2020 – 4th Quarter Report Support for Conducting Systems & Performance Audits of Clean Air Status and Trends Network (CASTNET) Sites and National Atmospheric Deposition Program (NADP) Monitoring Stations - II EPA Contract No. EP-W-18-005

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### List of Acronyms and Abbreviations

List of Acronyms and Addrey	lauons
% diff	percent difference
A/D	analog to digital converter
ARS	Air Resource Specialists, Inc.
ASTM	American Society for Testing and Materials
BLM-WSO	Bureau of Land Management – Wyoming State Office
CAL	Central Analytical Laboratory
CASTNET	Clean Air Status and Trends Network
CMAQ	Community Multiscale Air Quality
DAS	data acquisition system
deg	degree
DVM	digital voltmeter
ECCC	Environment and Climate Change Canada
EEMS	Environmental, Engineering & Measurement Services, Inc.
EPA	U.S. Environmental Protection Agency
ESC	Environmental Systems Corporation
FSA	Field Systems Audit
FSAD	Field Site Audit Database
GPS	geographical positioning system
HAL	Mercury Analytical Laboratory
LADCO	Lake Michigan Air Directors Consortium
lpm	liters per minute
MLM	Multilayer Model
MN PCA	Minnesota Pollution Control Agency
m/s	meters per second
mv	millivolt
NIST	National Institute of Standards and Technology
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
NYDEC	New York Department of Conservation
NYSERDA	New York State Energy Research and Development Authority
PE	Performance Evaluation
QAPP	Quality Assurance Project Plan
SCDHEC	South Carolina Department of Health and Environmental Control
SOP	standard operating procedure
TDEP	Total Deposition
TEI	Thermo Environmental Instruments
USDA-FS	United States Department of Agriculture – Forest Service
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
USNO	United States Naval Observatory
VDC	volts direct current
WDEQ	Wyoming Department of Environmental Quality
WDNR	Wisconsin Department of Natural Resources

WRRWorld Radiation ReferenceWSLHWisconsin State Laboratory of Hygiene

### **1.0 CASTNET Quarterly Report**

### 1.1 Introduction

The Clean Air Status and Trends Network (CASTNET) is a national air monitoring program established in 1988 by the US EPA. Nearly all CASTNET sites measures weekly concentrations of acidic gases and particles to provide accountability for EPA's emission reduction programs. Most sites measure ground-level ozone as well as supplemental measurements such as meteorology and/or other trace gas concentrations.

Ambient concentrations 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 critical loads research.

Historically, CASTNET pollutant flux measurements have been reported as the aggregate product of weekly measured concentrations and model-estimated deposition velocities. The Multi-layer Model (MLM) was used to derive deposition velocity estimates from on-site meteorological parameters, land use types, and site characteristics. In 2011, EPA discontinued meteorological measurements at most EPA-sponsored CASTNET sites.

Currently, CASTNET pollutant flux estimates are calculated as the aggregate product of weekly measured chemical concentrations and gridded model-estimated deposition velocities. Total deposition is assessed using the NADP's Total Deposition Hybrid Method (TDEP; EPA, 2015c; Schwede and Lear, 2014), which combines data from established ambient monitoring networks and chemical-transport models. To estimate dry deposition, ambient measurement data from CASTNET and other networks were merged with dry deposition rates and flux output from the Community Multiscale Air Quality (CMAQ) modeling system.

Since 2011 nearly all CASTNET ozone monitors have adhered to the requirements for State or Local Air Monitoring Stations (SLAMS) as specified by the EPA in 40 CFR Part 58. As such, the ozone data collected must meet the requirements in 40 CFR Part 58 Appendix A, which defines the quality assurance (QA) requirements for gaseous pollutant ambient air monitoring. The audits performed by EEMS under this contract fulfilled the requirement for annual performance evaluation audits of pollutant monitors in the network. The QA requirements can be found at: https://www.epa.gov/amtic/regulations-guidance-and-monitoring-plans

Currently 94 sites at 92 distinct locations measure ground-level ozone concentrations. Annual performance evaluation (PE), ozone audit data are submitted to the Air Quality System (AQS) database.

As of December 2020, the network is comprised of 97 active rural sampling sites across the United States and Canada, cooperatively operated by the Environmental Protection Agency (EPA), the National Park Service (NPS), Bureau of Land Management – Wyoming State Office (BLM-WSO) and several independent partners. Wood Environment and Infrastructure Solutions (Wood) is responsible for operating the EPA sponsored sites, and Air Resource Specialists, Inc. (ARS) is responsible for operating the NPS and BLM-WSO 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 reported 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.

Sensor	Parameter	Audit Challenge	Acceptance Criteria
Precipitation	Response	10 manual tips1 DAS count per tip	
Precipitation	Accuracy	2 introductions of known amounts of water	$\leq$ ±10.0% of input amount
Relative Humidity	Accuracy	Compared to reference instrument or standard solution	$\leq$ ±10.0% RH
Solar Radiation	Accuracy	Compared to WRR traceable standard	$\leq \pm 10.0\%$ of daytime average
Surface Wetness	Response	Distilled water spray mist	Positive response
Surface Wetness	Sensitivity	1% decade resistance	N/A
Temperature	Accuracy	Comparison to 3 NIST measured baths (~ 0° C, ambient, ~ full-scale)	$\leq \pm 0.5^{\circ} \mathrm{C}$
Temperature Difference	Accuracy	Comparison to station temperature sensor	$\leq \pm 0.50^{\circ} \mathrm{C}$

 Table 1. Performance Audit Challenge and Acceptance Criteria

Sensor	Parameter	Audit Challenge	Acceptance Criteria	
Shelter Temperature	Accuracy	Comparison to station temperature sensor	≤± 2.0° 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-	$0.9000 \le m \le 1.1000$	
Ozone	Intercept	point test gas concentration as	-5.0 ppb $\leq$ b $\leq$ 5.0 ppb	
Ozone	Correlation Coefficient	measured with a certified transfer standard	0.9950 ≤ r	
Ozone	Percent Difference	Comparison with Level 2 standard concentration	$\leq \pm 15.1\%$ of test gas concentration and $\leq \pm 0.0015$ ppm actual difference	
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, at least annually.

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

- Site locations and configurations match those provided in the CASTNET QAPP.
- Meteorological instruments are in good physical and operational condition and are sited to meet EPA ambient monitoring guidelines (EPA-600/4-82-060).
- Sites are accessible, orderly, and if applicable, compliant with OSHA safety standards.
- Sampling lines are free of leaks, kinks, visible contamination, weathering, and moisture.
- Site shelters provide adequate temperature control.

- All ambient air quality instruments are functional, being operated in the appropriate range, and the zero-air supply desiccant is unsaturated.
- All instruments are in current calibration.
- Site documentation (maintenance schedules, on-site SOPs, etc.) is current and log book records are complete.
- All maintenance and on-site SOPs are performed on schedule.
- Corrective actions are documented and appropriate for required maintenance/repair activity.
- Site operators demonstrate an adequate knowledge and ability to perform required site activities, including documentation and maintenance activities.

### 1.3 CASTNET Sites Visited Fourth Quarter 2020

This report consists of the systems and performance, and other audit results from the CASTNET sites visited during the fourth quarter (October through December) of 2020. The site locations, sponsor, visit dates, and parameters audited are included in Table 2. The number of sites visited during this period were fewer than scheduled due to the impact of the COVID-19 pandemic.

Site ID	Sponsor	Date	FSA	O3 PE	SO2	со	NOy	FLOW
HOX148	EPA	10/3/2020	1	1				1
UVL124	EPA	10/6/2020	1	1				1
ANA115	EPA	10/7/2020	1	1				1
DEN417	NPS	10/7/2020	1	1				1
SPD111	EPA	10/12/2020	1	1				1
GRS420	NPS	10/14/2020		1			1	
ESP127	EPA	10/16/2020	1	1				1
CAT175	EPA	10/20/2020	1					1
SAN189	EPA	10/22/2020		1				
OXF122	EPA	11/2/2020	<u> </u>	1	<u> </u>	<u> </u>		
SAL133	EPA	11/4/2020	1	1				1
BVL130	EPA	11/5/2020	-	1	1	1	1	-

### Table 2. CASTNET Site Audit Visits

Site ID	Sponsor	Date	FSA	O3 PE	SO2	СО	NOy	FLOW
MCK131	EPA	11/7/2020		1				
MCK231	EPA	11/7/2020		1				
CKT136	EPA	11/8/2020		1				
QAK172	EPA	11/9/2020		1				
VPI120	EPA	11/10/2020		1				
JOT403	NPS	11/12/2020	1	1				1
PAR107	EPA	11/12/2020		1				
CDR119	EPA	11/13/2020		1				
DEV412	NPS	11/13/2020	1	1				
BWR139	EPA	11/15/2020		1				
PNF126	EPA	11/15/2020	1	1			1	1
STK138	EPA	11/18/2020		1				
UMA009	EPA	11/23/2020	1	1				1
VIN140	EPA	12/4/2020		1				
PED108	EPA	12/6/2020		1				
ALH157	EPA	12/7/2020		1				
CDZ171	EPA	12/8/2020		1				
CND125	EPA	12/12/2020		1				
BFT142	EPA	12/16/2020		1				

### 1.4 Audit Results

The observations and results of the systems and performance audits are included in Appendix A, *CASTNET Audit Report Forms* by site, arranged by audit date. Photographs of site conditions are included within each system report where necessary. Copies of the spot reports that were sent following the audit of each site are included as Appendix B, *CASTNET Site Spot Report Forms*. The Ozone PE results and observations are included in Appendix C, *CASTNET Ozone Performance Evaluation Forms*.

Results of the PE audits of the gaseous pollutant monitors other than ozone, were submitted immediately following the PE and are not included in this report. All TTP PE results of gaseous pollutant monitors are uploaded to AQS and are available there. All audit data and reports are available from the EPA CASTNET website: <u>https://java.epa.gov/castnet/reportPage.do</u>

### 2.0 NADP Quarterly Report

### 2.1 Introduction

The National Atmospheric Deposition Program (NADP) operates two 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 precipitation event-based Atmospheric Integrated Research Monitoring Network (AIRMoN) began operation in 1992, and as of July 2019 is no longer in operation. The Mercury Deposition Network (MDN) measures total mercury in precipitation samples from approximately 90 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 networks of the NADP are sponsored by several federal, state, and local agencies as well as private organizations.

The NADP Program Office (PO) operates and administers the two precipitation chemistry networks (NTN and MDN), two atmospheric concentration networks (AMNet and AMoN), and two analytical laboratories (CAL and HAL), from the Wisconsin State Lab of Hygiene (WSLH) at the University of Wisconsin in Madison. The network equipment depot (NED) is also located at the WSLH.

### 2.2 **Project Objectives**

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

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

### 2.3 NADP Sites Visited Fourth Quarter 2020

This report presents the NADP sites surveyed during the fourth quarter (October through December) of 2020. The station locations, sponsors, network. and dates of the surveys are presented in Table 3. The number of sites visited during this period were fewer than scheduled due to the impact of the COVID-19 pandemic.

Table 3.	NADP	Site	Survey	Visits
----------	------	------	--------	--------

Site ID	Sponsor	Date	NTN	MDN	AMON
WI10	Potawatomi Community	10/2/2020	1	1	
MI95	EPA	10/3/2020			1
MI51	EPA	10/6/2020			1
AK03	NPS	10/7/2020	1		
MI52	EPA / LADCO	10/7/2020	1	1	1
AK01	USDA-FS	10/8/2020	1		
TN04	EPA	10/12/2020	1		1
TN12	NPS	10/13/2020		1	
TN00	NOAA	10/15/2020	1		
TN07	EPA	10/16/2020			1
MT95	Northern Cheyenne Tribe	10/19/2020		1	
MT96	Fort Peck Tribes	10/20/2020	1		
NY91	EPA	10/20/2020			1
ND00	NPS	10/21/2020	1		
NY96	Suffolk County NY	10/21/2020	1	1	
MA14	Nantucket Land Council	10/22/2020	1		
NE98	EPA	10/22/2020			1
TN14	USGS	10/22/2020	1		
NY43	NYSERDA / NYDEC	10/30/2020	1	1	
OH09	EPA	11/2/2020			1

Site ID	Sponsor	Date	NTN	MDN	AMON
IN41	Purdue University	11/3/2020	1		
IN20	USGS / EPA	11/4/2020	1		1
IL11	EPA	11/5/2020			1
KY29	EPA	11/8/2020			1
OH99	EPA	11/9/2020			1
VA13	EPA	11/10/2020			1
CA67	NPS	11/12/2020	1		1
WV18	EPA	11/12/2020			1
WV05	EPA	11/13/2020			1
MD06	EPA	11/15/2020			1
NC02	EPA	11/15/2020			1
IL37	EPA	11/18/2020			1
WA04	EPA	11/23/2020			1
ID02	USDA-FS	11/24/2020	1		
IN22	USGS / EPA / LADCO	12/4/2020	1	1	1
VA24	EPA	12/6/2020			1
IL46	EPA	12/7/2020	1		1
KY98	EPA	12/8/2020			1
NC06	EPA	12/11/2020			1
NC26	EPA	12/12/2020			1

### 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 the EPA OneDrive account where the NADP PO and the U.S. EPA POs can access them and download them as needed.

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

## APPENDIX A

**CASTNET** Audit Report Forms

# Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
HO	X148-Eric H	lebert-10/03/2020				
1	10/3/2020	Computer	Dell	07062	Inspiron 15	Unknown
2	10/3/2020	DAS	Campbell	000426	CR3000	2533
3	10/3/2020	Elevation	Elevation	None	1	None
4	10/3/2020	Filter pack flow pump	Thomas	06029	107CA18B	060400022669
5	10/3/2020	Flow Rate	Apex	000866	AXMC105LPMDPCV	illegible
6	10/3/2020	Infrastructure	Infrastructure	none	none	none
7	10/3/2020	Modem	Digi	07204	LR54	unknown
8	10/3/2020	Ozone	ThermoElectron Inc	000614	49i A1NAA	1009241794
9	10/3/2020	Ozone Standard	ThermoElectron Inc	000495	49i A3NAA	0622717849
10	10/3/2020	Sample Tower	Aluma Tower	000131	В	none
11	10/3/2020	Shelter Temperature	Campbell	none	107-L	none
12	10/3/2020	Siting Criteria	Siting Criteria	None	1	None
13	10/3/2020	Temperature	RM Young	06405	41342	14038
14	10/3/2020	Zero air pump	Werther International	06938	C 70/4	000829164

# **DAS Data Form**

DAS Time Max Error: 0.03

Mfg	Serial Nu	ımber S	ite	Technician	Site Visit Date	Parameter	Use Desc.
Campbell	2533	ŀ	HOX148	Eric Hebert	10/03/2020	DAS	Primary
Das Date: Das Time: Das Day:	10/3 /2020 11:33:32 277	Audit Dat Audit Tin Audit Day	ne 11:33:30	Mfg Serial Number	Datel 4000392	Parameter Tfer Desc.	r DAS , Source generator (D
Low Channel:		High Char	mel:	Tfer ID	01321		
Avg Diff: 0.0000	Max Diff: 0.000	<b>Avg Diff:</b> 1 0.0	Max Diff:           000         0.0001	Slope Cert Date	1.0000		0.00000
				Mfg Serial Number Tfer ID	Fluke 86590148 01310	Parameter Tfer Desc.	r DAS
				Slope	1.0000	0 Intercept	0.00000
				Cert Date	2/4/202	CorrCoff	1.00000
Channel	Input I	OVM Output	DAS Output	InputUnit	OutputUnit	Difference	
7	0.0000	0.000	0.000	0 V	V	0.0000	
7	0.1000	0.100	0.100	2 V	V	0.0000	
7	0.3000	0.300	0.300	3 V	V	0.0000	
7	0.5000	0.500			V	0.0000	
7	0.7000	0.700			V	0.0001	
7	0.9000	0.901			V	0.0001	
7	1.0000	1.001	3 1.001	4 V	V	0.0001	

# Flow Data Form

Mfg	Serial Num	ıber Tag	Site	Тео	chnician	hnician Site Visit Date		Paran	neter	Owner ID
Арех	illegible		HOX148	Eri	ic Hebert	10/03/2	2020	Flow F	late	000866
					Mfg Serial Number	BIOS 131818			'arameter Flov 'fer Desc. BIC	
					Tfer ID	01417				
					Slope		1.000	032 Intercept		-0.02240
					Cert Date		2/17/20	20 <b>Co</b>	rrCoff	0.99997
DAS 1:			L	Cal Factor Z	ero			0		
A Avg % Diff:	A Max % Dif	A Avg %	Diff A Max	x % Dif	Cal Factor F	ull Scale		1.	01	
0.88%	1.32%				<b>Rotometer R</b>	eading:		1.	45	
Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S	S E Ing	outUnit	OutputSignalH	PctDifference
primary	pump off	0.000	0.000	0.03	0.000	0.03		l/m	l/m	
primary	leak check	0.000	0.000	0.10	0.000	0.07		l/m	l/m	
primary	test pt 1	1.491	1.510	1.49	0.000	1.50		l/m	l/m	-0.66%
primary	test pt 2	1.493	1.510	1.49	0.000	1.50		l/m	l/m	-0.66%
primary	test pt 3	1.496	1.520	1.49	0.000	1.50		l/m	l/m	-1.32%
Sensor Com	ponent Leak Tes	t		Conditio	on			Statu	s pass	
Sensor Comj	ponent Tubing C	ondition		Conditio	n Good			Status pass		
Sensor Comj	ponent Filter Pos	ition		Conditio	on Good			Status pass		
Sensor Com	ponent Rotomete	er Conditio	n	Conditio	Clean and dry			Statu	s pass	
Sensor Com	ponent Moisture	Present		Conditio	No moisture p	resent		Statu	s pass	
Sensor Component Filter Distance			Conditio	<mark>on</mark> 5.0 cm			Status pass			
Sensor Component Filter Depth					ion 3.0 cm			Status pass		
Sensor Component Filter Azimuth				Conditio	ion 180 deg			Status pass		
Sensor Com	ponent System M	lemo		Conditio	on			Statu	s pass	

# **Ozone Data Form**

Mfg		Serial Numbe	er Tag Site		Tech	nician	Site Visit Date	Parame	ter	Owner ID
ThermoElec	ctron Inc	1009241794	HOX14	3	Eric I	Hebert	10/03/2020	Ozone		000614
Slope: Intercept CorrCoff:	Intercept 0.16381 Intercept		rcept	0.00000 0.00000 0.00000	Se	lfg erial Number fer ID				er ozone c. Ozone primary stan
	0 0%		AS 2: Avg %Diff A	Max % Dif	s SI	lope ert Date	0.9949		•	0.32220
UseDescr prima prima prima prima	iption ry ry ry ry	ConcGroup 1 2 3 4	Tfer Raw 0.43 13.58 35.25 68.85	Tfer Co 0.10 13.32 35.10 68.87		Site 0.35 13.20 34.69 68.02	Site Unit ppb ppb ppb ppb	RelPer	Dif -1.17 -1.24	AbsDif 0.25 -0.12
prima		5	106.94	107.16		105.70	ppb		-1.37	
Sensor C	ompone	ant Audit Pressu ant Sample Trai	'n	Con	dition dition	737.1 mmHg Good		Status Status		
Sensor C	ompone	nt Minimum dis	stance from road	I met Con	dition	True	Status F		pass	
Sensor C	ompone	nt Inlet Filter C	ondition	Con	Condition Clean			Status	pass	
Sensor C	ompone	nt 26.6 degree	unobstructed ru	le Con	dition	True		Status	pass	
Sensor C	ompone	nt Tree dewline	e >10m or below	inlet Con	dition	True		Status	pass	
Sensor C	ompone	nt Offset		Con	Condition -0.20			Status	pass	
Sensor C	ompone	nt Span		Con	dition	1.012		Status	pass	
	_	nt Zero Voltage	9		dition			Status pass		
	•	nt Fullscale Vo			dition		Status pass			
	-									
	•	ent Cell A Freq.				98.9 kHz		Status pass		
	-	nt Cell A Noise	)			0.9 ppb		Status		
Sensor C	ompone	Cell A Flow		Con	dition	0.73 lpm		Status	pass	
Sensor C	ompone	nt Cell A Press	sure	Con	dition	706.6 mmHg		Status	pass	
Sensor C	ompone	nt Cell A Tmp.		Con	dition	33.4 C		Status	pass	
Sensor C	ompone	nt Cell B Freq.		Con	dition	91.1 kHz		Status	pass	
Sensor C	Sensor Component Cell B Noise		Con	dition	0.4 ppb		Status	pass		
Sensor C	ompone	nt Cell B Flow		Con	dition	0.73 lpm		Status	pass	
Sensor C	Sensor Component Cell B Pressure		Con	dition	706.5 mmHg		Status			
	_	nt Line Loss				Not tested		Status		
	-	nt System Mer	no		dition			Status		
						L			L	

# Temperature Data Form

Mfg	Serial Number	Tag Site	I	Technician		Site V	isit Date	Param	eter	<b>Owner ID</b>	
RM Young	14038	HOX148		Eric H	ebert	10/03	/2020	Temper	ature	06405	
				Mf	g	Extect	1	Ра	rameter Te	mperature	
				Serial Number		H2327	'34	Tf	fer Desc. RTD		
				Tfer ID		01227	,				
DAS 1:		Slo	pe		1.00797 Intercept		0.12950				
DAS 1:DAS 2:Abs Avg ErrAbs Max ErrAbs Avg ErrAbs Max			Max Err	x Err Cert Date			2/14/202	0 Cor	rCoff	1.00000	
0.22	0.28										
UseDesc.	Test type	InputTmpRaw	InputTmp	SmpCorr. OutputTmpS		Signal OutputSig		gnalEng OSE Uni		Difference	
primary	Temp Low Range	-0.07	-0.20	0 0.000		0.1	L	C	0.28		
primary	Temp Mid Range	26.98	26.64	-	0.000		26.8		С	0.18	
primary	Temp High Range	48.47	47.96	<u>,</u>	0.000		48.	2	С	0.19	
Sensor Com	ponent Shield		Condi	tion C	Clean			Status	pass		
Sensor Component Blower			Condi	Condition N/A				Status	pass		
Sensor Component Properly Sited				Condition Properly sited				Status	Status pass		
Sensor Component System Memo			Condi	Condition				Status pass			

# Shelter Temperature Data For

Mfg	Serial Number Tag Site To		Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	HOX148	Eric Hebert	10/03/2020	Shelter Temperature	none
DAS 1:	<b>DAS 2:</b>		Mfg	Extech	Parameter She	Iter Temperature
Abs Avg Err At	Abs Avg Err       Abs Max Err       Abs Avg Err       Abs Max Err         1.16       1.18       (1.18)       (1.18)		r Serial Number	H232734	Tfer Desc. RTD	)
			Tfer ID	01227		
			Slope	1.0079	7 Intercept	0.12950
			Cert Date	2/14/202	0 CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	22.66	22.35	0.000	23.5	С	1.14
primary	Temp Mid Range	21.81	21.51	0.000	22.7	С	1.18
Sensor Cor	nponent System Memo	)	Condition		Status	pass	

### **Infrastructure Data For**

Site ID	HOX148	Technician Eric He	bert Site Visit Date 10/03/2020
Shelter	Make	Shelter Model	Shelter Size
Ekto		8810	640 cuft

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

# Siting Criteria Form

Sensor Component Large point source of So2 or Nox	Condition ~ 30 km	Status pass
Sensor Component City > 50,000	Condition	Status pass
Sensor Component City 1,000 to 10,000	Condition	Status pass
Sensor Component City 10,000 to 50,000	Condition	Status pass
Sensor Component Feedlot operations	Condition	Status pass
Sensor Component Large parking lot	Condition	Status pass
Sensor Component Limited agriculture operations	Condition 10 m	Status pass
Sensor Component Major industrial source	Condition	Status pass
Sensor Component Secondary road < or = 100 per da	Condition	Status pass
Sensor Component Secondary road >100 vehicles/da	Condition	Status pass
Sensor Component Small parking lot	Condition	Status pass
Sensor Component System Memo	Condition	Status pass
Sensor Component Major highway, airport, or rail yard	Condition	Status pass
Sensor Component Intensive agriculture operations	Condition	Status pass
Sensor ComponentSmall parking lotSensor ComponentSystem MemoSensor ComponentMajor highway, airport, or rail yard	Condition	Status       pass         Status       pass         Status       pass

# **Field Systems Comments**

#### 1 Parameter: SiteOpsProcedures

The ozone analyzer sample inlet filter is replaced and a Z/S/P check is performed every two weeks.

#### 2 Parameter: SitingCriteriaCom

There is a co-generating and smelting facility in Cadillac approximately 30 km to the northeast. The site is located in a hay field which is cut 2 or 3 times per year.

### 3 Parameter: ShelterCleanNotes

The shelter has been repaired since the previous audit visit.

### 4 Parameter: MetSensorComme

Met tower removed and temperature installed in naturally aspirated shield on the west leg of the sample tower.

### 5 Parameter: MetOpMaintCom

The signal cables are showing signs of wear with the outer insulation missing in a few places.

# Field Systems Data Form

# F-02058-1500-S1-rev002

Site ID HOX148	Technician Eric Hebert	Site Visit Date 10/03	3/2020					
Site Sponsor (agency)	EPA	USGS Map	Hoxeyville					
<b>Operating Group</b>	private	Map Scale						
AQS #	26-165-9991	Map Date						
Meteorological Type	R.M. Young							
Air Pollutant Analyzer	Ozone	QAPP Latitude						
<b>Deposition Measurement</b>	dry	QAPP Longitude						
Land Use	woodlands - mixed	QAPP Elevation Meters						
Terrain	gently rolling	QAPP Declination						
Conforms to MLM	Yes	QAPP Declination Date						
Site Telephone	(231) 862-3750	Audit Latitude	44.180787					
Site Address 1	10637 South 9 Rd.	Audit Longitude	-85.738964					
Site Address 2		Audit Elevation	297					
County	Wexford	Audit Declination	-5					
City, State	Cadillac, MI	Present						
Zip Code	49601	Fire Extinguisher 🗹	New in 2015					
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 Steps ✓						
Shelter Working Room ✓	Make Ekto M	odel 8810	Shelter Size 640 cuft					
Shelter Clean	Notes The shelter has been repaired	since the previous audit visit.						
Site OK	Notes							
Priving Directions From Cadillac proceed west on route 55 for approximately 12.5 miles. Turn left (south) on Hoxeyville Road (S13) and continue approximately 2 miles to the first stop sign. Turn right (west) on an unmarked road and continue approximately 2 miles to 9 road. Turn left (south) on 9 road which is not paved and continue approximately 1 mile, the site is on the left.								

Fie	eld Sy	stems Data Fo	orm				<b>F-0205</b>	8-1	500-S3-1	rev002
Site	e ID	HOX148	Technician	Eric Hebert		Site Visit Date	10/03/2020		]	
1		d speed and direction fluenced by obstructio		) as to avoid	<ul><li></li></ul>	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 plu	mb?		✓	N/A				
4		temperature shields p diated heat sources su			✓	West				
5	conditio surface	perature and RH sens ns? (i.e. ground below and not steeply sloped g water should be avoi	sensors should . Ridges, hollov	be natural						
6	Is the so	lar radiation sensor p	lumb?		✓	N/A				
7	Is it site	d to avoid shading, or	any artificial o	r reflected light?	✓	N/A				
8	Is the ra	in gauge plumb?				N/A				
9	Is it site towers,	d to avoid sheltering e etc?	ffects from buil	ldings, trees,	✓	N/A				
10	Is the su facing n	urface wetness sensor s orth?	sited with the g	rid surface		N/A				
11	Is it inc	lined approximately 3	0 degrees?		✓	N/A				

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

Met tower removed and temperature installed in naturally aspirated shield on the west leg of the sample tower.

# **Field Systems Data Form**

### F-02058-1500-S4-rev002

Site	e ID	HOX148	Technician	Eric Hebert		Site Visit Date	10/03/2020	
1		e meterological senso n, and well maintained		intact, in good		Temperature only		
2	Are all the reporting	he meteorological sens g data?	sors operational	l online, and	✓	Temperature only		
3	Are the s	shields for the tempera	ature and RH s	ensors clean?	✓			
4	4 Are the aspirated motors working?					N/A		
5	Is the sol scratche	ar radiation sensor's as?	lens clean and f	ree of	✓	N/A		
6	Is the su	rface wetness sensor g	grid clean and u	ndamaged?	✓	N/A		
7		sensor signal and pow n, and well maintained		, in good	✓	Signs of wear		
8		sensor signal and pow elements and well ma		tions protected	✓			
D	de enve	ditional ovaluation	(	alaatah 20 maaaa	· · · · · · · · · · · · · · · · · · ·		maliated above on en	a ath an factures

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 signal cables are showing signs of wear with the outer insulation missing in a few places.

Fi	eld Sy	stems Data Fo	orm		<b>F-02058-1</b>	500-S5-rev002
Site	e ID	HOX148	Technician Eric He	bert	Site Visit Date 10/03/2020	
	Siting C	Criteria: Are the pollut	ant analyzers and depo	osition equipn	ent sited in accordance with 40 CFR	58, Appendix E
1		sample inlets have at le icted airflow?	east a 270 degree arc of			
2	Are the	sample inlets 3 - 15 m	eters above the ground	?		
3		sample inlets > 1 mete meters from trees?	er from any major obst	ruction, 🔽		
	<u>Pollutar</u>	nt analyzers and depos	ition equipment operat	tions and mai	<u>ntenance</u>	
1		analyzers and equipme on and well maintained	ent appear to be in good  ?	d 🗸		
2	Are the reportin		rs operational, on-line,	and 🗹		
3	Describ	e ozone sample tube.			1/4 teflon by 15 meters	
4	Describ	e dry dep sample tube.			3/8 teflon by 15 meters	
5		ine filters used in the o location)	ozone sample line? (if y	es 🗸	At inlet only	
6	Are sam obstruct	nple lines clean, free of tions?	kinks, moisture, and			
7	Is the ze	ero air supply desiccan	t unsaturated?			
8	Are the	re moisture traps in th	e sample lines?		Flow line only	
9	Is there clean?	a rotometer in the dry	v deposition filter line, a	and is it 🔽	Clean and dry	

Fi	eld Sy	stems Data Fo	orm		F-02058-1500-S6-rev002				
Site	e ID	HOX148	Technician	Eric Hebert		Site Visit Date	10/03/2020		
	DAS, se	nsor translators, and g	peripheral equip	pment operation	ns and	<u>l maintenance</u>			
1		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					
4		signal connections pro intained?	otected from the	e weather and					
5	Are the	signal leads connected	to the correct	DAS channel?					
6	Are the 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	erature control	led?					
9	Is the m	et tower stable and gr	ounded?			Stable	(	Grounded	
10	Is the sa	mple tower stable and	grounded?						
11	Tower c	omments?			ſ	Met tower removed	1		

Field S	ystems Data	For	·m				<b>F-02</b>	058-	-1500-S7	'-rev002
Site ID	HOX148		Tech	nician	Eric Hebert	Site Visit Date	10/03/2020			
Documer	<u>ntation</u>									
<b>Does the</b>	site have the requir	ed ins	strum	ent and	d equipment manuals?					
Solar radiat Surface wet Wind senso Temperatur Humidity se Solar radiat	tion sensor re sensor midity sensor tion sensor ness sensor	Yes □ ✓ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □			Data logger       Data logger       Data logger       Strip chart       Computer       Modem       Printer       Zero air pur       Filter flow p       Surge prote       UPS	recorder mp pump	Yes ✓ □ □ □ ✓ □ □ □ □ □ □ □ □ □ □ □ □ □		N/A V V V V V V V V V	
Ozone analy	yzer flow controller	<ul><li></li></ul>								
-	MFC power supply			<ul> <li>✓</li> </ul>	_	contributioner				
-		ired a		ost rece	ent QC documents and r	<u>report forms?</u>				
		Pres					Curre	nt		
Station Log										
SSRF										
Site Ops Ma	anual			Oct 20'						
HASP			✓	Oct 20'	)14					
Field Ops M	Ianual	•	✓	June 19	987					
Calibration	Reports		<b>~</b>							

 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?
 ✓

**Ozone z/s/p Control Charts** 

**Preventive maintenance schedule** 

### **Field Systems Data Form**

#### HOX148 Technician Eric Hebert Site Visit Date 10/03/2020 Site ID Site operation procedures 10/20/2000 by ESE employee EOH Has the site operator attended a formal CASTNET training course? If yes, when and who instructed? Has the backup operator attended a formal CASTNET

✓

✓

4	has the backup operator attended a formal CASTN
	training course? If yes, when and who instructed?

- Is the site visited regularly on the required Tuesday 3 schedule?
- Are the standard CASTNET operational procedures being 4 flollowed by the site operator?
- Is the site operator(s) knowledgeable of, and able to perform 5 the required site activities? (including documentation)

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

QC	Check	Perf	ormed
----	-------	------	-------

1

-

### Frequency

Frequency

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

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

<b>OC</b>	Check	Perf	ormed
×Υ	Chiech		or mea

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

requency	
Semiannually	
Daily	
Daily	
Weekly	
Every 2 weeks	
N/A	
Weekly	
Weekly	

Unknown

- 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 comple

complete sample train including all filters?			
Are the automatic and manual z/s/p checks monitored and	$\checkmark$	SSRF, call	-in
reported? If yes, how?			

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

✓

The ozone analyzer sample inlet filter is replaced and a Z/S/P check is performed every two weeks.

### **Compliant**

Compliant

-	

F-	02(	)58-	150	0-88	8-rev	00
<b>T</b> . –		<b>JJU</b> -	100	0-00	)-1 C V	UU

2

#### **Field Systems Data Form** F-02058-1500-S9-rev002 HOX148 Technician Eric Hebert Site Visit Date 10/03/2020 Site ID Site operation procedures Is the filter pack being changed every Tuesday as scheduled? V Filter changed mornings 1 Are the Site Status Report Forms being completed and filed 2 correctly? No longer required Are data downloads and backups being performed as 3 scheduled? ✓ SSRF, logbook Are general observations being made and recorded? How? 4 ✓ Are site supplies on-hand and replenished in a timely 5 fashion? SSRF, call-in Are sample flow rates recorded? How? 6 $\checkmark$ Are samples sent to the lab on a regular schedule in a timely 7 fashion? ✓ Clean gloves on and off Are filters protected from contamination during handling 8 and shipping? How? ✓ Are the site conditions reported regularly to the field 9 operations manager or staff?

Compliant

QC Check Performed

### Frequency

Multi-point MFC Calibrations	Semiannually	
Flow System Leak Checks	✓ Weekly	
Filter Pack Inspection		
Flow Rate Setting Checks	✓ Weekly	
Visual Check of Flow Rate Rotometer	✓ Weekly	
In-line Filter Inspection/Replacement	Semiannually	
Sample Line Check for Dirt/Water	✓ Weekly	$\checkmark$

Field	S	vstems	Data	Form
riciu	D	SUCIIIS	Data	TUTII

HOX148

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

Technician Eric Hebert

Site Visit Date 10/03/2020

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	Unknown	07062
DAS	Campbell	CR3000	2533	000426
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CA18B	060400022669	06029
Flow Rate	Apex	AXMC105LPMDPC	illegible	000866
Infrastructure	Infrastructure	none	none	none
Modem	Digi	LR54	unknown	07204
Ozone	ThermoElectron Inc	49i A1NAA	1009241794	000614
Ozone Standard	ThermoElectron Inc	49i A3NAA	0622717849	000495
Sample Tower	Aluma Tower	В	none	000131
Shelter Temperature	Campbell	107-L	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342	14038	06405
Zero air pump	Werther International	C 70/4	000829164	06938

# Site Inventory by Site Visit

Site V	isit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number			
SAL133-Korey Devins-11/04/2020									
1	11/4/2020	Computer	Dell	07011	Inspiron 15	Unknown			
2	11/4/2020	DAS	Campbell	000351	CR3000	2129			
3	11/4/2020	Elevation	Elevation	None	1	None			
4	11/4/2020	Filter pack flow pump	Thomas	00765	107CA110	0000141			
5	11/4/2020	Flow Rate	Apex	000547	AXMC105LPMDPCV	50743			
6	11/4/2020	Infrastructure	Infrastructure	none	none	none			
7	11/4/2020	Modem	Digi	07206	LR54	unknown			
8	11/4/2020	Ozone	ThermoElectron Inc	000622	49i A1NAA	1009241785			
9	11/4/2020	Ozone Standard	ThermoElectron Inc	000371	49i A3NAA	0726124692			
10	11/4/2020	Sample Tower	Aluma Tower	none	В	AT-51065-5-G-A			
11	11/4/2020	Shelter Temperature	Campbell	none	107-L	none			
12	11/4/2020	Siting Criteria	Siting Criteria	None	1	None			
13	11/4/2020	Temperature	RM Young	06410	41342	14043			
14	11/4/2020	Zero air pump	Werther International	06876	C 70/4	000814286			

# **DAS Data Form**

0 DAS Time Max Error:

Mfg	Serial Nu	umber Site	Т	Technician	Site Visit Date	Parameter	Use Desc.
Campbell	2129	SAL	133 I	Korey Devins	11/04/2020	DAS	Primary
Das Date:	11/4 /2020	Audit Date	11/4 /2020	Mfg	Datel	Parameter	DAS
Das Time: Das Day:	11:47:00 309	Audit Time Audit Day	11:47:00 309	Serial Number	15510194	Tfer Desc.	Source generator (D
Low Channel:		High Channel	:	Tfer ID	01320	]	
Avg Diff:	Max Diff:	Avg Diff:	Max Diff:	Slope	1.00000	Intercept	0.00000
0.0001	0.000	1 0.0001	0.0001	Cert Date	2/13/2012	2 CorrCoff	1.00000
				Mfg	Fluke	Parameter	DAS
				Serial Number	95740135	Tfer Desc.	DVM
				Tfer ID	01311	]	
				Slope	1.00000	Intercept	0.00000
				Cert Date	1/28/2020	O CorrCoff	1.00000
Channel	Input I	DVM Output	DAS Output	InputUnit	OutputUnit	Difference	
7	0.0000	-0.0001	0.0000	) V	V	0.0001	
7	0.1000	0.0999	0.0999	V	V	0.0000	
7	0.3000	0.2997	0.2997	v V	V	0.0000	
7	0.5000	0.4995	0.4995	5 V	V	0.0000	
7	0.7000	0.6995	0.6994	V	V	-0.0001	
7	0.9000	0.8993	0.8992	2 V	V	-0.0001	
7	1.0000	0.9992	0.9991	V	V	-0.0001	

# Flow Data Form

Mfg	Serial Num	ber Tag	Site	Тес	chnician	Site Visit I	Date Param	ieter	<b>Owner ID</b>
Арех	50743		SAL133	Ko	orey Devins	11/04/202	0 Flow R	ate	000547
					Mfg	BIOS 131818		arameter Fl	
					Serial Number		T	fer Desc. B	Ю5 220-Н
					Tfer ID	01417			
					Slope	1	.00032 Inte	ercept	-0.02240
					Cert Date	2/1	7/2020 <b>Cor</b>	rCoff	0.99997
DAS 1:		<b>DAS 2:</b>		L	Cal Factor Z	ero	0.0	01	
A Avg % Diff:	A Max % Dif	A Avg %	Diff A Max	: % Dif	Cal Factor F	ull Scale	1.(	01	
0.00%	0.00%				Rotometer R	eading:	1	.5	
Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSigna	ll PctDifference
primary	pump off	0.000	0.000	0.00	0.000	0.01	l/m	l/m	
primary	leak check	0.000	0.000	-0.01	0.000	-0.03	l/m	l/m	
primary	test pt 1	1.482	1.500	1.50	0.000	1.50	l/m	l/m	0.00%
primary	test pt 2	1.481	1.500	1.50	0.000	1.50	l/m	l/m	0.00%
primary	test pt 3	1.481	1.500	1.50	0.000	1.50	l/m	l/m	0.00%
Sensor Comp	onent Leak Tes	t		Conditio	on		Status	pass	
Sensor Comp	onent Tubing C	ondition		Conditio	Condition Good			s pass	
Sensor Comp	onent Filter Pos	ition		Conditio	dition Good			pass	
Sensor Comp	onent Rotomete	er Conditio	n	Conditio	ondition Clean and dry			pass	
Sensor Component Moisture Present		Conditio	tion See comments		Status	pass			
Sensor Component Filter Distance		Conditio	ion 2.5 cm		Status	us pass			
Sensor Component Filter Depth		Conditio	ion 2.5 cm		Status	pass			
Sensor Comp	onent Filter Azir	nuth		Conditio	270 deg	Status	tus pass		
Sensor Comp	onent System M	1emo		Conditio	on		Status	pass	

# **Ozone Data Form**

Mfg	fg Serial Number Tag Site Technician		chnician	Site Visit Date	Parame	eter	Owner ID				
ThermoElect	ron Inc	1009241785	SAL133		Ko	orey Devins	11/04/2020	Ozone		000622	
Slope:0.99920Slope:Intercept-0.32976InterceptCorrCoff:1.00000CorrCoff:		cept	0.00000 0.00000 0.00000		Mfg Serial Number Tfer ID	ThermoElectron 1180030022 01114			r ozone . Ozone primary stan		
DAS 1: A Avg % Di	ff: A M		AS 2: Avg %Diff A	Max %		Slope	0.999		•	0.29010	
0.0	%	0.0%				Cert Date	1/14/20	20 Corr	Coff	0.99999	
UseDescrip primary primary primary	y y	ConcGroup 1 2 3	Tfer Raw 0.44 14.77 34.82	1	er Corr 0.14 14.48 34.54	Site -0.16 14.03 34.20	Site Unit ppb ppb ppb	RelPer	Dif -0.99	AbsDif -0.3 -0.45	
primary		4	67.15		56.89	66.64	ppb		-0.37		
primary		5	110.83	1	10.59	110.10	ppb	<i>a</i> .	-0.44		
Sensor Co	mponen	t Audit Pressu	ire		Conditio	742.2 mmHg		Status	pass		
Sensor Co	mponen	t Sample Trai	n		Conditio	on Good		Status	pass		
Sensor Co	mponen	t Minimum dis	stance from road	d met	Conditio	m True		Status	pass		
Sensor Co	Sensor Component Inlet Filter Condition				Conditio	Condition Moderately clean			Status pass		
Sensor Component 26.6 degree unobstructed rule			le	Conditio	on True		Status	pass			
Sensor Co	mponen	t Tree dewline	e >10m or below	inlet	Conditio	m True		Status	pass		
Sensor Co	mponen	t Offset			Conditio	<b>0.10</b>		Status	pass		
Sensor Co	mponen	t Span			Condition 1.017			Status	pass		
Sensor Co	mponen	t Zero Voltage	)	_	Condition N/A			Status	pass		
Sensor Co	mponen	t Fullscale Vo	ltage		Conditio	on N/A		Status	pass		
Sensor Co	mponen	t Cell A Freq.			Conditio	on 112.7 kHz		Status	pass		
Sensor Co	mponen	t Cell A Noise			Conditio	on 0.8 ppb		Status	pass		
Sensor Co	mponen	t Cell A Flow			Conditio	on 0.70 lpm		Status	pass		
Sensor Co	mponen	t Cell A Press	ure		Conditio	<b>on</b> 701.8 kHz		Status	pass		
Sensor Co	mponen	t Cell A Tmp.			Conditio	on 34.9 C		Status	pass		
Sensor Co	Sensor Component Cell B Freq.				Conditio	on 93.5 kHz		Status	pass		
Sensor Co	mponen	t Cell B Noise			Condition 0.5 ppb			Status	pass		
Sensor Co	mponen	t Cell B Flow	N Condition 0.72 lpm			Status	pass				
Sensor Co	mponen	t Cell B Press	ure		Conditio	<b>on</b> 702.4 mmHg		Status	pass		
Sensor Co	mponen	t Line Loss			Conditio	on Not tested		Status	pass		
Sensor Co	mponen	t System Men	no		Conditio	on		Status	pass		

# Temperature Data Form

Mfg	Serial Number	Tag Site	Т	Technician Sit		Site V	isit Date	Param	eter	Owner ID	
RM Young	14043	SAL133	ł	Korey	Devins	11/04	/2020	Temper	ature	06410	
				Mf	g	Extech	1	Ра	rameter Te	emperature	
				Ser	ial Number	H2327	34	Tf	er Desc. R	ГD	
				Tfe	er ID	01227					
DAS 1: DAS 2: Slope						1.00797 <b>Intercept</b> 0		0.12950			
Abs Avg Err Abs Max Err Abs Avg Err Abs		Max Err	lax Err Cert Date			2/14/202	0 Cor	rCoff	1.00000		
0.20	0.43			L							
UseDesc.	Test type	InputTmpRaw	InputTmp	Corr.	OutputTmpS	Signal	OutputSig	gnalEng	OSE Unit	Difference	
primary	Temp Low Range	0.20	0.07		0.000		0.5	5	С	0.43	
primary	Temp Mid Range	26.25	25.91		0.000		25.	8	С	-0.09	
primary	Temp High Range	46.74	46.24		0.000		46.	2	С	-0.07	
Sensor Con	nponent Shield		Condi	tion N	Ioderately clea	an		Status	pass		
Sensor Component Blower				Condition N/A				Status	atus pass		
Sensor Component Properly Sited				Condition Properly sited				Status	us pass		
Sensor Con	nponent System Memo	)	Condi	Condition				Status	tatus pass		

# Shelter Temperature Data For

Mfg	Ifg Serial Number Tag Site T		Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	SAL133	Korey Devins	11/04/2020	Shelter Temperature	none
DAS 1:	<b>DAS 2:</b>		Mfg	Extech	Parameter She	Iter Temperature
Abs Avg Err Ab			Serial Number	H232734	Tfer Desc. RTD	)
			Tfer ID	01227		
			Slope	1.0079	7 Intercept	0.12950
			Cert Date	2/14/202	0 CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	24.64	24.32	0.000	24.5	С	0.2
primary	Temp Mid Range	24.86	24.53	0.000	24.7	С	0.12
primary	Temp Mid Range	24.05	23.73	0.000	24.3	С	0.6
Sensor Con	nponent System Memo	1	Condition		pass		

#### **Infrastructure Data For**

Site ID	SAL133	Technician Korey D	Devins Site Visit Date 11/04/2020
Shelter I	Vlake	Shelter Model	Shelter Size
Ekto		8810	640 cuft

Sensor Component Sample Tower Type	Condition Type B	Status	pass
Sensor Component Conduit	Condition N/A	Status	pass
Sensor Component Met Tower	Condition N/A	Status	pass
Sensor Component Moisture Trap	Condition Installed	Status	pass
Sensor Component Power Cables	Condition Good	Status	pass
Sensor Component Shelter Temp Control	Condition Functioni	ing Status	pass
Sensor Component Rotometer	Condition Installed	Status	pass
Sensor Component Sample Tower	Condition Good	Status	pass
Sensor Component Shelter Condition	Condition Fair	Status	pass
Sensor Component Shelter Door	Condition Good	Status	pass
Sensor Component Shelter Roof	Condition Fair	Status	pass
Sensor Component Shelter Floor	Condition Good	Status	pass
Sensor Component Shelter walls	Condition Fair	Status	pass
Sensor Component Excessive mold present	Condition Fair	Status	pass
Sensor Component Signal Cable	Condition Fair	Status	pass
Sensor Component Tubing Type	Condition 3/8 teflon	Status	pass
Sensor Component Sample Train	Condition Good	Status	pass

# Siting Criteria Form

Sensor Component Large point source of So2 or Nox	Condition	Status pass
Sensor Component City > 50,000	Condition	Status pass
Sensor Component City 1,000 to 10,000	Condition	Status pass
Sensor Component City 10,000 to 50,000	Condition	Status pass
Sensor Component Feedlot operations	Condition	Status pass
Sensor Component Large parking lot	Condition	Status pass
Sensor Component Limited agriculture operations	Condition 20 m	Status Fail
Sensor Component Major industrial source	Condition	Status pass
Sensor Component Secondary road < or = 100 per da	Condition	Status pass
Sensor Component Secondary road >100 vehicles/da	Condition	Status pass
Sensor Component Small parking lot	Condition	Status pass
Sensor Component System Memo	Condition	Status pass
Sensor Component Major highway, airport, or rail yard	Condition	Status pass
Sensor Component Intensive agriculture operations	Condition 20 m	Status Fail

# **Site Visit Comments**

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazaro	Problem		
Flow Rate	SAL133	Korey Devins	11/04/2020	Moisture Present	Apex	3760				
The filter sample tubing has drops of moisture in low sections outside the shelter.										

