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June 10, 2016

RE: April 2016 Ambient Air Monitoring Monthly Reports

Attached are the monthly continuous ambient air monitoring reports for the LICA Airshed Zone's Cold Lake South, Maskwa, St. Lina, and Portable Air Monitoring System (located at Elk Point) stations. These reports also contain complete data tables, sample log sheets, and chain of custody documents for the integrated monitoring programs including volatile organic compounds, polycyclic aromatic hydrocarbons, Partisol sampler (particulate matter mass), and passive samplers.

Should you have any questions, please don't hesitate to contact me directly at (780) 266-7068.

Respectfully,

A handwritten signature in blue ink that reads 'Michael Bisaga'.

Michael Bisaga

Airshed Program Manager
Lakeland Industry and Community Association

cc (email): LICA Office



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AMBIENT AIR MONITORING MONTHLY DATA REPORT
LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
COLD LAKE SOUTH SITE

JOB #:2833-2016-04-01- C

April 2016

Prepared for:

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Attention: MIKE BISAGA

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SUMMARY

In April 2016, the Air Services Group of Maxxam Analytics conducted an ambient air monitoring program at the Cold Lake South Site of Lakeland Industry & Community Association, near Cold Lake, Alberta. Sampling was carried out to determine the concentrations of non-compliance parameters as requested by the Project Coordinator.

All data collected this month were within the objectives outlined in the AMD 1989, AMD 2006 and AMD 2015.

An external station audit was conducted by AEMERA on April 26. The audit results are included in this report.

The operational uptime for all analyzers and meteorological system were above the AMD's 90% requirement.

TRS: Thirty-two hours of data were invalidated due to a contaminated TRS converter and a compromised SO₂ scrubber material.

PM 2.5: Four hours of data collected after the AEMERA audit are invalid as the Teom unit was still in Maintenance mode. Forty-six hours of data were invalidated as the data was below -3 ug/m^3 this month.

The summary of results is presented on the following pages.

Any deviations or modifications made to the sampling or analytical methods are outlined in Section 1.0 Discussion. On this basis, Maxxam is issuing this completed report to Lakeland Industry & Community Association, Cold Lake South Site.

Should you have any questions concerning the results or if we can be of further assistance, please contact us at 403-219-3677 or toll-free at 1-800-386-7247.

Monthly Continuous Data Summary

Lakeland Industry & Community Association Cold Lake South Site						MAXIMUM VALUES							OPERATIONAL TIME (%)
PARAMETER	OBJECTIVES		EXCEEDENCES		MONTHLY AVERAGE	READING	DAY	1-HOUR			24-HOUR		
	1-HR	24-HR	1-HR	24-HR				HOUR	WIND SPEED (KPH)	WIND DIRECTION (DEGREES)	READING	DAY	
SO2 (PPB)	172	48	0	0	0.1	2.1	20	4	5.8	NW	0.4	20	99.2
TRS (PPB)	-	-	-	-	0.1	0.7	19, 26	9, 19	7.6 3.4	WSW SSE	0.3	14	93.6
THC (PPM)	-	-	-	-	2.12	3.15	27	20	1	ESE	2.29	27	100.0
NO2 (PPB)	159	-	0	-	2.3	16.6	28	7	1	NE	4.2	12	100.0
NO (PPB)	-	-	-	-	0.4	14.5	28	7	1	NE	1.7	28	100.0
NOX (PPB)	-	-	-	-	2.7	31.1	28	7	1	NE	5.8	28	100.0
O3 (PPB)	82	-	0	-	34.3	54.4	18	VAR	VAR	VAR	44.6	19	100.0
PM2.5 (UG/M3)	-	30	-	0	10.5	79.5	2	11	8.1	WSW	17.2	15	93.1
RELATIVE HUMIDITY (%)	-	-	-	-	54.9	98	26	6	2	S	90.8	5	100.0
AMBIENT TEMPERATURE (DEG C)	-	-	-	-	5.8	25.0	19	14	10	WSW	17.5	19	100.0
VECTOR WS (KPH)	-	-	-	-	6.7	20.5	6	16	-	NNW	12.7	9	100.0
VECTOR WD (DEG)	-	-	-	-	-	-	-	-	-	-	-	-	100.0

NA-NOT AVAILABLE VAR-VARIOUS

Exceedence Summary Report

SO₂ 1- Hour Exceedences

No Exceedences Recorded During the Month

SO₂ 24- Hour Exceedences

No Exceedences Recorded During the Month

NO₂ 1- Hour Exceedences

No Exceedences Recorded During the Month

PM_{2.5} 24- Hour Exceedences

No Exceedences Recorded During the Month

O₃ 1- Hour Exceedences

No Exceedences Recorded During the Month

Volatile Organics (VOCs) Data Summary

Sample Collected Date	Maximum reading (PPB)	Volatile Organic Compound
March 31, 2016	2.1	ACETONE
April 6, 2016	1.8	ACETONE
April 12, 2016	4.4	ACETONE
April 18, 2016	5.2	ACETONE
April 24, 2016	3.0	ACETONE
April 30, 2016	4.9	ACETONE

Note: March 31 result is included as it was sent from the lab with April results.

Polycyclic Aromatic Hydrocarbons (PAHs) Data Summary

Sample Collected Date	Maximum reading (ug)	Semi-Volatile Organic
March 31, 2016	0.09	Phenanthrene
April 6, 2016	0.10	Phenanthrene
April 12, 2016	0.37	Phenanthrene
April 18, 2016	0.22	Phenanthrene
April 24, 2016	0.10	Phenanthrene
April 30, 2016	0.08	Phenanthrene

Note: March 31 result is included as it was sent from the lab with April results.

Partisol Sampler Summary

Sample Collected Date	Concentration (mg)
March 31, 2016	0.024
April 6, 2016	0.011
April 12, 2016	0.089
April 18, 2016	0.097
April 24, 2016	0.071
April 30, 2016	0.086

Note: Note: March 31 result is included as it was sent from the lab with April results.

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1.0 Discussion

This monthly report consists of data for parameters Sulphur Dioxide (SO₂), Total Reduced Sulphur (TRS), Total Hydrocarbon (THC), Oxides of Nitrogen (NO_x), Nitric Oxides (NO), Nitrogen Dioxide (NO₂), Ozone (O₃), Particulate Matter 2.5 (PM_{2.5}), Relative Humidity (RH), Ambient Temperature (AmbTPX), Wind Speed (WS), Wind Direction (WD) and Standard Deviation Wind Direction (STDWD). The results for the non-continuous Partisol, VOCs, PAHs, Passive monitoring program are also included in this report.

Sample filters for all continuous air monitors are changed before the calibration begins. The sample manifold is cleaned during the site visit each month.

Control checks, consisting of a zero and span, are conducted daily on all continuous air monitors. In place of the air sample, zero air (from scrubbed air or gas cylinders) is used for zero checks, and a known concentration of the pollutant being analyzed is used for span checks. These checks are controlled by automatic timers and valves. The total zero span cycle is completed within an hour, the commencement of the zero span cycle is at the beginning of the hour.

Multipoint calibrations are done a minimum of once a month for each continuous air monitor. An additional calibration is required under the following conditions: 1) within three days after the initial start-up and stabilization of a newly installed instrument, 2) prior to shut-down or moving of an instrument which has been working to specification, and 3) when major repair has been done on the instrument.

Time during the first multi-point calibration is not considered downtime (Data is flagged as C). If more than one calibration is performed during the month, the time during the additional calibration is considered as downtime (Data is flagged as C1).

Only one zero/span check is run per day. Time during the zero/span check is not considered as downtime (Data is flagged as S). If an extra zero/span check is performed, the time during the additional check is considered as downtime (Data is flagged as S1).

The AMD requires each instrument and accompanying data recording system to be operational 90% of the time (minimum), on a monthly basis.

All sampling, analysis, and QA/QC for this project was performed by Maxxam Analytics and complies with the Alberta Air Monitoring Directive.

