Government of Alberta ■
Environment

Environmental Assurance
Air Monitoring and Audit Center
4946 89 Street N.W.
Edmonton, Alberta T6E-5K1
Canada
Telephone: 780-427-7888
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May 20, 2010 File No(s). 2010-021A / 044A

Shelly Pruden
Program Manager
Pease Airshed Zone Association
P.O. Box 21135
Grande Prairie, AB
T8V 6W7

Dear Shelly:

Re: PASZA Ambient Air Monitoring Station Audits

Please see attached audit summary for all audit findings from the audits conducted on the PASZA ambient air monitoring stations.

Please address the issues noted by June 16th, 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
Environmental Assurance

Attachment(s): none
cc: Gary Sasseville: District Approvals Manager
Greg Smith: District Compliance Manager
Marilyn Albert: Industrial Monitoring Assessment Technologist
Janine Ross: Ambient Air Support Tech
Jennifer Keturakis: Industrial Approvals Engineer

Audit Summary

Facility / Zone	PASZA
Total # of parameters that passed	
Total # of parameters audited in the network	
Date(s) of the audit	May 10 - 13, 2010
Issue Date of Audit Summary	May 20, 2010

Station Name	Valleyview		
Auditor	J. Scott		
Audit Date	May 10, 2010		
Critical	**Pass**	**Fail**	
H_2S	√		
SO_2	√		
TRS			
NO / NO_2 / NO_X			
O_3			
CO			
HC			
TEOM/BAM $PM_{2.5}$			
Wind Speed / Wind Direction	√		
Wind head Orientation	√		
Manifold Fan			
Precipitation Sampler			
Zero/Span Systems Operational	√		
Inspection Items	**OK**	**Need for Improvement**	
Sample pump venting/scrubbing		**X**	Not vented
Heating / Air Conditioning	√		
Manifold			
Sample Lines	√		
TEOM/BAM $PM_{2.5}$			
Safety	√		
Site Conditions	√		
Non-critical	**OK**	**Opportunity for Improvement**	
RH	√		
Ambient Temperature		**X**	+/- 1˚C
TEOM 'Pump On' test			
Station Condition	√		
Station Documentation	√		

Not monitored at this location

Audit Summary

Facility / Zone	PASZA
Total # of parameters that passed	22
Total # of parameters audited in the network	23
Date(s) of the audit	May 10 - 13, 2010
Issue Date of Audit Summary	May 20, 2010

Station Name	Smoky Heights		
Auditor	J. Scott		
Audit Date	May 10, 2010		
Critical	**Pass**	**Fail**	
H_2S			
SO_2	√		
TRS	√		
$NO / NO_2 / NO_X$			
O_3			
CO			
HC			
TEOM/BAM $PM_{2.5}$	√		
Wind Speed / Wind Direction	√		
Wind head Orientation	√		
Manifold Fan	√		
Precipitation Sampler			
Zero/Span Systems Operational	√		
Inspection Items	**OK**	**Need for Improvement**	
Sample pump venting/scrubbing	√		
Heating / Air Conditioning	√		
Manifold	√		
Sample Lines	√		
TEOM/BAM $PM_{2.5}$		**X**	Dusty Heads
Safety	√		
Site Conditions	√		
Non-critical	**OK**	**Opportunity for Improvement**	
RH			
Ambient Temperature	√		
TEOM 'Pump On' test	√		
Station Condition	√		
Station Documentation	√		

Not monitored at this location

Audit Summary

Facility / Zone	PASZA
Total # of parameters that passed	0
Total # of parameters audited in the network	0
Date(s) of the audit	May 10 - 13, 2010
Issue Date of Audit Summary	May 20, 2010

Station Name	Beaverlodge		
Auditor	J. Scott		
Audit Date	May 11, 2010		
Critical	**Pass**	**Fail**	
H_2S			
SO_2	√		
TRS			
$NO / NO_2 / NO_X$	√		
O_3	√		
CO			
HC			
TEOM/BAM $PM_{2.5}$		X	Flow
			Leak
Wind Speed / Wind Direction	√		
Wind head Orientation	√		
Manifold Fan	√		
Precipitation Sampler	√		
Zero/Span Systems Operational	√		
Inspection Items	**OK**	**Need for Improvement**	
Sample pump venting/scrubbing	√		
Heating / Air Conditioning	√		
Manifold	√		
Sample Lines	√		
TEOM/BAM $PM_{2.5}$		X	Dirty Heads
Safety	√		
Site Conditions	√		
Non-critical	**OK**	**Opportunity for Improvement**	
RH	√		
Ambient Temperature	√		
TEOM 'Pump On' test	√		
Station Condition	√		
Station Documentation	√		

Not monitored at this location

Audit Summary

Facility / Zone	PASZA
Total # of parameters that passed	0
Total # of parameters audited in the network	0
Date(s) of the audit	May 10 - 13, 2010
Issue Date of Audit Summary	May 20, 2010

Station Name	Evergreen		
Auditor	J. Scott		
Audit Date	May 11, 2010		
Critical	**Pass**	**Fail**	
H_2S			
SO_2	√		
TRS	√		
$NO / NO_2 / NO_X$			
O_3			
CO			
HC			
TEOM/BAM $PM_{2.5}$	√		
Wind Speed / Wind Direction	√		
Wind head Orientation	√		
Manifold Fan	√		
Precipitation Sampler			
Zero/Span Systems Operational	√		
Inspection Items	**OK**	**Need for Improvement**	
Sample pump venting/scrubbing		**X**	Not vented
Heating / Air Conditioning	√		
Manifold	√		
Sample Lines		**X**	Dirty
TEOM/BAM $PM_{2.5}$	√		
Safety	√		
Site Conditions	√		
Non-critical	**OK**	**Opportunity for Improvement**	
RH	√		
Ambient Temperature		X	+/- 1˚C
TEOM 'Pump On' test	√		
Station Condition	√		
Station Documentation	√		

Not monitored at this location

Audit Summary

Facility / Zone	PASZA
Total # of parameters that passed	22
Total # of parameters audited in the network	23
Date(s) of the audit	May 10 - 13, 2010
Issue Date of Audit Summary	May 20, 2010

Station Name	Henry Pirker		
Auditor	J. Scott		
Audit Date	May 12, 2010		
Critical	**Pass**	**Fail**	
H_2S			
SO_2	√		
TRS	√		
$NO / NO_2 / NO_X$	√		
O_3	√		
CO	√		
HC	√		
TEOM/BAM $PM_{2.5}$	√		
Wind Speed / Wind Direction	√		
Wind head Orientation	√		
Manifold Fan	√		
Precipitation Sampler			
Zero/Span Systems Operational	√		
Inspection Items	**OK**	**Need for Improvement**	
Sample pump venting/scrubbing	√		
Heating / Air Conditioning	√		
Manifold	√		
Sample Lines	√		
TEOM/BAM $PM_{2.5}$		**X**	Dusty Heads
Safety	√		
Site Conditions	√		
Non-critical	**OK**	**Opportunity for Improvement**	
RH	√		
Ambient Temperature	√		
TEOM 'Pump On' test	√		
Station Condition	√		
Station Documentation	√		

Not monitored at this location

Audit Summary

Facility / Zone	PASZA
Total # of parameters that passed	0
Total # of parameters audited in the network	0
Date(s) of the audit	May 10 - 13, 2010
Issue Date of Audit Summary	May 20, 2010

Station Name	Rover		
Auditor	J. Scott		
Audit Date	May 13, 2010		
Critical	**Pass**	**Fail**	
H_2S			
SO_2	√		
TRS	√		
$NO / NO_2 / NO_X$	√		
O_3	√		
CO			
HC			
TEOM/BAM $PM_{2.5}$			
Wind Speed / Wind Direction	√		
Wind head Orientation	√		
Manifold Fan	√		
Precipitation Sampler			
Zero/Span Systems Operational	√		
Inspection Items	**OK**	**Need for Improvement**	
Sample pump venting/scrubbing	√		
Heating / Air Conditioning	√		
Manifold	√		
Sample Lines	√		
TEOM/BAM $PM_{2.5}$			
Safety	√		
Site Conditions	√		
Non-critical	**OK**	**Opportunity for Improvement**	
RH		X	
Ambient Temperature	√		
TEOM 'Pump On' test			
Station Condition	√		
Station Documentation	√		

Not monitored at this location

STATION AUDIT

File No. 2010 - 026A / 030A

Date: May 11, 2010 Performed by: J. Scott

Station

Name: Beaverlodge Location: Beaverlodge

Facility/Zone: PASZA Operator: FOCUS

Temp: 22.5 C Barometric Press: 697mmHg

Location

Latitude N 55°11'47.7"
Longitute W 119°23'47.7"
Elevation 755m
Status of Site Documentation Good

Manifold Material Glass
Manifold Condition Good

Meterological

	Observed	Audit Value
Wind Speed Direction	169.7 Deg 4.0 kph	S 0-5 kph
Station Temperature	N/A	N/A
Relative Humidity	23.32%	23.47%
Ambient Temperature	17.27 C	16.91 C
Solar Radiation	N/A	N/A
Precipitation	N/A	N/A

Remarks:
New sealing pad needed for precip sampler.

SO_2 ANALYZER AUDIT

File No. 2010 - 026A

Date: May 11, 2010 Performed by: J. Scott

Station

Name: Beaverlodge Location: Beaverlodge

Facility/Zone: PASZA Operator: FOCUS

Temp: 22.5 C Barometric Press: 697 mmHg

Monitor

Make/Model: Teco 43i Serial No: AMU 1753

Inlet flow (sccm): 502 Full Scale Range ppm: 0.1

Last cal. Date: April 12, 2010 Old C.F. 0.9790

Zero/Bkg 2.59

Span Coef 0.886

Calibrator

Calibration Method: GAS DILUTION

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

Cylinder # : SV 14616 Cyl. Conc PPM: 11.2

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
					vs	
Air	Gas	Total			Audit Gas	Limits
4919	0.00	4919	0.0000	0.0001		
4939	34.90	4974	0.0786	0.0755	-4%	± 15%
4989	16.52	5006	0.0370	0.0358	-3%	± 15%
4985	6.84	4992	0.0153	0.0146	-6%	± 15%
				Absolute Average Percent Difference	4%	

Linear Regression Analysis:

y=mx+b (where x=calculated concentration, y=indicated concentration)

		LIMITS
Correlation Coeff.=	1.0000	**≥ 0.995**
m (Slope)=	0.9609	**0.85-1.15**
b (Intercept as % of full scale)=	0.0574	**± 3% F.S.**

Remarks:

NO-NOx-NO2 Analyzer Audit

File No. 2010 - 027A

Date: May 11, 2010 Performed by: J. Scott

Station: Name: BVLG Location: Beaverlodge Operator: FOCUS
Facility/Zone: PASZA Temp. 22.5 C BP: 697 mmHg

Monitor: Make/Model: Teco 42i Serial No. AMU 1796
Inlet flow (sccm): 765 / OK Range ppm: 1.0
Last cal. Date: April 12, 2010 Old C.F.'s NO: 0.9921
NOx: 0.9811
NO2: 0.9861

NO Bkg 2.3
NOx Bkg 2.5
NO Coef 1.371
NOx Coef 0.997
NO2 Coef 0.994

Calibration Method: Gas Dilution / GPT
Calibrator: Make/Model: Sabio 2010 AMU# 1778
NO cylinder # CLM 001756 NO conc. ppm 50.2 NOx conc. ppm 50.7