# **Field Systems Comments**

#### 1 Parameter: SiteOpsProcedures

The ozone inlet filter is replaced and a zero/span/precision test is performed every two weeks.

#### 2 Parameter: SitingCriteriaCom

The site is located next to a field usually planted with corn or soy beans.

#### 3 Parameter: ShelterCleanNotes

The shelter is in fair condition, ants are present. It is clean, neat, and well organized.

#### 4 Parameter: MetOpMaintCom

The temperature signal cable is showing signs of wear.

## F-02058-1500-S1-rev002

Site ID SAL133	Technician Korey Devins	Site Visit Date 11/04	4/2020						
Site Sponsor (agency)	EPA	USGS Map	Lagro						
Operating Group	private	Map Scale							
AQS#	18-169-9991	Map Date							
Meteorological Type	Climatronics	·							
•	dry	QAPP Latitude							
Deposition Measurement		QAPP Longitude							
Land Use	agriculture	QAPP Elevation Meters							
Terrain	flat	QAPP Declination							
Conforms to MLM	Yes	QAPP Declination Date							
Site Telephone	(260) 782-2428	Audit Latitude	40.816038						
Site Address 1	Hamilton Road	Audit Longitude	-85.661407						
Site Address 2		Audit Elevation	250						
County	Wabash	Audit Declination	-5						
City, State	Lagro, IN	Present							
Zip Code	46941	Fire Extinguisher 🗹	New in 2015						
Time Zone	Eastern	First Aid Kit							
Primary Operator		Safety Glasses							
Primary Op. Phone #		Safety Hard Hat							
Primary Op. E-mail		Climbing Belt							
<b>Backup Operator</b>		Security Fence							
Backup Op. Phone #		Secure Shelter							
Backup Op. E-mail		Stable Entry Steps ☑							
Shelter Working Room Make Ekto Mo		odel 8810	Shelter Size 640 cuft						
Shelter Clean	Notes The shelter is in fair condition,	ants are present. It is clean, no	eat, and well organized.						
Site OK	Notes								
Driving Directions From Huntington, IN take route 9 south a few miles to Division Road. Turn right (west) on Division and continue several miles to S 750 E, turn left (south). Turn right (west) at the first intersection (E 50 S). Turn left (south) at the next road, Hamilton or 725E. The site is about 1 mile on the right.									

Fie	eld Sy	stems Data Fo	orm				<b>F-0205</b> 8	8-15	500-S3-rev(	002
Site	e ID	SAL133	Technician	Korey Devins		Site Visit Date	11/04/2020		]	
1		l speed and direction luenced by obstructio		as to avoid	✓	N/A				
2 Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)						N/A				
3	Are the	tower and sensors plu	mb?		✓	N/A				
4	4 Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?				✓					
5	condition surface a	perature and RH sens ns? (i.e. ground below and not steeply sloped water should be avoi	sensors should . Ridges, hollov	be natural						
6	Is the so	lar radiation sensor p	lumb?		✓	N/A				
7	Is it sited	l to avoid shading, or	any artificial o	r reflected light?		N/A				
8	Is the ra	in gauge plumb?				N/A				
9	Is it sited towers, e	l to avoid sheltering e etc?	ffects from buil	ldings, trees,		N/A				
10	Is the su facing no	rface wetness sensor s orth?	sited with the g	rid surface	✓	N/A				
11	Is it incl	ined approximately 3	0 degrees?		✓	N/A				

## F-02058-1500-S4-rev002

Site	ID	SAL133	Technician	Korey Devins		Site Visit Date 11/04/2020				
1		e meterological senso n, and well maintaine		intact, in good	✓	Temperature only				
2	Are all the meteorological sensors operational online, and reporting data?					Temperature only				
3	Are the shields for the temperature and RH sensors clean?									
4	Are the aspirated motors working?					N/A				
5	Is the solar radiation sensor's lens clean and free of scratches?			free of	✓	N/A				
6	Is the su	rface wetness sensor <b>g</b>	grid clean and u	indamaged?	✓	N/A				
7		sensor signal and pow n, and well maintaine		, in good	✓	Signs of wear				
8		sensor signal and pow e elements and well ma		ctions protected	✓					

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

The temperature signal cable is showing signs of wear.

Fi	eld Sy	stems Data Fo	orm				F-0205	8-1500-S5-rev002
Site	e ID	SAL133	Technician	Korey Devins		Site Visit Date	11/04/2020	
	<u>Siting C</u>	Criteria: Are the pollut	ant analyzers a	nd deposition eq	<u>uipn</u>	nent sited in accord	dance with 40 C	CFR 58, Appendix E
1		cample inlets have at le	east a 270 degre	e arc of				
2	Are the	sample inlets 3 - 15 m	eters above the	ground?	✓			
3	Are the sample inlets > 1 meter from any major obstruction and 20 meters from trees?							
	<u>Pollutar</u>	nt analyzers and depos	ition equipmen	t operations and	mai	<u>ntenance</u>		
1		analyzers and equipme on and well maintained		e in good	✓			
2	Are the reportin	analyzers and moniton ng data?	rs operational, (	on-line, and	✓			
3	Describ	e ozone sample tube.				1/4 teflon by 15 met	ters	
4	Describ	e dry dep sample tube				3/8 teflon by 15 me	ters	
5		ine filters used in the o location)	ozone sample lir	ne? (if yes		At inlet only		
6	Are sam obstruct	nple lines clean, free of tions?	'kinks, moistur	e, and				
7	Is the ze	ero air supply desiccan	t unsaturated?		✓			
8	Are the	re moisture traps in th	e sample lines?		✓	Flow line only		
9	Is there clean?	a rotometer in the dry	v deposition filte	er line, and is it		Clean and dry		

Field Systems Data Form					F-02058-1500-S6-rev002				
Site	e ID	SAL133	Technician	Korey Devins		Site Visit Date	11/04/2020		
	DAS, se	nsor translators, and <b>j</b>	peripheral equi	pment operatio	ns ai	nd maintenance			
1		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 sig g protection circuitry?	· •	through	✓	Met sensors only			
4		signal connections pro intained?	otected from the	e weather and	✓				
5	Are the	signal leads connected	to the correct	DAS channel?	✓				
6	Are the grounde	DAS, sensor translato ed?	rs, and shelter	properly	✓				
7	Does the	e instrument shelter ha	ave a stable pov	ver source?	✓				
8	Is the in	strument shelter temp	erature contro	lled?	✓				
9	Is the m	et tower stable and gr	ounded?			Stable		Grounded	
10	Is the sa	mple tower stable and	grounded?						
11	Tower o	comments?							

Site ID	SAL133	Technician	Korey Devins	Site Visit Date	11/04/2020	
DAS, se	nsor translators, and p	eripheral equip	oment operations and	maintenance		

Field S	ystems Data	Form				<b>F-02</b>	.058-	1500-S7-rev002
Site ID	SAL133	Тес	<mark>hnician</mark> Korey	Devins	Site Visit Date	1/04/2020		
Docume	ntation							
Does the	site have the require	ed instrun	nent and equip	ment manuals	<u>s?</u>			
		Yes N	_			Yes	No	N/A
Wind speed			_	Data log	ger			
Wind direc	tion sensor			Data log	ger			
Temperatu	re sensor			Strip cha	art recorder			
Relative hu	midity sensor			Compute	er			
Solar radia	tion sensor			Modem			$\checkmark$	
Surface wet	tness sensor			Printer				
Wind senso	r translator			Zero air	pump		$\checkmark$	
Temperatu	re translator			Filter flo	w pump	$\checkmark$		
Humidity s	ensor translator			Surge pr	otector		$\checkmark$	
Solar radia	tion translator			UPS				
Tipping bu	cket rain gauge			Lightnin	g protection device		$\checkmark$	
Ozone anal	yzer			Shelter h	leater		$\checkmark$	
Filter pack	flow controller			Shelter a	ir conditioner		$\checkmark$	
Filter pack	MFC power supply							
- Does th	e site have the requi	red and n	ost recent OC	documents an	nd report forms?			
Does th			<u>iost recent QC</u>	documents an		C		
Station I an		Present				Curre	nı	
Station Log								
SSRF								
Site Ops M	anual							
HASP			Oct 2014					
Field Ops M								
Calibration								
-	<b>Control Charts</b>							
Preventive	maintenance schedul	e 🗌						
1 Is the	station log properly c	completed	l during every	site visit? 🔽				
2 Are th curren	e Site Status Report 1 t?	Forms be	ing completed	and 🗸				
	e chain-of-custody fo e transfer to and from		erly used to do	ocument 🔽				
4 Are oz curren	one z/s/p control cha t?	rts prope	rly completed	and	Control charts not us	ed		
	y additional explanat nan-made, that may				y) regarding condition	ons listed a	above, (	or any other features,
Site ID	SAL133	Тес	<mark>hnician</mark> Korey	' Devins	Site Visit Date	1/04/2020		
Docume	ntation							

#### SAL133 Technician Korey Devins Site Visit Date 11/04/2020 Site ID Site operation procedures Trained on-site by ESE employee (JBA) Has the site operator attended a formal CASTNET training 1 course? If yes, when and who instructed? 2 Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday ✓ 3 schedule? $\checkmark$ Are the standard CASTNET operational procedures being 4 flollowed by the site operator? Is the site operator(s) knowledgeable of, and able to perform 5 the required site activities? (including documentation)

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

QC Check Performed	
Multipoint Calibrations	$\checkmark$
Visual Inspections	$\checkmark$
Translator Zero/Span Tests (climatronics)	
Manual Rain Gauge Test	✓
<b>Confirm Reasonableness of Current Values</b>	$\checkmark$

Frequency	Compliant
Semiannually	
Weekly	$\checkmark$
N/A	
N/A	
Weekly	
N/A	

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

<b>OC</b>	Check	Perfor	rmed
×Υ.	Chiech		

**Test Surface Wetness Response** 

**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	$\checkmark$
Weekly	
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?

	Unknown
✓	
✓	SSRF, logbook, call-in

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

The ozone inle	zone inlet filter is replaced and a zero/span/precision test is performed every two weeks.					
Site ID	SAL133	Technician	Korey Devins	Site Visit Date	11/04/2020	

#### **Field Systems Data Form** F-02058-1500-S9-rev002 SAL133 Technician Korey Devins Site Visit Date 11/04/2020 Site ID Site operation procedures Is the filter pack being changed every Tuesday as scheduled? Filter changed afternoons 1 Are the Site Status Report Forms being completed and filed 2 correctly? No longer required Are data downloads and backups being performed as 3 scheduled? SSRF, logbook Are general observations being made and recorded? How? 4 ✓ Are site supplies on-hand and replenished in a timely 5 fashion? SSRF, call-in Are sample flow rates recorded? How? 6 $\checkmark$ Are samples sent to the lab on a regular schedule in a timely $\checkmark$ 7 fashion? ✓ Clean gloves on and off Are filters protected from contamination during handling 8 and shipping? How? ✓ 9 Are the site conditions reported regularly to the field operations manager or staff? **QC Check Performed** Frequency **Compliant** $\checkmark$ Semiannually **Multi-point MFC Calibrations** ✓ ✓ Weekly **Flow System Leak Checks**

✓ Weekly Visual Check of Flow Rate Rotometer  $\checkmark$ Semiannually **In-line Filter Inspection/Replacement**  $\checkmark$ ✓ Weekly Sample Line Check for Dirt/Water Provide any additional explanation (photograph or sketch if necessary) regarding conditions listed above, or any other features, natural or man-made, that may affect the monitoring parameters:

✓ Weekly

**Filter Pack Inspection** 

**Flow Rate Setting Checks** 

	· · · ·	01	
Site ID	SAL133	Technician Korey Devins	Site Visit Date 11/04/2020
Site op	eration procedures		

 $\checkmark$ 

 $\checkmark$ 

SAL133

## F-02058-1500-S10-rev002

Site	ID

Techn

Technician Korey Devins

Site Visit Date 11/04/2020

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	Unknown	07011
DAS	Campbell	CR3000	2129	000351
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CA110	0000141	00765
Flow Rate	Арех	AXMC105LPMDPC	50743	000547
Infrastructure	Infrastructure	none	none	none
Modem	Digi	LR54	unknown	07206
Ozone	ThermoElectron Inc	49i A1NAA	1009241785	000622
Ozone Standard	ThermoElectron Inc	49i A3NAA	0726124692	000371
Sample Tower	Aluma Tower	В	AT-51065-5-G-A	none
Shelter Temperature	Campbell	107-L	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342	14043	06410
Zero air pump	Werther International	C 70/4	000814286	06876

# Site Inventory by Site Visit

Site V	isit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
UVL1	24-Eric H	ebert-10/06/2020				
1	10/6/2020	Computer	Dell	07012	Inspiron 15	Unknown
2	10/6/2020	DAS	Campbell	000347	CR3000	2126
3	10/6/2020	Elevation	Elevation	None	1	None
4	10/6/2020	Filter pack flow pump	Thomas	02973	107CAB18	0493002467
5	10/6/2020	Flow Rate	Арех	000666	AXMC105LPMDPCV	54763
6	10/6/2020	Infrastructure	Infrastructure	none	none	none
7	10/6/2020	Modem	Digi	07167	LR54	unknown
8	10/6/2020	Ozone	ThermoElectron Inc	000680	49i A1NAA	1030244792
9	10/6/2020	Ozone Standard	ThermoElectron Inc	000438	49i A3NAA	CM08200014
10	10/6/2020	Sample Tower	Aluma Tower	03557	А	none
11	10/6/2020	Shelter Temperature	Campbell	none	107-L	none
12	10/6/2020	Siting Criteria	Siting Criteria	None	1	None
13	10/6/2020	Temperature	RM Young	06504	41342	14624
14	10/6/2020	Zero air pump	Werther International	06936	C 70/4	000829169

## **DAS Data Form**

0 DAS Time Max Error:

Mfg	Serial Nu	mber Site	. J	Fechnician	Site Visit Date	Parameter	Use Desc.
Campbell	2126	UV	L124	Eric Hebert	10/06/2020	DAS	Primary
Das Date:	10/6 /2020 12:20:00	Audit Date Audit Time	10/6 /2020 12:20:00	Mfg Serial Number	Datel 4000392	Parameter Tfer Desc.	DAS Source generator (D
Das Day: Low Channel: Avg Diff:	280 Max Diff:	Audit Day High Channe Avg Diff:	280 el: Max Diff:	Tfer ID	01321	]	
0.0001	0.0001			Slope Cert Date	1.00000	<b>F</b> .	0.00000
				Mfg Serial Number	Fluke 86590148	Parameter Tfer Desc.	
				Tfer ID	01310	]	
				Slope	1.00000	Intercept	0.00000
				Cert Date	2/4/2020	CorrCoff	1.00000
Channel	Input D	VM Output	DAS Output	InputUnit	OutputUnit	Difference	
7	0.0000	0.0002	0.0003	3 V	V	0.0001	
7	0.1000	0.1000	0.1000	) V	V	0.0000	
7	0.3000	0.3000	0.3000	) V	V	0.0000	
7	0.5000	0.5001	0.5000	) V	V	-0.0001	
7	0.7000	0.7001	0.7001	l V	V	0.0000	
7	0.9000	0.9002	0.9001	l V	V	-0.0001	
7	1.0000	1.0003	1.0002	2 V	V	-0.0001	

# Flow Data Form

Mfg	Serial Num	iber Tag S	Site	Тес	chnician	Site Visit I	Date Param	eter	Owner ID
Apex	54763		UVL124	Eri	ic Hebert	10/06/202	0 Flow R	ate	000666
					Mfg Serial Number Tfer ID	BIOS 131818 01417		arameter F	
Slope         1.00032         Interd           Cert Date         2/17/2020         Correl								-0.02240	
DAS 1: A Avg % Diff: 0.66%	A Max % Dif 0.66%	Diff A Max	: % Dif	Cal Factor Z Cal Factor F Rotometer R	ull Scale	0.0 1.0 1	_		
Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSigna	ll PctDifference
primary	pump off	0.000	0.000	0.00	0.000	0.02	l/m	l/m	
primary	leak check	0.000	0.000	0.02	0.000	0.05	l/m	l/m	
primary	test pt 1	1.487	1.510	1.48	0.000	1.50	l/m	l/m	-0.66%
primary	test pt 2	1.487	1.510	1.48	0.000	1.50	l/m	l/m	-0.66%
primary	test pt 3	1.488	1.510	1.48	0.000	1.50	l/m	l/m	-0.66%
Sensor Comp	onent Leak Tes onent Tubing C	ondition		Conditio	Condition Good			pass pass	
	onent Filter Pos onent Rotomete		1	Condition	n Good Clean and dry		Status Status		
	onent Moisture			Conditio	No moisture p	resent	Status	pass	
Sensor Component Filter Distance					<b>5.5 cm</b>	Status			
	onent Filter Dep onent Filter Azir				on 3.5 cm on 360 deg	Status Status			
	onent System M			Conditio		Status			

# **Ozone Data Form**

Mfg		Serial Numbe	r Tag Site		Technician	Site Visit Date	Parameter	Owner ID
ThermoElectro	on Inc	1030244792	UVL124		Eric Hebert	10/06/2020	Ozone	000680
Slope: Intercept CorrCoff:	-2		ccept (	0.00000 0.00000 0.00000	Mfg Serial Number	ThermoElectron 1180930075		er ozone
					Tfer ID	01115		
DAS 1:	рр. а тл		AS 2:	May 0/ Dif	Slope	0.994	90 Intercept	0.32220
A Avg % DII 0.0%		0.0%	Avg %Diff A		Cert Date	1/14/202	20 CorrCoff	0.99999
UseDescript	otion	ConcGroup	Tfer Raw	Tfer Cor	r Site	Site Unit	RelPerDif	AbsDif
primary		1	0.21	-0.11	-2.30	ppb		-2.19
primary		2	14.27	14.01	10.48	ppb		-3.53
primary		3	33.99	33.84	29.07	ppb	-15.16	
primary		4	66.66	66.67	60.60	ppb	-9.54	
primary		5	108.04	108.26		ppb	-7.53	
Sensor Cor	mponer	nt Audit Pressu	ire	Conc	lition 736.9 mmHg		Status pass	
Sensor Cor	mponei	nt Sample Trai	n	Cond	lition Good		Status pass	
Sensor Cor	mponei	nt Minimum dis	stance from road	met Cond	lition True		Status pass	
Sensor Cor	mponei	nt Inlet Filter C	ondition	Cond	lition Clean		Status pass	
Sensor Cor	mponer	nt 26.6 degree	unobstructed ru	le Cond	lition True		Status pass	
Sensor Cor	mponei	nt Tree dewline	e >10m or below	inlet Cond	lition True		Status pass	
Sensor Cor	mponei	nt Offset		Cond	lition 0.20		Status pass	
Sensor Cor	mponei	nt Span		Cond	lition 1.009		Status pass	
Sensor Cor	mponei	nt Zero Voltage	9	Cond	lition N/A	Status pass		
Sensor Cor	mponei	t Fullscale Vo	ltage	Cond	lition N/A		Status pass	
Sensor Cor	mponei	nt Cell A Freq.		Cond	lition 110.1 kHz		Status pass	
Sensor Cor	mponei	nt Cell A Noise		Cond	lition 1.3 ppb		Status pass	
Sensor Cor	mponei	t Cell A Flow		Cond	lition 0.46 lpm		Status pass	
Sensor Cor	mponei	nt Cell A Press	ure	Cond	lition 717.6 mmHg		Status pass	
Sensor Cor	mponei	t Cell A Tmp.		Cond	lition 36.7 C		Status pass	
Sensor Cor	mponer	nt Cell B Freq.		Cond	lition 101.1 kHz		Status pass	
Sensor Cor	mponer	nt Cell B Noise		Cond	lition 0.9 ppb		Status pass	
Sensor Cor	mponer	t Cell B Flow		Cond	lition 0.7 lpm		Status pass	
Sensor Cor	mponer	nt Cell B Press	ure	Cond	lition 717.9 mmHg		Status pass	
Sensor Cor	mponer	nt Line Loss		Cond	lition 1 %		Status pass	
Sensor Cor	mponer	nt System Mer	no	Cond	lition		Status pass	

# Temperature Data Form

Mfg	Serial Number	Tag Site	I	Technician S		Site V	isit Date	Param	eter	Owner ID
RM Young	14624	UVL124		Eric H	ebert	10/06	/2020	Temper	ature	06504
				Mf	g	Extect	1	Pa	rameter Te	mperature
				Ser	ial Number	H2327	'34	Tf	er Desc. R	TD.
				Tfe	er ID	01227				
DAS 1: DAS 2:				Slo	ре	1.00797 Intercept		rcept	pt 0.12950	
Abs Avg Err Abs Max Err Abs Avg Err Abs Ma				ax Err Cert Date			2/14/202	0 Cor	rCoff	1.00000
0.14	0.19									
UseDesc.	Test type	InputTmpRaw	InputTmp	Corr.	OutputTmp	Signal	OutputSig	gnalEng	OSE Unit	Difference
primary	Temp Low Range	0.21	0.08		0.000		0.3	3	С	0.19
primary	Temp Mid Range	26.37	26.03	6	0.000		26.	2	С	0.18
primary	Temp High Range	47.84	47.33	;	0.000		47.	4	С	0.05
Sensor Com	ponent Shield		Condi	tion N	loderately cle	an		Status	pass	
Sensor Component Blower				Condition N/A				Status	pass	
Sensor Component Properly Sited				Condition Properly sited				Status	pass	
Sensor Com	ponent System Memo	•	Condi	Condition				Status	pass	

# Shelter Temperature Data For

Mfg Serial Number Tag Site T		Technician	Site Visit Date	Parameter	Owner ID	
Campbell	none	UVL124	Eric Hebert	10/06/2020	Shelter Temperature	none
DAS 1:	<b>DAS 2:</b>		Mfg	Extech	Parameter She	Iter Temperature
Abs Avg Err Ab	0.68 Abs Avg	Err Abs Max Err	Serial Number	H232734	Tfer Desc. RTD	)
			Tfer ID	01227		
			Slope	1.0079	7 Intercept	0.12950
			Cert Date	2/14/202	0 CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	25.22	24.89	0.000	25.6	С	0.68
primary	Temp Mid Range	26.95	26.61	0.000	26.7	С	0.04
primary	Temp Mid Range	27.34	27.00	0.000	27.0	С	0.01
Sensor Con	nponent System Memo	1	Condition	Status pass			

#### **Infrastructure Data For**

Site ID	UVL124	Technician Eric He	bert Site Visit Date 10/06/2020
Shelter I	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	N/A	Status	pass
Sensor Component Moisture Trap	Condition	Installed	Status	pass
Sensor Component Power Cables	Condition	Good	Status	pass
Sensor Component Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component Rotometer	Condition	Installed	Status	pass
Sensor Component Sample Tower	Condition	Fair	Status	pass
Sensor Component Shelter Condition	Condition	Good	Status	pass
Sensor Component Shelter Door	Condition	Fair	Status	pass
Sensor Component Shelter Roof	Condition	Good	Status	pass
Sensor Component Shelter Floor	Condition	Fair	Status	pass
Sensor Component Shelter walls	Condition	Good	Status	pass
Sensor Component Excessive mold present	Condition	Good	Status	pass
Sensor Component Signal Cable	Condition	Good	Status	pass
Sensor Component Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component Sample Train	Condition	Good	Status	pass

# Siting Criteria Form

Sensor Component Large point source of So2 or Nox	Condition	Status pass
Sensor Component City > 50,000	Condition	Status pass
Sensor Component City 1,000 to 10,000	Condition	Status pass
Sensor Component City 10,000 to 50,000	Condition	Status pass
Sensor Component Feedlot operations	Condition	Status pass
Sensor Component Large parking lot	Condition	Status pass
Sensor Component Limited agriculture operations	Condition 30 m	Status Fail
Sensor Component Major industrial source	Condition	Status pass
Sensor Component Secondary road < or = 100 per da	Condition	Status pass
Sensor Component Secondary road >100 vehicles/da	Condition	Status pass
Sensor Component Small parking lot	Condition	Status pass
Sensor Component System Memo	Condition	Status pass
Sensor Component Major highway, airport, or rail yard	Condition	Status pass
Sensor Component Intensive agriculture operations	Condition 30 m	Status Fail

# **Field Systems Comments**

#### 1 Parameter: SiteOpsProcedures

Ozone sample train leak-check performed every two weeks.

2 Parameter: SitingCriteriaCom

The site is located in an active agriculture field usually planted with beans or corn.

#### 3 Parameter: ShelterCleanNotes

The shelter is clean and in good condition.

#### 4 Parameter: MetOpMaintCom

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

## F-02058-1500-S1-rev002

Site ID UVL124		Technician Eric Heb	ert	Site Visit D	ate 10/0	6/2020		
Site Sponsor (agency)	EPA			USGS Map		Ellington		
<b>Operating Group</b>	private			Map Scale				
AQS #	26-157-9	9991		Map Date				
Meteorological Type	R.M. Yo	ung						
Air Pollutant Analyzer	Ozone			QAPP Latitude				
Deposition Measuremen	Deposition Measurement dry, wet			QAPP Longitude				
Land Use	agricultu	re		QAPP Elevation M	leters			
Terrain	flat			QAPP Declination	L			
Conforms to MLM Yes		′es		QAPP Declination	Date			
Site Telephone	(989) 67	3-5901	Audit Latitude		43.613572			
Site Address 1	1821 E.	Dickerson Rd.		Audit Longitude			-83.359869	
Site Address 2			Audit Elevation			202		
County	unty Tuscola		Audit Declination		-7			
City, State	Unionvill	e, MI		Р	resent			
Zip Code	48767			Fire Extinguisher		New in 2015		
Time Zone	Eastern			First Aid Kit				
Primary Operator				Safety Glasses				
Primary Op. Phone #				Safety Hard Hat				
Primary Op. E-mail				<b>Climbing Belt</b>				
<b>Backup Operator</b>				Security Fence				
Backup Op. Phone #				Secure Shelter	$\checkmark$			
Backup Op. E-mail				Stable Entry Steps	<b>,</b> ✓			
Shelter Working Room	Make	Ekto	Μ	odel 8810		Shelter Size	640 cuft	
	Notes	The shelter is clean and	in goo	d condition.				
	Notes							
Driving Directions From Saginaw MI, take route 81 east through Caro. About 2.9 miles past the junction of SR24 and 81, turn left (north) on Colwood. There is a large church at that intersection. Continue on Colwood for about 6 miles to the intersection of Dickerson road. Turn left (west) at the stop sign. The site is on the right (north) side on the road behind the first farmhouse, where Fred Matt, the landowner resides.								

Fie	eld Sy	stems Data Fo	orm				F-02058-1	500-S3-rev002
Site	e ID	UVL124	Technician	Eric Hebert		Site Visit Date	10/06/2020	]
1		d speed and direction fluenced by obstructio		as to avoid	✓	N/A		
2 Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)						N/A		
3	Are the	tower and sensors plu	mb?		✓	N/A		
4		temperature shields p diated heat sources su			✓			
5	conditions surface a	perature and RH sens ns? (i.e. ground below and not steeply sloped swater should be avoi	sensors should . Ridges, hollov	be natural				
6	Is the so	lar radiation sensor p	lumb?		✓	N/A		
7	Is it site	l to avoid shading, or	any artificial o	r reflected light?		N/A		
8	Is the ra	in gauge plumb?			✓	N/A		
9	Is it site towers, o	l to avoid sheltering e etc?	ffects from buil	dings, trees,	✓	N/A		
10	Is the su facing n	rface wetness sensor s orth?	ited with the gr	rid surface	✓	N/A		
11	Is it inc	lined approximately 3	0 degrees?		✓	N/A		

## F-02058-1500-S4-rev002

Site	e ID	UVL124	Technician	Eric Hebert		Site Visit Date 10/0	06/2020	
<ol> <li>Do all the meterological sensors appear to be intact, in good condition, and well maintained?</li> <li>Are all the meteorological sensors operational online, and reporting data?</li> <li>Are the shields for the temperature and RH sensors clean?</li> </ol>					<ul><li></li><li></li><li></li></ul>	Temperature only Temperature only		
4		spirated motors worl			✓	N/A		
5	Is the sol scratches	ar radiation sensor's s?	lens clean and f	ree of		N/A		
6	Is the sur	rface wetness sensor g	grid clean and u	ndamaged?	✓	N/A		
7		ensor signal and pow 1, and well maintained		, in good				
8		ensor signal and pow elements and well ma		tions protected				

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

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

Field Systems Data Form						F-02058-1500-S5-rev002
Site	e ID	UVL124	Technician	Eric Hebert		Site Visit Date 10/06/2020
	Siting C	Criteria: Are the polluta	ant analyzers an	d deposition equ	uipn	ment sited in accordance with 40 CFR 58, Appendix E
1		cample inlets have at le icted airflow?	ast a 270 degree	arc of		
2	Are the	sample inlets 3 - 15 me	eters above the g	ground?	✓	
3		sample inlets > 1 meter meters from trees?	r from any majo	or obstruction,	✓	
	<u>Pollutar</u>	nt analyzers and deposi	ition equipment	operations and	mai	<u>aintenance</u>
1		analyzers and equipme on and well maintained		in good		
2	Are the reportin	analyzers and monitor ng data?	rs operational, o	n-line, and		
3	Describ	e ozone sample tube.				1/4 teflon by 12 meters
4	Describ	e dry dep sample tube.				3/8 teflon by 12 meters
5		ine filters used in the o location)	zone sample line	e? (if yes		At inlet only
6	Are sam obstruct	nple lines clean, free of tions?	kinks, moisture	, and		
7	Is the ze	ero air supply desiccan	t unsaturated?		✓	
8	Are the	re moisture traps in the	e sample lines?			Flow line only
9	Is there clean?	a rotometer in the dry	deposition filter	r line, and is it		Clean and dry

Fi	eld Sy	stems Data Fo	orm		<b>F-02</b>	058-15	00-S6-rev002		
Site	e ID	UVL124	Technician	Eric Hebert		Site Visit Date	10/06/2020		
	DAS, se	nsor translators, and p	peripheral equip	pment operation	<u>ns ai</u>	nd maintenance			
1		DAS instruments appeantained?	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?		through	✓	Met sensors only			
4		signal connections pro ntained?	otected from the	e weather and					
5	Are the	signal leads connected	to the correct	DAS channel?					
6	Are the grounde	DAS, sensor translato d?	rs, and shelter <b>j</b>	properly					
7	Does the	e instrument shelter ha	ave a stable pow	ver source?	✓				
8	Is the in	strument shelter temp	erature control	led?					
9	Is the m	et tower stable and gro	ounded?			Stable		Grounded	
10	Is the sa	mple tower stable and	grounded?						
11	Tower c	omments?				Tower not grounded			

Field Sy	stems Data	Foi	m				<b>F-0</b> 2	2058-	1500-	87-rev002
Site ID	UVL124		Tech	nician	Eric Hebert	Site Visit Date	10/06/2020	)		
Document	ation									
Does the s	ite have the requir	ed in	strum	ent and	equipment manuals	?				
		Yes	No	<b>N/</b> /	A		Yes	No	N/A	
Wind speed s	sensor			✓	Data logg	ger				
Wind directi	on sensor			✓	Data logg	ger			$\checkmark$	
Temperature	e sensor	✓			Strip cha	rt recorder			$\checkmark$	
Relative hun	nidity sensor			$\checkmark$	Compute	r		✓		
Solar radiati	on sensor			$\checkmark$	Modem			$\checkmark$		
Surface wetn	ess sensor				Printer				$\checkmark$	
Wind sensor	translator			$\checkmark$	Zero air j	pump		$\checkmark$		
Temperature	e translator			$\checkmark$	Filter flow	w pump				
Humidity ser	nsor translator			$\checkmark$	Surge pro	otector				
Solar radiati	on translator			$\checkmark$	UPS				$\checkmark$	
Tipping buck	ket rain gauge				Lightning	g protection device				
Ozone analyz		$\checkmark$			Shelter h	eater		$\checkmark$		
Filter pack fl	ow controller	$\checkmark$			Shelter ai	ir conditioner	$\checkmark$			
-	IFC power supply	✓								
Does the	site have the requ	ired a	nd mo	ost rece	nt QC documents an	d report forms?				
		Pres	ent				Curre	ent		
Station Log		I	✓				$\checkmark$			
SSRF			✓				$\checkmark$			
Site Ops Mar	nual		✓	Oct 201	4		$\checkmark$			

HASP Field Ops Manual Calibration Reports Ozone z/s/p Control Charts

**Preventive maintenance schedule** 

✓

✓

Oct 2014
Oct 2014
4/3/2018

# Current

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

## F-02058-1500-S8-rev002

Site	ID	UVL124	Technician	Eric Hebert		Site Visit Date	10/06/2020	
	<u>Site ope</u>	ration procedures						
1	1 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	3 Is the site visited regularly on the required Tuesday schedule?							
4		standard CASTNET of I by the site operator?	• •	cedures being				
5		e operator(s) knowled ired site activities? (in		-				
	<u>Are regu</u>	lar operational QA/Q	C checks perfo	rmed on meteor	ologica	al instruments?		

<b>OC</b>	Check	Perform	ed
VV.	Chick	I CITOI III	u

#### Frequency

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

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

<b>OC</b>	Check	Perf	formed
VV.	Chicch	1	ormeu

**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	C
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
✓	
✓	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:

Ozone sample train leak-check performed every two weeks.

### mpliant

Compliant

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

Sit	e ID	UVL124	Technicia	n Eric Hebert		Site Visit Date	10/06/2020	]	
	Site operation procedures								
1	Is the fil	ter pack being changed	every Tues	day as scheduled	? ✓	Filter changed morr	nings		
2	Are the correctly	Site Status Report Forr y?	ns being coi	npleted and filed		With noted exceptions			
3	Are data schedule	a downloads and backu ed?	ps being pe	formed as		No longer required			
4	Are gen	eral observations being	made and r	ecorded? How?	✓	SSRF, logbook			
5	Are site fashion?	supplies on-hand and r	eplenished i	n a timely	✓				
6	6 Are sample flow rates recorded? How?				✓	SSRF, logbook, call-in			
7	7 Are samples sent to the lab on a regular schedule in a timely fashion?								
8	8 Are filters protected from contamination during handling and shipping? How?					Clean gloves on and	d off		
9		site conditions reported ons manager or staff?	l regularly t	o the field					
QC	Check Po	erformed	Fr	requency			Compliant		
I	Multi-poir	nt MFC Calibrations	✓ Se	miannually			$\checkmark$		
Flow System Leak Checks Veekly					$\checkmark$				
Filter Pack Inspection									
Flow Rate Setting ChecksImage: Weekly									
	Visual Check of Flow Rate Rotometer <a> Weekly</a>								
I	In-line Filter Inspection/Replacement Semiannually								
5	Sample Line Check for Dirt/Water Weekly								

Field Systems Data Form	n
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## F-02058-1500-S10-rev002

Technician Eric Hebert

Site Visit Date 10/06/2020

**Site Visit Sensors** 

UVL124

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	Unknown	07012
DAS	Campbell	CR3000	2126	000347
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	0493002467	02973
Flow Rate	Apex	AXMC105LPMDPC	54763	000666
Infrastructure	Infrastructure	none	none	none
Modem	Digi	LR54	unknown	07167
Ozone	ThermoElectron Inc	49i A1NAA	1030244792	000680
Ozone Standard	ThermoElectron Inc	49i A3NAA	CM08200014	000438
Sample Tower	Aluma Tower	A	none	03557
Shelter Temperature	Campbell	107-L	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342	14624	06504
Zero air pump	Werther International	C 70/4	000829169	06936

# Site Inventory by Site Visit

Site V	isit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number			
ANA115-Eric Hebert-10/07/2020									
1	10/7/2020	Computer	Dell	07017	Inspiron 15	9K2MC12			
2	10/7/2020	DAS	Campbell	000339	CR3000	2118			
3	10/7/2020	Elevation	Elevation	None	1	None			
4	10/7/2020	Filter pack flow pump	Thomas	06025	107CAB18	060400022682			
5	10/7/2020	Flow Rate	Apex	000650	AXMC105LPMDPCV	54767			
6	10/7/2020	Infrastructure	Infrastructure	none	none	none			
7	10/7/2020	Modem	Digi	07197	LR54	unknown			
8	10/7/2020	Ozone	ThermoElectron Inc	000699	49i A1NAA	1030244804			
9	10/7/2020	Ozone Standard	ThermoElectron Inc	000686	49i A3NAA	1030244818			
10	10/7/2020	Sample Tower	Aluma Tower	000180	В	none			
11	10/7/2020	Shelter Temperature	Campbell	none	107-L	none			
12	10/7/2020	Siting Criteria	Siting Criteria	None	1	None			
13	10/7/2020	Temperature	RM Young	06535	41342	14796			
14	10/7/2020	Zero air pump	Werther International	06933	C 70/4	000836202			

## **DAS Data Form**

DAS Time Max Error: 0.03

Mfg	Serial Nu	mber Site	]	Fechnician	Site Visit Date	Parameter	Use Desc.
Campbell	2118	ANA	115	Eric Hebert	10/07/2020	DAS	Primary
Das Date:Das Time:Das Day:	10/7 /2020 09:44:32 281	Audit Date Audit Time Audit Day	10/7 /2020 09:44:30 281	Mfg Serial Number	Datel 4000392	Parameter Tfer Desc.	DAS Source generator (D
Low Channel: Avg Diff:	Max Diff:	High Channe Avg Diff:	Max Diff:	Tfer ID Slope	01321	0 Intercept	0.00000
0.0000	0.0000	0.0000	0.0000	Cert Date	1/22/201	5 CorrCoff	1.00000
				Mfg	Fluke	Parameter	DAS
				Serial Number	86590148	Tfer Desc.	DVM
				Tfer ID	01310		
				Slope	1.0000	0 Intercept	0.00000
				Cert Date	2/4/202	0 CorrCoff	1.00000
Channel	Input D	OVM Output	DAS Output	InputUnit	OutputUnit	Difference	
7	0.0000	0.0000	0.0000	) V	V	0.0000	
7	0.1000	0.1000	0.1000	) V	V	0.0000	
7	0.3000	0.3000	0.3000	) V	V	0.0000	
7	0.5000	0.5001	0.500	1 V	V	0.0000	
7	0.7000	0.7001	0.700		V	0.0000	
7	0.9000	0.9002	0.9002		V	0.0000	
7	1.0000	1.0002	1.0002	2 V	V	0.0000	

## Flow Data Form

Mfg	Serial Num	nber Tag S	Site	Те	chnician	Site Vis	it Date	Param	eter	Owner ID
Арех	54767		ANA115	Er	ic Hebert	10/07/2	10/07/2020 F		ate	000650
					Mfg Serial Number Tfer ID	BIOS 131818 01417			arameter Fl fer Desc. Bl	
					Slope Cert Date		1.00032 2/17/2020	_	rcept rCoff	-0.02240 0.99997
DAS 1:       DAS 2:         A Avg % Diff: A Max % Dif       A Avg % Diff         0.00%       0.00%			: % Dif	Cal Factor Z Cal Factor F Rotometer R	ull Scale		0.0 1.0 1.4	)1	`	
Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S	E Inpu	tUnit (	OutputSigna	II PctDifference
primary	pump off	0.000	0.000	0.00	0.000	0.01	1/	'n	1/m	
primary	leak check	0.000	0.000	0.04	0.000	0.05	1/	'n	l/m	
primary	test pt 1	1.483	1.500	1.50	0.000	1.50	l/m		l/m	0.00%
primary	test pt 2	1.479	1.500	1.50	0.000	1.50	1/	m	l/m	0.00%
primary	test pt 3	1.483	1.500	1.49	0.000	1.50	1/	m	l/m	0.00%
Sensor Comp	onent Leak Tes	t		Conditio	ndition			Status pass		
Sensor Comp	onent Tubing C	ondition		Conditio	ondition Good				pass	
Sensor Comp	onent Filter Pos	sition		Conditio	on Good			Status	pass	
Sensor Comp	onent Rotomete	er Condition	1	Conditio	on Clean and dry			Status	pass	
Sensor Comp	onent Moisture	Present		Conditio	on No moisture p	resent		Status	pass	
Sensor Comp	onent Filter Dist	tance		Conditio	on 5.5 cm			Status pass		
Sensor Comp	onent Filter Dep	oth		Conditio	on 3.5 cm		Status pass			
Sensor Comp	onent Filter Azir	muth		Conditio	on 180 deg		Status pass			
Sensor Comp	onent System M	lemo		Conditio	on			Status pass		

## **Ozone Data Form**

Mfg Se	erial Number Ta	g Site	1	Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc 1	030244804	ANA115		Eric Hebert	10/07/2020	Ozone	000699
Intercept 0.0	orcept         0.02164         Intercept         0.00000		00000	Mfg Serial Number	ThermoElectron 1180930075 01115		neter ozone Desc. Ozone primary stan
DAS 1: A Avg % Diff: A Ma:			Max % Dif	Tfer ID Slope Cert Date	0.9949		
0.0%	0.0%						
	ConcGroup T	fer Raw 0.35	Tfer Cor 0.02	r Site 0.01	Site Unit	RelPerDif	AbsDif -0.01
primary primary	2	13.39	13.13	13.39	ppb ppb		0.26
primary	3	34.59	34.44	35.21	ppb	2.2	
primary	4	67.81	67.83	69.27	ppb		2.1
primary	5	109.87	110.10	112.30	ppb		98
Sensor Component	Audit Pressure		Cond	lition 730.3 mmHg		Status pas	S
Sensor Component	Sample Train		Cond	lition Good		Status pas	S
Sensor Component	Minimum distanc	e from road i	met Cond	lition True		Status pas	S
Sensor Component	Inlet Filter Condit	ion	Cond	lition Clean		Status pas	S
Sensor Component	26.6 degree unol	ostructed rule	e Cond	lition True		Status pas	S
Sensor Component	Tree dewline >10	m or below i	nlet Cond	lition True		Status pas	s
Sensor Component	Offset		Cond	lition 0.000		Status pas	S
Sensor Component	Span		Cond	lition 1.052		Status pas	S
Sensor Component	Zero Voltage		Cond	lition N/A		Status pas	S
Sensor Component	Fullscale Voltage	!	Cond	lition N/A		Status pas	S
Sensor Component	Cell A Freq.		Cond	lition 95.8 kHz		Status pas	S
Sensor Component	Cell A Noise		Cond	lition 1.2 ppb		Status pas	S
Sensor Component	Cell A Flow		Cond	lition 0.73 lpm		Status pas	S
Sensor Component	Cell A Pressure		Cond	lition 695.4 mmHg		Status pas	S
Sensor Component	Cell A Tmp.		Cond	lition 38.6 C		Status pas	S
Sensor Component	Cell B Freq.		Cond	lition 95.7 kHz		Status pas	S
Sensor Component	Cell B Noise		Cond	lition 1.2 ppb		Status pas	S
Sensor Component	Cell B Flow		Cond	lition 0.68 lpm		Status pas	S
Sensor Component	Cell B Pressure		Cond	lition 695.7 mmHg		Status pas	S
Sensor Component	Line Loss		Cond	lition Not tested		Status pas	S
Sensor Component	System Memo		Cond	lition		Status pas	S

# Temperature Data Form

Mfg	Serial Number	Tag Site	]	Technician S		Site V	isit Date	Param	eter	Owner ID	
RM Young	14796	ANA115		Eric Hebert		10/07	/2020	Temper	ature	06535	
				Mf	g	Extect	1	Pa	rameter Te	mperature	
				Ser	rial Number	H2327	'34	Tf	er Desc. R	D	
				Tfe	er ID	01227					
DAS 1:	DAS	S 2:		Slo	ре		1.0079	7 Inte	rcept	0.12950	
Abs Avg Err Abs Max Err Abs Avg Err Abs Max			Max Err	Err Cert Date			2/14/202	20 Cor	rCoff	1.00000	
0.12	2 0.23										
UseDesc.	Test type	InputTmpRaw	InputTmp	Corr.	OutputTmpS	Signal	OutputSig	gnalEng	OSE Unit	Difference	
primary	Temp Low Range	0.25	0.12		0.000		0.4	1	С	0.23	
primary	Temp Mid Range	25.39	25.06		0.000		25.		С	0.06	
primary	Temp High Range	47.53	47.03	3	0.000		47.	0	С	-0.07	
Sensor Con	nponent Shield		Condi	ition C	Clean			Status	pass		
Sensor Component Blower				Condition N/A				Status	Status pass		
Sensor Component Properly Sited				Condition Properly sited				Status	tatus pass		
Sensor Con	nponent System Memo	)	Condi	Condition				Status	Status pass		

# Shelter Temperature Data For

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	ANA115	Eric Hebert	10/07/2020	Shelter Temperature	none
DAS 1:	DAS 2:		Mfg	Extech	Parameter Shel	ter Temperature
Abs Avg ErrAbs0.71	s Max Err Abs Avg 0.89	Err Abs Max Err	Serial Number	H232734	Tfer Desc. RTD	
			Tfer ID	01227	]	
			Slope	1.0079	7 Intercept	0.12950
			Cert Date	2/14/202	0 CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	25.42	25.09	0.000	26.0	С	0.89
primary	Temp Mid Range	25.90	25.57	0.000	26.1	С	0.53
Sensor Con	nponent System Memo	1	Condition	Status pass			

#### **Infrastructure Data For**

Site ID	ANA115	Technician Eric He	bert Site Visit Date 10/07/2020
Shelter	Make	Shelter Model	Shelter Size
Ekto		8810	640 cuft

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

## **Field Systems Comments**

#### 1 Parameter: DasComments

The met tower has been removed. The DAS controls the shelter heating and cooling.

#### 2 Parameter: SiteOpsProcedures

The ozone inlet filter is changed and a Z/S/P is performed every two weeks.

