Environment and Protected Areas
Resource Stewardship Division
Airshed & Watershed Stewardship
Air Monitoring
4946 – 89 street
Edmonton, Alberta
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June 26, 2024 File Numbers:2024-122A-140A

Karla Reesor
Executive Director
Peace River Air Monitoring Project

Subject: Ambient Air Audit Letter Peace River Area Monitoring Program (PRAMP)

Alberta Environment and Protected Areas (AEPA) conducted audits of the PRAMP airshed network. Here is a summary of the findings as noted.

All stations were found to be meet all audit criteria for Sulphur's, Hydrocarbons, Oxide of Nitrogen and wind monitoring. All documentation was available for review which included monthly calibration records, station documentation, network documentation and PRAMP's QAP.

All stations with Grimshaw being the exception, saw AEPA tolerances not being met for either the ambient temperature sensor, station temperature sensor and / or the relative humidity sensor. The temperatures were outside the +/- 1 Celsius tolerance used by AEPA, and the relative humidity sensors were close the to +/- 15% tolerance used by AEPA. This is an opportunity for improvement, AEPA recommends servicing the sensors. See the station audit field sheets for details.

At the Reno location, AEPA observed an unusual jump in the SO2 / TRS analyzers at the mid and low points. This may be due to excess humidity observed in the region prior to AEPA's arrival affecting the inlet filter element. No failure occurred so no further action was undertaken by AEPA or required by PRAMP and its contractor.

At the Grimshaw location a couple of items were noted.

1. The glass jar for the T640 PM2.5 sampler was found to be broken and not connected to the T640 PM2.5 sampler – laying on the shelter's roof. The housing was covered with duct tape. This in an improper repair. A Teledyne representative was contacted, and the response is copied here:

"If the jar is not there, the sample heater has to work harder to maintain the set RH. High RH can affect the light scattering and thus particulate data."

PRAMP is required to replace the glass jar as soon as possible. Data must be assessed to determine if there is any impact to the data collected when the jar was found to be broken and not properly repaired / replaced. Prior to the audit the region experienced some heavy periods of rain that could impact data collected. Please provide documentation regarding the completion of repairs (pictures), provide a timeline for assessing the data and data correction as required. See the attached pictures.

2. The ambient Oxides of Nitrogen (NOx) analyzer initially failed the low NO/NO_x point on the first audit attempt. AEPA conducted a second audit to assess if the first audit was

questionable based on observed responses. The second audit demonstrated similar responses when compared to the first audit using a second calibration system (calibrator and zero air system). The same audit gas and regulator were used. All NO/NO_x responses passed although the low NO/NO_x point was (-9%) low. Both audits showed unstable negative (low) responses that got worse indicating a possible analyzer system leak. A conventional leak check was completed which is capping the sample inlet bulkhead and no leak was initially observed. PRAMP will be required to determine the root cause for the responses noted. Bureau Veritas's monthly calibration done on June 11, 2024, demonstrated a very similar unstable response. Attached to this report are graphed responses for the June 11, 2024, monthly calibration and both AEPA's June 19, 2024, audits.

Of special note is that all 3 pictures, the monthly calibration / 2 audit graphed pictures and one other picture, displayed an anomaly where the NO (Nitric Oxide) comes in low then makes a sudden jump up and starts levelling off close to the expected NO value. This also needs to be assessed to determine the root cause of the anomaly. See attached pictures.

On Sunday June 16, 2024, Bureau Veritas conducted a service calibration on the Methane Non-methane analyzer at station 842. Reasoning was the daily span was trending upwards. The diagnostic data, calibration records and daily span control chart provided for review, indicated the analyzer was not out of compliance and therefore no service work beyond the service calibration was completed. As a result of this second calibration completed in the month of June 2024, data needs to be flagged as downtime for the period on June 16, 2024, this work was done. In the future as stated in the notification letter sent prior to the audit, no work was to be completed unless an emergency repair is required. The work completed does not constitute an emergency repair as the analyzer was performing properly. In the future respectively do not complete routine service work once the audit has been announced. Data will be flagged as downtime where applicable.

Please address the following noted items and provide a written response no later than July 25, 2024. If you have any concerns or comments do not hesitate to contact the undersigned.

Yours truly,

Al Clark
Monitoring Systems Auditor

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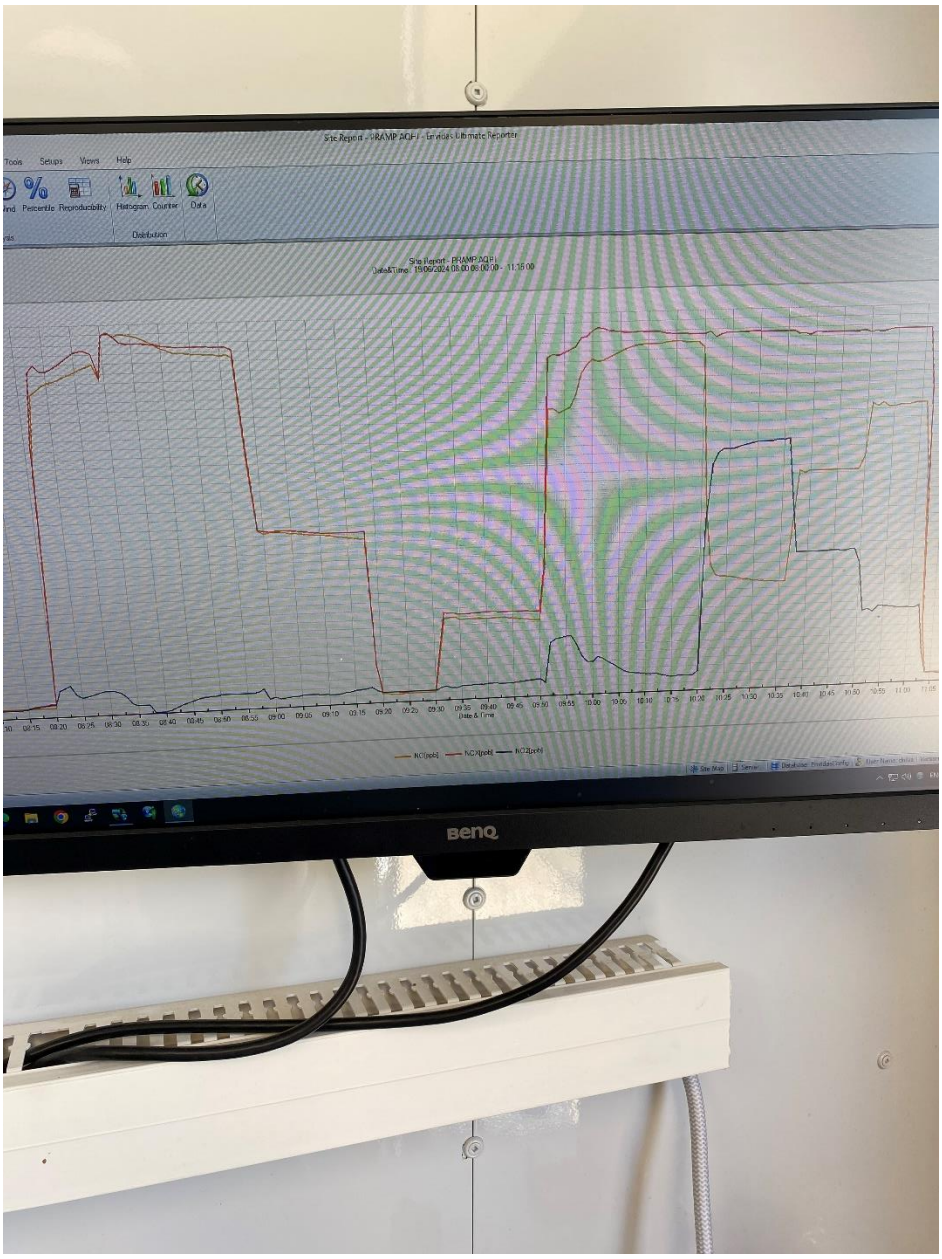
Cc: Marty Collins (EPA)
Mike Bisaga (PRAMP)
Lily Lin (PRAMP)
Christopher Wesson (Bureau Veritas)

Broken T640 Glass Jar Grimshaw Station

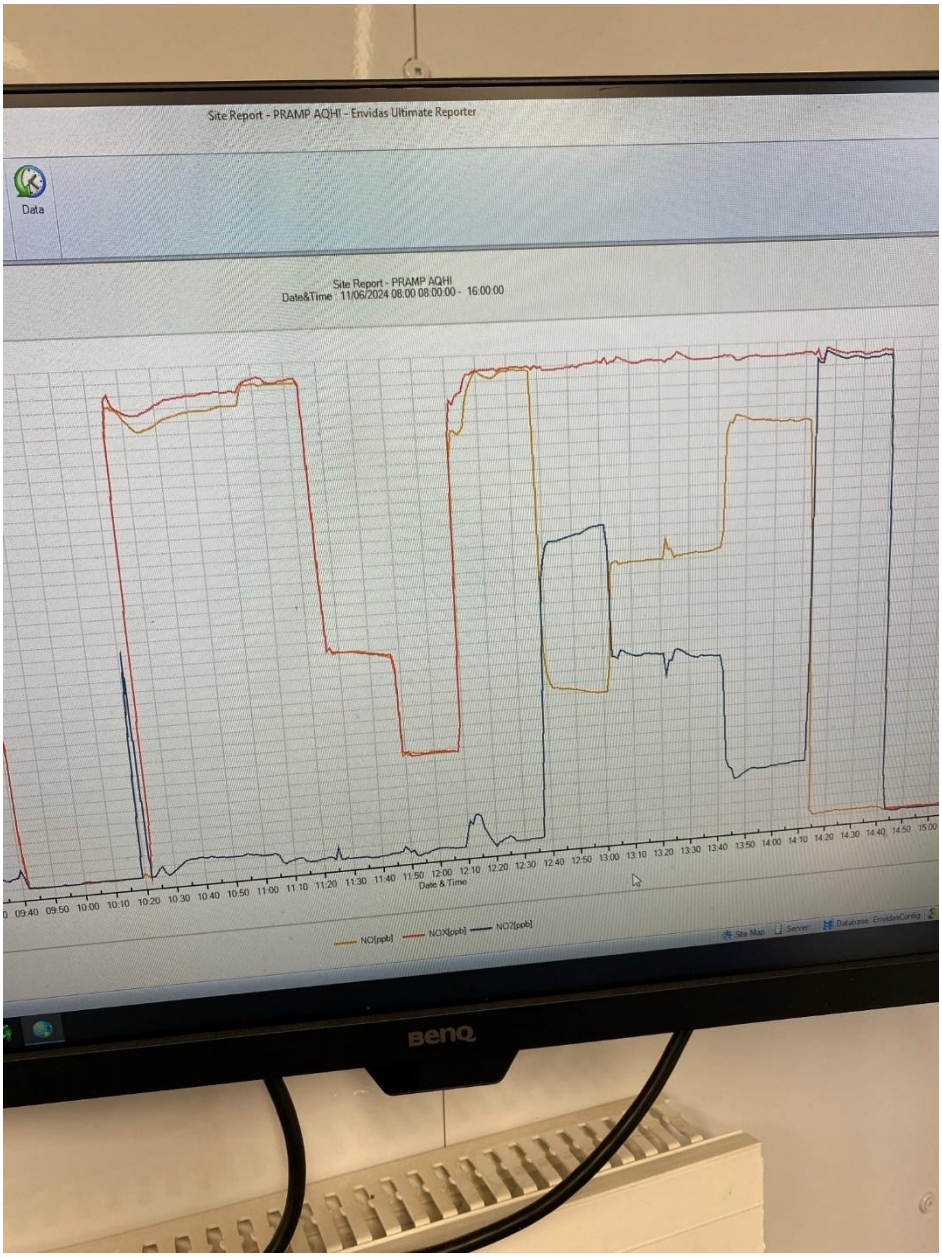
Improper Repair to T640 Glass Jar Mount Grimshaw Station



AEPA Audit #1 NOx analyzer. Failed low point Response. Note GPT anomaly response.

