



Environmental Assurance
Environmental Monitoring and
Evaluation
Monitoring Program delivery

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July 5, 2007

File No(s). 2007 - 085A / 106A

Mike Bisaga
Program Manager
Peace Airshed Zone Association
Otonabee Consulting Ltd
13440 - 62 Street
Edmonton, Alberta
T5A 0V7

Dear Mike

Re: Peace Airshed Zone Association (PASZA) Ambient Air Monitoring Station Audits

Attached are the results from the PASZA air monitoring station audit conducted from June 26, 2007 and June 27, 2007.

Audits consist of station inspections as well as performance audits of all continuous parameters. All continuous analyzers were audited according to the guidelines set forth in the Air Monitoring Directive (AMD), as well as operational limits specified by the manufacturer to ensure quality data.

Audit non-compliance items found, manufacture specifications not met and inspection issues found at the time of the AENV audit are listed below:

Beaverlodge

Audit failures:

- No analyzer failures.

Manufacturer specifications not met:

- TEOM sample heads dirty – cleaned during audit.

Inspection items:

- Site documentation not available on site.
- Manifold was dirty – contractor cleaned during audit.
- Humidity sensor out by 42%
- Analyzer fan filters dirty and require cleaning.

Falher (Portable)

Audit failures:

- The TRS analyzer failed 21% high.

Manufacturer specifications not met:

- No issues at the time of the audit.

Inspection items:

- Site documentation not available on site.

Evergreen

Audit failures:

- TEOM analyzer failed main flow 12.5% low.
- TEOM main flow has a minor leak.
- TEOM total flow is at the allowable limit and requires re-calibration.

Manufacturer specifications not met:

- No issues at this time.

Inspection items:

- Site documentation not available on site.

Henry Pirker

Audit failures:

- The Oxides of Nitrogen analyzer failed NO and NO_x – 26% high

Manufacturer specifications not met:

- The TEOM temperature sensor was out by 1.8°C.

Inspection items:

- Site documentation not available on site.
- RH is 18% high.

Smokey Heights

Audit failures:

- The TRS analyzer failed 28 % high.

Manufacturer specifications not met:

- No issues at this time.

Inspection items:

- Site documentation not available on site.

Valley View

Audit failures:

- The TRS analyzer failed 29 % high.

Manufacturer specifications not met:

- No issues at this time.

Inspection items:

- Site documentation not available on site.
- Sample pumps are not properly exhausted or scrubbed.
- Ambient temperature at 6-meter height so the audit reading was taken at 2-meter height. This may account for the variation in the audit reading versus the sensor reading.
- H₂S analyzer has a very dirty fan filter – cleaned during audit

The TRS analyzer at the Henry Pirker station experienced an oxidizer failure due to a power failure initiated when the auditor connected the calibrator to the power bar operating the bank of analyzers in one instrument rack. This analyzer required a thermocouple replacement, which was completed during the audit but the contractor had no time to complete a start-up calibration prior to an audit. Alberta Environment will audit this analyzer when we re-audit the failed equipment found during this recent audit.

The SO₂ analyzer at Beaverlodge initially failed the audit by 17% low. A low concentration gas used to conduct and a subsequent re-audit of the gas showed a 7% change from the previous cylinder gas audit thus the audit report was changed to reflect the lower concentration obtained and the audit results now indicate a pass. The SO₂ gas used by the contractor was also audited and it has changed from the last audit conducted on the gas.

The 3 TRS analyzer audits that failed were conducted with a NMI PRM gas and are considered failures. The contractor indicated that prior to the audit there were questions on the condition of

the calibration device used for TRS. Alberta Environment requires this calibration device to be audited to determine if it is outside of the acceptable limits for the certified value of the device.

The TEOM analyzer at Evergreen requires re-calibration of the mass flow controllers to ensure proper collection of PM 2.5 particulate matter. A minor leak also exists with the Evergreen TEOM that needs attention. The TEOM temperature sensor requires re-calibration to bring it back to factory specifications.

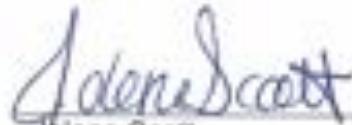
Two of the relative humidity sensors require either cleaning or factory re-calibration. They were outside the +/- 15% tolerance used by Alberta Environment.

Site documentation at the sites was missing at all sites. Please update the stations to ensure they meet all the required AMD guidelines.

During the audit the PASZA QAP was requested but was not produced. The 2006 amendment of the AMD requires that the QAP to have been completed by April 1, 2007. Please advise us as to the status of the QAP. The QAP needs to be fully implemented as of April 1, 2008.

Please address the issues noted above by July 31st, 2007, in writing indicating what corrective actions have been taken. If you have any questions please contact the undersigned at 780-427-7888.

Yours truly,



Jolene Scott
Monitoring Systems Auditor
Northern Region

Attachment(s): None

cc: Park Powell: District Approvals Manager
Greg Smith: District Compliance Manager
Marilyn Albert: Industrial Monitoring Assessment Technologist

**SUMMARY OF AUDIT RESULTS
STATION/MONITORING SITE AUDITED**

DATE: June 26-27, 2007

PARAMETER AUDITED	Beaverlodge	Evergreen	Henry Parkr	Saskey Heights
NO 0.85-1.15	Pass 1.0404	N/A	Fail 1.2586	N/A
NOX 0.85-1.15	Pass 1.0373	N/A	Fail 1.2682	N/A
NO2 0.85-1.15	Pass 0.9933	N/A	Pass 0.9474	N/A
OZONE 0.85-1.15	Pass 0.9176	N/A	Pass 0.9350	N/A
TRS 0.85-1.15	N/A	Pass 1.0981	Not Audited ²	Fail 1.1758
SO2 0.85-1.15	Pass 0.8841	Pass 0.9131	Pass 0.9937	Pass 0.9621
CO 0.85-1.15	N/A	N/A	Pass 0.9940	N/A
THC 0.85-1.15	N/A	N/A	Pass 1.1669	N/A
PAR/GSR	N/A	N/A	Pass	N/A
ORIENTATION	Good	Good	Good	Good
RH/Temp Rainfall	Fail ¹ /Pass N/A	N/A/Pass N/A	Pass /N/A Not functional	N/A/Pass N/A
PM 2.5	Pass	Fail ¹	Pass ²	Pass

1. Greater than 15% out.
2. Main flow out by more than +/- 0.2 lpm
3. Power failure caused thermo oxidizer thermocouple to fail
4. TEOM temperature outside manufacturers specifications of +/- 1%

Audit Performed by: _____ A. Clark / J. Scott _____



**SUMMARY OF AUDIT RESULTS
STATION/MONITORING SITE AUDITED**

DATE: June 26-27, 2007

PARAMETER AUDITED	Father	Valleyview
	June 26, 2007	June 27, 2007
NO 0.85-1.15	Pass 1.0940	N/A
NOX 0.85-1.15	Pass 1.1154	N/A
NO2 0.85-1.15	Pass 1.0112	N/A
OZONE 0.85-1.15	Pass 0.9252	N/A
TBS 0.85-1.15	Fail 1.2118	Fail 1.2874
SO2 0.85-1.15	Pass 1.0020	Pass 0.9884
CO 0.85-1.15	N/A	N/A
THC 0.85-1.15	N/A	N/A
PAR/GSR	N/A	N/A
ORIENTATION	Good	Good
RH/Temp Rainfall	Pass/Pass N/A	N/A/Pass N/A
PM 2.5	N/A	N/A

Audit Performed by: A. Clark / J. Scott



**Industrial Performance Audit
Station Summary**

Company: FOCUS Facility Name: PASZA

Approval No.: N/A Site Name: Beaverlodge

GENERAL

- Has the location remained unchanged from previous audit?
- Is site secure?
- Are station operating conditions adequate?

YES	NO	N/A
X		
X		
X		

DATA ACQUISITION

- Are strip charts in use?
- Is a telemetry system for data acquisition in use?

	X	
X		

SYSTEM COMPONENTS

- Is a glass sampling manifold installed?
- Is sampling manifold clean?
- Is a trap in place?
- Are spare manifold ports capped?
- Is manifold mounted at a slight downward angle?
- Are manifold ports situated to prevent water entering monitors?
- Is manifold pump properly installed and operative?
- Do sample lines extend at least 3/4" into manifold?
- Are monitor sampling lines connected to manifold?
- Are sampling lines clean?
- Are monitors properly mounted and secure?
- Are monitors properly exhausted from room or scrubbed?
- Are zero and span systems operational?