Data contained in this monthly report has undergone the verification and validation based on the requirements of the AMD Chapter 6: Ambient Data Quality for Verification and Validation of Continuous Ambient Air Quality Data. The descriptions of the data verification and validation process can be found in Section 5 of this report. Instantaneous data, where applicable, is provided for reference purposes and has not undergone zero correction.

Hourly and minute data have been reviewed based on daily zero/span results and multi-point calibration results. Data may be considered invalid if a zero-corrected span check in excess of +/- 10% of the span concentration (established by the previous multi-point calibration) is encountered and/or significant differences in the calibration factor occurs (greater than 10%).

Trailer inspection was completed on April 6. No issues were identified.

SULPHUR DIOXIDE (SO₂)

The routine monthly calibration was performed on April 6. An external audit was conducted by AEMERA on April 26. The audit results are included in this report. The analyzer spanned high on April 18 as the sample pump was due for maintenance. A shut-down calibration was performed on April 19, prior to rebuilding the pump. A post-repair calibration was completed afterwards. As the shut-down calibration met AMD requirements, no data was discarded due to this issue.

TOTAL REDUCED SULPHUR (TRS)

The routine monthly calibration was performed on April 7. An external audit was conducted by AEMERA on April 26. During the audit the TRS analyzer was reading higher than the audit gas at all three points, the AEMERA audit failed. Immediately following the audit Maxxam performed a shutdown calibration, followed by a post repair calibration, both were successful.

On April 29 more troubleshooting occurred beginning with a successful shut down calibration. A scrubber challenge was performed and it was determined that impaired function of the TRS converter SO₂ scrubber material was the cause of the failure. The scrubber material was replaced and a successful post repair calibration was performed.

On May 2 a shutdown calibration was performed which was unsuccessful. A successful leak check on the analyzer and converter was performed. The SO₂ scrubber material was replaced and reduced in length, then a successful scrubber challenge and post repair calibration was performed.

On May 5 a shutdown calibration was performed which was unsuccessful. The SO₂ scrubber material was replaced and a successful SO₂ scrubber challenge and post repair calibration was performed.

On May 6 a shutdown calibration was performed which was unsuccessful. The SO₂ scrubber material was replaced. In addition the TRS converter was cleaned as contamination was suspected. A successful post repair calibration and SO₂ scrubber challenge was performed.

On May 18 a single point as found and SO₂ scrubber challenge was performed. Both were successful.

On June 2 successful routine monthly calibration was performed.

Performance of this analyzer has been closely monitored since May 6 and observation indicates it has been operating according to AMD specifications to date.

It is likely that the cause of the audit failure was the compromised SO₂ scrubber material in addition to the contaminated TRS converter chamber. The April 26 AEMERA and Maxxam result discrepancy is accounted for by the difference in methodology. The AEMERA audit gas contains SO₂. The impaired function of the SO₂ scrubber material allowed excess SO₂ to pass through the converter thus biasing TRS results high. Prior to April 29 probability is the TRS analyzer data was higher than actual TRS ambient concentrations (depending on the composition of ambient air).

Because concentrations reported may have been higher than actual concentrations in ambient air coupled by the fact of the April 29 successful shutdown calibration, Maxxam is not invalidating prior to April 29. However TRS data has been invalidated from April 29 hour 16, to May 6, hour 14, for a total of 166 hours. Thirty-two hours of this downtime occurred in March.

TOTAL HYDROCARBONS (THC)

The routine monthly calibration was performed on April 6. An external audit was conducted by AEMERA on April 26. The audit results are included in this report.

NITROGEN DIOXIDE (NO₂)

The routine monthly calibration was performed on April 6. An external audit was conducted by AEMERA on April 26. The audit results are included in this report.

OZONE (O₃)

The routine monthly calibration was performed on April 7. An external audit was conducted by AEMERA on April 26. The audit results are included in this report.

PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM_{2.5})

Two routine audits were performed this month: one was completed on April 7, and the other audit was performed on April 19. Both the inlet filter and the FDMS filter were replaced on April 7. An external audit was conducted by AEMERA on April 26. The audit results are included in this report. Four hours of data collected after the AEMERA audit are invalid as the Teom unit was still in Maintenance mode.

Data was corrected using Alberta air quality guidelines. Data between 0 and -3 ug/m³, was corrected to 0 ug/m³. Data was below -3ug/m³ was invalidated. Forty-six hours of data were invalidated as the data was below -3 ug/m³ this month.

WIND SPEED (WS), WIND DIRECTION (WD) and STANDARD DEVIATION WIND DIRECTION (STDWD)

The wind system is reported as vector wind speed and vector wind direction. The wind direction data included in this report represents where the wind was coming from.

The wind system was working well throughout the month.

RELATIVE HUMIDITY (RH)

The humidity sensor was working well throughout the month.

AMBIENT TEMPERATURE (TPX)

The temperature sensor was working well throughout the month.

VOC SAMPLES

The sampler was programmed to run for 24 hours every 6th day per the NAPS (North American Pollution Surveillance Schedule).

Samples were collected on April 6, 12, 18, 24, 30. Analytical results are included in this report. The results for March 31 sample collection are included in this report. VOC values are reported in ppb.

The routine quarterly audit for the VOC sampler was completed on April 4.

PAH SAMPLES

The sampler was programmed to run for 24 hours every 6th day per the NAPS (North American Pollution Surveillance Schedule).

Samples were collected on April 6, 12, 18, 24, 30. Analytical results are included in this report. The results for March 31 sample collection are included in this report. PAH values are reported in µg.

PARTISOL SAMPLES

The sampler was programmed to run for 24 hours every 6th day per the NAPS (North American Pollution Surveillance Schedule).

Samples were collected on April 6, 12, 18, 24, 30. Analytical results are included in this report. The results for March 31 sample collection are included in this report. Partisol values are reported in mg.

The routine quarterly audit for the Partisol sampler was completed on April 8.

PASSIVE SAMPLES

No samples were collected this month as the samples are scheduled to be collected every two months.

2.0 Project Personnel

Mike Bisaga was the contact for Lakeland Industry & Community Association, and the Maxxam field sampling technician was Alexander Yakupov.

3.0 Plant Monthly Required AMD Summary

All data collected this month were within the objectives outlined in the AMD 1989, AMD 2006 and AMD 2015.

The operational uptime for all analyzers and meteorological system were above the AMD's 90% requirement.

4.0 Calculations and Results

All calculations and reporting of results follow the method described in the Air Monitoring Directive, 1989, 2006 Amendments to the Air Monitoring Directive, 1989 (AMD 2006) as well as AMD 2015.

5.0 Methods and Procedures

The following methods and procedures were used to complete the test program:

- Maxxam AIR SOP-00210: Ambient TRS Monitoring
- Maxxam AIR SOP-00211: Ambient SO₂ Monitoring
- Maxxam AIR SOP-00212: Ambient O₃ Monitoring
- Maxxam AIR SOP-00213: Ambient NO/NO₂/NO_x Monitoring
- Maxxam AIR SOP-00214: Ambient Hydrocarbon (THC) Monitoring
- Maxxam AIR SOP-00215: Teom Operation
- Maxxam AIR SOP-00225: The Collection of VOCs in Ambient Air Using Canister and Xontech

There were no deviations from the prescribed methods.

The following instruments were used to perform the test program:

- Sulphur Dioxide - Thermo 43i UV Fluorescent Analyzer
- Total Reduced Sulphur - 0 UV Fluorescent Analyzer
- Total Hydrocarbons - Thermo 450i FID Analyzer
- Oxides of Nitrogen - Thermo 42i Chemiluminescent Analyzer
- Ozone - Thermo 49i Photometric Analyzer
- Particulate Matter (PM_{2.5}) - R&P 1405F Teom Unit
- Wind System - Met One Unit
- Relative Humidity - Met One Unit
- Ambient Temperature - Met One Unit
- Datalogger - ESC 8832
- Partisol - 0 Unit

The following steps were used to complete the data verification and validation process:

Level 0 Preliminary Verification

Level 0 data are raw data obtained directly from the data acquisition system (DAS). Under the step of Level 0, these data undergo a certain amount of manual or automated screening and flagging. It included a) identification of periods of missing data; b) verification of time stamps against reference time; c) verification that instrument diagnostics/datalogger flags indicate normal operation; d) comparison of data to upper and lower limits; e) rate of change flagging indicating that data changed too rapidly or not at all; and f) verification that zero, span and multipoint performance checks are within specifications. This level of verification is performed on a daily basis.