AEPA Re-Audit NOx analyzer (#2). GPT anomaly. Same GPT anomaly seen in Audit #1.

AEPA Re-Audit (#2). Low point passed (-9% low). GPT Anomaly still present.



Bureau Veritas June 11, 2024 calibration. Shows instability throughout the calibration and identical GPT anomaly seen in AEPA's June 19, 2024 Audit and Re-Audit.

Audit Summary

Facility / Zone	Peace River Area Monitoring Program (PRAMP)
Total # of parameters that passed	19
Total # of parameters audited in the network	19
Date(s) of the audit	June 17-19, 2024
Issue Date of Audit Summary	June 26, 2024

Station Name	Reno		
Auditor	L. Tabor / A. Clark		
Audit Date	June 17, 2024		
Critical	**Pass**	**Fail**	
H_2S			
SO_2	X		
TRS	X		
NO / NO_2 / NO_X			
O_3			
CO			
THC			
NMHC	X		
NH_3			
Sharp / T640 $PM_{2.5}$			
TEOM/BAM PM_{10}			
Wind Speed / Wind Direction	X		
Wind head Orientation	X		
Manifold Fan	X		
Precipitation Sampler			
Partisol $PM_{2.5}$			
Partisol PM_{10}			
Partisol TSP			
Zero/Span Systems Operational	X		

Inspection Items	**OK**	**Need for Improvement**	
Sample pump venting/scrubbing	X		
Heating / Air Conditioning	X		
Manifold	X		
Sample Lines	X		
Sharp / T640 $PM_{2.5}$			
TEOM/BAM PM_{10}			
Partisol $PM_{2.5}$			
Partisol PM_{10}			
Partisol TSP			
Safety	X		
Site Conditions	X		

Non-critical	**OK**	**Opportunity for Improvement**	
RH		X	+/- 15%
Station Temperature		X	+/- 1˚C
Ambient Temperature		X	+/- 1˚C
Solar Radiation			
Barometric Pressure	X		
Tipping bucket	X		
TEOM 'Pump On' test			
Station Condition	X		
Station Documentation	X		

Not monitored at this location

Alberta Government

Audit Summary

Facility / Zone	Peace River Area Monitoring Program (PRAMP)
Total # of parameters that passed	19
Total # of parameters audited in the network	19
Date(s) of the audit	June 17-19, 2024
Issue Date of Audit Summary	June 26, 2024

Station Name	842		
Auditor	L. Tabor / A. Clark		
Audit Date	June 17, 2024		
Critical	**Pass**	**Fail**	
H_2S			
SO_2	X		
TRS	X		
NO / NO_2 / NO_X			
O_3			
CO			
THC			
NMHC	X		
NH_3			
Sharp / T640 $PM_{2.5}$			
TEOM/BAM PM_{10}			
Wind Speed / Wind Direction	X		
Wind head Orientation	X		
Manifold Fan	X		
Precipitation Sampler			
Partisol $PM_{2.5}$			
Partisol PM_{10}			
Partisol TSP			
Zero/Span Systems Operational	X		

Inspection Items	**OK**	**Need for Improvement**	
Sample pump venting/scrubbing	X		
Heating / Air Conditioning	X		
Manifold	X		
Sample Lines	X		
Sharp / T640 $PM_{2.5}$			
TEOM/BAM PM_{10}			
Partisol $PM_{2.5}$			
Partisol PM_{10}			
Partisol TSP			
Safety	X		
Site Conditions	X		

Non-critical	**OK**	**Opportunity for Improvement**	
RH	X		
Station Temperature		X	+/- 1˚C
Ambient Temperature	X		
Solar Radiation			
Barometric Pressure	X		
Tipping bucket		X	As per specifications
TEOM 'Pump On' test			
Station Condition	X		
Station Documentation	X		

Not monitored at this location

Audit Summary

Facility / Zone	Peace River Area Monitoring Program (PRAMP)
Total # of parameters that passed	19
Total # of parameters audited in the network	19
Date(s) of the audit	June 17-19, 2024
Issue Date of Audit Summary	June 26, 2024

Station Name	Peace River Complex		
Auditor	L. Tabor / A. Clark		
Audit Date	June 18, 2024		
Critical	**Pass**	**Fail**	
H_2S	X		
SO_2	X		
TRS	X		
NO / NO_2 / NO_X			
O_3			
CO			
THC			
NMHC	X		
NH_3			
Sharp / T640 $PM_{2.5}$			
TEOM/BAM PM_{10}			
Wind Speed / Wind Direction	X		
Wind head Orientation	X		
Manifold Fan	X		
Precipitation Sampler			
Partisol $PM_{2.5}$			
Partisol PM_{10}			
Partisol TSP			
Zero/Span Systems Operational	X		

Inspection Items	**OK**	**Need for Improvement**	
Sample pump venting/scrubbing	X		
Heating / Air Conditioning	X		
Manifold	X		
Sample Lines	X		
Sharp / T640 $PM_{2.5}$			
TEOM/BAM PM_{10}			
Partisol $PM_{2.5}$			
Partisol PM_{10}			
Partisol TSP			
Safety	X		
Site Conditions	X		

Non-critical	**OK**	**Opportunity for Improvement**	
RH		X	+/- 15%
Station Temperature	X		
Ambient Temperature	X		
Solar Radiation			
Barometric Pressure	X		
Tipping bucket			
TEOM 'Pump On' test			
Station Condition	X		
Station Documentation	X		

Not monitored at this location

Audit Summary

Facility / Zone	Peace River Area Monitoring Program (PRAMP)
Total # of parameters that passed	19
Total # of parameters audited in the network	19
Date(s) of the audit	June 17-19, 2024
Issue Date of Audit Summary	June 26, 2024

Station Name	986		
Auditor	L. Tabor / A. Clark		
Audit Date	June 18, 2024		
Critical	**Pass**	**Fail**	
H_2S			
SO_2	X		
TRS	X		
NO / NO_2 / NO_X			
O_3			
CO			
THC			
NMHC	X		
NH_3			
Sharp / T640 $PM_{2.5}$			
TEOM/BAM PM_{10}			
Wind Speed / Wind Direction	X		
Wind head Orientation	X		
Manifold Fan	X		
Precipitation Sampler			
Partisol $PM_{2.5}$			
Partisol PM_{10}			
Partisol TSP			
Zero/Span Systems Operational	X		

Inspection Items	**OK**	**Need for Improvement**	
Sample pump venting/scrubbing	X		
Heating / Air Conditioning	X		
Manifold		X	Dirty
Sample Lines	X		
Sharp / T640 $PM_{2.5}$			
TEOM/BAM PM_{10}			
Partisol $PM_{2.5}$			
Partisol PM_{10}			
Partisol TSP			
Safety	X		
Site Conditions	X		

Non-critical	**OK**	**Opportunity for Improvement**	
RH	X		
Station Temperature	X		
Ambient Temperature	X		
Solar Radiation			
Barometric Pressure	X		
Tipping bucket	X		
TEOM 'Pump On' test			
Station Condition	X		
Station Documentation	X		

Not monitored at this location

Audit Summary

Facility / Zone	Peace River Area Monitoring Program (PRAMP)
Total # of parameters that passed	19
Total # of parameters audited in the network	19
Date(s) of the audit	June 17-19, 2024
Issue Date of Audit Summary	June 26, 2024

Station Name	Grimshaw AQHI
Auditor	L. Tabor / A. Clark
Audit Date	June 19, 2024

Critical	**Pass**	**Fail**	
H_2S			
SO_2	X		
TRS	X		
NO / NO_2 / NO_X	X		
O_3	X		
CO			
THC			
NMHC	X		
NH_3			
Sharp / T640 $PM_{2.5}$	X		
TEOM/BAM PM_{10}			
Wind Speed / Wind Direction	X		
Wind head Orientation	X		
Manifold Fan	X		
Precipitation Sampler			
Partisol $PM_{2.5}$			
Partisol PM_{10}			
Partisol TSP			
Zero/Span Systems Operational	X		

Inspection Items	**OK**	**Need for Improvement**	
Sample pump venting/scrubbing	X		
Heating / Air Conditioning	X		
Manifold	X		
Sample Lines	X		
Sharp / T640 $PM_{2.5}$		X	Broken jar
TEOM/BAM PM_{10}			
Partisol $PM_{2.5}$			
Partisol PM_{10}			
Partisol TSP			
Safety	X		
Site Conditions	X		

Non-critical	**OK**	**Opportunity for Improvement**	
RH	X		
Station Temperature	X		
Ambient Temperature	X		
Solar Radiation			
Barometric Pressure	X		
Tipping bucket	X		
TEOM 'Pump On' test			
Station Condition	X		
Station Documentation	X		

Not monitored at this location

STATION AUDIT

File No. 2024 - 132A - 134A

Date: June 18, 2024 Performed by: Laura Tabor

Station

Name: 986 Location: Peace River

Facility/Zone: PRAMP Operator: Bureau Veritas

Temp: 23.4°C Barometric Press: 708 mmHg

Location

Latitude N	56° 22' 11"
Longitude W	116° 55' 29.9"
Elevation	614 m
Status of Site Documentation	Good
Status of Network Documentation	Good
Status of QAP	Good

Manifold Material	Glass
Manifold Condition	Good

Meteorological

	Observed	Audit Value
Wind Speed Direction	7.3km/hr / 261°	0-5km/hr / WSW
Station Temperature	21.9°C	21.4°C
Relative Humidity	32.3%	29.6%
Ambient Temperature	14.3°C	14.3°C
Barometric Pressure	943 mb / 707mmHg	708 mmHg
Precipitation	10 tips @ 0.1ml/tip	10 tips = 1ml

Remarks:

Alberta Government

SO_2 ANALYZER AUDIT

File No. 2024 - 132A

Date: June 18, 2024 Performed by: Laura Tabor

Station

Name: 986 Location: Peace River

Facility/Zone: PRAMP Operator: Bureau Veritas

Temp. 23.4°C Barometric Press. 708 mmHg

Monitor

Make/Model: Thermo 43iQ Serial No: 1193585646

Inlet flow (sccm): 435 Full Scale Range ppm: 0.5

Last cal. Date: June 4, 2024 Old Correction Factor: 1.000

Zero/Bkg 19.1

Span Coef 1.042

Calibrator

Calibration Method: GAS DILUTION Make/Model: Sabio 2010

Cylinder # : T2D58517 AMU # : 2092

CGA Date: June 13, 2024 SO_2 Concentration PPM: 50.19

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
4905	0.0	4905	0.000	0.000		
4888	39.9	4928	0.407	0.420	3%	± 10%
4905	20.3	4925	0.206	0.214	4%	± 10%
4933	10.4	4943	0.106	0.112	5%	± 10%
				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)=	1.0304	**0.90-1.10**
b (Intercept as % of full scale)=	0.2609	**± 3% F.S.**

Remarks:

Range on analyzer set to 50.0ppb, but instrument has been calibrated to 500ppb. Advised tech to change this at next calibration.

