

April 10, 2017

File No(s). 2017 - 529A / 551A

Mr. Patrick Andersen
Program Manager
Peace Airshed Zone Association (Paza)
Box 21135
Grande Prairie, AB
T8V 6W7

Mr. Andersen:

Subject: 2017 Paza Ambient Air Monitoring Network Audit Results

Between the dates of February 21st and March 16th 2016 the Alberta Environment and Parks Ambient Air Monitoring Audit team conducted an audit of the Peace Airshed Zone Association (Paza) ambient air monitoring stations. The audits conducted on February 21st and 22nd for TRS/H₂S were done with a gas that had not been properly verified prior to use. March 14th to 16th the TRS/H₂S analyzers were re-audited with a properly verified gas and were determined to meet AMD standards. No data has been affected as a result. The following is a listing of the audit findings:

On February 21, 2017 and March 14th, the station at Valleyview was audited - the SO₂ and H₂S analyzers passed the audit – the following concerns were noted:

1. The temperature/RH sensor is sitting on top of the wind tower with the wind sensor. Audit data obtained was from a ground level location adjacent to the station.
2. Trees surrounding the station appear to be taller than the wind sensor – Paza is required to verify that the wind sensor and station siting still meets AMD siting criteria as required by AMD Chapter 4 section 2.3 SS 2-D, and 2.3.1 SS 2-G (Table 3). Paza must provide the EMSD audit team with a diagram detailing the heights of the station inlet, wind system tower (actual measured height) and nearby tree heights. Angles of elevation from the wind sensor and station inlet to the nearby trees must also be included in the diagram. In the event the station/wind sensor no longer meets AMD siting requirements Paza will be required to increase the tower height, remove/crop trees to meet AMD criteria and/or obtain written authorization from the Regional Director for the Upper Peace Region to allow the site to deviate from AMD requirements. Wind calibration status is unknown.
3. Site documents were not up to date.

On February 21, 2017 and March 14th the station at Smokey Heights was audited - the TRS, SO₂ and PM2.5 analyzers all passed the audit – the following concerns were noted:

1. The glass manifold spare ports are currently filled with fittings that have a hole in them and are covered with electrical tape.
2. The wind sensor was oriented to 18 degrees east of True North (Magnetic North) – misalignment of the wind sensor was confirmed by the Paza tech accompanying the auditor. Wind calibration status is unknown.
3. Site documents were not up to date.
4. Station temperature was outside the +/- 1% tolerance used by the auditors and is considered an opportunity for improvement.

On February 22, 2017 the station at Beaverlodge was audited - the NO_x, SO₂, O₃ analyzers all passed the audit. The Sharp was not audited due to a faulty detector and bad weather – the following concerns were noted:

1. Site documents were not up to date.
2. Wind sensor is due for calibration. Last done in February 2015.

On March 15th, 2017 the Henry Pirker station in Grande Prairie was audited – the CO, SO₂, TRS, HC, NO_x, O₃ and Sharp analyzers passed the audit. The following concerns were noted:

1. The wind speed/direction sensor was found to be incorrectly aligned – the wind sensor was 25° too far to the East – misalignment of the wind sensor was confirmed by the Paza tech accompanying the auditor. Wind calibration status is unknown.
2. Site documents were not up to date.

On March 15th, 2017 the Evergreen station in Grande Prairie was audited – the SO₂, TRS and PM2.5 analyzers passed. The following concerns were noted:

1. Site documents were not up to date.
2. Wind calibration status is unknown.
3. Signs of a leaking roof around penetrations.

On March 16th, 2017 the station at Rycroft was audited – the SO₂, NO_x and Sharp PM2.5 monitors all passed the audit. The O₃ failed the last point 13% high. The high point and mid-point passed but were marginal. Please review the attached Onsite checklist. The shelter temp is not being maintained at a constant temperature as per AMD Site Selection Chapter 3.1 SS3-D as the temperature rose from 21.0 C to 30.0 C during the audit. Due to a major snow storm outside meteorological parameters were not audited as well as the PM2.5 sampler. The following concerns were noted:

1. Site documents were not up to date.
2. Wind calibration status is unknown.

The Donnelly station was not audited at this time due to severe weather in the area at the time.

During the onsite checklist review, it was noted that previous calibrations completed by Paza demonstrated similar calibration traces as seen by the audit. See checklist.

Paza must determine when the identified wind sensors were aligned incorrectly and correct the wind direction data accordingly – the manner in which the data is corrected must be clearly outlined to the EMSD Audit Team in the Paza response letter. Paza must also provide a timeline for completion of wind sensor calibrations where it was noted as calibration status unknown.