Level 1 Primary Validation

Validation actions under the step of Level 1 include a) review of all screening flags assigned during preliminary verification; b) review of all supporting site information and documentation; c) review of operational acceptance limits for each parameter/analyzer; d) review of daily zero/span and monthly calibration results for all gaseous parameters; and e) application of any necessary adjustments to data (e.g. baseline adjustments, below zero adjustments). This level of validation is performed on a monthly basis.

Level 2 Final Validation

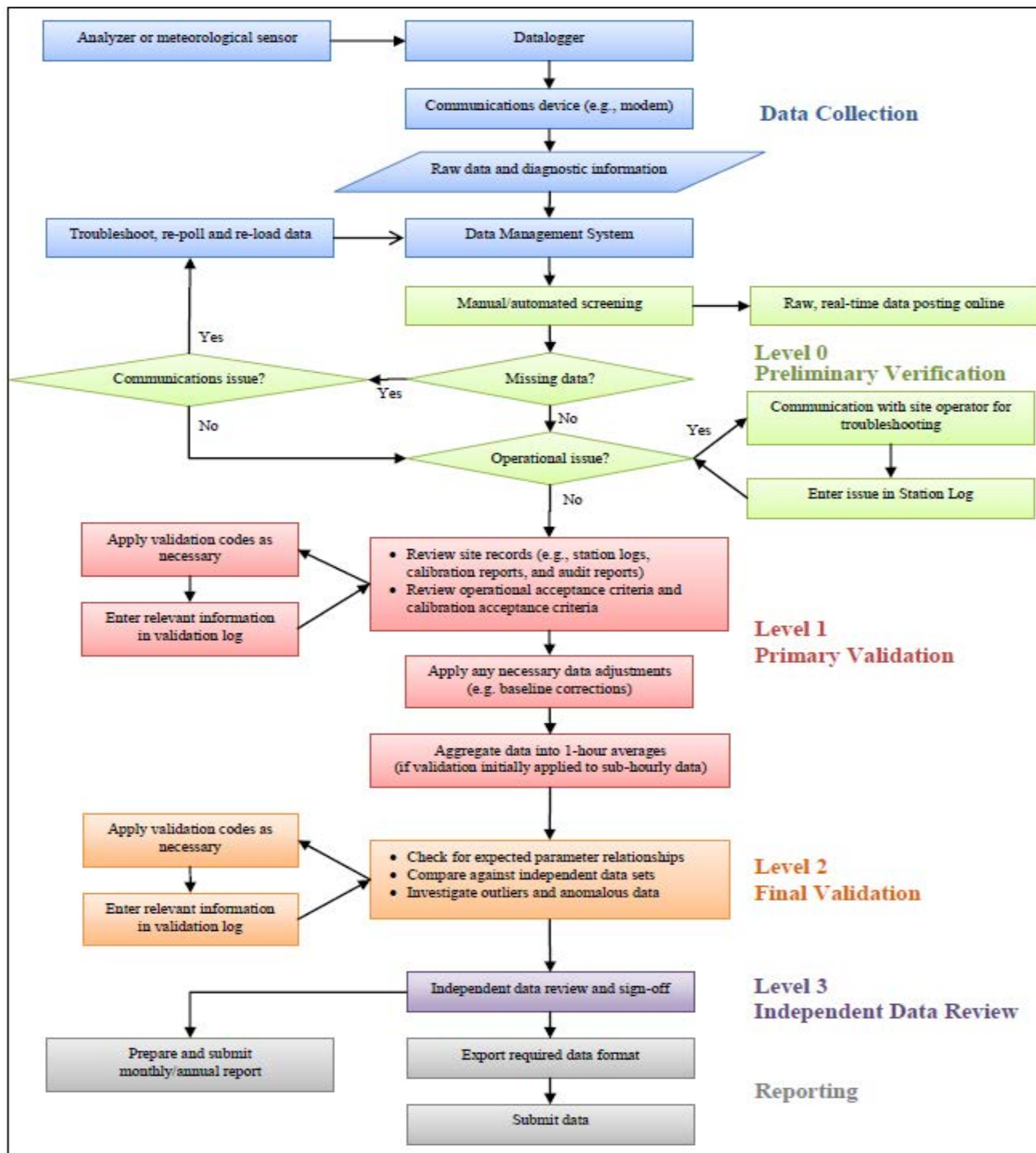
The purpose of Level 2 validation is to verify that there are no inconsistencies among related data, or among regional data measured at nearby sites.

Level 3 Independent Data Review

Level 3 validation is the last step of data review, and it is completed by an individual that is independent of both field operations and primary data validation. A final independent QA review and endorsement is performed during this step before data is submitted to Alberta Environment.

Post-Final Validation

The Post-Final Validation step serves to re-evaluate the data that errors or omissions are discovered and/or suspected after the initial submittal of data. Any data issues or patterns which were not clear on a monthly basis are highlighted during this step. This validation is performed on an annual basis.



Source: AMD Chapter 6: Ambient Data Quality for Verification and Validation of Continuous Ambient Air Quality Data; Figure 1 Data Collection and Management Process Flow Chart

APPENDIX I
CONTINUOUS MONITORING DATA RESULTS

SULPHUR DIOXIDE

SULPHUR DIOXIDE (SO2) hourly averages in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	RDGS.	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY 1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.6	0.7	1.2	0.3	0.4	0.5	0.2	0.1	0.0	0.2	0.2	0.1	0.1	S	0.0	0.0	1.2	0.2	24	
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.5	0.4	0.3	0.3	0.2	0.2	0.1	0.0	0.1	0.0	0.2	0.0	S	0.0	0.0	0.0	0.0	0.5	0.1	24
3	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	S	0.0	0.0	0.0	0.0	0.2	0.1	24
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	S	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	24
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	S	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	24
6	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	C	C	C	C	0.0	0.0	0.0	S	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	24
7	0.1	0.1	0.1	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.4	0.6	0.5	0.1	0.1	0.1	S	0.1	0.2	0.1	0.1	0.1	0.0	0.1	0.0	0.6	0.2	24	
8	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.1	S	0.0	0.2	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.2	0.1	24	
9	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.5	0.5	0.5	0.4	0.4	S	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.3	0.1	0.5	0.2	24	
10	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	S	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.3	0.2	24	
11	0.0	0.0	0.0	0.1	0.0	0.1	0.2	0.1	0.1	0.1	0.1	0.0	S	0.4	0.3	0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.0	0.4	0.1	24	
12	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.3	0.3	0.6	0.6	S	0.4	0.3	0.3	0.3	0.3	0.2	0.3	0.2	0.2	0.4	0.3	0.2	0.1	0.6	0.3	24	
13	0.3	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	S	0.1	0.2	1.1	0.3	0.1	0.1	0.0	0.4	0.6	0.2	0.2	0.2	0.1	0.0	1.1	0.2	24	
14	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.1	S	0.1	0.0	0.0	0.0	0.0	0.1	0.3	0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.3	0.1	24	
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
16	0.1	0.1	0.0	0.0	0.1	0.1	0.2	S	0.1	0.2	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.1	24	
17	0.0	0.0	0.0	0.0	0.0	0.0	S	0.1	0.1	0.3	0.3	0.4	0.1	0.2	0.3	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.4	0.1	24	
18	0.1	0.1	0.0	0.0	0.0	S	0.1	0.2	0.2	0.1	0.0	0.0	0.1	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	24	
19	0.1	0.0	0.0	0.1	S	0.3	S1	0.5	C1	C1	C1	C1	C1	C1	0.2	0.2	0.0	0.1	0.0	0.0	0.7	1.1	0.4	0.3	0.6	0.0	1.1	0.3	18
20	1.0	1.1	0.5	S	2.1	1.9	1.0	0.3	0.1	0.1	0.1	0.5	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.4	24	
21	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
22	0.0	S	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	24
23	S	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.1	S	0.0	0.2	0.1	24	
24	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.2	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2	S	0.1	0.1	0.3	0.2	24	
25	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.1	0.0	0.0	24
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Q	Q	Q	Q	Q	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.1	0.0	0.0	24
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.8	0.5	0.3	0.2	0.2	0.1	0.1	0.0	0.0	0.0	S	0.9	0.4	0.2	0.1	0.0	0.9	0.2	24		
28	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.3	0.4	0.4	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.2	S	0.2	0.2	0.2	0.3	0.3	0.0	0.4	0.2	24	
29	0.2	0.3	0.3	0.3	0.4	0.3	0.3	0.4	0.5	0.3	0.2	0.3	0.3	0.5	0.4	0.3	0.2	S	0.4	0.5	0.5	0.4	0.3	0.2	0.2	0.5	0.3	24	
30	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.4	0.4	0.2	0.2	0.2	0.3	0.3	0.2	0.2	S	0.1	0.2	0.8	0.5	0.3	0.4	0.3	0.1	0.8	0.3	24	
HOURLY MAX	1.0	1.1	0.5	0.3	2.1	1.9	1.0	0.5	0.8	0.6	0.7	1.2	0.5	1.1	0.5	0.3	0.3	0.3	0.4	0.8	1.1	0.4	0.4	0.6					
HOURLY AVG	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