X		
	X	
X		
X		
X		
X		
X		
X		
X		
X		
X		
X		
X		

WIND EQUIPMENT

- Is wind equipment properly oriented?
- Does wind equipment appear to be functioning properly?

X		
X		

COMMENTS: Contractor cleaned manifold during audit.

AUDITOR: Al Clark **DATE:** June 26, 2007



STATION AUDIT

File No. 2007 - 085A / 088ADate: June 26, 2007Performed by: A Clark**Station**

Name: <u>BVLG</u>	Location: <u>BVLG</u>
Facility/Zone: <u>PASZA</u>	Operator: <u>Focus</u>
Temp. <u>25.0 C</u>	Barometric Press. <u>703 mm/hg</u>

Location

Latitude N	<u>55 11' 49.4"</u>
Longitude W	<u>119 23' 54.5"</u>
Elevation	<u>749 m</u>

Status of Site Documentation Not on site

Manifold Material	<u>Glass</u>
Manifold Condition	<u>Good</u>

Meteorological

	Observed	Audit Value
Wind Speed Direction	<u>11 kph / 335 deg</u>	<u>10 - 15 deg / NW</u>
Station Temperature	<u>18.6 C</u>	<u>19.4 C</u>
Relative Humidity	<u>29%</u>	<u>58%</u>
Ambient Temperature	<u>20.3 C</u>	<u>18.5 C</u>
Solar Radiation	<u>N/A</u>	<u>N/A</u>
Precipitation	<u>N/A</u>	<u>N/A</u>

Remarks:



SO₂ ANALYZER AUDIT

File No. 2007 - 085A

Date: June 26, 2007

Performed by: A Clark

Station

Name: BVLG

Location: BVLG

Facility/Zone: PASZA

Operator: Focus

Temp. 25.0 C

Barometric Press. 703 mm/hg

Monitor

Make/Model: Teco 43CTL Serial No: 43CTL-74200-376

Inlet flow (scfm): 611 Full Scale Range ppm: 0.1

Last cal. Date: June 5/07 OIM C.F.: 0.9971

Zero/Bkg: 1.94

Span Coef: 0.756

Calibrator

Calibration Method: GAS DILUTION

Make/Model: R&R MFC 201

AMU #: 1698

Cylinder #: SV 14616

Cyl. Conc PPM: 11.0

Calibrator Flow (scfm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	Co/Ci Ratio
Air	Gas	Total			
4871	X	4871	0.0000	-0.0003	
5008	33.89	5042	0.0739	0.0651	1.1308
4990	19.08	5009	0.0419	0.0362	1.148
5028	9.84	5038	0.0210	0.0181	1.1408

Average Correction Factor (CF) = 1.1408

Linear Regression Analysis: $y = mx + b$ (where x=calculated concentration, y=indicated concentration)**LIMITS**

Correlation Coeff. = 1.0000

≥ 0.995

m (Slope) = 0.8841

0.85-1.15

b (Intercept as % of full scale) = -0.4764

± 3% F.S.

Remarks:



NO-NOx-NO₂ Analyzer Audit

File No. 2007 - 086A

Date:	June 26, 2007		Performed by:	A.Clark	
Station:	Name: BVLG	Location: BVLG	Operator:	Focus	
Facility/Zone:	PASZA	Temp. 25.0 C	BP:	703 mmHg	
Monitor:	Make/Model: Teco 42C		Serial No.:	42C-60475-327	
	Inlet flow (scfm): 786		Range ppm:	1.0	
	Last cal. Date: June 4/07		06d C.F.'s	NO:	1.0053
	NO Bkg:	1.3		NOx:	1.0026
	NOx Bkg:	1.4		NO ₂ :	0.9994
	NO Coef:	1.102			
	NOx Coef:	0.999			
	NO ₂ Coef:	1.000			
Calibration Method:	Gas Dilution / GPT				
Calibrator:	Make/Model: Dassil 5008		AMU#	1751	
NO cylinder #	CAL 7879	NO conc. ppm	51.4	NOx conc. ppm	51.4

Calibrator Flows			Calc. Conc.		Indicated Concentration			
			NO (ppm)	NOx (ppm)	NO (ppm)	NOx (ppm)	NO Coef/Ci	NOx Coef/Ci
Air	Gas	Total						
4936	xx	4936	0.0000	0.0000	-0.0003	-0.0003	xx	xx
4856	75.90	4935	0.8218	0.8218	0.8535	0.8516	0.9625	0.9648
4929	39.82	4960	0.4098	0.4098	0.4230	0.4218	0.9682	0.9709
4984	19.88	5004	0.2042	0.2042	0.2077	0.2069	0.9817	0.9761
Average Correction Factor (CF) =							0.9708	0.9708

Linear Regression Analysis:

 $y_{calc} = ab + c$ (where a =calculated concentration, b =indicated concentration)

	NO	NOx	NO ₂	LIMITS
Correlation Coeff. =	1.0000	1.0000	0.9999	≥ 0.995
m (Slope) =	1.0404	1.0373	0.9933	0.85-1.15
b (Intercept as % of full scale) =	-0.2468	-0.1850	0.2105	$\pm 3\% F.S.$

O ₂ Setting	Set Point	Flow Rate	Indicated Conc. (ppm)			NO Decrease	NO ₂ Increase	CF
			NO	NOx	NO ₂			
8	%	4935	0.8477	0.8439	-0.0047	xx	xx	xx
30	%	4935	0.3909	0.8407	0.4496	0.4568	0.4548	1.0048
20	%	4935	0.6271	0.8463	0.2195	0.2296	0.2242	0.9839
13	%	4935	0.8022	0.8434	0.0409	0.0455	0.0456	0.9978
Average Correction Factor (CF) =							0.9966	

Converter Efficiency

Average Converter Efficiency 100.4%

Remarks:



O3 ANALYZER AUDIT

File No. 2007 - 087A

Date: June 26, 2007

Performed by: A Clark

Station

Name: BVLG Location: BVLG
 Facility/Zone: PASZA Operator: Focus
 Temp. 25.0 C Barometric Press. 703 mm/hg

Monitor

Make/Model:	Taco 49C	Serial No:	49C-764443-383
Inlet flow (scfm):	758 / 713	Full Scale Range ppm:	0.5
Last cal. Date:	June 5/07	OM C.P.:	1.0049

Calibrator

Calibration Method:	Gas Dilution / GPT		
Make/Model:	Dosibit 5008	AMU #:	1495
NO cylinder #:	CAL 7879	NO concentration ppm:	51.4

Ozone Setting	Calibrator Flow (scfm)			Calculated Conc. (ppm)	Indicated Conc. (ppm)	Co/Ci Ratio
	Air	Gas	Total			
0	4935	X	4935	0.0000	0.0000	
30%	4935	X	4935	0.4998	0.4203	1.0881
20%	4935	X	4935	0.2308	0.2060	1.1221
13%	4935	X	4935	0.0445	0.0405	1.1125
Average Correction Factor (CF) =						1.0376

Linear Regression Analysis: $y=mx+b$ (where $x=\text{calculated concentration}$, $y=\text{indicated concentration}$)**LIMITS**

Correlation Coeff. =	0.9989	≥ 0.995
m (Slope) =	0.9178	0.85-1.15
b (Intercept as % of full scale) =	-0.2148	± 3% F.S.

