioner Filter pack MFC power supply Present Current Station Log SSRF Station Log SSRF Oct 2001 HASP Oct 2010 Field Ops Manual Oct 2010 Field Ops Manual Oct 2010 Calibration Reports 2/5/2014 Ozone z/s/p Control Charts Preventive maintenance schedul 1 Is the station log properly completed and current? 3 Are the chain-of-custody forms properly used to document ample transfer to and from lab? 4 Are ozone z/s/p control charts properly completed and current? Control charts not used Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features,	Solar radiation translator		States and the second states and the	UPS				
Filter pack MPC power supply Dest the site have the required and most recent QC documents and report forms? Present Station Log SSRF Got 2001 Current Site Ops Manual Oct 2001 HASP Oct 2010 Field Ops Manual Calibration Reports 2/5/2014 Octore z/s/p Control Charts Preventive maintenance schedul I Is the station log properly completed and a Are the Site Status Report Forms being completed and current? 3 Are the chain-of-custody forms properly used to document a Are ozone z/s/p control charts properly completed and current? Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features,	Tipping bucket rain gauge		A VALUE AND A VALUE	Lightni	ng protection device			
Filter pack MFC power supply Image: Control in Contro			the second second	Shelter	heater			
Dees the site have the required and most recent QC documents and report forms? Present Current Station Log Image: Current Image: Current SSRF Image: Current Image: Current Site Ops Manual Image: Oct 2001 Image: Current HASP Image: Oct 2010 Image: Current Field Ops Manual Image: Oct 2010 Image: Current Calibration Reports Image: Ziz/2014 Image: Current Corrent // Site Ops Control Charts Image: Ziz/2014 Image: Current 1 Is the station log properly completed during every site visit? Image: Control Charts 2 Are the Site Status Report Forms being completed and current? Image: Control Charts not used 3 Are the chain-of-custody forms properly used to document Image: Site Control Charts not used Image: Control Charts not used 4 Are ozone zis/p control charts properly completed and current? Image: Control Charts not used	Filter pack flow controller		Section and the second	Shelter	air conditioner			
Present Current Station Log Image: Current SSRF Image: Current Site Ops Manual Oct 2001 HASP Image: Current Calibration Reports Image: Current Calibration Reports Image: Current Corrent Current? Image: Current Image: Status Report Forms being completed and current? Image: Current Are the Site Status Report Forms properly used to document sample transfer to and from lab? Image: Current Are the chain-of-custody forms properly used to document sample transfer to and from lab? Image: Current Current? Image: Current Are ozone z/s/p control charts properly completed and current? Image: Control charts not used	Filter pack MFC power supply							
Station Log Image: station log SSRF Image: station log station log properly completed and current? Image: station log properly completed and current? Calibration Reports Image: station log properly completed and current? Control Charts properly used to document sample transfer to and from lab? Control Charts not used Control charts not used Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features,	Does the site have the requir	ed and m	ost recent	QC documents :	and report forms?			
SSRF Image: status statu		Present				Curre	nt	
Site Ops Manual Image: Control Charts Field Ops Manual Image: Control Charts Calibration Reports Image: Control Charts Calibration Reports Image: Control Charts Calibration Reports Image: Control Charts Ozone z/s/p Control Charts Image: Control Charts Preventive maintenance schedul Image: Control Charts Image: Ist he station log properly completed during every site visit? Image: Ist he station log properly completed during every site visit? Image: Ist he station log properly completed and current? Image: Ist he station log control charts properly used to document ist and from lab? Image: Ist he chain-of-custody forms properly completed and current? Image: Ist he station log control charts properly completed and current? Image: Ist he chain-of-custody forms properly completed and current? Image: Ist he chain-of-custody forms properly completed and current? Image: Ist he chain-of-custody forms properly completed and current? Image: Ist he chain-of-custody forms properly completed and current? Image: Ist he chain-of-custody forms properly completed and current?	Station Log							
HASP ✓ Oct 2010 Field Ops Manual □ □ Calibration Reports □ 2/5/2014 ✓ Ozone z/s/p Control Charts □ ✓ ✓ Preventive maintenance schedul □ ✓ ✓ 1 Is the station log properly completed during every site visit? ✓ ✓ 2 Are the Site Status Report Forms being completed and current? ✓ ✓ 3 Are the chain-of-custody forms properly used to document sample transfer to and from lab? ✓ ✓ 4 Are ozone z/s/p control charts properly completed and current? ✓ Control charts not used	SSRF							
HASP □ Field Ops Manual □ Calibration Reports □ 2/5/2014 □ Ozone z/s/p Control Charts □ Preventive maintenance schedul □ 1 Is the station log properly completed during every site visit? 2 Are the Site Status Report Forms being completed and current? 3 Are the chain-of-custody forms properly used to document sample transfer to and from lab? 4 Are ozone z/s/p control charts properly completed and current? Control charts not used Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features,	Site Ops Manual		Oct 2001					
Field Ops Manual Calibration Reports Ozone z/s/p Control Charts Preventive maintenance schedul 1 Is the station log properly completed during every site visit? 2 Are the Site Status Report Forms being completed and current? 3 Are the chain-of-custody forms properly used to document sample transfer to and from lab? 4 Are ozone z/s/p control charts properly completed and current? Control charts not used Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features,	HASP							
Ozone z/s/p Control Charts □ <td□< th=""><th>Field Ops Manual</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></td□<>	Field Ops Manual							
Preventive maintenance schedul 1 <t< th=""><th>Calibration Reports</th><th></th><th>2/5/2014</th><th></th><th></th><th></th><th></th><th></th></t<>	Calibration Reports		2/5/2014					
 Is the station log properly completed during every site visit? Are the Site Status Report Forms being completed and current? Are the chain-of-custody forms properly used to document sample transfer to and from lab? Are ozone z/s/p control charts properly completed and current? Control charts not used Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features,	Ozone z/s/p Control Charts							
 2 Are the Site Status Report Forms being completed and current? 3 Are the chain-of-custody forms properly used to document sample transfer to and from lab? 4 Are ozone z/s/p control charts properly completed and current? Control charts not used Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, 	Preventive maintenance schedul		-					
 2 Are the Site Status Report Forms being completed and current? 3 Are the chain-of-custody forms properly used to document sample transfer to and from lab? 4 Are ozone z/s/p control charts properly completed and current? Control charts not used Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, 								
current? 3 Are the chain-of-custody forms properly used to document sample transfer to and from lab? 4 Are ozone z/s/p control charts properly completed and current? Control charts not used Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features,	1 Is the station log properly c	ompleted	during eve	ery site visit? 🔽				
 sample transfer to and from lab? Are ozone z/s/p control charts properly completed and current? Control charts not used Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, 		Forms bei	ng comple	ted and 🗸				
current? Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features,			erly used to	o document 🔽				
		rts propei	ly complet	ted and	Control charts not use	ed		
and the second					ry) regarding conditio	ons listed a	above, o	or any other features,

Fie	eld Sy	stems Data	Form				F-0205	8-1500-S8-rev001
Site	ID	SUM156	Technician	Eric Hebert		Site Visit Date	02/11/2014	
1	Has th	eration procedure e site operator att ? If yes, when and	ended a formal CAS	TNET training	2	rained on-site in 19	989	
2		THE PERSON AND ADDRESS OF A DECK OF	r attended a formal vhen and who instru	HEAD THE TELEVILLE THE PAY AN AT THE SECOND				
3	Is the si schedul		y on the required T	uesday 💽	2			
		standard CASTN ed by the site oper	IET operational pro ator?	cedures being 🛛				
			owledgeable of, and s? (including docum					
	Are reg	ular operational (QA/QC checks perfo	ormed on meteoro	logi	cal instruments?		

QC Check Performed	Factorian
UU Uneck Periormea	Frequency

Multipoint Calibrations	N/A		<u> </u>
Visual Inspections	N/A	v	j
Translator Zero/Span Tests (climatronics)	N/A		·]
Manual Rain Gauge Test	N/A		·]
Confirm Reasonableness of Current Values	N/A]
Test Surface Wetness Response	N/A		ſ

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

QC Check Performed

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

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

Compliant

liant

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

Unknown

~

SSRF, logbook, call-in

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

Field Systems Data Form					F-02058-1500-S9-rev00				
Site	ID SUM156	Technician	Eric Hebert		Site Visit Date	e 02/11/2014			
1	Site operation procedures								
1	Is the filter pack being changed	every Tuesda	ay as scheduled?		Filter changed mor	rinings			
	2 Are the Site Status Report Forms being completed and filed correctly?								
	Are data downloads and backup scheduled?	os being perfo	ormed as		No longer required				
4.	Are general observations being	made and rec	corded? How?		SSRF, logbook				
	Are site supplies on-hand and re fashion?	eplenished in	a timely						
6.	Are sample flow rates recorded?	? How?			SSRF, logbook, call-in				
	Are samples sent to the lab on a fashion?	regular sche	dule in a timely						
	Are filters protected from conta and shipping? How?	mination du	ring handling		Clean gloves on ar	nd off			
	Are the site conditions reported operations manager or staff?	regularly to	the field						
QC (Check Performed	Free	quency			Compliant			
М	ulti-point MFC Calibrations	Sem	iannually	506					
	ow System Leak Checks	✓ Wee	ekly	1000		\checkmark			
Fil	Iter Pack Inspection	✓ Wee	kly						
Fl	Flow Rate Setting Checks								
Vi	Visual Check of Flow Rate Rotometer Weekly						States and the states		
In	In-line Filter Inspection/Replacement			2496 3713					
Sa	mple Line Check for Dirt/Wate	r 🗹 Wee	ekly						

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
IRL	141-Eric He	ebert-02/13/2014				
1	2/13/2014	Computer	Dell	000295	D520	HF974A02
2	2/13/2014	DAS	Campbell	000340	CR3000	2119
3	2/13/2014	Elevation	Elevation	None	1	None
4	2/13/2014	Filter pack flow pump	Thomas	00085	107CA110	71488
5	2/13/2014	Flow Rate	Apex	000598	AXMC105LPMDPCV	unknown
6	2/13/2014	Infrastructure	Infrastructure	none	none	none
7	2/13/2014	Modem	Raven	06384	H4222-C	0802310499
8	2/13/2014	Ozone	ThermoElectron Inc	000729	49i A1NAA	1105347323
9	2/13/2014	Ozone Standard	ThermoElectron Inc	000446	49i A3NAA	CM08200022
10	2/13/2014	Sample Tower	Aluma Tower	000020	В	AT-61152-A-H8-F
11	2/13/2014	Shelter Temperature	Campbell	none	107-L	none
12	2/13/2014	Siting Criteria	Siting Criteria	None	1	None
13	2/13/2014	Temperature	RM Young	illegible	41342VC	14804
14	2/13/2014	UPS	APC	06790	RS900	unknown
15	2/13/2014	Zero air pump	Werther International	06898	C 70/4	000821905

DAS Data Form

DAS Time Max Error: 0.02

Mfg	Serial N	Number Site	T	echnician	Site Visit Date	Parameter	Use Desc.
Campbell	2119	IRL	.141	Eric Hebert	02/13/2014	DAS	Primary
Das Date:	2 /13/2014	Audit Date	2 /13/2014	Mfg	Datel	Parameter	DAS
Das Time:	12:13:58	Audit Time	12:13:57		45540404		
Das Day:	44	Audit Day	44	Serial Number	15510194	Tfer Desc.	Source generator (D
Low Channe	d:	High Channe	d:	Tfer ID	01320		
Avg Diff:	Max Diff:	Avg Diff:	Max Diff:				
0.0000	0.00	02 0.0000	0.0002				
				Mfg	Fluke	Parameter	DAS
				Serial Number	86590148	Tfer Desc.	DVM
				Tfer ID	01310		
				Slope	1.0000	0 Intercept	0.00000
					12/28/201		1.00000
				Cert Date	12/20/201	3 CorrCoff	1.00000
Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference	
7	0.0000	0.0000	0.0000	V	V	0.0000	
7	0.1000	0.1000	0.1000	V	V	0.0000	
7	0.3000	0.3000	0.3000	V	V	0.0000	
7	0.5000	0.5000	0.5000	V	V	0.0000	
7	0.7000	0.7000	0.7000	V	V	0.0000	
7	0.9000	0.9001	0.8999	V	V	-0.0002	
7	1.0000	1.0001	1.0000	V	V	-0.0001	

Flow Data Form

Mfg	Serial Nun	nber Ta	Site	Тес	chnician	Site Visit D	ate Para	meter	Owner ID
Apex	unknown		IRL141	Eri	c Hebert	02/13/2014	Flow	Rate	000598
					Mfg Serial Number Tfer ID	BIOS 122974 01416		Parameter Flo	
DAS 1:		DAS 2:			Cal Factor Z		-0.0	017	
A Avg % Diff:	A Max % Di	A Avg %	Dif A Max	w Di	Cal Factor Z			.99	
0.92%	1.06%				Rotometer R			1.4	
UseDescription:	Test type:	Input l/m:	Input STP:	MfcDisp.:	OutputSignal:	Output S E:	InputUnit:	OutputSignal	PctDifference:
primary	pump off	0.000	0.000	-0.01	0.000	-0.02	l/m	l/m	
primary	leak check	0.000	0.000	0.00	0.000	0.05	l/m	l/m	
primary	test pt 1	0.000	1.516	1.51	0.000	1.50	l/m	l/m	-1.06%
primary	test pt 2	0.000	1.516	1.51	0.000	1.50	l/m	l/m	-1.03%
primary	test pt 3	0.000	1.520	1.51	0.000	1.51	l/m	l/m	-0.68%
Sensor Compo	onent Leak Tes	it		Conditio	n		Statu	1s pass	
Sensor Compo	Filter Azi	muth		Conditio	n 180 deg		Statu	1s pass	
Sensor Compo	onent Filter Dep	oth		Conditio	n 0.000		Statu	1s pass	
Sensor Compo	onent Filter Pos	sition		Conditio	n Fair		Statu	1s pass	
Sensor Compo	Moisture	Present		Conditio	n No moisture p	resent	Statu	1s pass	
Sensor Compo	nent Rotomete	er Condition	n	Conditio	n Clean and dry		Statu	1s pass	
Sensor Compo	onent System N	/lemo		Conditio	n		Statu	1s pass	
Sensor Compo	ment Tubing C	ondition		Conditio	n Good		Statu	1s pass	
Sensor Compo	onent Filter Dist	tance		Conditio	n 6.0 cm		Statu	18 pass	

Ozone Data Form

Mfg	Serial Number Ta	Site	Te	chnician		Site Visi	t Date	Parame	eter	Owner I	D
ThermoElectron Inc	1105347323	IRL141	Er	ic Hebert		02/13/20	014	Ozone		000729	
Intercept	0.99726 Slope: 0.41844 Intercept 0.99988 CorrCoff	0.00000	D	Mfg Serial N Tfer ID		ThermoE 5171121 01111			rameter c er Desc. C	ozone Dzone primary	/ stan
DAS 1:	DAS 2:			Slope			1.0056	1 Inter	mont	0.21	973
A Avg % Diff: A N	Max % Di A Avg	%Dif A Max	% Di	Slope Cert Da	ite		1/8/201		•	1.00	
1.3%	3.6%		[
UseDescription:	^	Tfer Raw:	Tfer		Sit			e Unit:	PctD	ifference:	
primary	1 2	0.24 33.09	0.0		-0. 33.		ppb			3.64%	
primary	3	62.41	61.		53. 62.		ppb ppb		_	0.91%	
primary	4	85.15	84.		84.		ppb ppb		_	0.91%	
primary primary	5	99.78	99.		04. 98.		ppb ppb			-0.30%	
		77.78	1			.70	ppb			-0.30%	
Sensor Compone	nt Cell B Noise		Conditio	0.8 pp	b			Status	pass		
Sensor Compone	nt Cell B Tmp.		Conditio	on				Status	pass		
Sensor Compone	nt Fullscale Voltage		Conditio	n/A				Status	pass		
Sensor Compone	nt Inlet Filter Condition	on	Conditio	on Clean				Status	pass		
Sensor Compone	nt Line Loss		Conditio	n Not te	sted			Status	pass		
Sensor Compone	nt Offset		Conditio	on 0.000				Status	pass		
Sensor Compone	nt Span		Conditio	on 1.025				Status	pass		
Sensor Compone	nt Cell B Freq.		Conditio	on 100.4	kHz			Status	pass		
Sensor Compone	nt System Memo		Conditio	on				Status	pass		
Sensor Compone	nt Sample Train		Conditio	on Good				Status	pass		
Sensor Compone	nt Cell B Pressure		Conditio	on				Status	pass		
Sensor Compone	nt Cell B Flow		Conditio	0.72 l	pm			Status	pass		
Sensor Compone	nt Cell A Tmp.		Conditio	on 35.6 (2			Status	pass		
Sensor Compone	nt Cell A Pressure		Conditio	on 732 m	nmHg			Status	pass		
Sensor Compone	nt Cell A Noise		Conditio	on 1.4 pp	b			Status	pass		
Sensor Compone	nt Cell A Freq.		Conditio	on 109.1	kHz			Status	pass		
Sensor Compone	nt Cell A Flow		Conditio	on 0.78 l	pm			Status	pass		
Sensor Compone	nt Battery Backup		Conditio	Funct	ioning			Status	pass		
Sensor Compone	nt Zero Voltage		Conditio	on N/A				Status	pass		

Temperature Data Form

Mfg	\$	Serial Nun	ıber Ta	Site		Tec	hni	ician	Site V	isit Date	Param	eter	Owner II)
RM Young		14804		IRL141		Erio	c He	ebert	02/13	8/2014	Temper	rature	illegible	
							Mf	g	Extec	า	Pa	arameter Te	emperature	
							Ser	ial Number	H2326	679	Tí	fer Desc. R	ſD	
							Tfe	er ID	01228	ł				
DAS 1:			DAS 2:				Slo	ре		1.0049	6 Inte	rcept	-0.23	009
Abs Avg Err	Abs	Max Er	Abs Av		Max Er		Cei	rt Date		1/8/201	4 Cor	rCoff	1.00	000
0.06		0.06]								
UseDesc.:	,	Test type:	In	putTmpRaw	InputTm	pCor	r.:	OutputTmpS	ignal:	OutputSig	nalEng:	OSE Unit:	Difference:	
primary	Temp	Low Range	2	-0.03	0.2	0		0.000		0.2	2	С	-0.05	
primary	Temp	Mid Range	:	25.19	25.2	29		0.000		25.	2	С	-0.06	
primary	Temp	High Rang	e	48.10	48.0)9		0.000		48.	0	C	-0.06	
Sensor Com	ponen	t Shield			Cond	litio	n N	Ioderately clea	an		Status	pass		
Sensor Com	ponen	t Blower S	tatus Sw	itch	Cond	litio	n N	I/A			Status	pass]
Sensor Com	ponen	t Blower			Cond	litio	n F	unctioning			Status	pass]
Sensor Com	ponen	t System N	lemo		Cond	litio	n 🗌				Status	pass		

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	IRL141	Eric Hebert	02/13/2014	Shelter Temperature	none
DAS 1:	DAS 2:		Mfg	Extech	Parameter She	elter Temperatur
Abs Avg ErrAb0.83	os Max Er Abs Avg 1.01	Err Abs Max Er	Serial Number	H232679	Tfer Desc. RT)
			Tfer ID	01228		
			Slope	1.0049	6 Intercept	-0.23009
			Cert Date	1/8/201	4 CorrCoff	1.00000

UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	26.85	26.95	0.000	26.3	С	-0.64
primary	Temp Mid Range	28.08	28.17	0.000	27.2	С	-1.01
primary	Temp Mid Range	20.39	20.52	0.000	21.4	С	0.83

Infrastructure Data For

Site ID	IRL141	Technician Eric He	ebert Site Visit Date 02/13/2014
Shelter	Make	Shelter Model	Shelter Size
Ekto		8810	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	Fair	Status	pass
Sensor Component	Shelter Condition	Condition	Good	Status	pass
Sensor Component	Shelter Floor	Condition	Fair	Status	pass
Sensor Component	Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component	Signal Cable	Condition	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

Field Systems Comments

1 Parameter: SiteOpsProcComm

The site operator is doing an excellent job of handling and changing the filter pack.

2 Parameter: SitingCriteriaCom

The expanded roadway and parking lots were observed to have several vehicles traveling and parking including motor homes, during the audit visit. Sebastian has an estimated population of 18,000. The park operates a boat ramp with vehicle parking near the site. The site is surrounded on three sides by boat traffic using the ramp.

3 Parameter: ShelterCleanNotes

The shelter is clean and well organized.

Site ID IRL141	Technician Eric Hebert	Site White Date 02/4	3/2014
Site ID IRL141		Site Visit Date 02/1	5/2014
Site Sponsor (agency)	EPA/SJRWMD	USGS Map	Sebastian
Operating Group	IRC Health Dept	Map Scale	
AQS#	12-061-9991	Map Date	
Meteorological Type	R.M. Young]	
Air Pollutant Analyzer	Ozone	QAPP Latitude	
Deposition Measurement	dry	QAPP Longitude	
Land Use	coastal	QAPP Elevation Meters	
Terrain	flat	QAPP Declination	
Conforms to MLM	Yes	QAPP Declination Date	
Site Telephone	(772) 538-2365	Audit Latitude	27.84921
Site Address 1	Sebastian Inlet State Park	Audit Longitude	-80.45559
Site Address 2	9700 South A1A	Audit Elevation	
County	Indian River	Audit Declination	-5.8
City, State	Melbourne Beach, FL	Present	
Zip Code	32951	Fire Extinguisher	No inspection date
Time Zone	Eastern	First Aid Kit	
Primary Operator		Safety Glasses	
Primary Op. Phone #		Safety Hard Hat	
Primary Op. E-mail		Climbing Belt	
Backup Operator		Security Fence	
Backup Op. Phone #		Secure Shelter	
Backup Op. E-mail		Stable Entry Step 🔽	
Shelter Working Room✓	Make Ekto M	Iodel 8810	Shelter Size 640 cuft
	Notes The shelter is clean and well	organized.	
Site OK	Notes		

Field Systems Data Form

IRL141

F-02058-1500-S2-rev001

Site ID

Technician Eric Hebert

Site Visit Date 02/13/2014

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		
Major industrial complex	10 to 20 km		
City > 50,000 population	40 km		
City 10,000 to 50,000 population	10 km	5 to 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	100 m	
Small parking lot	100 m	10 - 20 m	
Tree line	50 m		
Obstacles to wind	10 times obstacle height		

Siting Distances OK

Siting Criteria Comment

The expanded roadway and parking lots were observed to have several vehicles traveling and parking including motor homes, during the audit visit. Sebastian has an estimated population of 18,000. The park operates a boat ramp with vehicle parking near the site. The site is surrounded on three sides by boat traffic using the ramp.