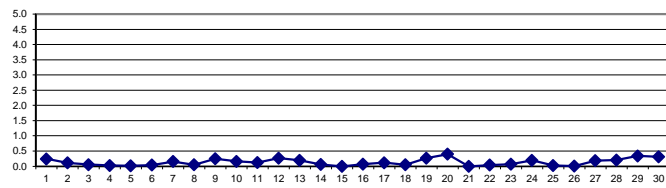
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT:	1-HR	172	PPB	24-HR	48	PPB
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MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0				
NUMBER OF 24-HR EXCEEDENCES:	0				
NUMBER OF NON-ZERO READINGS:	401				
MINIMUM 1-HR AVERAGE:	0.0	PPB	@ HOUR(S)	VAR	ON DAY(S)
MAXIMUM 1-HR AVERAGE:	2.1	PPB	@ HOUR(S)	4	ON DAY(S)
MAXIMUM 24-HR AVERAGE:	0.4	PPB			ON DAY(S)
					VAR-VARIOUS
IZS CALIBRATION TIME:	31	HRS	OPERATIONAL TIME:	714	HRS
MONTHLY CALIBRATION TIME:	4	HRS	AMD OPERATION UPTIME:	99.2	%
STANDARD DEVIATION:	0.20		MONTHLY AVERAGE:	0.1	PPB

24 HOUR AVERAGES FOR April 2016



SO2[ppb] Station: LICA COLD LAKE SOUTH Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— SO2[ppb]



SULPHUR DIOXIDE MAX instantaneous maximum in ppb

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.
DAY	HOURLY MAX	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
1	0.6	0.7	0.7	0.8	0.6	0.6	0.9	0.7	1.0	1.2	1.9	2.1	1.1	1.1	1.2	0.9	0.8	0.6	0.9	1.2	0.7	0.7	S	0.7	0.6	2.1	0.9	24	
2	0.7	0.7	0.5	0.6	0.7	0.6	0.7	0.6	0.9	1.2	1.4	1.1	1.1	0.9	0.8	0.6	0.8	0.8	0.6	0.9	0.8	S	0.6	0.7	0.5	1.4	0.8	24	
3	0.8	0.6	0.8	0.7	0.7	0.9	0.7	0.9	0.6	0.7	1.0	0.7	0.9	1.2	0.8	0.9	1.0	0.9	0.9	0.8	S	0.7	0.9	0.8	0.6	1.2	0.8	24	
4	0.5	0.7	0.6	0.6	0.6	0.7	0.8	0.7	0.9	0.7	0.8	0.8	0.6	0.6	0.8	0.8	0.7	0.7	0.6	S	0.6	0.7	0.6	0.7	0.5	0.9	0.7	24	
5	0.7	0.6	0.7	0.6	0.6	0.6	0.6	0.7	0.7	0.6	0.6	0.7	0.7	0.7	0.6	0.7	0.6	0.9	S	0.7	0.7	0.7	0.6	0.6	0.6	0.9	0.7	24	
6	0.6	0.6	0.7	0.7	0.6	0.6	0.9	0.9	0.6	0.7	C	C	C	C	0.6	0.7	0.8	S	0.9	0.7	0.9	0.8	0.6	0.7	0.6	0.9	0.7	24	
7	0.9	0.9	0.9	0.6	0.7	0.9	0.9	1.1	0.8	0.9	1.1	1.4	1.5	0.8	0.8	0.9	S	0.7	0.9	0.9	0.7	0.7	0.7	0.7	0.6	1.5	0.9	24	
8	0.7	0.7	0.7	0.6	0.6	0.6	0.7	0.6	0.7	0.7	0.7	0.7	0.6	0.7	0.6	S	0.6	0.8	0.6	0.7	0.6	0.9	0.9	0.7	0.6	0.9	0.7	24	
9	0.6	0.6	0.6	0.6	0.7	0.6	0.6	0.7	1.0	1.1	1.1	1.2	0.9	0.7	S	0.9	0.7	0.7	0.8	0.7	0.7	0.8	1.1	0.9	0.6	1.2	0.8	24	
10	0.8	0.7	0.6	0.7	0.7	0.7	0.6	0.6	0.6	0.8	0.7	0.7	0.9	S	0.8	0.9	0.8	0.6	0.7	0.6	0.8	0.8	0.6	0.9	0.6	0.9	0.7	24	
11	0.6	0.6	0.7	0.6	0.8	0.6	1.1	0.8	0.9	0.9	0.7	0.8	S	1.1	1.1	1.1	0.9	0.9	0.6	0.7	0.7	0.6	0.7	0.6	0.6	1.1	0.8	24	
12	0.6	0.6	0.7	0.7	0.9	0.8	0.6	0.9	0.9	1.2	1.6	S	1.1	0.8	0.8	0.9	0.9	0.9	0.8	0.9	0.9	1.2	1.2	1.1	0.6	1.6	0.9	24	
13	1.1	0.8	0.7	0.8	0.9	0.7	0.8	0.8	0.8	0.9	S	0.7	0.9	2.8	1.1	0.9	0.7	0.7	1.4	1.5	0.9	1.1	0.7	0.6	0.6	2.8	1.0	24	
14	0.6	0.8	0.6	0.7	0.7	0.8	0.7	0.9	0.7	S	0.9	0.7	0.6	0.6	1.1	0.8	1.2	1.1	1.1	1.1	0.6	0.6	0.7	0.6	0.6	1.2	0.8	24	
15	0.4	0.7	0.7	0.6	0.7	0.7	0.6	0.7	S	0.7	0.7	0.6	0.6	0.7	0.6	0.7	0.8	0.7	0.6	0.9	0.7	0.6	0.6	0.9	0.4	0.9	0.7	24	
16	0.7	0.6	0.6	0.7	0.9	1.2	S	0.8	0.9	0.8	0.8	0.8	0.7	0.8	0.9	0.8	0.8	0.8	0.6	0.6	0.8	0.9	0.8	0.8	0.6	1.2	0.8	24	
17	0.7	0.6	0.6	0.7	0.7	0.7	S	0.7	0.8	1.1	0.9	1.4	0.7	1.2	1.1	0.9	0.7	0.9	1.1	0.9	0.9	0.9	0.9	0.8	0.6	1.4	0.9	24	
18	0.6	0.7	0.7	0.6	0.7	S	0.9	0.8	0.9	1.0	0.7	0.7	0.9	0.6	1.4	0.6	0.7	0.9	0.7	0.7	0.6	0.6	0.8	0.7	0.6	1.4	0.8	24	
19	0.7	0.7	0.8	0.8	S	1.1	S1	S1	C1	C1	C1	C1	C1	C1	1.2	0.7	0.9	0.7	0.7	1.8	2.0	1.2	1.5	1.7	0.7	2.0	1.1	16	
20	2.0	2.0	1.3	S	3.0	3.0	2.3	1.1	0.7	1.0	1.2	1.3	1.3	1.0	0.9	0.7	0.7	0.9	0.6	0.6	0.6	0.7	0.7	0.7	0.6	3.0	1.2	24	
21	0.6	0.6	S	0.7	0.9	0.7	0.7	0.6	0.6	0.9	0.7	0.7	0.7	0.7	0.6	0.6	0.7	0.7	0.7	0.6	0.7	0.9	0.6	0.6	0.6	0.9	0.7	24	
22	0.6	S	0.8	0.7	0.9	0.7	0.9	0.6	0.9	0.9	0.7	0.6	0.9	1.0	0.7	0.6	0.6	0.6	0.7	0.6	0.7	0.7	0.6	0.7	0.7	0.6	1.0	0.7	24
23	S	0.7	0.9	0.6	0.7	0.6	0.6	0.6	0.6	0.7	0.7	0.6	0.6	0.7	0.7	0.6	0.7	0.6	0.7	0.9	0.7	0.7	0.9	S	0.6	0.9	0.7	24	
24	0.7	0.9	0.8	0.7	1.1	0.7	0.8	1.1	0.9	0.9	0.9	0.9	1.1	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.7	0.7	S	0.8	0.7	1.1	0.9	24	
25	0.9	0.9	0.6	1.1	0.7	0.6	0.7	0.7	0.7	0.9	0.9	0.9	0.7	0.9	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6	S	0.6	0.6	1.1	0.7	24	
26	1.1	0.6	0.7	0.7	0.6	0.9	0.6	Q	Q	Q	Q	Q	0.9	0.7	0.9	0.7	0.9	1.0	0.7	0.7	S	0.9	0.7	0.7	0.6	1.1	0.8	24	
27	0.7	0.7	0.8	0.7	0.7	0.7	1.5	1.7	1.3	1.0	0.9	0.9	0.9	0.7	1.0	0.7	0.6	0.9	0.9	S	1.9	1.0	0.9	0.9	0.6	1.9	0.9	24	
28	0.7	0.7	0.7	0.6	0.9	0.7	0.9	1.0	0.9	1.5	0.7	0.7	0.7	0.9	1.0	0.9	0.7	0.7	S	0.7	0.7	0.7	0.9	0.9	0.6	1.5	0.8	24	
29	0.7	0.7	0.7	1.0	0.9	0.9	1.0	0.9	2.5	0.9	0.7	0.9	0.9	1.2	0.7	0.7	0.6	S	0.9	0.9	0.9	0.9	0.7	0.7	0.6	2.5	0.9	24	
30	0.6	0.6	0.9	0.7	0.7	0.6	0.9	0.7	0.8	0.7	0.9	0.6	0.7	0.6	0.6	0.7	S	0.6	0.7	1.4	1.2	0.7	0.7	0.8	0.6	1.4	0.8	24	
HOURLY MAX	2.0	2.0	1.3	1.1	3.0	3.0	2.3	1.5	2.5	1.5	1.9	2.1	1.5	2.8	1.4	1.1	1.2	1.1	1.4	1.8	2.0	1.2	1.5	1.7					
HOURLY AVG	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.9	0.8	0.8	0.8					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	673
MAXIMUM INSTANTANEOUS VALUE:	3.0 PPB @ HOUR(S) 4, 5 ON DAY(S) 20, 20
	VAR-VARIOUS
IZS CALIBRATION TIME:	31 HRS
MONTHLY CALIBRATION TIME:	4 HRS
STANDARD DEVIATION:	0.28
OPERATIONAL TIME:	712 HRS