Remarks:



TEOM AUDIT

File No. 2007 - 088ADate: June 26, 2007Performed by: A.Clark**Station**

Name:	<u>BVLG</u>	Location:	<u>BVLG</u>
Facility/Zone:	<u>PASZA</u>	Operator:	<u>Focus</u>
Temp.	<u>25.0 C</u>	Barometric Press.	<u>703 mm/hg</u>

Audit Transfer Standard

Make/Model:	<u>Streamline Pro CU</u>	Cell s/n:	<u>MO 61206</u>
Serial Number:	<u>1752</u>		

Sampler Set-up and current readings

Make/Model	<u>R&P 1400a</u>	F-Main Set Pt (l/min)	<u>3.00</u>
Unit #	<u>PM 2.5</u>	F-Aux Set Pt (l/min)	<u>13.67</u>
Control unit s/n	<u>14048250580407</u>	Filter Load (%)	<u>27%</u>
Transducer s/n	<u>14048250580407</u>	K _D Factor	<u>14287</u>
		Temp (°C)	<u>19.5</u>
		Press (ATM)	<u>0.920</u>

Conversion from mm Hg or " Hg to ATM (Atmospheres)

ATM = (mm Hg) X (1.316 X 10⁻⁵) or ATM = ("Hg) X (3.34207 X 10⁻⁵)
 Note: Tolerances are noted as **BOLD** in Brackets

Zero flow

Pump Off	Pump On (Time to reach set points)		
F-Main (l/min)	<u>0.08</u>	(45-60 Sec)	<u>35</u>
F-Aux (l/min)	<u>-0.04</u>	(45-60 Sec)	<u>56</u>

Temperature/Pressure

Measured Temp ($\pm 1^{\circ}\text{C}$)	<u>20.1</u>	$\Delta^{\circ}\text{C}$	<u>0.5</u>
Measured Press ($\pm 1.5\%$ ATM)	<u>0.925</u>	$\Delta\%$ ATM	<u>0.60%</u>

Flow Audit

Indicated Main/Aux. Flow (l/min)	<u>3.00 / 13.65</u>	$\Delta\%$ from Set-point	<u>($\pm 2\%$) 0.0 / 0.2</u>
Total Flow = Main + Aux (l/min)	<u>16.65</u>		<u>($\pm 2\%$) 0.2</u>
Measured Total Flow (l/min)	<u>16.35</u>	$\pm 1.0 \text{ l/min. } 5.65\%$	<u>0.30 / 1.83%</u>
Measured Main Flow (l/min)	<u>3.03</u>	$\pm 0.2 \text{ l/min. } 6.25\%$	<u>0.03 / 1.00%</u>

Leak Check

Main (< 0.15 l/min)	<u>0.07</u>	Actual leakage = Pump On - Pump Off	<u>0.01</u>
Aux (< 0.15 l/min)	<u>0.02</u>		<u>0.06</u>

K_D Factor

Measured	<u>14240</u>	Heads Dirty	
K _D % Difference ($\pm 2.5\%$)	<u>0.33%</u>	Cleaned during audit	



Industrial Performance Audit Station Summary

Company: FOCUS Facility Name: PASZAApproval No.: N/A Site Name: Falher

GENERAL

- Has the location remained unchanged from previous audit?
- Is site secure?
- Are station operating conditions adequate?

YES	NO	NA
X		

DATA ACQUISITION

- Are strip charts in use?
- Is a telemetry system for data acquisition in use?

	X	
X		

SYSTEM COMPONENTS

- Is a glass sampling manifold installed?
- Is sampling manifold clean?
- Is a trap in place?
- Are space manifold ports capped?
- Is manifold mounted at a slight downward angle?
- Are manifold ports situated to prevent water entering monitors?
- Is manifold pump properly installed and operative?
- Do sample lines extend at least 3/4" into manifold?
- Are monitor sampling lines connected to manifold?
- Are sampling lines clean?
- Are monitors properly mounted and secure?
- Are monitors properly exhausted from room or scrubbed?
- Are zero and span systems operational?

X		
X		
X		
X		
X		
X		
X		
X		
X		
X		
X		
X		
X		
X		

WIND EQUIPMENT

- Is wind equipment properly oriented?
- Does wind equipment appear to be functioning properly?

X		
X		

COMMENTS:

AUDITOR: Jolene Scott DATE: June 26, 2007



STATION AUDIT

File No. 2007 - 089A / 092A

Date: June 26, 2007

Performed by: J Scott

Station

Name: Father

Location: Father

Facility/Zone: PASZA

Operator: J Scott

Temp. 19.0 C

Barometric Press. 715 mmHg

Location

Latitude N 55 45'37.6"

Longitude W 117 15'27.6"

Elevation 582

Status of Site Documentation Not Available

Manifold Material Glass

Manifold Condition Good

Meteorological

	Observed	Audit Value
Wind Speed Direction	<u>230 deg 7 kph</u>	<u>5-10 kph SW</u>

Station Temperature	<u>N/A</u>	<u>N/A</u>
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Relative Humidity	<u>51%</u>	<u>50%</u>
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Ambient Temperature	<u>18</u>	<u>18.5</u>
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Solar Radiation	<u>N/A</u>	<u>N/A</u>
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Precipitation	<u>N/A</u>	<u>N/A</u>
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Remarks:



SO₂ ANALYZER AUDIT

File No. 2007 - 089A

Date: June 26, 2007

Performed by: J Scott

Station

Name: Father

Location: Father

Facility/Zone: PASZA

Operator: J Scott

Temp. 19.0 C

Barometric Press. 715 mmHg

Monitor

Make/Model: Teco 43C Serial No: 609716239

Inlet flow (scfm): 492 Full Scale Range ppm: 0.5

Last cal. Date: June 18, 2007 Old C.P.: 0.9968

Zero/Bkg 8.1

Span Coef 1.137

Calibrator

Calibration Method: GAS DILUTION

Make/Model: R&R MFC 201

AMU #: 1699

Cylinder #: XF 0031888

Cyl. Conc PPM: 97.9

Calibrator Flow (scfm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	C _i /C _o Ratio
Air	Gas	Total			
5000	0.00	5000	0.0000	0.0004	
5031	25.49	5056	0.4836	0.4942	0.9979
5046	10.23	5056	0.1981	0.1972	1.0025
5029	5.45	5034	0.1060	0.1059	0.9991
Average Correction Factor (CF) =					0.9992

Linear Regression Analysis: $y = mx + b$ (where x=calculated concentration, y=indicated concentration)**LIMITS**

Correlation Coeff.= 1.0000

≥ 0.995

m (Slope)= 1.0020

0.85-1.15

b (Intercept as % of full scale)= -0.1165

± 3% F.S.

Remarks:



TRS ANALYZER AUDIT

File No. 2007 - 090ADate: June 26, 2007Performed by: J Scott**Station**Name: FatherLocation: FatherFacility/Zone: PASZAOperator: J ScottTemp. 19.0 CBarometric Press. 715 mmHg**Monitor**Make/Model: Teco 43C Serial No: 609716238Inlet flow (scfm): 439 Full Scale Range ppm: 0.1Last cal. Date: June 18, 2007 Old C.F. 0.9964Zero/Bkg 10.4Span Coef 1.799**Calibrator**Calibration Method: GAS DILUTIONMake/Model: R&R MFC 201 AMU #: 1699Cylinder #: D518922 Cyl. Conc PPM: 20.00

Calibrator Flow (scfm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	C _c /C _i Ratio
Air	Gas	Total			
5000	0.00	5000	0.0000	-0.0005	
5037	18.95	5056	0.0750	0.0605	0.8237
5048	9.92	5058	0.0392	0.0470	0.8261
5029	5.48	5034	0.0218	0.0264	0.8094
Average Correction Factor (CF) =					0.8197

Linear Regression Analysis:

$$y_{\text{indicated}} = b + mx \quad (\text{where } x = \text{calculated concentration}, y = \text{indicated concentration})$$

LIMITSCorrelation Coeff. = 1.0000

≥ 0.995

m (Slope) = 1.2118

0.85-1.15

b (Intercept as % of full scale) = -0.3440

± 3% F.S.