#### 3 Parameter: SitingCriteriaCom

Site is confined within a fenced area that is somewhat small. There is available space adjacent to the fenced area that could be utilized to improve the instrument siting.

#### 4 Parameter: ShelterCleanNotes

The shelter is in fair condition, however somewhat cluttered.

## Siting Criteria Form

Condition	Status pass
Condition	Status pass
	Condition         Condition

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

Site ID ANA115		Technician Eric Heb	ert	Site Visit D	<b>Date</b> 10/0	7/2020	]
						<b>D</b> : 1	
Site Sponsor (agency)	EPA			USGS Map		Pinckney	
<b>Operating Group</b>	Universi	ty of MI		Map Scale			
AQS #	26-161-	9991		Map Date			
Meteorological Type	Climatro	nics					
Air Pollutant Analyze	r Ozone			QAPP Latitude			
Deposition Measureme	ent dry, wet	Hg		QAPP Longitude			
Land Use	woodlan	d - mixed		QAPP Elevation N	Meters		
Terrain	flat			QAPP Declination	1		
Conforms to MLM	Margina	lly		QAPP Declination	n Date		
Site Telephone	(734) 42	6-0060		Audit Latitude			42.416636
Site Address 1	8420 St	awberry Lake Rd.		Audit Longitude		-83.902143	
Site Address 2				Audit Elevation			266
County	Washter	าลพ		Audit Declination		-6.6	
City, State	Dexter,	MI		P	Present		
Zip Code	48130			Fire Extinguisher ✓ New in 2015			
Time Zone	Eastern			First Aid Kit	$\checkmark$		
Primary Operator				Safety Glasses			
Primary Op. Phone #				Safety Hard Hat	$\checkmark$		
Primary Op. E-mail				Climbing Belt			
Backup Operator				Security Fence	$\checkmark$		
Backup Op. Phone #				Secure Shelter	$\checkmark$		
Backup Op. E-mail				Stable Entry Step	s V		
Shelter Working Room	n 🗹 Make	Ekto	Mo	del 8810		Shelter Size	640 cuft
Shelter Clean	✓ Notes	The shelter is in fair con	dition, h	owever somewhat c	luttered.		
Site OK	✓ Notes						
Driving Directions       From Ann Arbor take I-94 west to exit 169 to Dexter, turning right (north) to Dexter. Continue a few miles to the stop sign and turn left. Continue approximately one block to the small park in the center of town and turn right (north). Continue through Dexter, across the railroad tracks and river. Turn left (west) just across the river on Huron River Drive. Continue about 8 miles on Huron River Drive which becomes a dirt road after the intersection of North Territorial Rd. The site is on the left, just past the first sharp turn in the road (to the right) where it becomes Strawberry Lake Road.							

Fi	eld Systems Dat	ta Form			<b>F-02058-1</b>	500-S3-rev002
Site	e ID ANA115	Technician Eric Hebert		Site Visit Date	10/07/2020	]
1	Are wind speed and dir being influenced by obs	rection sensors sited so as to avoid structions?		N/A		
2	(i.e. wind sensors should	ted so as to minimize tower effects? d be mounted atop the tower or on a boom >2x the max diameter of the ng wind)		N/A		
3	Are the tower and sense	ors plumb?	✓	N/A		
4		nields pointed north or positioned to arces such as buildings, walls, etc?	✓			
5	conditions? (i.e. ground	RH sensors sited to avoid unnatural l below sensors should be natural sloped. Ridges, hollows, and areas of be avoided)				
6	Is the solar radiation se	ensor plumb?	✓	N/A		
7	Is it sited to avoid shad	ing, or any artificial or reflected light		N/A		
8	Is the rain gauge plumb	b?	✓	N/A		
9	Is it sited to avoid shelt towers, etc?	ering effects from buildings, trees,	✓	N/A		
10	Is the surface wetness s facing north?	ensor sited with the grid surface	✓	N/A		
11	Is it inclined approxim	ately 30 degrees?	✓	N/A		

### F-02058-1500-S4-rev002

Site	e ID	ANA115	Technician	Eric Hebert		Site Visit Date 10/07/2020
1		e meterological senson n, and well maintained		intact, in good		Temperature only
2	2 Are all the meteorological sensors operational online, and reporting data?					Temperature only
3	3 Are the shields for the temperature and RH sensors clean?					
4	4 Are the aspirated motors working?					N/A
5	5 Is the solar radiation sensor's lens clean and free of scratches?					N/A
6	Is the su	rface wetness sensor g	grid clean and u	ndamaged?	✓	N/A
7		sensor signal and pow n, and well maintained		, in good		
8		sensor signal and pow elements and well ma		tions protected		

Fi	eld Sy	stems Data Fo	orm			F-02058-1500-S5-rev002
Site	e ID	ANA115	Technician	Eric Hebert		Site Visit Date 10/07/2020
	Siting C	Criteria: Are the pollut	ant analyzers a	nd deposition eq	<u>uipn</u>	nent sited in accordance with 40 CFR 58, Appendix E
1		sample inlets have at le icted airflow?	east a 270 degre	e arc of		
2	Are the	sample inlets 3 - 15 m	eters above the	ground?	✓	
3		sample inlets > 1 mete meters from trees?	er from any maj	or obstruction,		
	<u>Pollutar</u>	nt analyzers and depos	ition equipmen	t operations and	mai	ntenance
1		analyzers and equipme on and well maintained		e in good		
2	Are the reportin	analyzers and moniton ng data?	rs operational, o	on-line, and		
3	Describ	e ozone sample tube.				1/4 teflon by 12 meters
4	Describ	e dry dep sample tube.				3/8 teflon by 12 meters
5		ine filters used in the o location)	ozone sample lir	ne? (if yes		At inlet only
6	Are sam obstruct	nple lines clean, free of tions?	' kinks, moistur	e, and	✓	
7	Is the ze	ero air supply desiccan	t unsaturated?		✓	
8	Are the	re moisture traps in th	e sample lines?		✓	Flow line only
9	Is there clean?	a rotometer in the dry	v deposition filte	er line, and is it		Clean and dry

Field Systems Data Form						<b>F-0</b> 2	2058-15	00-S6-rev002	
Site	e ID	ANA115	Technician	Eric Hebert		Site Visit Date	10/07/2020	)	
	<u>DAS, se</u>	ensor translators, and	peripheral equi	pment operation	<u>15 a</u>	nd maintenance			
1		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 sig g 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?	ors, and shelter	properly					
7	Does th	e instrument shelter h	ave a stable pov	ver source?	✓				
8	Is the ir	nstrument shelter temp	perature control	lled?					
9	Is the m	net tower stable and gr	ounded?			Stable		Grounded	
10	Is the sa	ample tower stable and	l grounded?						
11	Tower	comments?				Sample tower not gr	ounded		

The met tower has been removed. The DAS controls the shelter heating and cooling.

Field	l Systems Data	For	m					<b>F-02</b>	2058-	1500-	S7-rev0	02
Site ID	ANA115		Technic	cian E	ric Hebert		Site Visit Date	10/07/2020	)			
	<u>imentation</u>					1.0						
Does	s the site have the requi	red inst Yes	t <u>rument</u> No	and ec N/A	<u>luipment manua</u>	<u>als?</u>		Yes	No	N/A		
Wind d Temper Relative Solar ra Surface	peed sensor lirection sensor rature sensor e humidity sensor adiation sensor e wetness sensor ensor translator				Data le Data le Strip c Compu Moder Printe Zero a	oggei chart uter n r	recorder					
Temper	rature translator				Filter f		-		$\checkmark$			
Humidi Solar ra	ity sensor translator adiation translator			<ul><li></li></ul>	Surge UPS	prot	ector			<ul><li></li><li></li></ul>		
	g bucket rain gauge				Lightn		protection device					
Filter p Filter p	analyzer ack flow controller ack MFC power supply				Shelter	r air	conditioner		<ul> <li></li> </ul>			
<u>Doo</u>	es the site have the requ			recent	QC documents	and	report forms?					
HASP Field O Calibra Ozone z Prevent	s Manual ps Manual ation Reports z/s/p Control Charts tive maintenance sched							Curre	nt			
	the station log properly re the Site Status Repor	-										
cui 3 Ar	rrent? The chain-of-custody is a standard from the chain of the standard from the st	forms p	properly									
	e ozone z/s/p control ch rrent?	arts pr	operly o	complet	ted and	] Co	ontrol charts not u	sed				

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

Site	ID	ANA115	Technician	Eric Hebert		Site Visit Date	10/07/2020	
1	Has the	e <u>ration procedures</u> site operator attended If yes, when and who		TNET training				
2	Has the	e backup operator atte g course? If yes, when	nded a formal (					
3	Is the sit schedule	te visited regularly on a series of the seri	the required T	ıesday				
4		standard CASTNET o d by the site operator?	· ·	cedures being				
5		te operator(s) knowled ired site activities? (in						
	Are reg	ılar operational QA/Q	C checks perfo	rmed on meteor	ological	instruments?		
QC	Check P	erformed		Frequency			Compliant	

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

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

<b>OC</b>	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	Cor
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 ma	anual z/s/p checks monitored and
	reported? If yes, how?	_

	Unknown	
✓		
	Logbook, call-in	

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

The ozone inlet filter is changed and a Z/S/P is performed every two weeks.

### mpliant

 $\checkmark$ ✓  $\checkmark$  $\checkmark$ ✓  $\checkmark$ 

#### **Field Systems Data Form** F-02058-1500-S9-rev002 ANA115 Technician Eric Hebert Site Visit Date 10/07/2020 Site ID Site operation procedures Is the filter pack being changed every Tuesday as scheduled? V Filter changed mornings 1 Are the Site Status Report Forms being completed and filed 2 correctly? No longer required Are data downloads and backups being performed as 3 scheduled? ✓ SSRF, logbook Are general observations being made and recorded? How? 4 ✓ Are site supplies on-hand and replenished in a timely 5 fashion? SSRF, logbook, call-in Are sample flow rates recorded? How? 6 $\checkmark$ Are samples sent to the lab on a regular schedule in a timely 7 fashion? ✓ Clean gloves on and off Are filters protected from contamination during handling 8 and shipping? How? ✓ Are the site conditions reported regularly to the field 9 operations manager or staff?

Compliant

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

#### Frequency

Multi-point MFC Calibrations	Semiannually	$\checkmark$
Flow System Leak Checks	✓ Weekly	$\checkmark$
Filter Pack Inspection		
Flow Rate Setting Checks	✓ Weekly	$\checkmark$
Visual Check of Flow Rate Rotometer	✓ Weekly	$\checkmark$
In-line Filter Inspection/Replacement	Semiannually	$\checkmark$
Sample Line Check for Dirt/Water	✓ Weekly	$\checkmark$

Field	S	vstems	Data	Form
r iciu	D	SUCHIS	Data	

ANA115

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

Site ID	
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Technician Eric Hebert

Site Visit Date 10/07/2020

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	9K2MC12	07017
DAS	Campbell	CR3000	2118	000339
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	060400022682	06025
Flow Rate	Арех	AXMC105LPMDPC	54767	000650
Infrastructure	Infrastructure	none	none	none
Modem	Digi	LR54	unknown	07197
Ozone	ThermoElectron Inc	49i A1NAA	1030244804	000699
Ozone Standard	ThermoElectron Inc	49i A3NAA	1030244818	000686
Sample Tower	Aluma Tower	В	none	000180
Shelter Temperature	Campbell	107-L	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342	14796	06535
Zero air pump	Werther International	C 70/4	000836202	06933

# Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
DEl	N417-Martii	n Valvur-10/07/2020				
1	10/7/2020	Computer	Hewlett Packard	none	ProBook	5CB22906R7
2	10/7/2020	DAS	Environmental Sys Corp	90600	8816	2274
3	10/7/2020	Elevation	Elevation	None	1	None
4	10/7/2020	Filter pack flow pump	Thomas	none	107CAB18B	099800009754
5	10/7/2020	Flow Rate	Tylan	90966	FC280SAV	AW9706011
6	10/7/2020	Infrastructure	Infrastructure	none	none	none
7	10/7/2020	Met tower	Glen Martin Engineering	none	unknown	none
8	10/7/2020	MFC power supply	Tylan	90967	RO-32	FP9706004
9	10/7/2020	Modem	US Robotics	none	33.6 fax modem	unknown
10	10/7/2020	Ozone	ThermoElectron Inc	90778	49C	49C-77033-384
11	10/7/2020	Ozone Standard	ThermoElectron Inc	none	49C	49C-71310-368
12	10/7/2020	Printer	Canon	none	PC425	unknown
13	10/7/2020	Sample Tower	Aluma Tower	none	В	AT-71102-7I-5
14	10/7/2020	Shelter Temperature	ARS	none	none	006
15	10/7/2020	Siting Criteria	Siting Criteria	None	1	None
16	10/7/2020	Temperature2meter	RM Young	none	41342	018533
17	10/7/2020	Zero air pump	Werther International	none	PC70/4	526281

### **DAS Data Form**

DAS Time Max Error: 0.05

Mfg	Serial	Number Site	T	Technician	Site Visit Date	Parameter	Use Desc.
Environmental	Sys 2274	13D	N417	Martin Valvur	10/07/2020	DAS	Primary
Das Date:	10/7 /2020	Audit Date	10/7 /2020	Mfg	HY	Parameter	DAS
Das Time:	281	Audit Time	281	Serial Number	12010039329	Tfer Desc.	Source generator (D
Low Channel	:	High Channe	l:	Tfer ID	01322	]	
Avg Diff:	Max Diff:	Avg Diff:	Max Diff:	Slope	1.00000	Intercept	0.00000
0.0002	2 0.00	0.0002	0.0005	Cert Date	6/15/2014	4 CorrCoff	1.00000
				Mfg	Fluke	Parameter	DAS
				Serial Number	95740243	Tfer Desc.	DVM
				Tfer ID	01312	]	
				Slope	1.00000	Intercept	0.00000
				Cert Date	1/28/2020	O CorrCoff	1.00000
Channel	Input	DVM Output	DAS Output	InputUnit	OutputUnit	Difference	
4	0.0000	-0.0002	-0.0003	S V	V	-0.0001	
4	0.1000	0.1001	0.1000		V	-0.0001	
4	0.3000	0.2996	0.2998		V	0.0002	
4	0.5000	0.4997	0.4995		V	-0.0002	
4	0.7000	0.6994	0.6993		V	-0.0001	
4	0.9000	0.8997	0.8992		V	-0.0005	
4	1.0000	0.9997	0.9994	V	V	-0.0003	

## Flow Data Form

Mfg	Se	erial Nun	iber Tag	Site	Тес	chnician	Site Visit I	Date Param	eter	Owner ID
Tylan	A	W970601	1	DEN417	Ma	artin Valvur	10/07/2020	Flow R	ate	90966
Mfg	Tylan					Mfg	BIOS	P	arameter FI	ow Rate
SN/Owner ID	FP970	06004	90967			Serial Number	122974	Т	fer Desc. B	OS 220-H
Parameter:	MFC (	power sup	oply			Tfer ID	01416			
						Slope	1.	.00000 Inte	ercept	0.00000
						Cert Date	5/	6/2020 <b>Cor</b>	rCoff	1.00000
DAS 1:			DAS 2:		L	Cal Factor Z	ero	0.00	)4	
A Avg % Diff:	A May	x % Dif	A Avg %	Diff A Max	% Dif	Cal Factor F	ull Scale	5.58	39	
0.49%		0.70%				Rotometer R	eading:	3.1	5	
Desc.	Te	st type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSigna	II PctDifference
primary	pump	off	0.000	0.000	-0.21	0.0000	0.06	l/m	l/m	
primary	leak c	heck	0.000	0.000	-0.22	0.0000	0.05	l/m	l/m	
primary	test pt	: 1	3.016	3.020	2.62	0.0000	3.04	l/m	l/m	0.70%
primary	test pt	2	3.026	3.030	2.62	0.0000	3.04	l/m	l/m	0.36%
primary	test pt	: 3	3.033	3.030	2.62	0.0000	3.04	l/m	l/m	0.40%
Sensor Comp	onent	Leak Tes	t		Conditio	n		Status	pass	
Sensor Comp	onent	Tubing C	ondition		Conditio	on Good		Status	pass	
Sensor Comp	onent	Filter Pos	ition		Conditio	n Good		Status	pass	
Sensor Comp	onent	Rotomete	er Condition	า	Conditio	Clean and dry		Status	pass	
Sensor Comp	onent	Moisture	Present		Conditio	No moisture p	resent	Status	pass	
Sensor Comp	onent	Filter Dist	tance		Conditio	<b>n</b> 5.5 cm		Status	pass	
Sensor Comp	onent	Filter Dep	oth		Conditio	0.5 cm		Status	pass	
Sensor Comp	onent	Filter Azir	muth		Conditio	<b>n</b> 360 deg		Status	pass	
Sensor Comp	onent	System N	lemo		Conditio	on		Status	pass	

## **Ozone Data Form**

Mfg		Serial Numbe	r Tag Sit	te	Te	chnician	Site Visit Date	Parame	eter	Owner ID
ThermoElec	ctron Inc	49C-77033-38	34 DI	EN417	Ma	artin Valvur	10/07/2020	Ozone		90778
Slope: Intercept CorrCoff:			e:	0.0000	0	Mfg Serial Number Tfer ID	ThermoElectron 49CPS-70008-3 01110			er ozone c. Ozone primary stan
DAS 1: A Avg % D	Diff: A N	DA Iax % Dif A	AS 2: Avg %Di	ff A Max	% Dif	Slope	1/14/202		•	0.03590
0.0	0%	0.0%				Cert Date	1/14/202	20 Corr		0.99999
UseDescri primat primat primat	ry ry	ConcGroup 1 2 3	Tfer R 0.10 15.89 34.80	9	fer Corr 0.06 15.81 34.73	Site 0.72 16.36 35.06	Site Unit ppb ppb ppb	RelPer	Dif 0.95	AbsDif 0.66 0.55
prima	ry	4	64.90		64.69	64.31	ppb		-0.59	
prima		5	114.8	32 1	114.48	113.90	ppb		-0.51	
		nt Audit Pressunt nt Sample Trai			-	on 703 mmHg on Good		Status Status	[	
Sensor C	ompone	nt Minimum dis	stance fror	m road met	Conditi	on True		Status	pass	
Sensor C	ompone	nt Inlet Filter C	ondition		Conditi	on Clean		Status	pass	
Sensor C	ompone	nt 26.6 degree	unobstruc	cted rule	Conditi	on True		Status	pass	
Sensor C	ompone	nt Tree dewline	e >10m or	below inlet	Conditi	on True		Status	pass	
Sensor C	ompone	nt Offset			Conditi	on -0.9		Status	pass	
Sensor C	ompone	nt Span			Conditi	on 1.008		Status	pass	
Sensor C	ompone	nt Zero Voltage	Э		Conditi	on 0.0001		Status	pass	
Sensor C	ompone	nt Fullscale Vo	ltage		Conditi	on 1.000		Status	pass	
Sensor C	ompone	nt Cell A Freq.			Conditi	on 85.7 kHz		Status	pass	
Sensor C	ompone	nt Cell A Noise	•		Conditi	on 0.6 ppb		Status	pass	
Sensor C	ompone	nt Cell A Flow			Conditi	on 0.61 lpm		Status	pass	
Sensor C	ompone	nt Cell A Press	ure		Conditi	on 692.0 mmHg		Status	pass	
Sensor C	ompone	nt Cell A Tmp.			Conditi	on 34.4 C		Status	pass	
Sensor C	ompone	nt Cell B Freq.			Conditi	on 69.6 kHz		Status	pass	
Sensor C	ompone	nt Cell B Noise	•		Conditi	on 0.7 ppb		Status	pass	
Sensor C	ompone	nt Cell B Flow			Conditi	on 0.61 lpm		Status	pass	
Sensor C	ompone	nt Cell B Press	ure		Conditi	on 691.5 mmHg		Status	pass	
Sensor C	ompone	nt Line Loss			Conditi	on Not tested		Status	pass	
Sensor C	ompone	nt System Men	no		Condition	on		Status	pass	

# 2 Meter Temperature Data Form

**Calc. Difference** 

Mfg	Serial Number	r Tag Site		Technicia	an	Site Vis	it Date	Paramete	er	Owner ID
RM Young	018533	DEN417		Martin Va	alvur	10/07/2	020	Temperat	ure2meter	none
				Mfg Serial Tfer I	Number	Fluke 3275143 01229	3		meter Tem Desc. RTD	
DAS 1: Abs Avg Err Ab		AS 2: Is Avg Err Ab	os Max Err	Slope Cert l			1.00020 1/29/2020		-	-0.01710 1.00000
0.07	0.1									
UseDescription	Test type	InputTmpRaw	InputTmpC	Corrected	OutputTm	pSignal	OutputS	ignalEng	OSE Unit	Difference
primary T	Temp Low Rang	0.00		0.02	,	0.0000		0.00	С	-0.02
primary 7	Temp Mid Range	24.95		24.96		0.0000		24.87	С	-0.09
primary 7	Temp High Rang	47.47		47.47		0.0000		47.37	C	-0.1
Sensor Compon	ent Shield		Cond	lition Clea	an			Status pa	ass	
Sensor Component Properly Sited			Cond	Condition Properly sited				Status pass		
Sensor Compon	ent Blower		Cond	l <mark>ition</mark> Fun	ctioning			Status pa	ass	
Sensor Compon	ent System Mem	10	Cond	lition				Status pa	ass	

# Shelter Temperature Data For

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
ARS	006	DEN417	Martin Valvur	10/07/2020	Shelter Temperature	none
DAS 1:	DAS 2:		Mfg	Fluke	Parameter She	Iter Temperature
Abs Avg Err Ab	s Max Err Abs Avg 0.74	Err Abs Max Err	Serial Number	3275143	Tfer Desc. RTD	)
			Tfer ID	01229		
			Slope	1.0002	6 Intercept	-0.01710
			Cert Date	1/29/202	0 CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	23.01	23.02	0.000	23.5	С	0.48
primary	Temp Mid Range	24.25	24.26	0.000	23.5	С	-0.74
primary	Temp Mid Range	24.15	24.16	0.000	23.6	С	-0.58
Sensor Con	nponent System Memo	•	Condition		Status	pass	

#### **Infrastructure Data For**

Site ID	DEN417	Technician Martin	n Valvur Site Visit Date 10/07/2020
Shelter 1	Make	Shelter Model	Shelter Size
Ekto		8814	896 cuft

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

## Siting Criteria Form

Condition	Status pass
Condition	Status pass
	Condition         Condition

## **Field Systems Comments**

#### 1 Parameter: SiteOpsProcComm

The site operator uses one gloved hand, and the same glove, to remove and install the filter pack. Leak checks are performed when the ambient temperature is above -10 C.

#### 2 Parameter: ShelterCleanNotes

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

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

Site ID DEN417	Technician Martin Valvur	Site Visit Date 10/07	7/2020				
Site Sponsor (agency)	NPS/EPA	USGS Map	Healy C-4				
<b>Operating Group</b>	NPS	Map Scale					
AQS #	02-068-0003	Map Date					
Meteorological Type	Climatronics						
Air Pollutant Analyzer	ozone, IMPROVE	QAPP Latitude					
<b>Deposition Measurement</b>	dry, wet	QAPP Longitude					
Land Use	woodland - mixed	<b>QAPP Elevation Meters</b>					
Terrain	complex	QAPP Declination					
Conforms to MLM	No	<b>QAPP Declination Date</b>					
Site Telephone	(907) 683-9638	Audit Latitude	63.7232				
Site Address 1	mile 238 Parks Highway	Audit Longitude	-148.9676				
Site Address 2		Audit Elevation	663				
County	Denali Borough	Audit Declination	19.3				
City, State	Denali Park, AK	Present					
Zip Code	99755	Fire Extinguisher					
Time Zone	Alaska Time Zone	First Aid Kit					
Primary Operator		Safety Glasses					
Primary Op. Phone #		Safety Hard Hat					
Primary Op. E-mail		Climbing Belt					
<b>Backup Operator</b>		Security Fence					
Backup Op. Phone #		Secure Shelter					
Backup Op. E-mail		Stable Entry Steps ☑					
Shelter Working Room	Make Ekto M	odel 8814	Shelter Size 896 cuft				
Shelter Clean	Notes The shelter is in good conditio	n, clean, neat, and very well org	anized.				
Site OK	Notes						
town o the Pa							

Fie	eld Sy	stems Data Fo	orm			F-02058-1500-S3-rev002				-rev002
Site	ID	DEN417	Technician	Martin Valvur		Site Visit Date 1	0/07/2020		]	
1		d speed and direction fluenced by obstructio		as to avoid	✓	N/A				
2	(i.e. win horizon	d sensors mounted so d sensors should be m tally extended boom > to the prevailing wind	ounted atop the 2x the max diam	tower or on a		N/A				
3	Are the	tower and sensors plu	mb?	ŀ	✓	N/A				
4		temperature shields p idiated heat sources su		positioned to	✓					
5	conditio surface	perature and RH sens ns? (i.e. ground below and not steeply sloped g water should be avoi	sensors should . Ridges, hollow	be natural						
6	Is the so	lar radiation sensor p	lumb?	[	✓	N/A				
7	Is it site	d to avoid shading, or	any artificial or	reflected light?	✓	N/A				
8	Is the ra	in gauge plumb?		ŀ	✓	N/A				
9	Is it site towers,	d to avoid sheltering e etc?	ffects from build	lings, trees,	✓	N/A				
10	Is the su facing n	urface wetness sensor s orth?	sited with the gri	id surface	✓	N/A				
11	Is it inc	lined approximately 3	0 degrees?	[	✓	N/A				

### F-02058-1500-S4-rev002

Site	e ID	DEN417	Technician	Martin Valvur		Site Visit Date 10/07/2020	
1		e meterological sensor 1, and well maintained		intact, in good		Temperature only	
2	2 Are all the meteorological sensors operational online, and reporting data?					Temperature only	
3	3 Are the shields for the temperature and RH sensors clean?				✓		
4	4 Are the aspirated motors working?						
5	5 Is the solar radiation sensor's lens clean and free of scratches?				✓	N/A	
6	Is the su	rface wetness sensor g	rid clean and u	ndamaged?	✓	N/A	
7		ensor signal and powe		, in good	✓		
8		ensor signal and powe elements and well ma		tions protected			

Field Systems Data Form						F-02058-1500-S5-rev002
Site	e ID	DEN417	<b>Technician</b> M	artin Valvur		Site Visit Date 10/07/2020
	Siting C	riteria: Are the pollut	ant analyzers and	l deposition equ	<u>ıipn</u>	nent sited in accordance with 40 CFR 58, Appendix E
1		ample inlets have at locted airflow?	east a 270 degree a	arc of	✓	
2	Are the	sample inlets 3 - 15 m	eters above the gr	ound?	✓	
3		sample inlets > 1 meto neters from trees?	er from any major	obstruction,	✓	
	<u>Pollutan</u>	t analyzers and depos	sition equipment o	perations and	mai	<u>intenance</u>
1		nalyzers and equipmon n and well maintained		1 good	✓	
2	Are the a reportin	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 olocation)	ozone sample line?	? (if yes		At inlet only
6	Are sam obstruct	ple lines clean, free of ions?	f kinks, moisture,	and	✓	
7	Is the ze	ro air supply desiccar	nt unsaturated?		✓	
8	Are ther	e moisture traps in th	e sample lines?			
9	Is there a clean?	a rotometer in the dr	y deposition filter	line, and is it	✓	Clean and dry

Field Systems Data Form								<b>F-02</b>	058-15	00-S6-rev002
Site	e ID	DEN417	Technician	Martin Valvur		Site Visi	t Date 10	/07/2020		
	DAS, se	nsor translators, and p	peripheral equi	pment operatio	ns and	maintenai	<u>1ce</u>			
1		OAS instruments appearntained?	ar to be in good	l condition and						
2		he components of the backup, etc)	DAS operation	al? (printers,						
3		nalyzer and sensor sig g protection circuitry?	· •	through						
4		signal connections pro intained?	otected from the	e weather and						
5	Are the	signal leads connected	to the correct	DAS channel?						
6	Are the grounde	DAS, sensor translato d?	rs, and shelter	properly						
7	Does the	e instrument shelter ha	ave a stable pov	ver source?						
8	Is the in	strument shelter temp	erature control	lled?						
9	Is the m	et tower stable and gro	ounded?			Stable		(	Grounded	
10	Is the sa	mple tower stable and	grounded?			V				
11	Tower c	omments?			-					

Field S	ystems Data F	'or	m				<b>F-02</b>	058	-1500-S7-rev002
Site ID	DEN417		Technicia	n Martin Va	lvur	Site Visit Date	10/07/2020		
Documer	<u>ntation</u>								
Does the	<u>site have the required</u>	inst	rument a	nd equipmer	nt manuals?	-			
****	Ye	es	No	N/A			Yes	No ✓	N/A
Wind speed					Data logge				
Wind direct					Data logge				
Temperatur Delative has					-	t recorder			
	midity sensor				Computer			<ul><li>▼</li></ul>	
Solar radiat					Modem Printer				
Surface wet									
Wind senso	_				Zero air p	_		<ul> <li>✓</li> </ul>	
-	re translator				Filter flow				
-	ensor translator	_			Surge pro UPS	lector			
						protection device			
Ozone analy	cket rain gauge				Shelter he	•			
	,					r conditioner			
-					Sheller an	Conutioner			
-									
Does th	<u>e site have the require</u>			<u>cent QC doo</u>	<u>cuments and</u>	<u>l report forms?</u>			
		rese					Currei	nt	
Station Log		<ul> <li>Image: A start of the start of</li></ul>		view					
SSRF									
Site Ops Ma	anual								
HASP									
Field Ops M									
Calibration									
-	Control Charts		<sup>2</sup> Data	view					
Preventive	maintenance schedule								
1 Is the s	station log properly co	mple	eted durir	ng every site	visit?				
2 Are the curren	e Site Status Report Fo t?	orm	s being co	mpleted and					
	e chain-of-custody form transfer to and from			sed to docur	nent 🔽				
4 Are oz curren	one z/s/p control chart t?	s pr	operly co	npleted and		Dataview			
	v additional explanatio nan-made, that may af					regarding condit	ions listed a	bove,	or any other features,

Site	ID	DEN417	Technician	Martin Valvur		Site Visit Date	10/07/2020	]
1	Has the	<u>ration procedures</u> site operator attendec If yes, when and who		TNET training		Site operator trainec	I on-site by ARS emplo	yee
2		backup operator atter course? If yes, when				Trained by current o	perator	
3	Is the site schedule	e visited regularly on a ?	the required Tu	ıesday	✓			
		standard CASTNET o l by the site operator?	• •	cedures being	✓			
5		e operator(s) knowled ired site activities? (in			✓			

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

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

#### Frequency

Frequency

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

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

QC Che	ck Pe	erfor	med
--------	-------	-------	-----

**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** 

Semiannually	
Daily	
Monthly	
Daily	
Alarm values only	
Quarterly	
N/A	
Semiannually	

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

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

✓	Unknown	
✓		
✓	Dataview	

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

**Compliant** 

Compliant

F-02058-1500-S8-rev002

#### **Field Systems Data Form** F-02058-1500-S9-rev002 DEN417 Technician Martin Valvur Site Visit Date 10/07/2020 Site ID Site operation procedures Is the filter pack being changed every Tuesday as scheduled? Filter changed various times 1 Are the Site Status Report Forms being completed and filed 2 correctly? No longer required Are data downloads and backups being performed as 3 scheduled? ✓ SSRF Are general observations being made and recorded? How? 4 $\checkmark$ Are site supplies on-hand and replenished in a timely 5 fashion? SSRF Are sample flow rates recorded? How? 6 $\checkmark$ Are samples sent to the lab on a regular schedule in a timely 7 fashion? ✓ One set of gloves only Are filters protected from contamination during handling 8

Compliant

and shipping? How?9 Are the site conditions reported regularly to the field operations manager or staff?

QC Check Performed

#### Frequency

Multi-point MFC Calibrations	$\checkmark$	Semiannually	✓
Flow System Leak Checks	✓	Weekly	$\checkmark$
Filter Pack Inspection	✓	Weekly	$\checkmark$
Flow Rate Setting Checks	✓	Weekly	$\checkmark$
Visual Check of Flow Rate Rotometer	✓	Weekly	✓
In-line Filter Inspection/Replacement	$\checkmark$	As needed	$\checkmark$
Sample Line Check for Dirt/Water	$\checkmark$	As needed	

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

The site operator uses one gloved hand, and the same glove, to remove and install the filter pack. Leak checks are performed when the ambient temperature is above -10 C.

DEN417

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

Site ID

Techn

Technician Martin Valvur

Site Visit Date 10/07/2020

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Hewlett Packard	ProBook	5CB22906R7	none
DAS	Environmental Sys Corp	8816	2274	90600
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18B	099800009754	none
Flow Rate	Tylan	FC280SAV	AW9706011	90966
Infrastructure	Infrastructure	none	none	none
Met tower	Glen Martin Engineering	unknown	none	none
MFC power supply	Tylan	RO-32	FP9706004	90967
Modem	US Robotics	33.6 fax modem	unknown	none
Ozone	ThermoElectron Inc	49C	49C-77033-384	90778
Ozone Standard	ThermoElectron Inc	49C	49C-71310-368	none
Printer	Canon	PC425	unknown	none
Sample Tower	Aluma Tower	В	AT-71102-7I-5	none
Shelter Temperature	ARS	none	006	none
Siting Criteria	Siting Criteria	]1	None	None
Temperature2meter	RM Young	41342	018533	none
Zero air pump	Werther International	PC70/4	526281	none

# Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number			
SPD	SPD111-Eric Hebert-10/12/2020								
1	10/12/2020	Computer	Dell	07057	Inspiron 15	4H4MC12			
2	10/12/2020	DAS	Campbell	000342	CR3000	2121			
3	10/12/2020	Elevation	Elevation	None	1	None			
4	10/12/2020	Filter pack flow pump	Thomas	04857	107CAB18	060300020002			
5	10/12/2020	Flow Rate	Apex	000887	AXMC105LPMDPCV	illegible			
6	10/12/2020	Infrastructure	Infrastructure	none	none	none			
7	10/12/2020	Modem	Digi	07188	LR54	unknown			
8	10/12/2020	Ozone	ThermoElectron Inc	000742	49i A1NAA	1105347313			
9	10/12/2020	Ozone Standard	ThermoElectron Inc	000437	49i A3NAA	CM08200013			
10	10/12/2020	Sample Tower	Aluma Tower	03548	A	none			
11	10/12/2020	Shelter Temperature	Campbell	none	107-L	none			
12	10/12/2020	Siting Criteria	Siting Criteria	None	1	None			
13	10/12/2020	Temperature	RM Young	04314	41342	4011			
14	10/12/2020	Zero air pump	Werther International	06928	C 70/4	000822222			

### **DAS Data Form**

DAS Time Max Error:

1.5

Mfg	Serial Nu	mber Site	T	<b>Fechnician</b>	Site Visit Date	Parameter	Use Desc.
Campbell	2121	SPE	0111	Eric Hebert	10/12/2020	DAS	Primary
Das Date: Das Time: Das Day:	10/12/2020 09:45:00 286	Audit Date Audit Time Audit Day	10/12/2020 09:46:30 286	Mfg Serial Number	Datel 4000392	Parameter Tfer Desc.	DAS Source generator (D
Low Channel		High Channel		Tfer ID	01321		
Avg Diff: 0.0002	Max Diff:           0.0004	Avg Diff: 0.0002	Max Diff:           0.0004	Slope	1.0000		0.00000
				Cert Date Mfg Serial Number Tfer ID Slope Cert Date	Fluke 86590148 01310 1.0000 2/4/202	Parameter Tfer Desc. Intercept	DAS
Channel	Input D	VM Output	DAS Output	InputUnit	OutputUnit	Difference	
7	0.0000	0.0000	0.0000	•	V	0.0000	
7	0.1000	0.1000	0.0999		V	-0.0001	
7	0.3000	0.3001	0.2999		V	-0.0002	
7	0.5000	0.5001	0.4999		V	-0.0002	
7	0.7000	0.7001	0.6998	3 V	V	-0.0003	
7	0.9000	0.9001	0.8998		V	-0.0003	
7	1.0000	1.0002	0.9998	8 V	V	-0.0004	

## Flow Data Form

Mfg	Serial Num	iber Tag	Site	Tec	chnician	Site Visit I	Date Param	eter	Owner ID	
Арех	illegible		SPD111	Eri	c Hebert	10/12/2020	/12/2020 Flow Ra		000887	
					Mfg Serial Number	BIOS 131818 01417		arameter F fer Desc. B		
					Tfer ID Slope Cert Date	1		ercept rCoff	-0.02240 0.99997	
DAS 1:     DAS 2:       A Avg % Diff: A Max % Dif     A Avg % Diff       4.66%     5.06%				: % Dif	Cal Factor Z Cal Factor F Rotometer R	ull Scale	0.0 0.9			
Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSigna	all PctDifference	
primary	pump off	0.000	0.000	0.00	0.000	0.02	l/m	l/m		
primary	leak check	0.000	0.000	0.03	0.000	0.05	l/m	l/m		
primary	test pt 1	1.550	1.570	1.55	0.000	1.50	l/m	l/m	-4.46%	
primary	test pt 2	1.550	1.570	1.55	0.000	1.50	l/m	l/m	-4.46%	
primary	test pt 3	1.557	1.580	1.55	0.000	1.50	l/m	l/m	-5.06%	
	oonent Leak Tes			Conditio	ondition ondition Good			Status     pass       Status     pass		
Sensor Comp	onent Filter Pos	ition		Conditio	n Good		Status	pass		
	onent Rotomete		า	_	Clean and dry		Status			
	onent Moisture			_	n No moisture p	resent	Status			
Sensor Component Filter Distance				1	<b>n</b> 5.0 cm			tus pass		
Î. Î.	onent Filter Dep				<b>n</b> 3.0 cm			Status pass		
	Filter Azir			-	<b>n</b> 180 deg			atus pass		
Sensor Comp	onent System M	iemo		Conditio	n		Status	pass		

### **Ozone Data Form**

Mfg	S	erial Numbe	r Tag Site		Tecl	hnician	Site Visit Date	Parame	eter	Owner ID
ThermoElectror	n Inc	1105347313	SPD11	1	Eric	: Hebert	10/12/2020	Ozone		000742
Slope: Intercept CorrCoff:	ercept -0.93412 Intercept 0.00000		0.00000	\$	Mfg ThermoElectro Serial Number 1180930075				er ozone c. Ozone primary stan	
DAS 1: A Avg % Diff: 0.0%			AS 2: Avg %Diff A	Max % Dif	5	Ffer ID Slope Cert Date	01115		•	0.32220
UseDescripti		ConcGroup	Tfer Raw	Tfer Co	orr	Site	Site Unit	RelPer	Dif	AbsDif
primary		1	0.25	-0.07		-1.00	ppb			-0.93
primary primary		2 3	13.83 34.85	13.57 34.70		12.11 33.35	ppb ppb		-3.97	-1.46
primary		4	67.98	68.00		65.97	ppb		-3.03	
primary		5	115.18	115.44	ł	112.20	ppb		-2.85	
Sensor Com	ponent	t Audit Pressu	ure	Con	ditio	n 723.5 mmHg		Status	pass	
Sensor Com	ponent	t Sample Trai	n	Con	ditio	n Good		Status	pass	
Sensor Com	ponent	t Minimum dis	stance from roa	d met Con	ditio	n True		Status	pass	
Sensor Component Inlet Filter Condition			Con	Condition Clean			Status	pass		
Sensor Component 26.6 degree unobstructed rule		ule Con	ditio	n True		Status	pass			
Sensor Com	ponent	t Tree dewline	e >10m or belov	v inlet Con	ditio	n True		Status	pass	
Sensor Com	ponent	t Offset		Con	ondition 0.000			Status	pass	
Sensor Com	ponent	t Span		Con	ondition 1.005			Status	pass	
Sensor Com	ponent	t Zero Voltage	e	Con	ditio	n N/A		Status	pass	
Sensor Com	ponent	t Fullscale Vo	ltage	Con	ditio	n N/A		Status	pass	
Sensor Com	ponent	t Cell A Freq.		Con	ditio	n 95.3 kHz		Status	pass	
Sensor Com	ponent	t Cell A Noise	•	Con	ditio	n 0.9 ppb		Status	pass	
Sensor Com	ponent	t Cell A Flow		Con	ditio	<mark>n</mark> 0.68 lpm		Status	pass	
Sensor Com	ponent	t Cell A Press	sure	Con	ditio	n 694.0 mmHg		Status	pass	
Sensor Com	ponent	t Cell A Tmp.		Con	ditio	n 38.4 C		Status	pass	
Sensor Com	Sensor Component Cell B Freq.		Con	ditio	n 115.8 kHz		Status	pass		
Sensor Com	Sensor Component Cell B Noise		Con	ditio	n 0.8 ppb		Status	pass		
Sensor Com	ponent	Cell B Flow		Con	ditio	<b>n</b> 0.66 lpm		Status	pass	
Sensor Com	Sensor Component Cell B Pressure			Con	ditio	n 694.9 mmHg		Status	pass	
Sensor Com	ponent	t Line Loss		Con	ditio	tion Not tested Statu			pass	
Sensor Com	ponent	t System Mer	no	Con	ditio	n		Status	pass	

## Temperature Data Form

Mfg	Serial Number	Tag Site	]	<b>Fechni</b>	ician	Site Vi	isit Date	Param	eter	Owner ID	
RM Young	4011	SPD111		Eric Hebert		10/12/	/2020	Temper	ature	04314	
				Mf	g	Extech		Pa	rameter Te	mperature	
				Ser	ial Number	H2327	34	Tf	er Desc. R	TD.	
				Tfe	er ID	01227					
DAS 1: DAS 2:				Slo	ре	1.00797 Inte		ercept 0.12950			
Abs Avg Err Abs Max Err Abs Avg Err Abs Ma			Max Err	Err Cert Date			2/14/2020 Cor		rCoff 1.00000		
0.10	0.18										
UseDesc.	Test type	InputTmpRaw	InputTmp	Corr.	OutputTmpS	Signal	OutputSignalEng		OSE Unit	Difference	
primary	Temp Low Range	0.07	-0.06	5	0.000		0.1		С	0.18	
primary	Temp Mid Range	27.32	26.98		0.000		27.	-	С	0.06	
primary	Temp High Range	48.47	47.96	5	0.000		48.	0	С	0.07	
Sensor Con	nponent Shield		Condi	ition N	Ioderately clea	an		Status	pass		
Sensor Component Blower				Condition N/A				Status	Status pass		
Sensor Component Properly Sited C				ndition Properly sited				Status pass			
Sensor Con	nponent System Memo	)	Condi	Condition				Status pass			

# Shelter Temperature Data For

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	SPD111	Eric Hebert	10/12/2020	Shelter Temperature	none
DAS 1:	<b>DAS 2:</b>		Mfg	Extech	Parameter She	Iter Temperature
Abs Avg Err Ab	s Max Err Abs Avg 1.67	Err Abs Max Err	Serial Number	H232734	Tfer Desc. RTD	)
			Tfer ID	01227		
			Slope	1.0079	7 Intercept	0.12950
			Cert Date	2/14/202	0 CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference	
primary	Temp Mid Range	26.06	25.73	0.000	27.1	С	1.33	
primary	Temp Mid Range	23.39	23.08	0.000	24.8	С	1.67	
primary	Temp Mid Range	24.20	23.88	0.000	25.2	С	1.3	
Sensor Component System Memo			Condition	Status pass				

#### **Infrastructure Data For**

Site I	D SPD111	Technician Eric He	bert Site Visit Date 10/12/2020
Sh	elter Make	Shelter Model	Shelter Size
Ek	to	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	N/A	Status	pass
Sensor Component Moisture Trap	Condition	Installed	Status	pass
Sensor Component Power Cables	Condition	Good	Status	pass
Sensor Component Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component Rotometer	Condition	Installed	Status	pass
Sensor Component Sample Tower	Condition	Fair	Status	pass
Sensor Component Shelter Condition	Condition	Good	Status	pass
Sensor Component Shelter Door	Condition	Fair	Status	pass
Sensor Component Shelter Roof	Condition	Good	Status	pass
Sensor Component Shelter Floor	Condition	Good	Status	pass
Sensor Component Shelter walls	Condition	Good	Status	pass
Sensor Component Excessive mold present	Condition	Good	Status	pass
Sensor Component Signal Cable	Condition	Good	Status	pass
Sensor Component Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component Sample Train	Condition	Good	Status	pass

## Siting Criteria Form

Sensor Component Large point source of So2 or Nox	Condition	Status pass
Sensor Component City > 50,000	Condition	Status pass
Sensor Component City 1,000 to 10,000	Condition	Status pass
Sensor Component City 10,000 to 50,000	Condition	Status pass
Sensor Component Feedlot operations	Condition 100 m	Status Fail
Sensor Component Large parking lot	Condition	Status pass
Sensor Component Limited agriculture operations	Condition	Status pass
Sensor Component Major industrial source	Condition	Status pass
Sensor Component Secondary road < or = 100 per da	Condition	Status pass
Sensor Component Secondary road >100 vehicles/da	Condition	Status pass
Sensor Component Small parking lot	Condition	Status pass
Sensor Component System Memo	Condition	Status pass
Sensor Component Major highway, airport, or rail yard	Condition	Status pass
Sensor Component Intensive agriculture operations	Condition	Status pass

## **Field Systems Comments**

#### 1 Parameter: DasComments

The sample tower is an older Type A tower and some small cracks are present in the tower legs. The tower clamps are very rusty. The site operator mentioned that the tower is scheduled for replacement. It was discussed that the new tower should not impact the NADP equipment. The current tower location is meeting NADP siting criteria.

#### 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.

#### 4 Parameter: MetOpMaintCom

The temperature signal wire was found to be loose and the signal was intermittent. The signal wire was tightened during the audit.