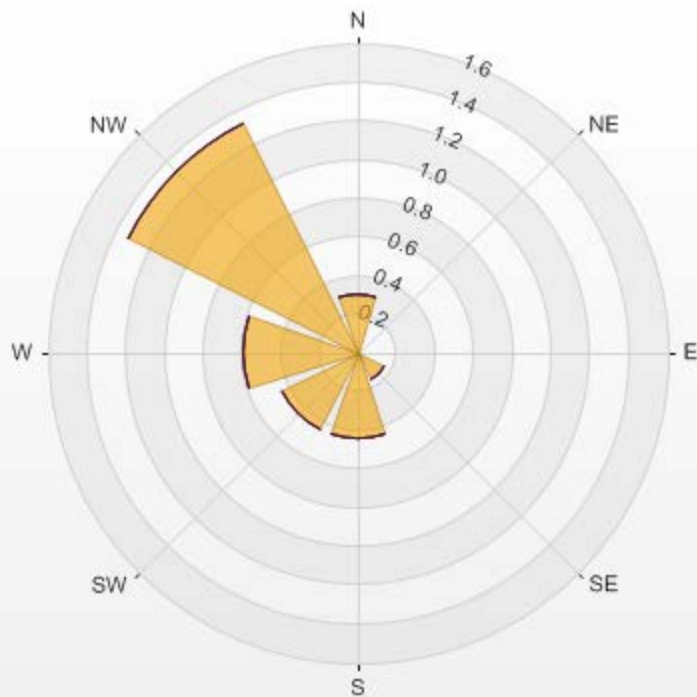
SO2 MAX[ppb] Station: LICA COLD LAKE SOUTH Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— SO2 MAX[ppb]

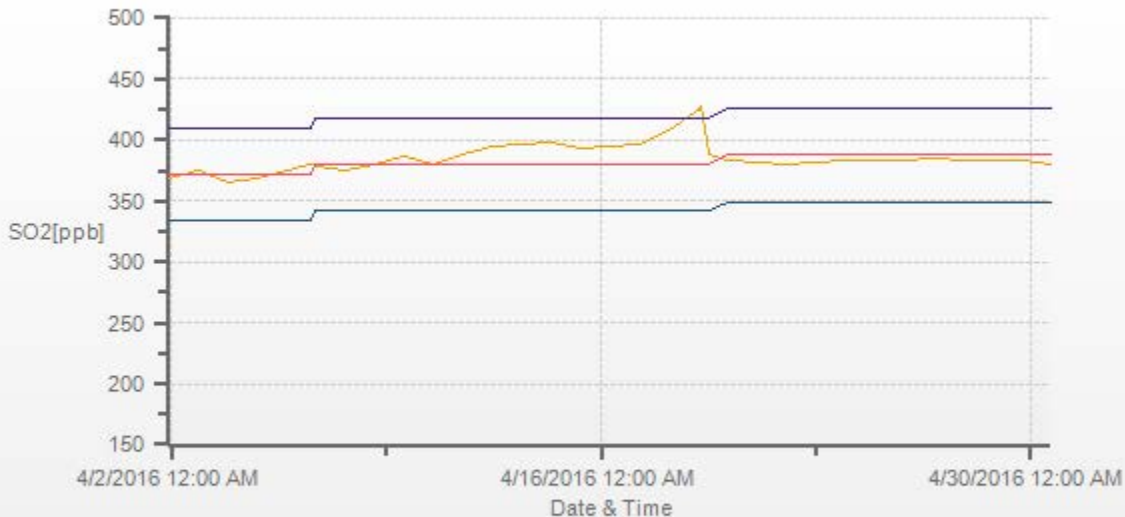
Wind: LICA COLD LAKE SOUTH Monitor: SO2 [ppb] Monthly: 04/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 96.74% Valid Data: 93.75% Calm Avg: 0.00