Remarks:



NO-NOx-NO₂ Analyzer Audit

File No. 2007 - 091A

Date:	June 26, 2007			Performed by:	J. Scott			
Station:	Name:	Father	Location:	Father	Operator:	FOCUS		
Facility/Zone:		PASZA		Temp.	19.0 C	BP.	715 mmHg	
Monitor:	Make/Model:	TECO 425			Serial No.	701120011		
	Inlet flow (scfm):	439			Range ppm:	1.0		
	Last cal. Date:	June 18, 2007			Old C.F.'s	NO:	0.9999	
	NO Bkg:	4.6			NOx:	0.9999		
	NOx Bkg:	4.8			NO2:	0.9999		
	NO Coef:	0.641						
	NOx Coef:	0.996						
	NO2 Coef:	1.013						
Calibration Method: Gas Dilution / GPT								
Calibrator:	Make/Model:	Sabio 2010			AMUF	1749		
NO cylinder #	CAL 7788	NO conc. ppm 51.6			NOx conc. ppm	51.6		
Calibrator Flows			Calc. Conc.	Indicated Concentration				
Air	Gas	Total	NO (ppm)	NOx (ppm)	NO (ppm)	NOx (ppm)	NO Co/Ci	
4872	0.00	4872	0.0000	0.0000	-0.0005	0.0000	XX	
4880	79.05	4936	0.7950	0.7950	0.8778	0.8953	0.9052	
4880	38.63	4923	0.3839	0.3839	0.4418	0.4495	0.8680	
4874	18.71	4891	0.1763	0.1763	0.2225	0.2360	0.7905	
Average Correction Factors (CF) =							0.8546	
Linear Regression Analysis: $y = mx + b$ (where x=calculated concentration, y=indicated concentration)								
							LIMITS	
Correlation Coeff. =	0.9993			NO	NOx	NO ₂	≥ 0.995	
m (Slope) =	1.0940				1.1154	1.0112	0.85-1.15	
b (Intercept as % of full scale) =	1.4732				1.4826	-0.1205	$\pm 3\% F.S.$	
O ₂ Setting	Set Point	Flow Rate	Indicated Conc. (ppm)			NO Decrease	NO ₂ Increase	CF
			NO	NOx	NO ₂			
0	XX	4936	0.8743	0.8900	0.9175	XX	XX	XX
0.8	XX	4936	0.4231	0.8938	0.4723	0.4512	0.4548	0.9621
0.4	XX	4936	0.6878	0.8916	0.2057	0.1865	0.1682	0.9610
0.2	XX	4936	0.8165	0.8890	0.0742	0.0578	0.0567	1.0194
Average Correction Factor (CF) =							1.0008	
Converter Efficiency								
Average Converter Efficiency							99.92%	
Remarks:								



O3 ANALYZER AUDIT

File No. 2007 - 092A

Date: June 26, 2007

Performed by: J Scott

Station

Name: Father

Location: Father

Facility/Zone: PASZA

Operator: J Scott

Temp. 19.0 C

Barometric Press. 715 mmHg

Monitor

Make/Model: Teco 49C Serial No: 609716240

Inlet flow (scfm): 671 / 673 Full Scale Range ppm: 0.5

Last cal. Date: June 18, 2007 Old C.F.: 0.9981

O3 BKG: 0.2

O3 COEF: 1.022

Calibrator

Calibration Method: Gas Dilution / GPT

Make/Model: Sabio 2010 AMU #: 1749

NO cylinder #: CAL 7788 NO concentration ppm: 51.6

Ozone Setting	Calibrator Flow (scfm)			Calculated Conc. (ppm)	Indicated Conc. (ppm)	Co/Ci Ratio
	Air	Gas	Total			
0.0 V	4936	X	4936	0.0000	0.0002	
0.8 V	4936	X	4936	0.4512	0.4168	1.0831
0.4 V	4936	X	4936	0.1865	0.1733	1.0774
0.2V	4936	X	4936	0.0578	0.0517	1.1223
Average Correction Factor (CF) =					1.0943	

Linear Regression Analysis: $y=mx+b$ (where x=calculated concentration, y=indicated concentration)**LIMITS**

Correlation Coeff.= 1.0000

≥ 0.995

m (Slope)= 0.9252

0.85-1.15

b (Intercept as % of full scale)= -0.0740

± 3% F.S.

Remarks:



Industrial Performance Audit Station Summary

Company: FOCUS Facility Name: PASZA

Approval No.: N/A Site Name: Evergreen

GENERAL

- Has the location remained unchanged from previous audit?
- Is site secure?
- Are station operating conditions adequate?

YES	NO	N/A
X		
X		
X		

DATA ACQUISITION

- Are strip charts in use?
- Is a telemetry system for data acquisition in use?

	X	
X		

SYSTEM COMPONENTS

- Is a glass sampling manifold installed?
- Is sampling manifold clean?
- Is a trap in place?
- Are spare manifold ports capped?
- Is manifold mounted at a slight downward angle?
- Are manifold ports situated to prevent water entering monitors?
- Is manifold pump properly installed and operative?
- Do sample lines extend at least 3/4" into manifold?
- Are monitor sampling lines connected to manifold?
- Are sampling lines clean?
- Are monitors properly mounted and secure?
- Are monitors properly exhausted from room or scrubbed?
- Are zero and span systems operational?

X		
X		
X		
X		
X		
X		
X		
X		
X		
X		
X		
X		
X		

WIND EQUIPMENT

- Is wind equipment properly oriented?
- Does wind equipment appear to be functioning properly?

X		
X		

COMMENTS: _____

AUDITOR: Al Clark DATE: June 26, 2007



STATION AUDIT

File No. 2007 - 093A / 095A

Date: June 26, 2007

Performed by: A. Clark

Station

Name: Evergreen Location: Evergreen
Facility/Zone: PASZA Operator: Focus
Temp: 25.0 C Barometric Press: 711 mm/hg

Location

Latitude N 55 07' 02.5"
Longitude W 118 45' 54.1"
Elevation 644 m

Status of Site Documentation None on site

Manifold Material Glass
Manifold Condition Good

Meteorological

	Observed	Audit Value
Wind Speed Direction	<u>8 kph / 4 deg</u>	<u>5-10 kph / N</u>
Station Temperature	<u>N/A</u>	<u>N/A</u>
Relative Humidity	<u>N/A</u>	<u>N/A</u>
Ambient Temperature	<u>22.8 C</u>	<u>23.8</u>
Solar Radiation	<u>N/A</u>	<u>N/A</u>
Precipitation	<u>N/A</u>	<u>N/A</u>

Remarks:



SO₂ ANALYZER AUDIT

File No. 2007 - 093A

Date: June 26, 2007

Performed by: A. Clark

Station

Name: Evergreen

Location: Evergreen

Facility/Zone: PASZA

Operator: Focus

Temp: 25.0 C

Barometric Press: 711 mm/Hg

Monitor

Make/Model: Teco 43I Serial No: 0701120008

Inlet flow (scfm): 444 Full Scale Range ppm: 1.0

Last cal. Date: June 21/07 Old C.F.: 1.0543

Zero/Bkg: 8.0

Span Coef: 0.833

Calibrator

Calibration Method: GAS DILUTION

Make/Model: R&R MFC 201 AMU #: 1698

Cylinder #: NIST SRM Cyl. Conc PPM: 97.9

Calibrator Flow (scfm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	Co/Ci Ratio
Air	Gas	Total			
5010	X	5010	0.0000	0.0004	
5020	41.10	5070	0.7936	0.7267	1.0942
5042	19.44	5061	0.3760	0.3456	1.0894
5013	9.53	5023	0.1857	0.1724	1.0799
Average Correction Factor (CF) =					1.0878

Linear Regression Analysis: $y_{calculated} = b + mx$ (where x=calculated concentration, y=indicated concentration)**LIMITS**

Correlation Coeff = 1.0000

≥ 0.995

m (Slope) = 0.9131

0.85-1.15

b (Intercept as % of full scale) = 0.1625

± 3% F.S.