## Field Systems Data Form

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

Site ID SPD111	Technician Eric Hebert	Site Visit Date 10/12	2/2020			
Site Sponsor (agency)	EPA	USGS Map	Ausmus			
Operating Group	private	Map Scale				
AQS#	47-025-9991	Map Date				
Meteorological Type	R.M. Young					
Air Pollutant Analyzer	Ozone	QAPP Latitude				
<b>Deposition Measurement</b>	dry, wet	QAPP Longitude				
Land Use	Agriculture, dairy, woodland - mixed	QAPP Elevation Meters				
Terrain	rolling / complex	QAPP Declination				
Conforms to MLM	Marginally	QAPP Declination Date	36.46983 -83.826511			
Site Telephone	4238698159	Audit Latitude	36.46983			
Site Address 1	718 Russell Hill Road	Audit Longitude	-83.826511			
Site Address 2		Audit Elevation	361			
County	Claiborne	Audit Declination	-5.1			
City, State	, TN	Present				
Zip Code	37870	Fire Extinguisher	New in 2015			
Time Zone	Eastern	First Aid Kit				
Primary Operator		Safety Glasses				
Primary Op. Phone #		Safety Hard Hat				
Primary Op. E-mail		Climbing Belt				
<b>Backup Operator</b>		Security Fence				
Backup Op. Phone #		Secure Shelter				
Backup Op. E-mail		Stable Entry Steps ✓				
Shelter Working Room ✓	Make Ekto Me	odel 8810	Shelter Size 640 cuft			
	Notes The shelter is in good condition. The shelter is clean, neat, well organized and well maintained.					
	Notes					
past r will en	I-75 take exit 134, 25W to 63 and LaFolle nile marker 6 and the B&B gas and tire st d at a Tee after about 150 yds. Turn left II Hill Rd. The site will be on the right in t	ation in Claiborne county, turn at the Tee and then an immedi	right on an unmarked road. This road			

Fie	eld Sy	stems Data Fo	orm				<b>F-02058</b>	8-1	500-S3-rev002
Site	e ID	SPD111	Technician	Eric Hebert		Site Visit Date	10/12/2020		
1		d speed and direction fluenced by obstructio		as to avoid		N/A			
2	2 Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)					N/A			
3	Are the	tower and sensors plu	mb?		✓	N/A			
4	Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?				✓				
5	condition surface a	perature and RH sens ns? (i.e. ground below and not steeply sloped s water should be avoi	sensors should . Ridges, hollow	be natural					
6	Is the so	lar radiation sensor p	lumb?		✓	N/A			
7	Is it sited	d to avoid shading, or	any artificial or	reflected light?		N/A			
8	Is the ra	in gauge plumb?			✓	N/A			
9	Is it sited towers, o	d to avoid sheltering e etc?	ffects from buil	dings, trees,	✓	N/A			
10	Is the su facing n	rface wetness sensor s orth?	sited with the gr	id surface	✓	N/A			
11	Is it inc	lined approximately 3	0 degrees?			N/A			

### **Field Systems Data Form**

### F-02058-1500-S4-rev002

Sit	<b>ID</b> SPD111 <b>Technician</b> Eric Hebert		Site Visit Date 10/12/2020
1	Do all the meterological sensors appear to be intact, in good condition, and well maintained?	✓	
2	Are all the meteorological sensors operational online, and reporting data?	✓	
3	Are the shields for the temperature and RH sensors clean?	✓	
4	Are the aspirated motors working?	✓	N/A
5	Is the solar radiation sensor's lens clean and free of scratches?	✓	N/A
6	Is the surface wetness sensor grid clean and undamaged?		N/A
7	Are the sensor signal and power cables intact, in good condition, and well maintained?	✓	Signs of wear
8	Are the sensor signal and power cable connections protected from the elements and well maintained?	✓	
	ide any additional explanation (photograph or skatch if passa		

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

The temperature signal wire was found to be loose and the signal was intermittent. The signal wire was tightened during the audit.

Fi	eld Sy	stems Data Fo	orm			F-02058-1500-S5-rev002				
Site	e ID	SPD111	Technician	Eric Hebert		Site Visit Date 10/12/2020				
	Siting C	Criteria: Are the pollut	ant analyzers and	d deposition eq	<u>uipn</u>	nent sited in accordance with 40 CFR 58, Appendix E				
1		sample inlets have at le icted airflow?	ast a 270 degree	arc of						
2	Are the sample inlets 3 - 15 meters above the ground?				✓					
3	Are the sample inlets > 1 meter from any major obstruction and 20 meters from trees?									
	Pollutar	nt analyzers and depos	ition equipment	operations and	mai	ntenance				
1		analyzers and equipme on and well maintained		in good						
2		analyzers and monitor 1g data?	rs operational, or	n-line, and						
3	Describ	e ozone sample tube.				1/4 teflon by 12 meters				
4	Describ	e dry dep sample tube.				3/8 teflon by 12 meters				
5		ine filters used in the o location)	zone sample line	e? (if yes		At inlet only				
6	Are san obstruc	nple lines clean, free of tions?	kinks, moisture,	, and	✓					
7	Is the ze	ero air supply desiccan	t unsaturated?		✓					
8	Are the	re moisture traps in the	e sample lines?			Flow line only				
9	Is there clean?	a rotometer in the dry	deposition filter	line, and is it		Clean and dry				

Field Systems Data Form							<b>F-02</b>	2058-15	500-S6-rev002
Site	e ID	SPD111	Technician	Eric Hebert		Site Visit Date	10/12/2020	)	
	DAS, sei	nsor translators, and p	peripheral equip	oment operation	is ai	<u>nd maintenance</u>			
1		OAS instruments appe ntained?	ar to be in good	condition and	✓				
2		he components of the backup, etc)	DAS operationa	al? (printers,					
3		nalyzer and sensor sig g protection circuitry?	· ·	hrough		Met sensors only			
4	4 Are the signal connections protected from the weather and well maintained?			weather and	✓				
5 Are the signal leads connected to the correct DAS channel?			DAS channel?	✓					
6	Are the grounde	DAS, sensor translato d?	rs, and shelter <b>p</b>	properly	✓				
7	Does the	instrument shelter ha	ave a stable pow	ver source?	✓				
8	Is the in	strument shelter temp	erature control	led?	✓				
9	Is the m	et tower stable and gr	ounded?			Stable		Grounded	
10	Is the sa	mple tower stable and	l grounded?						
11	Tower c	omments?				Met tower removed			

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

The sample tower is an older Type A tower and some small cracks are present in the tower legs. The tower clamps are very rusty. The site operator mentioned that the tower is scheduled for replacement. It was discussed that the new tower should not impact the NADP equipment. The current tower location is meeting NADP siting criteria.

Field Systems Data Form						F-02058-1500-S7-rev002		
Site ID SPD111		Tech	nician Eric I	Hebert Site Visit Date 1	10/12/2020			
<b>Documentation</b>								
Does the site have the requ	uired ins	strum	ent and equij	oment manuals?				
	Yes	No	N/A		Yes	No	N/A	
Wind speed sensor			$\checkmark$	Data logger		$\checkmark$		
Wind direction sensor			$\checkmark$	Data logger			$\checkmark$	
Temperature sensor		✓		Strip chart recorder			$\checkmark$	
Relative humidity sensor			$\checkmark$	Computer				
Solar radiation sensor			$\checkmark$	Modem		$\checkmark$		
Surface wetness sensor				Printer				
Wind sensor translator			$\checkmark$	Zero air pump		$\checkmark$		
Temperature translator			$\checkmark$	Filter flow pump		$\checkmark$		
Humidity sensor translator			$\checkmark$	Surge protector			$\checkmark$	
Solar radiation translator			$\checkmark$	UPS	$\checkmark$			
Tipping bucket rain gauge			$\checkmark$	Lightning protection device			$\checkmark$	
Ozone analyzer	$\checkmark$			Shelter heater		$\checkmark$		
Filter pack flow controller		$\checkmark$		Shelter air conditioner				
Filter pack MFC power supp	oly 🗌		$\checkmark$					
Does the site have the re	quired a	nd mo	ost recent QC	<u>C documents and report forms?</u>				
	Pres	ent			Curre	nt		
Station Log	[	✓			$\checkmark$			
SSRF	[	✓			$\checkmark$			
Site Ops Manual	[	✓	Nov 2011					
HASP	[	✓	Feb 2014		$\checkmark$			
Field Ops Manual	[	✓	July 1990					
Calibration Reports	[	✓			$\checkmark$			
Ozone z/s/p Control Charts	[							

1	Is the station log properly completed during every site visit?	✓

**Preventive maintenance schedule** 

- 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:

✓

### **Field Systems Data Form**

#### SPD111 Technician Eric Hebert Site Visit Date 10/12/2020 Site ID Site operation procedures Trained by ESE employee EOH during site installation Has the site operator attended a formal CASTNET training 1 course? If yes, when and who instructed? 2 Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday ✓ 3 schedule? $\checkmark$ Are the standard CASTNET operational procedures being 4 flollowed by the site operator? Is the site operator(s) knowledgeable of, and able to perform 5 the required site activities? (including documentation)

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

QC Che	ck Performed	ł
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#### Frequency

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

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

**QC Check Performed** 

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

	rrequency	Cu
✓	Semiannually	$\checkmark$
$\checkmark$	Daily	$\checkmark$
$\checkmark$	As needed	$\checkmark$
$\checkmark$	Daily	$\checkmark$
$\checkmark$	As needed	$\checkmark$
$\checkmark$	Weekly	$\checkmark$
$\checkmark$	Every 2 weeks	$\checkmark$
	N/A	$\checkmark$
$\checkmark$	Weekly	$\checkmark$
$\checkmark$	Weekly	$\checkmark$

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

	Unknown
✓	
✓	Call-in only

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 SPD111 Technician Eric Hebert Site Visit Date 10/12/2020 Site ID Site operation procedures Is the filter pack being changed every Tuesday as scheduled? Filter changed afternoons 1 Are the Site Status Report Forms being completed and filed 2 correctly? No longer required Are data downloads and backups being performed as 3 scheduled? SSRF, logbook Are general observations being made and recorded? How? 4 ✓ Are site supplies on-hand and replenished in a timely 5 fashion? SSRF, call-in Are sample flow rates recorded? How? 6 $\checkmark$ Are samples sent to the lab on a regular schedule in a timely 🗹 7 fashion? ✓ Clean gloves on and off Are filters protected from contamination during handling 8 and shipping? How? ✓ Are the site conditions reported regularly to the field 9 operations manager or staff? **QC Check Performed** Compliant Frequency $\checkmark$ Semiannually **Multi-point MFC Calibrations** ✓ Weekly ✓ **Flow System Leak Checks** ✓ Weekly $\checkmark$ **Filter Pack Inspection** ✓ Weekly $\checkmark$ **Flow Rate Setting Checks** ✓ Weekly $\checkmark$ **Visual Check of Flow Rate Rotometer** Semiannually $\checkmark$ **In-line Filter Inspection/Replacement** ✓ Weekly $\checkmark$ Sample Line Check for Dirt/Water

SPD111

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

Site ID	
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Technician Eric Hebert

Site Visit Date 10/12/2020

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	4H4MC12	07057
DAS	Campbell	CR3000	2121	000342
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	060300020002	04857
Flow Rate	Apex	AXMC105LPMDPC	illegible	000887
Infrastructure	Infrastructure	none	none	none
Modem	Digi	LR54	unknown	07188
Ozone	ThermoElectron Inc	49i A1NAA	1105347313	000742
Ozone Standard	ThermoElectron Inc	49i A3NAA	CM08200013	000437
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
Zero air pump	Werther International	C 70/4	000822222	06928

# Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
ESP	127-Eric H	ebert-10/16/2020				
1	10/16/2020	Computer	Dell	07060	Inspiron 15	894MC12
2	10/16/2020	DAS	Campbell	000352	CR3000	2130
3	10/16/2020	Elevation	Elevation	None	1	None
4	10/16/2020	Filter pack flow pump	Thomas	02975	107CAB18	0493002476
5	10/16/2020	Flow Rate	Арех	000808	AXMC105LPMDPCV	illegible
6	10/16/2020	Infrastructure	Infrastructure	none	none	none
7	10/16/2020	Modem	Digi	07131	LR54	unknown
8	10/16/2020	Ozone	ThermoElectron Inc	000734	49i A1NAA	1105347317
9	10/16/2020	Ozone Standard	ThermoElectron Inc	000327	49i A3NAA	0622717852
10	10/16/2020	Sample Tower	Aluma Tower	03550	A	none
11	10/16/2020	Shelter Temperature	Campbell	none	107-L	none
12	10/16/2020	Siting Criteria	Siting Criteria	None	1	None
13	10/16/2020	Temperature	RM Young	06406	41342VC	14039
14	10/16/2020	Zero air pump	Werther International	06874	C 70/4	000815256

### **DAS Data Form**

DAS Time Max Error: 0

Mfg	Serial Nur	nber Site	Т	echnician	Site Visit Date	Parameter	Use Desc.
Campbell	2130	ESF	°127 E	ric Hebert	10/16/2020	DAS	Primary
	10/16/2020 09:34:00	Audit Date	10/16/2020 09:34:00	Mfg	Datel	Parameter	DAS
Das Time: Das Day:	290	Audit Time Audit Day	290	Serial Number	4000392	Tfer Desc.	Source generator (D
Low Channel:		High Channel	l:	Tfer ID	01321		
Avg Diff:	Max Diff:	Avg Diff:	Max Diff:	Slope	1.00000	Intercept	0.00000
0.0001	0.0002	0.0001	0.0002	Cert Date	1/22/2015	<b>CorrCoff</b>	1.00000
				Mfg	Fluke	Parameter	DAS
				Serial Number	86590148	Tfer Desc.	DVM
				Tfer ID	01310	]	
				Slope	1.00000	Intercept	0.00000
				Cert Date	2/4/2020	CorrCoff	1.00000
Channel	Input D'	VM Output	DAS Output	InputUnit	OutputUnit	Difference	
7	0.0000	0.0000	0.0000	V	V	0.0000	
7	0.1000	0.1000	0.0999	V	V	-0.0001	
7	0.3000	0.3001	0.3000	V	V	-0.0001	
7	0.5000	0.5002	0.5001	V	V	-0.0001	
7	0.7000	0.7003	0.7001	V	V	-0.0002	
7	0.9000	0.9004	0.9002	V	V	-0.0002	
7	1.0000	1.0004	1.0002	V	V	-0.0002	

## Flow Data Form

Mfg	Serial Num	ber Tag	Site	Те	chnician	Site Vis	sit Date	Date Parameter		Owner ID
Арех	illegible		ESP127	Er	ic Hebert	10/16/2	2020	Flow F	Rate	000808
					Mfg Serial Number	BIOS 131818			<b>'arameter</b> Flov	
					Tfer ID	01417			iter Desc. Die	.0 220 11
					Slope		1.000	32 Int	ercept	-0.02240
					Cert Date		2/17/20	20 <b>Co</b>	rrCoff	0.99997
DAS 1:		DAS 2:		L	Cal Factor Z	lero		0.	08	
A Avg % Diff:	A Max % Dif	A Avg %	Diff A Max	: % Dif	Cal Factor F	ull Scale		1.0	09	
0.66%	0.66%				<b>Rotometer R</b>	eading:		1	.5	
Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S	SE Inp	outUnit	OutputSignalH	PctDifference
primary	pump off	0.000	0.000	-0.01	0.000	0.01		l/m	l/m	
primary	leak check	0.000	0.000	0.00	0.000	0.05		l/m	l/m	
primary	test pt 1	1.490	1.510	1.49	0.000	1.50		l/m	l/m	-0.66%
primary	test pt 2	1.491	1.510	1.49	0.000	1.50		l/m	l/m	-0.66%
primary	test pt 3	1.492	1.510	1.49	0.000	1.50		l/m	l/m	-0.66%
Sensor Comp	ponent Leak Tes	t		Conditio	on			Statu	s pass	
Sensor Com	ponent Tubing C	ondition		Conditio	on Good			Statu	s pass	
Sensor Comp	ponent Filter Pos	ition		Conditio	on Good			Statu	s pass	
Sensor Comp	ponent Rotomete	r Conditio	n	Conditio	Clean and dry			Statu	s pass	
Sensor Comp	ponent Moisture	Present		Conditio	n No moisture p	resent		Statu	s pass	
Sensor Component Filter Distance			Conditio	dition 4.5 cm			Statu	s pass		
Sensor Comp	ponent Filter Dep	oth			ion 3.0 cm			Statu	s pass	
	ponent Filter Azir			Conditio	tion 270 deg			Statu	s pass	
Sensor Comp	ponent System M	lemo		Conditio	on			Statu	s pass	

### **Ozone Data Form**

ThermoElectron Inc       [105347317]       ESP127       Enc Hebert       [0/16/2020       Ozone       000734         Stope:       0.96253       Stope:       0.00000       Ocreance       0.00000       Ocreance       0.00000         CorrCoff:       1.00000       CorrCoff:       0.00000       ThermoElectron Inc       Parameter 02000         Axg % Diff: A Max % Diff       Axg % Diff: A Max % Diff       Stope       0.99490       Intercept       0.32220         Axg % Diff: A Max % Diff       Axg % Diff       Axg % Diff       Max % Diff       0.54       0.54         primary       1       0.13       0.19       0.35       gpb       0.54       0.54         primary       3       32.53       32.73       31.61       ppb       -2.38       0.54         Sensor Component       Audt Pressure       Condition       10840       pb       -0.26       -0.26         Sensor Component       Audt Pressure       Condition       10840       pb       -2.38       -0.26         Sensor Component       Audt Pressure       Condition       10840       pb       -2.38       -0.26         Sensor Component       Audt Pressure       Condition       10840       pb       -2.38       -0.	Mfg		Serial Numbe	er Tag Site		Techn	ician	Site Visit Date	Parame	eter	Owner ID
Supe:       0.00000         CorrCoff:       1.00000         CorrCoff:       1.00000         CorrCoff:       0.00000         Avg % Diff:       AMax % Dif         Avg % Diff:       AMax % Dif         O.0000       0.0000         UseDescription       ConcGroup         Trer ID       01115         State       State         JweDescription       ConcGroup         Trer Raw       Tfer Conc         Oxed       0.0093         UseDescription       ConcGroup         Trer Raw       Tfer Conc         Optimary       1         0.0000       Trer Raw         Trer D       0.32220         Cert Date       1/14/202         CorrCorr       0.99999         UseDescription       ConcGroup         Trer Raw       Tfer Conc         Status       past         primary       2         14.12       13.86         11.97       11.22         11.97       11.22         Status       past         Sensor Component Audt Pressure       Condition         Sensor Component Intel Filler Condition       Condition	ThermoElec	tron Inc	1105347317	ESP127	7	Eric ⊢	lebert	10/16/2020	Ozone		000734
DAS 1:       DAS 2:       Stope       0.99490       Intercept       0.32220         A Vg % Diff: A Max % Dif       A Axg %Diff: A Max % Dif       A Max %Dif       0.99490       Intercept       0.32220         UseDescription       ConcGroup       Tfer Raw       Tfer Corr       Site       Site Unit       RelPerDif       AbSDif         primary       1       0.13       0.19       0.35       pph       0.26         primary       2       14.12       13.86       13.60       pph       -0.28         primary       3       32.53       32.37       31.61       pph       -3.46         Sensor Component Audit Pressure       Condition       738.4 mmHg       Status       pass         Sensor Component Intel Filter Condition       Condition       Clean       Status       pass         Sensor Component Z6.6 degree unobstructed rule       Condition       True       Status       pass         Sensor Component Z6.6 degree unobstructed rule       Condition       0.390       Status       pass         Sensor Component Z6.6 degree unobstructed rule       Condition       1.003       Status       pass         Sensor Component Eller Filter Condition       0.310       N/A       Status       pass	Intercept		0.43361 Inter	rcept	0.00000	Se	rial Number	1180930075			
UseDescription       ConcGroup       Tfer Raw       Tfer Corr       Site       UseDescription       ConcGroup       RelPerDif       AbsDif         primary       1       0.13       -0.19       0.35       ppb       -0.26         primary       3       32.53       32.37       31.61       ppb       -2.38         primary       4       69.55       69.58       67.51       ppb       -3.02         primary       5       111.97       112.22       108.40       ppb       -3.46         Sensor Component Audit Pressure       Condition       Good       Status pass       Sensor Component Sample Train       Condition       Good       Status pass         Sensor Component Inlet Filter Condition       Condition       Condition       True       Status pass       Sensor Component 26.6 degree unobstructed rule       Condition       True       Status pass         Sensor Component       Tree dewline >10m or below inlet       Condition       True       Status pass       Sensor Component       Status pass         Sensor Component       Span       Condition       0.30       Status pass       Sensor Component       Status pass         Sensor Component       Span       Condition       N/A       Status pass       Sensor	A Avg % D		Iax % Dif A		Max % Dif	Slo	ope	0.9949		•	
primary         1         0.13         -0.19         0.35         ppb         0.54           primary         2         14.12         13.86         13.60         ppb         -0.26           primary         3         32.53         32.37         31.61         ppb         -3.02           primary         4         69.55         69.58         67.51         ppb         -3.02           primary         5         111.97         112.22         108.40         ppb         -3.46           Sensor Component         Sample Train         Condition         Good         Status         pass           Sensor Component         Minimum distance from road met         Condition         True         Status         pass           Sensor Component         Inlet Filter Condition         Condition         True         Status         pass           Sensor Component         Tree dewline >10m or below inlet         Condition         True         Status         pass           Sensor Component         Tree dewline >10m or below inlet         Condition         1.003         Status         pass           Sensor Component         Span         Condition         1.003         Status         pass           Sensor Compon	0.0	0%	0.0%				rt Date	1/14/202	- Corr	Coll	0.0000
primary       4       69.55       69.58       67.51       ppb       -3.02         primary       5       111.97       112.22       108.40       ppb       -3.46         Sensor Component Audit Pressure       Condition       Good       Status       pass         Sensor Component Sample Train       Condition       Good       Status       pass         Sensor Component Minimum distance from road met       Condition       True       Status       pass         Sensor Component Inlet Filter Condition       Condition       Condition       True       Status       pass         Sensor Component       Inlet Filter Condition       Condition       True       Status       pass         Sensor Component       Tree dewline >10m or below inlet       Condition       True       Status       pass         Sensor Component Span       Condition       0.30       Status       pass         Sensor Component Eulscale Voltage       Condition       N/A       Status       pass         Sensor Component Cell A Freq.       Condition       0.7 ppb       Status       pass         Sensor Component Eulscale Voltage       Condition       0.7 ppb       Status       pass         Sensor Component Cell A Freq.       Condition <td>prima</td> <td>ry</td> <td>1</td> <td>0.13</td> <td>-0.19</td> <td></td> <td>0.35</td> <td>ppb</td> <td>RelPer</td> <td>Dif</td> <td>0.54</td>	prima	ry	1	0.13	-0.19		0.35	ppb	RelPer	Dif	0.54
primary5111.97112.22108.40ppb-3.46Sensor ComponentAudit PressureCondition738.4 mmHgStatuspassSensor ComponentSample TrainConditionGoodStatuspassSensor ComponentMinimum distance from road metConditionTrueStatuspassSensor ComponentInlef Filter ConditionConditionConditionTrueStatuspassSensor ComponentInlef Filter ConditionConditionTrueStatuspassSensor ComponentTree dewline >10m or below inletConditionTrueStatuspassSensor ComponentOffsetCondition1.003StatuspassSensor ComponentSpanCondition1.003StatuspassSensor ComponentSpanConditionN/AStatuspassSensor ComponentFullscale VoltageConditionN/AStatuspassSensor ComponentCell A Freq.ConditionN/AStatuspassSensor ComponentCell A Freq.Condition0.7 ppbStatuspassSensor ComponentCell A Freq.Condition10.4.3 mmHgStatuspassSensor ComponentCell A Freq.Condition0.7 ppbStatuspassSensor ComponentCell A Freq.Condition10.4.3 mmHgStatuspassSensor ComponentCell A Trp.Condition2.7 CStatuspassSensor Compone	-										
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Sensor ComponentFullscale VoltageConditionN/AStatuspassSensor ComponentCell A Freq.Condition88.7 kHzStatuspassSensor ComponentCell A NoiseCondition0.7 ppbStatuspassSensor ComponentCell A FlowCondition0.72 lpmStatuspassSensor ComponentCell A PressureCondition704.3 mmHgStatuspassSensor ComponentCell A Tmp.Condition32.7 CStatuspassSensor ComponentCell B Freq.Condition92.5 kHzStatuspassSensor ComponentCell B Freq.Condition0.9 ppbStatuspassSensor ComponentCell B Freq.Condition0.69 lpmStatuspassSensor ComponentCell B FlowCondition705.2 mmHgStatuspassSensor ComponentCell B PressureCondition705.2 mmHgStatuspassSensor ComponentLine LossConditionNot testedStatuspass	Sensor C	ompone	nt Span		Con	dition	1.003		Status	pass	
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Sensor Component       Cell B Pressure       Condition       705.2 mmHg       Status       pass         Sensor Component       Line Loss       Condition       Not tested       Status       Pass	Sensor C	ompone	nt Cell B Noise	)	Con	dition	0.9 ppb		Status	pass	
Sensor Component     Line Loss     Condition     Not tested     Status     Pass	Sensor C	ompone	Cell B Flow		Con	dition	0.69 lpm		Status	pass	
	Sensor C	ompone	nt Cell B Press	sure	Con	dition	705.2 mmHg		Status	pass	
Sensor Component System Memo Condition Status pass	Sensor C	ompone	nt Line Loss		Con	dition	Not tested		Status	Pass	
	Sensor C	ompone	nt System Mer	no	Con	dition			Status	pass	

## Temperature Data Form

Mfg	Serial Number	Tag Site	1	[echni	ician	Site V	isit Date	Param	eter	<b>Owner ID</b>
RM Young	14039	ESP127		Eric H	ebert	10/16	/2020	Temper	ature	06406
				Mf	g	Extech	1	Ра	rameter Te	mperature
				Ser	rial Number	H2327	'34	Tf	er Desc. R	D
				Tfe	er ID	01227				
<b>DAS 1:</b>	DAS	5 2:		Slo	pe		1.0079	7 Inte	rcept	0.12950
Abs Avg Err	Abs Max Err Abs	Avg Err Abs	Max Err	Crr Cert Date			2/14/2020 CorrCoff			1.00000
0.14	0.33									
UseDesc.	Test type	InputTmpRaw	InputTmp	tTmpCorr. OutputTmpSi		Signal	OutputSig	gnalEng	OSE Unit	Difference
primary	Temp Low Range	-0.11	-0.24	-	0.000	0.000		1	С	0.33
	Temp Mid Range	28.36	28.01		0.000		28.		С	0.05
primary	Temp High Range	45.89	45.40	)	0.000		45.	4	C	0.03
Sensor Com	ponent Shield		Condi	tion N	Ioderately cle	an		Status	pass	
Sensor Com	ponent Blower		Condi	tion N	J/A			Status	pass	
Sensor Component Properly Sited Con			Condi	ndition Properly sited				Status pass		
Sensor Com	ponent System Memo	)	Condi	tion				Status	pass	

# Shelter Temperature Data For

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter Owner ID
Campbell	none	ESP127	Eric Hebert	10/16/2020	Shelter Temperature none
DAS 1:	<b>DAS 2:</b>		Mfg	Extech	Parameter Shelter Temperature
Abs Avg Err Ab	s Max Err Abs Avg 0.82	Err Abs Max Err	Serial Number	H232734	Tfer Desc. RTD
			Tfer ID	01227	]
			Slope	1.0079	7 Intercept 0.12950
			Cert Date	2/14/202	0 <b>CorrCoff</b> 1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	23.05	22.74	0.000	23.6	С	0.82
primary	Temp Mid Range	24.85	24.53	0.000	24.9	С	0.36
Sensor Con	nponent System Memo	•	Condition		Status	pass	

#### **Infrastructure Data For**

Site ID	ESP127	Technician Eric He	bert Site Visit Date 10/16/2020
Shelter M	ake	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	N/A	Status	pass
Sensor Component Moisture Trap	Condition	Installed	Status	pass
Sensor Component Power Cables	Condition	Good	Status	pass
Sensor Component Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component Rotometer	Condition	Installed	Status	pass
Sensor Component Sample Tower	Condition	Fair	Status	pass
Sensor Component Shelter Condition	Condition	Good	Status	pass
Sensor Component Shelter Door	Condition	Good	Status	pass
Sensor Component Shelter Roof	Condition	Fair	Status	pass
Sensor Component Shelter Floor	Condition	Good	Status	pass
Sensor Component Shelter walls	Condition	Fair	Status	pass
Sensor Component Excessive mold present	Condition	Good	Status	pass
Sensor Component Signal Cable	Condition	Good	Status	pass
Sensor Component Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component Sample Train	Condition	Good	Status	pass

## Siting Criteria Form

Condition	Status pass
Condition	Status pass
	Condition         Condition

## **Field Systems Comments**

#### 1 Parameter: DocumentationCo

The chain-of-custody section of the SSRF is not being completed by the site operator.

#### 2 Parameter: ShelterCleanNotes

The shelter has been improved since the previous audit, however there is still some rot in the walls.

## Field Systems Data Form

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

Site ID ESP127	Technician Eric Hebert	Site Visit Date 10/16	6/2020				
Site Sponsor (agency)	EPA	USGS Map	Silver Point				
<b>Operating Group</b>	private, TN DEC	Map Scale					
AQS #	47-041-9991	Map Date					
Meteorological Type	Climatronics						
Air Pollutant Analyzer	Ozone	QAPP Latitude					
<b>Deposition Measurement</b>	dry	QAPP Longitude					
Land Use	woodland - mixed	QAPP Elevation Meters					
Terrain	rolling - complex	QAPP Declination					
Conforms to MLM	No	QAPP Declination Date					
Site Telephone	(615) 597-6556	Audit Latitude	36.038831				
Site Address 1	Craft Center Rd.	Audit Longitude	-85.732965				
Site Address 2	Hurricane Bridge	Audit Elevation	302				
County	DeKalb	Audit Declination	-3.5				
City, State	Smithville, TN	Present					
Zip Code	37166	Fire Extinguisher 🔽	New in 2015				
Time Zone	Central	First Aid Kit					
Primary Operator		Safety Glasses					
Primary Op. Phone #		Safety Hard Hat 🗹					
Primary Op. E-mail		Climbing Belt					
Backup Operator		Security Fence					
Backup Op. Phone #		Secure Shelter					
Backup Op. E-mail		Stable Entry Steps ✓					
Shelter Working Room	Make Ekto M	odel 8810	Shelter Size 640 cuft				
Shelter Clean	Notes The shelter has been improve	d since the previous audit, howe	ever there is still some rot in the walls.				
Site OK	Notes						
River,							

Site ID       ESP127       Technician       Eric Hebert       Site Visit Date       10/16/2020         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?       ✓       N/A	
being influenced by obstructions?	
2 Are wind sensors mounted so as to minimize tower effects? (i.e. wind sensors should be mounted atop the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind)	
3 Are the tower and sensors plumb?	
4 Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc? ✓	
5 Are temperature and RH sensors sited to avoid unnatural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)	
6 Is the solar radiation sensor plumb?	
7 Is it sited to avoid shading, or any artificial or reflected light?  N/A	
8 Is the rain gauge plumb?	
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? <ul> <li>N/A             </li></ul>	
11 Is it inclined approximately 30 degrees?	

### **Field Systems Data Form**

### F-02058-1500-S4-rev002

Site	e ID	ESP127	Technician	Eric Hebert		Site Visit Date 10/16/2020
1 2 3	condition Are all the reporting	e meterological senso n, and well maintained he meteorological sens g data? shields for the temper	d? sors operational	online, and	<ul><li>✓</li></ul>	Temperature only Temperature only Moderately clean
4	Are the a	aspirated motors worl	king?		✓	N/A
5	Is the sol scratche	lar radiation sensor's s?	lens clean and fr	ee of	✓	N/A
6	Is the su	rface wetness sensor g	grid clean and un	ndamaged?	✓	N/A
7 8	condition	sensor signal and pow n, and well maintained sensor signal and pow e elements and well ma	d? er cable connect	C	<ul><li>✓</li></ul>	

Fi	eld Sy	stems Data Fo	orm		F-02058-1500-S5-rev002
Site	e ID	ESP127	Technician Eric Hebert		Site Visit Date 10/16/2020
	<u>Siting C</u>	riteria: Are the pollut	ant analyzers and deposition	equipn	nent sited in accordance with 40 CFR 58, Appendix E
1		ample inlets have at le cted airflow?	ast a 270 degree arc of		
2	Are the	sample inlets 3 - 15 me	eters above the ground?		
3		sample inlets > 1 mete neters from trees?	r from any major obstructio	n, ⊻	
	<u>Pollutar</u>	nt analyzers and depos	ition equipment operations a	und mai	ntenance
1		nalyzers and equipme n and well maintained	nt appear to be in good ?		
2	Are the reportin		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		ine filters used in the o location)	zone sample line? (if yes		At inlet only
6	Are sam obstruct	ple lines clean, free of tions?	kinks, moisture, and		
7	Is the ze	ero air supply desiccan	t unsaturated?	$\checkmark$	
8	Are the	re moisture traps in th	e sample lines?		
9	Is there clean?	a rotometer in the dry	deposition filter line, and is	it 🗹	Clean and dry

Field Systems Data Form							<b>F-02</b>	2058-15	00-S6-rev002	
Site	e ID	ESP127	Technician	Eric Hebert		Site Visit Date	10/16/2020	)		
	DAS, sensor translators, and peripheral equipment operations and maintenance									
1		OAS instruments appeantained?	ar to be in good	condition and						
2		he components of the l backup, etc)	DAS operation	al? (printers,						
3		nalyzer and sensor sig g protection circuitry?		hrough		Met sensors only				
4		signal connections pro intained?	tected from the	e weather and						
5	Are the	signal leads connected	to the correct l	DAS channel?						
6	Are the grounde	DAS, sensor translator d?	rs, and shelter J	properly						
7	Does the	e instrument shelter ha	ive a stable pow	ver source?	✓					
8	Is the in	strument shelter temp	erature control	led?						
9	Is the m	et tower stable and gro	ounded?			Stable		Grounded		
10	Is the sa	mple tower stable and	grounded?							
11	Tower c	omments?				sample tower not g	rounded			

Fie	eld Sy	stems Data	For	m					<b>F-02</b>	2058-1	1500-S7-rev002
Site	ID	ESP127		Tech	nician	Eric Hebert		Site Visit Date	0/16/2020	)	
	ocument	ation ite have the requir	ed in	strum	ent and	equinment ma	muale?				
	oes the s						<u>inuais</u> .		Voc	No	N/A
Wind Tem Rela Solar Surf Wind Tem Hum Solar Tipp Ozor Filte	peraturo tive hun r radiati ace wetn d sensor peraturo nidity sen r radiati ing bucl ne analyz r pack fl	sensor on sensor e sensor hidity sensor on sensor tess sensor translator e translator hsor translator on translator on translator	Yes □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □			Dat Dat Stri Cor Mo Prin Zer Filt Sur UPS Lig She	htning p lter heat	recorder mp pump ctor rotection device	Yes □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	No V V V V V V V V V V V V	N/A ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓
]	Does the	site have the requi	ired a	nd mo	ost recei	nt QC documer	<u>nts and r</u>	<u>eport forms?</u>			
SSR Site HAS Field Calil	Ops Mar SP I Ops Ma bration I	anual Reports	     	ent	Oct 201 Nov 201				Curre	nt	
	-	Control Charts	l								
Preventive maintenance schedule <ul> <li>Is the station log properly completed during every site visit?</li> <li>Minimal information</li> </ul>											
2	Are the current	Site Status Report ?	: Forn	ıs beiı	ng comp	oleted and					
3		chain-of-custody f transfer to and fro			erly used	l to document		ain-of-custody not	used		
4	Are ozo current	ne z/s/p control cha ?	arts p	roper	ly comp	leted and		ntrol charts not use	ed		
		additional explana an-made, that may						egarding condition	ons listed a	above, oi	r any other features,
The	chain of	sustady saction of th	0 99		ot boing	completed by t	ho cito or	orator			

The chain-of-custody section of the SSRF is not being completed by the site operator.

### **Field Systems Data Form**

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

Site	ID	ESP127	Technician	Eric Hebert	Site Visit Date	10/16/2020	
1	Has the	ration procedures site operator attendec If yes, when and who		TNET training			
2		backup operator atte course? If yes, when a					
3	Is the site schedule	e visited regularly on t ?	the required Tu	iesday			
4		tandard CASTNET o by the site operator?	• •	cedures being			
5		e operator(s) knowled red site activities? (in		usie to perioriii			

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

QC Check Performed		Frequency	Compliant
Multipoint Calibrations		N/A	$\checkmark$
Visual Inspections	✓	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	$\checkmark$
Test Surface Wetness Response	$\checkmark$	N/A	$\checkmark$

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

0	~	Chack	Dor	formed	
V	· ر	Спеск	rer	formed	

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

Frequency	Compliant
Semiannually	
Daily	
As needed	
Daily	
As needed	
Weekly	
Every 2 weeks	
N/A	$\checkmark$
Weekly	
Weekly	$\checkmark$

- 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?

$\checkmark$	
$\checkmark$	Logbook, call-in
	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

Site ID

1

2

3

4

6

eld Sy	stems Data Fo	orm	F-02058-1500-89-rev002		
ID	ESP127	Technician Eric Hebert	 Site Visit Date 10/16/2020		
<u>Site ope</u>	eration procedures				
Is the fi	lter pack being change	d every Tuesday as scheduled?			
Are the correct		ms being completed and filed			
Are dat schedul		ips being performed as	No longer required		

✓ SSRF, call-in

SSRF, logbook, call-in

Clean gloves on and off

Compliant

 $\checkmark$ 

 $\checkmark$ 

✓

✓

Are site supplies on-hand and replenished in a timely 5 fashion?

Are general observations being made and recorded? How?

Are samples sent to the lab on a regular schedule in a timely 7

Are sample flow rates recorded? How?

- Are filters protected from contamination during handling 8 and shipping? How?
- Are the site conditions reported regularly to the field 9 operations manager or staff?

#### **QC Check Performed**

fashion?

#### Frequency

Semiannually	
✓ Weekly	
✓ Weekly	
✓ Weekly	
Semiannually	
Weekly	
	<ul> <li>Weekly</li> <li>Weekly</li> <li>Weekly</li> <li>Weekly</li> <li>Semiannually</li> </ul>

Field	S	vstems	Data	Form
r iciu	D	SUCHIS	Data	

ESP127

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

Site ID	
---------	--

Technician Eric Hebert

Site Visit Date 10/16/2020

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID	
Computer	Dell	Inspiron 15	894MC12	07060	
DAS	Campbell	CR3000	2130	000352	
Elevation	Elevation	1	None	None	
Filter pack flow pump	Thomas	107CAB18 0493002476		02975	
Flow Rate	Apex	AXMC105LPMDPC illegible		000808	
Infrastructure	Infrastructure	none	none	none	
Modem	Digi	LR54	unknown	07131	
Ozone	ThermoElectron Inc	49i A1NAA	1105347317	000734	
Ozone Standard	e Standard ThermoElectron Inc		0622717852	000327	
Sample Tower	le Tower Aluma Tower		none	03550	
Shelter Temperature	Campbell	107-L none		none	
Siting Criteria	Siting Criteria	1 None		None	
Temperature	RM Young	41342VC	14039	06406	
Zero air pump	Werther International	C 70/4	000815256	06874	

# Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number			
CA7	CAT175-Korey Devins-10/20/2020								
1	10/20/2020	DAS	Campbell	000412	CR3000	2532			
2	10/20/2020	Elevation	Elevation	None	1	None			
3	10/20/2020	Filter pack flow pump	Brailsford	none	TD-4X2N	1016			
4	10/20/2020	Flow Rate	Арех	000644	AXMC105LPMDPCV	illegible			
5	10/20/2020	Infrastructure	Infrastructure	none	none	none			
6	10/20/2020	Modem	Raven	06660	V4221-V	0918425101			
7	10/20/2020	Sample Tower	Aluma Tower	666359	В	none			
8	10/20/2020	Shield (10 meter)	RM Young	none	41003	none			
9	10/20/2020	Siting Criteria	Siting Criteria	None	1	None			
10	10/20/2020	Temperature	RM Young	06409	41342VO	14042			
11	10/20/2020	UPS	ProSine	04576	1000w	unknown			

## Flow Data Form

Mfg	Serial Num	ıber Tag	Site	Tee	chnician	Site Visit I	Date Param	neter	Owner ID
Арех	illegible		CAT175	Ko	orey Devins	10/20/2020	) Flow R	ate	000644
					Mfg Serial Number Tfer ID	BIOS 131818 01417		arameter F fer Desc. B	
					Slope Cert Date			ercept rrCoff	-0.02240 0.99997
DAS 1:         DAS 2:           A Avg % Diff: A Max % Dif         A Avg %Diff           1.03%         1.32%				x % Dif	Cal Factor Z Cal Factor F Rotometer R	ull Scale	1	0 0 .5	
Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSigna	all PctDifference
primary	pump off	0.000	0.000	0.01	0.000	0.01	1/m	1/m	
primary	leak check	0.000	0.000	0.01	0.000	0.00	l/m	l/m	
primary	test pt 1	1.491	1.510	1.47	0.000	1.50	l/m	l/m	-0.79%
primary	test pt 2	1.484	1.510	1.47	0.000	1.49	l/m	l/m	-1.32%
primary	test pt 3	1.488	1.510	1.47	0.000	1.50	1/m	l/m	-0.99%
Sensor Component         Leak Test           Sensor Component         Tubing Condition			Condition Condition Fair			Status     pass       Status     pass			
Sensor Component Filter Position			Conditio	Condition Good			Status pass		
Sensor Component Rotometer Condition		Conditio	lition Clean and dry			us pass			
Sensor Component Moisture Present			Conditio	See comments	Status	us pass			
Sensor Component Filter Distance			_	<b>91</b> 4.5 cm		IS pass			
Sensor Component Filter Depth				<b>on</b> 1.0 cm		s pass			
Sensor Component Filter Azimuth			_				tus pass		
Sensor Comp	onent System M	/lemo		Conditio	on		Status	s pass	

## **Temperature Data Form**

Mfg	Serial Number	Tag Site	]	Fechni	ician	Site V	isit Date	Param	eter	<b>Owner ID</b>	
RM Young	14042	CAT175		Korey Devins		10/20	/2020	Temper	ature	06409	
				Mf	g	Extect	1	Pa	rameter Te	mperature	
				Ser	ial Number	H2327	'34	Tf	er Desc. R	D	
				Tfe	er ID	01227	,				
DAS 1: DAS 2:				Slope			1.0079	97 Intercept 0.12		0.12950	
Abs Avg Err Abs Max Err Abs Avg Err Abs Ma			Max Err	Err Cert Date			2/14/202	20 Cor	rCoff	1.00000	
0.09	0.14										
UseDesc.	Test type	InputTmpRaw	InputTmp	Corr.	OutputTmpS	pSignal OutputS		gnalEng	OSE Unit	Difference	
primary	Temp Low Range	0.13	0.00		0.000		0.0	)	С	0.01	
primary	Temp Mid Range	27.15	26.81	1	0.000		26.		С	0.12	
primary	Temp High Range	47.52	47.02	2	0.000		47.	2	С	0.14	
Sensor Con	ponent Shield		Condi	ition C	Clean			Status	pass		
Sensor Component Blower				ondition N/A				Status	s pass		
Sensor Con	ponent Properly Sited	Condi	Condition Properly sited				Status	s pass			
Sensor Con	ponent System Memo	)	Condi	Condition				Status	s pass		

#### **Infrastructure Data For**

Site ID	CAT175	Technician Korey De	evins Site Visit Date 10/20/2020
Shelter 1	Make	Shelter Model	Shelter Size
Ekto		8810 (s/n 1977-1)	640 cuft

Sensor Component Sample Tower Type	Condition	Туре В	Status	pass
Sensor Component Conduit	Condition	N/A	Status	pass
Sensor Component Met Tower	Condition	N/A	Status	pass
Sensor Component Moisture Trap	Condition	Not installed	Status	pass
Sensor Component Power Cables	Condition	Good	Status	pass
Sensor Component Shelter Temp Control	Condition	N/A	Status	pass
Sensor Component Rotometer	Condition	Installed	Status	pass
Sensor Component Sample Tower	Condition	Good	Status	pass
Sensor Component Shelter Condition	Condition	Fair	Status	pass
Sensor Component Shelter Door	Condition	Fair	Status	pass
Sensor Component Shelter Roof	Condition	Good	Status	pass
Sensor Component Shelter Floor	Condition	Fair	Status	pass
Sensor Component Shelter walls	Condition	Poor	Status	Fail
Sensor Component Excessive mold present	Condition	Poor	Status	Fail
Sensor Component Signal Cable	Condition	Good	Status	pass
Sensor Component Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component Sample Train	Condition	Fair	Status	pass

## Siting Criteria Form

Condition	Status pass
Condition	Status pass
	Condition         Condition

## **Site Visit Comments**

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazaro	<b>Problem</b>		
Flow Rate	CAT175	Korey Devins	10/20/2020	Moisture Present	Apex	4212				
There is moisture present in the dry deposition sample train inside the shelter.										

## **Field Systems Comments**

#### 1 Parameter: DasComments

The shelter is not temperature controlled. The site is solar and DC battery powered. The met tower has been removed and the temperature is being measured from the sample tower at 10 meters above ground.

#### 2 Parameter: DocumentationCo

The site copies of the SSRF are no longer kept onsite.

#### 3 Parameter: ShelterCleanNotes

The shelter is seriously deteriorated with rot and mold on the walls. The vegetation has been allowed to grow. The shelter roof has been repaired.

#### 4 Parameter: PollAnalyzerCom

Ozone monitoring is no longer being conducted at the site.

# Field Systems Data Form

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

Site ID CAT175	Technician Korey Devins	Site Visit Date 10/2	0/2020
Site Sugaran (a concer)	EPA	USGS Map	Claryville
Site Sponsor (agency)		Map Scale	
<b>Operating Group</b>	private	-	
AQS #		Map Date	
Meteorological Type	R.M. Young		
Air Pollutant Analyzer	Ozone	QAPP Latitude	41.9423
<b>Deposition Measurement</b>	dry	QAPP Longitude	-74.5519
Land Use	woodland - mixed	QAPP Elevation Meters	765
Terrain	complex	QAPP Declination	13.5
Conforms to MLM	No	QAPP Declination Date	2/22/2006
Site Telephone	(845) 798-0947	Audit Latitude	41.942325
Site Address 1	Wildcat Mt. Road	Audit Longitude	-74.551999
Site Address 2		Audit Elevation	754
County	Ulster	Audit Declination	-13.2
City, State	Claryville, NY	Present	
Zip Code	12725	Fire Extinguisher 🔽	New in 2015
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 Steps	
Shelter Working Room	Make Ekto M	odel 8810 (s/n 1977-1)	Shelter Size 640 cuft
Shelter Clean	Notes The shelter is seriously deterior allowed to grow. The shelter r		walls. The vegetation has been
Site OK	Notes		
Road bridge	Liberty, NY go west on route 52 toward G 19 to Claryville. Stay on 19 through Clary at the far end of town. Bear right and fol rk and turn left at the first house on the le	/ville and turn left on Wildcat N llow the semi-paved road for al	It Road immediately after crossing the pout 0.7 miles to the fork. Go right at

Fie	eld Sy	stems Data Fo	orm			F-02058-1500-S3-rev002				
Site	e ID	CAT175	Technician	Korey Devins		Site Visit Date	10/20/2020			
1 2	being in Are wind (i.e. wind horizont	d speed and direction fluenced by obstructio d sensors mounted so al sensors should be mo ally extended boom >2 to the prevailing wind	ons? as to minimize ounted atop the 2x the max diar	tower effects? e tower or on a		N/A N/A				
3	Are the	tower and sensors plu	mb?		✓	N/A				
4		temperature shields po diated heat sources su								
5	conditio	perature and RH sens ns? (i.e. ground below and not steeply sloped swater should be avoid	sensors should . Ridges, hollov	be natural						
6	Is the so	lar radiation sensor p	lumb?		✓	N/A				
7	Is it site	l to avoid shading, or	any artificial o	r reflected light?		N/A				
8	Is the ra	in gauge plumb?			✓	N/A				
9	Is it site towers,	l to avoid sheltering e etc?	ffects from buil	dings, trees,		N/A				
10	Is the su facing n	rface wetness sensor s orth?	ited with the gr	rid surface	✓	N/A				
11	Is it inc	lined approximately 3	0 degrees?			N/A				

### **Field Systems Data Form**

#### F-02058-1500-S4-rev002

Site	e ID	CAT175	Technician	Korey Devins		Site Visit Date 10/20/2020
1 2 3	condition Are all the reporting	e meterological sensor 1, and well maintained 1e meteorological sens g data? shields for the temper	1? sors operational	l online, and	<b>&gt;</b>	Temperature only Temperature only
4		aspirated motors worl		clisors clean.		Natural aspiration
5	Is the sol scratches	ar radiation sensor's	lens clean and f	ree of	✓	N/A
6	Is the su	rface wetness sensor g	grid clean and u	ndamaged?	✓	N/A
7		ensor signal and pow 1, and well maintained		, in good	✓	N/A
8		ensor signal and pow elements and well ma		tions protected		N/A

Fi	eld Sy	stems Data Fo	orm			F-02058-1500-S5-rev002
Sit	e ID	CAT175	Technician	Korey Devins		Site Visit Date 10/20/2020
	Siting C	Criteria: Are the pollut	ant analyzers a	nd deposition eq	<u>uipr</u>	nent sited in accordance with 40 CFR 58, Appendix E
1		sample inlets have at le icted airflow?	east a 270 degre	e arc of	✓	
2	Are the	sample inlets 3 - 15 mo	eters above the	ground?	✓	
3		sample inlets > 1 mete meters from trees?	r from any maj	or obstruction,	✓	
	<u>Pollutar</u>	nt analyzers and depos	ition equipmen	t operations and	mai	intenance
1		analyzers and equipme on and well maintained		in good	✓	Ozone not measured
2		analyzers and moniton ng data?	rs operational, o	on-line, and	✓	
3	Describ	e ozone sample tube.				N/A
4	Describ	e dry dep sample tube.				3/8 teflon by 18 meters
5		ine filters used in the o location)	zone sample lir	ne? (if yes		N/A
6	Are sam obstruct	ple lines clean, free of tions?	kinks, moistur	e, and	✓	
7	Is the ze	ero air supply desiccan	t unsaturated?			N/A
8	Are the	re moisture traps in th	e sample lines?			
9	Is there clean?	a rotometer in the dry	v deposition filte	er line, and is it		Clean and dry

Ozone monitoring is no longer being conducted at the site.