Direction	0.5-20.0	20.0-60.0	60.0-110.0	110.0-170.0	170.0-340.0	>340.0	Total
N	0.3	0	0	0	0	0	0.3
NE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
SE	0.15	0	0	0	0	0	0.15
S	0.44	0	0	0	0	0	0.44
SW	0.44	0	0	0	0	0	0.44
W	0.59	0	0	0	0	0	0.59
NW	1.33	0	0	0	0	0	1.33
Summary	3.25	0	0	0	0	0	3.25



% Icon Classes (ppb)	3.3	0.5-20.0	0.0	20.0-60.0	0.0	60.0-110.0	0.0	110.0-170.0	0.0	170.0-340.0	0.0	>340.0

SO2[ppb] Calibration: LICA COLD LAKE SOUTH Monthly: 04/2016 Type: Span



Span Meas

Span Ref

-10%

+10%

TOTAL REDUCED SULPHUR

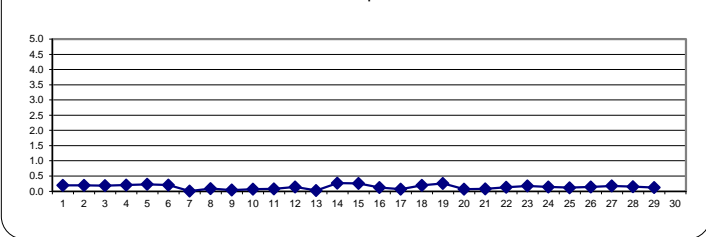
TOTAL REDUCED SULPHUR (TRS) hourly averages in ppb

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR				
DAY	MIN.	MAX.	AVG.	RDGS.																												
1	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.3	0.2	24	
2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.2	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.3	0.2	24	
3	0.2	0.1	0.1	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.0	0.2	0.2	24	
4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	24	
5	0.2	0.2	0.3	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.2	24	
6	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.3	0.4	0.3	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.4	0.2	0.2	24	
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	24	
8	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.1	0.2	0.0	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	24	
9	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	24	
10	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	24	
11	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.0	24	
12	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.2	0.1	24
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.2	0.0	0.2	0.0	0.0	24	
14	0.2	0.3	0.3	0.4	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.3	0.2	0.2	0.4	0.3	0.2	24	
15	0.2	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.3	0.2	24	
16	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.2	0.1	0.1	0.1	24	
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.0	0.2	0.1	0.1	24	
18	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.3	0.2	0.1	0.3	0.2	0.2	24	
19	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.2	0.3	0.7	0.3	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.3	0.1	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.7	0.3	0.2	24	
20	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.1	24	
21	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	24	
22	0.1	0.0	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.1	0.0	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	24	
23	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.1	0.1	0.2	0.1	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.1	0.3	0.2	0.1	24	
24	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.3	0.1	24	
25	0.1	0.2	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	24	
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17	
27	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.3	0.2	24	
28	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.0	0.3	23	
29	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	24	
30	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	10	
HOURLY MAX	0.3	0.3	0.3	0.4	0.3	0.3	0.4	0.3	0.4	0.7	0.3	0.3	0.3	0.4	0.3	0.4	0.3	0.3	0.2	0.7	0.3	0.4	0.3	0.2	0.2	0.2	0.1	0.3	0.2	0.1	24	
HOURLY AVG	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	24	

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

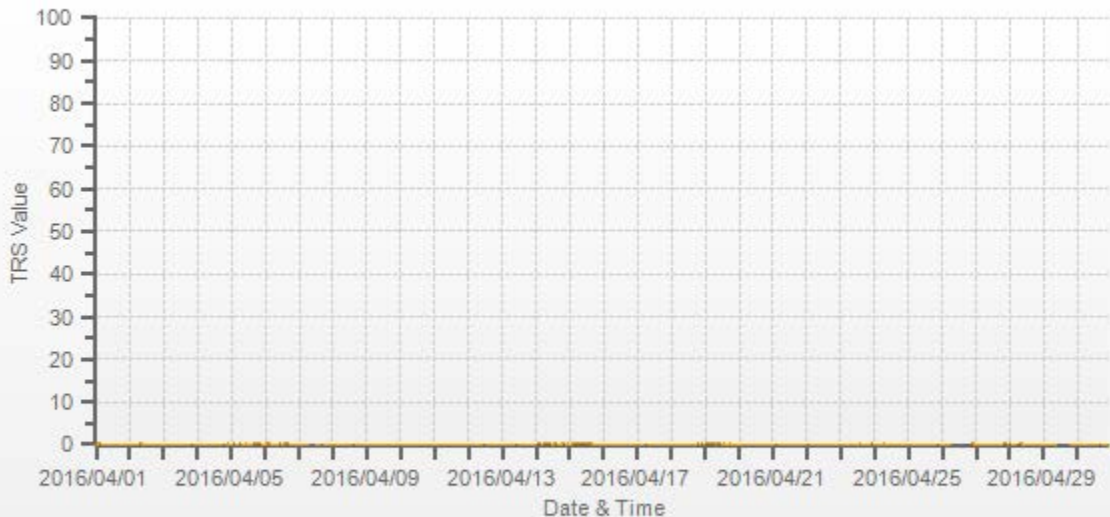
24 HOUR AVERAGES FOR April 2016



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	525			
MINIMUM 1-HR AVERAGE:	0.0	PPB @ HOUR(S)	VAR	ON DAY(S)
MAXIMUM 1-HR AVERAGE:	0.7	PPB @ HOUR(S)	9, 19	ON DAY(S)
MAXIMUM 24-HR AVERAGE:	0.3	PPB		ON DAY(S)
				VAR-VARIOUS
IZS CALIBRATION TIME:	29	HRS	OPERATIONAL TIME:	674
MONTHLY CALIBRATION TIME:	4	HRS	AMD OPERATION UPTIME:	93.6
STANDARD DEVIATION:	0.10		MONTHLY AVERAGE:	0.1
				PPB

TRS[ppb] Station: LICA COLD LAKE SOUTH Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— TRS[ppb]