Remarks:



TRS ANALYZER AUDIT

File No. 2007 - 094ADate: June 26, 2007Performed by: A. Clark**Station**Name: EvergreenLocation: EvergreenFacility/Zone: PASZAOperator: FocusTemp: 25.0 CBarometric Press: 711 mm/hg**Monitor**Make/Model: Teco 43C Serial No: 0436610005Inlet flow (scfm): 468 Full Scale Range ppm: 0.1Last cal. Date: June 21/07 Old C.F.: 1.0626Zero/Bkg: 19.4Span Coef: 1.085**Calibrator**Calibration Method: GAS DILUTIONMake/Model: R&R MFC 201 AMU #: 1698Cylinder #: NMI PRM Cyl. Conc PPM: 25.01

Calibrator Flow (scfm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	C _c /C _i Ratio
Air	Gas	Total			
5010	XX	5010	0.0000	-0.0015	
5054	15.85	5070	0.0782	0.0848	0.9081
5050	11.15	5065	0.0651	0.0683	0.9214
5018	6.56	5023	0.0327	0.0343	0.9124
Average Correction Factor (CF) =					0.9140

Linear Regression Analysis: $y = mx + b$ (where x=calculated concentration, y=indicated concentration)**LIMITS**Correlation Coeff. = 0.9999 ≥ 0.995 m (Slope) = 1.0881

0.85-1.15

b (Intercept as % of full scale) = -1.6312 $\pm 3\%$ F.S.**Remarks:**



TEOM AUDIT

File No. 2007 - 095ADate: June 26, 2007Performed by: Al Clark**Station**

Name:	<u>Evergreen</u>	Location:	<u>Grande Prairie</u>
Facility/Zone:	<u>PASZA</u>	Operator:	<u>Focus</u>
Temp.	<u>25.0 °C</u>	Barometric Press.	<u>711 mmHg</u>

Audit Transfer Standard

Make/Model:	<u>Streamline Pro CU</u>	Cell s/n:	<u>MO 61205</u>
Serial Number:	<u>1752</u>		

Sampler Set-up and current readings

Make/Model	<u>R&P 1400a</u>	F-Main Set Pt (l/min)	<u>3.00</u>
Unit #	<u>PM 2.5</u>	F-Aux Set Pt (l/min)	<u>13.67</u>
Control unit s/n	<u>140AB215519705</u>	Filter Load (%)	<u>20%</u>
Transducer s/n	<u>140AB215549705</u>	K _D Factor	<u>10124</u>
		Temp (°C)	<u>23.7</u>
		Press (ATM)	<u>0.936</u>

Conversion from mm Hg or " Hg to ATM (Atmospheres)

$$\text{ATM} = (\text{mm Hg}) \times (1.316 \times 10^{-3}) \quad \text{or} \quad \text{ATM} = (\text{" Hg}) \times (3.34297 \times 10^{-2})$$

Note: Tolerances are noted as **BOLD** in Brackets**Zero flow**

Pump Off	Pump On (Time to reach set points)		
F-Main (l/min)	<u>0.07</u>	(45-60 Sec)	<u>39</u>
F-Aux (l/min)	<u>0.03</u>	(45-60 Sec)	<u>47</u>

Temperature/Pressure

Measured Temp ($\pm 1^\circ\text{C}$)	<u>23.4</u>	$\Delta^\circ\text{C}$	<u>0.3</u>
Measured Press ($\pm 1.5\%$ ATM)	<u>0.932</u>	$\Delta\% \text{ ATM}$	<u>0.4%</u>

Flow Audit

Indicated Main/Aux Flow (l/min)	<u>3.00 / 13.67</u>	$\Delta\% \text{ from Set-point}$	<u>(\pm 2%) 0.0 / 0.0</u>
Total Flow = Main + Aux (l/min)	<u>16.67</u>		<u>(\pm 2%) 0.0</u>
Measured Total Flow (l/min)	<u>15.67</u>	$\pm 1.0 \text{ l/min}, 5.65\%$	<u>1.0 / 5.65%</u>
Measured Main Flow (l/min)	<u>2.60</u>	$\pm 0.2 \text{ l/min}, 6.25\%$	<u>0.40 / 12.50%</u>

Leak Check

Main (< 0.15 l/min)	<u>0.08</u>	Actual leakage = Pump On - Pump Off	<u>0.01</u>
Aux. (< 0.15 l/min)	<u>0.19</u>		<u>0.16</u>

K_D Factor

Measured	<u>10268</u>	Heads clean
K _D % Difference ($\pm 2.5\%$)	<u>1.42%</u>	



Industrial Performance Audit Station Summary

Company: FOCUS Facility Name: PASZA

Approval No.: N/A Site Name: Henry Parker

GENERAL

- Has the location remained unchanged from previous audit?
- Is site secure?
- Are station operating conditions adequate?

YES	NO	NA
X		
X		
X		

DATA ACQUISITION

- Are strip charts in use?
- Is a telemetry system for data acquisition in use?

	X	
X		

SYSTEM COMPONENTS

- Is a glass sampling manifold installed?
- Is sampling manifold clean?
- Is a trap in place?
- Are spare manifold ports capped?
- Is manifold mounted at a slight downward angle?
- Are manifold ports situated to prevent water entering monitors?
- Is manifold pump properly installed and operative?
- Do sample lines extend at least 3/4" into manifold?
- Are monitor sampling lines connected to manifold?
- Are sampling lines clean?
- Are monitors properly mounted and secure?
- Are monitors properly exhausted from room or scrubbed?
- Are zero and span systems operational?

X		
X		
X		
X		
X		
X		
X		
X		
X		
X		
X		
X		
X		
X		

WIND EQUIPMENT

- Is wind equipment properly oriented?
- Does wind equipment appear to be functioning properly?

X		
X		

COMMENTS: _____

AUDITOR: Al Clark DATE: June 27, 2007



STATION AUDIT

File No. 2007 - 096A / 101A

Date: June 27, 2008

Performed by: Al Clark

Station

Name: Henry Pirker Location: Grande Prairie
Facility/Zone: PASZA Operator: FOCUS
Temp: 20.5 C Barometric Press: 706 mm/Hg

Location

Latitude N 55 10' 35.9"
Longitude W 118 48' 27.9"
Elevation 668 m

Status of Site Documentation Not on site

Manifold Material Glass
Manifold Condition Good

Meteorological

	Observed	Audit Value
Wind Speed Direction	7 kph / 167 deg	5-10 kph / 8
Station Temperature	N/A	N/A
Relative Humidity	52%	65%
Ambient Temperature	19.2	18.8
Solar Radiation	390 W/M2	Mainly sunny @ 0915
Precipitation	Not functional	N/A

Remarks:



CO ANALYZER AUDIT

File No. 2007 - 096ADate: June 27, 2007Performed by: AJ Clark**Station**Name: Henry PirkerLocation: Grande PrairieFacility/Zone: PASZAOperator: FocusTemp: 20.5 CBarometric Press: 706 mm/Hg**Monitor**Make/Model: Teco 48CTL Serial No: 0508011062Inlet flow (scfm): 1103 Full Scale Range ppm: 50Last cal. Date: June 7, 2007 Old C.F.: 0.9999**Calibrator**Calibration Method: Gas DilutionMake/Model: R&R MFC 201 AMU #: 1698CO cylinder #: FF 13298 CO concentration ppm: 2520

Calibrator Flow (scfm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	Co/Ci Ratio
Air	Gas	Total			
4990	5000	4990	0.0	0.18	
5022	54.30	5076	26.96	27.01	1.0048
5014	24.23	5038	12.12	12.32	0.9983
5006	9.58	5015	4.89	5.08	0.9942
Average Correction Factor (CF) =					0.9958

Linear Regression Analysis: $y = mx + b$ (where x=calculated concentration, y=indicated concentration)**LIMITS**Correlation Coeff.= 1.0000 ≥ 0.995 m (Slope)= 0.9940 $0.85-1.15$ b (Intercept as % of full scale)= 0.4793 $\pm 3\% \text{ F.S.}$ **Remarks:**



SO₂ ANALYZER AUDIT

File No. 2007 - 097ADate: June 27, 2007Performed by: AJ Clark**Station**Name: Henry PirkerLocation: Grande PrairieFacility/Zone: PASZAOperator: Dawn EwanTemp: 23.0 CBarometric Press: 707 mm/Hg**Monitor**Make/Model: Tecp 43C Serial No: 0610816292Inlet flow (sccm): 461 Full Scale Range ppm: 0.5Last cal. Date: June 19/07 Old C.F.: 0.9972Zero/ffkg: 7.4Span Coef: 0.785**Calibrator**Calibration Method: GAS DILUTIONMake/Model: R&R MFC 201Cylinder #: NIST SRMAMU #: 1699Cyl. Conc PPM: 97.9

Calibrator Flow (sccm)			Calculated Conc (ppm)	Indicated Concentration (ppm)	Co/Ci Ratio
Air	Gas	Total			
4993	xx	4993	0.0000	0	
5000	19.15	5019	0.3741	0.3717	1.0085
5018	9.59	5024	0.1868	0.1846	1.0123
4996	4.86	5001	0.0951	0.094	1.0121
Average Correction Factor (CF) =					1.0103

Linear Regression Analysis: $y = mx + b$ (where x=calculated concentration, y=indicated concentration)**LIMITS**Correlation Coeff. = 1.0000 ≥ 0.995 m (Slope) = 0.9937 $0.85-1.15$ b (Intercept as % of full scale) = -0.0645 $\pm 3\% \text{ F.S.}$ **Remarks:**



TRS ANALYZER AUDIT

File No. DraftDate: June 27, 2007Performed by: AJ Clark**Station**Name: Henry ParkerLocation: Grande PrairieFacility/Zone: PASZAOperator: Focus

Temp: _____

Barometric Press: _____

MonitorMake/Model: _____ Serial No: 0630718528

Inlet flow (scfm): _____ Full Scale Range ppm: _____

Last cal. Date: _____ Old C.F.: _____

Zero/Bkg: _____

Span Coef: _____

Calibrator

Calibration Method: _____

Make/Model: _____

Cylinder #: _____

AMU #: _____

Cyl. Conc PPM: _____

Calibrator Flow (scfm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	Co/Ci Ratio
Air	Gas	Total			
0	X		0.0000		
0			#DIV/0!		#DIV/0!
0			#DIV/0!		#DIV/0!
0			#DIV/0!		#DIV/0!