Fi	eld Sy	stems Data Fo	orm		F-02058-1500-S6-rev002				
Site	e ID	CAT175	Technician	Korey Devins		Site Visit Date	10/20/2020	)	
	<u>DAS, se</u>	nsor translators, and	peripheral equi	pment operation	<u>ıs ar</u>	nd maintenance			
1		DAS instruments appe intained?	ear to be in good	l condition and	✓				
2		the components of the , backup, etc)	DAS operation	al? (printers,	✓				
3		analyzer and sensor signalyzer and sensor signaly and sensor signal sensor signal sensor signal sensor signal s	<u> </u>	through	✓	Met sensors only			
4		signal connections pro intained?	otected from the	e weather and					
5	Are the	signal leads connected	to the correct	DAS channel?					
6	Are the ground	DAS, sensor translate ed?	ors, and shelter	properly	✓				
7	Does th	e instrument shelter h	ave a stable pov	ver source?		Solar power			
8	Is the in	strument shelter temj	perature control	lled?		Shelter not tempera	ture control	led	
9	Is the m	et tower stable and gr	ounded?			Stable		Grounded	
10	Is the sa	mple tower stable and	d grounded?						
11	Tower of	comments?				Met tower removed			

The shelter is not temperature controlled. The site is solar and DC battery powered. The met tower has been removed and the temperature is being measured from the sample tower at 10 meters above ground.

Fie	eld Systems D	ata Fo	rm				<b>F-02</b>	058-	1500-	S7-rev0	02
Site	ID CAT175		Techn	i <mark>cian</mark> Ko	orey Devins	Site Visit Date	10/20/2020				
D	ocumentation										
D	oes the site have the <b>1</b>	required in	strumei	nt and eq	uipment manuals?						
		Yes	No	N/A			Yes	No	N/A		
	d speed sensor			$\checkmark$	Data logger						
Win	d direction sensor			$\checkmark$	Data logger						
	perature sensor				Strip chart	recorder					
	tive humidity sensor			$\checkmark$	Computer						
Sola	r radiation sensor			$\checkmark$	Modem			$\checkmark$			
Surf	ace wetness sensor			$\checkmark$	Printer				$\checkmark$		
Win	d sensor translator			$\checkmark$	Zero air pu	mp			$\checkmark$		
Tem	perature translator			$\checkmark$	Filter flow <b>p</b>	oump					
Hun	nidity sensor translate	or 🗌		$\checkmark$	Surge prote	ctor			$\checkmark$		
Sola	r radiation translator	•		$\checkmark$	UPS		$\checkmark$				
Tipp	ing bucket rain gaug	e 🗌		$\checkmark$	Lightning p	rotection device		$\checkmark$			
Ozoi	ne analyzer				Shelter heat	ter					
Filte	r pack flow controlle	r 🗌	✓		Shelter air o	conditioner					
Filte	r pack MFC power s	upply 🗌		$\checkmark$							
]	Does the site have the	e required a	and mos	t recent	QC documents and r	eport forms?					
-		Pres					Curre	nt			
Stati	on Log						$\checkmark$				
SSR	F						$\checkmark$				
Site	Ops Manual			Oct 2001							
HAS	SP			Oct 2015			$\checkmark$				
Field	l Ops Manual										
Cali	bration Reports										
Ozoi	ne z/s/p Control Char	ts		I/A							
Prev	entive maintenance s	chedule									
1	Is the station log pro	perly comp	oleted d	uring eve	ery site visit? 🔽						
2	Are the Site Status R current?	Report Forr	ns beinş	g comple	ted and 🔽 No	t present					
3	Are the chain-of-cus sample transfer to a			ly used to	o document 🔽						
4	Are ozone z/s/p contr current?	rol charts p	oroperly	complet	ted and N/A	Ą					
	ide any additional ex ral or man-made, tha					egarding conditi	ons listed a	ibove, o	or any oth	er features,	,
	site copies of the SSR				6 Faranceorbi						

#### **Field Systems Data Form**

flollowed by the site operator?

reported? If yes, how?

1

4

5

#### Site ID CAT175 Technician Korey Devins Site Visit Date 10/20/2020 Site operation procedures Trained by previous operator 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? Is the site visited regularly on the required Tuesday ✓ 3 schedule? $\checkmark$ Are the standard CASTNET operational procedures being

F-02058-1500-S8-rev002

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

Is the site operator(s) knowledgeable of, and able to perform

the required site activities? (including documentation)

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

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

QC Check Performed	Frequency	Compliant
Multi-point Calibrations	N/A	
Automatic Zero/Span Tests	N/A	$\checkmark$
Manual Zero/Span Tests	N/A	
Automatic Precision Level Tests	N/A	
Manual Precision Level Test	N/A	
Analyzer Diagnostics Tests	N/A	
In-line Filter Replacement (at inlet)	N/A	
In-line Filter Replacement (at analyze	N/A	$\checkmark$
Sample Line Check for Dirt/Water	N/A	$\checkmark$
Zero Air Desiccant Check	N/A	
1 Do multi-point calibration gases go through t sample train including all filters?	he complete	
2 Do automatic and manual z/s/p gasses go thro complete sample train including all filters?		
3 Are the automatic and manual z/s/p checks n	ionitored and 🛄 N/A	

Fi	eld Sy	stems Data Form	n			<b>F-02058-1</b>	500-S9-rev002	
Sit	e ID	CAT175 ]	Fechnician Korey Devins		Site Visit Date	10/20/2020		
	Site ope	eration procedures						
1	Is the fi	lter pack being changed ev	very Tuesday as scheduled	<b>~</b>	Filter changed morn	ings 95% of the time		
2	Are the correctl	-	being completed and filed					
3	Are dat schedul	a downloads and backups ed?	being performed as		No longer required			
4	Are gen	eral observations being m	ade and recorded? How?					
5	Are site fashion	supplies on-hand and rep ?	lenished in a timely	✓				
6	Are san	nple flow rates recorded? I	How?	✓	SSRF, logbook			
7	Are san fashion		egular schedule in a timely	✓				
8		ers protected from contam pping? How?	ination during handling	✓	Clean gloves on and off			
9		site conditions reported roons manager or staff?	egularly to the field					
QC	Check P	erformed	Frequency			Compliant		
I	Multi-poi	nt MFC Calibrations	Semiannually					
J	Flow Syst	em Leak Checks	✓ Weekly					
J	Filter Pac	k Inspection	✓ Weekly					
]	Flow Rate	e Setting Checks	✓ Weekly					
	Visual Ch	eck of Flow Rate Rotomet	er 🗹 Weekly					
]	In-line Fil	ter Inspection/Replacement	nt Semiannually			$\checkmark$		
5	Sample Li	ine Check for Dirt/Water	✓ Weekly					
_								

Field	C.	ystems	Data	Form
rielu	D	Stellis	Data	<b>F UI III</b>

CAT175

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

Technician Korey Devins

Site Visit Date 10/20/2020

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
DAS	Campbell	CR3000	2532	000412
Elevation	Elevation	1	None	None
Filter pack flow pump	Brailsford	TD-4X2N	1016	none
Flow Rate	Арех	AXMC105LPMDPC	illegible	000644
Infrastructure	Infrastructure	none	none	none
Modem	Raven	V4221-V	0918425101	06660
Sample Tower	Aluma Tower	В	none	666359
Shield (10 meter)	RM Young	41003	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342VO	14042	06409
UPS	ProSine	1000w	unknown	04576

# Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
JOT	403-Martin	Valvur-11/13/2020				
1	11/13/2020	DAS	Environmental Sys Corp	90599	8816	2271
2	11/13/2020	Elevation	Elevation	None	1	None
3	11/13/2020	Filter pack flow pump	Thomas	none	illegible	illegible
4	11/13/2020	flow rate	Tylan	03378	FC280AV	AW9403016
5	11/13/2020	Infrastructure	Infrastructure	none	none	none
6	11/13/2020	MFC power supply	Tylan	03683	RO-32	FP9403017
7	11/13/2020	Modem	Sierra wireless	none	GX450	Unknown
8	11/13/2020	Ozone	ThermoElectron Inc	none	49i A3NAA	1160770010
9	11/13/2020	Ozone Standard	ThermoElectron Inc	none	49i A1NAA	1130950194
10	11/13/2020	Sample Tower	Aluma Tower	923310	В	none
11	11/13/2020	Shelter Temperature	ARS	none	none	none
12	11/13/2020	Siting Criteria	Siting Criteria	None	1	None
13	11/13/2020	Temperature2meter	RM Young	none	41342	14960
14	11/13/2020	Zero air pump	Werther International	none	PC70/4	606491

### **DAS Data Form**

DAS Time Max Error: 1.08

Mfg		Serial Nur	nber Si	te	Technician	Site Visit Date	Parameter	Use Desc.
Environment	al Sys	2271	J	OT403	Martin Valvur	11/13/2020	DAS	Primary
Das Date: Das Time:		8/2020 :41:55	Audit Dat Audit Tim		Mfg	HY	Parameter	DAS
Das Day:		318	Audit Day		Serial Number	12010039329	Tfer Desc.	Source generator (D
Low Channe	el:		High Chan	nel:	Tfer ID	01322		
Avg Diff:		<b>Diff:</b>	Avg Diff:	Max Diff:	Slope	1.0000	0 Intercept	0.00000
0.000		0.0005	0.00	0.0005	Cert Date	6/15/201	4 CorrCoff	1.00000
					Mfg	Fluke	Parameter	DAS
					Serial Number	95740243	Tfer Desc.	, DVM
					Tfer ID	01312		
					Slope	1.0000	0 Intercept	0.00000
					Cert Date	1/28/202	0 CorrCoff	1.00000
Channel	Inp	ut D'	VM Output	DAS Output	InputUnit	OutputUnit	Difference	
15	6 0	.0000	-0.000	5 -0.000	95 V	V	0.0000	
15	6 0	.1000	0.099	9 0.099	9 V	V	0.0000	
15	6 0	.3000	0.299	7 0.299	9 V	V	0.0002	
15		.5000	0.499	6 0.499		V	0.0002	
15		.7000	0.699			V	0.0005	
15		.9000	0.899			V	0.0005	
15	i 1	.0000	0.999	6 1.000	0 V	V	0.0004	

### Flow Data Form

Mfg	Serial Nur	nber Tag S	Site	Тес	chnician	Site Visit	t Date Para	meter	Owner ID
Tylan	AW94030	16	JOT403	Ма	artin Valvur	11/13/20	20 flow	rate	03378
Mfg	Tylan				Mfg	BIOS		Parameter F	low Rate
SN/Owner ID	FP9403017	03683			Serial Number	122974		Tfer Desc. B	IOS 220-H
Parameter:	MFC power su				Tfer ID	01416			
			1		Slope		1.00000 Ir	tercept	0.00000
					Cert Date		5/6/2020 C	orrCoff	1.00000
DAS 1:		<b>DAS 2:</b>		L	Cal Factor Z	ero	0.	071	
A Avg % Diff:	A Max % Dif	A Avg %l	Diff A Max	% Dif	Cal Factor F	ull Scale	5.	487	
0.35%	0.64%				Rotometer R	eading:		3.3	
Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S	E InputUni	OutputSigna	III PctDifference
primary	pump off	0.000	0.000	-0.07	0.0000	0.04	l/m	l/m	
primary	leak check	0.000	0.000	-0.07	0.0000	0.03	l/m	l/m	
primary	test pt 1	2.982	2.980	0.00	0.0000	3.00	l/m	l/m	0.64%
primary	test pt 2	2.993	2.990	0.00	0.0000	3.00	l/m	l/m	0.23%
primary	test pt 3	2.994	2.990	0.00	0.0000	3.00	l/m	l/m	0.17%
Sensor Comp	onent Leak Tes	st		Conditio	on		Stat	us pass	
Sensor Comp	onent Tubing C	Condition		Conditio	n Good		Stat	us pass	
Sensor Comp	onent Filter Pos	sition		Conditio	n Poor		Stat	us Fail	
Sensor Comp	onent Rotomet	er Conditior	1	Conditio	n Clean and dry		Stat	us pass	
Sensor Comp	onent Moisture	Present		Conditio	n No moisture p	resent	Stat	us pass	
Sensor Comp	onent Filter Dis	tance		Conditio	<b>n</b> 4.0 cm		Stat	us pass	
Sensor Comp	onent Filter De	pth		Conditio	<b>n</b> -0.5 cm		Stat	us Fail	
Sensor Comp	onent Filter Azi	muth		Conditio	n 225 deg		Stat	us pass	
Sensor Comp	onent System	Nemo		Conditio	on		Stat	us pass	

### **Ozone Data Form**

Mfg		Serial Numbe	r Tag Site		Тес	chnician	Site Visit Date	Parame	eter	Owner ID
ThermoElec	tron Inc	1160770010	JOT403	3	Ma	artin Valvur	11/13/2020	Ozone		none
Slope: Intercept CorrCoff:			rcept	0.00000 0.00000 0.00000		Mfg Serial Number Tfer ID	ThermoElectron 49CPS-70008-3 01110			er ozone c. Ozone primary stan
DAS 1: A Avg % D	oiff: A N		AS 2: Avg %Diff A	. Max % Di	if	Slope	1.0020		-	0.03590
0.0	0%	0.0%				Cert Date	1/14/20	20 Cori	Coff	0.99999
UseDescri primat primat primat	ry ry	ConcGroup 1 2 3	Tfer Raw 0.10 17.26 37.94	Tfer C 0.06 17.17 37.80	7	Site 0.39 17.16 37.24	Site Unit ppb ppb ppb	RelPer	Dif -1.49	AbsDif 0.33 -0.01
prima	ry	4	67.41	67.19		66.49	ppb		-1.05	
prima		5	109.72	109.3		108.40	ppb		-0.91	
	_	nt Audit Pressunt nt Sample Trai				n 661.3 mmHg Good		Status Status		
	_		stance from road			n True		Status	L	
	-	nt Inlet Filter C				n Clean		Status	L	
Sensor C	ompone	nt 26.6 degree	unobstructed ru	ule Con	nditio	m True		Status	pass	
Sensor C	ompone	nt Tree dewline	e >10m or belov	v inlet Co	nditio	n True		Status	pass	
Sensor C	ompone	nt Offset		Со	nditio	<b>n</b> -0.10		Status	pass	
Sensor C	ompone	nt Span		Cor	nditio	<b>on</b> 0.999		Status	pass	
Sensor C	ompone	nt Zero Voltage	9	Со	nditio	<b>)n</b> 0.000		Status	pass	
Sensor C	ompone	nt Fullscale Vo	ltage	Cor	nditio	<b>n</b> 1.0006		Status	pass	
Sensor C	ompone	nt Cell A Freq.		Cor	nditio	<b>)n</b> 88.1 kHz		Status	pass	
Sensor C	ompone	nt Cell A Noise		Co	nditio	on 0.9 ppb		Status	pass	
Sensor C	ompone	nt Cell A Flow		Cor	nditio	on 0.63 lpm		Status	pass	
Sensor C	ompone	nt Cell A Press	ure	Cor	nditio	on 645.9 mmHg		Status	pass	
Sensor C	ompone	nt Cell A Tmp.		Cor	nditio	<b>34.2</b> C		Status	pass	
Sensor C	ompone	nt Cell B Freq.		Со	nditio	<b>on</b> 45.1 kHz		Status	Fail	
Sensor C	ompone	nt Cell B Noise		Со	nditio	<b>0.8</b> ppb		Status	pass	
Sensor C	ompone	nt Cell B Flow		Cor	nditio	<b>)n</b> 0.66 lpm		Status	pass	
Sensor C	ompone	nt Cell B Press	ure	Cor	nditio	on 645.3 mmHg		Status	pass	
Sensor C	ompone	nt Line Loss		Cor	nditio	Not tested		Status	pass	
Sensor C	ompone	nt System Men	no	Cor	nditio	on		Status	pass	

# 2 Meter Temperature Data Form

**Calc. Difference** 

Mfg	Serial Number	r Tag Site	Т	[echnicia]	n	Site Vis	it Date	Paramete	r	Owner ID
RM Young	14960	JOT403		Martin Va	llvur	11/13/2	020	Temperati	ure2meter	none
				Mfg Serial Tfer I	Number	Fluke 3275143 01229	3		meter Tem Desc. RTD	
DAS 1: Abs Avg Err A		AS 2: s Avg Err Ab	os Max Err	Slope Cert I			1.00026		-	-0.01710 1.00000
0.2	0.3									
UseDescription	Test type	InputTmpRaw	InputTmpCo	orrected	OutputTm	pSignal	OutputS	ignalEng	OSE Unit	Difference
primary	Temp Low Rang	-0.01		0.01		0.0000		-0.09	С	-0.1
primary '	Temp Mid Range	23.93		23.94		0.0000		23.73	С	-0.21
primary	Temp High Rang	47.45		47.45		0.0000		47.15	С	-0.3
Sensor Compo	nent Shield		Condi	tion Clea	an			Status Pa	ass	
Sensor Compo	nent Properly Site	d	Condi	tion Prop	perly sited			Status pa	ass	
Sensor Compo	nent Blower		Condi	tion Fund	ctioning			Status pa	ass	
Sensor Compo	nent System Mem	0	Condi	tion				Status pa	ass	

# Shelter Temperature Data For

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
ARS	none	JOT403	Martin Valvur	11/13/2020	Shelter Temperature	none
DAS 1:	<b>DAS 2:</b>		Mfg	Fluke	Parameter She	Iter Temperature
Abs Avg Err Ab	0.26 Abs Avg	Err Abs Max Err	Serial Number	3275143	Tfer Desc. RTD	)
			Tfer ID	01229		
			Slope	1.0002	6 Intercept	-0.01710
			Cert Date	1/29/202	0 CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	26.24	26.25	0.000	26.2	С	-0.03
primary	Temp Mid Range	22.88	22.89	0.000	23.2	С	0.26
primary	Temp Mid Range	24.59	24.60	0.000	24.8	С	0.16
Sensor Cor	nponent System Memo	•	Condition		Status	pass	

#### **Infrastructure Data For**

Site ID	JOT403	Technician	Martin Valvur	Site Visit Date	11/13/2020
Shelter 1	Make	Shelter Model	Sh	elter Size	
ShelterO	ne	E8129-28036	76	3 cuft	

Sensor Component Sample Tower Type	Condition	Туре В	Status	pass
Sensor Component Conduit	Condition	Good	Status	pass
Sensor Component Met Tower	Condition	Good	Status	pass
Sensor Component Moisture Trap	Condition	Not installed	Status	pass
Sensor Component Power Cables	Condition	Good	Status	pass
Sensor Component Shelter Temp Control	Condition	Functioning	Status	pass
Sensor Component Rotometer	Condition	Installed	Status	pass
Sensor Component Sample Tower	Condition	Good	Status	pass
Sensor Component Shelter Condition	Condition	Good	Status	pass
Sensor Component Shelter Door	Condition	Good	Status	pass
Sensor Component Shelter Roof	Condition	Good	Status	pass
Sensor Component Shelter Floor	Condition	Good	Status	pass
Sensor Component Shelter walls	Condition	Good	Status	pass
Sensor Component Excessive mold present	Condition	Good	Status	pass
Sensor Component Signal Cable	Condition	Good	Status	pass
Sensor Component Tubing Type	Condition	3/8 teflon	Status	pass
Sensor Component Sample Train	Condition	Good	Status	pass

## Siting Criteria Form

Condition	Status pass
Condition	Status pass
	Condition         Condition

## **Site Visit Comments**

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazard	Problem		
Flow Rate	JOT403	Martin Valvur	11/13/2020	Filter Position	Tylan	744				
The filter attachment orientation.	plate is mounted	too low in the enclos	ure resulting in	the filter being expo	osed to wind-drive	n rain and in the	standard ge	eometric		
Ozone	JOT403	Martin Valvur	11/13/2020	Cell B Freq.	ThermoElectron	4607				
This analyzer diagnostic check is outside the manufacturer's recommended value.										

## **Field Systems Comments**

1 Parameter: DocumentationCo

Hardcopies of manuals and documentation are no longer maintained on site. All information is maintained on the internet.

2 Parameter: ShelterCleanNotes

The shelter is in good condition, clean and well organized but not grounded.

# Field Systems Data Form

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

Site ID JOT403	Technician Martin Valvur	Site Visit Date 11/13	3/2020
Site Sponsor (agency)	NPS/EPA	USGS Map	Yucca Valley South
<b>Operating Group</b>	NPS	Map Scale	
AQS #	06-071-9002	Map Date	
Meteorological Type	RM Young		
Air Pollutant Analyzer	Ozone, IMPROVE	QAPP Latitude	34.0714
<b>Deposition Measurement</b>	dry, wet	QAPP Longitude	-116.3906
Land Use	desert	QAPP Elevation Meters	1244
Terrain	complex	QAPP Declination	
Conforms to MLM	No	QAPP Declination Date	
Site Telephone	(760) 228-1927	Audit Latitude	34.069569
Site Address 1		Audit Longitude	-116.388933
Site Address 2		Audit Elevation	1243
County	San Bernardino	Audit Declination	12
City, State	Yacca Valley, CA	Present	
Zip Code	92284	Fire Extinguisher 🔽	Inspected March 2014
Time Zone	Pacific	First Aid Kit	
Primary Operator		Safety Glasses	
Primary Op. Phone #		Safety Hard Hat	
Primary Op. E-mail		Climbing Belt	
<b>Backup Operator</b>		Security Fence	
Backup Op. Phone #		Secure Shelter	
Backup Op. E-mail		Stable Entry Steps ✓	
Shelter Working Room	Make ShelterOne Mo	E8129-28036	Shelter Size768 cuft
	Notes The shelter is in good condition	n, clean and well organized but	not grounded.
Site OK	Notes		
for Jos	intersection of route 62 and route 247 in shua Tree National Monument. The site i (gate lock = 1123 shelter lock = 5570)		

Fie	eld Sy	stems Data Fo	orm				<b>F-020</b>	58-15	500-S3-rev002
Site	e ID	JOT403	Technician	Martin Valvur		Site Visit Date	11/13/2020		]
1		l speed and direction luenced by obstructio		as to avoid	✓	N/A			
2	(i.e. wind horizont	l sensors mounted so l sensors should be m ally extended boom > to the prevailing wind	ounted atop the 2x the max diar	e tower or on a		N/A			
3	Are the	tower and sensors plu	mb?		✓	N/A			
4		temperature shields p diated heat sources su		· •					
5	condition surface a	perature and RH sens ns? (i.e. ground below and not steeply sloped water should be avoi	sensors should . Ridges, hollov	be natural					
6	Is the so	ar radiation sensor p	lumb?		✓	N/A			
7	Is it sited	l to avoid shading, or	any artificial o	r reflected light?	✓	N/A			
8	Is the ra	in gauge plumb?				N/A			
9	Is it sited towers, e	l to avoid sheltering e etc?	ffects from buil	ldings, trees,		N/A			
10	Is the su facing no	rface wetness sensor s orth?	sited with the gr	rid surface	✓	N/A			
11	Is it incl	ined approximately 3	0 degrees?		✓	N/A			
						L			

### **Field Systems Data Form**

#### F-02058-1500-S4-rev002

Site	e ID	JOT403	Technician	Martin Valvur		Site Visit Date	11/13/2020	
1 2	condition	e meterological sensor 1, and well maintained 1e meteorological sens 2 data?	1?		<ul><li>✓</li></ul>	N/A N/A		
3	Are the s	hields for the tempera	ature and RH s	ensors clean?	✓			
4	Are the a	spirated motors work	xing?		✓			
5	Is the sol scratches	ar radiation sensor's	lens clean and f	ree of	✓	N/A		
6	Is the su	rface wetness sensor g	rid clean and u	ndamaged?	✓	N/A		
7 8	condition	ensor signal and power n, and well maintained ensor signal and power elements and well ma	1? er cable connec	-	<ul><li>✓</li></ul>			

Fi	eld Sy	stems Data Fo	orm				<b>F-0205</b> 8	8-150	00-S5-rev002
Site	e ID	JOT403	Technician	Martin Valvur		Site Visit Date	11/13/2020		
	Siting C	riteria: Are the pollut	ant analyzers a	nd deposition eq	<u>uipn</u>	nent sited in accord	lance with 40 C	<u>FR 58,</u>	Appendix E
1		ample inlets have at le cted airflow?	east a 270 degre	e arc of	✓				
2	Are the	sample inlets 3 - 15 mo	eters above the	ground?	✓				
3		sample inlets > 1 mete neters from trees?	r from any maj	or obstruction,					
	<b>Pollutan</b>	nt analyzers and depos	ition equipmen	t operations and	mai	intenance			
1		nalyzers and equipme n and well maintained		e in good	✓				
2	Are the reportin	analyzers and monitor g data?	rs operational, o	on-line, and	✓				
3	Describe	e ozone sample tube.				1/4 teflon by 12 met	ers		
4	Describe	e dry dep sample tube.				3/8 teflon by 12 met	ers		
5		ine filters used in the o location)	zone sample lir	ne? (if yes		At inlet only			
6	Are sam obstruct	ple lines clean, free of tions?	kinks, moistur	e, and	✓				
7	Is the ze	ero air supply desiccan	t unsaturated?		✓				
8	Are the	re moisture traps in th	e sample lines?						
9	Is there clean?	a rotometer in the dry	deposition filto	er line, and is it		Clean and dry			

Fi	eld Sy	stems Data Fo	orm			F-02058-1500-S6-rev002				
Site	e ID	JOT403	Technician	Martin Valvur		Site Visit	Date 1	1/13/2020		
	DAS, sei	nsor translators, and p	peripheral equi	pment operation	ns an	<u>id maintenanc</u>	<u>ce</u>			
1	Do the E well mai	AS instruments appeant and a second s	ar to be in good	l condition and	✓					
2		he components of the backup, etc)	al? (printers,	✓						
<b>3</b> Do the analyzer and sensor signal leads pass through lightning protection circuitry?						Met sensors only				
4	Are the swell mai	signal connections pro ntained?	✓							
5	Are the	signal leads connected	to the correct	DAS channel?	✓					
6	Are the grounde	DAS, sensor translato d?	rs, and shelter	properly		Shelter not gro	ounded			
7	Does the	instrument shelter ha	ave a stable pov	ver source?	✓					
8	Is the in	strument shelter temp	erature contro	lled?						
9	Is the m	et tower stable and gro	ounded?			Stable		1	Grounded	
10	Is the sa	mple tower stable and	grounded?							
11	Tower c	omments?				The sample to	wer is b	olted to th	e shelter	

Fie	eld Systems Data	Fo	rm		F-02058-1500-S7-rev002				
Site	JOT403		Techı	<mark>nician</mark> Marti	n Valvur	Site Visit Date 1	1/13/2020	0	
D	ocumentation								
D	oes the site have the requir	ed in	strume	nt and equij	oment manuals?				
		Yes	No	N/A			Yes	No	N/A
	d speed sensor				Data logge				
	d direction sensor				Data logge				
	perature sensor				Strip char				
	ntive humidity sensor				Computer		<ul><li>✓</li></ul>		
	r radiation sensor				Modem				
	ace wetness sensor				Printer				
	d sensor translator				Zero air p		<ul><li>✓</li></ul>		
	perature translator				Filter flow				
	nidity sensor translator		_		Surge prot	tector			
	r radiation translator				UPS				
	ping bucket rain gauge				0 0	protection device			
	ne analyzer				Shelter he			<ul><li>✓</li></ul>	
	er pack flow controller				Shelter air	conditioner			
	er pack MFC power supply		$\checkmark$						
	Does the site have the requi	ired a	and mos	<u>st recent QC</u>	<b>C documents and</b>	<u>report forms?</u>			
		Pres	sent				Curre	ent	
Stat	ion Log		✓	Dataview			$\checkmark$		
SSR	F						$\checkmark$		
Site	Ops Manual						$\checkmark$		
HAS	SP								
Field	d Ops Manual								
Cali	bration Reports								
Ozo	ne z/s/p Control Charts								
Prev	ventive maintenance schedu	le							
1	Is the station log properly	comp	oleted d	uring every	site visit? 🔽 🗖	Dataview			
2	Are the Site Status Report current?	Form	ns bein	g completed	and 🗸 F	low & observation se	ections		
3	Are the chain-of-custody for sample transfer to and from			ly used to d	ocument 🔽				
4	Are ozone z/s/p control cha current?	arts p	oroperly	completed	and 🗌 C	Control charts not use	ed		
	vide any additional explana ıral or man-made, that may					regarding conditio	ons listed	above,	or any other features,
Harc	lcopies of manuals and docur	nenta	tion are	no longer m	aintained on site.	All information is m	aintained	on the i	nternet.

or manuals and documentation are no longer maintained on site. All information is maintained on the in

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

Site	ID JOT403 Technician Martin Valvur		Site Visit Date 11/13/2020
1	Site operation procedures Has the site operator attended a formal CASTNET training course? If yes, when and who instructed?	y 🔽	ARS provides refresher training during maintenance visits
2	Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed?		Trained by previous operator
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)	<mark>₁</mark>	

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

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

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

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

**Field Systems Data Form** 

Frequency	Compliant
Semiannually	$\checkmark$
Daily	$\checkmark$
Every 2 weeks	$\checkmark$
Daily	$\checkmark$
Alarm values only	$\checkmark$
Every 2 weeks	$\checkmark$
N/A	$\checkmark$
Weekly	$\checkmark$

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

complete sample train including all filters?	
Are the automatic and manual z/s/p checks monitored and	Datavie
reported? If yes, how?	

	Unknown	
✓		
	Dataview	

#### **Field Systems Data Form** F-02058-1500-S9-rev002 JOT403 Technician Martin Valvur Site Visit Date 11/13/2020 Site ID Site operation procedures Is the filter pack being changed every Tuesday as scheduled? Filter changed morinings 1 Are the Site Status Report Forms being completed and filed 2 correctly? No longer required 3 Are data downloads and backups being performed as scheduled? SSRF Are general observations being made and recorded? How? 4 ✓ Are site supplies on-hand and replenished in a timely 5 fashion? SSRF Are sample flow rates recorded? How? 6 $\checkmark$ Are samples sent to the lab on a regular schedule in a timely 7 fashion? ✓ Clean gloves on and off Are filters protected from contamination during handling 8 and shipping? How? Are the site conditions reported regularly to the field 9 operations manager or staff? **QC Check Performed** Compliant Frequency $\checkmark$ Semiannually **Multi-point MFC Calibrations** ✓ Weekly ✓ **Flow System Leak Checks Filter Pack Inspection** $\checkmark$ ✓ Weekly **Flow Rate Setting Checks** ✓ Weekly $\checkmark$ Visual Check of Flow Rate Rotometer ✓ Every 2 weeks $\checkmark$ **In-line Filter Inspection/Replacement**

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

Sample Line Check for Dirt/Water

## **Field Systems Data Form**

JOT403

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

Site ID

Techr

Technician Martin Valvur

Site Visit Date 11/13/2020

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
DAS	Environmental Sys Corp	8816	2271	90599
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	illegible	illegible	none
flow rate	Tylan	FC280AV	AW9403016	03378
Infrastructure	Infrastructure	none	none	none
MFC power supply	Tylan	RO-32	FP9403017	03683
Modem	Sierra wireless	GX450	Unknown	none
Ozone	ThermoElectron Inc	49i A3NAA	1160770010	none
Ozone Standard	ThermoElectron Inc	49i A1NAA	1130950194	none
Sample Tower	Aluma Tower	В	none	923310
Shelter Temperature	ARS	none	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature2meter	RM Young	41342	14960	none
Zero air pump	Werther International	PC70/4	606491	none

# Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
DEV	V412-Martir	1 Valvur-11/14/2020				
1	11/14/2020	Computer	Hewlett Packard	none	8470p	CNU3389GGZ
2	11/14/2020	DAS	Environmental Sys Corp	90654	8816	2567
3	11/14/2020	Met tower	Glen Martin Engineering	none	unknown	none
4	11/14/2020	Modem	Hughesnet	none	HN9000	unknown
5	11/14/2020	Ozone	ThermoElectron Inc	90566	49C	49C-59337-322
6	11/14/2020	Sample Tower	Aluma Tower	none	FOT-10	218298EE3
7	11/14/2020	Shelter Temperature	ARS	none	unknown	none
8	11/14/2020	Temperature	Vaisala	none	HMP45AC	Z1730043
9	11/14/2020	Zero air pump	Werther International	none	C 70/4	000915005

### **DAS Data Form**

DAS Time Max Error: 0.35

Mfg	S	erial Nur	nber S	ite	Technician	Site Visit Date	Parameter	Use Desc.
Environmenta	al Sys 💈	2567		DEV412	Martin Valvur	11/14/2020	DAS	Primary
Das Date: Das Time: Das Day:	11/14/2 08:5		Audit Dat Audit Tin Audit Day	ne 08:55:00	Mfg Serial Number Tfer ID	HY 12010039329 01322	Parameter Tfer Desc.	r DAS , Source generator (D
Low Channe Avg Diff: 0.000	Max	Diff: 0.0004	High Char Avg Diff: 0.0	mel: Max Diff: 002 0.0004	Slope	1.0000         6/15/201         Fluke         95740243         01312         1.0000	4 CorrCoff Parameter Tfer Desc.	
					Cert Date	1/28/202	0 CorrCoff	1.00000
Channel	Input		VM Output	DAS Output	InputUnit	OutputUnit	Difference	
16		0000	0.000	•	•	V	-0.0004	
16		.000	0.100			V	0.0000	
16		3000	0.299			V	0.0001	
16	0.5	5000	0.499	0.499	97 V	V	0.0002	
16	0.7	/000	0.699	0.699	96 V	V	-0.0002	
16		0000	0.899			V	0.0001	
16	1.0	0000	1.000	0 1.000	02 V	V	0.0002	

### **Ozone Data Form**

Mfg		Serial Numbe	r Tag Site		Tec	hnician	Site Visit Date	Parame	eter	Owner ID
ThermoElec	tron Inc	49C-59337-32	2 DEV41	2	Ма	rtin Valvur	11/14/2020	Ozone		90566
Slope: Intercept CorrCoff:	-(	0.98540 Slop 0.23248 Inter 1.00000 Corr	cept	0.00000 0.00000 0.00000		Mfg Serial Number Tfer ID	ThermoElectron 49CPS-70008-3 01110			er ozone
DAS 1:		DA	AS 2:			Slope	1.002	60 Inter	rcept	0.03590
_		Iax % Dif A	Avg %Diff A	Max % D	if	Cert Date	1/14/20	20 <b>Cor</b>	Coff	0.99999
0.0	0%	0.0%							Con	
UseDescri	•	ConcGroup	Tfer Raw	Tfer C		Site	Site Unit	RelPer	Dif	AbsDif
prima	•	1	0.18	0.14		0.09	ppb			-0.05
prima prima	-	2 3	14.88 33.62	14.8 33.4		14.28 32.64	ppb ppb		-2.57	-0.52
prima		4	65.35	65.1		63.88	ppb		-1.95	
prima		5	112.61	112.2		110.50	ppb		-1.6	
-	•	nt Audit Pressu		<u> </u>		n 757.5 mmHg		Status	pass	
Sensor C	ompone	nt Sample Trai	n	Co	nditio	n Good		Status	pass	
Sensor C	ompone	nt Minimum dis	stance from road	d met Co	nditio	n True		Status	pass	
Sensor C	ompone	nt Inlet Filter C	ondition			n Clean		Status	pass	
	_	nt 26.6 degree				n True		Status	pass	
Sensor C	ompone	nt Tree dewline	e >10m or belov	v inlet Co	nditio	n True		Status	pass	
Sensor C	ompone	nt Offset		Co	nditio	<b>n</b> -0.10		Status	pass	
Sensor C	ompone	nt Span		Co	nditio	on 0.987		Status	pass	
Sensor C	ompone	nt Zero Voltage	9	Co	nditio	<b>n</b> 0.000		Status	pass	
Sensor C	ompone	nt Fullscale Vo	ltage	Co	nditio	<b>n</b> 1.0002		Status	pass	
Sensor C	ompone	nt Cell A Freq.		Co	nditio	n 82.9 kHz		Status	pass	
Sensor C	ompone	nt Cell A Noise		Co	nditio	<b>n</b> 0.5 ppb		Status	pass	
Sensor C	ompone	nt Cell A Flow		Co	nditio	<b>n</b> 0.74 lpm		Status	pass	
Sensor C	ompone	nt Cell A Press	ure	Co	nditio	<b>n</b> 734.6 mmHg		Status	pass	
Sensor C	ompone	nt Cell A Tmp.		Co	nditio	n 36.8 C		Status	pass	
Sensor C	ompone	nt Cell B Freq.		Co	nditio	<b>n</b> 79.0 kHz		Status	pass	
Sensor C	ompone	nt Cell B Noise		Co	nditio	<b>n</b> 0.7 ppb		Status	pass	
Sensor C	ompone	nt Cell B Flow				<b>n</b> 0.74 lpm		Status	pass	
Sensor C	ompone	nt Cell B Press	ure	Co	nditio	<b>n</b> 734.2 mmHg		Status	pass	
Sensor C	ompone	nt Line Loss		Co	nditio	Not tested		Status	pass	
Sensor C	ompone	nt System Men	no	Co	nditio	n		Status	pass	

## **Temperature Data Form**

Mfg	Serial Number	Tag Site	Т	echni	ician	Site V	isit Date	Param	eter	Owner ID
Vaisala	Z1730043	DEV412	1	Martin	Valvur	11/14	/2020	Temper	ature	none
				Mf	g	Fluke		Pa	rameter Te	mperature
				Serial Number		32751	3275143 Tf		er Desc. R	ſD
				Tfe	er ID	01229	I			
DAS 1:	DA	S 2:		Slo	ре		1.0002	6 Inte	rcept	-0.01710
Abs Avg Err Abs Max Err Abs Avg Err Abs Ma			Max Err	Cer	rt Date		1/29/202	0 Cor	rCoff	1.00000
1.57	7 3.72									
UseDesc.	Test type	InputTmpRaw	InputTmp	Corr.	OutputTmpS	Signal	OutputSig	gnalEng	OSE Unit	Difference
primary	Temp Mid Range	17.47	17.48		0.0000		17.	9	С	0.38
primary	Temp Mid Range	19.16	19.17		0.0000	18.6			С	-0.6
primary	Temp Mid Range	20.12	20.13		0.0000		23.	9	С	3.72
Sensor Con	nponent Shield		Condi	tion C	Clean			Status	pass	
Sensor Component Blower				Condition N/A				Status	pass	
Sensor Con	Sensor Component Properly Sited				Condition Not properly sited				Fail	
Sensor Component System Memo				Condition					pass	

# Shelter Temperature Data For

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
ARS	none	e DEV412		11/14/2020	Shelter Temperature	none
DAS 1:	<b>DAS 2:</b>		Mfg	Fluke	Parameter She	Iter Temperature
Abs Avg Err Ab	Abs Max Err         Abs Avg Err         Abs Max Err           0.07		Serial Number	3275143	Tfer Desc. RTD	)
			Tfer ID	01229		
			Slope	1.0002	6 Intercept	-0.01710
			Cert Date	1/29/202	0 CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	22.48	22.49	0.000	22.4	С	-0.05
primary	Temp Mid Range	22.79	22.80	0.000	22.9	С	0.05
primary	Temp Mid Range	24.28	24.29	0.000	24.2	С	-0.07
Sensor Cor	nponent System Memo	1	Condition		Status	pass	

## **Site Visit Comments**

Parameter	Site	Technician	S.V. Date	Component	Mfg	Serial No.	Hazaro	Problem
Temperature	DEV412	Martin Valvur	11/14/2020	Properly Sited	Vaisala	4608		
This sensor is not mounted as stated in the QAPP with respect to orientation.								

# **Field Systems Comments**

#### 1 Parameter: SiteOpsProcComm

Dry deposition samples are not collected at this site.

#### 2 Parameter: MetSensorComme

The temperature and humidity combination sensor is mounted in a non-aspirated shield on the south side of the tower. The sensor cannot be submerged and therefore was only challenged in air side-by-side with the RTD standard. Audit results are not comparable with other submergible sensors.

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

Site ID DEV412	Technician Martin Valvur	Site Visit Date 11/14	1/2020
Site Sponsor (agency)	NPS	USGS Map	
<b>Operating Group</b>	NPS	Map Scale	
AQS#		Map Date	
Meteorological Type	Climatronics		
Air Pollutant Analyzer		QAPP Latitude	
Deposition Measurement		QAPP Longitude	
Land Use			
		QAPP Elevation Meters	
Terrain		QAPP Declination	
Conforms to MLM		QAPP Declination Date	
Site Telephone	(760) 786-2497	Audit Latitude	36.508819
Site Address 1	PO Box 579	Audit Longitude	-116.847697
Site Address 2	Hwy 190	Audit Elevation	131
County	Inyo	Audit Declination	13.3
City, State	Death Valley, CA	Present	
Zip Code	92328	Fire Extinguisher	
Time Zone	Pacific	First Aid Kit	
Primary Operator		Safety Glasses	
Primary Op. Phone #		Safety Hard Hat	
Primary Op. E-mail		Climbing Belt	
<b>Backup Operator</b>		Security Fence	
Backup Op. Phone #		Secure Shelter	
Backup Op. E-mail		Stable Entry Steps	
Shelter Working Room	Make Mo	odel	Shelter Size
Shelter Clean	Notes		
Site OK	Notes		
right o Highw Cow C	Las Vegas take route 160 west to Pahrum into route 127 toward Death Valley. In De ray 190. Continue to the park. Approxima Creek and the park administratin offices. g left and continuing uphill. The site is pa	eath Valley Junction, just past the tell of the furnace of the furnace of the first left and continue to the first left and	he Amargosa Theater, turn left onto Creek Ranch, turn right at the sign for up the hill past the park housing,

Fi	eld Sy	stems Data Fo	orm				<b>F-020</b>	58-15	500-S3-	rev002
Site	e ID	DEV412	Technician	Martin Valvur		Site Visit Date	11/14/2020		]	
1		d speed and direction fluenced by obstructio		) as to avoid	✓	N/A				
2	(i.e. wind horizont	d sensors mounted so d sensors should be m ally extended boom > to the prevailing wind	ounted atop the 2x the max dia	e tower or on a		N/A				
3	Are the	tower and sensors plu	mb?		✓					
4		temperature shields p diated heat sources su		· ·		south				
5	conditio surface	perature and RH sens ns? (i.e. ground below and not steeply sloped s water should be avoi	sensors should . Ridges, hollow	l be natural						
6	Is the so	lar radiation sensor p	lumb?		✓	N/A				
7	Is it site	d to avoid shading, or	any artificial o	r reflected light?		N/A				
8	Is the ra	in gauge plumb?			✓	N/A				
9	Is it site towers,	d to avoid sheltering e etc?	ffects from bui	ldings, trees,		N/A				
10	Is the su facing n	rface wetness sensor s orth?	sited with the g	rid surface	✓	N/A				
11	Is it inc	lined approximately 3	0 degrees?			N/A				

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

The temperature and humidity combination sensor is mounted in a non-aspirated shield on the south side of the tower. The sensor cannot be submerged and therefore was only challenged in air side-by-side with the RTD standard. Audit results are not comparable with other submergible sensors.