Fie	eld Systems Data	Form		F-02058-1500-S3-rev001
Site	ID IRL141	Technician Eric Hebo	ert	Site Visit Date 02/13/2014
1	Are wind speed and direct being influenced by obstr	tion sensors sited so as to avo uctions?	oid 🔽	N/A
2	(i.e. wind sensors should l	d so as to minimize tower eff be mounted atop the tower or om >2x the max diameter of t wind)	r on a	N/A
3	Are the tower and sensor			N/A
4		lds pointed north or position es such as buildings, walls, et		
5	conditions? (i.e. ground b	sensors sited to avoid unnatu elow sensors should be natur oped. Ridges, hollows, and ar avoided)	ral	
6	Is the solar radiation sens	sor plumb?		N/A
7	Is it sited to avoid shading light?	g, or any artificial or reflecte	d 🔽	N/A
8	Is the rain gauge plumb?			N/A
9	Is it sited to avoid shelter towers, etc?	ing effects from buildings, tro	ees, 🔽	N/A
10	Is the surface wetness sen facing north?	sor sited with the grid surfac	ce 🔽	N/A
11	Is it inclined approximat	ely 30 degrees?		N/A
Dre	wide one additional ovular	nation (nhotogranh or sketch	if nocossar	x) regarding conditions listed above or any other features

		Form			F-0	2058-1	500-S4-rev001
Site ID	IRL141	Technician	Fric Hebert		Site Visit Date 02/13/201	4	
	he meterological se on, and well mainta	ensors appear to be in ained?	ntact, in good				
2 Are all t reportin		sensors operational	online, and				
		perature and RH set	nsors clean?				
4 Are the	aspirated motors	working?					
5 Is the so	var radiation sons	or's lens clean and fr	ee of		N/A		
scratche		or siens crean and n					
6 Is the su	irface wetness sens	sor grid clean and un	damaged?		N/A		
	sensor signal and on, and well mainta	power cables intact, i	in good		Signs of wear		
8 Are the	sensor signal and	power cable connecti	ions protected				
	e elements and wel		A 75 A				
Parameter		Manufacturer	Model		S/N	C	lient ID
atural or ma	an-made, that may	affect the monitorin	g parameters:	, <u>, , , , , , , , , , , , , , , , , , </u>	regarding conditions listed	1	
natural or ma	an-made, that may	affect the monitorin	g parameters:	,			
natural or ma	an-made, that may	affect the monitorin	g parameters:	<i>J</i> /			
natural or ma	an-made, that may	affect the monitorin	g parameters:	,			
natural or ma	an-made, that may	affect the monitorin	g parameters:	,			
atural or ma	an-made, that may	affect the monitorin	g parameters:	,			
latural or ma	an-made, that may	affect the monitorin	g parameters:				
latural or ma	an-made, that may	affect the monitorin	g parameters:				
	m-made, that may	affect the monitorin	g parameters:				
atural or ma	an-made, that may	affect the monitorin	g parameters:				
	an-made, that may	affect the monitorin	g parameters:				
	an-made, that may	affect the monitorin	g parameters:				
	an-made, that may	affect the monitorin	g parameters:				

Field Systems Data Form						F-02058- 1	500-S5-rev001
Site	e ID	IRL141	Technician Eric	c Hebert		Site Visit Date 02/13/2014	
	Siting C	Criteria: Are tl	he pollutant analyzers and (deposition equ	<u>uipr</u>	nent sited in accordance with 40 CFR	<u>58, Appendix E</u>
1		sample inlets h icted airflow?	nave at least a 270 degree an	rc of			
2	Are the sample inlets 3 - 15 meters above the ground?			ound?			
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?						
	Pollutar	nt analyzers a	nd deposition equipment op	perations and	mai	<u>intenance</u>	
1		analyzers and on and well ma	equipment appear to be in aintained?	good			
2		analyzers and ng data?	l monitors operational, on-l	line, and			
3	Describ	e ozone sampl	e tube.			1/4 teflon by 15 meters	
4	Describ	e dry dep sam	ple tube.			3/8 teflon by 15 meters	
5		line filters used location)	d in the ozone sample line?	(if yes		At inlet only	
6	Are san obstruc		n, free of kinks, moisture, a	ınd		Moisture in tubing only	
7	Is the ze	ero air supply	desiccant unsaturated?				
8	Are the	re moisture tr	aps in the sample lines?				
9	Is there clean?	a rotometer i	n the dry deposition filter li	ine, and is it		Clean and dry	
Pa	rameter	A. 73-4	Manufacturer	Model		S/N	Client ID

Parameter	Manufacturer	Model	S/N	Client ID	
Sample Tower	Aluma Tower	В	AT-61152-A-H8-F	000020	
Ozone	ThermoElectron Inc	49i A1NAA	1105347323	000729	
Filter pack flow pump	Thomas	107CA110	71488	00085	
Zero air pump	Werther International	C 70/4	000821905	06898	

Fie	eld Sy	ystems Data Fo	orm				F-02	2058-15	00-S6-rev001
Site	D	IRL141	Technician	Eric Hebert		Site Visit D	ate 02/13/2014	4	
	DAS, s	ensor translators, and	peripheral equi	oment operation	<u>ns ar</u>	ud maintenance	The second		
1		DAS instruments appe aintained?	ar to be in good	condition and					
2		the components of the a, backup, etc)	DAS operation:	al? (printers,					
3		analyzer and sensor signal sensor s		hrough		Met sensors on	ly		
4		e signal connections pro aintained?	otected from the	weather and					
5	Are the	e signal leads connected	l to the correct l	DAS channel?					
6	Are the ground	e DAS, sensor translato led?	rs, and shelter j	oroperly					
7	Does th	e instrument shelter h	ave a stable pow	ver source?					
8	Is the i	nstrument shelter temj	oerature control	led?					
9	Is the r	net tower stable and gr	ounded?			Stable		Grounded	
10	Is the s	ample tower stable and	l grounded?					✓	
11	Tower	comments?						V	
Par	ameter	M	anufacturer	Model		S/N		Cli	ent ID

Parameter	Manufacturer	Model	S/N	Client ID	
Computer	Dell	D520	HF974A02	000295	
DAS	Campbell	CR3000	2119	000340	
Modem	Raven	H4222-C	0802310499	06384	
UPS	APC	RS900	unknown	06790	

Field Systems Data Fo	orm			F-02)58-1	1500-S7-rev001
Site ID IRL141	Technician	Eric Hebert	Site Visit Date 02/	13/2014		Der Thill Aller
Documentation						
Does the site have the required i	CONTRACTOR AND A CARD			Var	No	NT/A
Wind speed sensor	s No N/.	A Data logge	r	Yes	No ✓	N/A
Wind direction sensor		The second s				
Temperature sensor	and the second states of the second states	Strip char				
Relative humidity sensor		La serie substantine de la sectore de la				
Solar radiation sensor		Modem				
Surface wetness sensor		Printer				
Wind sensor translator		Zero air p	ump			
Temperature translator		Filter flow	pump			
Humidity sensor translator		Surge prot	ector			
Solar radiation translator		UPS				
Tipping bucket rain gauge		Lightning	protection device			
Ozone analyzer		Shelter he	ater			
Filter pack flow controller			conditioner			
Filter pack MFC power supply						
Does the site have the required	and most rece	nt QC documents and	report forms?			
Pr	esent			Curren	ıt	
Station Log			No. of Concession, Name			
SSRF			100			
Site Ops Manual	✓ Oct 20 ⁴	1				
HASP	✓ Oct 20 ⁴	1				
Field Ops Manual						
Calibration Reports						
Ozone z/s/p Control Charts						And the second second
Preventive maintenance schedul			S. 2015.			
1 Is the station log properly con	pleted during	every site visit? 🔽				
2 Are the Site Status Report For current?	rms being com	oleted and 🗹				
3 Are the chain-of-custody form sample transfer to and from la		d to document 🔽				
4 Are ozone z/s/p control charts current?	properly comp	oleted and				
Provide any additional explanation natural or man-made, that may aff			regarding conditions	ilisted a	bove, o	r any other features,

Field	l Systems Data	Form				F-020)58-15	500-58	-rev001
Site ID	IRL141	Technician Eric Hebert		S	ite Visit Date	02/13/2014]	
1 H	ite operation procedures las the site operator atter ourse? If yes, when and v	nded a formal CASTNET trainin	g 🗸	on-si	te 7/9/2001 by	MACTEC em	ployee E	ОН	
	the site visited regularly hedule?	on the required Tuesday							
	re the standard CASTNE blowed by the site operat	T operational procedures being or?							
		vledgeable of, and able to perform ((including documentation)	n 🗹						
<u>A</u>	re regular operational Q.	A/QC checks performed on mete	orolo	<mark>gical</mark> i	instruments?				
QC CI	heck Performed	Frequenc	7			Co	mpliant		

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

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

QC Check Performed

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

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

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

Unknown

 \checkmark

SSRF, control charts, call-in, logbook

Fie	Field Systems Data Form						F-02058-1500-S9-rev001				
Site	ID	IRL141	Techr	lician	Eric Hebert		Site Visit Dat	te 0	2/13/2014	1.1.1	
	Site ope	eration procedures									
1	Is the fi	lter pack being change	ed every ?	Fuesda	ay as scheduled	? ∠	Filter changed morinings				
	2 Are the Site Status Report Forms being completed and filed correctly?										
	Are data downloads and backups being performed as scheduled?						No longer required	d			
4	Are general observations being made and recorded? How?						SSRF, logbook				
	5 Are site supplies on-hand and replenished in a timely fashion?										
6	6 Are sample flow rates recorded? How?						SSRF, logbook, ca	all-iı	n		
	Are san fashion	nples sent to the lab on ?	a regula	r sche	dule in a timely						
		ers protected from con pping? How?	taminati	o <mark>n du</mark> r	ing handling		Clean gloves on and off				
		site conditions reporte ons manager or staff?	ed regula	rly to	the field						
QC	Check P	erformed		Free	quency			(Compliant		
Μ	lulti-poi	nt MFC Calibrations		Sem	iannually				2		
Fl	low Syst	em Leak Checks		Wee	kly				2		
Fi	ilter Pac	k Inspection						[
Fl	Flow Rate Setting Checks Weekly										
Vi	Visual Check of Flow Rate Rotometer 🗹 Weekly					2	N. CAN STREET				
In	In-line Filter Inspection/Replacement Semiannually			100 Mar 1							
Sa	ample L	ine Check for Dirt/Wa	ter 🔽	Wee	kly				2		
Provi	de any a	additional explanation	(photogr	aph o	r sketch if neces	sary) regarding condi	itio	ns listed above, or a	ny other features,	

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

The site operator is doing an excellent job of handling and changing the filter pack.

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
GAS	S153-Eric H	lebert-03/04/2014				
1	3/4/2014	Computer	Dell	000295	D520	HF974A02
2	3/4/2014	DAS	Campbell	000635	CR3000	4934
3	3/4/2014	Elevation	Elevation	None	1	None
4	3/4/2014	Filter pack flow pump	Thomas	04858	107CAB18	608102A
5	3/4/2014	Flow Rate	Apex	000643	AXMC105LPMDPCV	unknown
6	3/4/2014	Infrastructure	Infrastructure	none	none	none
7	3/4/2014	Modem	Raven	06805	H4222-C	0934411884
8	3/4/2014	Ozone	ThermoElectron Inc	000705	49i A1NAA	1030244807
9	3/4/2014	Ozone Standard	ThermoElectron Inc	000697	49i A3NAA	1030244814
10	3/4/2014	Sample Tower	Aluma Tower	000138	В	none
11	3/4/2014	Shelter Temperature	Campbell	none	107-L	none
12	3/4/2014	Siting Criteria	Siting Criteria	None	1	None
13	3/4/2014	Temperature	RM Young	04319	41342	4038
14	3/4/2014	UPS	APC	missing	BP6505	NB0009260535
15	3/4/2014	Zero air pump	Werther International	06865	C 70/4	000814277

DAS Data Form

7

7

7

0.7000

0.9000

1.0000

0.7001

0.9001

1.0001

DAS Time Max Error: 0.02

0.0000

0.0001

0.0001

V

V

V

V

V

V

Mfg	Serial	Number S	ite	Technician	Site Visit Date	Parameter	Use Desc.
Campbell	4934		GAS153	Eric Hebert	03/04/2014	DAS	Primary
Das Date: Das Time: Das Day: Das Day: Channet Avg Diff: 0.0001	Max Diff:	Audit Tin Audit Day High Chan	ne 10:17:01 63 mel: Max Diff:	Mfg Serial Number Tfer ID	Datel 4000392 01321	Parameter Tfer Desc.	r DAS
				Mfg Serial Number Tfer ID	Fluke 95740243 01312	Parameter Tfer Desc.	
Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference	
7	0.0000	-0.000	1 0.000	0 V	V	0.0001	
7	0.1000	0.099	9 0.100	0 V	V	0.0001	
7	0.3000	0.300	0 0.300	0 V	V	0.0000	
7	0.5000	0.500	0.500	1 V	V	0.0001	

0.7001

0.9002

1.0002

Flow Data Form

Mfg	Serial Nun	nber Ta S	lite	Tec	hnician	Site Visit l	Date Paran	neter	Owner ID
Apex	unknown	(GAS153	Eri	c Hebert	03/04/201	4 Flow F	Rate	000643
					Mfg	BIOS	I	Parameter FI	ow Rate
					Serial Number	131818	1	fer Desc. B	OS 220-H
					Tfer ID	01417			
					Slope	1.	.00000 Int	ercept	0.00000
					Cert Date			rrCoff	1.00000
DAC 1.		DAG 4.			Cal Fastar 7		-0.0	26	
DAS 1: A Avg % Diff: .	A Moy 0/ D:	DAS 2: A Avg %I	Dif A Max	0/ D :	Cal Factor Z Cal Factor F			36 97	
2.62%	2.86%	A AVg 701		5 % DI	Rotometer R			.5	
UseDescription:		Input 1/m:	Input STP:	MfcDisp.:			1	I	11 PctDifference
primary	pump off	0.000	0.000	0.00	0.000	-0.04	l/m	l/m	nir cuDinierence
primary	leak check	0.000	0.000	0.00	0.000	0.01	1/m	1/m	
primary	test pt 1	0.000	1.544	1.53	0.000	1.50	1/m	1/m	-2.86%
primary	test pt 2	0.000	1.544	1.53	0.000	1.51	l/m	l/m	-2.17%
primary	test pt 3	0.000	1.544	1.53	0.000	1.50	l/m	l/m	-2.83%
Sensor Compo	onent Leak Tes	st		Conditio	n		Statu	s pass	
Sensor Compo	onent Filter Azi	muth		Conditio	n 180 deg		Statu	s pass	
Sensor Compo	onent Filter Dep	oth		Conditio	n 3.0 cm		Statu	s pass	
Sensor Compo	onent Filter Pos	sition		Conditio	n Good		Statu	s pass	
Sensor Compo	onent Moisture	Present		Conditio	n See comments	6	Statu	s pass	
Sensor Compo	onent Rotomete	er Condition		Conditio	n Clean and dry		Statu	s pass	
Sensor Compo	onent System N	/lemo		Conditio	n		Statu	s pass	
Sensor Compo	onent Tubing C	ondition		Conditio	n Good		Statu	s pass	
Sensor Compo	ment Filter Dis	tance		Conditio	n 3.0 cm		Statu	s pass	

Ozone Data Form

Mfg	Se	erial Number Ta	Site	Te	chnician		Site Visi	t Date	Parame	eter	Owner I	D
ThermoElect	tron Inc 1	030244807	GAS153	Er	ic Heber	:	03/04/20	014	Ozone		000705	
Slope: [Intercept [CorrCoff [-0.4	2217Slope:4253Intercept0000CorrCoff	0.00000 0.00000 0.00000	D	Mfg Serial N Tfer ID		ThermoE 49CPS-7 01110			rameter o	zone Dzone primary	y stan
DAS 1:		DAS 2:			Slope			1.0070	7 Inter	rcept	-0.21	032
A Avg % D	iff: A Max		6Dif A Max 9	% Di	•		L			- 1		
1.3	8%	1.9%			Cert Da	ite		1/8/201	4 Cori	Coff	1.00	0000
UseDesc	cription:	ConcGroup:	Tfer Raw:	Tfer		Si	te:	Site	Unit:	PctDi	fference:	
prim	•	1	0.56	0.7		0.3		ppb				
prim	nary	2	28.45	28.		28.		ppb			0.63%	
prim	nary	3	50.05	49.		50.		ppb			1.30%	
prim	nary	4	77.27	76.	.93	78.	12	ppb			1.55%	
prim	nary	5	110.32	109	.75	111	.80	ppb			1.87%	
Sensor Co	omponent	Cell B Noise		Conditio	on 0.9 p	b			Status	pass		
Sensor Co	omponent	Cell B Tmp.		Conditio	on				Status	pass		
Sensor Co	omponent	Fullscale Voltage		Conditio	n N/A				Status	pass		
Sensor Co	omponent	Inlet Filter Condition	n	Conditio	on Clear	1			Status	pass		
Sensor Co	omponent	Line Loss		Conditio					Status	pass		
Sensor Co	omponent	Offset		Conditio	on 0.10				Status	pass		
Sensor Co	omponent	Span		Conditio	on 1.004				Status	pass		
	-	Cell B Freq.		Conditio					Status			
	•	System Memo		Conditio					Status			
		Sample Train		Conditio					Status			
	_	Cell B Pressure		Conditio					Status			
		Cell B Flow		Conditio		om			Status			
		Cell A Tmp.		Conditio					Status			
	_	Cell A Pressure		Conditio					Status			
		Cell A Noise		Conditio					Status			
	-	Cell A Freq.		Conditio					Status			
	•	Cell A Flow		Conditio					Status			
		Battery Backup				Inctioning			Status			
Sensor Co	omponent	Zero Voltage		Conditio	on N/A				Status	pass		

Temperature Data Form

Sensor Component Blower

Sensor Component System Memo

Mfg	Serial Number Ta	Site	Tech	nician	Site Visit Date	Parame	eter	Owner ID
RM Young	4038	GAS153	Eric	Hebert	03/04/2014	Temper	ature	04319
			Ν	/Ifg	Eutechnics	Pa	rameter	emperature
			S	erial Number	01D102193	Tf	er Desc. R	TD translator
		Т	fer ID	01231				
DAS 1:	DAS 2:		S	lope	1.0013	3 Inter	rcept	-0.05731
Abs Avg Err A		g Err Abs M	fax Er C	Cert Date	12/27/201	3 Corr	Coff	1.00000
			N	Afg	Eutechnics	Pa	rameter	emperature
			S	erial Number	01H0060	Tf	er Desc. R	TD probe
			Т	fer ID	01230			
			S	lope	1.0013	3 Inter	rcept	-0.05731
			C	Cert Date	12/27/201	3 Corr	Coff	1.00000
0.12	0.25							
UseDesc.:	Test type: Inp	outTmpRaw I	nputTmpCorr	.: OutputTmpS	ignal: OutputSig	nalEng:	OSE Unit:	Difference:
primary Ter	np Low Range	0.05	0.11	0.000	0.0)	С	-0.11
primary Ter	np Mid Range	15.83	15.87	0.000	15.	6	С	-0.25
primary Ter	np High Range	48.56	48.55	0.000	48.	5	С	-0.01
Sensor Compo	ent Shield		Condition	Moderately clea	an	Status	pass	
Sensor Compo	ent Blower Status Swi	tch	Condition	N/A		Status	pass	

Condition Functioning

Condition

Status pass

Status pass

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	GAS153	Eric Hebert	03/04/2014	Shelter Temperature	none
DAS 1: Abs Avg Err Abs 0.09	DAS 2: Max Er Abs Avg 0.10	Err Abs Max Er	Mfg Serial Number Tfer ID Slope Cert Date Mfg Serial Number Tfer ID Slope Cert Date	Eutechnics 01D102193 01231 1.0013 12/27/201 Eutechnics 01H0060 01230 1.0013 12/27/201	Tfer Desc. RTI Intercept CorrCoff Parameter She Tfer Desc. RTI Intercept Intercept	-0.05731 1.00000 elter Temperatur

UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	18.26	18.29	0.000	18.4	С	0.08
primary	Temp Mid Range	17.07	17.10	0.000	17.0	С	-0.1

Infrastructure Data For

Site ID	GAS153	Technician Eric He	bert Site Visit Date 03/04/2014
Shelter	Make	Shelter Model	Shelter Size
Ekto		8810	640 cuft
A CONTRACTOR OF THE			

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	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

Site Visit Comments

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazaro	Problem
Flow Rate	GAS153	Eric Hebert	03/04/2014	Moisture Present	Apex	3978		
The filter sample tubing has drops of moisture in low sections outside the shelter.								

Field Systems Comments

1 **Parameter:** SiteOpsProcedures

The ozone sample train is tested for leaks every two weeks.

Site ID GAS153	Technician Eric Hebert	Site Visit Date 03/0)4/2014
A second second			The second second
Site Sponsor (agency)	EPA	USGS Map	Hollonville
Operating Group	UGA	Map Scale	
AQS#	13-231-9991	Map Date	
Meteorological Type	R.M. Young		
Air Pollutant Analyzer	Ozone	QAPP Latitude	
Deposition Measuremer	t dry, wet	QAPP Longitude	
Land Use	agriculture, woodland - mixed	QAPP Elevation Meters	
Terrain	gently rolling	QAPP Declination	
Conforms to MLM	Yes	QAPP Declination Date	
Site Telephone	(770) 229-8542	Audit Latitude	33.18117
Site Address 1	Bledsoe Farm, GA Experiment Station	Audit Longitude	-84.410054
Site Address 2	1913 Jackson road	Audit Elevation	26
County	Pike	Audit Declination	-4
City, State	Williamson, GA	Present	
Zip Code	30292	Fire Extinguisher	No inspection date
Time Zone	Eastern	First Aid Kit	
Primary Operator		Safety Glasses	
Primary Op. Phone #		Safety Hard Hat 🔽	
Primary Op. E-mail		Climbing Belt	
Backup Operator		Security Fence	
Backup Op. Phone #		Secure Shelter	
Backup Op. E-mail		Stable Entry Step 🔽	
Shelter Working Room	Make Ekto	fodel 8810	Shelter Size 640 cuft
Shelter Clean	✓ Notes		
Site OK	✓ Notes		
and on	om I-75 take exit 205 (Rt 16) west to Griffin. I take the next exit (Rt 362) west toward W the dirt road marked Blanton Mill Road, app past the farm office and sheds on the north	illiamson. Continue 7.2 miles o proximately 0.9 miles to the gate	n 362 through Williamson. Bear right

Field Systems Data Form

GAS153

F-02058-1500-S2-rev001

Site ID

Technician Eric Hebert

ert Site Vi

Site Visit Date 03/04/2014

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

Siting Distances OK

Siting Criteria Comment

Fi	eld Systems Dat	ta Form		F-02058-1500-S3-rev001
Site	GAS153	Technician Eric	c Hebert	Site Visit Date 03/04/2014
1	Are wind speed and dir being influenced by obs	ection sensors sited so as structions?	to avoid 🛛 🗹	Ν/Α
2	(i.e. wind sensors should	ited so as to minimize tow d be mounted atop the tow boom $>2x$ the max diameted g wind)	ver or on a	N/A
3	Are the tower and sense			N/A
4		ields pointed north or pos rces such as buildings, wa		
5	conditions? (i.e. ground	CH sensors sited to avoid u l below sensors should be sloped. Ridges, hollows, a be avoided)	natural	
6	Is the solar radiation se	ensor plumb?		N/A
7	Is it sited to avoid shad light?	ing, or any artificial or re	flected	N/A
8	Is the rain gauge plumb	o?		N/A
9	Is it sited to avoid shelt towers, etc?	ering effects from buildin	gs, trees, 🔽	N/A
10	Is the surface wetness s facing north?	ensor sited with the grid s	urface 🗹	N/A
11	Is it inclined approxim	ately 30 degrees?		N/A
Dre	wide any additional aval	lanation (photograph or of	kotah if pagagan	y) regarding conditions listed above, or any other features

	Systems Dat	a Form		F-02	058-1500-S4-rev001
Site ID	GAS153	Technician Eric Hebert		Site Visit Date 03/04/2014	- Alter and a second
					1988 - A.
	all the meterological ndition, and well main	sensors appear to be intact, in good ntained?			
	e all the meteorologic porting data?	al sensors operational online, and			
3 Ar	e the shields for the t	emperature and RH sensors clean?			
4 Ar	e the aspirated motor	s working?			
	the solar radiation se atches?	nsor's lens clean and free of		N/A	
6 Is t	the surface wetness so	ensor grid clean and undamaged?		N/A	
	e the sensor signal an adition, and well main	d power cables intact, in good ntained?			
8 Ar		d power cable connections protected		N/A	
Paramo	eter	Manufacturer Model		S/N	Client ID
Temper	rature	RM Young 41342	23103	4038	04319

Fie	eld Sys	stems Dat	a Form		F-02058-1500-S5-rev001
Site	ID	GAS153	Technician Eric Hebert		Site Visit Date 03/04/2014
	Siting Cr	<u>iteria: Are the</u>	pollutant analyzers and deposition e	<u>quip</u> i	nent sited in accordance with 40 CFR 58, Appendix E
1		mple inlets hat ted airflow?	ve at least a 270 degree arc of		
2	Are the s	ample inlets 3	- 15 meters above the ground?		
3		ample inlets > leters from tree	1 meter from any major obstruction, es?		
	Pollutant	t analyzers and	deposition equipment operations an	d ma	<u>intenance</u>
1		nalyzers and eq and well main	uipment appear to be in good ntained?		
2	Are the a reporting		nonitors operational, on-line, and		
3	Describe	ozone sample	tube.		1/4 teflon by 12 meters
4	Describe	dry dep sampl	le tube.		3/8 teflon by 12 meters
5	Are in-lin indicate		in the ozone sample line? (if yes		At inlet only
6	Are samj obstructi		free of kinks, moisture, and		
7	Is the zer	o air supply do	esiccant unsaturated?		
8	Are there	e moisture trap	os in the sample lines?		
9	Is there a clean?	n rotometer in t	the dry deposition filter line, and is it		Clean and dry
Par	ameter		Manufacturer Model		S/N Client ID

Parameter	Manufacturer	Model	S/IN	Client ID	
Sample Tower	Aluma Tower	В	none	000138	
Ozone	ThermoElectron Inc	49i A1NAA	1030244807	000705	
Filter pack flow pump	Thomas	107CAB18	608102A	04858	
Zero air pump	Werther International	C 70/4	000814277	06865	

Fie	eld Sy	vstems Data Fo	orm				F-0 2	2058-15	00-S6-rev001
Site	e ID	GAS153	Technician	Eric Hebert	22122	Site Visit Dat	e 03/04/2014	4	
	DAS, se	ensor translators, and	peripheral equi	oment operation	ns ai	d maintenance			
1		DAS instruments appe							H. N. S.
1		aintained?	ar to be migood						
2		the components of the , backup, etc)	DAS operation	al? (printers,					
3		analyzer and sensor signaly and sensor signation and sensor signal sensor sensor signal sens		hrough		Met sensors only			
4	4 Are the signal connections protected from the weather and well maintained?								
5	Are the	signal leads connected	to the correct	DAS channel?					
6	Are the ground	DAS, sensor translato ed?	rs, and shelter	oroperly					
7	Does th	e instrument shelter h	ave a stable pov	ver source?					
8	Is the in	nstrument shelter temp	erature control	led?					
9	Is the n	net tower stable and gr	ounded?			Stable		Grounded	
10	Is the s	ample tower stable and	grounded?						1.10
11	Tower	comments?							
Par	ameter	М	anufacturer	Model		S/N		Cli	ent ID

Parameter	Manufacturer	Model	S/N	Client ID	
Computer	Dell	D520	HF974A02	000295	
DAS	Campbell	CR3000	4934	000635	
Modem	Raven	H4222-C	0934411884	06805	
UPS	APC	BP6505	NB0009260535	missing	

Field S	Systems Data	For	m				F-02	058-	1500-S7-rev001
Site ID	GAS153		Tech	nician E	Fric Hebert	Site Visit Date	03/04/2014		
Deau									
States and states	entation			S. Carlos		A. C. A.			
Does th	<u>e site have the requir</u>	223 C R R R R R R R R R R R R R R R R R R	STATES I	AND DESCRIPTION OF	quipment manuals	<u>-</u>			TTA
Wind spee	d sensor	Yes	No	N/A	Data log	Jer .	Yes	No ✓	N/A
Contract States and States	ction sensor			 ✓ 	Data log	and the second se			
Temperat				 ✓ 		rt recorder			
ACCESSION OF THE PARTY OF	umidity sensor				Compute				
	ation sensor				Modem				
	etness sensor				Printer				
	or translator				Zero air	pump			
Temperati	ure translator				Filter flo	and the second statistical to the second			
Cold State Cold States	sensor translator				Surge pr				
inter dester i dester	ation translator				UPS				
Tipping bu	ucket rain gauge				Lightnin	g protection device			
Ozone ana	lyzer				Shelter h	eater			
Filter pack	s flow controller				Shelter a	ir conditioner			
Filter pack	MFC power supply	7							
Does t	he site have the requ	ired a	nd mo	st recent	QC documents an	d report forms?			
		Pres	ent				Currer	ıt	
Station Lo	g		2			No. 1 Contraction of the local sectors of the local			
SSRF									
Site Ops M	fanual								
HASP				Oct 2011					
Field Ops	Manual								
Calibratio									
Ozone z/s/	p Control Charts								
Preventive	- e maintenance schedu	al [
1 Is the	station log properly	comp	leted d	luring ev	ery site visit? 🔽	Minimal information			
2 Are th curre	he Site Status Report nt?	t Forn	ıs bein	g comple	eted and				
3 Are the chain-of-custody forms properly used to document sample transfer to and from lab? ✓									
4 Are o curre	zone z/s/p control ch nt?	arts p	roperl	y comple	eted and	Control charts not u	sed		
	ny additional explana man-made, that may) regarding condit	ions listed a	bove,	or any other features,
								0.93	

Field	Systems Data	Form		F-02058	-1500-S8-rev001	
Site ID	GAS153	Technician Eric	c Hebert	Site Visit Date	03/04/2014	
1 Ha cou 2 Ha	rse? If yes, when and s the backup operator	ended a formal CASTN	STNET			
sche	edule?	ly on the required Tueso NET operational procedu				
floll 5 Is tl	owed by the site oper ne site operator(s) kno		e to perform 🗹			

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

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

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

QC	Check Performed
----	------------------------

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

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

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

rain	includin	g all	filters	s?		
1.1.1.1		1.1		100000	1000	

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

Unknown

SSRF, call-in

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

 \checkmark

The ozone sample train is tested for leaks every two weeks.