Paza must replace the manifold port caps covered with electrical tape. Electrical tape is not an inert material acceptable for use in manifolds. Paza must provide documented proof of the replacement to the EMSD audit team.

The Hydrocarbon analyzer at Henry Pirker is connected to a power bar behind the instrument rack. During the audit, the audit hydrocarbon zero air system was plugged into the same power bar. The power bar and the circuit it is connected to could not handle the audit equipment which resulted in a power drop/loss and caused the signal output from the hydrocarbon analyzer to become noisy. When the audit equipment was removed, the output signal returned to normal signal output. It is recommended that the hydrocarbon analyzer be isolated from other circuits so power drop/loss does not occur again.

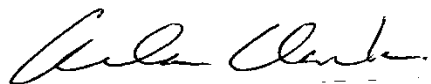
The station site documents at all of the Paza ambient air monitoring stations were found to be deficient or in need of updating. Additionally, the information included in the site documents must be current – photos required as part of the site documents must be periodically updated to reflect station changes such as station replacement, encroachment of vegetation or site changes such as new buildings adjacent to the station. Paza is required to review and update all station site documents to ensure all aspects of AMD Chapter 3 SS 4-B and SS 4-D are met.

During the notification of this audit Paza was requested to supply a copy of the Network Site Documents as required by AMD Chapter 3 SS 4-C – the EMSD Ambient Audit Team has not yet received a copy (paper or electronic) of the network site documents. Paza is required to supply a copy of the network site document to the EMSD Ambient Audit Team. AEP has received the QAP information.

The Rycroft station was unable to maintain the station at a constant temperature inside during the audit. During the station audit the shelter temperatures rose from 21.0 C to 30.0 C. This will cause the analyzers to start to react differently and puts stress on internal electronic components causing data to be suspect if left as is. Paza will be required to provide details to alleviate the poor HVAC system in place at each of the above noted stations.

Please address the issues noted above in writing as per AMD Chapter 8 AUD 5-C by April 28th, 2017 indicating what corrective actions have been taken or are scheduled. If you have any questions or comments, please contact the undersigned at 780-427-7888.

Yours truly,



Al Clark
Monitoring Systems Auditor

Attachments:

- Station Audit files
- Audit Summary
- Onsite checklist

cc: Okey Obiajulu: Approval Manager UAR
Owen Cook: Compliance Manager UAR
Marty Collins: Acting Air Quality Manager
Maxwell Mazur: Air Quality Specialist
Marilyn Albert: Air Quality Data Supervisor

Audit Summary

Form No. F-AA-018

Version 1.2

Page 1 of 6

Facility / Zone	Peace Airshed Zone
Total # of parameters that passed	22
Total # of parameters audited in the network	23
Date(s) of the audit	February 21-22, 2017 / March 14-16, 2017
Issue Date of Audit Summary	April 7, 2017

Station Name	Valleyview
Auditor	Al Clark
Audit Date	February 21, 2017 / March 14, 2017

Critical	Pass	Fail
H ₂ S	√	
SO ₂	√	
TRS		
NO / NO ₂ / NO _x		
O ₃		
CO		
THC		
NMHC		
NH ₃		
TEOM/BAM/Sharp 5030 PM _{2.5}		
TEOM/BAM/Sharp 5030PM ₁₀		
Wind Speed / Wind Direction	√	
Wind head Orientation	√	
Manifold Fan	√	
Precipitation Sampler		
Partisol PM _{2.5}		
Partisol PM ₁₀		
Partisol TSP		
Zero/Span Systems Operational	√	

Inspection Items	OK	Need for Improvement
Sample pump venting/scrubbing	√	
Heating / Air Conditioning	√	
Manifold	√	
Sample Lines	√	
TEOM/BAM/Sharp 5030 PM _{2.5}		
TEOM/BAM/Sharp 5030PM ₁₀		
Partisol PM _{2.5}		
Partisol PM ₁₀		
Partisol TSP		
Safety	√	
Site Conditions	√	

Non-critical	OK	Opportunity for Improvement
RH		
Station Temperature	√	
Ambient Temperature		
Solar Radiation		
Barometric Pressure		
Tipping bucket		
TEOM 'Pump On' test		
Station Condition	√	
Station Documentation		X Needs review / or missing

Not monitored at this location

Audit Summary

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Facility / Zone	Peace Airshed Zone
Total # of parameters that passed	22
Total # of parameters audited in the network	23
Date(s) of the audit	February 21-22, 2017 / March 14-16, 2017
Issue Date of Audit Summary	April 7, 2017