#### F-02058-1500-S4-rev002

Site	e ID	DEV412	Technician	Martin Valvur		Site Visit Date 11/14/2020
1		e meterological sensor 1, and well maintained		intact, in good		Temperature only
2	Are all the reporting	he meteorological sens g data?	ors operational	l online, and		Temperature only
3	Are the s	hields for the tempera	ature and RH s	ensors clean?	✓	
4	Are the a	aspirated motors work	king?		✓	N/A
5	Is the sol scratches	ar radiation sensor's	lens clean and f	ree of		N/A
6	Is the su	rface wetness sensor g	rid clean and u	ndamaged?	✓	N/A
7		ensor signal and pow n, and well maintained		, in good		
8		ensor signal and power elements and well ma		tions protected		

Fi	eld Sy	stems Data Fo	orm			F-02058-1500-S5-rev002
Site	e ID	DEV412	Technician	Martin Valvur		Site Visit Date 11/14/2020
	Siting C	Criteria: Are the pollut	ant analyzers a	nd deposition eq	<u>uipr</u>	ment sited in accordance with 40 CFR 58, Appendix E
1		sample inlets have at le icted airflow?	east a 270 degre	e arc of	✓	
2	Are the	sample inlets 3 - 15 m	eters above the	ground?	✓	
3		sample inlets > 1 mete meters from trees?	er from any maj	jor obstruction,		
	<u>Pollutar</u>	nt analyzers and depos	ition equipmen	t operations and	mai	<u>intenance</u>
1		analyzers and equipme on and well maintained		e in good	✓	
2	Are the reportir	analyzers and monitor ng data?	rs operational, o	on-line, and	✓	
3	Describ	e ozone sample tube.				1/4 teflon by 12 meters
4	Describ	e dry dep sample tube				N/A
5		ine filters used in the o location)	ozone sample lir	ne? (if yes		At inlet only
6	Are san obstruc	<pre>nple lines clean, free of tions?</pre>	' kinks, moistur	e, and	✓	
7	Is the ze	ero air supply desiccan	t unsaturated?		✓	
8	Are the	re moisture traps in th	e sample lines?		✓	N/A
9	Is there clean?	a rotometer in the dry	v deposition filte	er line, and is it		N/A

Fi	eld Sy	stems Data Fo	orm				<b>F-02</b>	058-15	00-S6-rev002	
Site	e ID	DEV412	Technician	Martin Valvur		Site Visi	t Date 11/	/14/2020		
	DAS, sei	nsor translators, and p	eripheral equi	pment operation	<u>ıs ar</u>	<u>ıd maintenaı</u>	<u>nce</u>			
1		DAS instruments appeantained?	l condition and	✓						
2		he components of the backup, etc)	al? (printers,	✓						
3		nalyzer and sensor sig g protection circuitry?	through	✓	Met sensors	only				
4		signal connections pro ntained?								
5	Are the	signal leads connected	DAS channel?	✓						
6	Are the grounde	DAS, sensor translator d?	rs, and shelter	properly		shelter not gi	rounded			
7	Does the	instrument shelter ha	we a stable pov	ver source?	✓					
8	Is the in	strument shelter temp	erature contro	lled?	✓					
9	Is the m	et tower stable and gro	ounded?			Stable		(	Grounded	
10	Is the sa	mple tower stable and	grounded?							
11	Tower c	omments?				sample towe	r not groun	ded		

Field S	Systems Data	Fo	rm				<b>F-02</b>	<b>058</b> -	-1500-S7-rev002
Site ID	DEV412		Technic	ian	Martin Valvur	Site Visit Date	11/14/2020		
<b>Docum</b>	entation								
Does th	<u>ne site have the requi</u>	red in	<u>strument</u>	and	equipment manuals?				
Wind spec Wind dire	ed sensor ection sensor	Yes	No	N/2	Data logge		Yes	No ✓	N/A □ ☑
Relative h	ure sensor numidity sensor				Strip char Computer	t recorder			
Surface w	iation sensor etness sensor sor translator			<ul><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li></ul>	Printer	ump			
Temperat Humidity	ure translator sensor translator				Filter flow Surge prot	pump			
	ation translator ucket rain gauge alvzer				UPS Lightning Shelter her	protection device ater			
Filter pac	k flow controller k MFC power supply	y		<ul><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li><li></li></ul>	Shelter air	• conditioner			
Does 1	the site have the requ	uired a	and most	rece	nt QC documents and	report forms?			
G4 4* T		Pres					Curre	nt	
Station Lo SSRF Site Ops M HASP			Dat     N/A	avie	W				
Field Ops Calibratio	on Reports								
	/p Control Charts e maintenance sched								
1 Is the	e station log properly	v comp	oleted dur	ing	every site visit? 🔽				
2 Are t curre	the Site Status Repor ent?	t Forn	ns being c	omp	pleted and V	I/A			
	the chain-of-custody ble transfer to and fro			useo	d to document 🗹 🛛	I/A			
4 Are o curro	ozone z/s/p control ch ent?	narts p	oroperly c	omp	oleted and 🔽				
	ny additional explan : man-made, that ma					regarding condit	ions listed a	above,	or any other features,

Site	ID	DEV412	Technician	Martin Valvur		Site Visit Date	11/14/2020	]
	<u>Site ope</u>	ration procedures			_			
1		site operator attended If yes, when and who i		TNET training		I/A		
2		backup operator atten course? If yes, when a				I/A		
3	Is the sit schedule	e visited regularly on t ?	he required Tu	iesday				
4		standard CASTNET of l by the site operator?	perational proc	cedures being		I/A		
5		e operator(s) knowledg ired site activities? (inc		able to periori				

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

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

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

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

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

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

✓ ✓ Dataview

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

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

F-02058-1500-S9-re	v002

Site	e ID	DEV412	Technician	Martin Valvur		Site Visit Date	1/14/2020			
	Site ope	eration procedures								
1	Is the fi	lter pack being changed	every Tuesda	y as scheduled?		N/A				
2	Are the correct	Site Status Report Forn ly?	ns being comp	leted and filed		N/A				
3	Are dat schedul	a downloads and backup ed?	os being perfo	rmed as		N/A				
4	Are ger	neral observations being	made and reco	orded? How?	✓	Dataview				
5	Are site fashion	e supplies on-hand and ro ?	eplenished in a	a timely						
6	Are sample flow rates recorded? How?					N/A				
7	Are samples sent to the lab on a regular schedule in a timely fashion?					N/A				
8		ers protected from conta pping? How?	mination duri	ng handling	✓	N/A				
9		site conditions reported ons manager or staff?	regularly to t	he field						
QC	Check P	erformed	Freq	uency		(	Compliant			
N	Iulti-poi	nt MFC Calibrations	✓ N/A				✓			
F	'low Syst	em Leak Checks	✓ N/A				$\checkmark$			
F	'ilter Pac	k Inspection	✓ N/A							
F	low Rate	e Setting Checks	✓ N/A							
V	visual Ch	neck of Flow Rate Rotom	eter 🗹 N/A				$\checkmark$			
I	n-line Fi	Iter Inspection/Replacem	nent 🗹 N/A				$\checkmark$			
S	ample L	ine Check for Dirt/Wate	r 🗹 N/A				$\checkmark$			

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:

Dry deposition samples are not collected at this site.

Field Sy	stems Data Fo	orm	F-02058-1500-S10-rev002			
Site ID	DEV412	Technician	Martin Valvur	Site Visit Date	11/14/2020	

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Hewlett Packard	8470p	CNU3389GGZ	none
DAS	Environmental Sys Corp	8816	2567	90654
Met tower	Glen Martin Engineering	unknown	none	none
Modem	Hughesnet	HN9000	unknown	none
Ozone	ThermoElectron Inc	49C	49C-59337-322	90566
Sample Tower	Aluma Tower	FOT-10	218298EE3	none
Shelter Temperature	ARS	unknown	none	none
Temperature	Vaisala	HMP45AC	Z1730043	none
Zero air pump	Werther International	C 70/4	000915005	none

# Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number			
PNF	PNF126-Eric Hebert-11/15/2020								
1	11/15/2020	Computer	Dell	0759	Inspiron 15	Unknown			
2	11/15/2020	DAS	Campbell	illegible	CR3000	3817			
3	11/15/2020	Elevation	Elevation	None	1	None			
4	11/15/2020	Filter pack flow pump	Thomas	06030	107CAB18	060400022677			
5	11/15/2020	Flow Rate	Apex	000550	AXMC105LPMDPCV	50740			
6	11/15/2020	Infrastructure	Infrastructure	none	none	none			
7	11/15/2020	Modem	Digi	07200	LR54	unknown			
8	11/15/2020	Ozone	ThermoElectron Inc	000741	49i A1NAA	1105347316			
9	11/15/2020	Ozone Standard	ThermoElectron Inc	000363	49i A3NAA	0726124691			
10	11/15/2020	Sample Tower	Aluma Tower	000178	В	none			
11	11/15/2020	Shelter Temperature	Campbell	none	107-L	none			
12	11/15/2020	Siting Criteria	Siting Criteria	None	1	None			
13	11/15/2020	Temperature	RM Young	04687	41342	6701			
14	11/15/2020	Zero air pump	Werther International	06885	C 70/4	000814270			
15	11/15/2020	Zero air pump	Teledyne	000774	701H	610			

### **DAS Data Form**

DAS Time Max Error: 0.5

Mfg	Serial Nu	mber Site	I	<b>Fechnician</b>	Site Visit Date	Parameter	Use Desc.
Campbell	3817	PNF	126	Eric Hebert	11/15/2020	DAS	Primary
Das Date: Das Time: Das Day:	11/15/2020 10:46:30 320	Audit Date Audit Time Audit Day	11/15/2020 10:46:00 320	Mfg Serial Number	Datel 4000392	Parameter Tfer Desc.	DAS
Low Channel		High Channe		Tfer ID	01321		
Avg Diff: 0.0001	Max Diff: 0.0002	Avg Diff: 0.0001	Max Diff: 0.0002	Slope Cert Date	1.0000		0.00000
				Mfg Serial Number Tfer ID Slope Cert Date	Fluke 86590148 01310 1.0000 2/4/202	Parameter Tfer Desc. Intercept	DAS
Channel 7	Input D 0.0000	VM Output	DAS Output	InputUnit	OutputUnit V	Difference	
7	0.0000	0.0000	0.0000		v V	0.0000	
7	0.1000	0.1000	0.1000		V	0.0000	
7	0.5000	0.5001	0.5001		V	-0.0001	
7	0.7000	0.7003	0.7002		V	-0.0001	
7	0.9000	0.9004	0.9002		V	-0.0002	
7	1.0000	1.0004	1.0003	3 V	V	-0.0001	

### Flow Data Form

Mfg	Serial Num	iber Tag	Site	Тес	chnician	Site Visit I	Date Param	ieter	<b>Owner ID</b>
Арех	50740		PNF126	Eri	c Hebert	11/15/2020	D Flow R	ate	000550
					Mfg Serial Number	BIOS 131818 01417		arameter F 'fer Desc. B	
					Tfer ID Slope Cert Date	1		ercept rrCoff	-0.02240 0.99997
DAS 1: A Avg % Diff: 4.46%	A Max % Dif 4.46%	DAS 2: A Avg %	Diff A Max	x % Dif	Cal Factor Z Cal Factor F Rotometer R	ull Scale	0.9		
Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S E	InputUnit	OutputSigna	all PctDifference
primary	pump off	0.000	0.000	-0.01	0.000	-0.01	l/m	1/m	
primary	leak check	0.000	0.000	0.00	0.000	0.00	l/m	l/m	
primary	test pt 1	1.544	1.570	1.53	0.000	1.50	l/m	l/m	-4.46%
primary	test pt 2	1.544	1.570	1.53	0.000	1.50	l/m	l/m	-4.46%
primary	test pt 3	1.545	1.570	1.53	0.000	1.50	l/m	1/m	-4.46%
	oonent Leak Tes oonent Tubing C				Condition Condition Good			pass pass	
Sensor Comp	onent Filter Pos	ition		Conditio	n Good		Status	pass	
	onent Rotomete		า	Conditio	n Clean and dry		Status	pass	
	onent Moisture				n No moisture p	resent	Status		
Sensor Component Filter Distance			_	ition 5.0 cm			pass		
•	onent Filter Dep				2.0 cm		s pass		
	onent Filter Azir			_	<b>n</b> 360 deg	Status			
Sensor Comp	onent System M	lemo		Conditio	n		Status	pass	

### **Ozone Data Form**

Mfg		Serial Numbe	r Tag Site		Technician	Site Visit Date	Parameter	Owner ID
ThermoElec	tron Inc	1105347316	PNF126	6	Eric Hebert	11/15/2020	Ozone	000741
Slope: Intercept					Mfg Serial Number	ThermoElectror		ter ozone
CorrCoff:	(	0.99999 Corr	Coff:	0.0000		01115		
-		_			Tfer ID	01115		
DAS 1:	iff• A N		AS 2: Avg %Diff A	Max % Dif	Slope	0.994	90 Intercept	0.32220
	)%	0.0%			Cert Date	1/14/20	20 CorrCoff	0.99999
UseDescri	intion	ConcGroup	Tfer Raw	Tfer Co	rr Site	Site Unit	RelPerDif	AbsDif
primar		1	0.53	0.20	0.22	ppb		0.02
prima		2	17.98	17.51	17.51	ppb		0
prima	-	3	36.70	36.08	36.44	ppb	0.99	
prima	ry	4	70.03	69.15		ppb	0.12	
primai	ry	5	105.96	104.79	0 104.90	ppb	0.1	
Sensor C	ompone	nt Audit Pressu	ire	Con	dition 646.3 mmHg		Status pass	
Sensor C	ompone	nt Sample Trai	n	Con	dition Good		Status pass	
Sensor C	ompone	nt Minimum dis	stance from road	d met Con	dition True		Status pass	
Sensor C	ompone	nt Inlet Filter C	ondition	Con	dition Clean		Status pass	
Sensor C	ompone	nt 26.6 degree	unobstructed ru	le Con	dition True		Status pass	
Sensor C	ompone	nt Tree dewline	e >10m or below	inlet Con	dition True		Status pass	
Sensor C	ompone	nt Offset		Con	dition -0.40		Status pass	
Sensor C	ompone	nt Span		Con	Condition 1.003		Status pass	
Sensor C	ompone	nt Zero Voltage	9	Con	dition N/A		Status pass	
Sensor C	ompone	nt Fullscale Vo	Itage	Con	dition N/A		Status pass	
Sensor C	ompone	nt Cell A Freq.		Con	dition 90.5 kHz		Status pass	
Sensor C	ompone	nt Cell A Noise		Con	dition 0.9 ppb		Status pass	
Sensor C	ompone	nt Cell A Flow		Con	dition 0.61 lpm		Status pass	
Sensor C	ompone	nt Cell A Press	ure	Con	dition 623.8 mmHg		Status pass	
Sensor C	ompone	nt Cell A Tmp.		Con	dition 36.4 C		Status pass	
Sensor C	ompone	nt Cell B Freq.		Con	dition 114.2 kHz		Status pass	
Sensor C	ompone	nt Cell B Noise	t Cell B Noise		dition 1.2 ppb		Status pass	
Sensor C	ompone	nt Cell B Flow		Con	dition 0.66 lpm		Status pass	
Sensor C	sor Component Cell B Pressure		Con	dition 623.2 mmHg		Status pass		
Sensor C	ompone	nt Line Loss		Con	dition Not tested		Status pass	
Sensor C	ompone	nt System Men	no	Con	dition		Status pass	

# Temperature Data Form

Mfg	Serial Number	Tag Site	]	<b>Fechni</b>	ician	Site V	isit Date	Param	eter	Owner ID
RM Young	6701	PNF126		Eric H	ebert	11/15	/2020	Temper	ature	04687
				Mf	g	Extech	1	Ра	rameter Te	mperature
				Ser	ial Number	H2327	'34	Tf	er Desc. R	D
				Tfe	er ID	01227	,			
DAS 1:	DAS	5 2:		Slo	pe		1.0079	7 Inte	rcept	0.12950
Abs Avg Err	Abs Max Err Abs	Avg Err Abs	Max Err	Cer	rt Date		2/14/202	20 Cor	rCoff	1.00000
0.19	0.23									
UseDesc.	Test type	InputTmpRaw	InputTmp	Corr.	OutputTmp	Signal	OutputSig	gnalEng	OSE Unit	Difference
primary	Temp Low Range	0.15	0.02		0.000		0.3	3	C	0.23
primary	Temp Mid Range	24.93	24.60	)	0.000		24.	8	С	0.18
primary	Temp High Range	49.67	49.15	5	0.000		49.	3	С	0.16
Sensor Com	ponent Shield		Condi	ition C	Clean			Status	pass	
Sensor Com	ponent Blower		Condi	ition N	I/A			Status	pass	
Sensor Com	ponent Properly Sited	l	Condi	ition F	Properly sited			Status	pass	
Sensor Com	ponent System Memo	)	Condi	ition				Status	pass	

# Shelter Temperature Data For

Mfg	Serial Number Tag Site T		Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	none PNF126		11/15/2020	Shelter Temperature	none
DAS 1:	<b>DAS 2:</b>		Mfg	Extech	Parameter She	Iter Temperature
Abs Avg Err Ab	s Max Err Abs Avg 1.10	Err Abs Max Err	Serial Number	H232734	Tfer Desc. RTD	)
			Tfer ID	01227		
			Slope	1.0079	7 Intercept	0.12950
			Cert Date	2/14/202	0 CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	26.46	26.12	0.000	26.5	С	0.37
primary	Temp Mid Range	24.68	24.36	0.000	24.7	С	0.37
primary	Temp Mid Range	23.63	23.31	0.000	24.4	С	1.1
Sensor Component System Memo			Condition		Status	pass	

#### **Infrastructure Data For**

Site ID	PNF126	Technician Eric He	ebert Site Visit Date 11/15/2020
Shelter 1	Make	Shelter Model	Shelter Size
Ekto		8810	640 cuft

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

## Siting Criteria Form

Condition	Status pass
Condition	Status pass
Condition 5 m	Status pass
Condition	Status pass
	Condition   Condition

# **Field Systems Comments**

#### 1 Parameter: SiteOpsProcComm

The site operator was not available for the systems audit. The reported information was obtained from the site log and site documentation.

#### 2 Parameter: DasComments

The sample towers are not grounded.

#### 3 Parameter: SitingCriteriaCom

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

#### 4 **Parameter:** ShelterCleanNotes

The shelter is in fair condition.

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

Site ID PNF126	Technician Eric Hebert	Site Visit Date 11/1	5/2020
			[]
Site Sponsor (agency)	EPA	USGS Map	Carvers Gap
<b>Operating Group</b>	USFS/private	Map Scale	
AQS #	37-011-9991	Map Date	
Meteorological Type	R.M. Young		
Air Pollutant Analyzer	Ozone	QAPP Latitude	
<b>Deposition Measurement</b>	dry	QAPP Longitude	
Land Use	woodland - mixed	<b>QAPP Elevation Meters</b>	
Terrain	complex	QAPP Declination	
Conforms to MLM	No	QAPP Declination Date	
Site Telephone	8287331643	Audit Latitude	36.105435
Site Address 1	end of paved road	Audit Longitude	-82.045015
Site Address 2	Roaring Creek Road	Audit Elevation	1216
County	Avery	Audit Declination	-6.3
City, State	, NC	Present	
Zip Code	28657	Fire Extinguisher 🔽	New in 2015
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 Steps	
Shelter Working Room	Make Ekto Me	odel 8810	Shelter Size640 cuft
Shelter Clean	Notes The shelter is in fair condition.		
Site OK	Notes		
	Hwy 19E north of Plumb tree, turn west of gright, and continue 200 meters. Site is		

Fi	eld Systems Data Form		F-02058-1500-S3-rev002
Site	ID PNF126 Technician Eric Hebert		Site Visit Date 11/15/2020
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

#### F-02058-1500-S4-rev002

Site	e ID	PNF126	Technician	Eric Hebert		Site Visit Date 11/15/2020
1		e meterological senson 1, and well maintained		intact, in good		Temperature only
2	2 Are all the meteorological sensors operational online, and reporting data?					Temperature only
3	Are the s	hields for the tempera	ature and RH s	ensors clean?	✓	
4	Are the a	spirated motors work	king?		✓	N/A
5	Is the sol scratches	ar radiation sensor's	lens clean and f	ree of		N/A
6	Is the sur	face wetness sensor g	rid clean and u	ndamaged?	✓	N/A
7		ensor signal and powe		, in good		
8		ensor signal and pow elements and well ma		tions protected		

Field Systems Data Form						F-02058-1500-S5-rev002
Site	e ID	PNF126	Technician E	Eric Hebert		Site Visit Date 11/15/2020
	<u>Siting C</u>	Criteria: Are the polluta	ant analyzers an	d deposition equ	uipn	nent sited in accordance with 40 CFR 58, Appendix E
1		cample inlets have at le icted airflow?	ast a 270 degree	arc of		
2	Are the	sample inlets 3 - 15 me	eters above the g	round?	✓	
3		sample inlets > 1 meter neters from trees?	r from any majo	or obstruction,	✓	
	<u>Pollutar</u>	nt analyzers and deposit	ition equipment	operations and	mai	ntenance
1		analyzers and equipme on and well maintained		in good	✓	
2	Are the reportin	analyzers and monitor ng data?	s operational, o	n-line, and	✓	
3	Describ	e ozone sample tube.				1/4 teflon by 12 meters
4	Describ	e dry dep sample tube.				3/8 teflon by 12 meters
5		ine filters used in the o location)	zone sample line	e? (if yes		At inlet only
6	Are sam obstruct	ple lines clean, free of tions?	kinks, moisture,	, and	✓	
7	Is the ze	ero air supply desiccan	t unsaturated?			
8	Are the	re moisture traps in the	e sample lines?		✓	Flow line only
9	Is there clean?	a rotometer in the dry	deposition filter	line, and is it		Clean and dry

Fie	eld Sy	stems Data Fo	orm			<b>F-02</b>	2058-15	00-S6-rev002	
Site ID         PNF126         Technician         Eric Hebert			Site Visit Date	11/15/2020	)				
	DAS, sei	nsor translators, and p	eripheral equij	pment operation	ns and	maintenance			
1		OAS instruments appeantained?	ar to be in good	condition and					
2 Are all the components of the DAS operational? (printers, modem, backup, etc)									
3 Do the analyzer and sensor signal leads pass through lightning protection circuitry?									
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 grounde	DAS, sensor translator d?	rs, and shelter ]	properly					
7	Does the	instrument shelter ha	ive a stable pow	ver source?					
8	Is the in	strument shelter temp	erature control	led?					
9	Is the m	et tower stable and gro	ounded?			Stable		Grounded	
10	Is the sa	mple tower stable and	grounded?						
11	Tower c	omments?			N	Iet tower removed			

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

The sample towers are not grounded.

Field Sys	stems Data Fo	orm			<b>F-02</b>	058-	1500-S7-rev002
Site ID	PNF126	Tecl	nnician Eric He	bert Site Visit Date	11/15/2020		
<b>Document</b> a	ation						
Does the si	<u>te have the required i</u>	instrum	ent and equipm	<u>ient manuals?</u>			
Solar radiatio Tipping buck Ozone analyz Filter pack flo	on sensor   sensor   idity sensor   idity sensor   on sensor   ess sensor   translator   translator   on translator   on translator   et rain gauge   er   ow controller		<ul> <li>&gt;</li> <li>&gt;&lt;</li></ul>	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 ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓		N/A  V V V V V V V V V V V V V V V V V V
-	ii e powei suppij —						
Does the	-		<u>ost recent QC d</u>	locuments and report forms?			
_	ual nual	esent	Oct 2001 Oct 2015 Oct 2015		Currer V V V V C C C C C C C C C C C C C	ıt	
2 1 0 1 0 H 0 H 0	beneudle						

**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?

			-
1			

Control charts not used

Ozone checks on filter off date

#### PNF126 Technician Eric Hebert Site Visit Date 11/15/2020 Site ID Site operation procedures Trained in Gainesville in 1987 Has the site operator attended a formal CASTNET training 1 course? If yes, when and who instructed? 2 Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday ✓ 3 schedule? $\checkmark$ Are the standard CASTNET operational procedures being 4 flollowed by the site operator? Is the site operator(s) knowledgeable of, and able to perform 5 the required site activities? (including documentation)

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

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

 $\checkmark$ 

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

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

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

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

Zero Air Desiccant Check

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

	Unknown	
✓		
✓	SSRF, call-in	

F-02058-1500-S8-rev002

#### Field Systems Data FormF-02058-1500-S9-rev002

Site	ID	PNF126	Technie	cian	Eric Hebert		Site Visit Date	11/15/2020				
	Site ope	ration procedures										
1	Is the filter pack being changed every Tuesday as scheduled? ✓ Filter changed mornings											
2	Are the correctly	Site Status Report Fori y?	ns being	comj	pleted and filed		Ozone checks on fil	lter off date				
3	Are data schedule	a downloads and backu ed?	ps being	perf	ormed as		No longer required					
4	Are gen	eral observations being	made an	d re	corded? How?	✓	SSRF					
5	Are site fashion?	supplies on-hand and r	eplenishe	d in	a timely							
6	Are sample flow rates recorded? How?						SSRF, call-in					
7	Are samples sent to the lab on a regular schedule in a timely fashion?											
8		rs protected from conta pping? How?	aminatior	du	ring handling	✓	One set of gloves o	nly				
9		site conditions reported ons manager or staff?	l regularl	y to	the field							
QC	Check Pe	erformed		Fre	quency			Compliant				
N	Iulti-poir	nt MFC Calibrations	$\checkmark$	Sem	niannually							
		em Leak Checks	$\checkmark$	Wee	ekly							
Filter Pack Inspection												
F	Flow Rate Setting Checks											
V	Visual Check of Flow Rate Rotometer											
I	In-line Filter Inspection/Replacement ✓ Semiannually											
S	ample Li	ne Check for Dirt/Wate	er 🗹	Wee	ekly							
Prov	ido ony o	dditional ovaluation (	nhotogra	ah a	r skotob if poos	COPT	) regarding conditi	ions 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:

The site operator was not available for the systems audit. The reported information was obtained from the site log and site documentation.

Field Systems Data Fori	n
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PNF126

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

Site ID	
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Technician Eric Hebert

Site Visit Date 11/15/2020

Site Visit Sensors

Parameter	Manufacturer	Model	S/N	Client ID
Computer	Dell	Inspiron 15	Unknown	0759
DAS	Campbell	CR3000	3817	illegible
Elevation	Elevation	1	None	None
Filter pack flow pump	Thomas	107CAB18	060400022677	06030
Flow Rate	Арех	AXMC105LPMDPC	50740	000550
Infrastructure	Infrastructure	none	none	none
Modem	Digi	LR54	unknown	07200
Ozone	ThermoElectron Inc	49i A1NAA	1105347316	000741
Ozone Standard	ThermoElectron Inc	49i A3NAA	0726124691	000363
Sample Tower	Aluma Tower	В	none	000178
Shelter Temperature	Campbell	107-L	none	none
Siting Criteria	Siting Criteria	1	None	None
Temperature	RM Young	41342	6701	04687
Zero air pump	Teledyne	701H	610	000774
Zero air pump	Werther International	C 70/4	000814270	06885

# Site Inventory by Site Visit

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number			
UM	UMA009-Martin Valvur-11/23/2020								
1	11/23/2020	Computer	Dell	07288	Latitude	H3NJJX2			
2	11/23/2020	DAS	Campbell	000883	CR6	13312			
3	11/23/2020	Filter pack flow pump	Permotec	none	BL30EB	432201630446			
4	11/23/2020	Flow Rate	Apex	000602	AXMC105LPMDPCV	illegible			
5	11/23/2020	Modem	Digi	01740	LR54	Unknown			
6	11/23/2020	Ozone	ThermoElectron Inc	000881	49i A1ZCA	1200706581			
7	11/23/2020	Sample Tower	Aluma Tower	none	FOT-10	Unknown			
8	11/23/2020	Shelter Temperature	Campbell	none	107-L	none			
9	11/23/2020	Temperature	RM Young	07280	41342VC	031771			
10	11/23/2020	Zero air pump	Werther International	06914	C 70/4	000829156			

### Flow Data Form

Mfg Serial Number Tag Site		Site	ite Technician S		Site Vis	sit Date	Paran	neter	Owner ID	
Арех	illegible		UMA009		Martin Valvur		11/23/2020 Flow		late	000602
					Mfg Serial Number	BIOS 122974			<b>'arameter</b> Flo	
					Tfer ID	01416			ilei Desc. Dic	0 220-11
					Slope		1.000	00 Int	ercept	0.00000
					Cert Date		5/6/20	20 <b>Co</b>	rrCoff	1.00000
DAS 1:		DAS 2:		L	Cal Factor Z	ero		-0.	01	
A Avg % Diff:	A Max % Dif	A Avg %	Diff A Max	: % Dif	Cal Factor F	ull Scale		1.	01	
0.66%	0.66%				<b>Rotometer R</b>	eading:			3	
Desc.	Test type	Input l/m	Input Corr_	MfcDisp.	OutputSignal	Output S	SE Inp	outUnit	OutputSignalI	PctDifference
primary	pump off	0.000	0.000	0.00	0.000	-0.01		l/m	1/m	
primary	leak check	0.000	0.000	0.00	0.000	-0.01		l/m	l/m	
primary	test pt 1	3.024	3.020	2.96	0.000	3.00		l/m	l/m	-0.66%
primary	test pt 2	3.022	3.020	2.96	0.000	3.00		l/m	l/m	-0.66%
primary	test pt 3	3.018	3.020	2.96	0.000	3.00		l/m	l/m	-0.66%
Sensor Comp	oonent Leak Tes	t		Conditio	on			Statu	s pass	
Sensor Comp	ponent Tubing C	ondition		Conditio	on Good			Statu	s pass	
Sensor Comp	onent Filter Pos	ition		Conditio	Condition Good				s pass	
Sensor Comp	ponent Rotomete	er Conditio	n	Conditio	ondition Clean and dry				s pass	
Sensor Comp	ponent Moisture	Present		Conditio	lition No moisture present				<mark>s</mark> pass	
Sensor Component Filter Distance				Conditio	tion 6.0 cm			Statu	s pass	
Sensor Component Filter Depth				Conditio	ion 4.0 cm			Statu	s pass	
Sensor Component Filter Azimuth					on 300 deg			Status pass		
Sensor Comp	ponent System M	lemo		Conditio	on			Statu	s pass	

### **Ozone Data Form**

Mfg		Serial Numbe	r Tag Site	1	echnician	Site Visit Date	Parameter	Owner ID
ThermoElec	tron Inc	1200706581	UMA009	9	Martin Valvur	11/23/2020	Ozone	000881
Slope: Intercept CorrCoff: DAS 1:	(		cept (	0.00000 0.00000 0.00000	Mfg Serial Number Tfer ID	ThermoElectron 49CPS-70008-3 01110	64 Tfer Des	sc. Ozone primary stan
	oiff: A M		AS 2. Avg %Diff A	Max % Dif	Slope	1.0020		0.03590
	0%	0.0%			Cert Date	1/14/20	20 CorrCoff	0.99999
UseDescri primar primar primar primar	ry ry ry	ConcGroup 1 2 3 4	Tfer Raw 0.16 16.90 35.27 66.64	Tfer Corr 0.12 16.82 35.14 66.43	0.07 17.10 35.61 67.29	Site Unit ppb ppb ppb	RelPerDif 1.33 1.29	
primar		5	117.24	116.90	118.20 tion 704.5 mmHg	ppb	1.11	
Sensor C	omponei	nt Audit Pressu nt Sample Trai	n	Condi	tion Good		Status pass Status pass	
Sensor C	omponei	nt Minimum dis	stance from road	I met Condi	tion True		Status pass	
Sensor C	omponer	nt Inlet Filter C	ondition	Condi	tion Clean		Status pass	
Sensor C	omponer	nt 26.6 degree	unobstructed ru	le Condi	tion True		Status pass	
Sensor C	omponei	nt Tree dewline	e >10m or below	inlet Condi	tion True		Status pass	
Sensor C	omponer	nt Offset		Condi	tion 0.10		Status pass	
Sensor C	omponei	nt Span		Condi	tion 1.026		Status pass	
Sensor C	omponer	nt Zero Voltage	9	Condi	tion N/A		Status pass	
Sensor C	omponer	nt Fullscale Vo	Itage	Condi	tion N/A		Status pass	
Sensor C	omponer	nt Cell A Freq.		Condi	tion 100.4 kHz		Status pass	
Sensor C	omponei	nt Cell A Noise		Condi	tion 1.0 ppb		Status pass	
Sensor C	omponei	nt Cell A Flow		Condi	tion 0.71 lpm		Status pass	
Sensor C	omponei	nt Cell A Press	ure	Condi	tion 692.2 mmHg		Status pass	
Sensor C	omponei	nt Cell A Tmp.		Condi	tion 30.3 C		Status pass	
Sensor C	omponei	nt Cell B Freq.		Condi	tion 91.9 kHz		Status pass	
Sensor C	omponei	nt Cell B Noise		Condi	tion 0.9 ppb		Status pass	
Sensor C	omponei	nt Cell B Flow		Condi	tion 0.69 lpm		Status pass	
Sensor Component Cell B Pressure		Condi	tion 691.9 mmHg		Status pass			
Sensor C	omponei	nt Line Loss		Condi	tion Not tested		Status pass	
Sensor C	omponei	nt System Men	no	Condi	tion		Status pass	

## **Temperature Data Form**

Mfg	Serial Number	Tag Site	T	echni	ician	Site V	isit Date	Param	eter	Owner ID	
RM Young 031771		UMA009	UMA009		Martin Valvur		11/23/2020 Temper		ature	07280	
				Mf	ġ	Fluke	Fluke Pa		arameter Temperature		
				Ser	rial Number	32751	43	Tf	er Desc. R	TD.	
				Tfer ID 012			1				
DAS 1:	DAS	5 2:		Slo	pe		1.0002	6 Inte	rcept	-0.01710	
Abs Avg Err	Abs Max Err Abs	Avg Err Abs	Max Err	x Err Cert Date			1/29/2020 CorrCoff 1.00			1.00000	
0.03	3 0.04										
UseDesc.	Test type	InputTmpRaw	InputTmp	Corr.	OutputTmpS	Signal	OutputSig	gnalEng	OSE Unit	Difference	
primary	Temp Low Range	-0.01	0.01		0.000		0.0	)	С	0.01	
primary	Temp Mid Range	23.60	23.61		0.000		23.	6	С	-0.03	
primary	Temp High Range	47.40	47.40		0.000	47.4		4	С	0.04	
Sensor Con	Sensor Component Shield C							Status	pass		
Sensor Con	nponent Blower	Condi	Condition N/A					pass			
Sensor Con	ponent Properly Sited	Condi	Condition Properly sited					us pass			
Sensor Con	ponent System Memory	)	Condi	Condition					us pass		

# Shelter Temperature Data For

Mfg	Serial Number Tag	Site	Technician	Site Visit Date	Parameter	Owner ID
Campbell	none	UMA009	Martin Valvur	11/23/2020	Shelter Temperature	none
DAS 1:	DAS 2:		Mfg	Fluke	Parameter She	Iter Temperature
Abs Avg ErrAbs0.26	s Max Err Abs Avg 0.34	Err Abs Max Err	Serial Number	3275143	Tfer Desc. RTD	)
			Tfer ID	01229		
			Slope	1.0002	6 Intercept	-0.01710
			Cert Date	1/29/202	0 CorrCoff	1.00000

UseDesc.	Test type	InputTmpRaw	InputTmpCorr.	OutputTmpSignal	OutputSignalEng	OSE Unit	Difference
primary	Temp Mid Range	21.91	21.92	0.000	21.7	С	-0.18
primary	Temp Mid Range	24.88	24.89	0.000	24.6	С	-0.34
primary	Temp Mid Range	25.87	25.88	0.000	25.6	С	-0.26
Sensor Component System Memo		Condition	Status		pass		

### Field Systems Data Form

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

Site ID UMA009	Technician Martin Valvur	Site Visit Date 11/23	3/2020
<b>G</b> <sup>1</sup> <b>G (</b> )		USGS Map	[]
Site Sponsor (agency)	EPA		
<b>Operating Group</b>	EPA	Map Scale	
AQS #		Map Date	
Meteorological Type			
Air Pollutant Analyzer	Ozone	QAPP Latitude	
<b>Deposition Measurement</b>	dry	QAPP Longitude	
Land Use		<b>QAPP Elevation Meters</b>	
Terrain		QAPP Declination	
Conforms to MLM		QAPP Declination Date	
Site Telephone		Audit Latitude	46.202975
Site Address 1		Audit Longitude	-117.954886
Site Address 2		Audit Elevation	678
County	Columbia	Audit Declination	14.2
City, State	Dayton, WA	Present	
Zip Code	99328	Fire Extinguisher	
Time Zone	Pacific	First Aid Kit	
Primary Operator		Safety Glasses	
Primary Op. Phone #		Safety Hard Hat	
Primary Op. E-mail		Climbing Belt	
Backup Operator		Security Fence	
Backup Op. Phone #		Secure Shelter	
Backup Op. E-mail		Stable Entry Steps	
Shelter Working Room ✓	Make Ekto Mo	odel 423 SP	Shelter Size
Shelter Working Room	Make Ekto Mo Notes		Shelter Size
Shelter Working Room ✓ Shelter Clean			Shelter Size

Site ID UMA009 Technician Martin Valvur Site Visit Date 11/23/2020   1 Are wind speed and direction sensors sited so as to avoid being influenced by obstructions? Image: Construction of the prevailing wind of the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind) Image: Construction of the prevailing wind of the tower or on a horizontally extended boom >2x the max diameter of the tower into the prevailing wind) Image: Construction of the prevailing wind of the tower or on a horizontally extended boom >2x the max diameter of the tower and sensors plumb? Image: Construction of the prevailing wind of the tower or on a avoid radiated heat sources such as buildings, walls, etc?   4 Are the tower and RH sensors sited to avoid unnatural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided) Image: Construction of the prevailing wind of the tower or on a horizontal to avoid shading, or any artificial or reflected light?   6 Is the solar radiation sensor plumb? Image: Construction of the tower of the tower of the tower of the tower or on a horizontal to avoid shading, or any artificial or reflected light? Image: Construction of the tower of the tower of the tower of the tower of tower o	Fi	eld Systems Data Form		F-02058-1500-S3-rev002					
<ul> <li>Are the tone prevailing wind)</li> <li>Are the tower and sensors plumb?</li> <li>Are the tower and sensors plumb?</li> <li>Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?</li> <li>Are the temperature and RH sensors should be natural conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)</li> <li>Is the solar radiation sensor plumb?</li> <li>N/A</li> <li>Is the surface wetness sensor sited with the grid surface facing north?</li> <li>N/A</li> </ul>	Site	ID UMA009 Technician Martin Valvur		Site Visit Date 11/23/2020					
<ul> <li>Are the temperature shields pointed north or positioned to avoid radiated heat sources such as buildings, walls, etc?</li> <li>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)</li> <li>Is the solar radiation sensor plumb?</li> <li>N/A</li> <li>Is it sited to avoid shading, or any artificial or reflected light?</li> <li>N/A</li> <li>Is the rain gauge plumb?</li> <li>N/A</li> <li>Is it sited to avoid sheltering effects from buildings, trees, towers, etc?</li> <li>Is the surface wetness sensor sited with the grid surface facing north?</li> </ul>	2	being influenced by obstructions? 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)							
<ul> <li>a life temperature and the following sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of standing water should be avoided)</li> <li>6 Is the solar radiation sensor plumb?</li> <li>7 Is it sited to avoid shading, or any artificial or reflected light?</li> <li>8 Is the rain gauge plumb?</li> <li>9 Is it sited to avoid sheltering effects from buildings, trees, towers, etc?</li> <li>10 Is the surface wetness sensor sited with the grid surface facing north?</li> </ul>		Are the temperature shields pointed north or positioned to							
<ul> <li>Is the solid relation sensor plants.</li> <li>Is it sited to avoid shading, or any artificial or reflected light? ✓</li> <li>N/A</li> <li>Is the rain gauge plumb?</li> <li>N/A</li> <li>Is it sited to avoid sheltering effects from buildings, trees, towers, etc?</li> <li>Is the surface wetness sensor sited with the grid surface facing north?</li> </ul>	5	conditions? (i.e. ground below sensors should be natural surface and not steeply sloped. Ridges, hollows, and areas of							
<ul> <li>8 Is the rain gauge plumb?</li> <li>9 Is it sited to avoid sheltering effects from buildings, trees, towers, etc?</li> <li>10 Is the surface wetness sensor sited with the grid surface facing north?</li> <li>N/A</li> </ul>	6	Is the solar radiation sensor 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	7	Is it sited to avoid shading, or any artificial or reflected light?		N/A					
<ul> <li>10 Is the surface wetness sensor sited with the grid surface facing north?</li> </ul>	8	Is the rain gauge plumb?	✓	N/A					
facing north?	9		✓	N/A					
11 Is it inclined approximately 30 degrees?       ✓         N/A	10			N/A					
	11	Is it inclined approximately 30 degrees?	✓	N/A					

### **Field Systems Data Form**

### F-02058-1500-S4-rev002

Site	ID	UMA009	Technician	Martin Valvur		Site Visit Date 11/23/2020			
1		e meterological senso 1, and well maintained		intact, in good		Temperature only			
2	Are all th reporting	ne meteorological sens g data?	sors operational	l online, and	✓	Temperature only			
3	Are the s	hields for the tempera	ature and RH s	ensors clean?					
4	Are the a	spirated motors work	king?		✓	N/A			
5	Is the sol scratches	ar radiation sensor's	lens clean and f	ree of		N/A			
6	Is the sur	rface wetness sensor g	grid clean and u	ndamaged?	✓	N/A			
7		ensor signal and pow , and well maintained		, in good	✓				
8		ensor signal and pow elements and well ma		tions protected					

Fi	eld Systems Data Form		F-02058-1500-S5-rev002
Site	UMA009 Technician Martin Valvur		Site Visit Date 11/23/2020
	Siting Criteria: Are the pollutant analyzers and deposition ec	luipi	nent sited in accordance with 40 CFR 58, Appendix E
1	Do the sample inlets have at least a 270 degree arc of unrestricted airflow?	✓	
2	Are the sample inlets 3 - 15 meters above the ground?	✓	
3	Are the sample inlets > 1 meter from any major obstruction, and 20 meters from trees?		
	Pollutant analyzers and deposition equipment operations and	l ma	intenance
1	Do the analyzers and equipment appear to be in good condition and well maintained?	✓	
2	Are the analyzers and monitors operational, on-line, and reporting data?	✓	
3	Describe ozone sample tube.		1/4 teflon by 10 meters
4	Describe dry dep sample tube.		3/8 teflon by 10 meters
5	Are in-line filters used in the ozone sample line? (if yes indicate location)	✓	At inlet only
6	Are sample lines clean, free of kinks, moisture, and obstructions?	✓	
7	Is the zero air supply desiccant unsaturated?	✓	
8	Are there moisture traps in the sample lines?		No
9	Is there a rotometer in the dry deposition filter line, and is it clean?	✓	

Fi	eld Sy	stems Data Fo	orm			F-02058-1500-S6-rev002			
Site	e ID	UMA009	Technician	Martin Valvur		Site Visit I	Date 11/23/2020	0	
	DAS, se	nsor translators, and	peripheral equij	pment operation	ns and	l maintenance	<u>e</u>		
1		DAS instruments appe intained?	ear to be in good	l condition and					
2		he components of the backup, etc)	DAS operation	al? (printers,					
3		nalyzer and sensor sig g protection circuitry		through					
4	4 Are the signal connections protected from the weather and well maintained?								
5	Are the	signal leads connected	l to the correct	DAS channel?					
6	Are the grounde	DAS, sensor translato ed?	ors, and shelter j	properly					
7	Does the	e instrument shelter h	ave a stable pow	ver source?					
8	Is the in	strument shelter temp	perature control	lled?					
9	Is the m	et tower stable and gr	ounded?			Stable		Grounded	
10	Is the sa	mple tower stable and	l grounded?						
11	Tower c	omments?						V	

Field Systems Data Form								F-02058-1500-S7-rev002			
Site ID	UMA009		Techn	<mark>ician</mark> Marti	n Valvur	Site Visit Date 1	1/23/202	0			
<b>Docum</b>	entation										
Does th	<u>ne site have the requ</u>	ired in	strumen	<u>t and equip</u>	oment manuals	<u>?</u>					
Temperat Relative h Solar radi Surface w Wind sens Temperat Humidity Solar radi Tipping b Ozone ana Filter pac	ection sensor sure sensor aumidity sensor iation sensor etness sensor sor translator ure translator sensor translator iation translator ucket rain gauge	Yes		N/A V V V V V V V V V V V	Computer Modem Printer Zero air p Filter flow Surge pro UPS Lightning Shelter ho	er rt recorder r pump w pump otector g protection device	Yes	No V V V V V V V V V	N/A		
	the site have the req	- -	nd mos	t recent QC	documents and	d report forms?					
		Pres	ent				Curr	ent			
Ozone z/s/	Manual										
1 Is the	e station log properl	y comp	leted du	ring every	site visit? 🔽						
2 Are t curre	the Site Status Repo ent?	rt Forn	ns being	completed	and 🗸						
	the chain-of-custody ble transfer to and fi			y used to do	ocument 🗹						
4 Are o curre	ozone z/s/p control c ent?	harts p	roperly	completed	and 🔽	Control charts not use	ed				
	ny additional explar r man-made, that ma					) regarding condition	ons listed	above,	or any other features,		

### **Field Systems Data Form**

#### UMA009 Technician Martin Valvur Site Visit Date 11/23/2020 Site ID Site operation procedures Trained by Wood during site installation Has the site operator attended a formal CASTNET training 1 course? If yes, when and who instructed? 2 Has the backup operator attended a formal CASTNET training course? If yes, when and who instructed? Is the site visited regularly on the required Tuesday ✓ 3 schedule? $\checkmark$ Are the standard CASTNET operational procedures being 4 flollowed by the site operator? Is the site operator(s) knowledgeable of, and able to perform 5 the required site activities? (including documentation)

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

QC Ch	leck ]	Perfo	rmed
-------	--------	-------	------

Mul Visu Tra Mai Con Test

#### Frequency

tipoint Calibrations	$\checkmark$	Semiannually	$\checkmark$
al Inspections	✓	Weekly	$\checkmark$
nslator Zero/Span Tests (climatronics)	$\checkmark$	N/A	$\checkmark$
uual Rain Gauge Test	$\checkmark$	N/A	$\checkmark$
firm Reasonableness of Current Values	$\checkmark$	Weekly	$\checkmark$
Surface Wetness Response	$\checkmark$	N/A	$\checkmark$

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

<b>OC</b>	Check	Performed
$\mathbf{v}$	Chiech	I CITOI IIICG

**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	
Every 2 weeks	
Daily	
Every 2 weeks	
N/A	
Weekly	
Weekly	

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

	Unknown
✓	

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

#### Compliant

Compliant

F-02058-1500-S8-rev002

### **Field Systems Data Form**

Site	ID	UMA009	Technic	ian	Martin Valvur		Site Visit Date	11/23/2020	
	Site opera	ation procedures							
1	Is the filt	er pack being changed	l every Tu	esda	ay as scheduled?				
2	Are the S correctly	Site Status Report Fori ?	ns being o	comj	pleted and filed				
3	Are data scheduled	downloads and backu d?	ps being ]	perf	ormed as		No longer required		
4	Are gene	ral observations being	made an	d re	corded? How?				
5	Are site supplies on-hand and replenished in a timely fashion?								
6	Are sample flow rates recorded? How?					✓	SSRF		
7	Are samp fashion?	ples sent to the lab on a	a regular	sche	dule in a timely				
8		rs protected from conta ping? How?	aminatior	du	ring handling		Clean gloves on and	d off	
9		ite conditions reported as manager or staff?	l regularl	y to	the field				
QC	Check Per	rformed		Fre	quency			Compliant	
N	Iulti-point	t MFC Calibrations	$\checkmark$	Sem	niannually				
F	Flow System Leak Checks								
F	Filter Pack Inspection								
F	Flow Rate Setting Checks								
V	Visual Check of Flow Rate Rotometer View								
Iı	n-line Filte	er Inspection/Replacer	nent 🗹	Wee	kly			$\checkmark$	
		e Check for Dirt/Wate		Wee	ekly				
Dear	do onv od	Iditional availantian (	nhotogra	ah a	n skotob if poos	OW	) recording conditi	and listed above on an	w other features

F-02058-1500-S9-rev002

# Field Systems Data Form F-02058-1500-S10-rev002 Site ID UMA009 Technician Martin Valvur Site Visit Date 11/23/2020

**Site Visit Sensors** 

Computer Dell Latitude H3NJJX2	07288
DAS Campbell CR6 13312	000883
Filter pack flow pump Permotec BL30EB 43220163	30446 none
Flow Rate Apex AXMC105LPMDPC illegible	000602
Modem Digi LR54 Unknown	01740
Ozone ThermoElectron Inc 49i A1ZCA 12007065	000881
Sample Tower Aluma Tower FOT-10 Unknown	none
Shelter Temperature Campbell 107-L none	none
Temperature RM Young 41342VC 031771	07280
Zero air pump Werther International C 70/4 00082915	06914

### **APPENDIX B**

**CASTNET Site Spot Report Forms** 

**Data Compiled:** 1/31/2021 11:28:26

## SiteVisitDateSiteTechnician12/07/2020ALH157Martin Valvur

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.99253	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.4139	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
4	Ozone % difference avg	Р	7	10	4	2.2	%	Р
5	Ozone Absolute Difference g1	Р	7	3	1	-0.13	ppb	Р
6	Ozone Absolute Difference g2	Р	7	1.5	1	-0.71	ppb	Р

Data Compiled: 1

1/28/2021 19:25:35

### SiteVisitDate Site Technician

10/07/2020 ANA115 Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	12	0.12	с	Р
2	Temperature max error	Р	4	0.5	12	0.23	с	Р
3	Ozone Slope	Р	0	1.1	4	1.02018	unitless	Р
4	Ozone Intercept	Р	0	5	4	0.02164	ppb	Р
5	Ozone correlation	Р	0	0.995	4	1.00000	unitless	Р
6	Ozone % difference avg	Р	7	10	4	2.1	%	Р
7	Ozone Absolute Difference g1	Р	7	3	1	-0.01	ppb	Р
8	Ozone Absolute Difference g2	Р	7	1.5	1	0.26	ppb	Р
9	Flow Rate average % difference	Р	10	5	4	0.00	%	Р
10	Flow Rate max % difference	Р	10	5	4	0.00	%	Р
11	DAS Voltage average error	Р	7	0.003	63	0.0000	V	Р
12	Shelter Temperature average error	Р	5	2	12	0.71	с	Р
13	Shelter Temperature max error	Р	5	2	12	0.89	c	Р

### **Field Systems Comments**

#### 1 Parameter: DasComments

The met tower has been removed. The DAS controls the shelter heating and cooling.