Fie	eld Sy	stems Data For	m					F-02058-	1500-S9-rev001		
Site	e ID	GAS153	Technie	cian Eric Hebe	ert		Site Visit Dat	e 03/04/2014			
	Site ope	eration procedures									
1	Is the fi	lter pack being changed	every Tı	iesday as sche	duled?	✓	Filter changed mo	rinings			
2			ns being	completed and	l filed	✓					
3		Site operation procedures Is the filter pack being changed every Tuesday as scher Are the Site Status Report Forms being completed and correctly? Are data downloads and backups being performed as scheduled? Are general observations being made and recorded? H Are site supplies on-hand and replenished in a timely fashion? Are sample flow rates recorded? How? Are samples sent to the lab on a regular schedule in a t fashion? Are filters protected from contamination during handl					No longer required				
4	correctly? Are data downloads and backups being performed as scheduled? Are general observations being made and recorded? I Are site supplies on-hand and replenished in a timely fashion? Are sample flow rates recorded? How? Are samples sent to the lab on a regular schedule in a fashion?				Iow?	✓	SSRF, call-in				
5			eplenishe	ed in a timely		✓					
6						✓	SSRF, call-in				
7			regular	schedule in a 1	timely	✓					
8			mination	ı during hand	ling	✓	Clean gloves on and off				
9			regularl	y to the field		•					
QC	Check P	erformed		Frequency				Compliant			
N	Iulti-poi	nt MFC Calibrations		Semiannually	A ON PERSONAL OF						
F	low Syst	em Leak Checks		Weekly							
F	ilter Pac	k Inspection									
F	low Rate	e Setting Checks		Weekly							
V	isual Ch	eck of Flow Rate Rotom	eter 🗹	Weekly							
I	n-line Fil	ter Inspection/Replacem	CARGE MALESCARE OF	Semiannually		10.371.30					
S	ample L	ine Check for Dirt/Wate	r 🗸	Weekly							
		additional explanation (p an-made, that may affect				ary) regarding condi	tions listed above, o	or any other features,		

Site Inventory by Site Visit

Site Vis	sit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
SND15	2-Eric H	lebert-03/05/2014				
1	3/5/2014	Computer	Dell	000255	D520	unknown
2	3/5/2014	DAS	Campbell	000357	CR3000	2135
3	3/5/2014	Elevation	Elevation	None	1	None
4	3/5/2014	Filter pack flow pump	Thomas	04855	107CAB18	060300020200
5	3/5/2014	Flow Rate	Apex	000555	AXMC105LPMDPCV	illegible
6	3/5/2014	Infrastructure	Infrastructure	none	none	none
7	3/5/2014	Modem	Raven	06458	V4221-V	0808337422
8	3/5/2014	Ozone	ThermoElectron Inc	000725	49i A1NAA	1106347326
9	3/5/2014	Ozone Standard	ThermoElectron Inc	000215	49i A3NAA	0622717856
10	3/5/2014	Sample Tower	Aluma Tower	000148	В	none
11	3/5/2014	Shelter Temperature	Campbell	none	107-L	none
12	3/5/2014	Siting Criteria	Siting Criteria	None	1	None
13	3/5/2014	Temperature	RM Young	06405	41342	14038
14	3/5/2014	Zero air pump	Werther International	06867	C 70/4	000814279

DAS Data Form

7

7

7

0.7000

0.9000

1.0000

0.7000

0.9001

1.0001

DAS Time Max Error: 0.03

0.0001

0.0001

0.0001

V

V

V

V

V

V

Mfg	Serial	l Number S	ite	Technician	Site Visit Date	Parameter	Use Desc.
Campbell	2135	:	SND152	Eric Hebert	03/05/2014	DAS	Primary
Das Date: Das Time: Das Day: Low Channe Avg Diff: 0.000	Max Diff:	Audit Tin Audit Day High Char	ne 10:48:30 64 mel: Max Diff:	Mfg Serial Number Tfer ID	Datel 4000392 01321	Parameter Tfer Desc.	r DAS Source generator (D
				Mfg Serial Number Tfer ID	Fluke 95740243 01312	Parameter Tfer Desc.	
Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference	
7	0.0000	-0.000	1 0.000	0 V	V	0.0001	
7	0.1000	0.099	9 0.099	6 V	V	-0.0003	
7	0.3000	0.300	0 0.300	0 V	V	0.0000	
7	0.5000	0.500	0 0.500	1 V	V	0.0001	

0.7001

0.9002

1.0002

Flow Data Form

Mfg	Serial Nun	nber Ta S	Site	Тес	chnician	Site Visit I	Date Paran	neter	Owner ID
Арех	illegible		SND152	Eri	c Hebert	03/05/2014	4 Flow R	ate	000555
					Mfg	BIOS		arameter	
					Serial Number	131818	Τ	fer Desc. Bl	OS 220-H
					Tfer ID	01417			
					Slope	1.	.00000 Inte	ercept	0.00000
					Cert Date	1/	8/2014 Co	rCoff	1.00000
DAS 1:		DAS 2:			Cal Factor Z	lero	-0.0)2	
A Avg % Diff: A	Max % Di	A Avg %I	Dif A Max	x % Di	Cal Factor F	ull Scale		1	
0.26%	0.47%				Rotometer R	leading:	1.4	15	
UseDescription:	Test type:	Input l/m:	Input STP:	MfcDisp.:	OutputSignal:	Output S E:	InputUnit:	OutputSigna	llPctDifference:
primary p	ump off	0.000	0.000	0.00	0.000	-0.01	l/m	l/m	
primary le	ak check	0.000	0.000	0.00	0.000	0.00	l/m	l/m	
primary te	est pt 1	0.000	1.511	1.50	0.000	1.51	l/m	l/m	-0.05%
primary te	est pt 2	0.000	1.517	1.50	0.000	1.51	l/m	l/m	-0.47%
Sensor Compon	ent Leak Tes	st		Conditio	n		Status	pass	
Sensor Compon	ent Filter Azi	muth		Conditio	n 270 deg		Status	pass	
Sensor Compon	ent Filter De	pth		Conditio	n 2.0 cm		Status	pass	
Sensor Compon	ent Filter Pos	sition		Conditio	n Good		Status	pass	
Sensor Compon	ent Moisture	Present		Conditio	n No moisture p	resent	Status	pass	
Sensor Compon	ent Rotomete	er Condition	1	Conditio	n Clean and dry		Status	pass	
Sensor Compon	ent System M	Memo		Conditio	n		Status	pass	
Sensor Compon	ent Tubing C	Condition		Conditio	n Good		Status	pass	
Sensor Compon	ent Filter Dis	tance		Conditio	n 4.5 cm		Status	pass	

Ozone Data Form

Mfg	Serial Number Ta	Site	Tecl	hnician		Site Visi	it Date	Parame	eter	Owner II	D
ThermoElectron Inc	1106347326	SND152	Eric	: Hebert		03/05/2	014	Ozone		000725	
~	4.00500			Mfg		Thermo			rameter 020	ne	
•	1.00529 Slope: 0.52037 Intercept	0.0000		-		 					
			- K	Serial N	umber	49CPS-7	70008-36	64 Tf	er Desc. Ozo	ne primary	stan
CorrCoff	0.99982 CorrCoff	0.0000		Гfer ID		01110					
DAS 1:	DAS 2:		5	Slope			1.00707	7 Inter	cept	-0.21	032
A Avg % Diff: A N	Max % Di A Avg	%Dif A Max	% Di	•		L			-		
1.3%	1.9%			Cert Da	te		1/8/2014	+ Cori	Coff	1.000	000
UseDescription:	ConcGroup:	Tfer Raw:	Tfer C	orr:	Sit	te:	Site	Unit:	PctDiffe	rence:	
primary	1	0.47	0.67	7	0.0	00	ppb				
primary	2	28.51	28.5	1	27.	.97	ppb			-1.89%	
primary	3	49.64	49.5	0	49.	.04	ppb			-0.93%	
primary	4	76.80	76.4	6	77.	.67	ppb			1.58%	
primary	5	108.51	107.9	95	107	.20	ppb			-0.69%	
Sensor Compone	nt Cell B Noise		Condition	1.0 pp	b			Status	pass		
Sensor Compone	nt Cell B Tmp.		Condition	1				Status	pass		
Sensor Compone	nt Fullscale Voltage		Condition	N/A				Status	pass		
Sensor Compone	nt Inlet Filter Conditi	on	Condition	Clean				Status	pass		
Sensor Compone	nt Line Loss		Condition	Not te	sted			Status	pass		_
Sensor Compone			Condition					Status	n.255		
Sensor Compone			Condition					Status	pass		
Sensor Compone	Cell B Freq.		Condition	1 92.6 k	Hz			Status	pass		
Sensor Compone	nt System Memo		Condition	n				Status	pass		
Sensor Compone	nt Sample Train		Condition	Good				Status	pass		
Sensor Compone	nt Cell B Pressure		Condition	n				Status	pass		
Sensor Compone	nt Cell B Flow		Condition	1 0.70 lp	om			Status	pass		
Sensor Compone	ent Cell A Tmp.		Condition	1 31.1 C	;			Status	pass		
Sensor Compone	nt Cell A Pressure		Condition	1 701 m	mHg			Status	pass		7
Sensor Compone	nt Cell A Noise		Condition	1.1 pp	b			Status	pass		_
Sensor Compone			Condition					Status			
Sensor Compone			Condition					Status			
	Battery Backup		Condition					Status			
Sensor Compone	ant Zero Voltage		Condition	N/A				Status	pass		

Temperature Data Form

Sensor Component Blower

Sensor Component System Memo

Mfg	Serial Number Ta	Site	Те	chnician	Site Visit Date	Paramo	eter	Owner ID
RM Young	14038	SND152	Er	ic Hebert	03/05/2014	Temper	ature	06405
				Mfg	Eutechnics	Pa	rameter	emperature
				Serial Number	01D102193	Tf	er Desc.	TD translator
				Tfer ID	01231			
DAS 1:	DAS 2:			Slope	1.0013	33 Inte	rcept	-0.05731
Abs Avg Err		g Err Abs	Max Er	Cert Date	12/27/20	13 Corr	rCoff	1.00000
			Mfg	Eutechnics	Pa	rameter	emperature	
				Serial Number	01H0060	Tf	er Desc.	TD probe
				Tfer ID	01230			
				Slope	1.0013	1.00133 Inte		-0.05731
				Cert Date	12/27/20	13 Corr	rCoff	1.00000
0.24	0.34							
UseDesc.:	Test type: In	outTmpRaw	InputTmpCo	orr.: OutputTmpS	Signal: OutputSi	gnalEng:	OSE Unit:	Difference:
	emp Low Range	0.05	0.11	0.000	0.	3	С	0.16
1 0	emp Mid Range	24.42	24.44	0.000			C	-0.23
primary Te	emp High Range	44.95	44.95	0.000	44	.6	С	-0.34
Sensor Compo	nent Shield		Conditio	Moderately cle	an	Status	pass	
Sensor Compo	nent Blower Status Swi	tch	Conditio	N/A		Status	pass	

Condition Functioning

Condition

Status pass

Status pass

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	SND152	Eric Hebert	03/05/2014	Shelter Temperature	none
DAS 1:	DAS 2: Max Er Abs Avg 0.70	J L	Effic HebertMfgSerial NumberTfer IDSlopeCert DateMfgSerial NumberTfer IDSlopeSlope	03/05/2014 Eutechnics 01D102193 01231 1.0013 12/27/201 Eutechnics 01H0060 01230 1.0013	Parameter She Tfer Desc. RTI Intercept CorrCoff Parameter She Tfer Desc. RTI	elter Temperatur D translator -0.05731 1.00000 elter Temperatur
			Cert Date	12/27/201	3 CorrCoff	1.00000

UseDesc.:	Test type:	InputTmpRaw	InputTmpCorr.:	OutputTmpSignal:	OutputSignalEng:	OSE Unit:	Difference:
primary	Temp Mid Range	17.29	17.32	0.000	17.3	С	-0.06
primary	Temp Mid Range	23.69	23.72	0.000	23.0	С	-0.7

Infrastructure Data For

Site ID	SND152	Technician Eric Hel	bert Site Visit Date 03/05/2014
Shelter	·Make	Shelter Model	Shelter Size
Ekto		8810	640 cuft
A CONTRACTOR OF THE			

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

Field Systems Comments

1 Parameter: DasComments

The sample tower is leaning approximately 10 degrees from vertical.

2 Parameter: SitingCriteriaCom

The site is located on an active research farm with cattle and poultry. Cattle are fed within 100 meters of the site. A Climate Reference Network site is located on the farm on the south side of Hwy 68 which is a better location for the CASTNET site.

3 Parameter: ShelterCleanNotes

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

4 Parameter: MetOpMaintCom

The temperature sensor signal cable is beginning to show signs of wear.

Site ID SND152	Technician Eric Hebert	Site Visit Date 03/	/05/2014
A Street		USGS Map	Crossville
Site Sponsor (agency)	EPA	and the state of the second second	
Operating Group	Auburn Univ./private	Map Scale	
AQS #	01-049-9991	Map Date	
Meteorological Type	R.M. Young		
Air Pollutant Analyzer	Ozone, PM10	QAPP Latitude	
Deposition Measurement	dry, wet,	QAPP Longitude	
Land Use	Agriculture, Dairy	QAPP Elevation Meters	
Terrain	plateau, gently rolling	QAPP Declination	
Conforms to MLM	Marginally	QAPP Declination Date	
Site Telephone	(256) 528-7175	Audit Latitude	34.28900
Site Address 1	Sand Mountain Research & Extension	Audit Longitude	-85.97006
Site Address 2	13112 Hwy 68	Audit Elevation	34
County	DeKalb	Audit Declination	-3
City, State	Crossville, AL	Present	
Zip Code	35962	Fire Extinguisher 🗹	No inspection date
Time Zone	Eastern	First Aid Kit	
Primary Operator		Safety Glasses	
Primary Op. Phone #		Safety Hard Hat 🔽	
Primary Op. E-mail		Climbing Belt	
Backup Operator		Security Fence	
Backup Op. Phone #		Secure Shelter	
Backup Op. E-mail		Stable Entry Step 🔽	
Shelter Working Room 🔽	Make Ekto M	lodel 8810	Shelter Size 640 cuft
Shelter Clean	Notes The shelter is kept clean, near	, and very well organized.	
Site OK	Notes		

Field Systems Data Form

SND152

F-02058-1500-S2-rev001

Site ID

Technician Eric Hebert

Site Visit Date 03/05/2014

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		
Major industrial complex	10 to 20 km		
City > 50,000 population	40 km		
City 10,000 to 50,000 population	10 km]
City 1,000 to 10,000 population	5 km		
Major highway, airport or rail yard	2 km		
Secondary road, heavily traveled	500 m		
Secondary road, lightly traveled	200 m		
Feedlot operations	500 m	100 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 on an active research farm with cattle and poultry. Cattle are fed within 100 meters of the site. A Climate Reference Network site is located on the farm on the south side of Hwy 68 which is a better location for the CASTNET site.

Fi	eld Systen	ns Dat	a Form		F-02058-1500-S3-rev001				
Site	ID SND1	52	Technician Er	ic Hebert	Site Visit Date 03/05/2014				
1	Are wind spee being influence		ection sensors sited so as tructions?	s to avoid	N/A				
2				N/A					
3	Are the tower		The second s		N/A				
4			ields pointed north or po rces such as buildings, w						
5	conditions? (i.	e. ground ot steeply	H sensors sited to avoid below sensors should be sloped. Ridges, hollows, be avoided)	e natural					
6	Is the solar rad	liation se	nsor plumb?		N/A				
7	Is it sited to av light?	oid shadi	ng, or any artificial or r	eflected	N/A				
8	Is the rain gau	ge plumb	?		N/A				
9	Is it sited to av towers, etc?	oid shelte	ering effects from buildin	ngs, trees,	N/A				
10	Is the surface facing north?	wetness so	ensor sited with the grid	surface	N/A				
11	Is it inclined a	pproxim	ately 30 degrees?		N/A				
Dre	vido onv odditi	onal ovni	anation (photograph or	akatah if paga	y) regarding conditions listed above	or any other features			

Field Systems Data Form						F-02058-1500-S4-rev00			
Site	ID	SND152	Technician [Eric Hebert		Site Visit Date 03/05	5/2014		
		he meterological sensor on, and well maintained		ntact, in good					and the second
 Are all the meteorological sensors operational online, and reporting data? 									
3	Are the	shields for the temper	ature and RH so	ensors clean?					
4	Are the	e aspirated motors worl	king?						
5 Is the solar radiation sensor's lens clean and free of scratches?				ree of		N/A			
6	Is the s	urface wetness sensor g	grid clean and u	ndamaged?		N/A			
7		e sensor signal and pow on, and well maintained		in good		Signs of wear			
		e sensor signal and pow ne elements and well ma		tions protected		N/A			
Par	ameter	Ma	anufacturer	Model		S/N	С	lient ID	
Tem	perature	e RM	1 Young	41342	200.00	14038	06	6405	
		additional explanation an-made, that may affe			ary)	regarding conditions li	sted above, or	any other featu	ıres,
The temperature sensor signal cable is beginning to show signs of wear.									

Fie	ld Systems Data F	orm		F-02058-1500-S5-rev001			
Site	ID SND152	Technician Eric Hebert		Site Visit Date 03/05/2014			
	Siting Criteria: Are the pollu	itant analyzers and deposition eq	uipr	nent sited in accordance with 40 CFR 58, Appendix E			
	Do the sample inlets have at unrestricted airflow?	least a 270 degree arc of					
2	Are the sample inlets 3 - 15 n	neters above the ground?					
	Are the sample inlets > 1 met and 20 meters from trees?	ter from any major obstruction,					
	Pollutant analyzers and depo	sition equipment operations and	mai	intenance			
	Do the analyzers and equipm condition and well maintaine						
	Are the analyzers and monitoreporting data?	ors operational, on-line, and					
3	Describe ozone sample tube.			1/4 teflon by 12 meters			
4	Describe dry dep sample tub	е.		3/8 teflon by 12 meters			
	Are in-line filters used in the indicate location)	ozone sample line? (if yes		At inlet only			
	Are sample lines clean, free obstructions?	of kinks, moisture, and					
7	Is the zero air supply desicca	nt unsaturated?					
8	Are there moisture traps in t	he sample lines?					
	9 Is there a rotometer in the dry deposition filter line, and is it clean?			Clean and dry			
Para	ameter N	Ianufacturer Model		S/N Client ID			

Parameter	Manufacturer	Model	S/IN	Client ID	
Sample Tower	Aluma Tower	В	none	000148	
Ozone	ThermoElectron Inc	49i A1NAA	1106347326	000725]
Zero air pump	Werther International	C 70/4	000814279	06867	
Filter pack flow pump	Thomas	107CAB18	060300020200	04855	

Fie	eld Sy	stems Data Fo	orm			F-02058-1500-S6-rev001			
Site	ID	SND152	Technician	Eric Hebert		Site Visit Date	03/05/2014		
	DAS, se	ensor translators, and j	peripheral equi	pment operation	<u>ns ai</u>	nd maintenance			
1	Do the well ma	DAS instruments appe intained?	ar to be in good	l condition and					
2		the components of the , backup, etc)	DAS operation	al? (printers,					
3		analyzer and sensor sign protection circuitry		through		Met sensors only			
4		signal connections pro intained?	otected from the	e weather and					
5	Are the	signal leads connected	l to the correct	DAS channel?					
6	Are the ground	DAS, sensor translato ed?	rs, and shelter	properly					
7	Does th	e instrument shelter h	ave a stable pov	ver source?					
8	Is the in	nstrument shelter temp	erature control	lled?					
9	Is the n	net tower stable and gr	ounded?			Stable	G	rounded	
10	Is the s	ample tower stable and	l grounded?						- series
11	Tower	comments?							
								100000000000000000000000000000000000000	

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D520	unknown	000255
DAS	Campbell	CR3000	2135	000357
Modem	Raven	V4221-V	0808337422	06458

The sample tower is leaning approximately 10 degrees from vertical.