Station Name	Smokey Heights
Auditor	Al Clark
Audit Date	February 21, 2017 / March 14, 2017

Critical	Pass	Fail
H ₂ S		
SO ₂	√	
TRS	√	
NO / NO ₂ / NO _x		
O ₃		
CO		
THC		
NMHC		
NH ₃		
TEOM/BAM/Sharp 5030 PM _{2.5}	√	
TEOM/BAM/Sharp 5030PM ₁₀		
Wind Speed / Wind Direction	√	
Wind head Orientation		X Not True North
Manifold Fan	√	
Precipitation Sampler		
Partisol PM _{2.5}		
Partisol PM ₁₀		
Partisol TSP		
Zero/Span Systems Operational		

Inspection Items	OK	Need for Improvement
Sample pump venting/scrubbing	√	
Heating / Air Conditioning	√	
Manifold	√	
Sample Lines	√	
TEOM/BAM/Sharp 5030 PM _{2.5}		
TEOM/BAM/Sharp 5030PM ₁₀		
Partisol PM _{2.5}		
Partisol PM ₁₀		
Partisol TSP		
Safety	√	
Site Conditions	√	

Non-critical	OK	Opportunity for Improvement
RH		
Station Temperature		X +/- 1°C
Ambient Temperature	√	
Solar Radiation		
Barometric Pressure		
Tipping bucket		
TEOM 'Pump On' test		
Station Condition	√	
Station Documentation		X Needs review / or missing

Not monitored at this location

Audit Summary

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Facility / Zone	Peace Airshed Zone
Total # of parameters that passed	22
Total # of parameters audited in the network	23
Date(s) of the audit	February 21-22, 2017 / March 14-16, 2017
Issue Date of Audit Summary	April 7, 2017

Station Name	Beaverlodge
Auditor	Al Clark
Audit Date	February 22, 2017

Critical	Pass	Fail
H ₂ S		
SO ₂	√	
TRS		
NO / NO ₂ / NO _x	√	
O ₃	√	
CO		
THC		
NMHC		
NH ₃		
TEOM/BAM/Sharp 5030 PM _{2.5}		
TEOM/BAM/Sharp 5030PM ₁₀		
Wind Speed / Wind Direction	√	
Wind head Orientation	√	
Manifold Fan	√	
Precipitation Sampler		
Partisol PM _{2.5}		
Partisol PM ₁₀		
Partisol TSP		
Zero/Span Systems Operational	√	

Inspection Items	OK	Need for Improvement
Sample pump venting/scrubbing	√	
Heating / Air Conditioning	√	
Manifold	√	
Sample Lines	√	
TEOM/BAM/Sharp 5030 PM _{2.5}		
TEOM/BAM/Sharp 5030PM ₁₀		
Partisol PM _{2.5}		
Partisol PM ₁₀		
Partisol TSP		
Safety	√	
Site Conditions	√	

Non-critical	OK	Opportunity for Improvement
RH	√	
Station Temperature	√	
Ambient Temperature	√	
Solar Radiation		
Barometric Pressure		
Tipping bucket		
TEOM 'Pump On' test		
Station Condition	√	
Station Documentation		X Needs review / or missing

Not monitored at this location

Audit Summary

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Facility / Zone	Peace Airshed Zone
Total # of parameters that passed	22
Total # of parameters audited in the network	23
Date(s) of the audit	February 21-22, 2017 / March 14-16, 2017
Issue Date of Audit Summary	April 7, 2017

Station Name	Evergreen
Auditor	Al Clark
Audit Date	March 15, 2017

Critical	Pass	Fail
H ₂ S		
SO ₂	√	
TRS	√	
NO / NO ₂ / NO _x		
O ₃		
CO		
THC		
NMHC		
NH ₃		
TEOM/BAM/Sharp 5030 PM _{2.5}	√	
TEOM/BAM/Sharp 5030PM ₁₀		
Wind Speed / Wind Direction	√	
Wind head Orientation	√	
Manifold Fan	√	
Precipitation Sampler		
Partisol PM _{2.5}		
Partisol PM ₁₀		
Partisol TSP		
Zero/Span Systems Operational	√	

Inspection Items	OK	Need for Improvement
Sample pump venting/scrubbing	√	
Heating / Air Conditioning	√	
Manifold	√	
Sample Lines	√	
TEOM/BAM/Sharp 5030 PM _{2.5}	√	
TEOM/BAM/Sharp 5030PM ₁₀		
Partisol PM _{2.5}		
Partisol PM ₁₀		
Partisol TSP		
Safety	√	
Site Conditions	√	