TOTAL REDUCED SULPHUR MAX instantaneous maximum in ppb

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.	
DAY	HOURLY MAX	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
1	1.0	1.1	1.3	1.2	1.2	1.0	1.1	0.9	1.1	1.3	1.1	1.2	1.1	1.0	1.0	1.2	1.1	1.1	1.0	1.1	1.0	1.2	S	1.2	0.9	1.3	1.1	24		
2	1.1	1.1	1.1	1.3	1.2	0.9	1.1	1.2	1.1	1.2	1.2	1.1	1.0	1.3	1.1	1.2	1.1	1.1	1.2	1.1	1.1	S	0.9	0.9	0.9	1.3	1.1	24		
3	1.1	1.0	0.9	0.9	1.2	1.0	0.9	1.2	1.2	1.0	1.2	1.0	1.2	1.3	1.2	1.2	1.1	1.1	1.0	1.0	S	1.3	1.1	1.3	0.9	1.3	1.1	24		
4	1.0	0.9	1.1	1.1	1.0	1.1	1.0	1.2	1.1	1.0	1.2	1.0	1.2	1.4	1.2	1.1	0.9	1.2	1.1	S	1.1	1.3	1.2	1.2	0.9	1.4	1.1	24		
5	1.2	1.2	1.1	1.0	1.1	1.2	1.3	0.9	1.1	1.1	1.0	1.5	1.1	1.1	1.1	1.4	1.1	1.1	S	1.0	1.1	1.1	0.9	0.8	0.8	1.5	1.1	24		
6	0.9	1.1	1.2	1.0	1.2	1.0	1.1	1.1	1.2	1.3	1.0	1.1	1.0	1.0	1.1	1.1	1.1	S	1.0	1.0	1.1	1.1	0.9	1.2	0.9	1.3	1.1	24		
7	1.0	1.0	1.1	1.2	1.4	0.9	1.2	1.2	C	C	C	C	1.2	1.2	1.1	1.1	S	1.2	1.0	1.3	1.2	1.2	1.1	0.9	0.9	1.4	1.1	24		
8	1.1	1.2	1.2	1.0	1.2	1.0	1.3	1.1	1.1	1.3	1.2	1.1	1.1	1.2	1.1	S	1.0	1.0	1.1	1.2	1.4	1.1	1.4	1.1	1.0	1.4	1.2	24		
9	1.1	1.2	1.1	1.3	1.2	1.2	1.4	1.4	1.1	1.2	1.1	1.2	1.1	1.3	S	1.2	1.2	1.1	1.2	1.2	1.1	1.2	1.3	1.2	1.1	1.4	1.2	24		
10	1.0	1.2	0.9	1.2	1.2	1.2	1.0	1.0	1.0	1.0	1.1	1.1	1.2	S	1.0	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.2	1.1	1.2	0.9	1.2	1.1	24	
11	1.1	1.2	1.0	1.3	1.0	1.2	1.1	1.0	1.1	1.0	1.2	1.2	S	1.0	1.2	1.1	1.3	1.3	1.4	1.2	1.2	1.2	1.2	0.9	0.9	1.4	1.1	24		
12	1.0	1.1	1.1	1.1	1.1	1.2	1.2	1.3	1.1	1.2	1.3	S	1.0	1.2	1.1	1.3	0.9	1.1	1.0	1.2	1.1	1.3	1.1	0.9	0.9	1.3	1.1	24		
13	1.0	1.2	1.2	1.2	1.0	1.1	1.2	1.2	1.3	1.2	S	1.1	1.3	1.2	1.0	1.1	1.3	1.2	1.3	1.1	1.2	1.2	1.4	1.1	1.0	1.4	1.2	24		
14	1.2	1.2	1.6	1.2	1.2	1.2	1.1	1.1	1.2	S	1.5	1.2	1.3	1.2	1.5	1.1	1.0	1.0	1.2	1.3	1.4	1.1	1.1	1.4	1.0	1.6	1.2	24		
15	1.1	1.1	0.9	1.1	1.3	1.1	1.2	1.2	S	1.2	1.1	1.3	1.5	1.4	1.1	1.3	1.3	1.2	1.2	1.3	1.0	1.3	1.0	1.0	0.9	1.5	1.2	24		
16	1.1	1.1	1.0	1.2	1.2	1.1	1.2	S	1.2	1.4	1.2	1.3	1.3	1.2	1.1	1.1	1.6	1.2	1.3	1.4	1.1	1.3	1.2	1.2	1.0	1.6	1.2	24		
17	1.2	1.1	1.2	1.2	1.1	1.2	S	1.2	1.2	1.2	1.4	1.2	1.4	1.4	1.1	1.2	1.2	1.2	1.1	1.1	1.2	1.2	1.3	1.2	1.1	1.4	1.2	24		
18	1.3	1.4	1.2	1.2	1.1	S	1.4	1.2	1.2	1.3	1.2	1.2	1.3	1.0	1.2	1.1	1.2	1.5	1.1	1.2	1.1	1.2	1.4	1.2	1.0	1.5	1.2	24		
19	1.3	1.1	1.1	1.3	S	1.2	1.1	1.3	1.5	1.7	1.3	1.4	1.2	1.2	1.3	1.3	1.1	1.4	1.1	1.1	1.2	1.1	1.1	1.2	1.1	1.7	1.2	24		
20	1.5	1.1	1.1	S	1.3	1.2	1.0	1.2	1.2	1.3	1.4	1.4	1.1	1.2	1.2	1.1	1.2	1.3	1.4	1.2	1.0	1.1	1.0	1.0	1.0	1.5	1.2	24		
21	1.2	1.1	S	1.3	1.1	1.0	1.1	1.0	1.2	1.4	1.2	1.2	1.0	1.2	0.9	1.2	1.0	1.1	1.1	1.1	1.1	1.1	1.3	1.2	1.1	0.9	1.4	1.1	24	
22	1.2	S	1.1	1.1	0.9	1.1	1.2	0.9	1.1	1.0	1.4	1.0	1.1	1.1	1.1	1.0	1.3	1.2	1.0	1.0	1.3	1.2	1.1	1.2	0.9	1.4	1.1	24		
23	S	1.3	1.1	1.2	1.2	1.2	1.1	1.2	1.2	1.1	1.2	1.3	1.1	1.3	1.4	1.4	1.1	1.3	1.2	1.3	1.4	1.5	1.5	S	1.1	1.5	1.3	24		
24	1.2	1.5	1.2	1.2	1.1	1.3	2.7	1.2	1.3	1.2	1.2	1.1	1.1	1.1	1.3	1.1	1.2	1.2	1.2	1.2	1.1	1.0	S	1.1	1.0	2.7	1.3	24		
25	1.2	1.3	1.1	1.4	1.2	1.2	1.4	1.3	1.1	1.3	1.2	1.0	1.3	1.1	1.1	1.1	1.1	1.1	1.2	1.1	1.1	1.3	S	1.1	1.2	1.0	1.4	1.2	24	
26	1.1	1.2	1.4	1.3	1.1	1.2	1.1	Q	Q	Q	Q	Q	C1	C1	C1	C1	C1	C1	C1	C1	1.4	S	0.6	0.5	0.4	0.4	1.4	1.0	17	
27	0.6	0.4	0.4	0.7	0.5	0.5	0.6	0.5	0.5	0.6	0.6	0.5	0.4	0.4	0.5	0.5	0.4	0.4	0.4	0.5	S	0.6	0.6	0.5	0.4	0.4	0.7	0.5	24	
28	0.7	0.4	0.5	0.4	0.4	0.5	S1	S1	0.7	0.4	0.4	0.5	0.4	0.4	0.5	0.4	0.4	0.4	S	0.3	0.4	0.5	0.5	0.5	0.3	0.7	0.5	22		
29	0.5	0.6	0.4	0.4	0.7	0.5	0.5	0.5	0.5	C1	C1	C1	C1	C1	C1	X	X	X	X	X	X	X	X	X	X	0.4	0.7	0.5	24	
30	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	24	
HOURLY MAX	1.5	1.5	1.6	1.4	1.4	1.3	2.7	1.4	1.5	1.7	1.5	1.5	1.5	1.4	1.5	1.4	1.6	1.5	1.4	1.4	1.4	1.4	1.5	1.5	1.4					
HOURLY AVG	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.1	1.1	1.1	1.1	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	635
MAXIMUM INSTANTANEOUS VALUE:	2.7 PPB @ HOUR(S) 6 ON DAY(S) 24
	VAR-VARIOUS
IZS CALIBRATION TIME:	29 HRS
MONTHLY CALIBRATION TIME:	4 HRS
STANDARD DEVIATION:	0.24
OPERATIONAL TIME:	673 HRS

TRS MAX[ppb] Station: LICA COLD LAKE SOUTH Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]

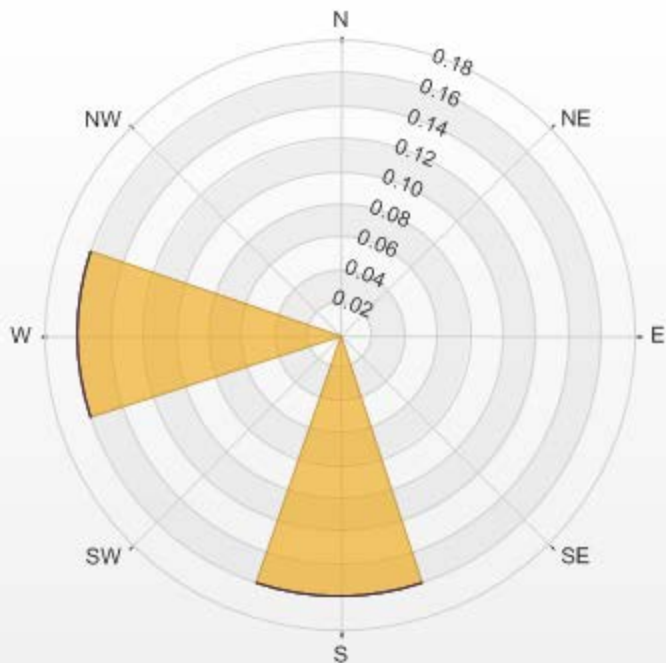


— TRS MAX[ppb]