SND 152 Technician Protection Sum service Vind speed sensor Vind sensor translator Vind sensor translator <t< th=""><th>Field Systems Data</th><th>For</th><th>m</th><th></th><th></th><th></th><th></th><th>F-02</th><th>058-</th><th>1500-S'</th><th>7-rev001</th></t<>	Field Systems Data	For	m					F-02	058-	1500-S'	7-rev001
Deschar state verber cequired instrument and equipment manuals? Vini di speed sensor Vini di speed sensor I di di direction sensor I di speed sensor <tdi di="" sensor<="" speed="" td=""></tdi>	Site ID SND152		Tech	nician	Eric Hebert		Site Visit Date	03/05/2014		1	
Deschar state verber cequired instrument and equipment manuals? Vini di speed sensor Vini di speed sensor I di di direction sensor I di speed sensor <tdi di="" sensor<="" speed="" td=""></tdi>	Sec. Sec.										
Yes No N/A Yes No N/A Wind direction sensor Data logger H H Camperature sensor Strip chart recorder H H Camperature sensor No N/A H Solar radiation sensor No No N/A Surface witheses sensor No N/A H Solar radiation sensor No No N/A Wind direction sensor No N/A H Solar radiation sensor No N/A H Wind sensor translator No N/A H Camperature translator No N/A H Humidity sensor translator No N/A H Solar radiation translator No N/A H Humidity sensor translator No N/A H Humidity sensor translator No N/A H Surface wither sensor N/A H H Humidity sensor translator No N/A H Humidity sensor translator No N/A H Humidity sensor translator No H Surface wither sensor No H Humidity sensor translator No H Humidity sensor translator No H Surface wither sensor No Surface wither sensor No <th></th>											
Wind speed sensor Ø Data logger Ø Data logger Ø Ø Data logger Ø Ø Bata logger Ø Ø<th>Does the site have the require</th><th>220000</th><th>3 6 6 6 C 1</th><th>1000000000</th><th>THE REPORT OF THE REPORT OF</th><th>nuals?</th><th></th><th></th><th></th><th></th><th></th>	Does the site have the require	220000	3 6 6 6 C 1	1000000000	THE REPORT OF THE REPORT OF	nuals?					
Wind direction sensor Image: Im	Wind spood sonsor	Contraction of the local division of the loc				to logger		Contract of the second s		N/A	
Temperature sensor Image: Strip chair recorder Relative humidity sensor Image: Computer Solar radiation sensor Image: Computer Surface wetness sensor Image: Computer Wind sensor translator Image: Computer Temperature translator Image: Computer Solar radiation translator Image: Computer Strip Law Met the recurrent and meter Image:											
Relative humidity sensor Computer Solar radiation sensor Modem Surface wetness sensor Printer Wind sensor translator Printer Umidity sensor translator Printer Iemperature translator Printer Iemperature translator Printer UPS Printer Solar radiation translator Printer Iemperature translator Printer Iemperature translator Printer Iemperature translator Printer Solar radiation translator Printer Iemperature translator Printer Solar radiation translator Printer Iemperature translator Printer Solar radiation translator Printer Immidity sensor translator Printer Solar radiation translator Printer Immidity sensor translator Printer Solar radiation translator Printer Immidity sensor translator Printer											
Solar radiation sensor						27.000.000.000	- ceoruer			199 <u>9-199</u> 2-1993	
Surface wetness sensor Wind sensor translator Care air pump Humidity sensor translator Surge protector Surge protector Surge protector Otome analyzer Shelter heater Shelter air conditioner Correat Correat Station Log Station Reports Station Reports Station Reports Station Reports Station Log properly completed during every site visit? Are the Status Report Forms being completed and current? Are the Status Report Forms being completed and current? Are the chain-of-custody forms properly used to document and current? Are the chain-of-custody forms properly used to document and current? Control charts not used						845 AN 1963 AN					
Wind sensor translator V Zero air pump V Temperature translator V Filter flow pump V Humidity sensor translator V UPS Solar radiation translator V UPS Tipping bucket rain gauge V Lightning protection device Ocone analyzer V Shelter heater Filter pack flow controller V Shelter air conditioner Filter pack flow controller V Shelter air conditioner Station Log V V Stie Ops Manual Oct 2011 HASP Oct 2011 HASP Oct 2011 Filed Ops Manual Oct 2011 Gatibration Reports V Vore maintenance schedul V											
Temperature translator Image: Surge protector Solar radiation translator Image: Surge protector Corner analyzer Image: Surge protector Filter pack flow controller Image: Surge protector Filter pack flow controller Image: Surge protector Does the site have the required and most recent QC documents and report forms? Does the site have the required and most recent QC documents and report forms? Station Log Image: Surge protector Station Reports Image: Surge protector Ozone s/s/p Control Charts Image: Surge protector Preventive maintenance schedut Image: Surge protector Image: Surge protector Image: Surge pro			And States and States		Zer	ro air pu	mp				
Humidity sensor translator Image: Surge protector Solar radiation translator Image: UPS Tipping bucket rain gauge Image: UPS Ozone analyzer Image: UPS Pitter pack flow controller Image: UPS Filter pack flow controller Image: UPS Present Image: UPS Station Log Image: UPS Station Reports Image: UPS Image: UPS Image: UPS Preventive maintenance schedul Image: UPS Image: UPS <th>Temperature translator</th> <th></th> <th></th> <th></th> <th></th> <th>1000 C 1000 C 100</th> <th>Cardo Adres and South State</th> <th></th> <th></th> <th></th> <th></th>	Temperature translator					1000 C 1000 C 100	Cardo Adres and South State				
Tipping bucket rain gauge Image: Shelter heater Ozone analyzer Shelter heater Filter pack flow controller Shelter heater Filter pack flow controller Shelter air conditioner Present Current Station Log Image: Shelter air conditioner SSRF Image: Shelter air conditioner Station Log Image: Shelter air conditioner Station Reports Image: Shelter air conditioner Control Charts Image: Shelter air conditioner Image: Shelter air conditioner Image: Shelter air conditioner Station Reports Image: Shelter air conditioner Current Image: Shelter air conditioner Image: Shelter air conditioner Image: Shelter air conditioner Image: Shelter air conditioner Station Reports Image: Shelter air conditioner Image: Shelter air conditioner Image: Shelter air conditioner Image: Shelter air conditioner Image: Shelter air conditioner Image: Shelter air conditioner	Humidity sensor translator										
Ozone analyzer Filter pack flow controller Shelter heater Filter pack MFC power supply Dees the site have the required and most recent QC documents and report forms? Dees the site have the required and most recent QC documents and report forms? Present Station Log SSRF Site Ops Manual Oct 2011 HASP Is the station log properly completed during every site visit? </th <th>Solar radiation translator</th> <th></th> <th></th> <th></th> <th>UP</th> <th>S</th> <th></th> <th></th> <th></th> <th></th> <th></th>	Solar radiation translator				UP	S					
Filter pack MFC power supply Present Current Station Log STRF Oct 2011 Site Ops Manual Oct 2011 Calibration Reports Oct 2011 Calibration Reports Ozone z/s/p Control Charts Preventive maintenance schedul 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 <th>Tipping bucket rain gauge</th> <th></th> <th></th> <th></th> <th>Lig</th> <th>htning p</th> <th>rotection device</th> <th></th> <th></th> <th></th> <th></th>	Tipping bucket rain gauge				Lig	htning p	rotection device				
Filter pack MFC power supply	Ozone analyzer				She	elter hea	ter				
Desite have the required and most recent QC documents and report forms? Present Current Station Log Image: Control Charts Image: Control Charts Site Ops Manual Oct 2011 Image: Control Charts Field Ops Manual Image: Control Charts Image: Control Charts Corone z/s/p Control Charts Image: Control Charts Image: Control Charts Preventive maintenance schedul Image: Control Charts Image: Control Charts 1 Is the station log properly completed and current? Image: Control Charts properly used to document as ample transfer to and from lab? 3 Are the chain-of-custody forms properly completed and current? Image: Control Charts not used 4 Are ozone z/s/p control charts properly completed and current? Image: Control Charts not used	Filter pack flow controller				She	elter air	conditioner				
Present Current Station Log Image: Control Charts SSR F Image: Control Charts Site Ops Manual Oct 2011 HASP Image: Control Charts Field Ops Manual Image: Control Charts Calibration Reports Image: Control Charts Ozone z/s/p Control Charts Image: Control Charts Preventive maintenance schedul Image: Control Charts 1 Is the station log properly completed and current? 2 Are the Site Status Report Forms being completed and current? 3 Are the chain-of-custody forms properly used to document and sample transfer to and from lab? 4 Are ozone z/s/p control charts properly completed and current?	Filter pack MFC power supply	7									
Station Log Image: station log in the station log properly completed and current? 1 Is the station log properly completed and from lab? 2 Are the chain-of-custody forms properly used to document sample transfer to and from lab? 4 Are ozone z/s/p control charts properly completed and current?	Does the site have the requ	ired a	nd mo	st recei	nt QC docume	nts and	report forms?				
SSRF Image: station log properly completed during every site visit? Image: station log properly completed during every site visit? Image: station log properly completed during every site visit? Image: station log properly completed during every site visit? Image: station log properly completed during every site visit? Image: station log properly completed during every site visit? Image: station log properly completed during every site visit? Image: station log properly completed during every site visit? Image: station log properly completed and current? Image: station log properly used to document sample transfer to and from lab? Image: station log properly completed and current?		Pres	ent					Curre	nt		
Site Ops Manual Image: Control Charts Field Ops Manual Image: Control Charts Calibration Reports Image: Control Charts Ozone z/s/p Control Charts Image: Control Charts Preventive maintenance schedul Image: Control Charts 1 Is the station log properly completed during every site visit? 2 Are the Site Status Report Forms being completed and current? 3 Are the chain-of-custody forms properly used to document sample transfer to and from lab? 4 Are ozone z/s/p control charts properly completed and current?	Station Log		✓ [No. of Concession, Name				
HASP Oct 2011 Field Ops Manual Image: Control Charts Calibration Reports Image: Control Charts Ozone z/s/p Control Charts Image: Control Charts Preventive maintenance schedul Image: Control Charts 1 Is the station log properly completed during every site visit? 2 Are the Site Status Report Forms being completed and current? 3 Are the chain-of-custody forms properly used to document sample transfer to and from lab? 4 Are ozone z/s/p control charts properly completed and current?	SSRF										
Field Ops Manual Calibration Reports Ozone z/s/p Control Charts Preventive maintenance schedul 1 Is the station log properly completed during every site visit? 2 Are the Site Status Report Forms being completed and current? 3 Are the chain-of-custody forms properly used to document sample transfer to and from lab? 4 Are ozone z/s/p control charts properly completed and current? Control charts not used	Site Ops Manual			Oct 201	1						
Calibration Reports Ozone z/s/p Control Charts Preventive maintenance schedul 1 Is the station log properly completed during every site visit? 2 Are the Site Status Report Forms being completed and current? 3 Are the chain-of-custody forms properly used to document sample transfer to and from lab? 4 Are ozone z/s/p control charts properly completed and current? Control charts not used	HASP			Oct 201	1						
Ozone z/s/p Control Charts Preventive maintenance schedul 1 2 1 2 1 2 1 2 3 2 4 2 2 3 2 3 2 3 3 2 3 3 3	Field Ops Manual										
Preventive maintenance schedul 1 <t< th=""><th>Calibration Reports</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></t<>	Calibration Reports										
 Is the station log properly completed during every site visit? Are the Site Status Report Forms being completed and current? Are the chain-of-custody forms properly used to document sample transfer to and from lab? Are ozone z/s/p control charts properly completed and current? Control charts not used 	Ozone z/s/p Control Charts										No.
 2 Are the Site Status Report Forms being completed and current? 3 Are the chain-of-custody forms properly used to document sample transfer to and from lab? 4 Are ozone z/s/p control charts properly completed and current? Control charts not used 	Preventive maintenance schedu	al [
current? 3 Are the chain-of-custody forms properly used to document sample transfer to and from lab? 4 Are ozone z/s/p control charts properly completed and current?	1 Is the station log properly completed during every site visit? ✓										
sample transfer to and from lab? 4 Are ozone z/s/p control charts properly completed and current? Control charts not used											
current?				rly used	l to document						
Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features,		arts p	roperl	y comp	leted and		ontrol charts not us	sed			
natural or man-made, that may affect the monitoring parameters:							egarding conditi	ions listed a	ibove, o	or any othe	r features,

Fi	eld S	ystems Data	a Form	F-02058-1500-S8-rev00				
Site	e ID	SND152	Technician	Eric Hebert		Site Visit Date	03/05/2014	
1 2	Has th course	e? If yes, when and	tended a formal CAS					
3	training course? If yes, when and who instructed?					IN NOCESSION AND INCOMESSION OF THE OP		
4	Are the		NET operational pro rator?	cedures being	<			
5			owledgeable of, and es? (including docum					

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

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

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

QC Check Performed

3

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

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

oliant

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

complete sample train i	including an	muers.		
Are the automatic and a	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:

~

~

Unknown

SSRF, call-in

Field Systems Data Form						F-02058-1500-S9-rev001				
Site	ID	SND152	Technic	tian Eric Hebert		Site Visit Dat	e 03/05/2014			
	Site ope	eration procedures								
1	Is the fi	lter pack being changed (every Tu	iesday as scheduled	?⊻	Filter changed morinings				
2	Are the correct	Site Status Report Form ly?	s being o	completed and filed						
3	Are dat schedul	a downloads and backup ed?	s being J	performed as		No longer required	d			
4	Are general observations being made and recorded? How?					SSRF, logbook				
5	Are site supplies on-hand and replenished in a timely fashion?									
6	5 Are sample flow rates recorded? How?				SSRF, logbook, ca	all-in				
7	Are san fashion	nples sent to the lab on a ?	regular	schedule in a timely						
8		ers protected from contai pping? How?	mination	during handling		Clean gloves on a	ind off			
9		site conditions reported ons manager or staff?	regularl	y to the field						
QC	Check P	erformed		Frequency			Compliant			
N	Iulti-poi	nt MFC Calibrations		Semiannually						
F	low Syst	em Leak Checks		Weekly						
F	ilter Pac	k Inspection								
F	Flow Rate Setting Checks Weekly									
V	Visual Check of Flow Rate Rotometer 🗹 Weekly						Repairing the second			
Ь	In-line Filter Inspection/Replacement Semiannually				CD 4 HG AT A					
S	Sample Line Check for Dirt/Water Weekly									
		additional explanation (p an-made, that may affect				y) regarding condi	tions listed above, o	or any other features,		

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
CO	W137-Sandy	Grenville-03/26/2014				
1	3/26/2014	Computer	Dell	000261	D520	23FNHB1
2	3/26/2014	DAS	Campbell	000401	CR3000	2529
3	3/26/2014	Elevation	Elevation	None	1	None
4	3/26/2014	Filter pack flow pump	Thomas	02758	107CAB18	001871
5	3/26/2014	Flow Rate	Apex	000652	AXMC105LPMDPCV	54771
6	3/26/2014	Infrastructure	Infrastructure	none	none	none
7	3/26/2014	Modem	Raven	06806	V4221-V	0936444095
8	3/26/2014	Ozone	ThermoElectron Inc	000726	49i A1NAA	1105347314
9	3/26/2014	Ozone Standard	ThermoElectron Inc	000441	49i A3NAA	CM08200017
10	3/26/2014	Sample Tower	Aluma Tower	03499	А	none
11	3/26/2014	Shelter Temperature	Campbell	none	107-L	none
12	3/26/2014	Siting Criteria	Siting Criteria	None	1	None
13	3/26/2014	Temperature	Climatronics	06693	100093	missing
14	3/26/2014	UPS	APC	none	650	unknown
15	3/26/2014	Zero air pump	Werther International	06878	C 70/4	000815254

DAS Data Form

DAS Time Max Error: 0.02

Mfg	Serial Nu	umber Site		Technician	Site Visit Date	Parameter	Use Desc.
Campbell	2529	CO	W137	Sandy Grenville	03/26/2014	DAS	Primary
Das Date: Das Time: Das Time: Das Day: Das Day: Das Day: Control Das Day: Control Das Day: Control Das Day: Das Day: Control Das Day: Das	Max Diff:	Audit Date Audit Time Audit Day High Channe Avg Diff: 1 0.000	Max Diff:	Mfg Serial Number Tfer ID Slope Cert Date Mfg Serial Number Tfer ID	Datel 4000392 01321 1.0000 2/13/201 Fluke 95740135 01311	0 Intercept	Source generator (D 0.00000 1.00000 DAS
Channel	Input I	OVM Output	DAS Output	InputUnit	OutputUnit	Difference	

Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference
7	0.0000	0.0000	0.0000	V	V	0.0000
7	0.1000	0.0999	0.0999	V	V	0.0000
7	0.3000	0.2998	0.2998	V	V	0.0000
7	0.5000	0.4997	0.4996	V	V	-0.0001
7	0.7000	0.6996	0.6995	V	V	-0.0001
7	0.9000	0.8995	0.8994	V	V	-0.0001
7	1.0000	0.9994	0.9993	V	V	-0.0001

Flow Data Form

Mfg	Serial Nun	nber Ta	Site	Тес	chnician	Site Visit I	Date Paran	neter	Owner ID
Apex	54771		COW137	Sa	ndy Grenville	03/26/2014	4 Flow R	late	000652
					Mfg Serial Number Tfer ID	BIOS 103424 01410		Parameter Flo	
					Slope	1.	00846 Inte	ercept	0.01358
					Cert Date	1/8	8/2014 Co	rrCoff	0.99997
DAS 1: A Avg % Diff: 2.04%	A Max % Di 2.04%	DAS 2: A Avg %	Dif A Max	« % Di	Cal Factor Z Cal Factor F Rotometer R	ull Scale	1.(0 01 .5	
Desc.	Test type	Input l/n	n Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignal	I PctDifference
primary	pump off	0.000	0.000	0.01	0.000	0.00	l/m	l/m	
primary	leak check	0.000	0.000	0.00	0.000	0.00	l/m	l/m	
primary	test pt 1	1.495	1.470	1.49	0.000	1.50	l/m	l/m	2.04%
primary	test pt 2	1.492	1.470	1.49	0.000	1.50	l/m	l/m	2.04%
primary	test pt 3	1.493	1.470	1.49	0.000	1.50	l/m	l/m	2.04%
Sensor Comp	onent Leak Tes	st		Conditio	n		Status	pass	
Sensor Comp	onent Tubing C	ondition		Conditio	n Good		Status	pass	
Sensor Comp	onent Filter Pos	sition		Conditio	n Good		Status	pass	
Sensor Comp	onent Rotomete	er Conditic	on	Conditio	n Clean and dry		Status	pass	
Sensor Comp	onent Moisture	Present		Conditio	n No moisture p	resent	Status	pass	
Sensor Comp	onent Filter Dis	tance		Conditio	n 4.5 cm		Status	pass	
Sensor Comp	onent Filter Dep	oth		Conditio	n 2.0 cm		Status	pass	
Sensor Comp	onent Filter Azi	muth		Conditio	n 170 deg		Status	pass	
Sensor Comp	onent System N	/lemo		Conditio	n		Status	pass	

Ozone Data Form

Mfg	Se	rial Number Ta	Site	Te	chnician		Site Visi	t Date	Parame	eter	Owner I	D
ThermoElectron Ir	nc 11	05347314	COW137	Sa	andy Grei	nville	03/26/20	014	Ozone		000726	
Slope: Intercept CorrCoff	0.24	997Slope:4297Intercept9994CorrCoff	0.0000	0	Mfg Serial N		ThermoE 49C-731			rameter ozo er Desc. Ozc		r
DAS 1: A Avg % Diff: A 2.1%	Max	DAS 2: % Di A Avg % 2.8%	6Dif A Max	% Di	Tfer ID Slope Cert Da		01100	1.00458 /10/2013		•cept •Coff	-0.11 1.00	
UseDescriptio	n:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	Unit:	PctDiffe	erence:	
primary		1	0.05	0.	16	0.8	85	ppb				
primary		2	31.27	31.	.24	31.	.86	ppb			1.98%	
primary		3	50.15	50.	.03	50.	.87	ppb			1.68%	
primary		4	79.55	79.		80.		ppb			1.89%	
primary		5	101.26	100	.91	103	5.70	ppb			2.76%	
Sensor Compo	nent	Cell B Noise		Conditio	0.6 pp	b			Status	pass		
Sensor Compo	nent	Cell B Tmp.		Conditio	on				Status	pass		
Sensor Compo	nent	Fullscale Voltage		Conditio	n N/A				Status	pass		
Sensor Compo	nent	Inlet Filter Conditio	n	Conditio	on Clean				Status	pass		
Sensor Compo	nent	Line Loss		Conditio	on Not te	sted			Status	pass		
Sensor Compo	nent	Offset		Conditio	on 0.20				Status	pass		
Sensor Compo	nent	Span		Conditio	on 1.020				Status	pass		
Sensor Compo	nent	Cell B Freq.		Conditio	on 99 kH	Z			Status	pass		
Sensor Compo	nent	System Memo		Conditio	on				Status	pass		
Sensor Compo	nent	Sample Train		Conditio	on Good				Status	pass		
Sensor Compo	nent	Cell B Pressure		Conditio	on				Status	pass		
Sensor Compo	nent	Cell B Flow		Conditio	on 0.72 l	pm			Status	pass		
Sensor Compo	nent	Cell A Tmp.		Conditio	on 29.9 ()			Status	pass		
Sensor Compo	nent	Cell A Pressure		Conditio	on 683.1	mmHg			Status	pass		
Sensor Compo	nent	Cell A Noise		Conditio	on 0.9 pp	b			Status	pass		
Sensor Compo	-				on 108 k				Status			
Sensor Compo	nent	Cell A Flow			on 0.77 l				Status			
Sensor Compo	nent	Battery Backup		Conditio	Not fu	inctioning			Status	Fail		
Sensor Compo	nent	Zero Voltage		Conditio	n N/A				Status	pass		

Temperature Data Form

Mfg	Serial Number Ta	Site	1	Techni	ician	Site V	isit Date	Param	eter	Owner ID	
Climatronics	missing	COW137		Sandy	/ Grenville	03/26	6/2014	Temper	ature	06693	
				Mf	g	Extec	h	Ра	rameter Te	mperature	
				Ser	rial Number	H232	734	Tf	er Desc. R	D	
				Tfe	er ID	01227	7				
DAS 1:	DAS 2:			Slo	ope		1.0028	8 Inte	rcept	-0.15155	; ;
Abs Avg Err Abs			Max Er	Ce	rt Date		1/8/201	4 Cor	rCoff	1.00000)
0.08	0.11										
UseDesc.	Test type In	putTmpRaw	InputTmp	oCorr.	OutputTmpS	Signal	OutputSig	gnalEng	OSE Unit	Difference	
primary Temp	Low Range	0.58	0.73	3	0.000		0.6	5	С	-0.11	
primary Temp	Mid Range	24.89	24.9	7	0.000		24.	9	С	-0.04	
primary Temp	High Range	49.14	49.1	5	0.000		49.	1	С	-0.09	
Sensor Compone	nt Shield		Cond	ition C	Clean			Status	pass		
Sensor Compone	nt Blower		Cond	ition F	Functioning			Status	pass		
Sensor Compone	nt Blower Status Sw	itch	Cond	ition 🛚	N/A			Status	pass		
Sensor Compone	nt System Memo		Cond	ition				Status	pass		

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	COW137	Sandy Grenville	03/26/2014	Shelter Temperature	none
DAS 1:	DAS 2:		Mfg	Extech	Parameter She	Iter Temperatur
Abs Avg ErrAb0.46	os Max Er Abs Avg 0.65	Err Abs Max Er	Serial Number	H232734	Tfer Desc. RTD)
			Tfer ID	01227		
			Slope	1.0028	8 Intercept	-0.15155
			Cert Date	1/8/201	4 CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	21.19	21.28	0.000	21.0	С	-0.27
primary	Temp Mid Range	21.44	21.53	0.000	21.1	С	-0.47
primary	Temp Mid Range	23.37	23.45	0.000	22.8	С	-0.65
Sensor Con	nponent System Memo	1	Condition		Status	pass	

Infrastructure Data For

Site ID	COW137	Technician Sandy	y Grenville Site Visit Date 03/26/2014
Shelter	Make	Shelter Model	Shelter Size
Ekto		8810	640 cuft

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

Field Systems Comments

1 Parameter: DasComments

One leg of the meteorological tower has two holes.

2 Parameter: SitingCriteriaCom

Construction was completed on new building with a parking lot, in October 2004. The parking area is within 60 meters of the site.

3 Parameter: ShelterCleanNotes

The shelter is in fair condition with some rot near the air conditioner and in the corners. It has degraded since the previous audit. It was reported that the roof leaks. The shelter is kept very clean, neat, and well organized.

Field Systems Data Form	

F-02058-1500-S1-rev002

Site ID COW137	Technician Sandy Grenville	Site Visit Date 03/26	6/2014
Site Sponsor (agency)	EPA/USFS	USGS Map	Prentiss
Operating Group	USFS	Map Scale	
	37-113-9991	Map Date	
AQS #		Map Date	
Meteorological Type	Climatronics		
Air Pollutant Analyzer	Ozone	QAPP Latitude	
Deposition Measurement	dry, wet	QAPP Longitude	
Land Use	woodland - mixed	QAPP Elevation Meters	
Terrain	complex	QAPP Declination	
Conforms to MLM	No	QAPP Declination Date	
Site Telephone	8283697919	Audit Latitude	35.060527
Site Address 1	Southeastern Forest Experiment Statio	Audit Longitude	-83.43034
Site Address 2	3160 Coweeta Lab Road	Audit Elevation	683
County	Macon	Audit Declination	-5.1
City, State	, NC	Present	
Zip Code	28763	Fire Extinguisher 🔽	No inspection date
Time Zone	Eastern	First Aid Kit	
Primary Operator		Safety Glasses	
Primary Op. Phone #		Safety Hard Hat	
Primary Op. E-mail		Climbing Belt	
Backup Operator		Security Fence	
Backup Op. Phone #		Secure Shelter	
Backup Op. E-mail		Stable Entry Step 🔽	
Shelter Working Room	Make Ekto Me	odel 8810	Shelter Size640 cuft
Shelter Clean		udit. It was reported that the ro	tioner and in the corners. It has of leaks. The shelter is kept very
Site OK	Notes		
Driving Directions			

Field Systems Data Form

COW137

F-02058-1500-S2-rev002

Site ID

Techn

Technician Sandy Grenville

Site Visit Date 03/26/2014

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

Siting Distances OK

Siting Criteria Comment

Construction was completed on new building with a parking lot, in October 2004. The parking area is within 60 meters of the site.

Fi	eld Systems Data Form	F-02058-1500-S3-rev002
Site	COW137 Technician Sandy Grenville	Site Visit Date 03/26/2014
1	Are wind speed and direction sensors sited so as to avoid being influenced by obstructions?	N/A
2	Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	N/A
3	Are the tower and sensors plumb?	N/A
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?	
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	
6	Is the solar radiation sensor plumb?	N/A
7	Is it sited to avoid shading, or any artificial or reflected light?	N/A
8	Is the rain gauge plumb?	N/A
9	Is it sited to avoid sheltering effects from buildings, trees, towers, etc?	N/A
10	Is the surface wetness sensor sited with the grid surface facing north?	N/A
11	Is it inclined approximately 30 degrees?	N/A

Field Systems Data Form F-02058-1500-S4-rev002 Site ID COW137 Technician Sandy Grenville Site Visit Date 03/26/2014 ✓ Temperature only 1 Do all the meterological sensors appear to be intact, in good condition, and well maintained? ✓ Temperature only 2 Are all the meteorological sensors operational online, and reporting data? ✓ Are the shields for the temperature and RH sensors clean? 3 ✓ Are the aspirated motors working? 4 ✓ N/A Is the solar radiation sensor's lens clean and free of 5 scratches? ✓ N/A Is the surface wetness sensor grid clean and undamaged? 6 ✓ 7 Are the sensor signal and power cables intact, in good condition, and well maintained? ✓ Are the sensor signal and power cable connections protected 8

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:

from the elements and well maintained?

Fi	Field Systems Data Form					F-02058-1500-S5-rev002
Site	e ID	COW137	Technician	Sandy Grenville		Site Visit Date 03/26/2014
	Siting C	riteria: Are the pollut	ant analyzers a	nd deposition eq	<u>uipr</u>	ment sited in accordance with 40 CFR 58, Appendix E
1		ample inlets have at le cted airflow?	east a 270 degre	e arc of		
2	Are the s	sample inlets 3 - 15 m	eters above the	ground?	✓	
3		sample inlets > 1 meten neters from trees?	er from any maj	jor obstruction,		
	<u>Pollutan</u>	t analyzers and depos	sition equipmen	t operations and	mai	<u>intenance</u>
1		nalyzers and equipme n and well maintained		e in good		
2	Are the a reporting	analyzers and monito g data?	rs operational,	on-line, and		
3	Describe	e ozone sample tube.				1/4 teflon by 12 meters
4	Describe	e dry dep sample tube	•			3/8 teflon by 12 meters
5		ne filters used in the o location)	ozone sample lin	ne? (if yes		At inlet only
6	Are sam obstruct	ple lines clean, free of ions?	° kinks, moistur	e, and	✓	
7	Is the ze	ro air supply desiccan	nt unsaturated?		✓	
8	Are ther	e moisture traps in th	e sample lines?		✓	Flow line only
9	Is there a clean?	a rotometer in the dry	y deposition filt	er line, and is it		Clean and dry

Fi	Field Systems Data Form						F-02	058-15	00-S6-rev002
Site	e ID	COW137	Technician	Sandy Grenville		Site Visit Date	03/26/2014	L .	
	DAS, se	nsor translators, and j	peripheral equi	oment operation	is ai	nd maintenance			
1	Do the I well mai	DAS instruments appe intained?	ar to be in good	condition and					
2		he components of the backup, etc)	DAS operation	al? (printers,					
3		nalyzer and sensor sig g protection circuitry?		hrough	✓	Met sensors only			
4		signal connections pro intained?	otected from the	e weather and					
5	Are the	signal leads connected	l to the correct	DAS channel?					
6	Are the grounde	DAS, sensor translato cd?	rs, and shelter j	properly					
7	Does the	e instrument shelter h	ave a stable pov	ver source?	✓				
8	Is the in	strument shelter temp	oerature control	led?	✓				
9	Is the m	et tower stable and gr	ounded?			Stable		Grounded	
10	Is the sa	mple tower stable and	l grounded?					⊻	
11	Tower c	omments?						Ŀ	

One leg of the meteorological tower has two holes.

Field S	ystems Data	a Fo	rm			F-02	2058-	1500-S7-rev002
Site ID	COW137		Techn	i <mark>cian</mark> Sano	dy Grenville Site Visit Date)3/26/2014	1	
Docume	<u>ntation</u>							
Does the	<u>e site have the requ</u>	ired in	strumer	<u>nt and equi</u>	<u>pment manuals?</u>			
		Yes	No	N/A		Yes	No	N/A
Wind speed					Data logger			
	ction sensor				Data logger			
Temperatu					Strip chart recorder			
	imidity sensor				Computer			
Solar radia					Modem		\checkmark	
	tness sensor				Printer			
Wind sense	or translator			\checkmark	Zero air pump			
-	re translator			\checkmark	Filter flow pump			
Humidity s	ensor translator			\checkmark	Surge protector			
Solar radia	tion translator			\checkmark	UPS		\checkmark	
Tipping bu	cket rain gauge			\checkmark	Lightning protection device			
Ozone anal	lyzer	\checkmark			Shelter heater		\checkmark	
Filter pack	flow controller	\checkmark			Shelter air conditioner		\checkmark	
Filter pack	MFC power suppl	ly 🗌		\checkmark				
Does th	ne site have the req	uired a	and mos	t recent Q	<u>C documents and report forms?</u>			
		Pres	sent			Curre	ent	
Station Log	5		✓			\checkmark		
SSRF			✓			\checkmark		
Site Ops M	anual							
HASP			✓ F	eb 2014		\checkmark		
Field Ops N	Manual							
Calibration	n Reports		✓			\checkmark		
Ozone z/s/p	o Control Charts							
Preventive	maintenance scheo	dul						
1 Is the	station log properl	y comp	oleted d	uring every	v site visit? Minimal information			
2 Are th	e Site Status Repo	rt Forr	ns beins	g completed	l and			

- **3** Are the chain-of-custody forms properly used to document sample transfer to and from lab?
- 4 Are ozone z/s/p control charts properly completed and current?

current?