Average Correction Factor (CF) = #DIV/0!

Linear Regression Analysis: $y = mx + b$ (where x=calculated concentration, y=indicated concentration)**LIMITS**Correlation Coeff.= #DIV/0! ≥ 0.995 m (Slope)= #DIV/0!

0.85-1.15

b (Intercept as % of full scale)= #DIV/0! $\pm 3\% \text{ F.S.}$ **Remarks:**

Not done. Power failure initiated when audit equipment was turned on tripped power bar breaker. When power re-applied the thermo oxidizer thermocouple failed. A new thermocouple was installed but the analyzer had not been calibrated. Will audit next trip up.



HC ANALYZER AUDIT

File No. 2007 - 098ADate: June 27, 2007Performed by: Al Clark**Station**Name: Henry ParkerLocation: Grande PrairieFacility/Zone: PASZAOperator: FocusTemp: 23.0 CBarometric Press: 707 mm/hg**Monitor**Make/Model: Taco 51CLT Serial No: 51CLT-79009-390Inlet flow (scfm): 6.10 psi Full Scale Range ppm: 25Last cal. Date: June 19/07 Old C.F.: 0.9993**Calibrator**Calibration Method: Gas DilutionMake/Model: Dasibi 5008 AMU #: 1751HC cylinder #: SV 16378 HC concentration ppm: 1855

Calibrator Flow (scfm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	Co/Ci Ratio
Air	Gas	Total			
4778	X	4778	0.00	-0.07	
4712	57.11	4769	22.21	24.34	0.9190
4753	29.32	4782	11.37	12.41	0.9113
4753	7.16	4760	2.79	2.89	0.9427
Average Correction Factor (CF) =					0.9013

Linear Regression Analysis: $y=mx+b$ (where x=calculated concentration, y=indicated concentration)**LIMITS**Correlation Coeff.= 1.0000 ≥ 0.995 m (Slope)= 1.1009

0.85-1.15

b (Intercept as % of full scale)= -0.4803 $\pm 3\%$ F.S.**Remarks:**



NO-NOx-NO₂ Analyzer Audit

File No. 2007 - 099A

Date:	June 27, 2007			Performed by:	A. Clark			
Station: Facility/Zone:	Name: PASZA	Location: Grande Prairie	Operator: Focus	Temp:	20.5	BP: 706 mm/Hg		
Monitor:	Make/Model: Teco 42C		Serial No.: 0508011073	Inlet flow (scfm):	780	Range ppm: 0.5		
	Last cal. Date: June 12/07		Old C.F.'s	NO:	0.9999	NO _x :	0.9999	
				NO ₂ :	0.9997			
	NO Bkg	10.4						
	NO _x Bkg	11						
	NO Coef	0.884						
	NO _x Coef	0.991						
	NO ₂ Coef	1.050						
Calibration Method:	Gas Dilution / GPT							
Calibrator:	Make/Model: Desibi 5008		AMLI# 1751					
NO cylinder #	CAL 7879	NO conc. ppm	51.4	NO _x conc. ppm	51.4			
Calibrator Flow:		Calc. Conc.		Indicated Concentration				
		Air	Gas	Total	NO (ppm)	NO _x (ppm)	NO (ppm)	NO _x (ppm)
4793	4793	4793	0.0000	0.0000	0.0000	-0.0004	0.7933	0.7906
4759	30.80	4790	0.3365	0.3305	0.4168	0.4166	0.7933	0.7906
4746	20.45	4795	0.2267	0.2267	0.2760	0.2757	0.7995	0.7962
4762	10.13	4782	0.1063	0.1063	0.1378	0.1369	0.7935	0.7964
Average Correction Factors (CF) = 0.7954 0.7960								
Linear Regression Analysis:		$y = mx + b$ (where x=calculated concentration, y=indicated concentration)						
		NO	NO _x	NO ₂	LIMITS			
Correlation Coeff = 1.0000		1.0000	1.0000	1.0000	≥ 0.995			
m (Slope) = 1.2586		1.2662	0.9474	0.9474	0.85-1.15			
b (Intercept as % of full scale) = -0.0443		-0.1784	0.3958	0.3958	± 3% F.S.			
O ₂ Setting	Set Point	Flow Rate	Indicated Conc. (ppm)			NO Decrease	NO _x Increase	CF
			NO	NO _x	NO ₂			
0	%	4790	0.4147	0.4168	0.0020	0.7933	0.7906	
30	%	4790	0.0929	0.4014	0.3087	0.3218	0.3067	1.0482
20	%	4790	0.2263	0.4068	0.1828	0.1884	0.1908	1.0420
10	%	4790	0.3424	0.4144	0.0723	0.0723	0.0703	1.0284
Average Correction Factor (CF) = 1.0399								
Converter Efficiency								
Average Converter Efficiency 96.16%								
Remarks:								



O3 ANALYZER AUDIT

File No. 2007 - 100A

Date: June 27, 2007

Performed by: Al Clark

Station

Name: Henry Pirker Location: Grande Prairie
 Facility/Zone: PASZA Operator: Dawn Ewan
 Temp: 23.0 C Barometric Press: 707 mm/Hg

Monitor

Make/Model:	Taco 49C	Serial No:	0607415781
Inlet flow (scfm):	685/677	Full Scale Range ppm:	0.5
Last cal. Date:	June 19/07	Old C.F.	0.9982

Calibrator

Calibration Method:	Gas Dilution / GPT		
Make/Model:	Danhi 500B	AMU #:	1751
NO cylinder #:	CAL 7879	NO concentration ppm:	51.4

Ozone Setting	Calibrator Flow (scfm)			Calculated Conc. (ppm)	Indicated Conc. (ppm)	Cc/Ci Ratio
	Air	Gas	Total			
0%	4790		4790	0.0000	0.0006	
30%	4790		4790	0.2160	0.2458	1.0658
20%	4790		4790	0.1440	0.1420	1.0601
10%	4790		4790	0.0725	0.0671	1.0177
Average Correction Factor (CF) =						1.0479

Linear Regression Analysis:

$$y_{cal} = b + mx \quad (\text{where } x=\text{calculated concentration}, y=\text{indicated concentration})$$
LIMITS

Correlation Coeff. =	0.9999	≥ 0.995
m (Slope) =	0.9390	0.85-1.15
b (Intercept as % of full scale) =	0.3608	± 3% F.S.

Remarks:

The ozone values were derived from the NO/NOx GPT. Due to the poor NO/NOx audit the average NO correction factor as determined by the audit was applied to the values seen during the NO/NOx/NO2 portion to derive the values used for this ozone audit. The factor was 0.7954.