Calibrator Flows			Calc. Conc.		Indicated Concentration		% Difference vs Audit Gas	
Air	Gas	Total	NO (ppm)	NOx (ppm)	NO (ppm)	NOx (ppm)	NO	NOx
4801	0.00	4801	0.0000	0.0000	-0.0001	0.0003	Limit ± 15%	
4841	78.23	4919	0.7984	0.8063	0.7734	0.7806	-3%	-3%
4934	39.29	4973	0.3966	0.4006	0.3886	0.3934	-2%	-2%
4944	19.68	4964	0.1990	0.2010	0.1958	0.1989	-2%	-1%
						Absolute Average Percent Difference	2%	2%

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

	NO	NOx	NO_2	LIMITS
Correlation Coeff.=	1.0000	1.0000	1.0000	**≥ 0.995**
m (Slope)=	0.9682	0.9667	0.9960	**0.85-1.15**
b (Intercept as % of full scale)=	0.2025	0.3033	0.0952	**± 3% F.S.**

O_3 Setting	Flow Rate	Indicated Conc. (ppm) NO	NOx	NO_2	NO Decrease	NO_2 Increase	% Difference vs Audit Gas	
0.000	4919	0.7669	0.7734	0.0057				%Dif Limit
0.80 V	4919	0.3727	0.7725	0.3989	0.3942	0.3932	0%	± 15%
0.40 V	4919	0.5916	0.7741	0.1824	0.1753	0.1767	1%	± 15%
0.20 V	4919	0.6976	0.7727	0.0749	0.0693	0.0692	0%	± 15%
						Absolute Average Percent Difference	0%	

Converter Efficiency
Average Converter Efficiency 100.1%

Remarks: Calibrated for a range of 0 - 0.5 not 0 - 1.0. The range of the analyzer needs to be changed or the analzyer needs to be calibrated properly for the range set.

O_3 ANALYZER AUDIT

File No. 2010 - 028A

Date: May 11, 2010 Performed by: J. Scott

Station

Name: Beaverlodge Location: Beaverlodge

Facility/Zone: PASZA Operator: FOCUS

Temp: 22.5 C Barometric Press: 697 mmHg

Monitor

Make/Model: Teco 49 C Serial No: AMU 1614

Inlet flow (sccm): 691 / 639 Full Scale Range ppm: 0.5

Last cal. Date: April 12, 2010 Old C.F. 1.0202

Zero/Bkg -0.7

Span Coeff. 1.026

Calibrator

Calibration Method: Gas Dilution / GPT

Make/Model: Sabio 2010 AMU # : 1778

NO cylinder # : CLM 001756 NO concentration ppm: 50.2

Ozone Setting	Calibrator Flow (sccm) Air	Gas	Total	Calculated Conc. (ppm)	Indicated Conc. (ppm)	% Difference vs Audit Gas	Limits
0.00 V	4919		4919	0.0000	-0.0002		
0.80 V	4919		4919	0.3942	0.4088	4%	± 15%
0.40 V	4919		4919	0.1753	0.1820	4%	± 15%
0.20 V	4919		4919	0.0693	0.0715	3%	± 15%
			Absolute Average Percent Difference			4%	

Linear Regression Analysis:

y=mx+b (where x=calculated concentration, y=indicated concentration)

		LIMITS
Correlation Coeff.=	1.0000	**≥ 0.995**
m (Slope)=	1.0378	**0.85-1.15**
b (Intercept as % of full scale)=	-0.0425	**± 3% F.S.**

Remarks:

TEOM AUDIT

File #: 2010 - 029A
Date: May 11, 2010 Performed by: J. Scott

Station

Name:	Beaverlodge	Location:	Beaverlodge
Facility/Zone:	PASZA	Operator:	FOCUS
Temperature:	22.5 C	Barometric Press.	697 mmHg

Audit Transfer Standard

Make/Model:	DeltaCal	Cell s/n:	0566
Serial Number:	AMU 1761		

Sampler Set-up and Current Readings

Make/Model	R&P 1400a	F-Main Set Pt (l/min)	3.00
Unit #	PM 2.5	F-Aux Set Pt (l/min)	13.67
Control unit s/n	AMU 1649	Filter Load (%)	17
Transducer s/n	AMU 1649	K_O Factor	14287
		Temp (°C)	11.7
		Press (ATM)	0.917
		FAdj Main	1.005
		FAdj Aux	1.005

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

ATM = (mm Hg) X (1.316×10^{-3}) or ATM = ("Hg) X (3.34207×10^{-2})

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

Zero Flow Pump Off		**Pump On (Time to reach set points)**	
F-Main (l/min)	0.01	**(45-60 Sec)**	23
F-Aux (l/min)	0.06	**(45-60 Sec)**	32

Temperature/Pressure			
Measured Temp **(± 2 °C)**	12.7	**Δ°C**	1.00
Measured Press **(± 1.5% ATM)**	0.917	**Δ% ATM**	0.00%

Flow Audit			**Δ% of Measured Flow from Set-point**		
Indicated Main/Aux Flow (l/min)	2.99	13.68	**(± 2%)**	-0.3%	0.1%
Total Flow = Main + Aux (l/min)	16.67		**(± 2%)**	0.0%	
			Δ of Measured Flow from Indicated		
Measured Total Flow (l/min)	6.99		**(± 1.00 l/min)**	**9.68**	
Measured Main Flow (l/min)	3.03		**(± 0.20 l/min.)**	0.04	

Leak Check		**Actual leakage = Pump On – Pump Off**
Main **(< 0.15 l/min)**	2.99	**2.98**
Aux **(< 0.65 l/min)**	13.68	**13.62**

K_O Factor

Measured	14211
K_O % Difference **(± 2.5%)**	0.54

Remarks:

PM 10 - good. PM 2.5 -dusty
Grover found a leak on the bypass line. Fixed and remeasured flows - passed.
April 12, 2010 - calibration done, heads cleaned, filter changed.

TEOM AUDIT

File #: 2010 - 030A
Date: May 11, 2010 Performed by: J. Scott

Station

Name:	Beaverlodge	Location:	Beaverlodge
Facility/Zone:	PASZA	Operator:	FOCUS
Temperature:	22.5 C	Barometric Press.	697 mmHg

Audit Transfer Standard

Make/Model:	DeltaCal	Cell s/n:	0566
Serial Number:	AMU 1761		

Sampler Set-up and Current Readings

Make/Model	R&P 1400a	F-Main Set Pt (l/min)	3.00
Unit #	PM 2.5	F-Aux Set Pt (l/min)	13.67
Control unit s/n	AMU 1649	Filter Load (%)	17
Transducer s/n	AMU 1649	K_O Factor	14287
		Temp (°C)	11.7
		Press (ATM)	0.917
		FAdj Main	1.005
		FAdj Aux	1.005

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

ATM = (mm Hg) X (1.316×10^{-3}) or ATM = ("Hg) X (3.34207×10^{-2})

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

Zero Flow Pump Off		**Pump On (Time to reach set points)**	
F-Main (l/min)	0.01	**(45-60 Sec)**	23
F-Aux (l/min)	0.06	**(45-60 Sec)**	32

Temperature/Pressure			
Measured Temp **(± 2 °C)**	12.7	**Δ°C**	1.00
Measured Press **(± 1.5% ATM)**	0.917	**Δ% ATM**	0.00%

Flow Audit			**Δ% of Measured Flow from Set-point**		
Indicated Main/Aux Flow (l/min)	2.99	13.68	**(± 2%)**	-0.3%	0.1%
Total Flow = Main + Aux (l/min)	16.67		**(± 2%)**	0.0%	
			Δ of Measured Flow from Indicated		
Measured Total Flow (l/min)	16.24		**(± 1.00 l/min)**	0.43	
Measured Main Flow (l/min)	3.03		**(± 0.20 l/min.)**	0.04	

Leak Check		**Actual leakage = Pump On – Pump Off**
Main **(< 0.15 l/min)**	-0.11	-0.12
Aux **(< 0.65 l/min)**	0.19	0.13

K_O Factor

Measured	
K_O % Difference **(± 2.5%)**	

Remarks:

Station Performance Audit Summary

Company: PASZA Facility Name: Beaverlodge

Approval No.: N/A Site Name: Beaverlodge

AENV Region: Northern AENV District: Northwest

Parameters audited:

H_2S		SO_2	X	NO_X	X	NH_3		O_3	X
CO		CH_4		NonCH4		THC		Ethylene	
$PM_{2.5}$	X	PM_{10}		TSP		BTEX		Wind Speed	X
Wind Dir	X	Amb. Temp	X	Stn.Temp		RH	X	Solar Radiation	
Rainfall		Precip		VWS		Other			
All parameters monitored as per approval: Yes_____ No _____									

	YES	NO	N/A
GENERAL			
Has the location remained unchanged from previous audit?	X		
Is site secure?	X		
Are station operating conditions adequate?	X		
DATA ACQUISITION			
Are strip charts in use?		X	
Is a telemetry system for data acquisition in use?	X		
SYSTEM COMPONENTS			
Is a glass sampling manifold installed?	X		
Is sampling manifold clean?	X		
Is a manifold trap in place?	X		
Are spare manifold ports capped	X		
Is manifold oriented so it is not exactly horizontal?	X		
Are manifold ports situated to prevent water entering monitors?	X		
Is manifold pump properly installed and operative?	X		
Do sample lines extend at least 3/4"into manifold?	X		
Are monitor sampling lines connected to manifold?	X		
Are sampling lines clean?	X		
Are monitors properly mounted and secure?	X		
Are monitors properly exhausted from room or scrubbed?	X		
Are zero and span systems operational?	X		
WIND EQUIPMENT			
Is wind sensor properly oriented?	X		
Does wind equipment appear to be functioning properly?	X		

COMMENTS: _____

AUDITOR: J. Scott *DATE:* May 11, 2010

STATION AUDIT

File No. 2010 - 031A / 033A

Date: May 11, 2010 Performed by: J. Scott

Station

Name: Evergreen Location: Evergreen

Facility/Zone: PASZA Operator: FOCUS

Temp: 21.5 C Barometric Press: 705 mmHg

Location

Latitude N 55°07'02.7"
Longitude W 118°45'54.2"
Elevation 650m
Status of Site Documentation Good

Manifold Material Glass
Manifold Condition Good

Meterological

	Observed	Audit Value
Wind Speed Direction	239 Deg 16.3 kph	SW 15-20 kph
Station Temperature	N/A	N/A
Relative Humidity	21.00%	19.57%
Ambient Temperature	**17.29 C**	**20.17 C**
Solar Radiation	N/A	N/A
Precipitation	N/A	N/A

Remarks:
Temperature and RH taken at ground level. Sensor at top of tower.