#### 2 Parameter: SiteOpsProcedures

The ozone inlet filter is changed and a Z/S/P is performed every two weeks.

#### 3 Parameter: SitingCriteriaCom

Site is confined within a fenced area that is somewhat small. There is available space adjacent to the fenced area that could be utilized to improve the instrument siting.

#### 4 Parameter: ShelterCleanNotes

The shelter is in fair condition, however somewhat cluttered.

**Data Compiled:** 1/31/2021 11:29:48

## SiteVisitDateSiteTechnician12/16/2020BFT142Korey Devins

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	1.0039	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.77559	ppb	Р
3	Ozone correlation	Р	0	0.995	4	1.00000	unitless	Р
4	Ozone % difference avg	Р	7	10	4	1.8	%	Р
5	Ozone Absolute Difference g1	Р	7	3	1	-0.85	ppb	Р
6	Ozone Absolute Difference g2	Р	7	1.5	1	-0.57	ppb	Р

**Data Compiled:** 1/31/2021 11:30:54

## SiteVisitDateSiteTechnician11/06/2020BVL130Korey Devins

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.96538	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.39174	ppb	Р
3	Ozone correlation	Р	0	0.995	4	1.00000	unitless	Р
4	Ozone % difference avg	Р	7	10	4	4.6	%	Р
5	Ozone Absolute Difference g1	Р	7	3	1	-0.37	ppb	Р
6	Ozone Absolute Difference g2	Р	7	1.5	1	-0.85	ppb	Р

**Data Compiled:** 1/31/2021 11:31:51

## SiteVisitDateSiteTechnician11/15/2020BWR139Korey Devins

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.98884	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.14904	ppb	Р
3	Ozone correlation	Р	0	0.995	4	1.00000	unitless	Р
4	Ozone % difference avg	Р	7	10	4	1.7	%	Р
5	Ozone Absolute Difference g1	Р	7	3	1	-0.05	ppb	Р
6	Ozone Absolute Difference g2	Р	7	1.5	1	-0.36	ppb	Р

**Data Compiled:** 1/29/2021 08:22:48

SiteVisitDate	Site	Technician
10/20/2020	CAT175	Korey Devins

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	21	0.09	с	Р
2	Temperature max error	Р	4	0.5	21	0.14	с	Р
3	Flow Rate average % difference	Р	10	5	6	1.04	%	Р
4	Flow Rate max % difference	Р	10	5	6	1.32	%	Р

10/20/2020 CAT175

Technician

#### Korey Devins

### **Field Performance Comments**

1 Parameter: Flow Rate SensorComponent: Moisture Present Com

CommentCode: 204

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

### **Field Systems Comments**

#### 1 Parameter: DasComments

The shelter is not temperature controlled. The site is solar and DC battery powered. The met tower has been removed and the temperature is being measured from the sample tower at 10 meters above ground.

#### 2 Parameter: DocumentationCo

The site copies of the SSRF are no longer kept onsite.

#### 3 Parameter: ShelterCleanNotes

The shelter is seriously deteriorated with rot and mold on the walls. The vegetation has been allowed to grow. The shelter roof has been repaired.

#### 4 Parameter: PollAnalyzerCom

Ozone monitoring is no longer being conducted at the site.

**Data Compiled:** 1/31/2021 11:33:02

## SiteVisitDateSiteTechnician11/13/2020CDR119Korey Devins

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.98394	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.09674	ppb	Р
3	Ozone correlation	Р	0	0.995	4	1.00000	unitless	Р
4	Ozone % difference avg	Р	7	10	4	2.0	%	Р
5	Ozone Absolute Difference g1	Р	7	3	1	0.01	ppb	Р
6	Ozone Absolute Difference g2	Р	7	1.5	1	-0.37	ppb	Р

**Data Compiled:** 1/31/2021 11:33:52

## SiteVisitDate Site Technician 12/08/2020 CDZ171 Martin Valvur

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.99764	unitless	Р
2	Ozone Intercept	Р	0	5	4	0.01650	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
4	Ozone % difference avg	Р	7	10	4	0.3	%	Р
5	Ozone Absolute Difference g1	Р	7	3	1	0.02	ppb	Р
6	Ozone Absolute Difference g2	Р	7	1.5	1	-0.02	ppb	Р

**Data Compiled:** 1/31/2021 11:35:02

## SiteVisitDateSiteTechnician11/08/2020CKT136Korey Devins

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.98431	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.25993	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
4	Ozone % difference avg	Р	7	10	4	2.7	%	Р
5	Ozone Absolute Difference g1	Р	7	3	1	0.01	ppb	Р
6	Ozone Absolute Difference g2	Р	7	1.5	1	-0.66	ppb	Р

**Data Compiled:** 1/31/2021 11:37:21

## SiteVisitDateSiteTechnician12/12/2020CND125Korey Devins

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	1.01001	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.50766	ppb	Р
3	Ozone correlation	Р	0	0.995	4	1.00000	unitless	Р
4	Ozone % difference avg	Р	7	10	4	1.0	%	Р
5	Ozone Absolute Difference g1	Р	7	3	1	-0.44	ppb	Р
6	Ozone Absolute Difference g2	Р	7	1.5	1	-0.39	ppb	Р

**Data Compiled:** 1/28/2021

1/28/2021 19:42:36

### SiteVisitDate Site Technician

10/07/2020 DEN417 Martin Valvur

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature2meter average error	Р	5	0.5	3	0.07	с	Р
2	Temperature2meter max error	Р	5	0.5	3	0.10	с	Р
3	Ozone Slope	Р	0	1.1	4	0.98810	unitless	Р
4	Ozone Intercept	Р	0	5	4	0.66287	ppb	Р
5	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
6	Ozone % difference avg	Р	7	10	4	1.4	%	Р
7	Ozone Absolute Difference g1	Р	7	3	1	0.66	ppb	Р
8	Ozone Absolute Difference g2	Р	7	1.5	1	0.55	ppb	Р
9	Flow Rate average % difference	Р	10	5	9	0.48	%	Р
10	Flow Rate max % difference	Р	10	5	9	0.70	%	Р
11	DAS Voltage average error	Р	4	0.003	84	0.0002	V	Р
12	Shelter Temperature average error	Р	5	2	21	0.60	с	Р
13	Shelter Temperature max error	Р	5	2	21	0.74	с	Р

### **Field Systems Comments**

#### 1 Parameter: SiteOpsProcComm

The site operator uses one gloved hand, and the same glove, to remove and install the filter pack. Leak checks are performed when the ambient temperature is above -10 C.

#### 2 Parameter: ShelterCleanNotes

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

**Data Compiled:** 1/29/2021 10:23:49

### SiteVisitDate Site Technician

11/14/2020 DEV412 Martin Valvur

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	3	1.57	с	Fail
2	Temperature max error	Р	4	0.5	3	3.72	c	Fail
3	Ozone Slope	Р	0	1.1	4	0.98540	unitless	Р
4	Ozone Intercept	Р	0	5	4	-0.23248	ppb	Р
5	Ozone correlation	Р	0	0.995	4	1.00000	unitless	Р
6	Ozone % difference avg	Р	7	10	4	2.4	%	Р
7	Ozone Absolute Difference g1	Р	7	3	1	-0.05	ppb	Р
8	Ozone Absolute Difference g2	Р	7	1.5	1	-0.52	ppb	Р
9	DAS Voltage average error	Р	16	0.003	14	0.0002	V	Р
10	Shelter Temperature average error	Р	5	2	3	0.06	c	Р
11	Shelter Temperature max error	Р	5	2	3	0.07	с	Р

11/14/2020 DEV412

Technician

#### Martin Valvur

### **Field Performance Comments**

1 Parameter: Temperature SensorComponent: Properly Sited

CommentCode: 190

This sensor is not mounted as stated in the QAPP with respect to orientation.

### **Field Systems Comments**

1 Parameter: SiteOpsProcComm

Dry deposition samples are not collected at this site.

#### 2 Parameter: MetSensorComme

The temperature and humidity combination sensor is mounted in a non-aspirated shield on the south side of the tower. The sensor cannot be submerged and therefore was only challenged in air side-by-side with the RTD standard. Audit results are not comparable with other submergible sensors.

Data Compiled:

1/29/2021 08:45:35

### SiteVisitDate Site Technician

10/16/2020 ESP127 Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	6	0.14	с	Р
2	Temperature max error	Р	4	0.5	6	0.33	с	Р
3	Ozone Slope	Р	0	1.1	4	0.96253	unitless	Р
4	Ozone Intercept	Р	0	5	4	0.43361	ppb	Р
5	Ozone correlation	Р	0	0.995	4	1.00000	unitless	Р
6	Ozone % difference avg	Р	7	10	4	2.7	%	Р
7	Ozone Absolute Difference g1	Р	7	3	1	0.54	ppb	Р
8	Ozone Absolute Difference g2	Р	7	1.5	1	-0.26	ppb	Р
9	Flow Rate average % difference	Р	10	5	3	0.66	%	Р
10	Flow Rate max % difference	Р	10	5	3	0.66	%	Р
11	DAS Voltage average error	Р	7	0.003	84	0.0001	V	Р
12	Shelter Temperature average error	Р	5	2	12	0.59	c	Р
13	Shelter Temperature max error	Р	5	2	12	0.82	c	Р

### **Field Systems Comments**

#### 1 Parameter: DocumentationCo

The chain-of-custody section of the SSRF is not being completed by the site operator.

#### 2 Parameter: ShelterCleanNotes

The shelter has been improved since the previous audit, however there is still some rot in the walls.

**Data Compiled:** 1/31/2021 11:38:25

## SiteVisitDate Site Technician 10/14/2020 GRS420 Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.97265	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.03298	ppb	Р
3	Ozone correlation	Р	0	0.995	4	1.00000	unitless	Р
4	Ozone % difference avg	Р	7	10	4	2.7	%	Р
5	Ozone Absolute Difference g1	Р	7	3	1	-0.02	ppb	Р
6	Ozone Absolute Difference g2	Р	7	1.5	1	-0.29	ppb	Р

Data Compiled: 1/

1/28/2021 18:51:03

### SiteVisitDate Site Technician

10/03/2020 HOX148 Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	12	0.22	с	Р
2	Temperature max error	Р	4	0.5	12	0.28	с	Р
3	Ozone Slope	Р	0	1.1	4	0.98482	unitless	Р
4	Ozone Intercept	Р	0	5	4	0.16381	ppb	Р
5	Ozone correlation	Р	0	0.995	4	1.00000	unitless	Р
6	Ozone % difference avg	Р	7	10	4	1.2	%	Р
7	Ozone Absolute Difference g1	Р	7	3	1	0.25	ppb	Р
8	Ozone Absolute Difference g2	Р	7	1.5	1	-0.12	ppb	Р
9	Flow Rate average % difference	Р	10	5	2	0.88	%	Р
10	Flow Rate max % difference	Р	10	5	2	1.32	%	Р
11	DAS Voltage average error	Р	7	0.003	77	0.0000	V	Р
12	Shelter Temperature average error	Р	5	2	12	1.16	с	Р
13	Shelter Temperature max error	Р	5	2	12	1.18	c	Р

### **Field Systems Comments**

#### 1 Parameter: SiteOpsProcedures

The ozone analyzer sample inlet filter is replaced and a Z/S/P check is performed every two weeks.

#### 2 Parameter: SitingCriteriaCom

There is a co-generating and smelting facility in Cadillac approximately 30 km to the northeast. The site is located in a hay field which is cut 2 or 3 times per year.

#### 3 Parameter: ShelterCleanNotes

The shelter has been repaired since the previous audit visit.

#### 4 Parameter: MetSensorComme

Met tower removed and temperature installed in naturally aspirated shield on the west leg of the sample tower.

#### 5 Parameter: MetOpMaintCom

The signal cables are showing signs of wear with the outer insulation missing in a few places.

**Data Compiled:** 1/29/2021 09:54:43

SiteVisitDate Site Technician

11/13/2020 JOT403 Martin Valvur

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature2meter average error	Р	5	0.5	3	0.20	с	Р
2	Temperature2meter max error	Р	5	0.5	3	0.30	c	Р
3	Ozone Slope	Р	0	1.1	4	0.98833	unitless	Р
4	Ozone Intercept	Р	0	5	4	0.15462	ppb	Р
5	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
6	Ozone % difference avg	Р	7	10	4	0.9	%	Р
7	Ozone Absolute Difference g1	Р	7	3	1	0.33	ppb	Р
8	Ozone Absolute Difference g2	Р	7	1.5	1	-0.01	ppb	Р
9	Flow Rate average % difference	Р	10	5	12	0.35	%	Р
10	Flow Rate max % difference	Р	10	5	12	0.64	%	Р
11	DAS Voltage average error	Р	15	0.003	63	0.0003	V	Р
12	Shelter Temperature average error	Р	5	2	21	0.15	с	Р
13	Shelter Temperature max error	Р	5	2	21	0.26	с	Р

11/13/2020 JOT403

Technician Martin Valvur

### **Field Performance Comments**

1Parameter:Flow RateSensorComponent:Filter PositionCommentCode:71

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

2 Parameter: Ozone SensorComponent: Cell B Freq.

CommentCode: 99

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

### **Field Systems Comments**

1 Parameter: DocumentationCo

Hardcopies of manuals and documentation are no longer maintained on site. All information is maintained on the internet.

2 Parameter: ShelterCleanNotes

The shelter is in good condition, clean and well organized but not grounded.

**Data Compiled:** 1/31/2021 11:39:29

## SiteVisitDateSiteTechnician11/07/2020MCK131Korey Devins

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.97873	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.57646	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
4	Ozone % difference avg	Р	7	10	4	3.8	%	Р
5	Ozone Absolute Difference g1	Р	7	3	1	-0.44	ppb	Р
6	Ozone Absolute Difference g2	Р	7	1.5	1	-0.78	ppb	Р

**Data Compiled:** 1/31/2021 11:40:27

## SiteVisitDateSiteTechnician11/07/2020MCK231Korey Devins

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.99707	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.65291	ppb	Р
3	Ozone correlation	Р	0	0.995	4	1.00000	unitless	Р
4	Ozone % difference avg	Р	7	10	4	2.0	%	Р
5	Ozone Absolute Difference g1	Р	7	3	1	-0.7	ppb	Р
6	Ozone Absolute Difference g2	Р	7	1.5	1	-0.53	ppb	Р

**Data Compiled:** 1/31/2021 11:41:24

## SiteVisitDate Site Technician 11/02/2020 0XF122 Korey Devins

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.99756	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.36609	ppb	Р
3	Ozone correlation	Р	0	0.995	4	1.00000	unitless	Р
4	Ozone % difference avg	Р	7	10	4	1.4	%	Р
5	Ozone Absolute Difference g1	Р	7	3	1	-0.34	ppb	Р
6	Ozone Absolute Difference g2	Р	7	1.5	1	-0.41	ppb	Р

**Data Compiled:** 1/31/2021 11:42:25

# SiteVisitDateSiteTechnician11/12/2020PAR107Korey Devins

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.98329	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.77807	ppb	Р
3	Ozone correlation	Р	0	0.995	4	1.00000	unitless	Р
4	Ozone % difference avg	Р	7	10	4	3.9	%	Р
5	Ozone Absolute Difference g1	Р	7	3	1	-0.88	ppb	Р
6	Ozone Absolute Difference g2	Р	7	1.5	1	-1.02	ppb	Р

**Data Compiled:** 1/31/2021 11:43:31

# SiteVisitDateSiteTechnician12/06/2020PED108Korey Devins

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.97700	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.03784	ppb	Р
3	Ozone correlation	Р	0	0.995	4	1.00000	unitless	Р
4	Ozone % difference avg	Р	7	10	4	2.4	%	Р
5	Ozone Absolute Difference g1	Р	7	3	1	0.00	ppb	Р
6	Ozone Absolute Difference g2	Р	7	1.5	1	-0.38	ppb	Р

Data Compiled: 1/

1/29/2021 10:41:55

#### SiteVisitDate Site Technician

11/15/2020 PNF126 Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	9	0.19	c	Р
2	Temperature max error	Р	4	0.5	9	0.23	с	Р
3	Ozone Slope	Р	0	1.1	4	1.00058	unitless	Р
4	Ozone Intercept	Р	0	5	4	0.08738	ppb	Р
5	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
6	Ozone % difference avg	Р	7	10	4	0.3	%	Р
7	Ozone Absolute Difference g1	Р	7	3	1	0.02	ppb	Р
8	Ozone Absolute Difference g2	Р	7	1.5	1	0.00	ppb	Р
9	Flow Rate average % difference	Р	10	5	6	4.46	%	Р
10	Flow Rate max % difference	Р	10	5	6	4.46	%	Р
11	DAS Voltage average error	Р	7	0.003	84	0.0001	V	Р
12	Shelter Temperature average error	Р	5	2	18	0.61	с	Р
13	Shelter Temperature max error	Р	5	2	18	1.1	c	Р

## **Field Systems Comments**

#### 1 Parameter: SiteOpsProcComm

The site operator was not available for the systems audit. The reported information was obtained from the site log and site documentation.

#### 2 Parameter: DasComments

The sample towers are not grounded.

#### 3 Parameter: SitingCriteriaCom

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

4 Parameter: ShelterCleanNotes

The shelter is in fair condition.

**Data Compiled:** 1/31/2021 11:44:52

# SiteVisitDateSiteTechnician11/09/2020QAK172Korey Devins

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.97826	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.27934	ppb	Р
3	Ozone correlation	Р	0	0.995	4	1.00000	unitless	Р
4	Ozone % difference avg	Р	7	10	4	3.1	%	Р
5	Ozone Absolute Difference g1	Р	7	3	1	-0.24	ppb	Р
6	Ozone Absolute Difference g2	Р	7	1.5	1	-0.63	ppb	Р

Data Compiled: 1

1/29/2021 09:15:39

### SiteVisitDate Site Technician

11/04/2020 SAL133 Korey Devins

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	12	0.20	с	Р
2	Temperature max error	Р	4	0.5	12	0.43	с	Р
3	Ozone Slope	Р	0	1.1	4	0.99920	unitless	Р
4	Ozone Intercept	Р	0	5	4	-0.32976	ppb	Р
5	Ozone correlation	Р	0	0.995	4	1.00000	unitless	Р
6	Ozone % difference avg	Р	7	10	4	1.2	%	Р
7	Ozone Absolute Difference g1	Р	7	3	1	-0.3	ppb	Р
8	Ozone Absolute Difference g2	Р	7	1.5	1	-0.45	ppb	Р
9	Flow Rate average % difference	Р	10	5	4	0.00	%	Р
10	Flow Rate max % difference	Р	10	5	4	0.00	%	Р
11	DAS Voltage average error	Р	7	0.003	77	0.0001	V	Р
12	Shelter Temperature average error	Р	5	2	18	0.31	с	Р
13	Shelter Temperature max error	Р	5	2	18	0.60	с	Р

11/04/2020 SAL133

Technician

#### Korey Devins

## **Field Performance Comments**

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

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

## Field Systems Comments

**1 Parameter:** SiteOpsProcedures

The ozone inlet filter is replaced and a zero/span/precision test is performed every two weeks.

2 Parameter: SitingCriteriaCom

The site is located next to a field usually planted with corn or soy beans.

3 Parameter: ShelterCleanNotes

The shelter is in fair condition, ants are present. It is clean, neat, and well organized.

4 Parameter: MetOpMaintCom

The temperature signal cable is showing signs of wear.

**Data Compiled:** 1/31/2021 11:46:02

# SiteVisitDateSiteTechnician10/22/2020SAN189Martin Valvur

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	1.00548	unitless	Р
2	Ozone Intercept	Р	0	5	4	0.03634	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
4	Ozone % difference avg	Р	7	10	4	1.1	%	Р
5	Ozone Absolute Difference g1	Р	7	3	1	-0.15	ppb	Р
6	Ozone Absolute Difference g2	Р	7	1.5	1	0.41	ppb	Р

Data Compiled: 1/28

1/28/2021 20:00:43

#### SiteVisitDate Site Technician

10/12/2020 SPD111 Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	18	0.10	с	Р
2	Temperature max error	Р	4	0.5	18	0.18	с	Р
3	Ozone Slope	Р	0	1.1	4	0.98127	unitless	Р
4	Ozone Intercept	Р	0	5	4	-0.93412	ppb	Р
5	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
6	Ozone % difference avg	Р	7	10	4	5.1	%	Р
7	Ozone Absolute Difference g1	Р	7	3	1	-0.93	ppb	Р
8	Ozone Absolute Difference g2	Р	7	1.5	1	-1.46	ppb	Р
9	Flow Rate average % difference	Р	10	5	2	4.66	%	Р
10	Flow Rate max % difference	Р	10	5	2	5.06	%	Fail
11	DAS Voltage average error	Р	7	0.003	77	0.0002	V	Р
12	Shelter Temperature average error	Р	5	2	18	1.43	с	Р
13	Shelter Temperature max error	Р	5	2	18	1.67	c	Р

## **Field Systems Comments**

#### 1 Parameter: DasComments

The sample tower is an older Type A tower and some small cracks are present in the tower legs. The tower clamps are very rusty. The site operator mentioned that the tower is scheduled for replacement. It was discussed that the new tower should not impact the NADP equipment. The current tower location is meeting NADP siting criteria.

#### 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.

#### 4 Parameter: MetOpMaintCom

The temperature signal wire was found to be loose and the signal was intermittent. The signal wire was tightened during the audit.

**Data Compiled:** 1/31/2021 11:47:04

# SiteVisitDate Site Technician 11/18/2020 STK138 Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.99445	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.39568	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
4	Ozone % difference avg	Р	7	10	4	1.9	%	Р
5	Ozone Absolute Difference g1	Р	7	3	1	-0.28	ppb	Р
6	Ozone Absolute Difference g2	Р	7	1.5	1	-0.57	ppb	Р

Data Compiled: 1/2

1/29/2021 11:20:40

### SiteVisitDate Site Technician

11/23/2020 UMA009 Martin Valvur

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	3	0.03	с	Р
2	Temperature max error	Р	4	0.5	3	0.04	с	Р
3	Ozone Slope	Р	0	1.1	4	1.01124	unitless	Р
4	Ozone Intercept	Р	0	5	4	0.04290	ppb	Р
5	Ozone correlation	Р	0	0.995	4	1.00000	unitless	Р
6	Ozone % difference avg	Р	7	10	4	1.4	%	Р
7	Ozone Absolute Difference g1	Р	7	3	1	-0.05	ppb	Р
8	Ozone Absolute Difference g2	Р	7	1.5	1	0.28	ppb	Р
9	Flow Rate average % difference	Р	10	5	3	0.66	%	Р
10	Flow Rate max % difference	Р	10	5	3	0.66	%	Р
11	Shelter Temperature average error	Р	5	2	3	0.26	с	Р
12	Shelter Temperature max error	Р	5	2	3	0.34	с	Р

Data Compiled: 1/

1/28/2021 19:09:03

#### SiteVisitDate Site Technician

10/06/2020 UVL124 Eric Hebert

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Temperature average error	Р	4	0.5	18	0.14	с	Р
2	Temperature max error	Р	4	0.5	18	0.19	с	Р
3	Ozone Slope	Р	0	1.1	4	0.95010	unitless	Р
4	Ozone Intercept	Р	0	5	4	-2.66192	ppb	Р
5	Ozone correlation	Р	0	0.995	4	0.99997	unitless	Р
6	Ozone % difference avg	Р	7	10	4	13.9	%	Fail
7	Ozone Absolute Difference g1	Р	7	3	1	-2.19	ppb	Р
8	Ozone Absolute Difference g2	Р	7	1.5	1	-3.53	ppb	Fail
9	Flow Rate average % difference	Р	10	5	4	0.66	%	Р
10	Flow Rate max % difference	Р	10	5	4	0.66	%	Р
11	DAS Voltage average error	Р	7	0.003	84	0.0001	V	Р
12	Shelter Temperature average error	Р	5	2	18	0.24	с	Р
13	Shelter Temperature max error	Р	5	2	18	0.68	c	Р

## **Field Systems Comments**

1 Parameter: SiteOpsProcedures

Ozone sample train leak-check performed every two weeks.

2 Parameter: SitingCriteriaCom

The site is located in an active agriculture field usually planted with beans or corn.

3 Parameter: ShelterCleanNotes

The shelter is clean and in good condition.

4 Parameter: MetOpMaintCom

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

**Data Compiled:** 1/31/2021 11:48:04

# SiteVisitDateSiteTechnician12/04/2020VIN140Korey Devins

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	1.00141	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.00927	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99999	unitless	Р
4	Ozone % difference avg	Р	7	10	4	0.3	%	Р
5	Ozone Absolute Difference g1	Р	7	3	1	0.07	ppb	Р
6	Ozone Absolute Difference g2	Р	7	1.5	1	0.08	ppb	Р

**Data Compiled:** 1/31/2021 11:53:14

# SiteVisitDate Site Technician 11/10/2020 VPI120 Korey Devins

Line	Audited Parameter	DAS	Ch. #	Criteria +/-	Counts	QaResult	Units	Pass/Fail
1	Ozone Slope	Р	0	1.1	4	0.96927	unitless	Р
2	Ozone Intercept	Р	0	5	4	-0.54355	ppb	Р
3	Ozone correlation	Р	0	0.995	4	0.99998	unitless	Р
4	Ozone % difference avg	Р	7	10	4	4.6	%	Р
5	Ozone Absolute Difference g1	Р	7	3	1	-0.44	ppb	Р
6	Ozone Absolute Difference g2	Р	7	1.5	1	-0.84	ppb	Р

### **APPENDIX C**

**CASTNET Ozone Performance Evaluation Forms** 

Site Visit D	ate Parameter	Mfg	Owner ID	Model Number	Serial Number
GRS420-Er	ic Hebert-10/14/2020				
1 10/14/2	020 DAS	Environmental Sys Corp	GRSM-LR	8864	C2599
2 10/14/2	020 Ozone	ThermoElectron Inc	none	49i A3NAA	1023943903
3 10/14/2	020 Ozone Standard	ThermoElectron Inc	none	49i A1NAA	1130450193
4 10/14/2	020 Zero air pump	Werther International	none	PC70/4	531385

Mfg		Serial Numbe	r Tag Site		Techn	iician	Site Visit Date	Parame	eter	Owner ID
ThermoElec	tron Inc	1023943903	GRS420	)	Eric ⊢	lebert	10/14/2020	Ozone		none
Slope: Intercept		0.97265 Slop 0.03298 Inter		D.00000 D.00000	Mi Se	fg rial Number	ThermoElectron			er ozone
CorrCoff:		1.00000 <b>Corr</b>	Coff:	0.0000	Tf	er ID	01115			
DAS 1:			AS 2:		Slo	ope	0.994	0 Inter	cept	0.32220
_	Diff: A N D%	<b>1ax % Dif A</b> 0.0%	Avg %Diff A	Max % Dif	r 7 Ce	ert Date	1/14/202	20 Corr	Coff	0.99999
				<b>—</b> ———————————————————————————————————		~.			<b>- 1</b>	
UseDescri		ConcGroup	Tfer Raw 0.25	Tfer Co -0.07	orr	Site -0.09	Site Unit ppb	RelPer	Dif	AbsDif -0.02
primai primai	•	2	15.33	-0.07			ppb			-0.02
prima	•	3	36.13	35.99			ppb		-3.39	0.2)
prima		4	64.64	64.64		62.78	ppb		-2.92	
prima		5	106.97	107.19		104.30	ppb		-2.73	
Sensor C	ompone	nt Audit Pressu	ire	Con	dition	693 mmHg		Status	pass	
Sensor C	ompone	nt Sample Trai	n	Con	dition	Good		Status	pass	
Sensor C	ompone	nt Minimum dis	stance from road	I met Con	dition	True		Status	pass	
Sensor C	ompone	nt Inlet Filter C	ondition	Con	dition	Moderately clea	an	Status	pass	
Sensor C	ompone	nt 26.6 degree	unobstructed ru	le Con	dition	True		Status	pass	
Sensor C	ompone	nt Tree dewline	e >10m or below	inlet Con	dition	True		Status	pass	
Sensor C	ompone	nt Offset		Con	dition	0.000		Status	pass	
Sensor C	ompone	nt Span		Con	dition	1.001		Status	pass	
Sensor C	ompone	nt Zero Voltage	9	Con	dition	N/A		Status	pass	
Sensor C	ompone	nt Fullscale Vo	Itage	Con	dition	N/A		Status	pass	
Sensor C	ompone	nt Cell A Freq.		Con	dition	63.8 kHz		Status	pass	
Sensor C	ompone	nt Cell A Noise		Con	dition	0.6 ppb		Status	pass	
Sensor C	ompone	nt Cell A Flow		Con	dition	0.64 lpm		Status	pass	
Sensor C	ompone	nt Cell A Press	ure	Con	dition	684.0 mmHg		Status	pass	
Sensor C	ompone	nt Cell A Tmp.			dition			Status	pass	
Sensor C	ompone	nt Cell B Freq.		Con	dition	71.6 kHz		Status	pass	
Sensor C	ompone	nt Cell B Noise		Con	dition	0.7 ppb		Status	pass	
Sensor C	ompone	nt Cell B Flow		Con	dition	0.68 lpm		Status	pass	
Sensor C	ompone	nt Cell B Press	ure	Con	dition	683.7 mmHg		Status	pass	
Sensor C	ompone	nt Line Loss		Con	dition	Not tested		Status	pass	
Sensor C	ompone	nt System Men	no	Con	dition			Status	pass	

Site	te Visit Date Parameter		Mfg	Ifg Owner ID		Serial Number
SAN	189-Martin	v Valvur-10/22/2020				
1	10/22/2020	DAS	Campbell	000360	CR3000	2138
2	10/22/2020	Ozone	ThermoElectron Inc	000685	49i A1NAA	1030244789
3	10/22/2020	Ozone Standard	ThermoElectron Inc	000367	49i A3NAA	0726124683
4	10/22/2020	Zero air pump	Werther International	06875	C 70/4	000814272

ThermoElectror	n Inc 1					hnician	Site Visit Date			<b>Owner ID</b>
_	J L	1030244789	SAN18	9	Ma	irtin Valvur	10/22/2020	Ozone		000685
Slope: Intercept CorrCoff: DAS 1:	0.0	DA	Coff:	0.00000		Mfg Serial Number Tfer ID Slope	ThermoElectron 49CPS-70008-3 01110 1.0026	64 <b>Tf</b>	er Deso	ozone         Ozone primary stan         0.03590
<b>A Avg % Diff:</b> 0.0%		0.0%		VIAX 7		Cert Date	1/14/20	20 Corr	Coff	0.99999
UseDescription primary primary primary primary	on (	ConcGroup 1 2 3 4	Tfer Raw 0.11 14.90 37.76 65.60		er Corr 0.07 14.82 37.62 55.39	Site           -0.08           15.23           37.91           65.55	Site Unit ppb ppb ppb ppb	RelPer	Dif 0.77 0.24	AbsDif -0.15 0.41
primary		5	114.00	1	13.66	114.40	ppb		0.65	
Sensor Com	ponent	Audit Pressu	ire		Conditio	n 724.7 mmHg		Status	pass	
Sensor Com	ponent	Sample Trai	n		Conditio	n Good		Status	pass	
Sensor Com	ponent	t Minimum dis	tance from road	d met	Conditio	n True		Status	pass	
Sensor Com	ponent	Inlet Filter C	ondition		Conditio	n Clean		Status	pass	
Sensor Com	ponent	26.6 degree	unobstructed ru	ule	Conditio	n True		Status	pass	
Sensor Com	ponent	Tree dewline	e >10m or belov	v inlet	Conditio	n True		Status	pass	
Sensor Com	ponent	Offset			Conditio	<b>n</b> 0.000		Status	pass	
Sensor Com	ponent	Span			Conditio	n 1.023		Status	pass	
Sensor Com	ponent	Zero Voltage	)		Conditio	n N/A		Status	pass	
Sensor Com	ponent	Fullscale Vo	ltage		Conditio	n N/A		Status	pass	
Sensor Com	ponent	Cell A Freq.			Conditio	94.3 kHz		Status	pass	
Sensor Com	ponent	Cell A Noise			Conditio	<b>n</b> 0.9 ppb		Status	pass	
Sensor Com	ponent	Cell A Flow			Conditio	<b>n</b> 0.69 lpm		Status	pass	
Sensor Com	ponent	Cell A Press	ure		Conditio	n 691.7 mmHg		Status	pass	
Sensor Com	ponent	Cell A Tmp.			Conditio	<b>n</b> 32.4 C		Status	pass	
Sensor Com	ponent	Cell B Freq.			Conditio	93.8 kHz		Status	pass	
Sensor Com	ponent	Cell B Noise			Conditio	on 0.8 ppb		Status	pass	
Sensor Com	ponent	Cell B Flow			Conditio	n 0.68 lpm		Status	pass	
Sensor Com	ponent	Cell B Press	ure		Conditio	<b>n</b> 691.1 mmHg		Status	pass	
Sensor Com	ponent	Line Loss			Conditio	n Not tested		Status	pass	
Sensor Com	ponent	System Men	10		Conditio	on		Status	pass	

Site	ite Visit Date Parameter		Mfg Owner ID		Model Number	Serial Number
OXF	122-Korey	Devins-11/02/2020				
1	11/2/2020	DAS	Campbell	000425	CR3000	2528
2	11/2/2020	Ozone	ThermoElectron Inc	000610	49i A1NAA	1009241778
3	11/2/2020	Ozone Standard	ThermoElectron Inc	000545	49i A3NAA	0929938241
4	11/2/2020	Zero air pump	Werther International	06908	C 70/4	000821900

ThermoElectron Inc       1009241778       OXF122       Korey Devins       11/02/2020       Ozone         Slope:       0.99756       Slope:       0.00000       Mfg       ThermoElectron Inc       Parameter         Intercept       -0.36609       Intercept       0.00000       Serial Number       1180030022       Tfer Desc         CorrCoff:       1.00000       CorrCoff:       0.00000       Tfer ID       01114         DAS 1:       DAS 2:       Slope       0.99950       Intercept         A Avg % Diff:       A Avg %Diff       A Max % Dif       Cert Date       1/14/2020       CorrCoff	000610 pr ozone Ozone primary stan 0.29010 0.99999 AbsDif
Stope:         0.39730         Stope:         0.00000         Stope:         0.00000         Stope:         0.00000         Serial Number         1180030022         Tfer Desc           Intercept         -0.36609         Intercept         0.00000         Serial Number         1180030022         Tfer Desc           CorrCoff:         1.00000         CorrCoff:         0.00000         Serial Number         1180030022         Tfer Desc           DAS 1:         DAS 2:         Slope         0.99950         Intercept           A Avg % Diff:         A Avg %Diff         A Max % Dif         Slope         1/14/2020         CorrCoff:	0zone primary stan 0.29010 0.99999
DAS 1:     DAS 2:     Slope     0.99950     Intercept       A Avg % Diff: A Max % Dif     A Avg % Diff     A Max % Dif     Correct Data     1/14/2020     Correct Data	0.99999
	AbsDif
UseDescription         ConcGroup         Tfer Raw         Tfer Corr         Site         Site Unit         RelPerDif           primary         1         0.44         0.14         -0.20         ppb            primary         2         15.10         14.81         14.40         ppb            primary         3         34.71         34.43         33.86         ppb         -1.67           primary         4         66.36         66.10         65.73         ppb         -0.56	-0.34 -0.41
primary 5 109.83 109.59 108.90 ppb -0.63	
Sensor ComponentAudit PressureCondition742.5 mmHgStatuspassSensor ComponentSample TrainConditionGoodStatuspass	
Sensor Component         Minimum distance from road met         Condition         True         Status         pass	
Sensor Component         Inlet Filter Condition         Condition         Clean         Status         pass	
Sensor Component         26.6 degree unobstructed rule         Condition         True         Status         pass	
Sensor Component Tree dewline >10m or below inlet Condition True Status pass	
Sensor Component Offset Condition 0.10 Status pass	
Sensor Component     Span     Condition     1.030     Status     pass	
Sensor Component     Zero Voltage     Condition     N/A     Status     pass	
Sensor Component         Fullscale Voltage         Condition         N/A         Status         pass	
Sensor Component         Cell A Freq.         Condition         121.6 kHz         Status         pass	
Sensor Component         Cell A Noise         Condition         0.6 ppb         Status         pass	
Sensor Component         Cell A Flow         Condition         0.59 lpm         Status         pass	
Sensor Component         Cell A Pressure         Condition         709.2 mmHg         Status         pass	
Sensor Component     Cell A Tmp.       Condition     33.2 C       Status     pass	
Sensor Component     Cell B Freq.     Condition     99.9 kHz     Status     pass	
Sensor Component       Cell B Noise         Condition       0.8 ppb         Status       pass	
Sensor Component       Cell B Pressure       Condition       709.8 mmHg       Status       pass	
Sensor Component         Line Loss         Condition         Not tested         Status         pass	
Sensor Component         System Memo         Condition         Status         pass	

Site	te Visit Date Parameter		Mfg Owner ID		Model Number	Serial Number
BVL	130-Korey	Devins-11/06/2020				
1	11/6/2020	DAS	Campbell	000332	CR3000	2111
2	11/6/2020	Ozone	ThermoElectron Inc	000739	49i A1NAA	1105347318
3	11/6/2020	Ozone Standard	ThermoElectron Inc	000512	49i A3NAA	0922236890
4	11/6/2020	Zero air pump	Werther International	06926	PC70/4	000836218

Mfg	Serial Number	r Tag Site	Т	echnician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1105347318	BVL130	ł	Korey Devins	11/06/2020	Ozone	000739
Intercept	0.96538 Slope 0.39174 Inter 1.00000 Corr	cept 0	0.00000 0.00000 0.00000	Mfg Serial Number Tfer ID	ThermoElectron 1180030022 01114		er ozone c. Ozone primary stan
DAS 1: A Avg % Diff: A N 0.0%		AS 2: Avg %Diff A	Max % Dif	Slope Cert Date	0.9995		0.29010
UseDescription primary primary primary primary primary	ConcGroup 1 2 3 4 5 L A dia December 1	Tfer Raw           0.43           14.86           35.35           67.87           111.64	Tfer Corr 0.13 14.57 35.07 67.61 111.40	Site           -0.24           13.72           33.40           64.82           107.20	Site Unit ppb ppb ppb ppb ppb	RelPerDif -4.88 -4.21 -3.84	
Sensor Compone Sensor Compone Sensor Compone Sensor Compone	nt Sample Trair nt Minimum dis	ו tance from road	met Condi	tion 747.7 mmHg tion Good tion True tion Clean		StatuspassStatuspassStatuspassStatuspass	
Sensor Compone Sensor Compone Sensor Compone	nt Tree dewline		inlet Condi	tion True tion True tion 0.000		Status pass Status pass Status pass	
Sensor Compone Sensor Compone	nt Span nt Zero Voltage		Condi	tion 0.973 tion N/A		Status pass Status pass	
Sensor Compone Sensor Compone Sensor Compone	nt Cell A Freq.	tage	Condi	tion N/A tion 99.5 kHz tion 0.8 ppb		StatuspassStatuspassStatuspass	
Sensor Compone Sensor Compone	nt Cell A Flow	ure	Condi	tion 0.69 lpm tion 722.6 mmHg		Status pass Status pass	
Sensor Compone Sensor Compone	nt Cell B Freq.		Condi	tion 36.4 C tion 98.7 kHz		Status pass	
Sensor Compone Sensor Compone Sensor Compone	nt Cell B Flow	ure	Condi	tion 0.3 ppb tion 0.72 lpm tion 723.6 mmHg		StatuspassStatuspassStatuspass	
Sensor Compone Sensor Compone	nt Line Loss			tion Not tested		Status pass Status pass	

Site	Site Visit Date Parameter		Mfg	Owner ID	Model Number	Serial Number
МСК	131-Korey	v Devins-11/07/2020				
1	11/7/2020	DAS	Campbell	000429	CR3000	2535
2	11/7/2020	Ozone	ThermoElectron Inc	000613	49i A1NAA	1009241783
3	11/7/2020	Ozone Standard	ThermoElectron Inc	000366	49i A3NAA	0726124695
4	11/7/2020	Zero air pump	Werther International	06911	PC70/4	000829167

Mfg		Serial Numbe	er Tag Site		Tecl	hnician	Site Visit Date	Parame	eter	Owner ID
ThermoElec	tron Inc	1009241783	MCK13	1	Kor	ey Devins	11/07/2020	Ozone		000613
Slope: Intercept CorrCoff:	-		rcept	0.00000 0.00000 0.00000	5	Mfg Serial Number Tfer ID	ThermoElectron 1180030022 01114			er ozone
	oiff: AN		AS 2: Avg %Diff A	. Max % Di	f	Slope Cert Date	0.9995		•	0.29010
UseDescr prima prima prima prima	iption ry ry ry	ConcGroup 1 2 3 4	Tfer Raw 0.44 15.50 35.67 68.72	Tfer Co 0.14 15.21 35.39 68.46		Site           -0.30           14.43           33.77           66.30	Site Unit ppb ppb ppb ppb	RelPer	Dif -4.68 -3.21	AbsDif -0.44 -0.78
prima		5	108.46	108.22		105.50	ppb		-2.55	
Sensor C	ompone	nt Audit Pressu	ure	Con	ditio	<mark>n</mark> 741.5 mmHg		Status	pass	
Sensor C	ompone	nt Sample Trai	'n	Con	ditio	n Good		Status	pass	
	_		stance from roa	d met Con	ditio	n True		Status	pass	
	_	nt Inlet Filter C				n Moderately clea	an	Status		
	•									
	•		unobstructed ru			n True		Status	[	
Sensor C	ompone	nt Tree dewline	e >10m or belov	v inlet Con	ditio	n True		Status	pass	
Sensor C	ompone	ont Offset		Con	ditio	<b>n</b> -0.10		Status	pass	
Sensor C	ompone	nt Span		Con	ditio	<mark>n</mark> 1.003		Status	pass	
Sensor C	ompone	nt Zero Voltage	9	Con	ditio	n N/A		Status	pass	
Sensor C	ompone	nt Fullscale Vo	ltage			n N/A		Status	[	
	-	nt Cell A Freq.				n 80.8 kHz		Status	[	
	•									
	•	nt Cell A Noise	;			n 0.6 ppb		Status		
Sensor C	ompone	ent Cell A Flow		Con	ditio	<mark>n</mark> 0.70 lpm		Status	pass	
Sensor C	ompone	ent Cell A Press	sure	Con	ditio	<mark>n</mark> 734.1 mmHg		Status	pass	
Sensor C	ompone	nt Cell A Tmp.		Con	ditio	<mark>n</mark> 37.5 C		Status	pass	
Sensor C	ompone	nt Cell B Freq.		Con	ditio	n 87.0 kHz		Status	pass	
Sensor C	ompone	nt Cell B Noise	)	Con	ditio	n 0.7 ppb		Status	pass	
Sensor C	ompone	nt Cell B Flow		Con	ditio	n 0.71 lpm		Status	pass	
Sensor C	ompone	nt Cell B Press	sure	Con	ditio	n 735.0 kHz		Status		
	_	nt Line Loss				n Not tested		Status	L	
	-	nt System Mer	no		ditio			Status		
	mpone							Status	· ··· •	

Site	Site Visit Date Parameter		Mfg	Owner ID	Model Number	Serial Number
МСК	231-Korey	v Devins-11/07/2020				
1	11/7/2020	DAS	Campbell	000359	CR3000	2137
2	11/7/2020	Ozone	ThermoElectron Inc	000682	49i A1NAA	1030244796
3	11/7/2020	Ozone Standard	ThermoElectron Inc	000544	49i A3NAA	0929938242
4	11/7/2020	Zero air pump	Werther International	06924	C 70/4	000836205