Control charts not used

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

Field Systems Data Form

Site	ID COW137 Technician Sandy Grenville		Site Visit Date 03/26/2014
1	Site operation procedures Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?		In Gainesville in 1987
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?		
3	Is the site visited regularly on the required Tuesday schedule?	✓	
4	Are the standard CASTNET operational procedures being flollowed by the site operator?	✓	
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)	✓	

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

QC Check Performed

Frequency

Frequency

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

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

OC	Check	Perfo	rmed
\mathbf{v}	Chiech		I IIICu

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

	requency	C
✓	Semiannually	✓
✓	Daily	✓
✓	As needed	✓
✓	Daily	\checkmark
✓	As needed	\checkmark
✓	Weekly	✓
✓	Every 3 weeks	\checkmark
	N/A	\checkmark
✓	Weekly	\checkmark
✓	Weekly	\checkmark

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

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

Unknown
SSRF, call-in

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

Compliant

Compliant

F-02058-1500-S8-rev002

Fi	eld Sy	stems Data Fo	orm				F-02058- 1	1500-S9-rev002		
Sit	e ID	COW137	Technicia	n Sandy Grenville)	Site Visit Date	03/26/2014			
	<u>Site ope</u>	eration procedures								
1	Is the fi	lter pack being change	d every Tues	day as scheduled	? ✓	Filter changed morn	ings			
2	Are the correctl	Site Status Report For y?	rms being cor	npleted and filed						
3	Are dat schedul	a downloads and back ed?	ups being per	formed as		No longer required				
4	Are gen	eral observations bein	g made and r	ecorded? How?	✓	SSRF				
5	Are site fashion	supplies on-hand and ?	replenished i	n a timely	✓					
6	Are sample flow rates recorded? How?				✓	SSRF, logbook, call-in				
7	Are san fashion	nples sent to the lab on ?	a regular sch	edule in a timely	✓					
8		ers protected from con pping? How?	tamination d	uring handling	✓	Clean gloves on and	d off			
9		site conditions reporte ons manager or staff?	ed regularly t	o the field						
QC	Check P	erformed	Fr	requency			Compliant			
I	Multi-poi	nt MFC Calibrations	✓ Se	miannually						
1	Flow Syst	em Leak Checks		eekly						
I	Filter Pac	k Inspection								
I	Flow Rate	e Setting Checks		eekly			\checkmark			
	Visual Ch	eck of Flow Rate Roto	meter 🗹 😡	eekly			\checkmark			
1	n-line Fil	ter Inspection/Replace	ement 🗹 Se	miannually						
5	Sample Li	ine Check for Dirt/Wa	ter 🔽 W	eekly						
	de energe		(an alaatah if maaaa) waaandina aan diti	and listed above on			

Field Systems Data Form

COW137

F-02058-1500-S10-rev002

Site ID

Techn

Technician Sandy Grenville

Site Visit Date 03/26/2014

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D520	23FNHB1	000261
DAS	Campbell	CR3000	2529	000401
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	001871	02758
Flow Rate	Арех	AXMC105LPMDPC	54771	000652
Infrastructure	Infrastructure	none	none	none
Modem	Raven	V4221-V	0936444095	06806
Ozone	ThermoElectron Inc	49i A1NAA	1105347314	000726
Ozone Standard	ThermoElectron Inc	49i A3NAA	CM08200017	000441
Sample Tower	Aluma Tower	A	none	03499
Shelter Temperature	Campbell	107-L	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	Climatronics	100093	missing	06693
UPS	APC	650	unknown	none
Zero air pump	Werther International	C 70/4	000815254	06878

Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
ESP	P127-Sandy	Grenville-03/27/2014				
1	3/27/2014	Computer	Dell	000322	D520	unknown
2	3/27/2014	DAS	Campbell	illegible	CR3000	3817
3	3/27/2014	Elevation	Elevation	None	1	None
4	3/27/2014	Filter pack flow pump	Thomas	02975	107CAB18	0493002476
5	3/27/2014	Flow Rate	Apex	000642	AXMC105LPMDPCV	54755
6	3/27/2014	Infrastructure	Infrastructure	none	none	none
7	3/27/2014	Modem	Raven	06606	H4223-C	0844355622
8	3/27/2014	Ozone	ThermoElectron Inc	000622	49i A1NAA	1009241785
9	3/27/2014	Ozone Standard	ThermoElectron Inc	000687	49i A3NAA	1030244809
10	3/27/2014	Sample Tower	Aluma Tower	03550	A	none
11	3/27/2014	Shelter Temperature	Campbell	none	107-L	none
12	3/27/2014	Siting Criteria	Siting Criteria	None	1	None
13	3/27/2014	Temperature	Climatronics	06692	100093	none
14	3/27/2014	Zero air pump	Werther International	06909	C 70/4	000829161

DAS Data Form

DAS Time Max Error:

0

Mfg	Serial Nu	mber S	ite	Technician	Site Visit Date	Parameter	Use Desc.
Campbell	3817	E	ESP127	Sandy Grenville	03/27/2014	DAS	Primary
Das Date: Das Time: Das Day: Low Channel: Avg Diff: 0.0001	3/27/2014 15:04:01 86 Max Diff: 0.0001	Audit Dat Audit Tin Audit Day High Chan Avg Diff: 0.00	ne 15:04:01 7 86 mel: Max Diff:	Mfg Serial Number Tfer ID Slope Cert Date Mfg Serial Number Tfer ID	Datel 4000392 01321 1.0000 2/13/201 Fluke 95740135 01311	0 Intercept	Source generator (D 0.00000 1.00000
Channel 7	Input D 0.0000	VM Output 0.000	DAS Output 0 0.000	InputUnit 0 V	OutputUnit V	Difference 0.0000	

Chaimer	mpat	Diniouput	Drib Output	mparome	outputome	Difference
7	0.0000	0.0000	0.0000	V	V	0.0000
7	0.1000	0.0999	0.0999	V	V	0.0000
7	0.3000	0.2997	0.2998	V	V	0.0001
7	0.5000	0.4996	0.4997	V	V	0.0001
7	0.7000	0.6996	0.6996	V	V	0.0000
7	0.9000	0.8995	0.8994	V	V	-0.0001
7	1.0000	0.9994	0.9993	V	V	-0.0001

Flow Data Form

Mfg	Serial Nun	nber Ta	Site	Tec	chnician	Site Visit I	Date Paran	neter	Owner ID
Арех	54755		ESP127	Sa	ndy Grenville	03/27/2014	4 Flow R	late	000642
					Mfg Serial Number Tfer ID	BIOS 103424 01410	1	Parameter Flo T fer Desc. Bl	
					Slope			ercept	0.01358
					Cert Date	1/8	8/2014 Co	rrCoff	0.99997
DAS 1: A Avg % Diff: 0.45%	A Max % Di 0.67%	DAS 2: A Avg %	Dif A Max	x % Di	Cal Factor Z Cal Factor F Rotometer R	ull Scale	0.0		
Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignal	ll PctDifference
primary	pump off	0.000	0.000	-0.03	0.000	0.01	l/m	l/m	
primary	leak check	0.000	0.000	0.01	0.000	0.06	l/m	l/m	
primary	test pt 1	1.529	1.500	1.50	0.000	1.51	l/m	l/m	0.67%
primary	test pt 2	1.534	1.510	1.50	0.000	1.51	l/m	l/m	0.00%
primary	test pt 3	1.530	1.500	1.50	0.000	1.51	l/m	l/m	0.67%
Sensor Comp	onent Leak Tes	st		Conditio	n		Status	pass	
Sensor Comp	onent Tubing C	ondition		Conditio	n Good		Status	pass	
Sensor Comp	onent Filter Pos	sition		Conditio	n Good		Status	pass	
Sensor Comp	onent Rotomete	er Conditio	n	Conditio	n Clean and dry		Status	pass	
Sensor Comp	onent Moisture	Present		Conditio	n No moisture p	resent	Status	pass	
Sensor Comp	onent Filter Dis	tance		Conditio	n 4.25 cm		Status	pass	
Sensor Comp	onent Filter Dep	pth		Conditio	n 0.75 cm		Status	pass	
Sensor Comp	onent Filter Azi	muth		Conditio	n 350 deg		Status	pass	
Sensor Comp	onent System M	Nemo		Conditio	n		Status	pass	

Ozone Data Form

Mfg	5	Serial Number Ta	Site	Te	chnician		Site Visi	t Date	Parame	ter	Owner I	D
ThermoElec	tron Inc	1009241785	ESP127	Sa	andy Grei	nville	03/27/20)14	Ozone		000622	
Slope: [Intercept [CorrCoff [0.	99644Slope:52675Intercept99999CorrCoff	0.0000	0	Mfg Serial N Tfer ID		ThermoE 49C-7310 01100			rameter ozc er Desc. Ozc		
DAS 1:		DAS 2:			Slope			1.0045	8 Inter	cent	-0.11	484
A Avg % D 0.4		Ax % Di A Avg % 0.8%	6Dif A Max	% Di	Cert Da	ite		/10/201			1.00	
UseDesc	cription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	Unit:	PctDiffe	erence:	
prin	nary	1	0.03	0.1	14	0.8	88	ppb				
prin	nary	2	30.68	30.	65	30.	.90	ppb			0.82%	
prin	nary	3	50.19	50.	07	50.	.15	ppb			0.16%	
prin	nary	4	80.03	79.	77	80.	.20	ppb			0.54%	
prin	nary	5	102.36	102	.00	102	.20	ppb			0.20%	
Sensor Co	omponen	t Cell B Noise		Conditio)n 0.7 pp	b			Status	pass		
Sensor Co	omponen	t Cell B Tmp.		Conditio	on				Status	pass		
Sensor Co	omponen	t Fullscale Voltage		Conditio	n N/A				Status	pass		
Sensor Co	omponen	Inlet Filter Condition	n	Conditio	n Clean				Status	pass		
Sensor Co	omponen	t Line Loss		Conditio	n Not te	sted			Status	pass		
Sensor Co	omponen	t Offset		Conditio	n -0.1				Status	pass		
Sensor Co	omponen	t Span		Conditio	n 1.007				Status	pass]
Sensor Co	omponen	t Cell B Freq.		Conditio	n 102.2	kHz			Status	pass]
Sensor Co	omponen	t System Memo		Conditio	on				Status	pass		
Sensor Co	omponen	t Sample Train		Conditio	Good				Status	pass		
Sensor Co	omponen	Cell B Pressure		Conditio	on				Status	pass]
Sensor Co	omponen	t Cell B Flow		Conditio	n 0.71 l	pm			Status	pass		
Sensor Co	omponen	t Cell A Tmp.		Conditio	on 33.4 ()			Status	pass		
Sensor Co	omponen	t Cell A Pressure		Conditio	n 704 m	nmHg			Status	pass		
Sensor Co	omponen	t Cell A Noise		Conditio	n 0.7 pp	b			Status	pass		
Sensor Co	omponen	t Cell A Freq.		Conditio	on 88.8 k	κHz			Status	pass		
Sensor Co	omponen	t Cell A Flow		Conditio	0.70 l	pm			Status	pass		
Sensor Co	omponen	Battery Backup		Conditio	n N/A				Status	pass		
Sensor Co	omponen	zero Voltage		Conditio	N/A				Status	pass		

Temperature Data Form

Mfg	Serial Number	Га Site	,	Techni	ician	Site V	isit Date/	Param	eter	Owner ID
Climatronics	none	ESP127		Sandy	Grenville	03/27	7/2014	Temper	ature	06692
				Mf	g	Extec	h	Pa	rameter Te	emperature
				Ser	rial Number	H232	734	Tf	er Desc. R	ſD
				Tfe	er ID	01227	7			
DAS 1:	DAS	2:		Slo	ре		1.0028	8 Inte	rcept	-0.15155
Abs Avg Err Ab			Max Er	Ce	rt Date		1/8/201	4 Cor	rCoff	1.00000
0.09	0.15									
UseDesc.	Test type	InputTmpRaw	InputTmp	oCorr.	OutputTmpS	Signal	OutputSig	gnalEng	OSE Unit	Difference
primary Tem	p Low Range	1.03	1.18	3	0.000		1.0)	С	-0.15
primary Tem	p Mid Range	25.30	25.3	8	0.000		25.	3	С	-0.13
primary Tem	p High Range	47.95	47.9	6	0.000		48.	0	С	0
Sensor Compone	ent Shield		Cond	ition [Dirty			Status	Fail	
Sensor Compone	ent Blower		Cond	ition F	Functioning			Status	pass	
Sensor Compone	ent Blower Status	Switch	Cond	ition 🛚	I/A			Status	pass	
Sensor Compone	ent System Memo		Cond	ition				Status	pass	

Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	ESP127	Sandy Grenville	03/27/2014	Shelter Temperature	none
DAS 1:	DAS 2:		Mfg	Extech	Parameter She	Iter Temperatur
Abs Avg ErrAb0.21	os Max Er Abs Avg 0.31	Err Abs Max Er	Serial Number	H232734	Tfer Desc. RTD)
			Tfer ID	01227		
			Slope	1.0028	8 Intercept	-0.15155
			Cert Date	1/8/201	4 CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	22.40	22.49	0.000	22.3	С	-0.21
primary	Temp Mid Range	21.90	21.99	0.000	22.3	С	0.31
primary	Temp Mid Range	23.40	23.48	0.000	23.6	С	0.12
Sensor Con	nponent System Memo)	Condition		Status	pass	

Infrastructure Data For

Site ID	ESP127	Technician Sandy	/ Grenville Site Visit Date 03/27/2014
Shelte	r Make	Shelter Model	Shelter Size
Ekto		8810	640 cuft

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

Field Systems Comments

1 Parameter: DasComments

The site operator must use a chair to stand on when accessing the sample tower filter pack enclosure due to obstructions when lowering the sample tower.

2 Parameter: ShelterCleanNotes

The shelter is in poor condition with rot at the bottom of walls and floor. Some paneling is loose.

F-02058-1500-S1-rev002

Site ID	ESP127		Technician Sandy C	Grenville	Site Visit D	Date 03/2	7/2014]	
Site Sponsor	(agency)	EPA			USGS Map		Silver Point		
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		private, T	N DEC		Map Scale				
	loup	•			Map Date				
AQS #		47-041-9991							
Meteorologic		Climatron					[		
Air Pollutant	Analyzer	Ozone			QAPP Latitude				
<b>Deposition</b> M	easurement	dry			QAPP Longitude				
Land Use		woodland	- mixed		QAPP Elevation N	Meters			
Terrain		rolling - co	omplex		QAPP Declination	1			
Conforms to	MLM	No			QAPP Declination	n Date			
Site Telephor	ne	(615) 597-6556			Audit Latitude			36.038	
Site Address	1	Craft Center Rd.			Audit Longitude			-85.7330	
Site Address	2	Hurricane Bridge			Audit Elevation			30	
County		DeKalb			Audit Declination		-3.5		
City, State		Smithville	, TN		P	Present			
Zip Code		37166			Fire Extinguisher	$\checkmark$	No inspection date		
Time Zone		Central			First Aid Kit				
Primary Ope	rator				Safety Glasses				
Primary Op.	Phone #				Safety Hard Hat	$\checkmark$			
Primary Op.	E-mail				<b>Climbing Belt</b>				
Backup Oper	ator				Security Fence				
Backup Op. Phone #					Secure Shelter	$\checkmark$			
Backup Op.	E-mail				Stable Entry Step	$\checkmark$			
Shelter Work	ting Room	Make	Ekto	M	odel 8810		Shelter Size	640 cuft	
Shelter Clean		Notes	The shelter is in poor c	ondition	with rot at the botton	n of walls	and floor. Some	paneling is loose.	
Site OK		Notes							
Driving Direc	River,	turn left at	40 take exit 273, south o the sign for Tennessee ow gate on the right.	e Tech a	and the Appalachian (	Center for			

ESP127

### F-02058-1500-S2-rev002

Site ID

Tech

Technician Sandy Grenville

Site Visit Date 03/27/2014

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

Siting Distances OK

Siting Criteria Comment

Field Systems Data Form					F-02058-1500-S3-rev00				
Site	e ID	ESP127	Technician Sa	andy Grenville	Site Visit Date 03/27/2014				
1		d speed and directi fluenced by obstrue	on sensors sited so as ctions?	to avoid	N/A				
2	(i.e. wind horizont	d sensors should be	so as to minimize tow mounted atop the to 1 >2x the max diamet ind)	ower or on a	N/A				
3	Are the	tower and sensors <b>j</b>	plumb?		N/A				
4		-	s pointed north or po s such as buildings, w						
5	conditions surface a	ns? (i.e. ground bel	ensors sited to avoid to ow sensors should be oed. Ridges, hollows, voided)	e natural					
6	Is the so	lar radiation senso	r plumb?	$\checkmark$	N/A				
7	Is it sited light?	d to avoid shading,	or any artificial or re	eflected 🗸	N/A				
8	Is the ra	in gauge plumb?		$\checkmark$	N/A				
9	Is it site towers, o		g effects from buildir	ngs, trees,	N/A				
10	Is the su facing n		or sited with the grid	surface 🔽	N/A				
11	Is it inc	lined approximatel	y 30 degrees?	$\checkmark$	N/A				
Pro	ovide anv	additional explana	tion (photograph or s	sketch if necessar	y) regarding conditions listed above, or any other features,				

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

#### **Field Systems Data Form** F-02058-1500-S4-rev002 Site ID ESP127 Technician Sandy Grenville Site Visit Date 03/27/2014 ✓ Temperature only 1 Do all the meterological sensors appear to be intact, in good condition, and well maintained? ✓ Temperature only 2 Are all the meteorological sensors operational online, and reporting data? Are the shields for the temperature and RH sensors clean? 3 ✓ Are the aspirated motors working? 4 ✓ N/A Is the solar radiation sensor's lens clean and free of 5 scratches? ✓ N/A Is the surface wetness sensor grid clean and undamaged? 6 ✓ 7 Are the sensor signal and power cables intact, in good condition, and well maintained? ✓ Are the sensor signal and power cable connections protected 8 from the elements and well maintained?

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

Fi	Field Systems Data Form					F-02058-1500-S5-rev002
Site	e ID	ESP127	Technician S	andy Grenville		Site Visit Date 03/27/2014
	Siting C	<mark>riteria: Are the pol</mark>	lutant analyzers and	d deposition equ	iipn	nent sited in accordance with 40 CFR 58, Appendix E
1		cample inlets have a acted airflow?	t least a 270 degree	arc of	✓	
2	Are the	sample inlets 3 - 15	meters above the g	round?	✓	
3		sample inlets > 1 m meters from trees?	eter from any majo	r obstruction,	✓	
	<u>Pollutar</u>	nt analyzers and dep	position equipment	operations and 1	mai	ntenance
1		analyzers and equip on and well maintair		n good	✓	
2	Are the reportin	analyzers and moni ng data?	itors operational, or	n-line, and	✓	
3	Describ	e ozone sample tube	2.			1/4 teflon by 12 meters
4	Describ	e dry dep sample tu	be.			3/8 teflon by 12 meters
5		ine filters used in th location)	e ozone sample line	? (if yes	✓	At inlet only
6	Are sam obstruct	nple lines clean, free tions?	of kinks, moisture,	and	✓	
7	Is the ze	ero air supply desice	cant unsaturated?	[	✓	
8	Are the	re moisture traps in	the sample lines?	[	✓	
9	Is there clean?	a rotometer in the o	dry deposition filter	line, and is it	✓	Clean and dry

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

Fi	eld Systems Data Form			<b>F-0</b> 2	2058-15	00-S6-rev002
Site	ESP127 Technician Sandy Grenville	)	Site Visit	Date 03/27/2014	4	
	DAS, sensor translators, and peripheral equipment operatio	<u>ns a</u>	<u>nd maintenan</u>	<u>ce</u>		
1	Do the DAS instruments appear to be in good condition and well maintained?	✓				
2	Are all the components of the DAS operational? (printers, modem, backup, etc)	✓				
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?	✓	Met sensors o	only		
4	Are the signal connections protected from the weather and well maintained?	✓				
5	Are the signal leads connected to the correct DAS channel?	✓				
6	Are the DAS, sensor translators, and shelter properly grounded?	✓				
7	Does the instrument shelter have a stable power source?	✓				
8	Is the instrument shelter temperature controlled?	✓				
9	Is the met tower stable and grounded?		Stable		Grounded	
10	Is the sample tower stable and grounded?					
11	Tower comments?					

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

The site operator must use a chair to stand on when accessing the sample tower filter pack enclosure due to obstructions when lowering the sample tower.

Field Systems Data	Foi	m			<b>F-02</b>	. <b>058</b> -	-1500-S7-rev002
Site ID ESP127		Techi	nician Sand	y Grenville Site Visit Date	03/27/2014	ļ	
<b>Documentation</b>							
Does the site have the requi	red in	strume	nt and equip	ment manuals?			
Wind speed sensor Wind direction sensor Temperature sensor Relative humidity sensor Solar radiation sensor Surface wetness sensor Wind sensor translator Temperature translator Humidity sensor translator Solar radiation translator Solar radiation translator Tipping bucket rain gauge Ozone analyzer Filter pack flow controller Filter pack MFC power supply	Yes			Data logger Data logger Strip chart recorder Computer Modem Printer Zero air pump Filter flow pump Surge protector UPS Lightning protection device Shelter heater Shelter air conditioner	Yes □ □ □ □ □ □ □	No V V V V V V V V V V	N/A □ ✓ ✓ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □
		nd mo	st recent OC	documents and report forms?			
<u>_</u>	Pres		······		Curre	nt	
Station Log SSRF Site Ops Manual HASP Field Ops Manual Calibration Reports Ozone z/s/p Control Charts Preventive maintenance sched	6 6 6 6 6 6		-eb 2014				
1 Is the station log properly	v comn	leted d	uring everv	site visit? 🗸			

- 2 Are the Site Status Report Forms being completed and current?
- 3 Are the chain-of-custody forms properly used to document sample transfer to and from lab?
- 4 Are ozone z/s/p control charts properly completed and current?