SO_2 ANALYZER AUDIT

File No. 2010 - 031A

Date: May 11, 2010 Performed by: J. Scott

Station

Name: Evergreen Location: Evergreen

Facility/Zone: PASZA Operator: FOCUS

Temp. 21.5 C Barometric Press. 705 mmHg

Monitor

Make/Model: Teco 43i Serial No: 0701120008

Inlet flow (sccm): 449 Full Scale Range ppm: 1.0

Last cal. Date: April 20, 2010 Old C.F. 0.9893

Zero/Bkg 10.9

Span Coef 1.041

Calibrator

Calibration Method: GAS DILUTION

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

Cylinder # : CLM 008622 Cyl. Conc PPM: 50.2

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
3042	0.00	3042	0.0000	0.0008		
3056	48.52	3105	0.7844	0.7693	-2%	± 15%
3049	24.52	3074	0.4004	0.3943	-2%	± 15%
3031	11.90	3043	0.1963	0.1912	-3%	± 15%
				Absolute Average Percent Difference	2%	

Linear Regression Analysis:

y=mx+b (where x=calculated concentration, y=indicated concentration)

		LIMITS
Correlation Coeff.=	1.0000	**≥ 0.995**
m (Slope)=	0.9807	**0.85-1.15**
b (Intercept as % of full scale)=	0.0262	**± 3% F.S.**

Remarks:

Calibrated from a range of 0 - 0.5 not 0 - 1.0. The range of the analyzer needs to be changed or the analyzer needs to be properly calibrated for the range set.

TRS ANALYZER AUDIT

File No. 2010 - 032A

Date: May 11, 2010 Performed by: J. Scott

Station

Name: Evergreen Location: Evergreen

Facility/Zone: PASZA Operator: FOCUS

Temp. 21.5 C Barometric Press. 705 mmHg

Monitor

Make/Model: Teco 43C Serial No: 0436610005

Inlet flow (sccm): 481 Full Scale Range ppm: 0.1

Last cal. Date: April 20, 2010 Old C.F. 0.9814

Zero/Bkg 15.4

Span Coef 0.859

Calibrator

Calibration Method: GAS DILUTION

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

Cylinder # : 3L1679 Cyl. Conc PPM: 9.6

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
3042	0.00	3042	0.0000	0.0005		
3080	24.82	3105	0.0767	0.0784	2%	± 15%
3062	12.19	3074	0.0381	0.0393	2%	± 15%
3038	5.12	3043	0.0162	0.0169	2%	± 15%
				Absolute Average Percent Difference	2%	

Linear Regression Analysis:

y=mx+b (where x=calculated concentration, y=indicated concentration)

		LIMITS
Correlation Coeff.=	1.0000	**≥ 0.995**
m (Slope)=	1.0154	**0.85-1.15**
b (Intercept as % of full scale)=	0.5317	**± 3% F.S.**

Remarks:

TEOM AUDIT

File #: 2010 - 033A
Date: May 11, 2010 Performed by: J. Scott

Station

Name:	Evergreen	Location:	Evergreen
Facility/Zone:	PASZA	Operator:	FOCUS
Temperature:	21.5 C	Barometric Press.	705 mmHg

Audit Transfer Standard

Make/Model:	DeltaCal	Cell s/n:	0566
Serial Number:	AMU 1761		

Sampler Set-up and Current Readings

Make/Model	R&P 1400a	F-Main Set Pt (l/min)	3.00
Unit #	PM 2.5	F-Aux Set Pt (l/min)	13.67
Control unit s/n	140AB215549705	Filter Load (%)	37
Transducer s/n	140AB215549705	K_O Factor	10124
		Temp (°C)	18.5
		Press (ATM)	0.927
		FAdj Main	0.985
		FAdj Aux	0.975

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

ATM = (mm Hg) X (1.316×10^{-3}) or ATM = ("Hg) X (3.34207×10^{-2})

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

Zero Flow

Pump Off		**Pump On (Time to reach set points)**	
F-Main (l/min)	-0.06	**(45-60 Sec)**	21
F-Aux (l/min)	-0.27	**(45-60 Sec)**	35

Temperature/Pressure

Measured Temp **(± 2 °C)**	17.6	**Δ°C**	0.90
Measured Press **(± 1.5% ATM)**	0.928	**Δ% ATM**	0.11%

Flow Audit

			Δ% of Measured Flow from Set-point		
Indicated Main/Aux Flow (l/min)	2.99	13.67	**(± 2%)**	-0.3%	0.0%
Total Flow = Main + Aux (l/min)	16.66		**(± 2%)**	-0.1%	
			Δ of Measured Flow from Indicated		
Measured Total Flow (l/min)	16.82		**(± 1.00 l/min)**	0.16	
Measured Main Flow (l/min)	3.02		**(± 0.20 l/min.)**	0.03	

Leak Check

		Actual leakage = Pump On – Pump Off
Main **(< 0.15 l/min)**	-0.05	0.01
Aux **(< 0.65 l/min)**	-0.12	0.15

K_O Factor

Measured	10349
K_O % Difference **(± 2.5%)**	2.22

Remarks: April 20, 2010 - calibrated, filter changed, heads cleaned.

Station Performance Audit Summary

Company: PASZA Facility Name: Evergreen

Approval No.: N/A Site Name: Evergreen

AENV Region: Northern AENV District: Northwest

Parameters audited:

H_2S	X	SO_2	X	NO_X		NH_3		O_3	
CO		CH_4		NonCH4		THC		Ethylene	
$PM_{2.5}$	X	PM_{10}		TSP		BTEX		Wind Speed	X
Wind Dir	X	Amb. Temp	X	Stn.Temp		RH	X	Solar Radiation	
Rainfall		Precip		VWS		Other			
All parameters monitored as per approval: Yes_____ No _____									

	YES	NO	N/A
GENERAL			
Has the location remained unchanged from previous audit?	X		
Is site secure?	X		
Are station operating conditions adequate?	X		
DATA ACQUISITION			
Are strip charts in use?		X	
Is a telemetry system for data acquisition in use?	X		
SYSTEM COMPONENTS			
Is a glass sampling manifold installed?	X		
Is sampling manifold clean?	X		
Is a manifold trap in place?	X		
Are spare manifold ports capped	X		
Is manifold oriented so it is not exactly horizontal?	X		
Are manifold ports situated to prevent water entering monitors?	X		
Is manifold pump properly installed and operative?	X		
Do sample lines extend at least 3/4"into manifold?	X		
Are monitor sampling lines connected to manifold?	X		
Are sampling lines clean?		X	
Are monitors properly mounted and secure?	X		
Are monitors properly exhausted from room or scrubbed?		X	
Are zero and span systems operational?	X		
WIND EQUIPMENT			
Is wind sensor properly oriented?	X		
Does wind equipment appear to be functioning properly?	X		

COMMENTS: _____

AUDITOR: J. Scott *DATE:* May 11, 2010

STATION AUDIT

File No. 2010 - 034A / 040A

Date: May 12, 2010 Performed by: J. Scott

Station

Name: Henry Pirker Location: Grande Prairie

Facility/Zone: PASZA Operator: FOCUS

Temp: 19.5 C Barometric Press: 703 mmHg

Location

Latitude N 55°10'37.7"
Longitute W 118°48'26.8"
Elevation 660m
Status of Site Documentation Good

Manifold Material Glass
Manifold Condition Good

Meterological

	Observed	Audit Value
Wind Speed Direction	27.7 kph 263 Deg	20 - 30 kph W
Station Temperature	N/A	N/A
Relative Humidity	17.02%	15.75%
Ambient Temperature	17.67 C	17.94 C
Solar Radiation	N/A	N/A
Precipitation	N/A	N/A

Remarks:

CO ANALYZER AUDIT

File No. 2010 - 034A

Date: May 12, 2010 Performed by: J. Scott

Station

Name: Henry Pirker Location: Grande Prairie

Facility/Zone: PASZA Operator: FOCUS

Temp. 20.5 C Barometric Press. 702 mmHg

Monitor

Make/Model: Teco 48C Serial No: AMU 1652

Inlet flow (sccm): 1134 Full Scale Range ppm: 50.0

Last cal. Date: April 29, 2010 Old C.F. 0.9940

Zero/Bkg. 9.612

Span Coeff. 1.062

Calibrator

Calibration Method: Gas Dilution

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

CO cylinder # : FF 23059 CO concentration ppm: 2466

Calibrator Flow (sccm)			Calculated Conc.	Indicated Concentration	% Difference	
Air	Gas	Total	(ppm)	(ppm)	vs Audit Gas	Limits
3040	0.00	3040	0.00	0.12		
3038	48.47	3086	38.73	38.12	-2%	± 15%
3041	21.62	3063	17.41	17.42	-1%	± 15%
3033	9.17	3042	7.43	7.51	-1%	± 15%
				Absolute Average Percent Difference	1%	

Linear Regression Analysis:

y=mx+b (where x=calculated concentration, y=indicated concentration)

		LIMITS
Correlation Coeff.=	1.0000	**≥ 0.995**
m (Slope)=	0.9805	**0.85-1.15**
b (Intercept as % of full scale)=	0.4179	**± 3% F.S.**

Remarks:

Alberta
Freedom To Create. Spirit To Achieve.

SO_2 ANALYZER AUDIT

File No. 2010 - 035A

Date: May 12, 2010 Performed by: J. Scott

Station

Name: Henry Pirker Location: Grande Prairie

Facility/Zone: PASZA Operator: FOCUS

Temp. 19.5 C Barometric Press. 703 mmHg

Monitor

Make/Model: Teco 43C Serial No: AMU 1702

Inlet flow (sccm): 480 Full Scale Range ppm: 0.5

Last cal. Date: April 22, 2010 Old C.F. 0.9881

Zero/Bkg 8.4

Span Coef 0.799

Calibrator

Calibration Method: GAS DILUTION

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

Cylinder # : CLM 008622 Cyl. Conc PPM: 50.2

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
					vs	
Air	Gas	Total			Audit Gas	Limits
5001	0.00	5001	0.0000	0.0000		
5040	41.86	5082	0.4135	0.4065	-2%	± 15%
5028	19.39	5047	0.1929	0.1893	-2%	± 15%
4998	9.31	5007	0.0933	0.0924	-1%	± 15%
				Absolute Average Percent Difference	2%	

Linear Regression Analysis:

y=mx+b (where x=calculated concentration, y=indicated concentration)

		LIMITS
Correlation Coeff.=	1.0000	**≥ 0.995**
m (Slope)=	0.9825	**0.85-1.15**
b (Intercept as % of full scale)=	0.0380	**± 3% F.S.**

Remarks:

TRS ANALYZER AUDIT

File No. 2010 - 036A

Date: May 12, 2010 Performed by: J. Scott

Station

Name: Henry Pirker Location: Grande Prairie

Facility/Zone: PASZA Operator: FOCUS

Temp. 19.5 C Barometric Press. 703 mmHg

Monitor

Make/Model: Teco 45C Serial No: AMU 1744

Inlet flow (sccm): 471 Full Scale Range ppm: 0.1

Last cal. Date: April 29, 2010 Old C.F. 1.0034

Zero/Bkg 17.3

Span Coef 0.812

Calibrator

Calibration Method: GAS DILUTION

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

Cylinder # : 3L1679 Cyl. Conc PPM: 9.6

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
					vs	
Air	Gas	Total			Audit Gas	Limits
5001	0.00	5001	0.0000	-0.0001		
5039	43.01	5082	0.0812	0.0807	-1%	± 15%
5027	19.68	5047	0.0374	0.0376	1%	± 15%
4997	9.82	5007	0.0188	0.0193	3%	± 15%
				Absolute Average Percent Difference	1%	

Linear Regression Analysis:

y=mx+b (where x=calculated concentration, y=indicated concentration)