Alberta Government

TRS ANALYZER AUDIT

File No. 2024 - 133A

Date: June 18, 2024 Performed by: Laura Tabor

Station

Name: 986 Location: Peace River

Facility/Zone: PRAMP Operator: Bureau Veritas

Temp. 23.4°C Barometric Press. 708 mmHg

Monitor

Make/Model: Thermo 43iQ Serial No: 1193585646

Inlet flow (sccm): 422 Full Scale Range ppm: 0.1

Last cal. Date: June 4, 2024 Old Correction Factor: 1.005

Zero/Bkg 16.9

Span Coef 1.009

Calibrator

Calibration Method: GAS DILUTION Make/Model: Sabio 2010

Cylinder # : D735284 AMU # : 2092

CGA Date: May 22, 2024 H_2S Concentration PPM: 10.06

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
4905	0.0	4905	0.0000	-0.0002		
4888	40.4	4928	0.0824	0.0838	2%	± 10%
4905	20.0	4925	0.0409	0.0419	3%	± 10%
4933	9.8	4943	0.0200	0.0208	5%	± 10%
				Absolute Average Percent Difference	3%	

Linear Regression Analysis:

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

		LIMITS
Correlation Coeff.=	1.0000	**≥ 0.995**
m (Slope)=	1.0174	**0.90-1.10**
b (Intercept as % of full scale)=	0.1457	**± 3% F.S.**

Remarks:

Range on analyzer set to 50.0ppb, but calibrated to 100ppb. Advised tech to adjust this at the next calibration.

Alberta Government

Non Methane Analyzer Audit

File No. 2024 - 134A

Date: June 18, 2024 Performed by: Laura Tabor

Station:

Name: 986 Location: Peace River Operator: Bureau Veritas

Facility/Zone: PRAMP Temp. 23.3°C BP: 708 mmHg

Monitor:

Make/Model: Thermo 55i Serial No. 1022143392

Inlet flow (sccm): na CH_4 Range ppm: 20.0

Last cal. Date: June 4, 2024 Non CH_4 Range ppm: 20.0

THC Range ppm: 40.0

Old Correction Factor: CH_4: 1.000

Non CH_4: 1.002

THC: 1.001

Calibration Method: Gas Dilution

Calibrator: Make/Model Sabio 2010 AMU# 2270

HC cylinder # FF20501 CH_4 conc. (ppm) 507 CH_4 Equiv (C3H8 only) (ppm) 575

CGA Date N/A C_3H_8 conc. (ppm) 209 Total CH_4 Equiv. (ppm) 1082

Calibrator Flows			Calc. Conc.			Indicated Concentration			% Difference vs Audit Gas Limit ± 10%		
Air	Gas	Total	CH_4 (ppm)	Non CH_4 (ppm)	THC (ppm)	CH_4 (ppm)	Non CH_4 (ppm)	THC (ppm)	CH_4	Non CH_4	THC
2943	0.0	2943	0.00	0.00	0.00	0.00	0.00	0.00			
2870	79.3	2950	13.63	15.45	29.09	13.29	14.87	28.17	-3%	-4%	-3%
2905	39.9	2945	6.87	7.79	14.66	6.71	7.48	14.19	-2%	-4%	-3%
2936	19.8	2956	3.39	3.85	7.24	3.35	3.75	7.10	-1%	-2%	-2%
								Absolute Average Percent Difference	2%	3%	3%

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

	CH_4	Non CH_4	THC	LIMITS
Correlation Coeff.=	1.0000	1.0000	1.0000	**≥ 0.995**
m (Slope)=	0.9739	0.9610	0.9674	**0.90-1.10**
b (Intercept as % of FS)=	0.0980	0.0858	0.0869	**± 3% F.S.**

Remarks:

Station Performance Audit Summary

Company: PRAMP Facility Name: 986

Approval No.: N/A Site Name: 986

Region: Upper Peace River District: Peace River

Parameters audited:

TRS	**X**	SO_2	**X**	NO_x		NH_3	
CO		CH_4	**X**	$NonCH_4$	**X**	THC	**X**
PM2.5		PM10		TSP		W. Speed	**X**
W. Direction	**X**	AmbTmp	**X**	Stn. Temp	**X**	RH	**X**
O_3		Ethylene		BTEX		BP	**X**
Rainfall	**X**	Precip		VWS		Other	
All parameters monitored as per approva		Yes / No		N/A		**X**	

	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**		
Date of last calibration. Date: August 3, 2023			

COMMENTS: Manifold dirty at elbow and trap

AUDITOR: Laura Tabor DATE: June 18, 2024

Alberta Government

Station Site Documents Audit Checklist

Station

Name: 986 Location: Peace River

Facility/Zone: PRAMP Operator: Bureau Veritas

Required Elements of AMD Chapter 3 *SS 4-B*

Do the Site Documents Contain the Following:

	Meets AMD		NA	Current	
	YES	NO		YES	NO
(a) Name of Owner/ Approval Holder	X				
(b) Name of Operating Agency	X				
(c) Contact Information	X				
(d) Date the Site or Station was Established	X				
(e) Date the information was last updated	X				
(f) Location including Latitude and Longitude	X				
(g) Four Colour Photos Looking N, E, S, W From Manifold Inlet	X				
(h) Additional Photos/Sketches of AMD Standard Site Non-Conformance	X				
(i) List of Instruments Located at the Site	X				
(j) Site Description Including the following:					
(i) Land Use By Sector	X				
(ii) Site Elevation	X				
(iii) Greatest Angle of Elevation & Direction to Nearby Buildings	X				
(iv) Average Building height in the area	X				
(v) Distance to Nearest Trees	X				

Required Elements of AMD Chapter 3 *SS 4-D*

Do the Station Site Documents Contain the Following:

	Meets AMD		NA	Current	
	YES	NO		YES	NO
(a) Recent Area Map Covering Approximately 1Km^2	X				
(b) Plan View Sketch	X				
(c) Cross-Sectional Sketch of Area Within 500 m Radius	X				
(d) Colour Photos Showing Sample Manifold/Inlet	X				
(e) Colour Photo of the Station	X				
(f) Additional Photos/Sketches of AMD Standard Station Non-Conformance	X				

COMMENTS:

AUDITOR: Laura Tabor DATE: June 19, 2024

Network Site Documents Audit Checklist

Network

Name: 986 Location: Peace River

Facility/Zone: PRAMP Operator: Bureau Veritas

Required Elements of AMD Chapter 3 *SS 4-C*

Do the Network Site Documents Contain the Following:

	Meets AMD YES	Meets AMD NO	NA	Current YES	Current NO
(a) A Recent Area Map Showing the Following:					
(i) Station Locations	X				
(ii) Roadways	X				
(iii) Railway Lines		X			
(iv) Airports		X			
(v) Lakes	X				
(vi) Rivers	X				
(vii) Human Settlements	X				
(viii) Locations of Identified Industrial & Non-Industrial Pollutant Sources	X				
(ix) Other Significant Landmarks	X				
(b) A windrose for each Continuous Ambient Air Monitoring Station	X				

COMMENTS: _____

AUDITOR: Laura Tabor DATE: June 19, 2024

Alberta Government

Station Checklist

Station

Name: 986 Location: Peace River

Facility/Zone: PRAMP Operator: Bureau Veritas

	Yes	No	N/A
Are all Particulate Sampler Heads put back in the correct			X
Has the existing or new TEOM filter been installed?			X
Has the flow bypass line on Teom Been reinstalled?			X
Has the Sharp Filter Tape been installed back on spool?			X
Has the BAM sampler been put back into the sample mode?			X
Have all intermittent particulate samplers been returned to an as found condition?			X
Have all sample lines been reconnected as found?	X		
Have all parameters that were marked down on the DAS been marked up?	X		
Are all ambient gas analyzers back in sample mode?	X		
Is everything left as it was at the start of the audit?	X		
Is the station properly secured upon departure?	X		

Auditor: Laura Tabor Date: June 18, 2024

Print

Signature

Operator: Kevin Sebastian Date: June 18, 2024

Print

Signature

STATION AUDIT

File No. 2024 - 125A - 127A

Date: June 17, 2024 Performed by: Laura Tabor

Station

Name: 842 Location: Peace River

Facility/Zone: PRAMP Operator: Bureau Veritas

Temp: 21.4°C Barometric Press: 704 mmHg

Location

Latitude N	56° 16' 27.7"
Longitude W	116° 58' 53.3"
Elevation	627m
Status of Site Documentation	Good
Status of Network Documentation	Good
Status of QAP	Good

Manifold Material	Glass
Manifold Condition	Good

Meteorological

	Observed	Audit Value
Wind Speed Direction	15 km/h, 301°	15-20 km/h, W
Station Temperature	22.6°C	20.4°C
Relative Humidity	34.2%	33.7%
Ambient Temperature	12.9°C	13.5°C
Barometric Pressure	702 mmHg	704 mmHg
Precipitation	10 tips at 0.1ml	unknown

Remarks:

Tipping bucket registering but not tipping, check for maintenance.