Non-critical	OK	Opportunity for Improvement
RH	√	
Station Temperature	√	
Ambient Temperature	√	
Solar Radiation		
Barometric Pressure		
Tipping bucket		
TEOM 'Pump On' test		
Station Condition		X Leaky roof
Station Documentation		X Needs review / or missing

Not monitored at this location

Audit Summary

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Facility / Zone	Peace Airshed Zone
Total # of parameters that passed	22
Total # of parameters audited in the network	23
Date(s) of the audit	February 21-22, 2017 / March 14-16, 2017
Issue Date of Audit Summary	April 7, 2017

Station Name	Henry Pirker
Auditor	Al Clark
Audit Date	March 15, 2017

Critical	Pass	Fail
H ₂ S		
SO ₂	√	
TRS	√	
NO / NO ₂ / NO _x	√	
O ₃	√	
CO	√	
THC		
NMHC	√	
NH ₃		
TEOM/BAM/Sharp 5030 PM _{2.5}	√	
TEOM/BAM/Sharp 5030PM ₁₀		
Wind Speed / Wind Direction	√	
Wind head Orientation		X Not True North
Manifold Fan	√	
Precipitation Sampler		
Partisol PM _{2.5}		
Partisol PM ₁₀		
Partisol TSP		
Zero/Span Systems Operational	√	

Inspection Items	OK	Need for Improvement
Sample pump venting/scrubbing	√	
Heating / Air Conditioning	√	
Manifold	√	
Sample Lines	√	
TEOM/BAM/Sharp 5030 PM _{2.5}	√	
TEOM/BAM/Sharp 5030PM ₁₀		
Partisol PM _{2.5}		
Partisol PM ₁₀		
Partisol TSP		
Safety	√	
Site Conditions	√	

Non-critical	OK	Opportunity for Improvement
RH	√	
Station Temperature	√	
Ambient Temperature	√	
Solar Radiation	√	
Barometric Pressure		
Tipping bucket		
TEOM 'Pump On' test		
Station Condition	√	
Station Documentation		X Needs review / or missing

Not monitored at this location

Audit Summary

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Facility / Zone	Peace Airshed Zone
Total # of parameters that passed	22
Total # of parameters audited in the network	23
Date(s) of the audit	February 21-22, 2017 / March 14-16, 2017
Issue Date of Audit Summary	April 7, 2017

Station Name	Rycroft
Auditor	Al Clark
Audit Date	March 16, 2017

Critical	Pass		Fail
H ₂ S			
SO ₂	√		
TRS	√		
NO / NO ₂ / NO _x	√		
O ₃		X	Point >10%
CO			
THC			
NMHC	√		
NH ₃			
TEOM/BAM/Sharp 5030 PM _{2.5}			
TEOM/BAM/Sharp 5030PM ₁₀			
Wind Speed / Wind Direction			
Wind head Orientation			
Manifold Fan	√		
Precipitation Sampler			
Partisol PM _{2.5}			
Partisol PM ₁₀			
Partisol TSP			
Zero/Span Systems Operational	√		

Inspection Items	OK		Need for Improvement
Sample pump venting/scrubbing	√		
Heating / Air Conditioning	√		
Manifold	√		
Sample Lines	√		
TEOM/BAM/Sharp 5030 PM _{2.5}			
TEOM/BAM/Sharp 5030PM ₁₀			
Partisol PM _{2.5}			
Partisol PM ₁₀			
Partisol TSP			
Safety	√		
Site Conditions	√		

Non-critical	OK		Opportunity for Improvement
RH			
Station Temperature			
Ambient Temperature			
Solar Radiation			
Barometric Pressure			
Tipping bucket			
TEOM 'Pump On' test			
Station Condition	√		
Station Documentation		X	Needs review / or missing

Not monitored at this location

April 28, 2017

Mr. Al Clark & Shea Beaton
Monitoring Systems Auditors
Alberta Environment and Parks
Monitoring Branch
4946 89 Street
Edmonton, Alberta
T6E 5K1

Dear Auditors:

Re: AEP File No. 2017-529A/551A

This letter is in response to the Audit letter of April 10, 2017. Please find our actions on the outstanding issues noted:

Valleyview:

1. Temperature/RH sensor is integrated into the wind instrumentation by the manufacturer. Variance from audit measurements is believed to be due to the different sampling heights. No action taken.
2. Measurements and calculations for requested diagram are to be taken at the next calibration visit. If found to no longer meet AMD siting criteria at that time, one of the actions outlined in the audit letter will be taken. PAZA will follow up with the auditor with a proposed course of action by May 31st, 2017.
3. All site and network documents are currently being updated to meet the AMD criteria, draft documents are complete awaiting review. Completion date is expected to be May 15th, 2017. PDF copies of the updated documents will be sent to the auditor when completed.