		LIMITS
Correlation Coeff.=	1.0000	**≥ 0.995**
m (Slope)=	0.9920	**0.85-1.15**
b (Intercept as % of full scale)=	0.2727	**± 3% F.S.**

Remarks:

Alberta
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HC ANALYZER AUDIT

File No. 2010 - 037A

Date: May 12, 2010 Performed by: J. Scott

Station

Name: Henry Pirker Location: Grande Prairie

Facility/Zone: PASZA Operator: FOCUS

Temp. 20.5 C Barometric Press. 702 mmHg

Monitor

Make/Model: Teco 51C-LT Serial No: 51CLT-79009-390

Inlet flow (sccm): 6.49 psi Full Scale Range ppm: 25

Last cal. Date: April 29, 2010 Old C.F. 1.0119

Calibrator

Calibration Method: Gas Dilution

Make/Model: Sabio 2010 AMU # : 1778

HC cylinder # : SV 13950 HC concentration ppm: 1088.4

Calibrator Flow (sccm)			Calculated Conc.	Indicated Concentration	% Difference	
Air	Gas	Total	(ppm)	(ppm)	vs Audit Gas	Limits
2964	0.00	2964	0.00	0.01		
2965	49.34	3014	17.82	17.07	-4%	± 15%
2979	24.89	3004	9.02	8.55	-5%	± 15%
2982	9.91	2992	3.60	3.42	-5%	± 15%
				Absolute Average Percent Difference	5%	

Linear Regression Analysis:

y=mx+b (where x=calculated concentration, y=indicated concentration)

		LIMITS
Correlation Coeff.=	1.0000	**≥ 0.995**
m (Slope)=	0.9577	**0.85-1.15**
b (Intercept as % of full scale)=	-0.1021	**± 3% F.S.**

Remarks:

NO-NOx-NO2 Analyzer Audit

File No. 2010 - 038A

Date: May 12, 2010 Performed by: J. Scott

Station: Name: Henry Pirker Location: Grande Prairie Operator: FOCUS
Facility/Zone: PASZA Temp. 19 5 C BP: 703 mmHg

Monitor: Make/Model: Teco 42C Serial No. AMU 1658
Inlet flow (sccm): 754 / OK Range ppm: 0.5
Last cal. Date: April 22, 2010 Old C.F.'s NO: 0.9917
NOx: 0.9906
NO2: 1.0011

NO Bkg 10.5
NOx Bkg 10.7
NO Coef 0.772
NOx Coef 1.001
NO2 Coef 1.000

Calibration Method: Gas Dilution / GPT
Calibrator: Make/Model: Sabio 2010 AMU# 1778
NO cylinder # CLM 001756 NO conc. ppm 50.2 NOx conc. ppm 50.7

Calibrator Flows			Calc. Conc.		Indicated Concentration		% Difference vs Audit Gas	
Air	Gas	Total	NO (ppm)	NOx (ppm)	NO (ppm)	NOx (ppm)	NO	NOx
4920	0.00	4920	0.0000	0.0000	0.0000	0.0001	Limit ± 15%	
4930	40.32	4970	0.4073	0.4113	0.3927	0.3978	-4%	-3%
4958	20.18	4978	0.2035	0.2055	0.1977	0.2007	-3%	-2%
4964	10.05	4974	0.1014	0.1024	0.0993	0.1014	-2%	-1%
						Absolute Average Percent Difference	3%	2%

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

	NO	NOx	NO_2	LIMITS
Correlation Coeff.=	1.0000	1.0000	1.0000	**≥ 0.995**
m (Slope)=	0.9634	0.9655	1.0023	**0.85-1.15**
b (Intercept as % of full scale)=	0.1786	0.2751	-0.4562	**± 3% F.S.**

O_3 Setting	Flow Rate	Indicated Conc. (ppm) NO	NOx	NO_2	NO Decrease	NO_2 Increase	% Difference vs Audit Gas	
0.00 V	4970	0.3896	0.3957	0.0056				%Dif Limit
0.60 V	4970	0.0985	0.3933	0.2953	0.2911	0.2897	0%	± 15%
0.40 V	4970	0.2086	0.3928	0.1843	0.1810	0.1787	-1%	± 15%
0.20 V	4970	0.3179	0.3928	0.0754	0.0717	0.0698	-3%	± 15%
						Absolute Average Percent Difference	-1%	

Converter Efficiency
Average Converter Efficiency 98.5%

Remarks:

O_3 ANALYZER AUDIT

File No. 2010 - 039A

Date: May 12, 2010 Performed by: J. Scott

Station

Name: Henry Pirker Location: Grande Prairie

Facility/Zone: PASZA Operator: FOCUS

Temp. 20.5 C Barometric Press. 702 mmHg

Monitor

Make/Model: Teco 49C Serial No: AMU 1709

Inlet flow (sccm): 720 / 737 Full Scale Range ppm: 0.5

Last cal. Date: April 22, 2010 Old C.F. 0.9931

Zero/Bkg -0.7

Span Coeff. 0.922

Calibrator

Calibration Method: Gas Dilution / GPT

Make/Model: Sabio 2010 AMU # : 1778

NO cylinder # : CLM 001756 NO concentration ppm: 50.2

Ozone Setting	Calibrator Flow (sccm) Air	Gas	Total	Calculated Conc. (ppm)	Indicated Conc. (ppm)	% Difference vs Audit Gas	Limits
0.00 V	4970		4970	0.0000	0.0006		
0.80 V	4970		4970	0.3902	0.3676	-6%	± 15%
0.40 V	4970		4970	0.1735	0.1645	-6%	± 15%
0.20 V	4970		4970	0.0686	0.0646	-7%	± 15%
			Absolute Average Percent Difference			6%	

Linear Regression Analysis:

y=mx+b (where x=calculated concentration, y=indicated concentration)

		LIMITS
Correlation Coeff.=	1.0000	**≥ 0.995**
m (Slope)=	0.9412	**0.85-1.15**
b (Intercept as % of full scale)=	0.1088	**± 3% F.S.**

Remarks:

Alberta
Freedom To Create. Spirit To Achieve.

TEOM AUDIT

File #: 2010 - 040A
Date: May 12, 2010 Performed by: J. Scott

Station

Name:	Henry Pirker	Location:	Grande Prairie
Facility/Zone:	PASZA	Operator:	FOCUS
Temperature:	20.5 C	Barometric Press.	702 mmHg

Audit Transfer Standard

Make/Model:	DeltaCal	Cell s/n:	0566
Serial Number:	AMU 1761		

Sampler Set-up and Current Readings

Make/Model	R&P 1400a	F-Main Set Pt (l/min)	3.00
Unit #	PM 2.5	F-Aux Set Pt (l/min)	13.67
Control unit s/n	AMU 1697	Filter Load (%)	20
Transducer s/n	140AB258750510	K_O Factor	13020
		Temp (°C)	16.9
		Press (ATM)	0.929
		FAdj Main	1.000
		FAdj Aux	1.000

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

ATM = (mm Hg) X (1.316×10^{-3}) or ATM = ("Hg) X (3.34207×10^{-2})

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

Zero Flow Pump Off		**Pump On (Time to reach set points)**	
F-Main (l/min)	0.00	**(45-60 Sec)**	24
F-Aux (l/min)	0.07	**(45-60 Sec)**	36

Temperature/Pressure			
Measured Temp **(± 2 °C)**	17.3	**Δ°C**	0.40
Measured Press **(± 1.5% ATM)**	0.924	**Δ% ATM**	-0.54%

Flow Audit			**Δ% of Measured Flow from Set-point**	
Indicated Main/Aux Flow (l/min)	2.99	13.63	**(± 2%)** -0.3%	-0.3%
Total Flow = Main + Aux (l/min)	16.62		**(± 2%)** -0.3%	
			Δ of Measured Flow from Indicated	
Measured Total Flow (l/min)	16.18		**(± 1.00 l/min)**	0.44
Measured Main Flow (l/min)	2.9		**(± 0.20 l/min.)**	0.09

Leak Check		**Actual leakage = Pump On – Pump Off**
Main **(< 0.15 l/min)**	0.01	0.01
Aux **(< 0.65 l/min)**	0.11	0.04

K_O Factor

Measured	13080
K_O % Difference **(± 2.5%)**	0.46%

Remarks: March 9, 2010 - calibration done, heads cleaned, filters changed.
Heads are dusty.

Station Performance Audit Summary

Company: PASZA Facility Name: Henry Pirker

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

AENV Region: Northern AENV District: Northwest

Parameters audited:

H_2S	X	SO_2	X	NO_X	X	NH_3		O_3	X
CO	X	CH_4		NonCH4		THC	X	Ethylene	
$PM_{2.5}$	X	PM_{10}		TSP		BTEX		Wind Speed	X
Wind Dir	X	Amb. Temp	X	Stn.Temp		RH	X	Solar Radiation	
Rainfall		Precip		VWS		Other			
All parameters monitored as per approval: Yes_____ No _____									

	YES	NO	N/A
GENERAL			
Has the location remained unchanged from previous audit?	X		
Is site secure?	X		
Are station operating conditions adequate?	X		
DATA ACQUISITION			
Are strip charts in use?		X	
Is a telemetry system for data acquisition in use?	X		
SYSTEM COMPONENTS			
Is a glass sampling manifold installed?	X		
Is sampling manifold clean?	X		
Is a manifold trap in place?	X		
Are spare manifold ports capped	X		
Is manifold oriented so it is not exactly horizontal?	X		
Are manifold ports situated to prevent water entering monitors?	X		
Is manifold pump properly installed and operative?	X		
Do sample lines extend at least 3/4"into manifold?	X		
Are monitor sampling lines connected to manifold?	X		
Are sampling lines clean?	X		
Are monitors properly mounted and secure?	X		
Are monitors properly exhausted from room or scrubbed?	X		
Are zero and span systems operational?	X		
WIND EQUIPMENT			
Is wind sensor properly oriented?	X		
Does wind equipment appear to be functioning properly?	X		

COMMENTS: _____

AUDITOR: J. Scott *DATE:* May 12, 2010

STATION AUDIT

File No. 2010 - 041A / 044A

Date: May 13, 2010 Performed by: J. Scott

Station

Name: Rover Location: Kinuso

Facility/Zone: PASZA Operator: FOCUS

Temp: 22.5 C Barometric Press: 706 mmHg

Location

Latitude N 55°15'05.9"
Longitute W 115°21'51.6"
Elevation 619 m
Status of Site Documentation Good

Manifold Material Glass
Manifold Condition Good

Meterological

	Observed	Audit Value
Wind Speed Direction	322 Deg 9.2 kph	N 5-10 kph
Station Temperature	N/A	N/A
Relative Humidity	-73.40%	30.46%
Ambient Temperature	16.0 C	16.18 C
Solar Radiation	N/A	N/A
Precipitation	N/A	N/A

Remarks:

SO_2 ANALYZER AUDIT

File No. 2010 - 041A

Date: May 13, 2010 Performed by: J. Scott

Station

Name: Rover Location: Kinuso

Facility/Zone: PASZA Operator: FOCUS

Temp. 22.5 C Barometric Press. 706 mmHg

Monitor

Make/Model: Teco 43C Serial No: 609716239

Inlet flow (sccm): 489 Full Scale Range ppm: 0.5

Last cal. Date: April 14, 2010 Old C.F. 1.0044

Zero/Bkg 8.8

Span Coef 0.889

Calibrator

Calibration Method: GAS DILUTION

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

Cylinder # : CLM 008622 Cyl. Conc PPM: 50.2

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
4969	0.00	4969	0.0000	0.0005		
5015	41.58	5057	0.4128	0.4173	1%	± 15%
5019	19.33	5038	0.1926	0.1947	1%	± 15%
5011	9.34	5020	0.0934	0.0946	1%	± 15%
				Absolute Average Percent Difference	1%	