Control charts not used

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

✓

Site	ID ESP127 Technician Sandy Grenville	Si	ite Visit Date	03/27/2014	
1	Site operation procedures Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?				
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?				
3	Is the site visited regularly on the required Tuesday schedule?				
4	Are the standard CASTNET operational procedures being flollowed by the site operator?				
5	Is the site operator(s) knowledgeable of, and able to perform the required site activities? (including documentation)				

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

### Frequency

Multipoint Calibrations	$\checkmark$	N/A	$\checkmark$
Visual Inspections	$\checkmark$	N/A	$\checkmark$
Translator Zero/Span Tests (climatronics)		N/A	$\checkmark$
Manual Rain Gauge Test	$\checkmark$	N/A	$\checkmark$
Confirm Reasonableness of Current Values	$\checkmark$	N/A	✓
Test Surface Wetness Response	$\checkmark$	N/A	<ul> <li>Image: A start of the start of</li></ul>

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

QC Check Performe
-------------------

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

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

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

	Unknown
✓	
✓	SSRF, logbook, call-in

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

#### mpliant

Compliant

### F-02058-1500-S8-rev002

Site	ID	ESP127 Te	chnic	ian	Sandy Grenville		Site Visit Date	03/27/2014
	<u>Site ope</u>	ration procedures						
1	Is the fil	ter pack being changed eve	ry Tu	esda	y as scheduled?			
2	2 Are the Site Status Report Forms being completed and filed correctly?							
3	Are data downloads and backups being performed as scheduled?						No longer required	
4	Are gen	eral observations being mad	le and	l rec	orded? How?	✓	SSRF, logbook, cal	I-in
5	Are site fashion?	supplies on-hand and reple	nishe	d in	a timely			
6	Are sam	ple flow rates recorded? Ho	ow?				SSRF, logbook, cal	l-in
7	Are sam fashion?	ples sent to the lab on a reg	ular s	che	dule in a timely			
8		ers protected from contamin oping? How?	ation	dur	ing handling	✓	Clean gloves on an	d off
9		site conditions reported reg ons manager or staff?	ularly	7 <b>to</b> 1	the field			
QC	Check Po	erformed	]	Freq	luency			Compliant
N	Iulti-poir	nt MFC Calibrations		Sem	iannually			
F	low Syste	em Leak Checks		Wee	kly			
F	Filter Pack Inspection							
F	Flow Rate Setting ChecksImage: Weekly							
V	Visual Check of Flow Rate Rotometer Weekly							
I	n-line Filter Inspection/Replacement							
S	Sample Line Check for Dirt/Water 🛛 🗹 Weekly							
Prov	ide any a	dditional explanation (phot	ograp	h or	sketch if neces	sary	) regarding condit	ions listed above, or any other features,

F-02058-1500-S9-rev002

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

ESP127

### F-02058-1500-S10-rev002

Site ID

Techn

Technician Sandy Grenville

Site Visit Date 03/27/2014

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D520	unknown	000322
DAS	Campbell	CR3000	3817	illegible
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	0493002476	02975
Flow Rate	Apex	AXMC105LPMDPC	54755	000642
Infrastructure	Infrastructure	none	none	none
Modem	Raven	H4223-C	0844355622	06606
Ozone	ThermoElectron Inc	49i A1NAA	1009241785	000622
Ozone Standard	ThermoElectron Inc	49i A3NAA	1030244809	000687
Sample Tower	Aluma Tower	A	none	03550
Shelter Temperature	Campbell	107-L	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	Climatronics	100093	none	06692
Zero air pump	Werther International	C 70/4	000829161	06909

# Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
SPL	D111-Sandy	Grenville-03/31/2014				
1	3/31/2014	Computer	Dell	000265	D520	unknown
2	3/31/2014	DAS	Campbell	000342	CR3000	2121
3	3/31/2014	Elevation	Elevation	None	1	None
4	3/31/2014	Filter pack flow pump	Thomas	04861	107CAB18	00019997
5	3/31/2014	Flow Rate	Apex	000459	AXMC105LPMDPCV	40577
6	3/31/2014	Infrastructure	Infrastructure	none	none	none
7	3/31/2014	Modem	Raven	06463	V4221-V	0808337428
8	3/31/2014	Ozone	ThermoElectron Inc	000676	49i A1NAA	1030244794
9	3/31/2014	Ozone Standard	ThermoElectron Inc	000515	49i A3NAA	0922236891
10	3/31/2014	Sample Tower	Aluma Tower	03548	A	none
11	3/31/2014	Shelter Temperature	Campbell	none	107-L	none
12	3/31/2014	Siting Criteria	Siting Criteria	None	1	None
13	3/31/2014	Temperature	RM Young	04314	41342	4011
14	3/31/2014	UPS	APC	06096	RS800	080331133278
15	3/31/2014	Zero air pump	Werther International	06918	C 70/4	000829138

## **DAS Data Form**

DAS Time Max Error:

0

Mfg	Serial Number	Site	Technician	Site Visit Date	Parameter	Use Desc.
Campbell	2121	SPD111	Sandy Grenville	03/31/2014	DAS	Primary
Das Time: 1 Das Day: Low Channel: Avg Diff: Ma 0.0001		ime       17:22:09         pay       90         annel:	Mfg Serial Number Tfer ID Slope Cert Date Mfg Serial Number Tfer ID	Datel 4000392 01321 1.0000 2/13/201 Fluke 95740135 01311	0 Intercept 2 CorrCoff 9 Parameter 1 Tfer Desc.	Source generator (D 0.00000 1.00000
	put DVM Outpu 0 0000 0 0	t DAS Output	InputUnit 0 V	OutputUnit V	Difference 0 0000	

Channel	Input	DVM Output	DAS Output	InputOnit	OutputOnit	Difference
7	0.0000	0.0000	0.0000	V	V	0.0000
7	0.1000	0.1000	0.0999	V	V	-0.0001
7	0.3000	0.2998	0.2997	V	V	-0.0001
7	0.5000	0.4997	0.4996	V	V	-0.0001
7	0.7000	0.6996	0.6993	V	V	-0.0003
7	0.9000	0.8994	0.8995	V	V	0.0001
7	1.0000	0.9994	0.9993	V	V	-0.0001

## Flow Data Form

Mfg	Serial Nur	nber Ta	Site	Тес	chnician	Site Visit I	Date Paran	neter	Owner ID
Арех	40577		SPD111	Sa	ndy Grenville	03/31/2014	4 Flow R	late	000459
					Mfg Serial Number	BIOS 103424		<b>arameter</b> Flo	
					Tfer ID	01410			
					Slope	1.	00846 Int	ercept	0.01358
					Cert Date	1/8	8/2014 <b>Co</b>	rrCoff	0.99997
DAS 1: A Avg % Diff: 0.44%	A Max % Di 0.66%	DAS 2: A Avg %	bDif A Max	x % Di	Cal Factor Z Cal Factor F Rotometer R	ull Scale	-0.0 0.9		
Desc.	Test type	Input l/n	n Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSignal	PctDifference
primary	pump off	0.000	0.000	0.00	0.000	-0.03	l/m	l/m	
primary	leak check	0.000	0.000	0.00	0.000	-0.03	l/m	l/m	
primary	test pt 1	1.524	1.500	1.53	0.000	1.50	l/m	l/m	0.00%
primary	test pt 2	1.533	1.510	1.53	0.000	1.50	l/m	l/m	-0.66%
primary	test pt 3	1.539	1.510	1.53	0.000	1.50	l/m	l/m	-0.66%
Sensor Comp	onent Leak Tes	st		Conditio	n		Status	pass	
Sensor Comp	onent Tubing C	Condition		Conditio	n Good		Status	pass	
Sensor Comp	onent Filter Pos	sition		Conditio	n Good		Status	pass	
Sensor Comp	onent Rotomet	er Conditic	on	Conditio	n Clean and dry		Status	pass	
Sensor Comp	onent Moisture	Present		Conditio	n No moisture p	resent	Status	pass	
Sensor Comp	onent Filter Dis	tance		Conditio	<b>n</b> 4.0 cm		Status	pass	
Sensor Comp	Sensor Component Filter Depth			Conditio	n 2.5 cm		Status	pass	
Sensor Comp	Sensor Component Filter Azimuth			Conditio	n Not tested		Status	pass	
Sensor Comp	onent System I	Memo		Conditio	n		Status	pass	

## **Ozone Data Form**

Mfg	S	Serial Number Ta	Site	Te	chnician		Site Visi	t Date	Parame	ter	Owner I	D
ThermoElect	ron Inc	1030244794	SPD111	Sa	andy Grei	nville	03/31/20	)14	Ozone		000676	
Slope: Intercept CorrCoff	0.2	00976Slope:27889Intercept99982CorrCoff	0.0000	0	Mfg Serial N Tfer ID		ThermoE 49C-7310 01100			rameter ozo er Desc. Oz		
DAS 1:		<b>DAS 2:</b>			Slope			1.0045	8 Inter	reent	-0.11	484
	iff: A Ma	ax % Di A Avg %	6Dif A Max	% Di	•							
1.79	%	2.5%			Cert Da	ite	12	/10/201	3 Corr	Coff	1.00	000
UseDesc	ription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	Unit:	PctDiff	erence:	
prim	ary	1	0.04	0.	15	0.0	02	ppb				
prim	ary	2	30.54	30.	.51	30.	.99	ppb			1.57%	
prim	ary	3	52.03	51.	.90	53.	.22	ppb			2.54%	
prim	ary	4	81.12	80.	.86	82.	.90	ppb			2.52%	
prim	ary	5	103.77	103	.41	103	.70	ppb			0.28%	
Sensor Co	mponent	Cell B Noise		Conditio	on 0.8 pp	b	,		Status	pass		7
	_	Cell B Tmp.		Conditio	on				Status	pass		
Sensor Co	mponent	Fullscale Voltage		Conditio	n N/A				Status	pass		7
Sensor Co	mponent	Inlet Filter Condition	n	Conditio	on Clean	<u> </u>			Status	pass		
Sensor Co	mponent	Line Loss		Conditio	on Not te	sted			Status	pass		
Sensor Co	mponent	Offset		Conditio	<b>on</b> 0.20				Status	pass		
Sensor Co	mponent	Span		Conditio	on 1.021				Status	pass		
Sensor Co	mponent	Cell B Freq.		Conditio	<b>on</b> 101.3	kHz			Status	pass		
Sensor Co	mponent	System Memo		Conditio	on				Status	pass		
Sensor Co	mponent	Sample Train		Conditio	on Good				Status	pass		
Sensor Co	mponent	Cell B Pressure		Conditio	on				Status	pass		
Sensor Co	mponent	Cell B Flow		Conditio	on 0.69 l	pm			Status	pass		
Sensor Co	mponent	Cell A Tmp.		Conditio	on 32.7 (	)			Status	pass		
Sensor Co	mponent	Cell A Pressure		Conditio	<b>on</b> 701.8	mmHg			Status	pass		
Sensor Co	mponent	Cell A Noise		Conditio	on 1.1 pp	b			Status	pass		
Sensor Co	mponent	Cell A Freq.		Conditio	<b>on</b> 101.8	kHz			Status	pass		
Sensor Co	mponent	Cell A Flow		Conditio	<b>on</b> 0.60 l	pm			Status	pass		
Sensor Co	mponent	Battery Backup		Conditio	Funct	ioning			Status	pass		
Sensor Co	mponent	Zero Voltage		Conditio	N/A				Status	pass		

## Temperature Data Form

Mfg	Serial Number 7	Fa Site	,	<b>Fechn</b> i	ician	Site V	isit Date	Param	eter	<b>Owner ID</b>	
RM Young	4011	SPD111		Sandy	Grenville	03/31	1/2014	Temper	ature	04314	
				Mf	g	Extec	h	Pa	rameter Te	emperature	
				Ser	rial Number	H2327	734	Tí	er Desc. R	٢D	
				Tfe	er ID	01227	7				
DAS 1:	DAS	2:		Slo	pe		1.0028	8 Inte	rcept	-0.1515	55
Abs Avg Err A			Max Er	Ce	rt Date		1/8/201	4 Cor	rCoff	1.0000	00
0.14	0.26										
UseDesc.	Test type	InputTmpRaw	InputTmp	Corr.	OutputTmpS	Signal	OutputSig	gnalEng	OSE Unit	Difference	
primary Ter	mp Low Range	0.71	0.86		0.000		0.6	5	С	-0.26	
primary Ter	mp Mid Range	25.94	26.02	2	0.000		25.	9	С	-0.08	
primary Ter	mp High Range	49.41	49.42	2	0.000		49.	4	С	-0.07	
Sensor Compo	nent Shield		Condi	ition	Clean			Status	pass		
Sensor Compo	nent Blower		Condi	ition F	Functioning			Status	pass		
Sensor Compo	Sensor Component Blower Status Switch				Condition N/A			Status	pass		
Sensor Compo	nent System Memo		Condi	ition				Status	pass		

# Shelter Temperature Data For

Mfg	Serial Number Ta	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	SPD111	Sandy Grenville	03/31/2014	Shelter Temperature	none
DAS 1:	DAS 2:		Mfg	Extech	Parameter She	lter Temperatur
Abs Avg ErrAb0.23	os Max Er Abs Avg 0.26	Err Abs Max Er	Serial Number	H232734	Tfer Desc. RTE	D
			Tfer ID	01227		
			Slope	1.0028	8 Intercept	-0.15155
			Cert Date	1/8/201	4 CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	21.91	22.00	0.000	21.7	С	-0.26
primary	Temp Mid Range	22.02	22.11	0.000	21.9	С	-0.21
primary	Temp Mid Range	22.19	22.28	0.000	22.1	С	-0.23
Sensor Con	nponent System Memo	)	Condition		Status	pass	

#### **Infrastructure Data For**

Site ID	SPD111	Technician Sandy	Grenville Site Visit Date 03/31/2014
Shelte	r Make	Shelter Model	Shelter Size
Ekto		8810	640 cuft

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

## **Field Systems Comments**

#### 1 Parameter: DasComments

One leg of the meteorological tower is split.

#### 2 Parameter: SitingCriteriaCom

The site is in a pasture with as many as 75 cattle. The cattle are fed within 100 meters of the site. When the site is visited the cattle approach to within 10 meters of the site.

#### 3 Parameter: ShelterCleanNotes

The shelter is in good condition. The shelter is clean, neat, well organized and well maintained, however the floor is beginning to buckle.

Field Systems Data Form	

### F-02058-1500-S1-rev002

Site ID	SPD111		Technician Sandy G	renville	Site Visit I	Date 03/3	1/2014	
Site Sponsor	(agency)	EPA			USGS Map		Ausmus	
Operating G	roup	private			Map Scale			
AQS #		47-025-9	991		Map Date			
Meteorologic	al Type	R.M. You	ng					
Air Pollutant	Analyzer	Ozone			QAPP Latitude			
Deposition M	leasurement	dry, wet			QAPP Longitude	1		
Land Use		Agricultu	re, dairy, woodland - mixe	ed	<b>QAPP Elevation</b>	Meters		
Terrain		rolling / c	omplex		QAPP Declination	n		
Conforms to	MLM	Marginal	ly		QAPP Declination	n Date		
Site Telephon	ie	4238698	159		Audit Latitude		36.46983	
Site Address	1	718 Russell Hill Road			Audit Longitude		-83.82651	
Site Address	2			Audit Elevation		361		
County		Claiborne			Audit Declination -5.1		-5.1	
City, State		, TN			]	Present		
Zip Code		37870			Fire Extinguisher	· 🗸	No inspection date	
Time Zone		Eastern			First Aid Kit	$\checkmark$		
Primary Ope	rator				Safety Glasses	$\checkmark$		
Primary Op.	Phone #				Safety Hard Hat	$\checkmark$		
Primary Op.	E-mail				Climbing Belt	$\checkmark$		
Backup Oper	ator				Security Fence			
Backup Op.	Phone #				Secure Shelter	$\checkmark$		
Backup Op.	E-mail				Stable Entry Step			
Shelter Work	ting Room ✓	Make	Ekto	Mo	odel 8810		Shelter Size         640 cuft	
Shelter Clean		Notes	The shelter is in good co however the floor is beg			an, neat, w	ell organized and well maintained,	
Site OK	$\checkmark$	Notes		jii ii iii iy t				
Driving Direc			exit 134, 25W to 63 and I	LaFollet	te. Continue throug	h LaFollet	te on 63 into Claiborne county. Just	
	past i	mile mark	er 6 and the B&B gas and	d tire sta	ation in Claiborne co	ounty, turn	right on an unmarked road. This road	
			The site will be on the ri				iate right at the next intersection onto	

SPD111

### F-02058-1500-S2-rev002

Site ID

Tech

Technician Sandy Grenville

Site Visit Date 03/31/2014

Potential Interferent	Minimum Distance From Measurement Apparatus	Distance	Pass = Checked
Large Point Source of SO2 or NOx	20 to 40 km		
Major industrial complex	10 to 20 km		
City > 50,000 population	40 km		
City 10,000 to 50,000 population	10 km		
City 1,000 to 10,000 population	5 km		
Major highway, airport or rail yard	2 km		
Secondary road, heavily traveled	500 m		
Secondary road, lightly traveled	200 m		
Feedlot operations	500 m	100 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 in a pasture with as many as 75 cattle. The cattle are fed within 100 meters of the site. When the site is visited the cattle approach to within 10 meters of the site.

Fi	eld Sy	stems Data	Form		F-02058-1500-S3-rev(			
Site	e ID	SPD111	Technician S	andy Grenville	Site Visit Date 03/31/2014			
1		d speed and directi fluenced by obstrue	on sensors sited so as ctions?	s to avoid 🔽	✓ N/A			
2	(i.e. win horizont	d sensors should be	so as to minimize to mounted atop the to n >2x the max diame ind)	ower or on a	✓ N/A			
3	Are the	tower and sensors <b>j</b>	plumb?	$\checkmark$	✓ N/A			
4		÷	s pointed north or po s such as buildings, v	ositioned to				
5	Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)							
6	Is the so	lar radiation senso	r plumb?	V	✓ N/A			
7	Is it site light?	d to avoid shading,	or any artificial or r	eflected 🗸	✓ N/A			
8	Is the ra	in gauge plumb?		V	✓ N/A			
9	Is it site towers,		g effects from buildi	ngs, trees, 🔽	✓ N/A			
10	Is the su facing n		or sited with the grid	surface	✓ N/A			
11	Is it inc	lined approximatel	y 30 degrees?	V	✓ N/A			
Pro	ovide anv	additional explana	tion (photograph or	sketch if necessa	sary) regarding conditions listed above, or any other features,			

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

#### **Field Systems Data Form** F-02058-1500-S4-rev002 Site ID SPD111 Technician Sandy Grenville Site Visit Date 03/31/2014 ✓ Temperature only 1 Do all the meterological sensors appear to be intact, in good condition, and well maintained? ✓ Temperature only 2 Are all the meteorological sensors operational online, and reporting data? ✓ Are the shields for the temperature and RH sensors clean? 3 ✓ Are the aspirated motors working? 4 ✓ N/A Is the solar radiation sensor's lens clean and free of 5 scratches? ✓ N/A Is the surface wetness sensor grid clean and undamaged? 6 ✓ 7 Are the sensor signal and power cables intact, in good condition, and well maintained?

8 Are the sensor signal and power cable connections protected **rom** the elements and well maintained?

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

Field Systems Data Form						F-02058-1500-S5-rev002
Site	e ID SPD11	<u> </u>	Technician	Sandy Grenville		Site Visit Date 03/31/2014
	Siting Criteria:	Are the pollut	ant analyzers a	nd deposition eq	uipr	nent sited in accordance with 40 CFR 58, Appendix E
1	Do the sample ir unrestricted airf		east a 270 degre	e arc of		
2	Are the sample i	nlets 3 - 15 m	eters above the	ground?		
3	Are the sample i and 20 meters fr		er from any maj	or obstruction,		
	Pollutant analyz	ers and depos	ition equipmen	t operations and	mai	intenance
1	Do the analyzers condition and w			in good		
2	Are the analyzer reporting data?	s and monito	rs operational, (	on-line, and	✓	
3	Describe ozone s	ample tube.				1/4 teflon by 12 meters
4	Describe dry dej	o sample tube				3/8 teflon by 12 meters
5	Are in-line filter indicate location		ozone sample lin	ne? (if yes		At inlet only
6	Are sample lines obstructions?	clean, free of	kinks, moistur	e, and		
7	Is the zero air su	pply desiccan	t unsaturated?		✓	
8	Are there moist	ire traps in th	e sample lines?		✓	Flow line only
9	Is there a rotom clean?	eter in the dry	v deposition filte	er line, and is it		Clean and dry

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

Field Systems Data Form						F-02058-1500-S6-rev002			
Site	e ID	SPD111	Technician	Sandy Grenville		Site Visit Date	03/31/2014	L .	
	DAS, se	nsor translators, and j	peripheral equip	pment operation	is ai	nd maintenance			
1		DAS instruments appe intained?	ar to be in good	condition and	✓				
2		the components of the backup, etc)	al? (printers,						
3	Do the analyzer and sensor signal leads pass through lightning protection circuitry?				✓	Met sensors only			
4	Are the signal connections protected from the weather and well maintained?				✓				
5	Are the	signal leads connected	l to the correct l	DAS channel?	✓				
6	Are the grounde	DAS, sensor translato ed?	rs, and shelter <b>j</b>	properly	✓				
7	Does the	e instrument shelter ha	ave a stable pow	ver source?	✓				
8	Is the in	strument shelter temp	perature control	led?					
9	Is the m	et tower stable and gr	ounded?			Stable		Grounded	
10	Is the sa	mple tower stable and	l grounded?						
11	Tower o	comments?				one leg of met towe	r split		

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

One leg of the meteorological tower is split.

Field Systems Data	<b>Fo</b>	rm			<b>F-02</b>	058-	-1500-S7-rev00
Site ID SPD111		Techni	cian	Sandy Grenville Site Visit Da	ate 03/31/2014		
<b>Documentation</b>							
Does the site have the requi	i <mark>red in</mark>	strument	t and	<u>equipment manuals?</u>			
Wind speed sensor	Yes	No	N/⊿	Data logger	Yes	No ✓	N/A
Wind direction sensor Temperature sensor				Data logger Strip chart recorder			
Relative humidity sensor Solar radiation sensor			<ul><li></li><li></li></ul>	Computer Modem			
Surface wetness sensor			✓	Printer			
Wind sensor translator Temperature translator			<ul><li></li><li></li></ul>	Zero air pump Filter flow pump		<ul><li>✓</li></ul>	
Humidity sensor translator Solar radiation translator			<ul><li></li><li></li></ul>	Surge protector UPS			
Tipping bucket rain gauge			<ul><li>✓</li></ul>	Lightning protection dev	vice		
Ozone analyzer Filter pack flow controller				Shelter heater Shelter air conditioner			
Filter pack MFC power suppl	у 🗆						
<b>Does the site have the req</b>	uired a	and most	rece	nt QC documents and report forms	?		
C4-4* T	Pres	sent			Curre	nt	

Oct 2001	
Feb 2014	
July 1990	
> > > >	✓       Oct 2001         ✓       Feb 2014         ✓       July 1990         ✓

1	Is the station	log properly	completed	during	every site	visit?	$\checkmark$	N
---	----------------	--------------	-----------	--------	------------	--------	--------------	---

- Are the Site Status Report Forms being completed and 2 current?
- ✓ 3 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 4 current?

Control	charts	not	used

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

✓

Minimal information		
Control charts not used		

### )2

Site	ID	SPD111	Technician	Sandy Grenville		Site Visit Date	03/31/2014		
1	Has the	e <u>ration procedures</u> site operator attended If yes, when and who		TNET training	✓	Trained by ESE emp	ployee EOH during s	site installation	
2		backup operator atter g course? If yes, when a							
	Is the sit schedule	e visited regularly on t ?	he required T	uesday	✓				
		standard CASTNET og d by the site operator?	perational pro	cedures being	✓				
		e operator(s) knowled ired site activities? (in			✓				
					_				

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

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

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

QC Check Performed		Frequency
Multi-point Calibrations	$\checkmark$	Semiannually
Automatic Zero/Span Tests	$\checkmark$	Daily
Manual Zero/Span Tests	$\checkmark$	As needed
Automatic Precision Level Tests	$\checkmark$	Daily
Manual Precision Level Test	$\checkmark$	As needed
Analyzer Diagnostics Tests	$\checkmark$	Weekly
In-line Filter Replacement (at inlet)	$\checkmark$	Every 2 weeks
In-line Filter Replacement (at analyze		N/A
Sample Line Check for Dirt/Water	$\checkmark$	Weekly
Zero Air Desiccant Check	$\checkmark$	Weekly
1 Do multi point collibustion googg go the	angh the	a amandata V

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

$\checkmark$	
	SSRF, call-in

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

#### Compliant

# Compliant

F-02058-1500-S8-rev002

Field Systems Data Form							F-02058	-1500-S9-rev002	
Site	e ID	SPD111	Technician	Sandy Grenville		Site Visit Date	03/31/2014		
	<u>Site ope</u>	ration procedures							
1	Is the fil	lter pack being change	ed every Tueso	lay as scheduled?		Filter changed vario	us times		
2	Are the correctly	Site Status Report For y?	rms being con	pleted and filed					
3	Are data schedule	a downloads and back ed?	ups being per	formed as		No longer required			
4	Are gen	eral observations bein	g made and ro	ecorded? How?	✓	SSRF, logbook			
5	Are site fashion?	supplies on-hand and ?	replenished in	n a timely					
6	Are sam	ple flow rates recorde	ed? How?		✓	SSRF, call-in			
7	Are sam fashion?	pples sent to the lab on	a regular sch	edule in a timely					
8		ers protected from con oping? How?	tamination du	iring handling	✓	Clean gloves on and	d off		
9		site conditions reporte ons manager or staff?	ed regularly to	the field					
QC	Check Po	erformed	Fre	equency			Compliant		
N	Iulti-poir	nt MFC Calibrations	Sei	miannually					
F	low Syste	em Leak Checks	✓ We	ekly					
F	Filter Pack Inspection Weekly								
F	Flow Rate Setting Checks								
V	Visual Check of Flow Rate Rotometer Weekly					$\checkmark$			
I	n-line Fil	ter Inspection/Replace	ement 🗹 Sei	miannually			$\checkmark$		
S	ample Li	ine Check for Dirt/Wa	ter 🗹 We	ekly			$\checkmark$		

_

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:

SPD111

### F-02058-1500-S10-rev002

Site ID

Techr

Technician Sandy Grenville

Site Visit Date 03/31/2014

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	D520	unknown	000265
DAS	Campbell	CR3000	2121	000342
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	00019997	04861
Flow Rate	Арех	AXMC105LPMDPC	40577	000459
Infrastructure	Infrastructure	none	none	none
Modem	Raven	V4221-V	0808337428	06463
Ozone	ThermoElectron Inc	49i A1NAA	1030244794	000676
Ozone Standard	ThermoElectron Inc	49i A3NAA	0922236891	000515
Sample Tower	Aluma Tower	A	none	03548
Shelter Temperature	Campbell	107-L	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342	4011	04314
UPS	APC	RS800	080331133278	06096
Zero air pump	Werther International	C 70/4	000829138	06918

### **APPENDIX B**

**CASTNET Site Spot Report Forms** 

Data Compiled:

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SiteVisitDate	Site	Technician			
03/12/2014	ALC188	Eric Hebert			

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	1.00006	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.63109	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99996	unitless	Р
4	Ozone % difference avg	Р	7	10	4	1.7	%	Р
5	Ozone % difference max	Р	7	10	4	4.3	%	Р

Data Compiled:

4/11/2014 5:07:30 PM

SiteVisitDate	Site	Technician		
03/20/2014	BBE401	Alison Ray		

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	1.02051	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.35549	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99998	unitless	Р
4	Ozone % difference avg	Р	7	10	4	1.5	%	Р
5	Ozone % difference max	Р	7	10	4	2.0	%	Р

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SiteVisitDate	Site	Technician			
02/25/2014	CAD150	Sandy Grenville			

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	1.02516	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.20051	ppb	Р
3	Ozone correlation	Р	0	0.995	4	1.00000	unitless	Р
4	Ozone % difference avg	Р	7	10	4	2.1	%	Р
5	Ozone % difference max	Р	7	10	4	2.4	%	Р

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SiteVisitDate	Site	Technician
03/28/2014	CDZ171	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.99413	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.51849	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99995	unitless	Р
4	Ozone % difference avg	Р	7	10	4	1.9	%	Р
5	Ozone % difference max	Р	7	10	4	3.5	%	Р

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SiteVisitDate	Site	Technician
02/26/2014	CHE185	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	1.02487	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.19321	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99982	unitless	Р
4	Ozone % difference avg	Р	7	10	4	2.4	%	Р
5	Ozone % difference max	Р	7	10	4	4.2	%	Р

Data Compiled: 4/2

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SiteVisitDate	Site	Technician
03/31/2014	CKT136	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.99303	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.34168	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
4	Ozone % difference avg	Р	7	10	4	1.5	%	Р
5	Ozone % difference max	Р	7	10	4	2.2	%	Р

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# SiteVisitDateSiteTechnician03/26/2014COW137Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Tamparatura avaraga arror	Р	4	0.5	3	0.08	с	Р
1	Temperature average error	I	4	0.5	5	0.08	C	1
2	Temperature max error	Р	4	0.5	3	0.11	с	Р
3	Ozone Slope	Р	0	1.1	4	1.01997	unitless	Р
4	Ozone Intercept	Р	0	5	4	0.24297	ppb	Р
5	Ozone correlation	Р	0	0.995	4	0.99994	unitless	Р
6	Ozone % difference avg	Р	7	10	4	2.1	%	Р
7	Ozone % difference max	Р	7	10	4	2.8	%	Р
8	Flow Rate average % difference	Р	10	5	3	2.04	%	Р
9	Flow Rate max % difference	Р	10	5	3	2.04	%	Р
10	DAS Time maximum error	Р	0	5	1	0.02	min	Р
11	DAS Voltage average error	Р	7	0.003	49	0.0001	V	Р

## **Field Systems Comments**

1 Parameter: DasComments

One leg of the meteorological tower has two holes.