Alberta Government

SO_2 ANALYZER AUDIT

File No. 2024 - 125A

Date: June 17, 2024 Performed by: Laura Tabor

Station

Name: 842 Location: Peace River

Facility/Zone: PRAMP Operator: Bureau Veritas

Temp. 21.4°C Barometric Press. 704 mmHg

Monitor

Make/Model: Thermo 43iQ Serial No: 1200736629

Inlet flow (sccm): 423 Full Scale Range ppm: 0.5

Last cal. Date: June 6, 2024 Old Correction Factor: 0.995

Zero/Bkg 9.2

Span Coef 1.134

Calibrator

Calibration Method: GAS DILUTION Make/Model: Sabio 2010

Cylinder # : T2D585G AMU # : 2092

CGA Date: June 13, 2024 SO_2 Concentration PPM: 50.19

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
4900	0.0	4900	0.000	0.000		
4888	38.9	4927	0.396	0.415	5%	± 10%
4900	20.2	4920	0.206	0.214	4%	± 10%
4932	10.5	4942	0.107	0.110	2%	± 10%
				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)=	1.0488	**0.90-1.10**
b (Intercept as % of full scale)=	-0.2918	**± 3% F.S.**

Remarks:

Alberta Government

TRS ANALYZER AUDIT

File No. 2024 - 126A

Date: June 17, 2024 Performed by: Laura Tabor

Station

Name: 842 Location: Peace River

Facility/Zone: PRAMP Operator: Bureau Veritas

Temp. 21.4°C Barometric Press. 704 mmHg

Monitor

Make/Model: Thermo 43iQ Serial No: 1200736630

Inlet flow (sccm): 372 Full Scale Range ppm: 0.1

Last cal. Date: June 6, 2024 Old Correction Factor: 1.001

Zero/Bkg 15.0

Span Coef 0.932

Calibrator

Calibration Method: GAS DILUTION Make/Model: Sabio 2010

Cylinder # : D735284 AMU # : 2092

CGA Date: May 22, 2024 H_2S Concentration PPM: 10.06

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
4900	0.0	4900	0.0000	-0.0001		
4887	40.0	4927	0.0817	0.0811	-1%	± 10%
4900	20.3	4920	0.0415	0.0403	-3%	± 10%
4932	9.9	4942	0.0201	0.0198	-1%	± 10%
				Absolute Average Percent Difference	1%	

Linear Regression Analysis:

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

		LIMITS
Correlation Coeff.=	0.9999	**≥ 0.995**
m (Slope)=	0.9932	**0.90-1.10**
b (Intercept as % of full scale)=	-0.2850	**± 3% F.S.**

Remarks:

Alberta Government

Non Methane Analyzer Audit

File No. 2024 - 127A

Date: June 17, 2024 Performed by: Laura Tabor

Station:

Name: 842 Location: Peace River Operator: Bureau Veritas

Facility/Zone: PRAMP Temp. 21.4°C BP: 704 mmHg

Monitor:

Make/Model: Thermo 55i Serial No. 1501663728

Inlet flow (sccm): N/A CH_4 Range ppm: 20.0

Last cal. Date: June 16, 2024 Non CH_4 Range ppm: 20.0

THC Range ppm: 40.0

Old Correction Factor: CH_4: 1.001

Non CH_4: 1.001

THC: 1.001

Calibration Method: Gas Dilution

Calibrator: Make/Model Sabio 2010 AMU# 2092

HC cylinder # FF20501 CH_4 conc. (ppm) 507 CH_4 Equiv (C3H8 only) (ppm) 575

CGA Date N/A C_3H_8 conc. (ppm) 209 Total CH_4 Equiv. (ppm) 1082

Calibrator Flows			Calc. Conc.			Indicated Concentration			% Difference vs Audit Gas Limit ± 10%		
Air	Gas	Total	CH_4 (ppm)	Non CH_4 (ppm)	THC (ppm)	CH_4 (ppm)	Non CH_4 (ppm)	THC (ppm)	CH_4	Non CH_4	THC
2946	0.0	2946	0.00	0.00	0.00	0.00	0.00	0.00			
2869	79.8	2949	13.72	15.55	29.27	13.31	14.82	28.13	-3%	-5%	-4%
2913	39.7	2953	6.81	7.73	14.54	6.56	7.36	13.92	-4%	-5%	-4%
2942	19.8	2962	3.39	3.84	7.22	3.24	3.67	6.91	-4%	-4%	-4%
					Absolute Average Percent Difference				4%	5%	4%

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

	CH_4	**Non CH_4**	**THC**	**LIMITS**
Correlation Coeff.=	1.0000	1.0000	1.0000	**≥ 0.995**
m (Slope)=	0.9708	0.9525	0.9611	**0.90-1.10**
b (Intercept as % of FS)=	-0.1393	0.0261	-0.0566	**± 3% F.S.**

Remarks:

Station Performance Audit Summary

Company: PRAMP Facility Name: 842

Approval No.: N/A Site Name: 842

Region: Upper Peace River District: Peace River

Parameters audited:

TRS	**X**	SO_2	**X**	NO_x		NH_3	
CO		CH_4	**X**	$NonCH_4$	**X**	THC	**X**
PM2.5		PM10		TSP		W. Speed	**X**
W. Direction	**X**	Amb Tmp	**X**	Stn. Temp	**X**	RH	**X**
O_3		Ethylene		BTEX		BP	**X**
Rainfall	**X**	Precip		VWS		Other	
All parameters monitored as per approva		Yes / No		N/A		**X**	

	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**		
Date of last calibration. Date: August 3, 2023			

COMMENTS: _____

AUDITOR: Laura Tabor DATE: June 17, 2024

Alberta Government

Station Site Documents Audit Checklist

Station

Name: 842 Location: Peace River

Facility/Zone: PRAMP Operator: Bureau Veritas

Required Elements of AMD Chapter 3 *SS 4-B*

Do the Site Documents Contain the Following:

	Meets AMD		NA	Current	
	YES	NO		YES	NO
(a) Name of Owner/ Approval Holder	X				
(b) Name of Operating Agency	X				
(c) Contact Information	X				
(d) Date the Site or Station was Established	X				
(e) Date the information was last updated	X				
(f) Location including Latitude and Longitude	X				
(g) Four Colour Photos Looking N, E, S, W From Manifold Inlet	X				
(h) Additional Photos/Sketches of AMD Standard Site Non-Conformance	X				
(i) List of Instruments Located at the Site	X				
(j) Site Description Including the following:					
(i) Land Use By Sector	X				
(ii) Site Elevation	X				
(iii) Greatest Angle of Elevation & Direction to Nearby Buildings	X				
(iv) Average Building height in the area	X				
(v) Distance to Nearest Trees	X				

Required Elements of AMD Chapter 3 *SS 4-D*

Do the Station Site Documents Contain the Following:

	Meets AMD		NA	Current	
	YES	NO		YES	NO
(a) Recent Area Map Covering Approximately 1Km^2	X				
(b) Plan View Sketch	X				
(c) Cross-Sectional Sketch of Area Within 500 m Radius	X				
(d) Colour Photos Showing Sample Manifold/Inlet	X				
(e) Colour Photo of the Station	X				
(f) Additional Photos/Sketches of AMD Standard Station Non-Conformance	X				

COMMENTS:

AUDITOR: Laura Tabor DATE: June 19, 2024

Network Site Documents Audit Checklist

Network

Name: 842 Location: Peace River

Facility/Zone: PRAMP Operator: Bureau Veritas

Required Elements of AMD Chapter 3 *SS 4-C*

Do the Network Site Documents Contain the Following:

	Meets AMD YES	Meets AMD NO	NA	Current YES	Current NO
(a) A Recent Area Map Showing the Following:					
(i) Station Locations	X				
(ii) Roadways	X				
(iii) Railway Lines		X			
(iv) Airports		X			
(v) Lakes	X				
(vi) Rivers	X				
(vii) Human Settlements	X				
(viii) Locations of Identified Industrial & Non-Industrial Pollutant Sources	X				
(ix) Other Significant Landmarks	X				
(b) A windrose for each Continuous Ambient Air Monitoring Station	X				

COMMENTS: _____

AUDITOR: Laura Tabor DATE: June 19, 2024

Alberta Government

Station Checklist

Station

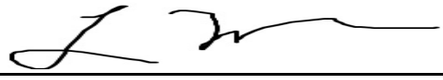
Name: 842 Location: Peace River

Facility/Zone: PRAMP Operator: Bureau Veritas

	Yes	No	N/A
Are all Particulate Sampler Heads put back in the correct			X
Has the existing or new TEOM filter been installed?			X
Has the flow bypass line on Teom Been reinstalled?			X
Has the Sharp Filter Tape been installed back on spool?			X
Has the BAM sampler been put back into the sample mode?			X
Have all intermittent particulate samplers been returned to an as found condition?			X
Have all sample lines been reconnected as found?	X		
Have all parameters that were marked down on the DAS been marked up?	X		
Are all ambient gas analyzers back in sample mode?	X		
Is everything left as it was at the start of the audit?	X		
Is the station properly secured upon departure?	X		

Auditor: Laura Tabor Date: June 17, 2024

Print



Signature

Operator: Kevin Sebastian Date: June 17, 2024

Print

Signature

STATION AUDIT

File No. 2024 - 122A - 124A

Date: June 17, 2024 Performed by: Laura Tabor

Station

Name: Reno Location: Reno

Facility/Zone: PRAMP Operator: Bureau Veritas

Temp: 18.8°C Barometric Press: 704 mmHg

Location

Latitude N	55° 53' 26.8"
Longitude W	117° 08' 13.8"
Elevation	634 m
Status of Site Documentation	Good
Status of Network Documentation	Good
Status of QAP	Good

Manifold Material	Glass
Manifold Condition	Good

Meteorological

	Observed	Audit Value
Wind Speed Direction	11.9 km/h / 13°	15-20kph / NNE
Station Temperature	22.8°C	23.9°C
Relative Humidity	51.7%	45.6%
Ambient Temperature	8.7°C	10.5°C
Barometric Pressure	702 mmHg	704 mmHg
Precipitation	10 tips @ 0.1ml/tip	10 tips = 1ml

Remarks:

Alberta Government

SO_2 ANALYZER AUDIT

File No. 2024 - 122A

Date: June 17, 2024 Performed by: Laura Tabor

Station

Name: Reno Location: Reno

Facility/Zone: PRAMP Operator: Bureau Veritas

Temp. 18.5°C Barometric Press. 704 mmHg

Monitor

Make/Model: Thermo 43IQ Serial No: 12101910505

Inlet flow (sccm): 433 Full Scale Range ppm: 0.5

Last cal. Date: June 13, 2024 Old Correction Factor: 1.002

Zero/Bkg 1.30

Span Coef 0.898

Calibrator

Calibration Method: GAS DILUTION Make/Model: Sabio 2010

Cylinder # : T2D585G AMU # : 2092

CGA Date: June 13, 2024 SO_2 Concentration PPM: 50.19

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
4875	0.0	4875	0.000	0.000		
4846	39.4	4885	0.405	0.412	2%	± 10%
4885	19.3	4904	0.197	0.211	7%	± 10%
4928	10.0	4938	0.101	0.109	8%	± 10%
			Absolute Average Percent Difference		6%	

Linear Regression Analysis:

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

		LIMITS
Correlation Coeff.=	0.9996	**≥ 0.995**
m (Slope)=	1.0147	**0.90-1.10**
b (Intercept as % of full scale)=	0.9284	**± 3% F.S.**

Remarks:

Remeasured flows for high point due to BIOS still warming up

Gas = 39.283, Total = 4920 (still only 3% high)

Alberta Government

TRS ANALYZER AUDIT

File No. 2024 - 123A

Date: June 17, 2024 Performed by: Laura Tabor

Station

Name: Reno Location: Reno

Facility/Zone: PRAMP Operator: Bureau Veritas

Temp. 18.5°C Barometric Press. 704 mmHg

Monitor

Make/Model: Thermo 43iQ Serial No: 12101910504

Inlet flow (sccm): 385 Full Scale Range ppm: 0.1

Last cal. Date: June 13, 2024 Old Correction Factor: 0.998

Zero/Bkg 1.10

Span Coef 0.908

Calibrator

Calibration Method: GAS DILUTION Make/Model: Sabio 2010

Cylinder # : D735284 AMU # : 2092

CGA Date: May 22, 2024 H_2S Concentration PPM: 10.06

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
4875	0.0	4875	0.0000	0.0000		
4844	40.7	4885	0.0838	0.0836	0%	± 10%
4884	19.8	4904	0.0405	0.0425	5%	± 10%
4928	9.6	4938	0.0196	0.0207	6%	± 10%
				Absolute Average Percent Difference	3%	

Linear Regression Analysis:

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

		LIMITS
Correlation Coeff.=	0.9996	**≥ 0.995**
m (Slope)=	0.9957	**0.90-1.10**
b (Intercept as % of full scale)=	0.8574	**± 3% F.S.**

Remarks:

Alberta Government

Non Methane Analyzer Audit

File No. 2024 - 124A

Date: June 17, 2024 Performed by: Laura Tabor

Station:

Name: Reno Location: Reno Operator: Bureau Veritas

Facility/Zone: PRAMP Temp. 18.5°C BP: 704 mmHg

Monitor:

Make/Model: Thermo 55i Serial No. 1193585652

Inlet flow (sccm): N/A CH_4 Range ppm: 20.0

Last cal. Date: June 13, 2024 Non CH_4 Range ppm: 20.0

THC Range ppm: 40.0

Old Correction Factor: CH_4: 0.999

Non CH_4: 1.001

THC: 1.000

Calibration Method: Gas Dilution

Calibrator: Make/Model Sabio 2010 AMU# 2270

HC cylinder # FF20501 CH_4 conc. (ppm) 507 CH_4 Equiv (C3H8 only) (ppm) 575

CGA Date N/A C_3H_8 conc. (ppm) 209 Total CH_4 Equiv. (ppm) 1082

Calibrator Flows			Calc. Conc.			Indicated Concentration			% Difference vs Audit Gas Limit ± 10%		
Air	Gas	Total	CH_4 (ppm)	Non CH_4 (ppm)	THC (ppm)	CH_4 (ppm)	Non CH_4 (ppm)	THC (ppm)	CH_4	Non CH_4	THC
4900	0.0	4900	0.00	0.00	0.00	0.00	0.00	0.00			
2921	79.1	3000	13.37	15.15	28.52	13.11	14.38	27.49	-2%	-5%	-4%
2900	39.4	2939	6.80	7.71	14.50	6.56	7.25	13.80	-3%	-6%	-5%
2928	19.6	2948	3.38	3.83	7.20	3.24	3.60	6.85	-4%	-6%	-5%
								Absolute Average Percent Difference	3%	6%	4%

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

	CH_4	**Non CH_4**	**THC**	**LIMITS**
Correlation Coeff.=	1.0000	1.0000	1.0000	**≥ 0.995**
m (Slope)=	0.9816	0.9491	0.9642	**0.90-1.10**
b (Intercept as % of FS)=	-0.2468	-0.1250	-0.1807	**± 3% F.S.**

Remarks:

Station Performance Audit Summary

Company: PRAMP Facility Name: Reno

Approval No.: N/A Site Name: Reno

Region: Upper Peace River District: Peace River

Parameters audited:

TRS	**X**	SO_2	**X**	NO_x		NH_3	
CO		CH_4	**X**	$NonCH_4$	**X**	THC	**X**
PM2.5		PM10		TSP		W. Speed	**X**
W. Direction	**X**	Amb Tmp	**X**	Stn. Temp	**X**	RH	**X**
O_3		Ethylene		BTEX		BP	**X**
Rainfall	**X**	Precip		VWS		Other	
All parameters monitored as per approva		Yes / No		YES	N/A	**X**	

	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**		
Date of last calibration. Date: August 1, 2023			

COMMENTS: _____

AUDITOR: Laura Tabor DATE: June 17, 2024

Alberta Government

Station Site Documents Audit Checklist

Station

Name: Reno Location: Reno

Facility/Zone: PRAMP Operator: Bureau Veritas

Required Elements of AMD Chapter 3 *SS 4-B*

Do the Site Documents Contain the Following:

	Meets AMD		NA	Current	
	YES	NO		YES	NO
(a) Name of Owner/ Approval Holder	X				
(b) Name of Operating Agency	X				
(c) Contact Information	X				
(d) Date the Site or Station was Established	X				
(e) Date the information was last updated	X				
(f) Location including Latitude and Longitude	X				
(g) Four Colour Photos Looking N, E, S, W From Manifold Inlet	X				
(h) Additional Photos/Sketches of AMD Standard Site Non-Conformance	X				
(i) List of Instruments Located at the Site	X				
(j) Site Description Including the following:					
(i) Land Use By Sector	X				
(ii) Site Elevation	X				
(iii) Greatest Angle of Elevation & Direction to Nearby Buildings	X				
(iv) Average Building height in the area	X				
(v) Distance to Nearest Trees	X				

Required Elements of AMD Chapter 3 *SS 4-D*

Do the Station Site Documents Contain the Following:

	Meets AMD		NA	Current	
	YES	NO		YES	NO
(a) Recent Area Map Covering Approximately 1Km^2	X				
(b) Plan View Sketch	X				
(c) Cross-Sectional Sketch of Area Within 500 m Radius	X				
(d) Colour Photos Showing Sample Manifold/Inlet	X				
(e) Colour Photo of the Station	X				
(f) Additional Photos/Sketches of AMD Standard Station Non-Conformance	X				

COMMENTS:

AUDITOR: Laura Tabor DATE: June 19, 2024

Network Site Documents Audit Checklist

Network

Name: Reno Location: Reno

Facility/Zone: PRAMP Operator: Bureau Veritas

Required Elements of AMD Chapter 3 *SS 4-C*

Do the Network Site Documents Contain the Following:

	Meets AMD YES	Meets AMD NO	NA	Current YES	Current NO
(a) A Recent Area Map Showing the Following:					
(i) Station Locations	X				
(ii) Roadways	X				
(iii) Railway Lines		X			
(iv) Airports		X			
(v) Lakes	X				
(vi) Rivers	X				
(vii) Human Settlements	X				
(viii) Locations of Identified Industrial & Non-Industrial Pollutant Sources	X				
(ix) Other Significant Landmarks	X				
(b) A windrose for each Continuous Ambient Air Monitoring Station	X				

COMMENTS: _____

AUDITOR: Laura Tabor DATE: June 19, 2024

Alberta Government

Station Checklist

Station

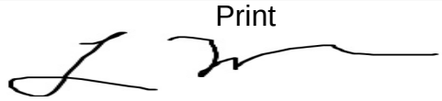
Name: Reno Location: Reno

Facility/Zone: PRAMP Operator: Bureau Veritas

	Yes	No	N/A
Are all Particulate Sampler Heads put back in the correct			X
Has the existing or new TEOM filter been installed?			X
Has the flow bypass line on Teom Been reinstalled?			X
Has the Sharp Filter Tape been installed back on spool?			X
Has the BAM sampler been put back into the sample mode?			X
Have all intermittent particulate samplers been returned to an as found condition?			X
Have all sample lines been reconnected as found?	X		
Have all parameters that were marked down on the DAS been marked up?	X		
Are all ambient gas analyzers back in sample mode?	X		
Is everything left as it was at the start of the audit?	X		
Is the station properly secured upon departure?	X		

Auditor: Laura Tabor Date: June 17, 2024

Print



Signature

Operator: Kevin Sebastian Date: June 17, 2024

Print

Signature

Alberta Government

STATION AUDIT

File No. 2024 - 128A - 131A

Date: June 18, 2024 Performed by: Laura Tabor

Station

Name: Peace River Complex Location: Peace River

Facility/Zone: PRAMP Operator: Bureau Veritas

Temp: 18.1°C Barometric Press: 707 mmHg

Location

Latitude N	56° 22' 57.3"
Longitude W	116° 46' 08.5"
Elevation	632 m
Status of Site Documentation	Good
Status of Network Documentation	Good
Status of QAP	Good

Manifold Material	Glass
Manifold Condition	Good

Meteorological

	Observed	Audit Value
Wind Speed Direction	10.2km/h / 222°	5-10km/h / SW
Station Temperature	23.9°C	23.4°C
Relative Humidity	53.4%	46.9%
Ambient Temperature	11.2°C	11.7°C
Barometric Pressure	708 mmHg	707 mmHg
Precipitation	N/A	N/A

Remarks:

Alberta Government

SO_2 ANALYZER AUDIT

File No. 2024 - 128A

Date: June 18, 2024 Performed by: Laura Tabor

Station

Name: Peace River Complex Location: Peace River

Facility/Zone: PRAMP Operator: Bureau Veritas

Temp. 18.1°C Barometric Press. 707 mmHg

Monitor

Make/Model: Thermo 43i Serial No: 1034746225

Inlet flow (sccm): 443 Full Scale Range ppm: 0.5

Last cal. Date: June 5, 2024 Old Correction Factor: 1.002

Zero/Bkg 20.7

Span Coef 1.15

Calibrator

Calibration Method: GAS DILUTION Make/Model: Sabio 2010

Cylinder # : T2D58517 AMU # : 2092

CGA Date: June 13, 2024 SO_2 Concentration PPM: 50.19

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
4903	0.0	4903	0.000	0.000		
4863	39.9	4903	0.408	0.420	3%	± 10%
4880	20.3	4900	0.207	0.214	3%	± 10%
4903	10.5	4914	0.107	0.111	4%	± 10%
				Absolute Average Percent Difference	3%	

Linear Regression Analysis:

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

		LIMITS
Correlation Coeff.=	1.0000	**≥ 0.995**
m (Slope)=	1.0270	**0.90-1.10**
b (Intercept as % of full scale)=	0.1860	**± 3% F.S.**

Remarks:

Alberta Government

H_2S ANALYZER AUDIT

File No. 2024 - 129A

Date: June 18, 2024 Performed by: Laura Tabor

Station

Name: Peace River Complex Location: Peace River

Facility/Zone: PRAMP Operator: Bureau Veritas

Temp. 18.1°C Barometric Press. 707 mmHg

Monitor

Make/Model: Thermo 450i Serial No: 1308857354

Inlet flow (sccm): 938 Full Scale Range ppm: 0.1

Last cal. Date: June 5, 2024 Old Correction Factor: 0.994

Zero/Bkg 16.6

Span Coef 1.112

Calibrator

Calibration Method: GAS DILUTION Make/Model: Sabio 2010

Cylinder # : D735284 AMU # : 2092

CGA Date: May 22, 2024 H_2S Concentration PPM: 10.06

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
4903	0.0	4903	0.0000	0.0005		
4862	40.7	4903	0.0834	0.0857	2%	± 10%
4880	20.3	4900	0.0417	0.0418	-1%	± 10%
4904	10.0	4914	0.0204	0.0212	1%	± 10%
				Absolute Average Percent Difference	1%	

Linear Regression Analysis:

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

		LIMITS
Correlation Coeff.=	0.9999	**≥ 0.995**
m (Slope)=	1.0201	**0.90-1.10**
b (Intercept as % of full scale)=	0.1692	**± 3% F.S.**

Remarks:

Alberta Government

TRS ANALYZER AUDIT

File No. 2024 - 130A

Date: June 18, 2024 Performed by: Laura Tabor

Station

Name: Peace River Complex Location: Peace River

Facility/Zone: PRAMP Operator: Bureau Veritas

Temp. 18.1°C Barometric Press. 707 mmHg

Monitor

Make/Model: Thermo 450i Serial No: 1034746224

Inlet flow (sccm): 695 Full Scale Range ppm: 0.1

Last cal. Date: June 5, 2024 Old Correction Factor: 0.992

Zero/Bkg 30.4

Span Coef 1.106

Calibrator

Calibration Method: GAS DILUTION Make/Model: Sabio 2010

Cylinder # : D735284 AMU # : 2092

CGA Date: May 22, 2024 H_2S Concentration PPM: 10.06

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
4903	0.0	4903	0.0000	-0.0003		
4862	40.7	4903	0.0834	0.0835	0%	± 10%
4880	20.3	4900	0.0417	0.0415	0%	± 10%
4904	10.0	4914	0.0204	0.0206	2%	± 10%
				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)=	1.0027	**0.90-1.10**
b (Intercept as % of full scale)=	-0.1733	**± 3% F.S.**