Linear Regression Analysis:

y=mx+b (where x=calculated concentration, y=indicated concentration)

		LIMITS
Correlation Coeff.=	1.0000	**≥ 0.995**
m (Slope)=	1.0099	**0.85-1.15**
b (Intercept as % of full scale)=	0.0700	**± 3% F.S.**

Remarks:

TRS ANALYZER AUDIT

File No. 2010 - 042A

Date: May 13, 2010 Performed by: J. Scott

Station

Name: Rover Location: Kinuso

Facility/Zone: PASZA Operator: FOCUS

Temp. 22.5 C Barometric Press. 706 mmHg

Monitor

Make/Model: Teco 43C Serial No: 609716238

Inlet flow (sccm): 430 Full Scale Range ppm: 0.1

Last cal. Date: April 14, 2010 Old C.F. 1.0295

Zero/Bkg 10.2

Span Coef 1.375

Calibrator

Calibration Method: GAS DILUTION

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

Cylinder # : 3L1679 Cyl. Conc PPM: 9.6

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
					vs	
Air	Gas	Total			Audit Gas	Limits
4969	0.00	4969	0.0000	-0.0005		
5014	42.85	5057	0.0813	0.0800	-1%	± 15%
5018	19.67	5038	0.0375	0.0369	0%	± 15%
5010	9.78	5020	0.0187	0.0186	2%	± 15%
				Absolute Average Percent Difference	0%	

Linear Regression Analysis:

y=mx+b (where x=calculated concentration, y=indicated concentration)

		LIMITS
Correlation Coeff.=	1.0000	**≥ 0.995**
m (Slope)=	0.9873	**0.85-1.15**
b (Intercept as % of full scale)=	-0.1967	**± 3% F.S.**

Remarks:

NO-NOx-NO2 Analyzer Audit

File No. 2010 - 043A

Date: May 13, 2010 Performed by: J. Scott

Station: Name: Rover Location: Kinuso Operator: FOCUS
Facility/Zone: PASZA Temp. 22.5 C BP: 706 mmHg

Monitor: Make/Model: Teco 42i Serial No. 701120011
Inlet flow (sccm): 536 / OK Range ppm: 0.5
Last cal. Date: April 14, 2010 Old C.F.'s NO: 0.9792
NOx: 0.9766
NO2: 1.0092

NO Bkg 4.4
NOx Bkg 4.5
NO Coef 0.810
NOx Coef 1.000
NO2 Coef 1.001

Calibration Method: Gas Dilution / GPT
Calibrator: Make/Model: Sabio 2010 AMU# 1778
NO cylinder # CLM001756 NO conc. ppm 50.2 NOx conc. ppm 50.7

Calibrator Flows			Calc. Conc.		Indicated Concentration		% Difference vs Audit Gas	
Air	Gas	Total	NO (ppm)	NOx (ppm)	NO (ppm)	NOx (ppm)	NO	NOx
4851	0.00	4851	0.0000	0.0000	0.0007	0.0004	Limit ± 15%	
4910	35.07	4945	0.3560	0.3596	0.3345	0.3405	-6%	-5%
4952	20.00	4972	0.2019	0.2039	0.1927	0.1963	-5%	-4%
4966	10.00	4976	0.1009	0.1019	0.0975	0.0992	-4%	-3%
						Absolute Average Percent Difference	5%	4%

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

	NO	NOx	NO_2	LIMITS
Correlation Coeff.=	1.0000	0.9999	1.0000	**≥ 0.995**
m (Slope)=	0.9370	0.9452	0.9922	**0.85-1.15**
b (Intercept as % of full scale)=	0.4040	0.3719	0.2780	**± 3% F.S.**

O_3 Setting	Flow Rate	Indicated Conc. (ppm)			NO Decrease	NO_2 Increase	% Difference vs Audit Gas	
		NO	NOx	NO_2				
0.00 V	4945	0.3334	0.3398	0.0039				%Dif Limit
0.60 V	4945	0.0466	0.3387	0.2897	0.2868	0.2858	0%	± 15%
0.40 V	4945	0.1568	0.3395	0.1808	0.1766	0.1769	0%	± 15%
0.20 V	4945	0.2642	0.3404	0.0738	0.0692	0.0699	1%	± 15%
						Absolute Average Percent Difference	0%	

Converter Efficiency

Average Converter Efficiency 100.3%

Remarks:

O_3 ANALYZER AUDIT

File No. 2010 - 044A

Date: May 13, 2010 Performed by: J. Scott

Station

Name: Rover Location: Kinuso

Facility/Zone: PASZA Operator: FOCUS

Temp. 22.5 C Barometric Press. 706 mmHg

Monitor

Make/Model: Teco 49C Serial No: 609716240

Inlet flow (sccm): 715 / 686 Full Scale Range ppm: 0.5

Last cal. Date: April 14, 2010 Old C.F. 1.0170

Zero/Bkg -14.6

Span Coeff. 1.479

Calibrator

Calibration Method: Gas Dilution / GPT

Make/Model: Sabio 2010 AMU # : 1778

NO cylinder # : CLM 001756 NO concentration ppm: 50.2

Ozone Setting	Calibrator Flow (sccm) Air	Gas	Total	Calculated Conc. (ppm)	Indicated Conc. (ppm)	% Difference vs Audit Gas	Limits
0.00 V	4945		4945	0.0000	0.0023		
0.80 V	4945		4945	0.3921	0.4118	4%	± 15%
0.40 V	4945		4945	0.1744	0.1854	5%	± 15%
0.20 V	4945		4945	0.0689	0.0742	4%	± 15%
				Absolute Average Percent Difference		5%	

Linear Regression Analysis:

y=mx+b (where x=calculated concentration, y=indicated concentration)

		LIMITS
Correlation Coeff.=	1.0000	**≥ 0.995**
m (Slope)=	1.0446	**0.85-1.15**
b (Intercept as % of full scale)=	0.4979	**± 3% F.S.**

Remarks:

Alberta
Freedom To Create. Spirit To Achieve.

Station Performance Audit Summary

Company: PASZA Facility Name: Kinuso

Approval No.: N/A Site Name: Rover

AENV Region: Northern AENV District: Northwest

Parameters audited:

H_2S	X	SO_2	X	NO_X	X	NH_3		O_3	X
CO		CH_4		NonCH4		THC		Ethylene	
$PM_{2.5}$		PM_{10}		TSP		BTEX		Wind Speed	X
Wind Dir	X	Amb. Temp	X	Stn.Temp		RH	X	Solar Radiation	
Rainfall		Precip		VWS		Other			
All parameters monitored as per approval: Yes_____ No _____									

GENERAL	*YES*	*NO*	*N/A*
Has the location remained unchanged from previous audit?	X		
Is site secure?	X		
Are station operating conditions adequate?	X		

DATA ACQUISITION			
Are strip charts in use?		X	
Is a telemetry system for data acquisition in use?	X		

SYSTEM COMPONENTS			
Is a glass sampling manifold installed?	X		
Is sampling manifold clean?	X		
Is a manifold trap in place?	X		
Are spare manifold ports capped	X		
Is manifold oriented so it is not exactly horizontal?	X		
Are manifold ports situated to prevent water entering monitors?	X		
Is manifold pump properly installed and operative?	X		
Do sample lines extend at least 3/4"into manifold?	X		
Are monitor sampling lines connected to manifold?	X		
Are sampling lines clean?	X		
Are monitors properly mounted and secure?	X		
Are monitors properly exhausted from room or scrubbed?	X		
Are zero and span systems operational?	X		

WIND EQUIPMENT			
Is wind sensor properly oriented?	X		
Does wind equipment appear to be functioning properly?	X		

COMMENTS: _____

AUDITOR: J. Scott *DATE:* May 13, 2010

STATION AUDIT

File No. 2010 - 023A / 025A

Date: May 10, 2010 Performed by: J. Scott

Station

Name: Smoky Heights Location: Smoky Heights

Facility/Zone: PASZA Operator: FOCUS

Temp: 23.0 C Barometric Press: 704 mmHg

Location

Latitude N 55°24'09.8"
Longitude W 118°16'52.2"
Elevation 649m
Status of Site Documentation Good

Manifold Material Glass
Manifold Condition Good

Meteorological

	Observed	Audit Value
Wind Speed Direction	71 Deg 8.7 kph	5 - 10 kph E
Station Temperature	N/A	N/A
Relative Humidity	N/A	N/A
Ambient Temperature	16.5 C	16.4 C
Solar Radiation	N/A	N/A
Precipitation	N/A	N/A

Remarks:

SO_2 ANALYZER AUDIT

File No. 2010 - 023A

Date: May 10, 2010 Performed by: J. Scott

Station

Name: Smoky Heights Location: Smoky Heights

Facility/Zone: PASZA Operator: FOCUS

Temp: 23.0 C Barometric Press: 704 mmHg

Monitor

Make/Model: Teco 43i Serial No: 701120009

Inlet flow (sccm): 441 Full Scale Range ppm: 0.5

Last cal. Date: April 15, 2010 Old C.F. 0.9828

Zero/Bkg 8.2

Span Coef 0.696

Calibrator

Calibration Method: GAS DILUTION

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

Cylinder # : CLM 008622 Cyl. Conc PPM: 50.2

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
5000	0.00	5000	0.0000	0.0007		
5041	41.80	5083	0.4128	0.4084	-1%	± 15%
5026	19.30	5045	0.1920	0.1908	-1%	± 15%
4992	9.35	5001	0.0939	0.0933	-1%	± 15%
				Absolute Average Percent Difference	1%	

Linear Regression Analysis:

y=mx+b (where x=calculated concentration, y=indicated concentration)

		LIMITS
Correlation Coeff.=	1.0000	**≥ 0.995**
m (Slope)=	0.9878	**0.85-1.15**
b (Intercept as % of full scale)=	0.1518	**± 3% F.S.**

Remarks:

Alberta
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TRS ANALYZER AUDIT

File No. 2010 - 024A

Date: May 10, 2010 Performed by: J. Scott

Station

Name: Smoky Heights Location: Smoky Heights

Facility/Zone: PASZA Operator: FOCUS

Temp: 23.0 C Barometric Press: 704 mmHg

Monitor

Make/Model: Teco 43C Serial No: 436610004

Inlet flow (sccm): 721 Full Scale Range ppm: 0.1

Last cal. Date: April 15, 2010 Old C.F. 1.0092

Zero/Bkg 14.2

Span Coef 0.999

Calibrator

Calibration Method: GAS DILUTION

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

Cylinder # : 3L1679 Cyl. Conc PPM: 9.6

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
5000	0.00	5000	0.00	0.0001		
5040	42.80	5083	0.08	0.0802	-1%	± 15%
5025	19.53	5045	0.04	0.0373	0%	± 15%
4991	9.72	5001	0.02	0.0189	1%	± 15%
				Absolute Average Percent Difference	0%	