TEOM AUDIT

File No. 2007 - 101ADate: June 27, 2007Performed by: A. Clark**Station**

Name:	<u>Henry Pirker</u>	Location:	<u>Grande Prairie</u>
Facility/Zone:	<u>PASZA</u>	Operator:	<u>Focus</u>
Temp.	<u>23.0 C</u>	Barometric Press.	<u>707 mm/Hg</u>

Audit Transfer Standard

Make/Model:	<u>Streamline Pro CU</u>	Cell s/n:	<u>MO 61205</u>
Serial Number:	<u>1752</u>		

Sampler Set-up and current readings

Make/Model	<u>R&P 1400a</u>	F-Main Set Pt (l/min)	<u>3.00</u>
Unit #	<u>PM2.5</u>	F-Aux Set Pt (l/min)	<u>13.67</u>
Control unit s/n	<u>140AB258750510</u>	Filter Load (%)	<u>20%</u>
Transducer s/n	<u>140AB258750510</u>	K _O Factor	<u>13020</u>
		Temp (°C)	<u>19.0</u>
		Press (ATM)	<u>0.929</u>

Conversion from mm Hg or " Hg to ATM (Atmospheres).

$$\text{ATM} = (\text{mm Hg}) \times (1.316 \times 10^{-3}) \quad \text{or} \quad \text{ATM} = (\text{"Hg}) \times (3.34207 \times 10^{-3})$$

Note: Tolerances are noted as **BOLD** in Brackets**Zero flow**

Pump Off	Pump On (Time to reach set points)		
F-Main (l/min)	<u>0.1</u>	(45-60 Sec)	<u>36</u>
F-Aux (l/min)	<u>0.28</u>	(45-60 Sec)	<u>44</u>

Temperature/Pressure

Measured Temp ($\pm 1^\circ\text{C}$)	<u>20.8</u>	$\Delta^\circ\text{C}$	<u>1.8</u>
Measured Press ($\pm 1.5\%$ ATM)	<u>0.925</u>	$\Delta\%$ ATM	<u>0.4 %</u>

Flow Audit

Indicated Main/Aux Flow (l/min)	<u>3.00 / 13.66</u>	$\Delta\%$ from Set-point	<u>($\pm 2\%$) 0.0 / 0.1</u>
Total Flow = Main + Aux (l/min)	<u>16.66</u>		<u>($\pm 2\%$) 0.1</u>
Measured Total Flow (l/min)	<u>16.3</u>	± 1.0 l/min. 5.65%	<u>0.36 / 2.21%</u>
Measured Main Flow (l/min)	<u>2.95</u>	± 0.2 l/min. 6.25%	<u>0.05 / 1.69%</u>

Leak Check

Main (< 0.15 l/min)	<u>0.12</u>	Actual leakage = Pump On - Pump Off	<u>0.02</u>
Aux. (< 0.15 l/min)	<u>0.29</u>		<u>0.01</u>

K_O Factor

Measured	<u>13029</u>	Heads clean
K _O % Difference ($\pm 2.5\%$)	<u>0.07</u>	



Industrial Performance Audit Station Summary

Company: FOCUS Facility Name: PASZA

Approval No.: N/A Site Name: Smoky Heights

GENERAL

- Has the location remained unchanged from previous audit?
- Is site secure?
- Are station operating conditions adequate?

YES	NO	N/A
X		
X		
X		

DATA ACQUISITION

- Are strip charts in use?
- Is a telemetry system for data acquisition in use?

	X	
X		

SYSTEM COMPONENTS

- Is a glass sampling manifold installed?
- Is sampling manifold clean?
- Is a trap in place?
- Are spare manifold ports capped?
- Is manifold mounted at a slight downward angle?
- Are manifold ports situated to prevent water entering monitors?
- Is manifold pump properly installed and operative?
- Do sample lines extend at least 3/4" into manifold?
- Are monitor sampling lines connected to manifold?
- Are sampling lines clean?
- Are monitors properly mounted and secure?
- Are monitors properly exhausted from room or scrubbed?
- Are zero and span systems operational?

X		
X		
X		
X		
X		
X		
X		
X		
X		
X		
X		
X		
X		
X		

WIND EQUIPMENT

- Is wind equipment properly oriented?
- Does wind equipment appear to be functioning properly?

X		
X		

COMMENTS: _____

AUDITOR: J Scott DATE: June 27, 2007



STATION AUDIT

File No. 2007 - 302A / 104A

Date: June 27, 2007

Performed by: J. Scott

Station

Name: Smoky Heights Location: Smoky Heights
Facility/Zone: PASZA Operator: FOCUS
Temp: 23 Barometric Press: 707 mmHg

Location

Latitude N 55 24'09.8"
Longitude W 118 16'52.7"
Elevation 651 m

Status of Site Documentation Not Available

Manifold Material Glass
Manifold Condition Good

Meteorological

	Observed	Audit Value
Wind Speed Direction	<u>126 Degs 18.2 kph</u>	<u>SE @ 15 - 20 kph</u>
Station Temperature	<u>N/A</u>	<u>N/A</u>
Relative Humidity	<u>N/A</u>	<u>N/A</u>
Ambient Temperature	<u>16.2 C</u>	<u>17.0 C</u>
Solar Radiation	<u>N/A</u>	<u>N/A</u>
Precipitation	<u>N/A</u>	<u>N/A</u>

Remarks:



SO₂ ANALYZER AUDIT

File No. 2007 - 102A

Date: June 27, 2007

Performed by: J. Scott

Station

Name:	Smoky Heights	Location:	Smoky Heights
Facility/Zone:	PASZA	Operator:	FOCUS
Temp:	23	Barometric Press:	707 mmHg

Monitor

Make/Model:	Teco 43I	Serial No.:	701120009
Inlet flow (scfm):	445	Full Scale Range (ppm):	0.5
Last cal. Date:	June 23, 2007	Old C.P.:	0.981
Zero/Bkg:	5.1		
Span Coef:	0.813		

Calibrator

Calibration Method:	GAS DILUTION		
Make/Model:	R&R MFC 201	AMU #:	1699
Cylinder #:	XF 0031888	Cyl. Conc PPM:	97.9

Calibrator Flow (scfm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	Co/Ci Ratio
Air	Gas	Total			
5023	0.00	5023	0.0000	0.0003	
5027	20.38	5047	0.3963	0.3805	1.0398
5056	10.27	5096	0.1973	0.1929	1.0244
5050	5.54	5056	0.1073	0.1039	1.0354
Average Correction Factor (CF) =					1.0332

Linear Regression Analysis:

$$y=mx+b \quad (\text{where } x=\text{calculated concentration}, y=\text{indicated concentration})$$

LIMITS

Correlation Coeff. =	1.0000	≥ 0.995
m (Slope) =	0.9621	0.85-1.15
b (Intercept as % of full scale) =	0.2096	$\pm 3\% \text{ F.S.}$

Remarks:



TRS ANALYZER AUDIT

File No. 2007 - 103ADate: June 27, 2007Performed by: J. Scott**Station**

Name: <u>Smoky Heights</u>	Location: <u>Smoky Heights</u>
Facility/Zone: <u>PASZA</u>	Operator: <u>FOCUS</u>
Temp: <u>23</u>	Barometric Press: <u>707 mmHg</u>

Monitor

Make/Model: <u>Teco 43C</u>	Serial No: <u>436610004</u>
Inlet flow (sccm): <u>765</u>	Full Scale Range ppm: <u>0.1</u>
Last cal. Date: <u>June 23, 2007</u>	OM C.F.: <u>0.8728</u>

Zero/Bkg 15.3
Span Coef 1.343

Calibrator

Calibration Method: <u>GAS DILUTION</u>	AMU #: <u>1699</u>
Make/Model: <u>R&R MFC 201</u>	Cyl. Conc PPM: <u>20.00</u>
Cylinder #: <u>D518922</u>	

Calibrator Flow/ (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	Cc/Ci Ratio
Air	Gas	Total			
5023	0.00	5023	0.0000	0.0005	
5036	19.38	5055	0.0767	0.0683	0.784
5068	9.99	5096	0.0392	0.0519	0.7628
5050	5.52	5056	0.0218	0.0288	0.7716
Average Correction Factor (CF) =					0.7728

Linear Regression Analysis: $y = mx + b$ (where x=calculated concentration, y=indicated concentration)**LIMITS**

Correlation Coeff.: <u>0.9999</u>	≥ 0.995
m (Slope): <u>1.2758</u>	$0.85-1.15$
b (Intercept as % of full scale): <u>0.9494</u>	$\pm 3\% \text{ F.S.}$

Remarks:



TEOM AUDIT

File No. 2007 - 104ADate: June 27, 2007Performed by: J. Scott**Station**

Name:	<u>Smoky Height</u>	Location:	<u>Smoky Heights</u>
Facility/Zone:	<u>PASZA</u>	Operator:	<u>FOCUS</u>
Temp.	<u>23.0 C</u>	Barometric Press:	<u>707 mmHg</u>