Smokey Heights:

1. Appropriate manifold caps are to be installed at the next calibration visit.
2. Please find calibration form for wind equipment attached. Wind head was installed March 25, 2015. Technicians are scheduled to attend the site the week of May 15th to verify deviation from true north via solar noon measurement and adjust the head alignment accordingly. PAZA will adjust the wind direction data by the amount reported by the technicians from installation date to the date of adjustment, resubmit any adjusted data to the data warehouse and report the adjustment to the auditor.

3. See #3 Valleyview, above
4. HVAC unit at this station is nearing end of life and had experienced a failure in the days before. The temperature variation noted is believed to be partially due to the unusual activity in the station (multiple people, in and out) putting extra strain on the equipment. Unit is slated for replacement or repair in 2017 budget year.

Beaverlodge:

1. See #3 Valleyview above.
2. Wind system calibrations are on the workplan for 2017.

Henry Pirker:

1. Wind head was installed April 21, 2015. Technicians are scheduled to attend the site the week of May 15th to verify deviation from true north via solar noon measurement and adjust the head alignment accordingly. PAZA will adjust the wind direction data by the amount reported by the technicians from installation date to the date of adjustment, resubmit any adjusted data to the data warehouse and report the adjustment to the auditor.
2. See #3 Valleyview above.

See #3 Valleyview above.

Evergreen Park:

1. See #3 Valleyview above.
2. Please find calibration form for wind equipment attached. Wind system calibrations are on the workplan for 2017
3. Replacement shelter is currently being fabricated, shelter replacement scheduled for summer 2017.

Rycroft (Portable):

1. See #3 Valleyview above.
2. Please find calibration form for wind equipment attached. Wind system calibrations are on the workplan for 2017
3. O₃ Audit failure: As noted at the time of the audit the analyzer displayed similar behaviors at the March 7th calibration, though the results were within expected limits (see attached). Spans are stable and within expected limits until March 14th, when they drift out of spec. March 17th calibration and troubleshooting (see calibration form and field notes attached) found leaking connections within the analyzer which, when corrected, yielded an improved response. The data between the March 13th span and the March 17th calibration will be removed.
4. Shelter Temperature: HVAC unit at this station is nearing end of life. The temperature variation noted is believed to be partially due to the unusual activity in the station (multiple people, in and out) putting extra strain on the equipment. Slated for replacement.

We hope you find this response satisfactory and await your reply.

On Behalf of the
Peace Airshed Zone Association



Patrick Andersen, B.Sc.
Program Manager

May 8, 2017

File No(s). 2017 - 529A / 551A

Mr. Patrick Andersen
Program Manager
Peace Airshed Zone Association (Paza)
Box 21135
Grande Prairie, AB
T8V 6W7

Mr. Andersen:

Subject: 2017 Paza Ambient Air Monitoring Network Audit Results

Alberta Environment and Parks (AEP) Ambient Air Monitoring Audit team received and reviewed the content of the letter dated April 28, 2017 from the Peace Airshed Zone Association (Paza).

Valleyview station: Although not verified, AEP accepts Paza's follow-up actions and considers these items closed.

Smokey Heights station: Although not verified, AEP accepts Paza's follow-up actions and considers these items closed.

Beaverlodge station: Although not verified, AEP accepts Paza's follow-up actions and considers these items closed.

Henry Pirker station: Although not verified, AEP accepts Paza's follow-up actions and considers these items closed.

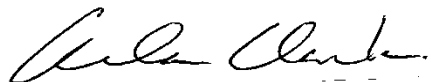
Evergreen station: Although not verified, AEP accepts Paza's follow-up actions and considers these items closed.

Rycroft station: Although not verified, AEP accepts Paza's follow-up actions and considers these items closed.

Donnelly station: Not audited in 2016/2017.

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

Yours truly,

A handwritten signature in black ink, appearing to read "Al Clark", written over a horizontal line.

Al Clark
Monitoring Systems Auditor

Attachments:

cc: Okey Obiajulu: Approval Manager UAR
Owen Cook: Compliance Manager UAR
Marty Collins: Acting Air Quality Manager
Maxwell Mazur: Air Quality Specialist
Marilyn Albert: Air Quality Data Supervisor