Linear Regression Analysis:

y=mx+b (where x=calculated concentration, y=indicated concentration)

		LIMITS
Correlation Coeff.=	1.0000	**≥ 0.995**
m (Slope)=	0.9899	**0.85-1.15**
b (Intercept as % of full scale)=	0.3064	**± 3% F.S.**

Remarks:

TEOM AUDIT

File #: 2010 - 025A
Date: May 10, 2010 Performed by: J. Scott

Station

Name:	Smoky Heights	Location:	Smoky Heights
Facility/Zone:	PASZA	Operator:	FOCUS
Temperature:	23.0 C	Barometric Press.	704 mmHg

Audit Transfer Standard

Make/Model:	DeltaCal	Cell s/n:	0566
Serial Number:	AMU 1761		

Sampler Set-up and Current Readings

Make/Model	R&P 1400a	F-Main Set Pt (l/min)	3.00
Unit #	PM 2.5	F-Aux Set Pt (l/min)	13.67
Control unit s/n	140AB246340305	Filter Load (%)	32
Transducer s/n	140AB246340305	K_O Factor	12122
		Temp (°C)	16.4
		Press (ATM)	0.924
		FAdj Main	1.000
		FAdj Aux	1.025

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

ATM = (mm Hg) X (1.316×10^{-3}) or ATM = ("Hg) X (3.34207×10^{-2})

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

Zero Flow

Pump Off		**Pump On (Time to reach set points)**	
F-Main (l/min)	0.00	**(45-60 Sec)**	27
F-Aux (l/min)	0.04	**(45-60 Sec)**	38

Temperature/Pressure

Measured Temp **(± 2 °C)**	16.5	**Δ°C**	0.10
Measured Press **(± 1.5% ATM)**	0.926	**Δ% ATM**	0.22%

Flow Audit

			Δ% of Measured Flow from Set-point		
Indicated Main/Aux Flow (l/min)	3.00	13.68	**(± 2%)**	0.0%	0.1%
Total Flow = Main + Aux (l/min)	16.68		**(± 2%)**	0.1%	
			Δ of Measured Flow from Indicated		
Measured Total Flow (l/min)	16.33		**(± 1.00 l/min)**	0.35	
Measured Main Flow (l/min)	2.9		**(± 0.20 l/min.)**	0.10	

Leak Check

		Actual leakage = Pump On – Pump Off
Main **(< 0.15 l/min)**	0.00	0
Aux **(< 0.65 l/min)**	0.05	0.01

K_O Factor

Measured	12126
K_O % Difference **(± 2.5%)**	0.04

Remarks:

April 19, 2010 - head cleaned, teom calibrated and filter changed.
Heads are dusty.

Station Performance Audit Summary

Company: PASZA Facility Name: Smoky Heights

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

AENV Region: Norther AENV District: Northwest

Parameters audited:

H_2S	X	SO_2	X	NO_X		NH_3		O_3	
CO		CH_4		NonCH4		THC		Ethylene	
$PM_{2.5}$	X	PM_{10}		TSP		BTEX		Wind Speed	X
Wind Dir	X	Amb. Temp	X	Stn.Temp		RH		Solar Radiation	
Rainfall		Precip		VWS		Other			
All parameters monitored as per approval: Yes_____ No _____									

	YES	NO	N/A
GENERAL			
Has the location remained unchanged from previous audit?	X		
Is site secure?	X		
Are station operating conditions adequate?	X		
DATA ACQUISITION			
Are strip charts in use?		X	
Is a telemetry system for data acquisition in use?	X		
SYSTEM COMPONENTS			
Is a glass sampling manifold installed?	X		
Is sampling manifold clean?	X		
Is a manifold trap in place?	X		
Are spare manifold ports capped	X		
Is manifold oriented so it is not exactly horizontal?	X		
Are manifold ports situated to prevent water entering monitors?	X		
Is manifold pump properly installed and operative?	X		
Do sample lines extend at least 3/4"into manifold?	X		
Are monitor sampling lines connected to manifold?	X		
Are sampling lines clean?	X		
Are monitors properly mounted and secure?	X		
Are monitors properly exhausted from room or scrubbed?	X		
Are zero and span systems operational?	X		
WIND EQUIPMENT			
Is wind sensor properly oriented?	X		
Does wind equipment appear to be functioning properly?	X		

COMMENTS: _____

AUDITOR: J. Scott *DATE:* May 10, 2010

STATION AUDIT

File No. 2010 - 021A / 022A

Date: May 10, 2010 Performed by: J. Scott

Station

Name: Valleyview Location: South Sturgeon

Facility/Zone: PASZA Operator: FOCUS

Temp. 21.5 C Barometric Press. 702 mmHg

Location

Latitude N 54°56'23.7"
Longitude W 117°12'57.7"
Elevation 657m
Status of Site Documentation Good

Manifold Material Teflon lines
Manifold Condition Good

Meterological

	Observed	Audit Value
Wind Speed Direction	321 Deg 4.91 kph	0-5 kph W
Station Temperature	N/A	N/A
Relative Humidity	26.08%	24.87%
Ambient Temperature	**12.7 C**	**22.10 C**
Solar Radiation	N/A	N/A
Precipitation	N/A	N/A

Remarks:
Temperature taken at ground level and not up with at the sensor.

SO_2 ANALYZER AUDIT

File No. 2010 - 021A

Date: May 10, 2010 Performed by: J. Scott

Station

Name: Valleyview Location: South Sturgeon

Facility/Zone: PASZA Operator: FOCUS

Temp. 21.5 C Barometric Press. 702 mmHg

Monitor

Make/Model: Teco 45C Serial No: 45C-57531-313

Inlet flow (sccm): 469 Full Scale Range ppm: 1.0

Last cal. Date: April 13, 2010 Old C.F. 0.9845

Zero/Bkg

Span Coef

Calibrator

Calibration Method: GAS DILUTION

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

Cylinder # : CLM 008622 Cyl. Conc PPM: 50.2

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
4421	0.00	4421	0.0000	-0.0002		
4442	35.79	4478	0.4012	0.3873	-3%	± 15%
4381	16.83	4398	0.1921	0.1867	-3%	± 15%
4356	7.02	4363	0.0808	0.0768	-5%	± 15%
				Absolute Average Percent Difference	4%	

Linear Regression Analysis:

y=mx+b (where x=calculated concentration, y=indicated concentration)

		LIMITS
Correlation Coeff.=	1.0000	**≥ 0.995**
m (Slope)=	0.9671	**0.85-1.15**
b (Intercept as % of full scale)=	-0.0335	**± 3% F.S.**

Remarks:

Calibrated from a range of 0 - 0.5 not 0 - 1.0. The range of the analyzer needs to be changed or the analyzer needs to be properly calibrated for the range set.

H2S ANALYZER AUDIT

File No. 2010 - 022A

Date: May 10, 2010 Performed by: J. Scott

Station

Name: Valleyview Location: South Sturgeon

Facility/Zone: PASZA Operator: FOCUS

Temp. 21.5 C Barometric Press. 702 mmHg

Monitor

Make/Model: Teco 43i Serial No: 0701120010

Inlet flow (sccm): 424 Full Scale Range ppm: 0.1

Last cal. Date: April 13, 2010 Old C.F. 1.0021

Zero/Bkg 5.0

Span Coef 1.085

Calibrator

Calibration Method: GAS DILUTION

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

Cylinder # : 3L1679 Cyl. Conc PPM: 9.6

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
4421	0.00	4421	0.0000	0.0001		
4442	36.37	4478	0.0780	0.0793	2%	± 15%
4381	17.00	4398	0.0371	0.0376	1%	± 15%
4356	7.43	4363	0.0163	0.0164	0%	± 15%
				Absolute Average Percent Difference	1%	

Linear Regression Analysis:

y=mx+b (where x=calculated concentration, y=indicated concentration)

		LIMITS
Correlation Coeff.=	1.0000	**≥ 0.995**
m (Slope)=	1.0170	**0.85-1.15**
b (Intercept as % of full scale)=	-0.0656	**± 3% F.S.**

Remarks:

Station Performance Audit Summary

Company: PASZA Facility Name: South Sturgeon

Approval No.: N/A Site Name: Valleyview

AENV Region: Northern AENV District: Northwest

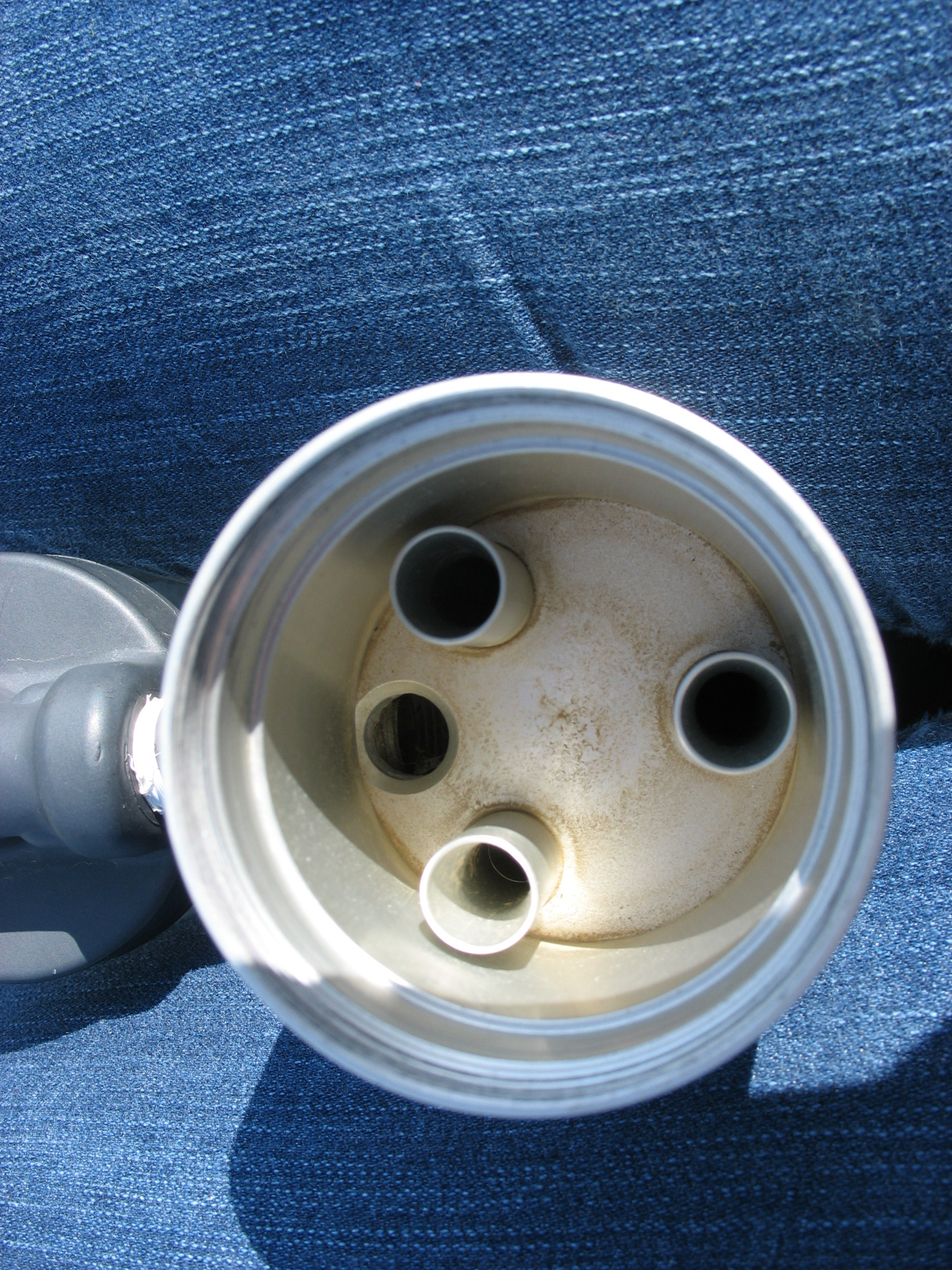
Parameters audited:

xH_2S	X	SO_2	X	NO_X		NH_3		O_3	
CO		CH_4		NonCH4		THC		Ethylene	
$PM_{2.5}$		PM_{10}		TSP		BTEX		Wind Speed	X
Wind Dir	X	Amb. Temp	X	Stn.Temp		RH	X	Solar Radiation	
Rainfall		Precip		VWS		Other			
All parameters monitored as per approval: Yes_____ No _____									