Remarks:

Alberta Government

Non Methane Analyzer Audit

File No. 2024 - 131A

Date: June 18, 2024 Performed by: Laura Tabor

Station:

Name: PRC Location: Peace River Operator: Bureau Veritas

Facility/Zone: PRAMP Temp. 18.1°C BP: 707 mmHg

Monitor:

Make/Model: Thermo 55i Serial No. 1191032505

Inlet flow (sccm): N/A CH_4 Range ppm: 20.0

Last cal. Date: June 12, 2024 Non CH_4 Range ppm: 20.0

THC Range ppm: 40.0

Old Correction Factor: CH_4: 0.998

Non CH_4: 0.998

THC: 0.998

Calibration Method: Gas Dilution

Calibrator: Make/Model Sabio 2010 AMU# 2270

HC cylinder # FF20501 CH_4 conc. (ppm) 507 CH_4 Equiv (C3H8 only) (ppm) 575

CGA Date N/A C_3H_8 conc. (ppm) 209 Total CH_4 Equiv. (ppm) 1082

Calibrator Flows			Calc. Conc.			Indicated Concentration			% Difference vs Audit Gas Limit ± 10%		
Air	Gas	Total	CH_4 (ppm)	Non CH_4 (ppm)	THC (ppm)	CH_4 (ppm)	Non CH_4 (ppm)	THC (ppm)	CH_4	Non CH_4	THC
2933	0.0	2933	0.00	0.00	0.00	0.00	0.00	0.00			
2852	79.5	2932	13.76	15.60	29.35	13.47	15.03	28.50	-2%	-4%	-3%
2858	39.8	2898	6.96	7.89	14.85	6.79	7.51	14.28	-2%	-5%	-4%
2924	19.7	2944	3.40	3.85	7.24	3.37	3.53	6.90	-1%	-8%	-5%
					Absolute Average Percent Difference				2%	6%	4%

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

	CH_4	Non CH_4	THC	LIMITS
Correlation Coeff.=	1.0000	0.9999	1.0000	≥ **0.995**
m (Slope)=	0.9778	0.9670	0.9720	**0.90-1.10**
b (Intercept as % of FS)=	0.0656	-0.4556	-0.2048	**± 3% F.S.**

Remarks:

Station Performance Audit Summary

Company: PRAMP Facility Name: Peace River Complex

Approval No.: N/A Site Name: Peace River Complex

Region: Upper Peace River District: Peace River

Parameters audited:

H_2S	**X**	SO_2	**X**	NO_x		NH_3	
TRS	**X**	CH_4	**X**	NonCH_4	**X**	THC	**X**
PM2.5		PM10		TSP		W. Speed	**X**
W. Direction	**X**	Amb Tmp	**X**	Stn. Temp	**X**	RH	**X**
O_3		Ethylene		BTEX		BP	**X**
Rainfall		Precip		VWS		Other	
All parameters monitored as per approva			Yes / No		N/A	**X**	

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**		
Date of last calibration. Date: August 3, 2023			

COMMENTS: _____

AUDITOR: Laura Tabor DATE: June 18, 2024

Alberta Government

Station Site Documents Audit Checklist

Station

Name: Peace River Complex Location: Peace River

Facility/Zone: PRAMP Operator: Bureau Veritas

Required Elements of AMD Chapter 3 *SS 4-B*

Do the Site Documents Contain the Following:

	Meets AMD		NA	Current	
	YES	NO		YES	NO
(a) Name of Owner/ Approval Holder	X				
(b) Name of Operating Agency	X				
(c) Contact Information	X				
(d) Date the Site or Station was Established	X				
(e) Date the information was last updated	X				
(f) Location including Latitude and Longitude	X				
(g) Four Colour Photos Looking N, E, S, W From Manifold Inlet	X				
(h) Additional Photos/Sketches of AMD Standard Site Non-Conformance	X				
(i) List of Instruments Located at the Site	X				
(j) Site Description Including the following:					
(i) Land Use By Sector	X				
(ii) Site Elevation	X				
(iii) Greatest Angle of Elevation & Direction to Nearby Buildings	X				
(iv) Average Building height in the area	X				
(v) Distance to Nearest Trees	X				

Required Elements of AMD Chapter 3 *SS 4-D*

Do the Station Site Documents Contain the Following:

	Meets AMD		NA	Current	
	YES	NO		YES	NO
(a) Recent Area Map Covering Approximately 1Km^2	X				
(b) Plan View Sketch	X				
(c) Cross-Sectional Sketch of Area Within 500 m Radius	X				
(d) Colour Photos Showing Sample Manifold/Inlet	X				
(e) Colour Photo of the Station	X				
(f) Additional Photos/Sketches of AMD Standard Station Non-Conformance	X				

COMMENTS:

AUDITOR: Laura Tabor DATE: June 19, 2024

Network Site Documents Audit Checklist

Network

Name: Peace River Complex Location: Peace River

Facility/Zone: PRAMP Operator: Bureau Veritas

Required Elements of AMD Chapter 3 *SS 4-C*

Do the Network Site Documents Contain the Following:

	Meets AMD YES	Meets AMD NO	NA	Current YES	Current NO
(a) A Recent Area Map Showing the Following:					
(i) Station Locations	X				
(ii) Roadways	X				
(iii) Railway Lines		X			
(iv) Airports		X			
(v) Lakes	X				
(vi) Rivers	X				
(vii) Human Settlements	X				
(viii) Locations of Identified Industrial & Non-Industrial Pollutant Sources	X				
(ix) Other Significant Landmarks	X				
(b) A windrose for each Continuous Ambient Air Monitoring Station	X				

COMMENTS: _____

AUDITOR: Laura Tabor DATE: June 19, 2024

Station Checklist

Station

Name: Peace River Complex Location: Peace River

Facility/Zone: PRAMP Operator: Bureau Veritas

	Yes	No	N/A
Are all Particulate Sampler Heads put back in the correct			X
Has the existing or new TEOM filter been installed?			X
Has the flow bypass line on Teom Been reinstalled?			X
Has the Sharp Filter Tape been installed back on spool?			X
Has the BAM sampler been put back into the sample mode?			X
Have all intermittent particulate samplers been returned to an as found condition?			X
Have all sample lines been reconnected as found?	X		
Have all parameters that were marked down on the DAS been marked up?	X		
Are all ambient gas analyzers back in sample mode?	X		
Is everything left as it was at the start of the audit?	X		
Is the station properly secured upon departure?	X		

Auditor: Laura Tabor Date: June 18, 2024

Print

Signature

Operator: Kevin Sebastian Date: June 18, 2024

Print

Signature

STATION AUDIT

File No. 2024 - 135A - 140A

Date: June 19, 2024 Performed by: Laura Tabor

Station

Name: Grimshaw Location: Grimshaw

Facility/Zone: PRAMP Operator: Bureau Veritas

Temp: 21.7°C Barometric Press: 708 mmHg

Location

Latitude N	56° 11' 11.4"
Longitude W	117° 36' 17.5"
Elevation	606 m
Status of Site Documentation	Good
Status of Network Documentation	Good
Status of QAP	Good

Manifold Material	Glass
Manifold Condition	Good

Meteorological

	Observed	Audit Value
Wind Speed Direction	12.7km/h / 173°	10-15km/hr / S
Station Temperature	23.4°C	23.4°C
Relative Humidity	49.7%	48.3%
Ambient Temperature	14.4°C	14.9°C
Barometric Pressure	945 mb / 709 mmHg	708 mmHg
Precipitation	N/A	N/A

Remarks:

Alberta Government

SO_2 ANALYZER AUDIT

File No. 2024 - 135A

Date: June 19, 2024 Performed by: Laura Tabor

Station

Name: Grimshaw Location: Grimshaw

Facility/Zone: PRAMP Operator: Bureau Veritas

Temp. 21.7°C Barometric Press. 708 mmHg

Monitor

Make/Model: Teledyne T100 Serial No: 722

Inlet flow (sccm): 479 Full Scale Range ppm: 0.5

Last cal. Date: June 11, 2024 Old Correction Factor: 0.998

Zero/Bkg 35.1

Span Coef 0.935

Calibrator

Calibration Method: GAS DILUTION Make/Model: Sabio 2010

Cylinder # : T2D58517 AMU # : 2092

CGA Date: June 13, 2024 SO_2 Concentration PPM: 50.19

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
4903	0.0	4903	0.000	-0.001		
4885	39.8	4925	0.406	0.416	3%	± 10%
4858	20.2	4878	0.208	0.214	3%	± 10%
4931	10.4	4941	0.106	0.110	4%	± 10%
			Absolute Average Percent Difference		3%	

Linear Regression Analysis:

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

		LIMITS
Correlation Coeff.=	1.0000	**≥ 0.995**
m (Slope)=	1.0254	**0.90-1.10**
b (Intercept as % of full scale)=	0.0732	**± 3% F.S.**

Remarks:

Alberta Government

TRS ANALYZER AUDIT

File No. 2024 - 136A

Date: June 19, 2024 Performed by: Laura Tabor

Station

Name: Grimshaw Location: Grimshaw

Facility/Zone: PRAMP Operator: Bureau Veritas

Temp. 21.7°C Barometric Press. 708 mmHg

Monitor

Make/Model: Teledyne T100U Serial No: 132

Inlet flow (sccm): 550 Full Scale Range ppm: 0.1

Last cal. Date: June 11, 2024 Old Correction Factor: 1.002

Zero/Bkg 69.5

Span Coef 0.677

Calibrator

Calibration Method: GAS DILUTION Make/Model: Sabio 2010

Cylinder # : D735284 AMU # : 2092

CGA Date: May 22, 2024 H_2S Concentration PPM: 10.06

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
4903	0.0	4903	0.0000	-0.0007		
4885	40.2	4925	0.0822	0.0804	-1%	± 10%
4858	20.0	4878	0.0413	0.0404	0%	± 10%
4931	9.9	4941	0.0201	0.0195	0%	± 10%
				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)=	0.9862	**0.90-1.10**
b (Intercept as % of full scale)=	-0.4963	**± 3% F.S.**

Remarks:

Alberta Government

Non Methane Analyzer Audit

File No. 2024 - 137A

Date: June 19, 2024 Performed by: Laura Tabor

Station:

Name: Grimshaw Location: Grimshaw Operator: Bureau Veritas

Facility/Zone: PRAMP Temp. 23.8°C BP: 708 mmHg

Monitor:

Make/Model: Thermo 55i Serial No. 12101910497

Inlet flow (sccm): N/A CH_4 Range ppm: 20.0

Last cal. Date: June 11, 2024 Non CH_4 Range ppm: 20.0

THC Range ppm: 40.0

Old Correction Factor: CH_4: 0.999

Non CH_4: 0.998

THC: 0.999

Calibration Method: Gas Dilution

Calibrator: Make/Model Sabio 2010 AMU# 2092

HC cylinder # FF20501 CH_4 conc. (ppm) 507 CH_4 Equiv (C3H8 only) (ppm) 575

CGA Date N/A C_3H_8 conc. (ppm) 209 Total CH_4 Equiv. (ppm) 1082

Calibrator Flows			Calc. Conc.			Indicated Concentration			% Difference vs Audit Gas Limit ± 10%		
Air	Gas	Total	CH_4 (ppm)	Non CH_4 (ppm)	THC (ppm)	CH_4 (ppm)	Non CH_4 (ppm)	THC (ppm)	CH_4	Non CH_4	THC
2915	0.0	2915	0.00	0.00	0.00	0.00	0.00	0.00			
2844	78.7	2922	13.65	15.47	29.12	13.27	15.09	28.36	-3%	-2%	-3%
2878	39.7	2918	6.91	7.83	14.74	6.71	7.63	14.35	-3%	-3%	-3%
2909	20.3	2929	3.51	3.98	7.50	3.42	3.93	7.34	-3%	-1%	-2%
								Absolute Average Percent Difference	3%	2%	2%

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

	CH_4	**Non CH_4**	**THC**	**LIMITS**
Correlation Coeff.=	1.0000	1.0000	1.0000	**≥ 0.995**
m (Slope)=	0.9722	0.9743	0.9735	**0.90-1.10**
b (Intercept as % of FS)=	0.0039	0.0857	0.0398	**± 3% F.S.**

Remarks:

Alberta Government

NO-NOx-NO2 Analyzer Audit

File No. 2024 - 138A

Date: June 19, 2024 Performed by: Laura Tabor

Station:

Name: Grimshaw Location: Grimshaw Operator: Bureau Veritas

Facility/Zone: PRAMP Temp. 23.5°C BP: 708 mmHg

Monitor:

Make/Model: Teledyne T200 Serial No. 837

Inlet flow (sccm): 445 Range ppm: 0.5

Last cal. Date: June 11, 2024 Old CF: NO: 1.000

NOx: 1.001

NO2: 0.999

NO Bkg 1.7

NOx Bkg 0.2

NO Coef 1.026

NOx Coef 1.003

NO2 Coef N/A

Calibration Method: Gas Dilution / GPT

Calibrator: Make/Model: Sabio 2010 AMU# 2270

NO cylinder # T36RLA9 NO conc. ppm 50.0 NOx conc. ppm 50.1

CGA Date June 13, 2024

Calibrator Flows			Calc. Conc.		Indicated Concentration		% Difference vs Audit Gas	
Air	Gas	Total	NO (ppm)	NOx (ppm)	NO (ppm)	NOx (ppm)	NO	NOx
4925	0.0	4925	0.0000	0.0000	0.0007	0.0000	Limit ± 10%	
4892	39.7	4931	0.4023	0.4031	0.3970	0.4050	-1%	0%
4914	20.1	4934	0.2040	0.2044	0.1961	0.2021	-4%	-1%
4941	10.5	4951	0.1058	0.1060	0.0966	0.1039	-9%	-2%
					Absolute Average Percent Difference		5%	1%

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

	NO	NOx	NO_2	LIMITS
Correlation Coeff.=	0.9997	1.0000	1.0000	**≥ 0.995**
m (Slope)=	0.9903	1.0059	1.0009	**0.90-1.10**
b (Intercept as % of full scale)=	-0.7405	-0.3375	-0.0920	**± 3% F.S.**

O_3 Setting	Flow Rate	Indicated Conc. (ppm)			NO Decrease	NO_2 Increase	% Difference vs Audit Gas	
		NO	NOx	NO_2				
0.000	4931.3	0.396	0.406	0.010				%Dif Limit
0.280	4931.3	0.143	0.407	0.263	0.253	0.253	0%	± 10%
0.150	4931.3	0.263	0.405	0.142	0.133	0.132	-1%	± 10%
0.075	4931.3	0.335	0.407	0.071	0.061	0.061	0%	± 10%
				Absolute Average Percent Difference			0%	

Converter Efficiency

Average Converter Efficiency 99.7%

Remarks: Used different calibration set up, similar results although not failing this time. NO2 still very unstable. Checked June cal chart and saw similar instabilities on minute data. Values on June cal report were obtained from unstable points with noisy NO2 response, similar to what was seen today. Will investigate data further.

O_3 ANALYZER AUDIT

File No. 2024 - 139A

Date: June 19, 2024 Performed by: Laura Tabor

Station

Name: Grimshaw Location: Grimshaw

Facility/Zone: PRAMP Operator: Bureau Veritas

Temp. 21.9°C Barometric Press. 708 mmHg

Monitor

Make/Model: Teledyne T400 Serial No: 824

Inlet flow (sccm): 745 Full Scale Range ppm: 0.5

Last cal. Date: June 11, 2024 Old Correction Factor: 0.998

Zero/Bkg 1.7

Span Coeff. 1.01

Calibrator

Calibration Method: Generator

Make/Model: Sabio 2030 AMU # : 2243

NO cylinder # : N/A NO concentration ppm: N/A

Ozone Setting PPB/Current	Calibrator Flow (sccm) Air	Gas	Total	Calculated Conc. (ppm)	Indicated Conc. (ppm)	% Difference vs Audit Gas	% Difference Limits
0	1191		1191	0.000	0.001		
400	1191		1191	0.400	0.403	1%	± 10%
200	1191		1191	0.200	0.204	1%	± 10%
100	1191		1191	0.100	0.103	1%	± 10%
				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)=	1.0055	**0.90-1.10**
b (Intercept as % of full scale)=	0.3480	**± 3% F.S.**

Remarks:

Alberta Government

Teledyne API T-640 Instrument Audit

File No. 2024 - 140A

Date: June 19, 2024 **Performed by:** Laura Tabor

Station

Name:	Grimshaw	Location:	Grimshaw
Site Name:	Grimshaw	Operator:	Bureau Veritas
Station Temperature:	23.4 C	Station Pressure:	708 mmHg
Last Audit:	N/A		

Calibration Flowmeter Standard

Make/Model:	DeltaCal
Serial Number:	1002

Instrument Details

Make/Model	T640
AMU #	N/A
S/N #	318
DOE #	N/A

As-found Recordings

Flow (l/min)	5.03
PM2.5 (ug/m3)	3.1
Pump PMW (%)	60
Sample RH (%)	23.3
Temp (°C)	19.0
Press (mmHg)	708.8

Zero Test (Leak Check)

PM2.5 Reading (ug/m3): 0.0

Time to reach zero **(min)**: 34 seconds

(must read 0.0 for leak check to pass)

Ambient Temperature

	(°C)	Acceptable (°C)	Result (°C)
T640 Temp	19.3		
Measured Temp	19.0	2.0	0.3

Ambient Pressure

	(mmHg)	Acceptable	Result
T640 Pressure	709		
Measured Press	708	5%	0%

Flow Audit

T640 Flow (l/min)	5.00	Acceptable	
Measure Flow (l/min)	5.13	5.0 LPM ± 0.25LPM	0.13

PMT Performance Check

Span Dust Lot #	1001128-050-036	Last Checked	May 7, 2024
Span Dust Peak at Channel	10.9	Peak Channel Reading	10.5
Expiry Date	December 28, 2023	PMT Setting (V)	As-found: 1532 / As-left: 1532

(Adjust PMT if reading > ± 0.5)

Remarks:
Water knockout housing enclosed with duct tape, jar broken.

Reviewed By:

Preventative Maintenance	Due
Sample Inlet Cleaning	June 11, 2024
DFU Replacement	March 15, 2024
Optical Chamber Cleaning	May 7, 2024

Station Performance Audit Summary

Company: PRAMP Facility Name: Grimshaw

Approval No.: N/A Site Name: Grimshaw

Region: Upper Peace River District: Peace River

Parameters audited:

TRS	**X**	SO_2	**X**	NO_x	**X**	NH_3	
CO		CH_4	**X**	NonCH_4	**X**	THC	**X**
PM2.5	**X**	PM10		TSP		W. Speed	**X**
W. Direction	**X**	Amb Tmp	**X**	Stn. Temp	**X**	RH	**X**
O_3		Ethylene		BTEX		BP	**X**
Rainfall		Precip		VWS		Other	
All parameters monitored as per approva		Yes / No		N/A		**X**	

	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**		
Date of last calibration. Date: August 2, 2023			

COMMENTS: _____

AUDITOR: Laura Tabor DATE: June 19, 2024

Alberta Government

Station Site Documents Audit Checklist

Station

Name: Grimshaw Location: Grimshaw

Facility/Zone: PRAMP Operator: Bureau Veritas

Required Elements of AMD Chapter 3 *SS 4-B*

Do the Site Documents Contain the Following:

	Meets AMD		NA	Current	
	YES	NO		YES	NO
(a) Name of Owner/ Approval Holder	X				
(b) Name of Operating Agency	X				
(c) Contact Information	X				
(d) Date the Site or Station was Established	X				
(e) Date the information was last updated	X				
(f) Location including Latitude and Longitude	X				
(g) Four Colour Photos Looking N, E, S, W From Manifold Inlet	X				
(h) Additional Photos/Sketches of AMD Standard Site Non-Conformance	X				
(i) List of Instruments Located at the Site	X				
(j) Site Description Including the following:					
(i) Land Use By Sector	X				
(ii) Site Elevation	X				
(iii) Greatest Angle of Elevation & Direction to Nearby Buildings	X				
(iv) Average Building height in the area	X				
(v) Distance to Nearest Trees	X				

Required Elements of AMD Chapter 3 *SS 4-D*

Do the Station Site Documents Contain the Following:

	Meets AMD		NA	Current	
	YES	NO		YES	NO
(a) Recent Area Map Covering Approximately 1Km^2	X				
(b) Plan View Sketch	X				
(c) Cross-Sectional Sketch of Area Within 500 m Radius	X				
(d) Colour Photos Showing Sample Manifold/Inlet	X				
(e) Colour Photo of the Station	X				
(f) Additional Photos/Sketches of AMD Standard Station Non-Conformance	X				

COMMENTS:

AUDITOR: Laura Tabor DATE: June 19, 2024

Network Site Documents Audit Checklist

Network

Name: Grimshaw Location: Grimshaw

Facility/Zone: PRAMP Operator: Bureau Veritas

Required Elements of AMD Chapter 3 *SS 4-C*

Do the Network Site Documents Contain the Following:

	Meets AMD YES	Meets AMD NO	NA	Current YES	Current NO
(a) A Recent Area Map Showing the Following:					
(i) Station Locations	X				
(ii) Roadways	X				
(iii) Railway Lines		X			
(iv) Airports		X			
(v) Lakes	X				
(vi) Rivers	X				
(vii) Human Settlements	X				
(viii) Locations of Identified Industrial & Non-Industrial Pollutant Sources	X				
(ix) Other Significant Landmarks	X				
(b) A windrose for each Continuous Ambient Air Monitoring Station	X				

COMMENTS: _____

AUDITOR: Laura Tabor DATE: June 19, 2024

Alberta Government

Station Checklist

Station

Name: Grimshaw Location: Grimshaw

Facility/Zone: PRAMP Operator: Bureau Veritas

	Yes	No	N/A
Are all Particulate Sampler Heads put back in the correct			X
Has the existing or new TEOM filter been installed?			X
Has the flow bypass line on Teom Been reinstalled?			X
Has the Sharp Filter Tape been installed back on spool?			X
Has the BAM sampler been put back into the sample mode?			X
Have all intermittent particulate samplers been returned to an as found condition?			X
Have all sample lines been reconnected as found?	X		
Have all parameters that were marked down on the DAS been marked up?	X		
Are all ambient gas analyzers back in sample mode?	X		
Is everything left as it was at the start of the audit?	X		
Is the station properly secured upon departure?	X		

Auditor: Laura Tabor Date: June 19, 2024

Print

Signature

Operator: Kevin Sebastian Date: June 19, 2024

Print

Signature

PEACE RIVER AREA MONITORING PROGRAM

Alberta Environment and Protected Areas
Resource Stewardship Division
Airshed & Watershed Stewardship Air Monitoring
4946 – 89 street
Edmonton, Alberta T6E 5K1
Telephone: 780.427.7888

July 24, 2024

Mr. Al Clark,

RE: Ambient Air Monitoring Station Audit Results for the PRAMP Network
File Numbers: 2024-122A-140A

Below, please see the responses and corrective actions either completed or proposed in response to Alberta Environmental and Protected Areas' June 2024 audit of the Peace River Area Monitoring Program's ambient air monitoring network.