Mfg		Serial Numbe	r Tag Site		Тео	chnician	Site Visit Date	Parame	eter	Owner ID
ThermoElec	tron Inc	1030244796	MCK23	1	Ko	orey Devins	11/07/2020	Ozone		000682
Slope: Intercept CorrCoff:	-(		cept	0.00000 0.00000 0.00000		Mfg Serial Number	ThermoElectron			er ozone
001100111						Tfer ID	01114			
<b>DAS 1:</b>			AS 2:			Slope	0.999	50 Inter	cept	0.29010
_			Avg %Diff A	Max % D	if	Cert Date	1/14/202	20 Corr	·Coff	0.99999
0.0	0%	0.0%								
UseDescri		ConcGroup	Tfer Raw	Tfer C		Site	Site Unit	RelPer	Dif	AbsDif
prima prima	•	$\frac{1}{2}$	0.44	0.14		-0.56	ppb ppb			-0.7 -0.53
prima	•	3	35.67	35.3		34.52	ppb		-2.49	-0.55
prima		4	68.72	68.4	6	67.55	ppb		-1.34	
prima	ry	5	108.46	108.2	22	107.30	ppb		-0.85	
Sensor C	ompone	nt Audit Pressu	ire	Со	nditio	<b>on</b> 741.5 mmHg		Status	pass	
Sensor C	ompone	nt Sample Trai	n	Со	nditio	on Good		Status	pass	
Sensor C	ompone	nt Minimum dis	stance from roa	d met Co	nditio	on True		Status	pass	
Sensor C	ompone	nt Inlet Filter C	ondition	Со	nditio	on Moderately cle	an	Status	pass	
Sensor C	ompone	nt 26.6 degree	unobstructed r	ule Co	nditio	on True		Status	pass	
Sensor C	ompone	nt Tree dewline	e >10m or below	v inlet Co	nditio	on True		Status	pass	
Sensor C	ompone	nt Offset		Со	nditio	<b>0.000</b>		Status	pass	
Sensor C	ompone	nt Span		Со	nditio	on 1.017		Status	pass	
Sensor C	ompone	nt Zero Voltage	9	Co	nditio	on N/A		Status	pass	
Sensor C	ompone	nt Fullscale Vo	Itage	Co	nditio	on N/A		Status	pass	
Sensor C	ompone	nt Cell A Freq.		Co	nditio	on 83.4 kHz		Status	pass	
Sensor C	ompone	nt Cell A Noise		Со	nditio	0.6 ppb		Status	pass	
Sensor C	ompone	nt Cell A Flow		Co	nditio	0.68 lpm		Status	pass	
Sensor C	ompone	nt Cell A Press	ure	Co	nditio	<b>on</b> 715.5 mmHg		Status	pass	
Sensor C	ompone	nt Cell A Tmp.		Co	nditio	on 37.8 C		Status	pass	
Sensor C	ompone	nt Cell B Freq.		Co	nditio	on 86.7 kHz		Status	pass	
Sensor C	ompone	nt Cell B Noise		Co	nditio	on 0.6 ppb		Status	pass	
Sensor C	ompone	nt Cell B Flow		Co	nditio	0.74 lpm		Status	pass	
Sensor C	ompone	nt Cell B Press	ure	Со	nditio	<b>on</b> 716.4 mmHg		Status	pass	
Sensor C	ompone	nt Line Loss		Со	nditio	n Not tested		Status	pass	
Sensor C	ompone	nt System Men	no	Co	nditio	on		Status	pass	

Site	Site Visit Date Parameter		Mfg Owner ID		Model Number	Serial Number	
CKT	136-Korey	Devins-11/08/2020					
1	11/8/2020	DAS	Campbell	000336	CR3000	2115	
2	11/8/2020	Ozone	ThermoElectron Inc	000744	49i A1NAA	1105347324	
3	11/8/2020	Ozone Standard	ThermoElectron Inc	000200	49i A3NAA	0607315738	
4	11/8/2020	Zero air pump	Werther International	06878	C 70/4	000815254	

Mfg		Serial Numbe	er Tag Site		Tech	nician	Site Visit Date	Parame	eter	Owner ID
ThermoElec	tron Inc	1105347324	CKT136	6	Kore	y Devins	11/08/2020	Ozone		000744
Slope: Intercept CorrCoff:	-		rcept	0.00000 0.00000 0.00000	S	lfg erial Number fer ID	ThermoElectron 1180030022 01114			er ozone
	<b>Diff: A N</b> 0%		AS 2: Avg %Diff A	. Max % Dif	SI	lope fert Date	0.9995		-	0.29010
UseDescr prima prima prima prima	ry ry ry ry	ConcGroup 1 2 3 4 5	Tfer Raw 0.34 15.52 35.41 67.93 113.59	Tfer Co 0.04 15.23 35.13 67.67 113.35		Site 0.05 14.57 34.14 66.33 111.40	Site Unit ppb ppb ppb ppb ppb	RelPer	Dif -2.86 -2 -1.74	AbsDif 0.01 -0.66
-		ant Audit Pressu				735.3 mmHg		Status		
Sensor C	ompone	nt Sample Trai	in	Con	dition	Good		Status	pass	
	_		stance from road		dition			Status	L	
	_	nt Inlet Filter C				Moderately clea	an	Status		
	•									
	•		unobstructed ru		dition			Status	[	
Sensor C	ompone	nt Tree dewline	e >10m or belov	v inlet Con	dition	True		Status	pass	
Sensor C	ompone	ont Offset		Con	dition	-0.10		Status	pass	
Sensor C	ompone	nt Span		Con	dition	1.008		Status	pass	
Sensor C	ompone	nt Zero Voltage	9	Con	dition	N/A		Status	pass	
Sensor C	ompone	nt Fullscale Vo	ltage		dition			Status	L	
	_	nt Cell A Freq.				90.8 kHz		Status	[	
	•									
	•	nt Cell A Noise	)			0.7 ppb		Status		
Sensor C	ompone	t Cell A Flow		Con	dition	0.73 lpm		Status	pass	
Sensor C	ompone	nt Cell A Press	sure	Con	dition	708.4 mmHg		Status	pass	
Sensor C	ompone	nt Cell A Tmp.		Con	dition	38.9 C		Status	pass	
Sensor C	ompone	nt Cell B Freq.		Con	dition	93.8 kHz		Status	pass	
Sensor C	ompone	nt Cell B Noise	)	Con	dition	0.9 ppb		Status	pass	
Sensor C	ompone	nt Cell B Flow		Con	dition	0.70 lpm		Status	pass	
	•	nt Cell B Press	sure			709.0 mmHg		Status		
	_	nt Line Loss				Not tested		Status	L	
Sensor C	ompone	nt System Mer	no		dition			Status		
	ponte								<u> </u>	

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
QAK	172-Korey	Devins-11/09/2020				
1	11/9/2020	DAS	Campbell	000418	CR3000	2518
2	11/9/2020	Ozone	ThermoElectron Inc	000729	49i A1NAA	1105347323
3	11/9/2020	Ozone Standard	ThermoElectron Inc	000513	49i A3NAA	0922236889
4	11/9/2020	Zero air pump	Werther International	06870	PC70/4	000814278

Mfg	Serial Number	r Tag Site	ï	ſechnician	Site Visit Date	Parameter	Owner ID
ThermoElectron Inc	1105347323	QAK172		Korey Devins	11/09/2020	Ozone	000729
Intercept	0.97826 Slope 0.27934 Inter 1.00000 Corr	cept 0	.00000 .00000	Mfg Serial Number Tfer ID	ThermoElectron 1180030022 01114		er ozone
DAS 1: A Avg % Diff: A M 0.0%		AS 2: Avg %Diff A	Max % Dif	Slope Cert Date	0.9995		0.29010
UseDescription primary primary primary primary primary Sensor Compone	ConcGroup 1 2 3 4 5 ent Audit Pressu	Tfer Raw           0.41           15.40           35.30           68.32           112.53	Tfer Corr 0.11 15.11 35.02 68.06 112.29 Condi	Site           -0.13           14.48           33.97           66.26           109.60           ition	Site Unit ppb ppb ppb ppb ppb	RelPerDif -3.04 -2.68 -2.42 Status pass	
Sensor Compone Sensor Compone Sensor Compone	ent Minimum dis ent Inlet Filter Co	tance from road	met Condi	ition Good ition True ition Moderately cle	an	Status pass Status pass Status pass	
Sensor Compone Sensor Compone Sensor Compone	ent Tree dewline		inlet Condi	ition True ition True ition -0.10		Status pass Status pass Status pass	
Sensor Compone Sensor Compone Sensor Compone	ent Zero Voltage		Condi	ition 1.014 ition N/A ition N/A		Status pass Status pass Status pass	
Sensor Compone Sensor Compone	ent Cell A Freq.		Condi	ition 102.7 kHz		Status pass	
Sensor Compone Sensor Compone	ent Cell A Press	ure	Condi	0.76 lpm           ition           695.9 mmHg		Status pass	
Sensor Compone Sensor Compone Sensor Compone	ent Cell B Freq.		Condi	ition 35.9 C ition 94.3 kHz ition 0.6 ppb		StatuspassStatuspassStatuspass	
Sensor Compone Sensor Compone	ent Cell B Flow	ure	Condi	ition 0.72 lpm ition 696.8 mmHg		Status pass	
Sensor Compone Sensor Compone		10	Condi	ition Not tested		StatuspassStatuspass	

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
VPII	20-Korey l	Devins-11/10/2020				
1	11/10/2020	DAS	Campbell	000402	CR3000	2514
2	11/10/2020	Ozone	ThermoElectron Inc	000690	49i A1NAA	1030244800
3	11/10/2020	Ozone Standard	ThermoElectron Inc	000328	49i A3NAA	0622717850
4	11/10/2020	Zero air pump	Werther International	06929	C 70/4	000829173

Mfg	S	Serial Numbe	r Tag Site		Тео	chnician	Site Visit Date	Parame	eter	Owner ID
ThermoElectro	n Inc	1030244800	VPI120		Ko	orey Devins	11/10/2020	Ozone		000690
Slope: Intercept CorrCoff:	-0.	.96927 Slop .54355 Inter .99998 Corr	cept	0.0000 0.0000 0.0000	0	Mfg Serial Number	ThermoElectron			ozone Ozone primary stan
						Tfer ID	01114			
DAS 1:			AS 2:			Slope	0.999	50 Inter	cept	0.29010
A Avg % Diff 0.0%		ax % Dif A . 0.0%	Avg %Diff A	Max 9	% Dif	Cert Date	1/14/20	20 Corr	Coff	0.99999
				1		-	1			
UseDescripti	ion (	ConcGroup	Tfer Raw		er Corr	Site	Site Unit	RelPer	Dif	AbsDif
primary primary		2	0.34		0.04 14.67	-0.40	ppb ppb			-0.44 -0.84
primary		3	34.58		34.30	32.60	ppb		-5.08	0.04
primary		4	66.82		66.56	63.55	ppb		-4.63	
primary		5	110.92	1	10.68	107.00	ppb		-3.38	
Sensor Com	iponen	t Audit Pressu	ire		Conditio	<b>on</b> 708.5 mmHg		Status	pass	
Sensor Com	iponen	t Sample Trai	n		Conditio	on Good		Status	pass	
Sensor Com	iponen	t Minimum dis	stance from road	d met	Conditio	on True		Status	pass	
Sensor Com	iponen	t Inlet Filter C	ondition		Conditio	on Moderately cle	an	Status	pass	
Sensor Com	iponen	t 26.6 degree	unobstructed ru	lle	Conditio	on True		Status	pass	
Sensor Com	iponen	t Tree dewline	e >10m or below	/ inlet	Conditio	on True		Status	pass	
Sensor Com	iponen	t Offset			Conditio	<b>0.000</b>		Status	pass	
Sensor Com	iponen	t Span			Conditio	<b>on</b> 0.998		Status	pass	
Sensor Com	nponen	t Zero Voltage	9		Conditio	on N/A		Status	pass	
Sensor Com	iponen	t Fullscale Vo	Itage		Conditio	on N/A		Status	pass	
Sensor Com	iponen	t Cell A Freq.			Conditio	on 106.8 kHz		Status	pass	
Sensor Com	iponen	t Cell A Noise			Conditio	0.7 ppb		Status	pass	
Sensor Com	iponen	t Cell A Flow			Conditio	0.71 lpm		Status	pass	
Sensor Com	nponen	t Cell A Press	ure		Conditio	on 680.8 mmHg		Status	pass	
Sensor Com	iponen	t Cell A Tmp.			Conditio	on 36.2 C		Status	pass	
Sensor Com	nponen	t Cell B Freq.			Conditio	96.7 kHz		Status	pass	
Sensor Com	iponen	t Cell B Noise			Conditio	0.7 ppb		Status	pass	
Sensor Com	iponen	t Cell B Flow			Conditio	0.70 lpm		Status	pass	
Sensor Com	iponen	t Cell B Press	ure		Conditio	on 681.7 mmHg		Status	pass	
Sensor Com	iponen	t Line Loss			Conditio	n Not tested		Status	pass	
Sensor Com	nponen	t System Men	10		Conditio	on		Status	pass	

Site Vis	sit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
PAR10	7-Korey	Devins-11/12/2020				
1 11	1/12/2020	DAS	Campbell	000333	CR3000	2112
2 11	1/12/2020	Ozone	ThermoElectron Inc	000689	49i A1NAA	1030244802
3 11	1/12/2020	Ozone Standard	ThermoElectron Inc	000436	49i A3NAA	CM08200012
4 11	1/12/2020	Zero air pump	Werther International	06907	C 70/4	000829179

Mfg	Serial Numbe	er Tag Site		Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron Ir	c 1030244802	PAR107	•	Korey Devins	11/12/2020	Ozone	000689
Slope: Intercept CorrCoff:		rcept (	).00000 ).00000 ).00000	Mfg Serial Number Tfer ID	ThermoElectron 1180030022 01114		ter ozone sc. Ozone primary stan
DAS 1: A Avg % Diff: A	Max % Dif A	AS 2: Avg %Diff A	Max % Dif	Slope Cert Date	0.999		0.29010
0.0%	0.0%						
UseDescription	ConcGroup	Tfer Raw	Tfer Cor		Site Unit	RelPerDif	AbsDif
primary primary	2	0.38	0.08	-0.80	ppb ppb		-0.88 -1.02
primary	3	35.09	34.81	33.60	ppb	-3.54	
primary	4	67.70	67.44	65.51	ppb	-2.9	
primary	5	111.51	111.27	108.60	ppb	-2.43	
Sensor Compo	nent Audit Press	ure	Cond	lition 717.3 mmHg		Status pass	
Sensor Compo	nent Sample Tra	in	Cond	lition Good		Status pass	
Sensor Compo	nent Minimum dis	stance from road	met Cond	lition True		Status pass	
Sensor Compo	nent Inlet Filter C	ondition	Cond	lition Clean		Status pass	
Sensor Compo	nent 26.6 degree	unobstructed ru	le Cond	lition True		Status pass	
Sensor Compo	nent Tree dewline	e >10m or below	inlet Cond	lition True		Status pass	
Sensor Compo	nent Offset		Cond	lition 0.10		Status pass	
Sensor Compo	nent Span		Cond	lition 1.009		Status pass	
Sensor Compo	nent Zero Voltag	e	Cond	lition N/A		Status pass	
Sensor Compo	nent Fullscale Vo	oltage	Cond	lition N/A		Status pass	
Sensor Compo	nent Cell A Freq.		Cond	lition 81.3 kHz		Status pass	
Sensor Compo	nent Cell A Noise	)	Cond	lition 0.7 ppb		Status pass	
Sensor Compo	nent Cell A Flow		Cond	lition 0.58 lpm		Status pass	
Sensor Compo	nent Cell A Press	sure	Cond	lition 689.5 mmHg		Status pass	
Sensor Compo	nent Cell A Tmp.		Cond	lition 34.8 C		Status pass	
Sensor Compo	nent Cell B Freq.		Cond	lition 85.2 kHz		Status pass	
Sensor Compo	nent Cell B Noise	)	Cond	lition 0.6 ppb		Status pass	
Sensor Compo	nent Cell B Flow		Cond	lition 0.49 lpm		Status pass	
Sensor Compo	nent Cell B Press	sure	Cond	lition 690.1 mmHg		Status pass	
Sensor Compo	nent Line Loss		Cond	lition Not tested		Status pass	
Sensor Compo	nent System Mer	mo	Cond	lition		Status pass	

Site Vi	isit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
CDR11	19-Korey	Devins-11/13/2020				
1 11	1/13/2020	DAS	Campbell	None	CR3000	4935
2 1 <sup>7</sup>	1/13/2020	Ozone	ThermoElectron Inc	000705	49i A1NAA	1030244807
3 1 <sup>7</sup>	1/13/2020	Ozone Standard	ThermoElectron Inc	000365	49i A3NAA	0726124688
4 1 <sup>7</sup>	1/13/2020	Zero air pump	Werther International	06335	C 70/4	000829172

Mfg	Serial Numbe	er Tag Site		Technician	Site Visit Date	Parameter	Owner ID
ThermoElectron In	ic 1030244807	CDR119	)	Korey Devins	11/13/2020	Ozone	000705
Slope: Intercept CorrCoff:		rcept (	).00000 ).00000 ).00000	Mfg Serial Number Tfer ID	ThermoElectron 1180030022 01114		ter ozone sc. Ozone primary stan
DAS 1: A Avg % Diff: A 0.0%		AS 2: Avg %Diff A	Max % Dif	Slope Cert Date	0.9999		0.29010
UseDescription primary primary	ConcGroup 1 2	Tfer Raw 0.33 15.09	Tfer Cor 0.03 14.80	0.04 14.43	Site Unit ppb ppb	RelPerDif	AbsDif 0.01 -0.37
primary primary primary	3 4 5	34.65 67.14 111.18	34.37 66.88 110.94	33.61 65.71 109.10	ppb ppb ppb	-2.24 -1.76 -1.67	
	nent Audit Press			lition 741.6 mmHg lition Good		Status pass Status pass	
	nent Minimum dia nent Inlet Filter C			lition True		Status pass	
Sensor Compo	nent 26.6 degree	unobstructed ru	le Cond	lition True		Status pass	
	nent Tree dewlin	e >10m or below		lition True		Status pass	
Sensor Compo	nent Offset			lition -0.10		Status pass	
Sensor Compo	nent Span		Cond	lition 1.005		Status pass	
Sensor Compo	nent Zero Voltag	е	Cond	lition N/A		Status pass	
Sensor Compo	nent Fullscale Vo	oltage	Cond	lition N/A		Status pass	
Sensor Compo	nent Cell A Freq.		Cond	lition 90.8 kHz		Status pass	
Sensor Compo	nent Cell A Noise	)	Cond	lition 0.8 ppb		Status pass	
Sensor Compo	nent Cell A Flow		Cond	lition 0.71 lpm		Status pass	
Sensor Compo	nent Cell A Press	sure	Cond	lition 710.7 mmHg		Status pass	
Sensor Compo	nent Cell A Tmp.		Cond	lition 35.6 C		Status pass	
Sensor Compo	nent Cell B Freq.		Cond	lition 90.9 kHz		Status pass	
Sensor Compo	nent Cell B Noise	)	Cond	lition 0.6 ppb		Status pass	
Sensor Compo	nent Cell B Flow		Cond	lition 0.72 lpm		Status pass	
Sensor Compo	nent Cell B Press	sure	Cond	lition 711.6 mmHg		Status pass	
Sensor Compo			Cond	lition Not tested		Status pass	
Sensor Compo	nent System Mer	no	Cond	lition		Status pass	

Site Visit D	ate Parameter	Mfg	Owner ID	Model Number	Serial Number
BWR139-Ko	orey Devins-11/15/2020	)			
1 11/15/2	D20 DAS	Campbell	000431	CR3000	2536
2 11/15/2	020 Ozone	ThermoElectron Inc	000618	49i A1NAA	1009241789
3 11/15/2	020 Ozone Standard	ThermoElectron Inc	000697	49i A3NAA	1030244814
4 11/15/2	020 Zero air pump	Werther International	06877	C 70/4	000815258

Mfg		Serial Numbe	er Tag Site		Technicia	n	Site Visit Date	Parame	eter	Owner ID
ThermoElec	tron Inc	1009241789	BWR13	9	Korey Dev	vins	11/15/2020	Ozone		000618
Slope: Intercept CorrCoff:	-		rcept	0.00000 0.00000 0.00000	Mfg Serial I Tfer II	Number )	ThermoElectron 1180030022 01114			ozone Ozone primary stan
	<b>Diff: A N</b> 0%		AS 2: Avg %Diff A	Max % Dif	Slope		0.9995		-	0.29010
UseDescr prima prima prima prima prima	ry ry ry ry	ConcGroup 1 2 3 4 5	Tfer Raw 0.47 15.37 35.03 67.57 111.80	Tfer Co 0.17 15.08 34.75 67.31 111.56		Site 0.12 14.72 34.12 56.41 10.20	Site Unit ppb ppb ppb ppb ppb	RelPer	Dif -1.83 -1.35 -1.23	AbsDif -0.05 -0.36
-	•	ant Audit Pressu		1	dition 758.8			Status		
Sensor C	ompone	nt Sample Trai	'n	Cone	dition Good	d		Status	pass	
			stance from road		dition True			Status	L	
	_	nt Inlet Filter C			dition Mode		an	Status		
	•									
	-		unobstructed ru		dition True			Status		
Sensor C	ompone	nt Tree dewline	e >10m or belov	/ inlet Con	dition True			Status	pass	
Sensor C	ompone	ont Offset		Con	dition -0.30	)		Status	pass	
Sensor C	ompone	nt Span		Con	dition 1.02	3		Status	pass	
Sensor C	ompone	nt Zero Voltage	9	Con	dition N/A			Status	pass	
	•	nt Fullscale Vo			dition N/A			Status		
		nt Cell A Freq.			dition 90.3	kH2		Status		
	•									
	-	nt Cell A Noise	)		dition 0.4 p			Status		
Sensor C	ompone	t Cell A Flow		Con	dition 0.73	lpm		Status	pass	
Sensor C	ompone	nt Cell A Press	sure	Con	dition 727.0	0 mmHg		Status	pass	
Sensor C	ompone	nt Cell A Tmp.		Con	dition 31.9	С		Status	pass	
Sensor C	ompone	nt Cell B Freq.		Con	dition 103.2	2 kHz		Status	pass	
Sensor C	ompone	nt Cell B Noise	)	Con	dition 0.6 p	pb		Status	pass	
Sensor C	ompone	nt Cell B Flow		Con	dition 0.73	lpm		Status	pass	
	-	nt Cell B Press	sure		dition 728.2			Status		
		nt Line Loss			dition Not t			Status	L	
Sensor C	ompone	nt System Mer	no		dition			Status		
	1								Ľ	

Site Visit	Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
STK138-E	Eric H	ebert-11/18/2020				
1 11/18	8/2020	DAS	Campbell	000349	CR3000	2128
2 11/18	8/2020	Ozone	ThermoElectron Inc	000625	49i A1NAA	1009241797
3 11/18	8/2020	Ozone Standard	ThermoElectron Inc	000688	49i A3NAA	1030244817
4 11/18	8/2020	Zero air pump	Werther International	06915	C 70/4	000829162

Mfg		Serial Numbe	r Tag Site		Te	chnician	Site Visit Date	Parame	eter	Owner ID
ThermoElec	tron Inc	1009241797	STK1	38	Er	ic Hebert	11/18/2020	Ozone		000625
Slope: Intercept CorrCoff:	-(	0.99445 Slop 0.39568 Inter 0.99999 Corr		0.0000	0	Mfg Serial Number	ThermoElectror 1180030022			r ozone . Ozone primary stan
CorrColl:		0.55555 Cori		0.0000	U	Tfer ID	01114			
DAS 1:			AS 2:		D/ D*6	Slope	0.999	50 Inter	cept	0.29010
	0%	<b>lax % Dif</b> A . 0.0%		A Max	70 DII	Cert Date	1/14/20	20 Corr	Coff	0.99999
UseDescr		ConcGroup	Tfer Raw	Tf	fer Corr	Site	Site Unit	RelPer	Dif	AbsDif
prima	•	1	0.35		0.05	-0.23	ppb			-0.28
prima	ry	2	15.70		15.41	14.84	ppb			-0.57
prima	•	3	34.34		34.06	33.23	ppb		-2.47	
prima	•	4	68.72		68.46	68.02	ppb		-0.64	
prima		5	113.38	1	13.14	112.00	ppb		-1.01	
Sensor C	ompone	nt Audit Pressu	ıre			on 731 mmHg		Status	pass	
Sensor C	ompone	nt Sample Trai	n		Conditio	on Good		Status	pass	
Sensor C	ompone	nt Minimum dis	stance from ro	ad met	Conditi	on True		Status	pass	
Sensor C	ompone	nt Inlet Filter C	ondition		Conditio	on Clean		Status	pass	
Sensor C	ompone	nt 26.6 degree	unobstructed	rule	Conditio	on True		Status	pass	
Sensor C	ompone	nt Tree dewline	e >10m or bel	ow inlet	Conditio	on True		Status	pass	
Sensor C	ompone	nt Offset			Conditio	<b>on</b> 0.10		Status	pass	
Sensor C	ompone	nt Span			Conditio	<b>on</b> 1.003		Status	pass	
Sensor C	ompone	nt Zero Voltage	e		Conditio	on N/A		Status	pass	
Sensor C	ompone	nt Fullscale Vo	ltage		Conditio	on N/A		Status	pass	
Sensor C	ompone	nt Cell A Freq.			Conditio	on 100.9 kHz		Status	pass	
Sensor C	ompone	nt Cell A Noise			Conditio	on 1.0 ppb		Status	pass	
Sensor C	ompone	nt Cell A Flow			Conditi	<b>on</b> 0.69 lpm		Status	pass	
Sensor C	ompone	nt Cell A Press	ure		Conditio	0 <b>n</b> 705.5 kHz		Status	pass	
Sensor C	ompone	nt Cell A Tmp.			Conditio	on 35.5 C		Status	pass	
Sensor C	ompone	nt Cell B Freq.			Conditio	on 91.8 kHz		Status	pass	
Sensor C	ompone	nt Cell B Noise			Conditio	on 1.3 ppb		Status	pass	
Sensor C	ompone	nt Cell B Flow			Conditio	0.62 lpm		Status	pass	
Sensor C	ompone	nt Cell B Press	ure		Conditio	0n 705.8 mmHg		Status	pass	
Sensor C	ompone	nt Line Loss			Conditio	on Not tested		Status	pass	
Sensor C	ompone	nt System Men	no		Conditio	on		Status	pass	

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
VIN1	40-Korey	Devins-12/04/2020				
1	12/4/2020	DAS	Campbell	000358	CR3000	2136
2	12/4/2020	Ozone	ThermoElectron Inc	000740	49i A1NAA	1105347311
3	12/4/2020	Ozone Standard	ThermoElectron Inc	000546	49i A3NAA	0929938239
4	12/4/2020	Zero air pump	Werther International	06906	C 70/4	000821908

Mfg		Serial Numbe	r Tag S	Site		Те	chnician	Site Visit Date	Param	eter	Owner ID
ThermoElec	ctron Inc	1105347311		VIN140		Ko	orey Devins	12/04/2020	Ozone		000740
Slope: Intercept CorrCoff:	-		e: [ ccept [ ·Coff: [	(	).00000 ).00000 ).00000	D	Mfg Serial Number Tfer ID	ThermoElectron 1180030022 01114			er ozone c. Ozone primary stan
<b>DAS 1:</b>		DA	AS 2:				Slope	0.999	50 Inte	rcept	0.29010
		Iax % Dif A	Avg %	Diff A	Max 9	% Dif	Cert Date	1/14/20		Coff	0.99999
0.	0%	0.0%					Cert Date	1/14/20			0.00000
UseDescr	iption	ConcGroup		Raw	Tf	er Corr	Site	Site Unit	RelPer	Dif	AbsDif
prima		1		41		0.11	0.18	ppb			0.07
prima	-	2		.93		14.64	14.72	ppb			0.08
prima: prima:		3 4		.53		34.25 56.36	34.25 66.16	ppb ppb		-0.3	
prima		5		9.62 9.62		09.38	109.70	ppb		0.29	
-		nt Audit Pressu		.02			748 mmHg	ppo	Status	-	
		nt Sample Trai					on Good		Status		
	_	nt Minimum dis		rom road	l met	Conditio			Status		
		nt Inlet Filter C					m Moderately cle	an	Status		
	-	nt 26.6 degree				Conditio	-		Status		
		nt Tree dewline	e >10m	or below	Iniet	Conditio			Status		
Sensor C	_					Conditio			Status	L	
Sensor C							<b>on</b> 1.015		Status		
Sensor C	ompone	nt Zero Voltage	9			Conditio	on N/A		Status	pass	
Sensor C	ompone	nt Fullscale Vo	ltage			Conditio	on N/A		Status	pass	
Sensor C	ompone	nt Cell A Freq.				Conditio	<b>on</b> 97.8 kHz		Status	pass	
Sensor C	ompone	nt Cell A Noise	!			Conditio	0.8 ppb		Status	pass	
Sensor C	ompone	nt Cell A Flow				Conditio	0.70 lpm		Status	pass	
Sensor C	ompone	nt Cell A Press	ure			Conditio	<b>on</b> 706.5 mmHg		Status	pass	
Sensor C	ompone	nt Cell A Tmp.				Conditio	on 36.9 C		Status	pass	
Sensor C	ompone	nt Cell B Freq.				Conditio	on 87.3 kHz		Status	pass	
Sensor C	ompone	nt Cell B Noise				Conditio	0.5 ppb		Status	pass	
Sensor C	ompone	nt Cell B Flow				Conditio	0.70 lpm		Status	pass	
Sensor C	ompone	nt Cell B Press	ure			Conditio	<b>on</b> 707.1 mmHg		Status	pass	
Sensor C	ompone	nt Line Loss				Conditio	n Not tested		Status	pass	
Sensor C	ompone	nt System Men	no			Conditio	on		Status	pass	
	-						L			L	

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
PED	108-Korey	Devins-12/06/2020				
1	12/6/2020	DAS	Campbell	000406	CR3000	2511
2	12/6/2020	Ozone	ThermoElectron Inc	000732	49i A1NAA	1105347319
3	12/6/2020	Ozone Standard	ThermoElectron Inc	000214	49i A3NAA	0622717855
4	12/6/2020	Zero air pump	Werther International	06883	C 70/4	000815257

Mfg	5	Serial Numbe	r Tag Site		Тес	chnician	Site Visit Date	Parame	eter	Owner ID
ThermoElectr	on Inc	1105347319	PED108	3	Ko	rey Devins	12/06/2020	Ozone		000732
Slope: Intercept CorrCoff:	-0	.97700 Slop .03784 Inter .00000 Corr	cept	0.00000 0.00000 0.00000	)	Mfg Serial Number	ThermoElectron			r ozone Ozone primary stan
DAS 1: A Avg % Dif	ff: A Ma		AS 2: Avg %Diff A	. Max %		Tfer ID Slope	01114		•	0.29010
0.0%	%	0.0%				Cert Date	1/14/20	20 Corr	Coff	0.99999
UseDescrip primary primary primary	7	ConcGroup 1 2 3	Tfer Raw 0.42 15.16 34.87	1	er Corr 0.12 4.87 34.59	Site 0.12 14.49 33.75	Site Unit ppb ppb ppb	RelPer	Dif -2.46	AbsDif 0 -0.38
primary		4	67.26		57.00	65.33	ppb		-2.52	
primary	7	5	110.66	1	10.42	107.90	ppb		-2.31	
Sensor Cor	mponen	t Audit Pressu	ire		Conditio	<b>n</b> 744.5 mmHg		Status	pass	
Sensor Cor	mponen	t Sample Trai	n		Conditio	on Good		Status	pass	
Sensor Cor	mponen	t Minimum dis	stance from road	d met	Conditio	n True		Status	pass	
Sensor Cor	mponen	t Inlet Filter C	ondition		Conditio	n Clean		Status	pass	
Sensor Cor	mponen	t 26.6 degree	unobstructed ru	le	Conditio	n True		Status	pass	
Sensor Cor	mponen	t Tree dewline	e >10m or belov	v inlet	Conditio	n True		Status	pass	
Sensor Cor	mponen	t Offset			Conditio	<b>n</b> -0.10		Status	pass	
Sensor Cor	mponen	t Span			Conditio	<b>)n</b> 0.996		Status	pass	
Sensor Cor	mponen	t Zero Voltage	9		Conditio	n N/A		Status	pass	
Sensor Cor	mponen	t Fullscale Vo	ltage		Conditio	on N/A		Status	pass	
Sensor Cor	mponen	t Cell A Freq.			Conditio	<b>90</b> 88.1 kHz		Status	pass	
Sensor Cor	mponen	t Cell A Noise			Conditio	<b>0.9</b> ppb		Status	pass	
Sensor Cor	mponen	t Cell A Flow			Conditio	on 0.59 lpm		Status	pass	
Sensor Cor	mponen	t Cell A Press	ure		Conditio	<b>713.9 mmHg</b>		Status	pass	
Sensor Cor	mponen	t Cell A Tmp.			Conditio	on 29.8 C		Status	pass	
Sensor Cor	mponen	t Cell B Freq.			Conditio	on 106.7 kHz		Status	pass	
Sensor Cor	mponen	t Cell B Noise			Conditio	on 0.4 ppb		Status	pass	
Sensor Cor	mponen	t Cell B Flow			Conditio	on 0.56 lpm		Status	pass	
Sensor Cor	mponen	t Cell B Press	ure		Conditio	714.8 mmHg		Status	pass	
Sensor Cor	mponen	t Line Loss			Conditio	n Not tested		Status	pass	
Sensor Cor	mponen	t System Men	no		Conditio	on		Status	pass	

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
ALH	157-Martir	1 Valvur-12/07/2020				
1	12/7/2020	DAS	Campbell	000428	CR3000	2534
2	12/7/2020	Ozone	ThermoElectron Inc	000615	49i A1NAA	1009241787
3	12/7/2020	Ozone Standard	ThermoElectron Inc	000329	49i A3NAA	0622717853
4	12/7/2020	Zero air pump	Werther International	06925	C 70/4	000836220

Mfg		Serial Numbe	r Tag Site		Тео	chnician	Site Visit Date	Parame	eter	Owner ID
ThermoElec	tron Inc	1009241787	ALH15	7	Ma	artin Valvur	12/07/2020	Ozone		000615
Slope: Intercept CorrCoff:	Intercept -0.41390 Intercept 0.00			0.00000 0.00000 0.00000	MfgThermoElectroSerial Number49CPS-70008-Tfer ID01110					er ozone c. Ozone primary stan
_		fax % Dif A	AS 2: Avg %Diff	A Max % D		Slope Cert Date	1.0020		•	0.03590
0.0	0%	0.0%				Cert Date	1/1//20			0.00000
UseDescri primat primat primat	ry ry	ConcGroup 1 2 3	Tfer Raw 0.13 16.99 38.68	Tfer C 0.09 16.9 38.5	9 1	Site -0.04 16.20 37.74	Site Unit ppb ppb ppb	RelPer	Dif -2.1	AbsDif -0.13 -0.71
prima		4	67.15	66.9		65.85	ppb		-1.64	
prima		5	116.06	115.7		114.60	ppb		-0.97	
Sensor C	ompone	nt Audit Pressu	ıre	Со	nditio	<b>on</b> 751 mmHg		Status	pass	
Sensor C	ompone	nt Sample Trai	n	Со	nditio	on Good		Status	pass	
Sensor C	ompone	nt Minimum dis	stance from roa	d met Co	nditio	m True		Status	pass	
Sensor C	ompone	nt Inlet Filter C	ondition	Co	nditio	on Clean		Status	pass	
Sensor C	ompone	nt 26.6 degree	unobstructed r	ule Co	Condition True			Status pass		
Sensor C	ompone	nt Tree dewline	e >10m or belo	w inlet Co	Condition True			Status	pass	
Sensor C	ompone	nt Offset		Со	Condition 0.10			Status	pass	
Sensor C	ompone	nt Span		Со	nditio	<b>n</b> 1.007	Status pass		pass	
Sensor C	ompone	nt Zero Voltage	9	Со	nditio	on N/A	Status pass		pass	
Sensor C	ompone	nt Fullscale Vo	ltage	Cond		tion N/A		Status	1s pass	
Sensor C	ompone	nt Cell A Freq.		Conc		lition 97.9 kHz		Status	pass	
Sensor C	ompone	nt Cell A Noise	•	Cond		ition 0.6 ppb		Status	pass	
Sensor C	ompone	nt Cell A Flow		Со	nditio	ndition 0.67 lpm		Status	pass	
Sensor C	ompone	nt Cell A Press	ure	Co	ndition 725.6 mmHg			Status	pass	
Sensor C	Sensor Component Cell A Tmp.			Со	nditio	on 32.9 C		Status pass		
Sensor Component Cell B Freq.		Со	Condition 92.2 kHz			Status	pass			
Sensor C	Sensor Component Cell B Noise			Со	Condition 0.5 ppb			Status	pass	
Sensor C	Sensor Component Cell B Flow			Co	Condition 0.68 lpm			Status	pass	
Sensor C	Sensor Component Cell B Pressure			Co	nditio	<b>on</b> 725.1 mmHg	Status	pass		
Sensor C	ompone	nt Line Loss		Co	Condition Not tested			Status	pass	
Sensor C	ompone	nt System Men	no	Co	nditio	on		Status	pass	

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
CDZ	171-Martir	n Valvur-12/08/2020				
1	12/8/2020	DAS	Campbell	000355	CR3000	2133
2	12/8/2020	Ozone	ThermoElectron Inc	000727	49i A1NAA	1105347320
3	12/8/2020	Ozone Standard	ThermoElectron Inc	000220	49i A3NAA	0622717868
4	12/8/2020	Zero air pump	Werther International	06879	C 70/4	000814275

Mfg	Serial Numbe	er Tag Site	T	echnician	Site Visit Date	Parameter	<b>Owner ID</b>		
ThermoElectron Inc	1105347320	CDZ171	Ν	lartin Valvur	12/08/2020	Ozone	000727		
Slope: Intercept CorrCoff: DAS 1: A Avg % Diff: A 1 0.0%	0.99999 Corr	rcept (Coff: Coff:	0.00000 0.00000 0.00000 Max % Dif	Mfg Serial Number Tfer ID Slope Cert Date	ThermoElectron 49CPS-70008-3 01110 1.0020 1/14/20	364   Tfer L     60   Intercep			
		Tfer Raw	Tfer Corr	Site	Site Unit	RelPerDif	AbsDif		
UseDescription primary	ConcGroup 1	0.11	0.07	0.09	ppb	KelPerDif	AbsDif 0.02		
primary	2	13.35	13.27	13.25	ppb		-0.02		
primary	3	35.83	35.70	35.46	ppb	-0.	67		
primary	4	67.57	67.35	67.49	ppb		21		
primary	5	118.42	118.07	117.70	ppb	-0.			
Sensor Compon	ent Audit Pressu	ure	Condit	ion 752 mmHg		Status pas	S		
Sensor Compon	ent Sample Trai	n	Condit	ion Good		Status pas	SS		
Sensor Compon	ent Minimum dis	stance from road	met Condit	Condition True			SS		
Sensor Compon	ent Inlet Filter C	ondition	Condit	Condition Clean			SS		
Sensor Compon	ent 26.6 degree	unobstructed ru	le Condit	Condition True			S		
Sensor Compon	ent Tree dewline	e >10m or below	inlet Condit	Condition True			tatus pass		
Sensor Compon	ent Offset		Condit	ion -0.10		Status pas	S		
Sensor Compon	ent Span		Condit	ion 1.019		Status pas	35		
Sensor Compon	ent Zero Voltage	Э	Condit	Condition N/A			35		
Sensor Compon	ent Fullscale Vo	ltage	Condit	ion N/A		Status pas	35		
Sensor Compon	ent Cell A Freq.		Condit	ion 90.4 kHz		Status pas	SS		
Sensor Compon	ent Cell A Noise	)	Condit	Condition 0.6 ppb		Status pas	SS		
Sensor Compon	ent Cell A Flow		Condit	ion 0.78 lpm		Status pas	SS		
Sensor Compon	ent Cell A Press	sure	Condit	Condition 712.2 mmHg			SS		
Sensor Compon	ent Cell A Tmp.		Condit	Condition 32.4 C			SS		
Sensor Compon	Sensor Component Cell B Freq.			ion 94.8 kHz		Status pas	SS		
Sensor Compon	Sensor Component Cell B Noise			ion 0.6 ppb		Status pas	SS		
Sensor Component Cell B Flow			Condit	ion 0.86 lpm		Status pas	SS		
Sensor Component Cell B Pressure			Condit	ion 711.6 mmHg		Status pas	SS		
Sensor Compon	ent Line Loss		Condit	ion Not tested		Status pas	SS		
Sensor Compon	ent System Mer	no	Condit	ion		Status pas	SS		

Site V	isit Date/	Parameter	Mfg	Owner ID	Model Number	Serial Number
CND	125-Korey	Devins-12/12/2020				
1	12/12/2020	DAS	Campbell	000499	CR3000	3816
2	12/12/2020	Ozone	ThermoElectron Inc	000692	49i A1NAA	1030244803
3	12/12/2020	Ozone Standard	ThermoElectron Inc	000376	49i A3NAA	0726124693
4	12/12/2020	Zero air pump	Werther International	06868	C 70/4	000814284

Mfg		Serial Numbe	r Tag Site		Тео	chnician	Site Visit Date	Parame	eter	Owner ID
ThermoElec	tron Inc	1030244803	CND12	5	Ko	orey Devins	12/12/2020	Ozone		000692
Slope: Intercept CorrCoff:	ntercept -0.50766 Intercept 0.0000			0.00000 0.00000 0.00000		Mfg Serial Number Tfer ID				er ozone c. Ozone primary stan
DAS 1: A Avg % D	)iff: A N	DA Iax % Dif A	AS 2: Avg %Diff A	Max % D		Slope	0.9995		•	0.29010
0.0	0%	0.0%				Cert Date	1/14/202	20 Cori	Coff	0.99999
UseDescri primat primat primat	ry ry	ConcGroup 1 2 3	Tfer Raw 0.38 15.16 34.99	Tfer C 0.03 14.8 34.7	8 37	Site           -0.36           14.48           34.51	Site Unit ppb ppb ppb	RelPer	Dif -0.58	AbsDif -0.44 -0.39
prima		4	68.11	67.8		67.99	ppb		0.21	
primar		5 nt Audit Pressu	112.39	112.		112.80 746.7 mmHg	ppb	Status	0.58	
Sensor C	ompone	nt Sample Trai	n	Co	onditio	on Good		Status	pass	
Sensor C	ompone	nt Minimum dis	stance from roa	d met Co	onditio	on True		Status	pass	
Sensor C	ompone	nt Inlet Filter C	ondition	Co	onditio	<b>on</b> Moderately cle	an	Status	pass	
Sensor C	ompone	nt 26.6 degree	unobstructed ru	ule Co	Condition True			Status	pass	
Sensor C	ompone	nt Tree dewline	e >10m or belov	v inlet Co	Condition True			Status	pass	
Sensor C	ompone	nt Offset		Co	Condition 0.40			Status	pass	
Sensor C	ompone	nt Span		Co	Condition 1.033			Status	pass	
Sensor C	ompone	nt Zero Voltage	9	Co	nditio	on N/A		Status	pass	
Sensor C	ompone	nt Fullscale Vo	ltage	Cone		ion N/A		Status	pass	
Sensor C	ompone	nt Cell A Freq.		Conc		tion 98.1 kHz		Status	pass	
Sensor C	ompone	nt Cell A Noise				tion 0.6 ppb		Status	pass	
Sensor C	ompone	nt Cell A Flow		Co	onditio	lition 0.71 lpm		Status	pass	
Sensor C	ompone	nt Cell A Press	ure	Co	onditio	on 714.9 mmHg		Status	pass	
Sensor C	ompone	nt Cell A Tmp.		Co	onditio	on 35.8 C		Status	pass	
Sensor Component Cell B Freq.		Co	onditio	ndition 102.7 kHz			pass			
Sensor C	Sensor Component Cell B Noise			Co	onditio	ndition 0.4 ppb			pass	
Sensor C	Sensor Component Cell B Flow			Co	onditio	0.75 lpm		Status	pass	
Sensor C	Sensor Component Cell B Pressure			Co	onditio	on 715.5 mmHg		Status	pass	
Sensor C	ompone	nt Line Loss		Co	onditio	n Not tested		Status	pass	
Sensor C	ompone	nt System Men	no	Co	onditio	on		Status	pass	

Site	Visit Date	Parameter	Mfg	Owner ID	Model Number	Serial Number
BFT	142-Korey	Devins-12/16/2020				
1	12/16/2020	DAS	Campbell	000498	CR3000	3815
2	12/16/2020	Ozone	ThermoElectron Inc	000746	49i A1NAA	1105347315
3	12/16/2020	Ozone Standard	ThermoElectron Inc	000330	49i A3NAA	0622717854
4	12/16/2020	Zero air pump	Werther International	06898	C 70/4	000821905

Mfg		Serial Numbe	r Tag Site		Те	chnician	Site Visit Date	Parame	eter	Owner ID	
ThermoElec	tron Inc	1105347315	BFT14	2	Kc	orey Devins	12/16/2020	Ozone		000746	
Slope: Intercept CorrCoff:	rcept -0.77559 Intercept 0.000			0.00000 0.00000 0.00000		Mfg Serial Number Tfer ID	erial Number 1180030022 Tfer			er ozone c. Ozone primary stan	
DAS 1: A Avg % D	oiff: A N	DA Iax % Dif A	AS 2: Avg %Diff	A Max % I	Dif	Slope	0.9995		-	0.29010	
0.0	0%	0.0%				Cert Date	1/14/20/	20 Cori	COIL	0.99999	
UseDescri primat primat primat	ry ry	ConcGroup 1 2 3	Tfer Raw 0.51 14.97 34.40	Tfer (           0.2           14.0           34.1	2 58	Site -0.63 14.11 33.44	Site Unit ppb ppb ppb	RelPer	Dif -2.01	AbsDif -0.85 -0.57	
prima		4	65.79	65.	53	64.94	ppb		-0.9		
prima		5	108.36	108.		107.80	ppb		-0.3		
	_	nt Audit Pressu nt Sample Train				on 760 mmHg on Good		Status Status	[		
Sensor C	ompone	nt Minimum dis	tance from roa	d met C	onditi	ition True		Status	pass		
Sensor C	ompone	nt Inlet Filter Co	ondition	C	onditi	on Moderately cle	an	Status pass			
Sensor C	Sensor Component 26.6 degree unobstructed rule		ule Co	onditi	on True		Status pass				
Sensor C	ompone	nt Tree dewline	e >10m or belo	w inlet Co	Condition True			Status	Status pass		
Sensor C	ompone	nt Offset		C	Condition 0.30			Status	pass		
Sensor C	ompone	nt Span		C	onditi	ion 1.023		Status	pass		
Sensor C	ompone	nt Zero Voltage	9	Cond		ition N/A		Status	pass		
Sensor C	ompone	nt Fullscale Vo	Itage	Cone		ion N/A		Status	pass		
Sensor C	ompone	nt Cell A Freq.		Cond		tion 92.4 kHz		Status	pass		
Sensor C	ompone	nt Cell A Noise		C	onditi	ion 0.7 ppb		Status	pass		
Sensor C	ompone	nt Cell A Flow		C	onditi	dition 0.65 lpm		Status	pass		
Sensor C	ompone	nt Cell A Press	ure	C	onditi	ndition 726.8 mmHg		Status	pass		
Sensor C	ompone	nt Cell A Tmp.		C	onditi	ition 34.5 C		Status	pass		
Sensor Component Cell B Freq.		C	ondition 103.0 kHz			Status	pass				
Sensor C	Sensor Component Cell B Noise			C	Condition 0.9 ppb			Status	pass		
Sensor C	Sensor Component Cell B Flow			C	onditi	ndition 0.64 lpm			pass		
Sensor C	Sensor Component Cell B Pressure			C	onditi	on 727.7 mmHg		Status	pass		
Sensor C	ompone	nt Line Loss		C	onditi	on Not tested		Status	pass		
Sensor C	ompone	nt System Men	no	C	onditi	on		Status	pass		