	YES	*NO*	*N/A*
GENERAL			
Has the location remained unchanged from previous audit?	X		
Is site secure?	X		
Are station operating conditions adequate?	X		
DATA ACQUISITION			
Are strip charts in use?		X	
Is a telemetry system for data acquisition in use?	X		
SYSTEM COMPONENTS			
Is a glass sampling manifold installed?		X	
Is sampling manifold clean?			X
Is a manifold trap in place?			X
Are spare manifold ports capped			X
Is manifold oriented so it is not exactly horizontal?			X
Are manifold ports situated to prevent water entering monitors?			X
Is manifold pump properly installed and operative?			X
Do sample lines extend at least 3/4"into manifold?			X
Are monitor sampling lines connected to manifold?			X
Are sampling lines clean?	X		
Are monitors properly mounted and secure?	X		
Are monitors properly exhausted from room or scrubbed?		X	
Are zero and span systems operational?	X		
WIND EQUIPMENT			
Is wind sensor properly oriented?	X		
Does wind equipment appear to be functioning properly?	X		

COMMENTS: Monitors will be properly vented when the new trailer is installed.

AUDITOR: J. Scott *DATE:* May 10, 2010



PASZA
Peace Air Shed Zone Association

P.O. Box 21135
Grande Prairie, Alberta
T8V 6W7
(780) 833-4343

June 16, 2010

Jolene Scott
Monitoring Systems Auditor
Environmental Assurance
Air Monitoring and Audit Centre
4946 89 Street N.W.
Edmonton, Alberta
T6E 5K1

Dear Ms. Scott

SUBJECT: PASZA Ambient Air Monitoring Station(s) Audit
File No. 2010 – 021A / 044A

Further to the Alberta Environment (AENV) audit conducted May 10 - 13th, 2010 and AENV correspondence dated May 20, 2009, PASZA provides the following response.

Valleyview Station:
At the Vallyview station two items were identified as need or opportunity for improvement, the sample lines not adequately vented and the ambient temperature sensor greater than +/- 1ºC. The Valleyview station building is currently being replaced and the sample lines will be adequately vented in the new building. The building replacement is scheduled for the end of June 2010. The temperature sensor at this site is a part of the ultrasonic met sensor pak and is sited at the 10 metre level on the tower. Audit measurements were taken at ground level which is likely the reason for the temperature difference. However, the temperature sensor will be audited internally during the met calibration that is scheduled for completion within the next few months

Smoky Heights Station:
At the Smoky Heights station one item was identified as a need for improvement, the TEOM particulate matter sampling head was noted as “dusty”. The sample head was previously cleaned April 19, 2010. The sample head was cleaned at the time of the audit and again on May 26th. The function of the head will always show some particulate material on the impaction plate as a result of the head performing its function. It is PASZA’s understanding, that the point noted in the audit summary is considered to be a notation only and that the current frequency of cleaning every 30 days is acceptable

Beaverlodge Station:
At the Beaverlodge station, the FDMS 8500C particulate matter analyzer initially failed the flow leak check. During the audit, a leak was found and repaired. Following the repair, the system was checked again and the leak test passed. As a result of this the data prior to the audit may be in question due to the initial leak found. A review of the data indicates that the data appeared

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normal over the previous two months with the exception of a large negative spike observed in the data on May 5, 2010. There is no evidence to support this was the event that caused the leak. A field check was completed on the TEOM system on May 4 during routine maintenance. A leak check was completed at that time and passed. The event on May 5 may have contributed to, or been the cause of the leak in the system. The field documentation from the Beaverlodge site visit on May 4 has been included for your review. Data over the period from the previous passed leak test on May 4 to the audit on May 10 will be invalidated.

The audit also identified the particulate matter sampling head as being "dirty" and noted as a need for improvement. Prior to the audit, the sample head was last cleaned on May 4, 2010 and was cleaned again during regular maintenance on May 20, 2010. The function of the head will always show some particulate material on the impaction plate as a result of the head performing its function. It is PASZA's understanding, that the point noted in the audit summary is considered to be a notation only and that the current frequency of cleaning every 30 days is acceptable

Evergreen Park Station:
Three items were identified as a need or opportunity for improvement at the Evergreen Park station, the sample pump lines not adequately vented, the sample lines were noted as "dirty" and the ambient temperature sensor was greater than +/- 1 ºC.

The sample pump was adequately vented following the audit on May 23, 2010. The field service report is attached for your review. The sample lines were cleaned during the time of the audit and this will be inspected monthly during routine maintenance and cleaned as required. The temperature sensor is a part of the ultrasonic met sensor pak and is sited at the 10 metre level on the tower. The audit measurements were taken at ground level which is likely the reason for the temperature difference. However, the temperature sensor will be audited internally during the met calibration scheduled for completion within the next few months. Unlike the Valleyview station, the tower at the Evergreen Park station can be lowered to the trailer roof. For future AENV audits, the tower will be lowered to allow access to the met sensor pak at the roof of the trailer.

Henry Pirker Station:
One item was identified as a need for improvement at the Henry Pirker station; the TEOM particulate matter sample head was noted as "dusty". The sample head was previously cleaned late in April. The sample head was cleaned at the time of the audit and again on May 18, 2010 during regular maintenance. The function of the head will always show some particulate material on the impaction plate as a result of the head performing its function. It is PASZA's understanding, that the point noted in the audit summary is considered to be a notation only and that the current frequency of cleaning every 30 days is acceptable.

Rover Station / Kinuso:
The relative humidity sensor was identified as a need for improvement item at the Rover station. Currently there is no relative humidity sensor located at the Rover station. This sensor was previously relocated to a different station however the channel for this data collection was not removed from the data acquisition system. This channel will be removed from the system.

PASZA
Peace Air Shed Zone Association

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If you have any questions or concerns with regards to PASZA's audit response, please contact me at (780) 882-4071.

Yours Truly,

Shelly Pruden
PASZA Program Manager

Cc: Gary Cross, Focus Corporation
Greg Smith, Alberta Environment
Jennifer Keturkis, Alberta Environment

Attachments: Field Service Reports

AB TEOM PM2.5 Calibration

FOCUS AIR QUALITY MONITORING

STATION: **Smokey Heights**

LOCATION: PASZA - Grande Prairie

OPERATOR: Grover Christansen

DATE: 26-May-10

MONITOR INFO / PARAMETER VALUES:

Make/Model	TEOM AB
Configuration	PM2.5
Serial Number	24634
Site Number	3
Inlet Type	PM 10 / SCC
FAdj. Main Setting	1.000
FAdj. Aux. Setting	1.000
T-Case Indicated / Set Point	40/40
T-Air Indicated / Set Point	40/40
T-Cap Indicated / Set Point	40/40
Splitter Assembly Alignment (cm)	15.5

(vs. specified depth of 15.5 cm from top of flow tube to top of concentric 1/2 in. tube)

RECENT CALIBRATION AND AUDIT HISTORY

Previous Audit	15-Apr-10
Previous Calibration	NA

PUMP CAPACITY CHECK *	PASS

* capacity test or pump on timed test utilized to verify pump integrity

"FAIL" indicates that pump requires service.

LEAK CHECK	Indicated Flow (lpm)	
	Main	Auxiliary
PUMP ON	0.000	0.060
PUMP OFF	0.000	0.001
NET	0.000	0.059
LIMITS	*<0.15*	*<0.60*

		Ambient Temp. (^{0} C)	Ambient Pres. (atm)	Ko *	Bypass flow (lpm)	Sample flow (lpm)
	SET POINT (S)	na	na	12122	13.67	3.000
	INDICATED (I)	19.6	0.929		13.68	3.000
As Found Data	MEASURED (AF)	18.8	0.930		13.64	2.970
Adjusted Data	MEASURED (M)	18.8	0.930	12218	13.64	2.970
	DIFFERENCE (M-I)	-0.8	0.001	0.8%	-0.22	-0.03
	LIMITS	*± 2 ^{0} C*	*± 0.005 atm*	*± 2.5 %*	*± 1.0 L/min*	*± 0.2 L/min*

Ko Audit Filter data *Weight:* 0.10814 *Serial #:* *CVK 3831*

COMMENTS: PASS

Sample Head Inspection/Cleaning:

PM10:Cleaned

PM2.5:Cleaned

Large In Line Filter Inspection & Or Replacement:

Main: Good

Aux: Good

Field Service Report

Air Monitoring Network / Client: Peace AirShed Zone Association

Station Information

Visit Date: May 26, 2010. Project Number: 20500006
Station Location: Smokey Heights Station Number: 9
Reason for Visit: Monthly Calibration
Arrival Time: 8:20 MST Departure Time:
Weather Conditions: Sunshine!!! Temp: 14.7, NE wind at 8.6km/hr.

Record of Hours ***Parts Used***

Employee	Category	Hours	Qty	Description
GC	CAL	7.0		Monthly Calibrations
GC	TRA	4.0		

Station Information

Time (MST)	Comments
08:20	Arrived onsite to perform monthly calibration and maintenance of AQM Station.
08:30	Entered as found Zero for SO2
08:38	Start As found span, SO2 – *(Slow climb on the SO2, so we did a quick drop back to zero, and tried again for as found span 08:47AM.)*
09:05	Noticed that zero air is not as steady as usual. Noticeable overheating smell coming from the pump.
09:18	Tried span again to see what would happen; same results
09:22	Turned off SO2 Cylinder, to look at calibrator, zero air and pump
09:43	**Took TEOM offline, to utilize the pump, so we can continue with the calibrations.**
10:08	Restart SO2 cal. Entered As found zero.
10:50	Cleaned TEOM head, while TEOM is offline.
11:22	Entered second point for SO2 cal.
11:47	Entered third point for SO2 cal.
11:50	Updated third point for SO2 cal (forgot to hit update)
11:50	Entered as found zero for TRS cal.
12:12	Initiated AIC for SO2 cal
12:24	Entered as found span TRS
12:44	Entered second point of TRS cal.
13:17	Ended SO2 cal.
13:27	Initiated AIC for TRS cal
13:49	Calibrated TEOM, checked for flows, BP, and temperature.
14:19	Finished TRS calibration
14:30	TEOM back on line/enabled.
14:36	-Reconnected AP1000 directly to modem, secured connection w/ Kelly.
15:00	Left Site.