Audit Transfer Standard

Make/Model:	<u>BIOS DC 2</u>	Cell s/n:	<u>102231</u>
Serial Number:	<u>101865</u>		

Sampler Set-up and current readings

Make/Model	<u>R&P 1400a</u>	F-Main Set Pt (l/min)	<u>3</u>
Unit #	<u>PM 2.5</u>	F-Aux Set Pt (l/min)	<u>13.67</u>
Control unit s/n	<u>140ABQ246340305</u>	Filter Load (%)	<u>15%</u>
Transducer s/n	<u>140ABQ246340305</u>	K _D Factor	<u>12122</u>
		Temp (°C)	<u>20.2</u>
		Press (ATM)	<u>0.929</u>

Conversion from mm Hg or " Hg to ATM (Atmospheres)

$ATM = (\text{mm Hg}) \times (1.316 \times 10^{-5})$ OR $ATM = (\text{"Hg}) \times (3.34207 \times 10^{-5})$

Note: Tolerances are noted as **BOLD** in Brackets

Zero flow**Pump Off**

F-Main (l/min)	<u>0.11</u>	Pump On (Time to reach set points)
F-Aux (l/min)	<u>0.29</u>	(45-60 Sec) <u>30</u>
		(45-60 Sec) <u>45</u>

Temperature/Pressure

Measured Temp ($\pm 1^\circ\text{C}$)	<u>20.3</u>	$\Delta^\circ\text{C}$ <u>0.1</u>
Measured Press ($\pm 1.5\%$ ATM)	<u>0.930</u>	$\Delta\% \text{ ATM}$ <u>0.20%</u>

Flow Audit

Indicated Main/Aux Flow (l/min)	<u>3.00 / 13.67</u>	$\Delta\%$ from Set-point
Total Flow = Main + Aux (l/min)	<u>16.67</u>	($\pm 2\%$) <u>0.0 % / 0.0%</u>
Measured Total Flow (l/min)	<u>15.80</u>	($\pm 2\%$) <u>0.00%</u>
Measured Main Flow (l/min)	<u>2.88</u>	($\pm 1.0 \text{ lmin}$) <u>0.87 / 5.5%</u>
		($\pm 0.2 \text{ lmin}$) <u>0.12 / 4.2%</u>

Leak Check

Main ($< 0.15 \text{ l/min}$)	<u>0.11</u>	Actual leakage = Pump On - Pump Off
Aux. ($< 0.15 \text{ l/min}$)	<u>0.29</u>	<u>0</u>

K_D Factor

Measured	<u>12267</u>	Bypass flow filter dirty.
K _D % Difference ($\pm 2.5\%$)	<u>1.20%</u>	



Industrial Performance Audit Station Summary

Company: FOCUS Facility Name: PASZA

Approval No.: N/A Site Name: Valleyview

GENERAL

- Has the location remained unchanged from previous audit?
- Is site secure?
- Are station operating conditions adequate?

YES	NO	N/A
X		
X		

DATA ACQUISITION

- Are strip charts in use?
- Is a telemetry system for data acquisition in use?

	X	
X		

SYSTEM COMPONENTS

- Is a glass sampling manifold installed?
- Is sampling manifold clean?
- Is a trap in place?
- Are spare manifold ports capped?
- Is manifold mounted at a slight downward angle?
- Are manifold ports situated to prevent water entering monitors?
- Is manifold pump properly installed and operative?
- Do sample lines extend at least 3/4" into manifold?
- Are monitor sampling lines connected to manifold?
- Are sampling lines clean?
- Are monitors properly mounted and secure?
- Are monitors properly exhausted from room or scrubbed?
- Are zero and span systems operational?

	X	
	X	
	X	
	X	
	X	
	X	
	X	
	X	
	X	
X		
X		
	X	
X		

WIND EQUIPMENT

- Is wind equipment properly orientated?
- Does wind equipment appear to be functioning properly?

X		
X		

COMMENTS: _____

AUDITOR: J Scott

DATE: June 27, 2007



STATION AUDIT

File No. 2007 - 105A / 106A

Date: June 27, 2007

Performed by: J Scott

Station

Name: Valleyview Location: South Sturgeon
Facility/Zone: PASZA Operator: FOCUS
Temp: 25.5 C Barometric Press: 705 mmHg

Location

Latitude N 54 56'25.7"E
Longitude W 117 12'55.0"S
Elevation 676 m

Status of Site Documentation Not Available

Manifold Material Teflon Lines
Manifold Condition Good

Meteorological

	Observed	Audit Value
Wind Speed Direction	180 deg @ 11 kph	5 @ 10 - 15 kph
Station Temperature	N/A	N/A
Relative Humidity	47%	Not audited
Ambient Temperature	27.6	28.8
Solar Radiation	N/A	N/A
Precipitation	N/A	N/A

Remarks:

Could not get ambient temperature from the same height (20 foot difference).



SO₂ ANALYZER AUDIT

File No. 2007 - 105A

Date: June 27, 2007

Performed by: J Scott

Station

Name:	Valleyview	Location:	South Sturgeon
Facility/Zone:	PASZA	Operator:	FOCUS
Temp:	25.5 C	Barometric Press:	705 mmHg

Monitor

Make/Model:	Teco 45C	Serial No.:	45C-57351-313
Inlet flow (sccm):	469	Full Scale Range (ppm):	0.5
Last cal. Date:	June 20, 2007	Old C.P.:	1.0273

Zero/Bkg 26.8
Span Coef 0.772

Calibrator

Calibration Method:	GAS DILUTION		
Make/Model:	R&R MFC 201	AMU #:	1699
Cylinder #:	XF 003188B	Cyl. Conc PPM:	97.9

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	C _i /C _c Ratio
Air	Gas	Total			
5075	0.00	5075	0.0000	-0.0015	
5084	20.39	5104	0.3911	0.3885	1.0105
5087	10.23	5097	0.1965	0.1965	0.9924
5057	5.48	5062	0.1060	0.1059	0.9998
Average Correction Factor (CF) =					0.9996

Linear Regression Analysis: $y = mx + b$ (where x=calculated concentration, y=indicated concentration)**LIMITS**

Correlation Coeff. =	0.9999	≥ 0.995
m (Slope) =	0.9884	0.85-1.15
b (Intercept as % of full scale) =	0.0418	$\pm 3\%$ F.S.

Remarks:



H₂S ANALYZER AUDIT

File No. 2007 - 106ADate: June 27, 2007Performed by: J Scott**Station**

Name: <u>Valleyview</u>	Location: <u>South Sturgeon</u>
Facility/Zone: <u>PASZA</u>	Operator: <u>FOCUS</u>
Temp: <u>26.5 C</u>	Barometric Press: <u>705 mmHg</u>

Monitor

Make/Model:	<u>Teco 43i</u>	Serial No.:	<u>701120010</u>
Inlet flow (scfm):	<u>433</u>	Full Scale Range ppm:	<u>0.1</u>
Last cal. Date:	<u>June 20, 2007</u>	Old C.F.:	<u>0.9715</u>

Zero/Bkg 6.1
Span Coef 1.374

Calibrator

Calibration Method:	<u>GAS DILUTION</u>		
Make/Model:	<u>R&R MFC 201</u>	AMU #:	<u>1699</u>
Cylinder #:	<u>D518922</u>	Cyl. Conc PPM:	<u>20.00</u>

Calibrator Flow (scfm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	Co/Ci Ratio
Air	Gas	Total			
5075	0.00	5075	0.0000	0.0001	
5085	19.23	5104	0.0754	0.0970	0.7778
5087	9.95	5097	0.0391	0.0509	0.7603
5086	5.56	5042	0.0220	0.0282	0.7818
Average Correction Factor (CF) =					<u>0.7710</u>

Linear Regression Analysis: $y = mx + b$ (where x=calculated concentration, y=indicated concentration)**LIMITS**

Correlation Coeff. =	<u>1.0000</u>	≥ 0.995
m (Slope) =	<u>1.2624</u>	0.85-1.15
b (Intercept as % of full scale) =	<u>0.1436</u>	$\pm 3\% \text{ F.S.}$

Remarks:Fan filter very dirty. Cleaned during audit.



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