2 Parameter: SitingCriteriaCom

Construction was completed on new building with a parking lot, in October 2004. The parking area is within 60 meters of the site.

#### 3 Parameter: ShelterCleanNotes

The shelter is in fair condition with some rot near the air conditioner and in the corners. It has degraded since the previous audit. It was reported that the roof leaks. The shelter is kept very clean, neat, and well organized.

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SiteVisitDate	Site	Technician
02/28/2014	CVL151	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	1.00749	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.67428	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
4	Ozone % difference avg	Р	7	10	4	0.7	%	Р
5	Ozone % difference max	Р	7	10	4	2.0	%	Р

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# SiteVisitDateSiteTechnician03/27/2014ESP127Sandy Grenville

1:00	Audited Devementer		<b>Ch</b> #	Critoria d	Counto		l In:to	
Line	Audited Parameter	DAS	Cn. #	Criteria +/-	Counts	Qaresuit	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	6	0.09	c	Р
2	Temperature max error	Р	4	0.5	6	0.15	c	Р
3	Ozone Slope	Р	0	1.1	4	0.99644	unitless	Р
4	Ozone Intercept	Р	0	5	4	0.52675	ppb	Р
5	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
6	Ozone % difference avg	Р	7	10	4	0.4	%	Р
7	Ozone % difference max	Р	7	10	4	0.8	%	Р
8	Flow Rate average % difference	Р	10	5	4	0.44	%	Р
9	Flow Rate max % difference	Р	10	5	4	0.67	%	Р
10	DAS Time maximum error	Р	0	5	1	0.00	min	Р
11	DAS Voltage average error	Р	7	0.003	49	0.0001	V	Р

### **Field Systems Comments**

#### 1 Parameter: DasComments

The site operator must use a chair to stand on when accessing the sample tower filter pack enclosure due to obstructions when lowering the sample tower.

#### 2 **Parameter:** ShelterCleanNotes

The shelter is in poor condition with rot at the bottom of walls and floor. Some paneling is loose.

Data Compiled:

8/9/2014 4:05:00 PM

# SiteVisitDateSiteTechnician03/04/2014GAS153Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	12	0.12	c	Р
2	Temperature max error	Р	4	0.5	12	0.25	с	Р
3	Ozone Slope	Р	0	1.1	4	1.02217	unitless	Р
4	Ozone Intercept	Р	0	5	4	-0.44253	ppb	Р
5	Ozone correlation	Р	0	0.995	4	1.00000	unitless	Р
6	Ozone % difference avg	Р	7	10	4	1.3	%	Р
7	Ozone % difference max	Р	7	10	4	1.9	%	Р
8	Flow Rate average % difference	Р	10	5	2	2.62	%	Р
9	Flow Rate max % difference	Р	10	5	2	2.86	%	Р
10	DAS Time maximum error	Р	0	5	1	0.02	min	Р
11	DAS Voltage average error	Р	7	0.003	21	0.0001	V	Р
12	Shelter Temperature average error	Р	5	1	6	0.09	с	Р
13	Shelter Temperature max error	Р	5	1	6	0.10	c	Р

### **Field Performance Comments**

1	Parameter:	Flow Rate	SensorComponent:	Moisture Present	CommentCode 72
	The filter samp	ple tubing has drops of	moisture in low sections ou	tside the shelter.	

### **Field Systems Comments**

1 Parameter: SiteOpsProcedures

The ozone sample train is tested for leaks every two weeks.

Data Compiled:

8/9/2014 3:04:58 PM

# SiteVisitDateSiteTechnician02/13/2014IRL141Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	3	0.06	c	Р
2	Temperature max error	Р	4	0.5	3	0.06	с	Р
3	Ozone Slope	Р	0	1.1	4	0.99726	unitless	Р
4	Ozone Intercept	Р	0	5	4	0.41844	ppb	Р
5	Ozone correlation	Р	0	0.995	4	0.99988	unitless	Р
6	Ozone % difference avg	Р	7	10	4	1.3	%	Р
7	Ozone % difference max	Р	7	10	4	3.6	%	Р
8	Flow Rate average % difference	Р	10	5	4	0.92	%	Р
9	Flow Rate max % difference	Р	10	5	4	1.06	%	Р
10	DAS Time maximum error	Р	0	5	1	0.02	min	Р
11	DAS Voltage average error	Р	7	0.003	35	0.0000	V	Р
12	Shelter Temperature average error	Р	5	1	9	0.83	с	Р
13	Shelter Temperature max error	Р	5	1	9	1.01	с	Fail

### **Field Systems Comments**

#### 1 Parameter: SiteOpsProcComm

The site operator is doing an excellent job of handling and changing the filter pack.

#### 2 Parameter: SitingCriteriaCom

The expanded roadway and parking lots were observed to have several vehicles traveling and parking including motor homes, during the audit visit. Sebastian has an estimated population of 18,000. The park operates a boat ramp with vehicle parking near the site. The site is surrounded on three sides by boat traffic using the ramp.

#### 3 Parameter: ShelterCleanNotes

The shelter is clean and well organized.

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SiteVisitDate	Site	Technician
03/28/2014	MAC426	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	1.01804	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.31284	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99998	unitless	Р
4	Ozone % difference avg	Р	7	10	4	1.1	%	Р
5	Ozone % difference max	Р	7	10	4	1.7	%	Р

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SiteVisitDate	Site	Technician
03/30/2014	MCK131	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	1.00752	unitless	Р
2	Ozone Intercept	Р	0	5	4	0.11721	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99997	unitless	Р
4	Ozone % difference avg	Р	7	10	4	1.2	%	Р
5	Ozone % difference max	Р	7	10	4	2.6	%	Р

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SiteVisitDate	Site	Technician
03/30/2014	MCK231	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	1.01159	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.35351	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99998	unitless	Р
4	Ozone % difference avg	Р	7	10	4	0.8	%	Р
5	Ozone % difference max	Р	7	10	4	1.2	%	Р

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SiteVisitDate	Site	Technician
03/25/2014	PAL190	Alison Ray

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.99016	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.24018	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
4	Ozone % difference avg	Р	7	10	4	1.6	%	Р
5	Ozone % difference max	Р	7	10	4	2.3	%	Р

Data Compiled:

ed: 8/10/2014 10:54:16 AM

# SiteVisitDateSiteTechnician03/05/2014SND152Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	3	0.24	с	Р
2	Temperature max error	Р	4	0.5	3	0.34	с	Р
3	Ozone Slope	Р	0	1.1	4	1.00529	unitless	Р
4	Ozone Intercept	Р	0	5	4	-0.52037	ppb	Р
5	Ozone correlation	Р	0	0.995	4	0.99982	unitless	Р
6	Ozone % difference avg	Р	7	10	4	1.3	%	Р
7	Ozone % difference max	Р	7	10	4	1.9	%	Р
8	Flow Rate average % difference	Р	10	5	1	0.26	%	Р
9	Flow Rate max % difference	Р	10	5	1	0.47	%	Р
10	DAS Time maximum error	Р	0	5	1	0.03	min	Р
11	DAS Voltage average error	Р	7	0.003	35	0.0001	V	Р
12	Shelter Temperature average error	Р	5	1	6	0.38	с	Р
13	Shelter Temperature max error	Р	5	1	6	0.70	с	Р

### **Field Systems Comments**

#### 1 Parameter: DasComments

The sample tower is leaning approximately 10 degrees from vertical.

#### 2 Parameter: SitingCriteriaCom

The site is located on an active research farm with cattle and poultry. Cattle are fed within 100 meters of the site. A Climate Reference Network site is located on the farm on the south side of Hwy 68 which is a better location for the CASTNET site.

#### 3 Parameter: ShelterCleanNotes

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

#### 4 Parameter: MetOpMaintCom

The temperature sensor signal cable is beginning to show signs of wear.

Data Compiled: 5/2

5/2/2016 7:30:07 PM

# SiteVisitDateSiteTechnician03/31/2014SPD111Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	12	0.14	c	Р
2	Temperature max error	Р	4	0.5	12	0.26	с	Р
3	Ozone Slope	Р	0	1.1	4	1.00976	unitless	Р
4	Ozone Intercept	Р	0	5	4	0.27889	ppb	Р
5	Ozone correlation	Р	0	0.995	4	0.99982	unitless	Р
6	Ozone % difference avg	Р	7	10	4	1.7	%	Р
7	Ozone % difference max	Р	7	10	4	2.5	%	Р
8	Flow Rate average % difference	Р	10	5	8	0.44	%	Р
9	Flow Rate max % difference	Р	10	5	8	0.66	%	Р
10	DAS Time maximum error	Р	0	5	1	0.00	min	Р
11	DAS Voltage average error	Р	7	0.003	49	0.0001	V	Р

### **Field Systems Comments**

1 Parameter: DasComments

One leg of the meteorological tower is split.

2 Parameter: SitingCriteriaCom

The site is in a pasture with as many as 75 cattle. The cattle are fed within 100 meters of the site. When the site is visited the cattle approach to within 10 meters of the site.

#### 3 Parameter: ShelterCleanNotes

The shelter is in good condition. The shelter is clean, neat, well organized and well maintained, however the floor is beginning to buckle.

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# SiteVisitDateSiteTechnician02/11/2014SUM156Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	6	0.07	c	Р
2	Temperature max error	Р	4	0.5	6	0.13	с	Р
3	Ozone Slope	Р	0	1.1	4	0.98734	unitless	Р
4	Ozone Intercept	Р	0	5	4	-0.66673	ppb	Р
5	Ozone correlation	Р	0	0.995	4	1.00000	unitless	Р
6	Ozone % difference avg	Р	7	10	4	2.6	%	Р
7	Ozone % difference max	Р	7	10	4	4.0	%	Р
8	Flow Rate average % difference	Р	10	5	3	2.34	%	Р
9	Flow Rate max % difference	Р	10	5	3	2.37	%	Р
10	DAS Time maximum error	Р	0	5	1	0.02	min	Р
11	DAS Voltage average error	Р	7	0.003	35	0.0001	V	Р
12	Shelter Temperature average error	Р	5	1	9	0.43	с	Р
13	Shelter Temperature max error	Р	5	1	9	0.67	с	Р

02/11/2014 SUM156

Technician

Eric Hebert

### **Field Performance Comments**

1 Parameter: Flow Rate SensorComponent: Moisture Present Comm

CommentCode 72

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

### **Field Systems Comments**

#### 1 Parameter: DasComments

The meteorological tower has been removed. The temperature sensor is mounted in a naturally aspirated shield on the sample tower.

#### 2 Parameter: SitingCriteriaCom

The site is surrounded by pine trees on land managed by the forest service. A few trees are now 17 meters tall and within 17 meters of the sample tower. Most trees are 30 meters from the sample tower.

#### 3 Parameter: ShelterCleanNotes

The shelter is clean and well organized.. The site operator does an excellent job of organizing and maintaining the site.

#### 4 Parameter: PollAnalyzerCom

There is water in the flow tubing outside the shelter. Trees to the north are less than 20 meters from the sample inlets.

#### **APPENDIX C**

**CASTNET Ozone Performance Evaluation Forms** 

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SiteVisitDate	Site	Technician
02/25/2014	CAD150	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	1.02516	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.20051	ppb	Р
3	Ozone correlation	Р	0	0.995	4	1.00000	unitless	Р
4	Ozone % difference avg	Р	7	10	4	2.1	%	Р
5	Ozone % difference max	Р	7	10	4	2.4	%	Р

Mfg	Serial Number Ta	Site	Тео	chnician		Site Visi	t Date	Parame	eter Owner ID		)
ThermoElectron Inc	1009241792	CAD150	Sa	indy Grei	nville	02/25/20	014	Ozone		000624	
Intercept	ntercept -0.20051 Intercept 0.00000		0	Mfg Serial N Tfer ID		 	49C-73104-373 Tf		er Desc. Ozone transfer		
DAS 1:	<b>DAS 2:</b>			Slope			1.00458	3 Inter	rcent	-0.114	184
A Avg % Diff: A N 2.1%	Iax % Di         A Avg %           2.4%	6Dif A Max	% Di	Cert Da	ite	12	/10/2013		-	1.000	
UseDescription:	ConcGroup:	Tfer Raw:	Tfer (	Corr:	Si	te:	Site	Unit:	PctDiffer	ence:	
primary	1	0.53	0.6		0.4		ppb				
primary	2	31.55	31.	52	32	.08	ppb			1.78%	
primary	3	50.86	50.	74	51.		ppb			2.31%	
primary	4	80.88	80.		82.		ppb			2.08%	
primary	5	100.06	99.	71	102	2.10	ppb			2.40%	
Sensor Compone	nt Cell B Noise		Conditio	<b>n</b> 1.6 pp	b			Status	pass		]
Sensor Compone	nt Cell B Tmp.		Conditio	on				Status	pass		]
Sensor Compone	nt Fullscale Voltage		Conditio	N/A				Status	pass		]
Sensor Compone	nt Inlet Filter Condition	on	Conditio	n Clean	1			Status	pass		]
Sensor Compone	nt Line Loss		Conditio	n Not te	ested			Status	pass		]
Sensor Compone	nt Offset		Conditio	<b>n</b> 0.20				Status	pass		]
Sensor Compone	nt Span		Conditio	<b>n</b> 1.037				Status	pass		]
Sensor Compone	nt Cell B Freq.		Conditio	<b>n</b> 100.3	kHz			Status	pass		]
Sensor Compone	nt System Memo		Conditio	n				Status	pass		]
Sensor Compone	nt Sample Train		Conditio	n Good				Status	pass		]
Sensor Compone	nt Cell B Pressure		Conditio	n				Status	pass		]
Sensor Compone	nt Cell B Flow		Conditio	<b>n</b> 0.71 l	pm			Status	pass		]
Sensor Compone	nt Cell A Tmp.		Conditio	<b>n</b> 31.8 (	C			Status	pass		]
Sensor Compone	nt Cell A Pressure		Conditio	<b>n</b> 737.5	mmHg			Status	pass		]
Sensor Compone	nt Cell A Noise		Conditio	<b>n</b> 0.9 pp	b			Status	pass		]
Sensor Compone	nt Cell A Freq.		Conditio	<b>n</b> 103.6	kHz			Status	pass		]
Sensor Compone	nt Cell A Flow		Conditio	<b>n</b> 0.72 l	pm			Status	pass		]
Sensor Compone	nt Battery Backup		Conditio	N/A				Status	pass		]
Sensor Compone	nt Zero Voltage		Conditio	N/A				Status	pass		

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
CAD	150-Sandy	Grenville-02/25/2014				
1	2/25/2014	DAS	Campbell	000421	CR3000	2530
2	2/25/2014	Ozone	ThermoElectron Inc	000624	49i A1NAA	1009241792
3	2/25/2014	Ozone Standard	ThermoElectron Inc	000495	49i A3NAA	0622717849
4	2/25/2014	Zero air pump	Werther International	06885	C 70/4	000814270

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SiteVisitDate	Site	Technician
02/26/2014	CHE185	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	1.02487	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.19321	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99982	unitless	Р
4	Ozone % difference avg	Р	7	10	4	2.4	%	Р
5	Ozone % difference max	Р	7	10	4	4.2	%	Р

Mfg	Serial Number Ta	Site	Te	chnician		Site Visi	t Date	Parame	eter	Owner II	)
Monitor Labs, Inc.	191	CHE185	Sa	andy Grei	nville	02/26/20	014	Ozone		54901	
Slope:         1.02487         Slope:         0.0000           Intercept         -0.19321         Intercept         0.0000           CorrCoff         0.99982         CorrCoff         0.0000			0	Mfg Serial N	umber	ThermoE			rameter ozor er Desc. Ozo		
				Tfer ID		01100					
DAS 1:	<b>DAS 2:</b>			Slope			1.00458	Inter	cept	-0.114	484
A Avg % Diff: A N 2.4%	Image: Arrow of the second s	6Dif A Max	% Di	Cert Da	ite	12	2/10/2013	B Corr	·Coff	1.000	000
UseDescription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	Unit:	PctDiffe	rence:	
primary	1	0.05	0.		0.0		ppb				
primary	2	30.04	30	.01	29.	.67	ppb			-1.13%	
primary	3	50.78	50	.66	52.	.78	ppb			4.18%	
primary	4	82.49	82		84.		ppb			2.71%	
primary	5	100.14	99	.79	101	.50	ppb			1.71%	
Sensor Compone	nt Cell B Noise		Conditi	on 0.22 p	pb			Status	pass		
Sensor Compone	nt Cell B Tmp.		Conditi	on				Status	pass		
Sensor Compone	nt Fullscale Voltage		Conditi	on N/A				Status	pass		
Sensor Compone	nt Inlet Filter Condition	วท	Conditi	on Clean				Status	pass		
Sensor Component	nt Line Loss		Conditi	on Not te	sted			Status	pass		
Sensor Compone	nt Offset		Condition	on -0.06				Status	pass		
Sensor Compone	nt Span		Conditi	on 1.079				Status	pass		
Sensor Compone	nt Cell B Freq.		Conditi	on				Status	pass		
Sensor Compone	nt System Memo		Conditi	on				Status	pass		
Sensor Compone	nt Sample Train		Conditi	on Good				Status	pass		
Sensor Compone	nt Cell B Pressure		Conditi	on				Status	pass		
Sensor Compone	nt Cell B Flow		Conditi	on 0.5 lp	m			Status	pass		
Sensor Compone	nt Cell A Tmp.		Conditi	on 37.6 (	2			Status	pass		
Sensor Compone	nt Cell A Pressure		Conditi	on 712 m	mHg			Status	pass		
Sensor Compone	nt Cell A Noise		Conditi	on 0.22 p	pb			Status	pass		
Sensor Component	nt Cell A Freq.		Condition	on				Status	pass		
Sensor Compone	nt Cell A Flow		Conditi	on 0.5 lp	m			Status	pass		
Sensor Component	nt Battery Backup		Condition	on Funct	ioning			Status	pass		
Sensor Compone	nt Zero Voltage		Conditi	on N/A				Status	pass		

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
CHE	185-Sandy	Grenville-02/26/2014				
1	2/26/2014	DAS	Environmental Sys Corp	73955	8832	A0656-b
2	2/26/2014	Ozone	Monitor Labs, Inc.	54901	ML9811	191
3	2/26/2014	UPS	Tripplite	none	LRC2400	9743AYOLC615000
4	2/26/2014	Zero air pump	Ecotech	none	8301LC	01-0658

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SiteVisitDate	Site	Technician
02/28/2014	CVL151	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	1.00749	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.67428	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
4	Ozone % difference avg	Р	7	10	4	0.7	%	Р
5	Ozone % difference max	Р	7	10	4	2.0	%	Р

Mfg	S	erial Number Ta	Site	Тес	chnician		Site Visi	t Date	Parame	eter	Owner I	D
ThermoElectr	on Inc 1	030244797	CVL151	Sa	ndy Gre	nville	02/28/20	014	Ozone		000698	
Slope: Intercept CorrCoff	tercept -0.67428 Intercept 0.0000			) )	Mfg Serial N Tfer ID						cone zone transfe	
DAS 1:		<b>DAS 2:</b>			Clana			1 00459	D Tratas	<b>-</b>	-0.11	191
	ff: A Ma	x % Di A Avg %	6Dif A Max 9		Slope			1.00458		rcept		
0.7%		2.0%			Cert Da	nte	12	/10/201	3 Corr	Coff	1.00	0000
UseDescr	iption:	ConcGroup:	Tfer Raw:	Tfer (	Corr:	Sit	te:	Site	Unit:	PctDif	ference:	
prima	ıry	1	0.03	0.1	4	-0.	44	ppb				
prima	ıry	2	31.60	31.	57	30.	95	ppb			-1.96%	
prima	ary	3	49.97	49.	85	49.	56	ppb			-0.58%	
prima	ary	4	81.09	80.	83	80.	90	ppb			0.09%	
prima	ary	5	99.74	99.	39	99.	40	ppb			0.01%	
Sensor Cor	nponent	Cell B Noise		Conditio	<b>n</b> 1.0 pp	ob			Status	pass		
Sensor Cor	nponent	Cell B Tmp.		Conditio	n				Status	pass		
Sensor Cor	nponent	Fullscale Voltage		Conditio	N/A				Status	pass		
Sensor Cor	nponent	Inlet Filter Condition	on	Conditio	n Clear	1			Status	pass		
Sensor Cor	nponent	Line Loss		Conditio	n Not te	ested			Status	pass		
Sensor Cor	nponent	Offset		Conditio	<b>n</b> 0.30				Status	pass		
Sensor Cor	nponent	Span		Conditio	<b>n</b> 1.02				Status	pass		
Sensor Cor	nponent	Cell B Freq.		Conditio	n 100.8	kHz			Status	pass		
Sensor Cor	nponent	System Memo		Conditio	n				Status	pass		
Sensor Cor	nponent	Sample Train		Conditio	n Good				Status	pass		
Sensor Cor	nponent	Cell B Pressure		Conditio	n				Status	pass		
Sensor Cor	nponent	Cell B Flow		Conditio	<b>n</b> 0.70 l	pm			Status	pass		
Sensor Cor	nponent	Cell A Tmp.		Conditio	n 33.5 (	C			Status	pass		
Sensor Cor	nponent	Cell A Pressure		Conditio	<b>n</b> 726 m	nmHg			Status	pass		
Sensor Cor	nponent	Cell A Noise		Conditio	<b>n</b> 0.8 pp	ob			Status	pass		
Sensor Cor	nponent	Cell A Freq.		Conditio	<b>n</b> 95.9 k	κHz			Status	pass		
Sensor Cor	nponent	Cell A Flow		Conditio	<b>n</b> 0.70 l	pm			Status	pass		
Sensor Cor	nponent	Battery Backup		Conditio	N/A				Status	pass		
Sensor Cor	nponent	Zero Voltage		Conditio	n N/A				Status	pass		

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
CVL	151-Sandy	Grenville-02/28/2014				
1	2/28/2014	DAS	Campbell	000410	CR3000	2508
2	2/28/2014	Ozone	ThermoElectron Inc	000698	49i A1NAA	1030244797
3	2/28/2014	Ozone Standard	ThermoElectron Inc	000464	49i A3NAA	0622717858
4	2/28/2014	Zero air pump	Werther International	06884	PC70/4	000815263

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SiteVisitDate	Site	Technician
03/12/2014	ALC188	Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	1.00006	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.63109	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99996	unitless	Р
4	Ozone % difference avg	Р	7	10	4	1.7	%	Р
5	Ozone % difference max	Р	7	10	4	4.3	%	Р

Mfg	S	erial Number Ta	Site	Te	chnician		Site Visi	t Date	Parame	ter	Owner I	D
ThermoElectro	on Inc	1030244802	ALC188	Er	ric Hebert	:	03/12/20	014	Ozone		000689	
Slope: Intercept CorrCoff				0 Serial Number							zone zone primary	/ stan
DAS 1:		<b>DAS 2:</b>			Slone			1.0070	7 Inton	a ant	-0.21	032
	f: A Ma	ax % Di A Avg %	6Dif A Max 9	% Di	Slope					- L		
1.7%		4.3%			Cert Da	ite		1/8/201	4 Corr	Coff	1.00	000
UseDescri	iption:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	Unit:	PctDif	fference:	
prima	ry	1	0.58	0.	78	0.5	51	ppb				
prima	ry	2	26.99	27.	.00	25.	.85	ppb			-4.26%	
prima	ry	3	47.52	47.	.39	46.	.69	ppb			-1.48%	
prima	ry	4	75.22	74.	.90	74.	.51	ppb			-0.52%	
prima	ry	5	103.96	103	3.43	102	2.80	ppb			-0.61%	
Sensor Con	nponent	Cell B Noise		Conditio	on 0.9 pp	b			Status	pass		
Sensor Con	nponent	Cell B Tmp.		Conditi	on				Status	pass		
Sensor Con	nponent	Fullscale Voltage		Conditio	on N/A				Status	pass		
Sensor Con	nponent	Inlet Filter Condition	งท	Conditi	on Clean	1			Status	pass		
Sensor Con	nponent	Line Loss		Conditi	on Not te	ested			Status	pass		
Sensor Con	nponent	Offset		Conditi	on 0.000				Status	pass		
Sensor Con	nponent	Span		Conditio	on 1.015				Status	pass		
Sensor Con	nponent	Cell B Freq.		Conditi	on 93.0 k	κHz			Status	pass		
Sensor Con	nponent	System Memo		Conditi	on				Status	pass		
Sensor Con	nponent	Sample Train		Conditio	on Good				Status	pass		
Sensor Con	nponent	Cell B Pressure		Conditio	on				Status	pass		
Sensor Con	nponent	Cell B Flow		Conditio	on 0.69 l	pm			Status	pass		
Sensor Con	nponent	Cell A Tmp.		Conditio	on 28.0 (	C			Status	pass		
Sensor Con	nponent	Cell A Pressure		Conditio	<mark>on</mark> 731 m	nmHg			Status	pass		
Sensor Con	nponent	Cell A Noise		Conditio	<mark>on</mark> 0.8 pp	b			Status	pass		
Sensor Con	nponent	Cell A Freq.		Conditio	on 94.5 k	κHz			Status	pass		
Sensor Con	nponent	Cell A Flow		Conditio	on 0.72 l	pm			Status	pass		
Sensor Con	nponent	Battery Backup		Condition	on N/A				Status	pass		
Sensor Con	nponent	Zero Voltage		Conditio	on N/A				Status	pass		

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number	
ALC188-Eric Hebert-03/12/2014							
1	3/12/2014	DAS	Campbell	000422	CR3000	2523	
2	3/12/2014	Ozone	ThermoElectron Inc	000689	49i A1NAA	1030244802	
3	3/12/2014	Ozone Standard	ThermoElectron Inc	000363	49i A3NAA	0726124691	
4	3/12/2014	Zero air pump	Werther International	06940	C 70/4	000821897	

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SiteVisitDate	Site	Technician
03/20/2014	BBE401	Alison Ray

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	1.02051	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.35549	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99998	unitless	Р
4	Ozone % difference avg	Р	7	10	4	1.5	%	Р
5	Ozone % difference max	Р	7	10	4	2.0	%	Р