Technician:
Grover/Courtney

FDMS TEOM PM2.5 AUDIT

FOCUS AIR QUALITY MONITORING

STATION: **BeaverLodge**
LOCATION: PASZA - Grande Prairie

OPERATOR: Grover Christiansen
DATE: 4-May-10

MONITOR INFO / PARAMETER VALUES:

Make/Model	TEOM AB
Configuration	PM2.5
Serial Number	AMU1649
Site Number	4
Inlet Type	PM 10 / SCC
FAdj. Main Setting	1.000
FAdj. Aux. Setting	1.000
T-Case Indicated / Set Point	30/30
T-Air Indicated / Set Point	30/30
T-Cap Indicated / Set Point	30/30
Splitter Assembly Alignment (cm)	15.5

(vs. specified depth of 15.5 cm from top of flow tube to top of concentric 1/2 in. tube)

RECENT CALIBRATION AND AUDIT HISTORY

Previous Audit	12-Apr-10
Previous Calibration	

PUMP CAPACITY CHECK *	PASS

* capacity test or pump on timed test utilized to verify pump integrity

"FAIL" indicates that pump requires service.

LEAK CHECK	Indicated Flow (lpm)	
	Main	Auxiliary
PUMP ON	-0.080	0.220
PUMP OFF	0.000	0.050
NET	-0.080	0.170
LIMITS	*<0.15*	*<0.60*

		Ambient Temp. (^{0}C)	Ambient Pres. (atm)	Ko *	Bypass flow (lpm)	Sample flow (lpm)
	SET POINT (S)	na	na	14287	13.67	3.000
	INDICATED (I)	2.7	0.916		13.67	3.000
As Found Data	MEASURED (AF)	2.6	0.916		13.70	3.003
Adjusted Data	MEASURED (M)	2.6	0.916	14119	13.70	3.003
	DIFFERENCE (M-I)	-0.1	0.000	-1.2%	0.22	0.10
	LIMITS	*± 2 ^{0} C*	*± 0.005 atm*	*± 2.5 %*	*± 1.0 L/min*	*± 0.2 L/min*

Ko Audit Filter data *Weight:* 0.11477 *Serial #:* *CVK 3532*

COMMENTS: 8500C FDMS was removed after disabling the data to Cal Mode. Unit was installed at H.P. and H.P.'s unit was transported back to Beaverlodge to replace the unit removed. Although a K.O.was not preformed all other parameters were identical to what was noted on Aprils calibration. Have informed Harry Benders that PM 2.5 data from both H.P. and BL will be flagged in the CAL mode while observing the data over the next period.

PASS

Sample Head Inspection Or Cleaning:

PM10: Inspected
PM2.5: Inspected

TEOM / FDMS IN LINE FILTER INSPECTION OR REPLACEMENT:

TEOM IN LINE: Main: Good
AUX: Good

FDMS Water knock out:Good

FDMS 47 mm Filter Cassette: Replaced

Field Service Report

Air Monitoring Network PASZA

FOCUS AIR QUALITY MONITORING

Station Information

Visit Date	May 4, 2010	Project Number	20500006
Station Location	Beaverlodge	Station Number	4
Reason for visit	**Remove/replace 8500C FDMS Unit**		
Arrival Time (MST)			

Weather Conditions A few clouds, wind NW 12 Km/h, 6 deg C

Parts Used

Employee	Category	Hours	QTY	Description
	TRA	1		
	CAL			
	RM			
GC	ER	1		**Remove/Replace FDMS Unit**
	IS			
	TOTAL HOURS	2		

Details of visit

17:30: Disable TEOM PM 2.5 8500 FDMS at B.L. Power off TEOM, remove 8500C FDMS unit and transport to H.P.

Return to B.L. & install 8500C FDMS unit from H.P. Change sample filters, run diagnostics & allow stabilize.

Leak checks and a quick check of parameters were performed following swap.

B.L. Leak Check: Main pump off: 0.000 Aux pump off: 0.050
Main pump on: -0.070 Aux pump on: 0.220
Flows measured: Main: 3.003 Aux: 13.70
TEOM data will be left in CAL mode to observe data and any changes if any.
All parameters are functioning well.
TEOM data will remain in CAL mode for enough time to assess data; Harry Benders has been notified.

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Technician Grover Christiansen

Field Service Report

Air Monitoring Network PASZA

FOCUS AIR QUALITY MONITORING

Station Information

Visit Date	May 20, 2010	Project Number	20500006
Station Location	Beaverlodge	Station Number	4
Reason for visit	**Monthly Calibrations Nox, SO2 & O3**		
Arrival Time (MST)	8:30		14:41

Weather Conditions Light rain showers. 9°C. Wind: NE 19km/hr

Parts Used

Employee	Category	Hours	QTY	Description
CT	TRA	1		
CT	CAL	7		**Cal Nox, SO2 & O3**
	RM			
	ER			
	IS			
	TOTAL HOURS	8		

Details of visit

8:30: Arrive on site, set up calibrator and take readings of analyzers. Bleeding lines etc.
8:55: Started Cal for NOX and SO2
9:15: Adjusted the NO and NOX on analyzer.
10:13 Start as found span NOx & SO2.
11:34: Going over chart representation of data, and again I have an out of place blip compared to Grover's last calibration. I am not to sure what caused this, but I will discuss it with Grover.
11:41 Set up for O3 Calibration
12:33 Set O3 reading to last point from NOX Calibration
13:16: Finished NOX cal, and put NO,NO2,NOX back online on ESC data logger.
14:00 Gathered precipitation sample, changed out rain bucket as well as box up sample. 42mm of precip. rain water collected from sample shack. * Quick Note*It is raining out, and the sample was taken in the middle of the day. The forcast calls for more rain, but the sample was taken to late, should be done every Wednesday
14:05: Swapped TEOM head's for cleaning as per monthly schedule as well as to address audit's issue.
14:14: Watching real time data for O3 in AIC, and no un-called for blips! (BOO YA)
14:27: AIC completed, put O3 back online on ESC data logger, and exported data.
14:41: Packed up and leave shack.

Technician Courtney Thompson

Field Service Report

Air Monitoring Network PASZA

FOCUS AIR QUALITY MONITORING

Station Information

Visit Date	May 23, 2010	Project Number	20500006
Station Location	Evergreen Park	Station Number	2
Reason for visit	Monthly Calibrations		
Arrival Time (MST)	8:15	Departure Time (MST)	15:35

Weather Conditions Fair, Winds SE 13 Km/h, 5.9 deg C.

Record of Hours on Visit / ***Parts Used***

Employee	Category	Hours	QTY	Description
GC	TRA	1		
GC	CAL	7		**Monthly cals SO2, TEOM & TRS**
	RM	1		**Clean TEOM heads**
	ER			
	IS			
	ADMIN			
	TOTAL HOURS	9		

Details of visit

8:15: Arrived on site, to discover that the fence has been tampered with. The chain link locking system has been tampered with, as well as a section of the gate completely broken. Called Dawn Ewan to get contact information from Land Owner, as of current time, no response.
08:36 Arrived and set up equipment and computer problems.
08:46 Start as found zero SO2.
09:07: Start as found span SO2 Cal.
09:58: Start TRS as found zero.
10:22: Started as found span for TRS (No adjust needed on TRS)
11:08 Vented sample pumps to ambient.
11:12 Finish SO2 cal.
12:05 Finish TRS Cal.
12:49: Auditing ambient temperature, as indicated by sensor the reading is 6.24168, the comparison when measured was 5.9
13:00 Audit TEOM- Change filter.
13:30 TEOM back on line.
13:45 Direct to AP1000 from modem, noticed an empty serial port on the DACS.
13:50 Leave trailer.

Technician Grover Christiansen

FDMS AB TEOM PM2.5 AUDIT

FOCUS AIR QUALITY MONITORING

STATION: **Henry Pirker**
LOCATION: PASZA - Grande Prairie

OPERATOR: Grover Christiansen
DATE: 5/18/2010

MONITOR INFO / PARAMETER VALUES:

Make/Model	TEOM AB
Configuration	PM2.5
Serial Number	AMU 1697
Site Number	1
Inlet Type	PM 10 / SCC
FAdj. Main Setting	1.000
FAdj. Aux. Setting	1.000
T-Case Indicated / Set Point	30/30
T-Air Indicated / Set Point	30/30
T-Cap Indicated / Set Point	30/30
Splitter Assembly Alignment (cm)	15.5

(vs. specified depth of 15.5 cm from top of flow tube to top of concentric 1/2 in. tube)

RECENT CALIBRATION AND AUDIT HISTORY

Previous Audit	29-Apr-10
Previous Calibration	NA

PUMP CAPACITY CHECK *	PASS

* capacity test or pump on timed test utilized to verify pump integrity

"FAIL" indicates that pump requires service.

LEAK CHECK	Indicated Flow (lpm)	
	Main	Auxiliary
PUMP ON	0.000	0.000
PUMP OFF	0.030	-0.080
NET	-0.030	0.080
LIMITS	*<0.15*	*<0.60*

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		Ambient Temp. (^{u}C)	Ambient Pres. (atm)	Ko *	Bypass flow (lpm)	Sample flow (lpm)
	SET POINT (S)	na	na	13020	13.67	3.000
	INDICATED (I)	21.5	0.915		13.65	3.000
As Found Data	MEASURED (AF)	21.5	0.915		13.68	3.001
Adjusted Data	MEASURED (M)	21.5	0.915	12919	13.68	3.001
	DIFFERENCE (M-I)	0.0	0.000	-0.8%	0.07	0.03
	LIMITS	*± 2 ^{0} C*	*± 0.005 atm*	*± 2.5 %*	*± 1.0 L/min*	*± 0.2 L/min*

Ko Audit Filter data *Weight:* 0.11014 *Serial #:* *CVK 2123*

COMMENTS: PASS

Sample Head Inspection Or Cleaning:
PM10: Cleaned
PM2.5: Cleaned

TEOM / FDMS IN LINE FILTER INSPECTION OR REPLACEMENT:
TEOM IN LINE:
Main: Good
AUX: Replace next cal.

FDMS Water knck out:Good

FDMS 47 mm Filter Cassette: Replaced

Government of Alberta ■
Environment

Environmental Assurance
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June 18, 2010 File No(s). 2010 – 021A / 044A

Shelly Pruden
Program Manager
Peace Airshed Zone Association
P.O. Box 21135
Grande Prairie, AB
T8V 6W7

Dear Shelly:

Re: PASZA Ambient Air Monitoring Station Audits Closure Letter

The PASZA letter dated May 20, 2010 indicates that all actions required to address the audit findings have been taken.

Alberta Environment has not verified that these actions have indeed been taken. Based on the content of the letter, Alberta Environment is satisfied that PASZA has fulfilled the requirements of the audit findings and considers this audit closed.

If you have any questions please contact the undersigned at 780-427-7888.

Yours truly,

Jolene Scott
Monitoring Systems Auditor
Environmental Assurance

Attachment(s): none
cc: Gary Sasseville: District Approvals Manager
Greg Smith: District Compliance Manager
Marilyn Albert: Industrial Monitoring Assessment Technologist
Janine Ross: Ambient Air Support Tech
Jennifer Keturakis: Industrial Approvals Engineer