COMMON ISSUE: Ambient temperature, station temperature sensor and/or relative humidity sensor

"All stations with Grimshaw being the exception, saw AEPA tolerances not being met for either the ambient temperature sensor, station temperature sensor and / or the relative humidity sensor. The temperatures were outside the +/- 1 Celsius tolerance used by AEPA, and the relative humidity sensors were close the to +/- 15% tolerance used by AEPA."

Corrective Action: Field staff completed the sensor check using a certified standard at the 842-B station, Reno-B station and 986-C station on July 9, 12 and 15, respectively. The check results met the AEPA sensor check requirements.

During the monthly sensor verification check, PRAMP's practice is to place the certified standard in situ, beside the stations' sensors for at least 3 hours before taking measurements. This ensures the standard is acclimated and provides a stable response. PRAMP has found this procedure effective in addressing potential discrepancies between certified standards and in-field sensor measurements, even though it differs from the AEPA audit process.

To further enhance reliability and precision and in direct response to the AEPA audit finding, PRAMP has ordered a spare temperature and relative humidity gauge. This new factory-calibrated probe will replace the unit at one of PRAMP's stations, allowing PRAMP to send the existing probe at the station back to the manufacturer for calibration. The probe will then be used as a rotating spare in the network. The goal is to have all existing probes sent back to the manufacturer for calibration by Q3 2024 (December 31, 2024).

AQHI – GRIMSHAW STATION: Particulate Matter 2.5 (the glass jar for the T640 PM2.5 sampler was broken and not connected to the sampler)

"The glass jar for the T640 PM2.5 sampler was found to be broken and not connected to the T640 PM2.5 sampler – laying on the shelter's roof. The housing was covered with duct tape. This in an improper repair. A Teledyne representative was contacted, and the response is copied here: If the jar is not there, the sample heater has to work harder to maintain the set RH. High RH can affect the light scattering and thus particulate data."

Corrective Action: The glass jar was found broken during the site visit on June 11. With no spare part available, the field operator removed the broken jar and temporarily covered the orifice where the jar connected to the sample inlet with duct tape. A new glass jar was ordered and was installed on July 9.

Figure 1: New glass jar installed at Grimshaw AQHI Station

The metadata collected between May 1 and July 9 by the T640 $PM_{2.5}$ sampler were reviewed on July 22. The review confirmed the proper functioning of the Aerosol Sample Conditioner (ASC), with the inlet heater effectively maintaining the sample humidity around 35%. The data quality remained uncompromised despite the missing jar.

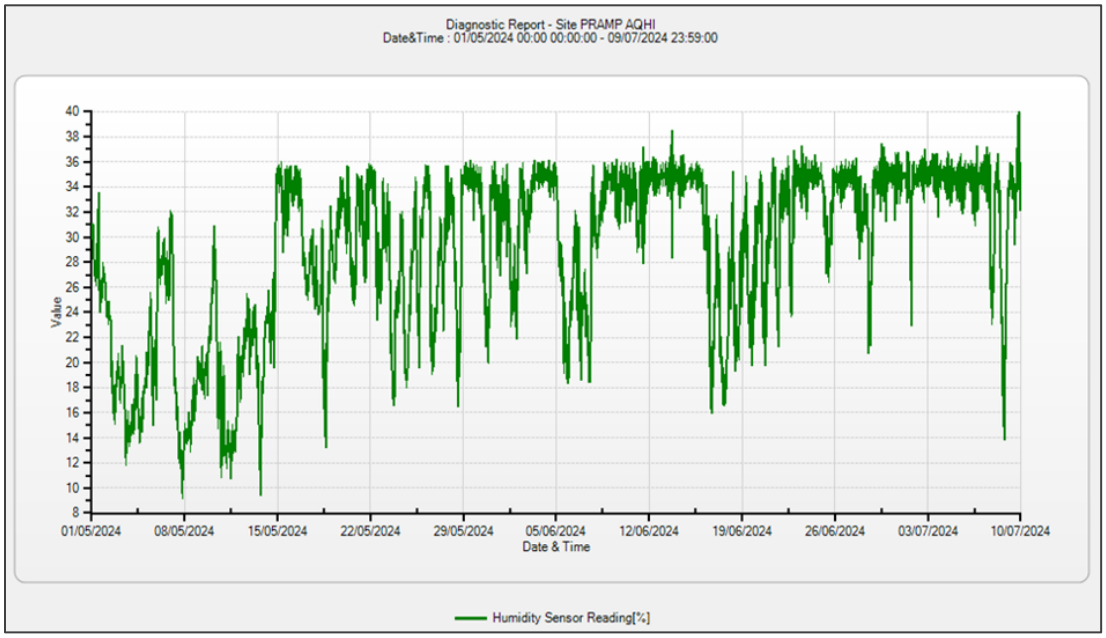


Figure 2: Diagnostic report showing the humidity sensor readings collected by the T640 $PM_{2.5}$ sampler from May 1 to July 9.

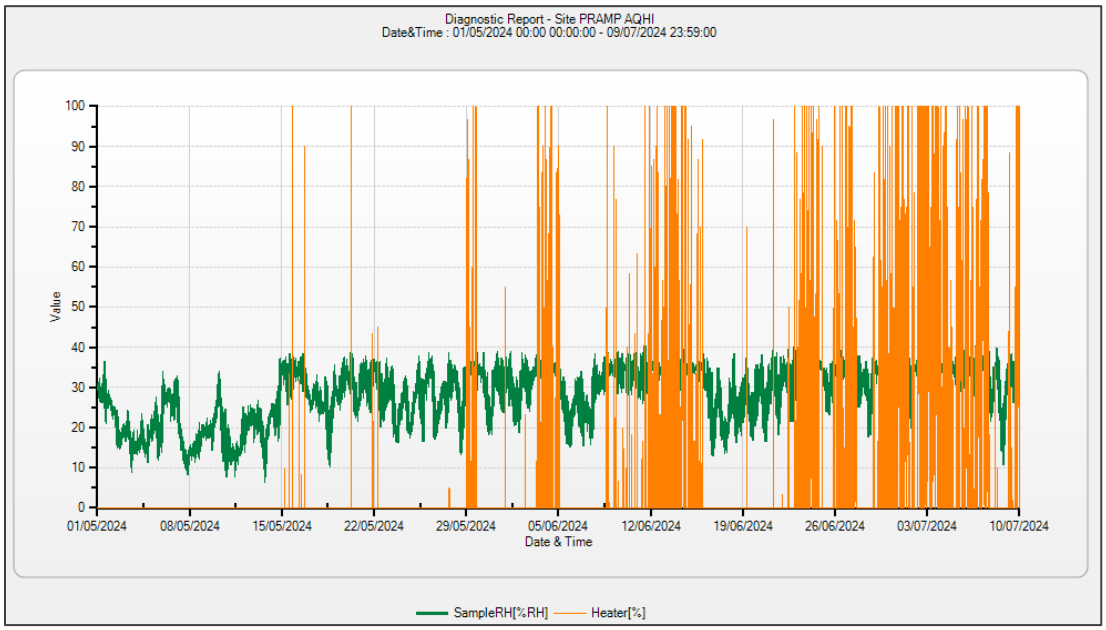


Figure 3: Diagnostic report showing metadata (humidity overlain with ASC heater actuation) collected by the T640 $PM_{2.5}$ sampler from May 1 to July 9; sample humidity was maintained at around 35%.

AQHI – GRIMSHAW STATION: Oxides of Nitrogen (initial failure)

"The ambient Oxides of Nitrogen (NOx) analyzer initially failed the low NO/NOx point on the first audit attempt. AEPA conducted a second audit to assess if the first audit was questionable based on observed responses. The second audit demonstrated similar responses when compared to the first audit using a second calibration system (calibrator and zero air system). The same audit gas and regulator were used. All NO/NOx responses passed although the low NO/NOx point was (-9%) low. Both audits showed unstable negative (low) responses that got worse indicating a possible analyzer system leak. A conventional leak check was completed which is capping the sample inlet bulkhead and no leak was initially observed."

Corrective Action: To address the AEPA audit finding, PRAMP scheduled the removal and investigation of the Teledyne T200 analyzer, s/n: 837, during the week of July 8. On July 9, the analyzer exhibited a significant daily span drift (-8.2% for NOx and -8.3% for NO2). Subsequently, it failed the as-found points check on July 10 and was promptly removed and replaced by a Thermo 42i NOx/NO/NO_2 analyzer on the same day. PRAMP allowed the replacement analyzer to stabilize overnight, and a successful installation calibration was completed on July 11.

As of the preparation of this audit response letter, PRAMP has not yet determined the root cause for the noted audit findings. However, investigating this remains our priority, with a target for completion by the end of Q2 2024 (September 30, 2024).

Should you have any questions or require further clarification, please don't hesitate to contact me.

Respectfully,

Karla Reesor
Executive Director
Peace River Area Monitoring Program

Cc: Marty Collins (AEPA)
Mike Bisaga (PRAMP)
Lily Lin (PRAMP)
Christopher Wesson (Bureau Veritas)

Alberta Environment and Protected Areas

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July 26, 2024 File Numbers: 2024 – 122A – 140A

Karla Reesor
Executive Director
Peace River Air Monitoring Project

Ms. Reesor:

Subject: 2024 Peace River Air Monitoring Project (PRAMP) Ambient Air Monitoring Network Audit Closure Letter

The AEPA Audit Team has reviewed the PRAMP audit response letter and all associated documents – the Audit Team accepts all of the proposed responses from PRAMP.

Although the corrective actions detailed in the response letter have not been field verified, the AEPA Audit Team now considers this audit closed. If you have any questions or comments, please contact the undersigned.

Yours truly,

Laura Tabor
Air Monitoring Technologist

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Al Clark
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