Mfg	Serial Number Ta	Site	Tee	chnician		Site Visi	it Date	Parame	eter	Owner I	D
ThermoElectron Inc	49C-58468-318	BBE401	Ali	son Ray		03/20/2	014	Ozone		90517	
~			 [	Mfg		Thermo			rameter oz	one	
•	1.02051 Slope:	0.0000				 					
•	0.35549 Intercept	0.0000		Serial N	lumber	49CPS-7	70008-36	64 <b>Tf</b>	er Desc. Oz	zone primary	/ stan
CorrCoff (	0.99998 CorrCoff	0.0000	J	Tfer ID		01110					
DAS 1:	<b>DAS 2:</b>			Slope			1.00707	7 Inter	rcept	-0.21	032
A Avg % Diff: A N	fax % Di 🛛 A Avg %	<b>6</b> Dif A Max	% Di	•		L					
1.5%	2.0%			Cert Da	ate		1/8/2014	4 Corr	Coff	1.00	000
UseDescription:	ConcGroup:	Tfer Raw:	Tfer (	Corr:	Si	te:	Site	Unit:	PctDif	ference:	
primary	1	0.45	0.6	55	0.2	21	ppb				
primary	2	33.13	33.	10	33.	.58	ppb			1.45%	
primary	3	45.07	44.	96	45.	.45	ppb			1.09%	
primary	4	82.65	82.	27	83.	.88	ppb			1.96%	
primary	5	94.83	94.	37	95.	.69	ppb			1.40%	
Sensor Componen	nt Cell B Noise		Conditio	<b>n</b> 0.6 pp	ob			Status	pass		
Sensor Compone	nt Cell B Tmp.		Conditio	on				Status	pass		
Sensor Compone	nt Fullscale Voltage		Conditio	n N/A				Status	pass		
Sensor Compone	nt Inlet Filter Condition	on	Conditio	n Clear	1			Status	pass		_
Sensor Componen	nt Line Loss		Conditio	n Not te	ested			Status	pass		
Sensor Componen	nt Offset		Conditio	<b>n</b> 0.000				Status	pass		
Sensor Componer	nt Span		Conditio	<b>n</b> 1.018				Status	pass		
Sensor Componer	nt Cell B Freq.		Conditio	<b>n</b> 87 kH	lz			Status	pass		
Sensor Componer	nt System Memo		Conditio	on				Status	pass		
Sensor Componer	nt Sample Train		Conditio	Good				Status	pass		
Sensor Componer	nt Cell B Pressure		Conditio	on 📃				Status	pass		
Sensor Compone	nt Cell B Flow		Conditio	<b>n</b> 0.70 l	pm			Status	pass		_
Sensor Compone	nt Cell A Tmp.		Conditio	<b>n</b> 38.0 (	C			Status	pass		_
Sensor Compone	nt Cell A Pressure		Conditio	n 659.6	mmHg			Status	pass		_
Sensor Componer			Conditio					Status			_
Sensor Componer			Conditio					Status			
Sensor Componen			Conditio					Status			
Sensor Componen	nt Battery Backup		Conditio	N/A				Status	pass		
Sensor Componen	nt Zero Voltage		Conditio	n N/A				Status	pass		

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number	
BBE401-Alison Ray-03/20/2014							
1	3/20/2014	DAS	Environmental Sys Corp	90665	8816	2689	
2	3/20/2014	Ozone	ThermoElectron Inc	90517	49C	49C-58468-318	
3	3/20/2014	Ozone Standard	ThermoElectron Inc	90832	49C	520012326	
4	3/20/2014	Zero air pump	Werther International	none	C 70/4	606499	

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SiteVisitDate	Site	Technician
03/25/2014	PAL190	Alison Ray

Line	Audited Parameter DAS Ch. # Criteria +/- Counts C		QaResult	Units	Pass/Fail			
1	Ozone Slope	Р	0	1.1	4	0.99016	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.24018	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
4	Ozone % difference avg	Р	7	10	4	1.6	%	Р
5	Ozone % difference max	Р	7	10	4	2.3	%	Р

Mfg	S	erial Number Ta	Site	Te	chnician	L	Site Visi	t Date	Parame	eter	Owner I	D
ThermoElec	ctron Inc	105347322	PAL190	Ali	ison Ray		03/25/20	014	Ozone		000733	
Slope: Intercept CorrCoff	ntercept -0.24018 Intercept 0			0 0 0	Mfg Serial N Tfer ID			49CPS-70008-364 Tf		rameter ozo er Desc. Oz		/ stan
DAS 1:		<b>DAS 2:</b>			Slone			1.00707	7 Into		-0.21	032
	Diff: A Ma	x % Di A Avg %	6Dif A Max	% Di	Slope							
0	6%	2.3%			Cert Da	ate		1/8/201	4 Cori	Coff	1.00	000
UseDes	cription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	Unit:	PctDiff	erence:	
prin	nary	1	0.03	0.2	23	0.	13	ppb				
prin	nary	2	33.45	33.	42	32.	.64	ppb			-2.33%	
prin	nary	3	51.67	51.	51	50.	.72	ppb			-1.53%	
prin	nary	4	79.81	79.	45	78.	.52	ppb			-1.17%	
prin	nary	5	98.06	97.	58	96.	.40	ppb			-1.21%	
Sensor Co	omponent	Cell B Noise		Conditio	on 0.8 p	b			Status	pass		
Sensor Co	omponent	Cell B Tmp.		Conditio	on				Status	pass		
Sensor Co	omponent	Fullscale Voltage		Conditio	n N/A				Status	pass		
Sensor Co	omponent	Inlet Filter Condition	วท	Conditio	n Clear	1			Status	pass		7
Sensor Co	omponent	Line Loss		Conditio	n Not te	ested			Status	pass		
Sensor Co	omponent	Offset		Conditio	<b>n</b> 0.1				Status	pass		7
Sensor Co	omponent	Span		Conditio	<b>n</b> 1.005				Status	pass		7
Sensor Co	omponent	Cell B Freq.		Conditio	<b>)n</b> 97.6	κHz			Status	pass		
Sensor Co	omponent	System Memo		Conditio	on				Status	pass		
Sensor Co	omponent	Sample Train		Conditio	on Good				Status	pass		
Sensor Co	omponent	Cell B Pressure		Conditio	on				Status	pass		
Sensor Co	omponent	Cell B Flow		Conditio	on 0.67 l	pm			Status	pass		
Sensor Co	omponent	Cell A Tmp.		Conditio	on 27.4 (	0			Status	pass		
Sensor Co	omponent	Cell A Pressure		Conditio	on 657.6	mmHg			Status	pass		
Sensor Co	omponent	Cell A Noise		Conditio	on 0.8 p	ob			Status	pass		
Sensor Co	omponent	Cell A Freq.		Conditio	<b>n</b> 90.5	κHz			Status	pass		
Sensor Co	omponent	Cell A Flow		Conditio	on 0.67	pm			Status	pass		
Sensor Co	omponent	Battery Backup		Conditio	n N/A				Status	pass		
Sensor Co	omponent	Zero Voltage		Conditio	n N/A				Status	pass		

Site Visit Date		Parameter	Mfg	Owner ID	Model Number	Serial Number
PAL	190-Alison	Ray-03/25/2014				
1	3/25/2014	DAS	Campbell	000347	CR3000	2126
2	3/25/2014	Ozone	ThermoElectron Inc	000733	49i A1NAA	1105347322
3	3/25/2014	Ozone Standard	ThermoElectron Inc	000214	49i A3NAA	0622717855
4	3/25/2014	Zero air pump	Werther International	06929	C 70/4	000829173

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SiteVisitDate	Site	Technician
03/28/2014	CDZ171	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.99413	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.51849	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99995	unitless	Р
4	Ozone % difference avg	Р	7	10	4	1.9	%	Р
5	Ozone % difference max	Р	7	10	4	3.5	%	Р

Mfg	Ser	ial Number Ta	Site	Te	chnician		Site Visi	t Date	Parame	ter	Owner ID	
ThermoElectron In	c 110	05347320	CDZ171	Sa	andy Grer	nville	03/28/20	)14	Ozone		000727	
Slope:         0.99413         Slope:         0.0000           Intercept         -0.51849         Intercept         0.0000           CorrCoff         0.99995         CorrCoff         0.0000			0	Serial Number			· · · · · · · · · · · · · · · · · · ·			er Desc. Ozone transfer		
DAS 1: A Avg % Diff: A 1.9%	Max	DAS 2: % Di A Avg % 3.5%	oDif A Max	% Di	Slope Cert Da			1.00458 /10/2013	]	-	-0.11484 1.00000	1
UseDescription	n:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	Unit:	PctDiffe	rence:	
primary		1	0.31	0.4	42	0.2	26	ppb				
primary		2	32.20	32.	.16	31.	.03	ppb			-3.51%	
primary		3	50.81	50.		49.	.57	ppb			-2.21%	
primary		4	80.50	80.		79.		ppb			-0.75%	
primary		5	100.28	99.	.93	98.	.80	ppb			-1.13%	
Sensor Compon	ent C	ell B Noise		Conditio	<b>0.7</b> pp	b			Status	pass		
Sensor Compon	ent C	cell B Tmp.		Conditio	on				Status	pass		
Sensor Compon	ent F	ullscale Voltage		Conditio	on N/A				Status	pass		
Sensor Compon	ent Ir	nlet Filter Conditio	n	Conditio	on Clean				Status	pass		
Sensor Compon	ent L	ine Loss		Conditio	on Not te	sted			Status	pass		
Sensor Compon	ent O	Offset		Conditio	<b>on</b> 0.000				Status	pass		
Sensor Compon	ent S	pan		Conditio	on 1.007				Status	pass		
Sensor Compon	ent C	ell B Freq.		Conditio	on 89.1 k	Hz			Status	pass		
Sensor Compon	ent S	system Memo		Conditio	on				Status	pass		
Sensor Compon	ent S	ample Train		Conditio	on Good				Status	pass		
Sensor Compon	ent C	ell B Pressure		Conditio	on				Status	pass		
Sensor Compon	ent C	ell B Flow		Conditio	on 0.72 l	pm			Status	pass		
Sensor Compon	ent C	cell A Tmp.		Conditio	on 35.6 C	)			Status	pass		
Sensor Compon	ent C	ell A Pressure		Conditio	on 714.3	mmHg			Status	pass		
Sensor Compon	ent C	ell A Noise		Conditio	0.8 pp	b			Status	pass		
Sensor Compon	ent C	ell A Freq.		Conditio	on 91.8 k	Hz			Status	pass		
Sensor Compon	ent C	ell A Flow		Conditio	on 0.72 l	om			Status	pass		
Sensor Compon	ent B	attery Backup		Conditio	<b>Funct</b>	ioning			Status	pass		
Sensor Compon	ent Z	ero Voltage		Conditio	on N/A				Status	pass		

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
CDZ	171-Sandy	Grenville-03/28/2014				
1	3/28/2014	DAS	Campbell	000352	CR3000	2130
2	3/28/2014	Ozone	ThermoElectron Inc	000727	49i A1NAA	1105347320
3	3/28/2014	Ozone Standard	ThermoElectron Inc	000544	49i A3NAA	0929938242
4	3/28/2014	UPS	APC	06793	RS900	unknown
5	3/28/2014	Zero air pump	Werther International	06899	PC70/4	000821902

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SiteVisitDate	Site	Technician
03/28/2014	MAC426	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	1.01804	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.31284	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99998	unitless	Р
4	Ozone % difference avg	Р	7	10	4	1.1	%	Р
5	Ozone % difference max	Р	7	10	4	1.7	%	Р

Mfg	S	erial Number Ta	Site	Тес	chnician		Site Visi	t Date	Parame	eter	Owner I	D
ThermoElect	ron Inc	CM08460049	MAC426	Sa	indy Grei	nville	03/28/20	)14	Ozone		none	
Slope: Intercept CorrCoff	ercept -0.31284 Intercept 0.0000			0	Mfg Serial N Tfer ID			ThermoElectron Inc   Parameter ozone     49C-73104-373   Tfer Desc. Ozone transmission				r
DAS 1:		<b>DAS 2:</b>						1.00458			-0.11	101
	iff: A Ma	ax % Di A Avg %	6Dif A Max		Slope					- L		
1.19	%	1.7%			Cert Da	ite	12	/10/201	3 Corr	Coff	1.00	0000
UseDesc	ription:	ConcGroup:	Tfer Raw:	Tfer (	Corr:	Sit	te:	Site	Unit:	PctDiff	ference:	
prima	ary	1	0.03	0.1	4	-0.	03	ppb				
prima	ary	2	29.81	29.7	78	30.	11	ppb			1.11%	
prima	ary	3	50.79	50.	67	50.	82	ppb			0.30%	
prima	ary	4	80.34	80.	08	81.	25	ppb			1.46%	
prima	ary	5	99.87	99.:	52	101	.17	ppb			1.66%	
Sensor Co	mponent	Cell B Noise		Conditio	<b>n</b> 0.9 pp	b			Status	pass		
Sensor Co	mponent	Cell B Tmp.		Conditio	n				Status	pass		
Sensor Co	mponent	Fullscale Voltage		Conditio	n N/A				Status	pass		
Sensor Co	mponent	Inlet Filter Condition	ิท	Conditio	n Clean	1			Status	pass		
Sensor Co	mponent	Line Loss		Conditio	n Not te	ested			Status	pass		
Sensor Co	mponent	Offset		Conditio	<b>n</b> 0.2				Status	pass		
Sensor Co	mponent	Span		Conditio	<b>n</b> 1.016				Status	pass		
Sensor Co	mponent	Cell B Freq.		Conditio	<b>n</b> 106.1	kHz			Status	pass		
Sensor Co	mponent	System Memo		Conditio	n				Status	pass		
Sensor Co	mponent	Sample Train		Conditio	n Good				Status	pass		
Sensor Co	mponent	Cell B Pressure		Conditio	n				Status	pass		
Sensor Co	mponent	Cell B Flow		Conditio	<b>n</b> 0.72 l	pm			Status	pass		
Sensor Co	mponent	Cell A Tmp.		Conditio	<b>n</b> 34.7 (	2			Status	pass		
Sensor Co	mponent	Cell A Pressure		Conditio	<b>n</b> 729.4	mmHg			Status	pass		
Sensor Co	mponent	Cell A Noise		Conditio	<b>n</b> 0.8 pp	b			Status	pass		
Sensor Co	mponent	Cell A Freq.		Conditio	<b>n</b> 88.1 k	κHz			Status	pass		
Sensor Co	mponent	Cell A Flow		Conditio	<b>n</b> 0.72 l	pm			Status	pass		
Sensor Co	mponent	Battery Backup		Conditio	Funct	ioning			Status	pass		
Sensor Co	mponent	Zero Voltage		Conditio	N/A				Status	pass		

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
MAC	C426-Sandy	Grenville-03/28/2014				
1	3/28/2014	DAS	Environmental Sys Corp	3027	8832	A3027
2	3/28/2014	Ozone	ThermoElectron Inc	none	49i A3NAA	CM08460049
3	3/28/2014	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	1030745084
4	3/28/2014	UPS	APC	none	XS1500	unkown
5	3/28/2014	Zero air pump	Werther International	none	PC70/4	000665778

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SiteVisitDate	Site	Technician
03/30/2014	MCK131	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	1.00752	unitless	Р
2	Ozone Intercept	Р	0	5	4	0.11721	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99997	unitless	Р
4	Ozone % difference avg	Р	7	10	4	1.2	%	Р
5	Ozone % difference max	Р	7	10	4	2.6	%	Р

Mfg	;	Serial N	umber Ta	Site	Teo	chnician		Site Visi	t Date	Parame	eter	Owner II	)
ThermoElectro	on Inc	110534	7327	MCK131	Sa	ndy Grei	nville	03/30/20	014	Ozone		000723	
		00750	CI.	0.0000		Mfg		ThermoE	lectron l		rameter 0	zone	
Slope:		.00752 .11721	Slope: Intercept	0.0000				I					
Intercept					Serial N	lumber	49C-73104-373 Tfer			er Desc. 🖸	zone transfer		
CorrCoff	0	.99991	CorrColl	0.0000	<b>Tfer ID</b> 01100				]				
DAS 1:			<b>DAS 2:</b>			Slope			1.00458	Inter	cept	-0.114	184
A Avg % Dif	f: A M	ax % D	i A Avg %	<b>6Dif</b> A Max	% Di	-		40		1			
1.2%	ó	2.69	%			Cert Da	ite	12	2/10/2013	Cori	Coff	1.000	000
UseDescri	iption:	Co	ncGroup:	Tfer Raw:	Tfer (	Corr:	Si	te:	Site	Unit:	PctDi	fference:	
prima	ry		1	0.03	0.1	4	0.	14	ppb				
prima	ry		2	31.04	31.	01	31	.81	ppb			2.58%	
prima	ry		3	51.03	50.	91	51.	.00	ppb			0.18%	
prima	ry		4	80.79	80.	53	81	.30	ppb			0.96%	
prima	ry		5	100.25	99.	90	100	.80	ppb			0.90%	
Sensor Con	nponen	t Cell B	Noise		Conditio	<b>n</b> 1.7 pp	b			Status	pass		]
Sensor Con	nponen	t Cell B	Tmp.		Conditio	n				Status	pass		]
Sensor Con	nponen	t Fullsc	ale Voltage		Conditio	n N/A				Status	pass		]
Sensor Con	-			20									]
	_			Л	Conditio					Status	pass		
Sensor Con	nponen	t Line L	OSS		Conditio	n Not te	ested			Status	pass		
Sensor Con	nponen	t Offset			Conditio	<b>n</b> 0.3				Status	pass		]
Sensor Con	nponen	t Span			Conditio	<b>n</b> 1.031				Status	pass		
Sensor Con	nponen	t Cell B	Freq.		Conditio	<b>n</b> 110.1	kHz			Status	pass		]
Sensor Con	nponen	t Syster	m Memo		Conditio	n				Status	pass		]
Sensor Con	nponen	t Samp	le Train		Conditio	n Good				Status	pass		]
Sensor Con	nponen	t Cell B	Pressure		Conditio	n				Status	pass		]
Sensor Con					Conditio	n 0.73 l	pm			Status	pass		1
Sensor Con					Conditio					Status			]
Sensor Con	-				Conditio					Status			ן ן
Sensor Con	-				Conditio					Status			J
	-												J
Sensor Con	-				Conditio					Status			J
Sensor Con	nponen	t Cell A	Flow		Conditio	0.71 l	pm			Status	pass		
Sensor Con	nponen	t Batter	y Backup		Conditio	N/A				Status	pass		]
Sensor Con	nponen	t Zero \	/oltage		Conditio	N/A				Status	pass		

Site Visit Date		Parameter	Mfg	Owner ID	Model Number	Serial Number
MCK	K131-Sandy	v Grenville-03/30/2014				
1	3/30/2014	DAS	Campbell	000429	CR3000	2535
2	3/30/2014	Ozone	ThermoElectron Inc	000723	49i A1NAA	1105347327
3	3/30/2014	Ozone Standard	ThermoElectron Inc	000366	49i A3NAA	0726124895
4	3/30/2014	Zero air pump	Werther International	06912	PC70/4	000829177

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SiteVisitDate	Site	Technician
03/30/2014	MCK231	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	1.01159	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.35351	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99998	unitless	Р
4	Ozone % difference avg	Р	7	10	4	0.8	%	Р
5	Ozone % difference max	Р	7	10	4	1.2	%	Р

Mfg	S	erial Number Ta	Site	Te	chnician		Site Visi	t Date	Parame	eter	Owner I	D
ThermoElec	tron Inc 1	105347318	MCK231	Sa	andy Gre	nville	03/30/20	014	Ozone		000739	
Slope: [ Intercept [ CorrCoff [	tercept -0.35351 Intercept 0.0000			D	Mfg Serial N Tfer ID						one zone transfe	
DAS 1:		<b>DAS 2:</b>					01100	4 00 454				404
	) oiff: A Ma	x % Di A Avg %	6Dif A Max 9	% Di	Slope			1.00458			-0.11	
0.8		1.2%			Cert Da	nte	12	/10/201	3 Corr	Coff	1.00	0000
UseDesc	cription:	ConcGroup:	Tfer Raw:	Tfer	Corr:	Si	te:	Site	Unit:	PctDif	ference:	
prin	nary	1	0.13	0.2	24	0.	10	ppb				
prin	nary	2	31.04	31.	01	30.	.65	ppb			-1.16%	
prin	nary	3	51.54	51.	41	51.	.64	ppb			0.45%	
prin	nary	4	81.03	80.	77	81.	.60	ppb			1.03%	
prin	nary	5	100.82	100	.47	101	.20	ppb			0.73%	
Sensor Co	omponent	Cell B Noise		Conditio	on 0.8 pp	b			Status	pass		
Sensor Co	omponent	Cell B Tmp.		Conditio	on				Status	pass		
Sensor Co	omponent	Fullscale Voltage		Conditio	n N/A				Status	pass		
Sensor Co	omponent	Inlet Filter Condition	on	Conditio	on Clear	1			Status	pass		
Sensor Co	omponent	Line Loss		Conditio	n Not te	ested			Status	pass		
Sensor Co	omponent	Offset		Conditio	on 0.20				Status	pass		
Sensor Co	-			Conditio					Status			
	_	Cell B Freq.		Conditio					Status			
	•	System Memo		Conditio					Status	[		
		Sample Train		Conditio					Status			
		Cell B Pressure		Conditio					Status			
		Cell B Flow		Conditio					Status			
	•	Cell A Tmp.		Conditio	on 35.2 (	2			Status	pass		
Sensor Co	omponent	Cell A Pressure		Conditio	<b>n</b> 705.8	mmHg			Status	pass		
Sensor Co	omponent	Cell A Noise		Conditio	on 1.1 pp	b			Status	pass		
Sensor Co	omponent	Cell A Freq.		Conditio	on 93.4 k	kHz			Status	pass		
Sensor Co	omponent	Cell A Flow		Conditio	on 0.69 l	pm			Status	pass		
Sensor Co	omponent	Battery Backup		Conditio	n N/A				Status	pass		
Sensor Co	omponent	Zero Voltage		Conditio	n N/A				Status	pass		

Site Visit Date		Parameter	Mfg	Owner ID	Model Number	Serial Number
MCK	X231-Sandy	v Grenville-03/30/2014				
1	3/30/2014	DAS	Campbell	000359	CR3000	2137
2	3/30/2014	Ozone	ThermoElectron Inc	000739	49i A1NAA	1105347318
3	3/30/2014	Ozone Standard	ThermoElectron Inc	000369	49i A3NAA	0726124890
4	3/30/2014	Zero air pump	Werther International	06924	C 70/4	000836205

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SiteVisitDate	Site	Technician
03/31/2014	CKT136	Sandy Grenville

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.99303	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.34168	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
4	Ozone % difference avg	Р	7	10	4	1.5	%	Р
5	Ozone % difference max	Р	7	10	4	2.2	%	Р

Mfg	Serial	Number Ta	Site	Te	chnician		Site Visi	t Date	Parameter		Owner I	D
ThermoElectron Ind	10092	241780	CKT136	Sa	andy Grei	nville	03/31/20	)14	Ozone		000617	
Slope: Intercept CorrCoff	0.99303 -0.34168 0.99999	3 Intercept	0.0000	0	Mfg Serial N	lumber				er Desc. Ozone transfer		
DAS 1: A Avg % Diff: A 1.5%	Max %	<b>DAS 2:</b>			Tfer ID Slope Cert Da			1.00458 /10/2013	]		-0.11	
			Tfer Raw:	Tfer	Corr	Si	ta:	Sito	Unit:	PctDiffe	aranca:	
UseDescription primary	<u>.</u> (	ConcGroup:1	0.02	0.1		-0.		ppb	Unit:	PCtDille	erence:	
primary		2	31.31	31.		30.		ppb ppb			-2.24%	
primary		3	52.54	52.		51.		ppb			-1.72%	
primary		4	82.03	81.		81.		ppb			-0.94%	
primary		5	100.36	100	.01	99.		ppb			-1.01%	
Sensor Compon	ent Cell	B Noise		Conditio	on 1.0 pp	b			Status	pass		]
Sensor Compon	ent Cell	B Tmp.		Conditio	on				Status	pass		
Sensor Compon	ent Full	scale Voltage		Conditio	on N/A				Status	pass		
Sensor Compon	ent Inle	t Filter Conditio	n	Conditio	on Clean				Status	pass		
Sensor Compon	ent Line	Loss		Conditio	on Not te	sted			Status	pass		
Sensor Compon	ent Offs	set		Conditio	<b>on</b> 0.20				Status	pass		
Sensor Compon	ent Spa	in		Conditio	<b>n</b> 1.008				Status	pass		
Sensor Compon	ent Cell	B Freq.		Conditio	<b>on</b> 113.7	kHz			Status	pass		
Sensor Compon	ent Sys	tem Memo		Conditio	on				Status	pass		
Sensor Compon	ent San	nple Train		Conditio	on Good				Status	pass		
Sensor Compon	ent Cell	B Pressure		Conditio	on				Status	pass		
Sensor Compon	ent Cell	B Flow		Conditio	on 0.64 l	pm			Status	pass		
Sensor Compon	ent Cell	A Tmp.		Conditio	on 34.0 (	)			Status	pass		
Sensor Compon	ent Cell	A Pressure		Conditio	on 711.5	mmHg			Status	pass		
Sensor Compon	ent Cell	A Noise		Conditio	on 0.9 pp	b			Status	pass		
Sensor Compon	ent Cell	A Freq.		Conditio	<b>on</b> 98.2 k	κHz			Status	pass		
Sensor Compon	ent Cell	A Flow		Conditio	<b>on</b> 0.66 l	pm			Status	pass		
Sensor Compon	ent Batt	ery Backup		Conditio	on N/A				Status	pass		
Sensor Compon	ent Zero	o Voltage		Conditio	n N/A				Status	pass		

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
CKT136-Sandy Grenville-03/31/2014						
1	3/31/2014	DAS	Campbell	000354	CR3000	2132
2	3/31/2014	Ozone	ThermoElectron Inc	000617	49i A1NAA	1009241780
3	3/31/2014	Ozone Standard	ThermoElectron Inc	000433	49i A3NAA	CM08200009
4	3/31/2014	Zero air pump	Werther International	06902	PC70/4	000829157