Wind: LICA COLD LAKE SOUTH Monitor: TRS [ppb] Monthly: 04/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 99.69% Valid Data: 88.33% Calm Avg: 0

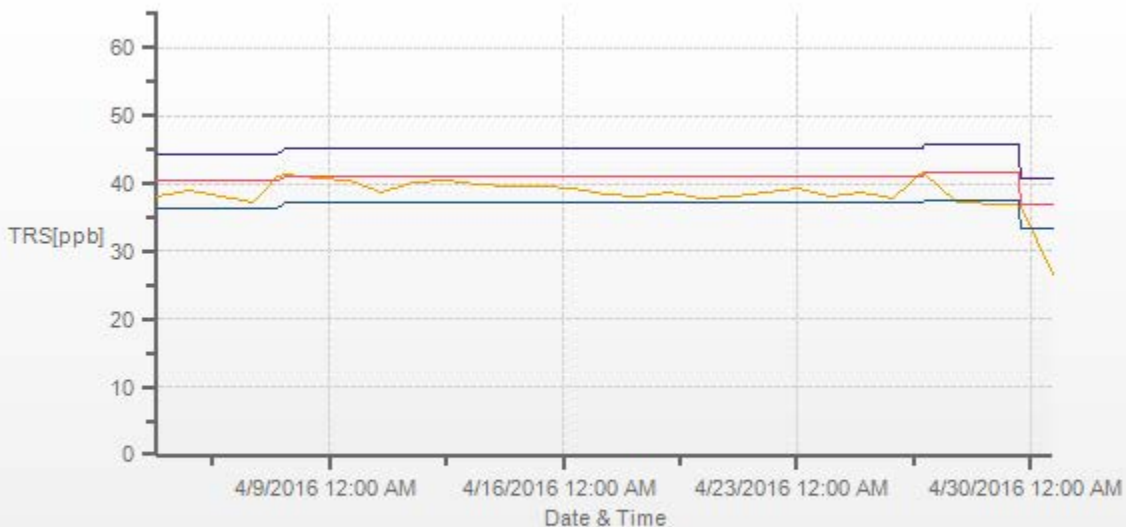
Direction	0.5-3.0	3.0-10.0	10.0-50.0	>50.0	Total
N	0	0	0	0	0
NE	0	0	0	0	0
E	0	0	0	0	0
SE	0	0	0	0	0
S	0.16	0	0	0	0.16
SW	0	0	0	0	0
W	0.16	0	0	0	0.16
NW	0	0	0	0	0
Summary	0.32	0	0	0	0.32

LICA COLD LAKE SOUTH 2016/04/01 12:00 AM - 2016/04/30 11:00 PM Calm: 99.69% Calm Wind Avg Speed: 0.14(ppb)



% Icon Classes (ppb)	0.32	0.5-3.0	0.00	3.0-10.0	0.00	10.0-50.0	0.00	>50.0
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TRS[ppb] Calibration: LICA COLD LAKE SOUTH Monthly: 04/2016 Type: Span



Span Meas

Span Ref

-10%

+10%

TOTAL HYDROCARBON



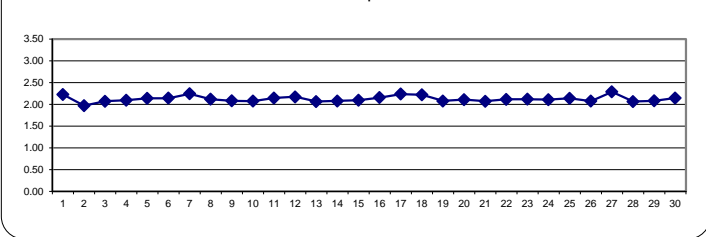
TOTAL HYDROCARBONS (THC) hourly averages in ppm

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
DAY	MIN.	MAX.	AVG.	RDGS.																									
1	2.48	2.38	2.45	2.44	2.48	2.41	2.42	2.50	2.41	2.18	2.03	2.05	2.07	2.04	2.04	2.11	2.11	2.08	2.06	2.09	2.10	2.33	S	1.99	1.99	2.50	2.23	24	
2	2.00	2.06	2.14	2.14	2.23	2.26	2.50	2.22	2.20	1.99	2.05	2.01	1.84	1.81	1.74	1.74	1.70	1.67	1.66	1.81	1.84	S	1.80	1.87	1.66	2.50	1.97	24	
3	1.93	1.98	2.00	2.00	2.05	2.07	2.09	2.14	2.09	2.11	2.07	2.02	2.06	2.08	2.06	2.04	2.03	2.06	2.10	2.10	S	2.12	2.20	2.28	1.93	2.28	2.07	24	
4	2.21	2.15	2.14	2.12	2.12	2.14	2.19	2.21	2.24	2.15	2.10	2.06	2.04	2.06	2.02	1.99	2.00	1.99	2.02	S	2.08	2.10	2.04	2.04	1.99	2.24	2.10	24	
5	2.06	2.05	2.05	2.08	2.08	2.09	2.13	2.16	2.16	2.18	2.15	2.19	2.12	2.08	2.06	2.09	2.12	2.10	S	2.15	2.23	2.22	2.24	2.41	2.05	2.41	2.14	24	
6	2.33	2.30	2.34	2.19	2.09	2.10	2.09	2.04	2.02	2.11	C	C	C	C	2.02	2.03	2.06	S	2.08	2.10	2.12	2.16	2.25	2.27	2.02	2.34	2.14	24	
7	2.30	2.30	2.27	2.27	2.31	2.44	2.47	2.36	2.28	2.28	2.26	2.22	2.22	2.14	2.12	2.12	S	2.13	2.13	2.14	2.16	2.19	2.22	2.29	2.12	2.47	2.24	24	
8	2.30	2.27	2.26	2.25	2.24	2.24	2.24	2.25	2.25	2.27	2.22	2.15	2.09	2.05	2.06	S	2.01	1.95	1.93	1.92	1.95	1.94	1.94	1.93	1.92	2.30	2.12	24	
9	1.95	1.97	1.99	2.01	2.04	2.07	2.07	2.14	2.17	2.15	2.08	2.02	2.04	2.08	S	2.13	2.17	2.15	2.12	2.11	2.12	2.13	2.11	2.10	1.95	2.17	2.08	24	
10	2.11	2.09	2.08	2.08	2.06	2.04	2.05	2.06	2.06	2.08	2.09	2.06	2.03	S	2.03	2.04	2.05	2.05	2.09	2.11	2.10	2.10	2.11	2.13	2.03	2.13	2.07	24	
11	2.12	2.11	2.10	2.14	2.27	2.25	2.33	2.41	2.36	2.25	2.18	2.11	S	2.10	2.07	2.08	2.09	2.09	2.08	2.05	2.01	1.98	2.04	2.13	1.98	2.41	2.15	24	
12	2.20	2.17	2.22	2.21	2.18	2.25	2.30	2.34	2.32	2.34	2.38	S	2.07	2.07	2.06	2.09	2.09	2.08	2.05	2.05	2.14	2.14	2.12	2.09	2.05	2.38	2.17	24	
13	2.09	2.10	2.09	2.09	2.09	2.11	2.11	2.05	2.04	2.07	S	2.08	2.06	2.08	2.07	2.04	2.04	2.02	2.03	2.02	2.00	2.00	2.04	2.11	2.00	2.11	2.06	24	
14	2.20	2.18	2.14	2.12	2.18	2.15	2.14	2.08	2.07	S	1.99	1.99	2.01	2.02	2.02	2.04	2.03	2.01	1.96	1.99	2.08	2.10	2.16	2.12	1.96	2.20	2.08	24	
15	2.14	2.16	2.17	2.22	2.27	2.29	2.27	2.13	S	2.10	2.09	2.01	1.96	1.93	1.93	2.00	2.01	2.02	2.00	2.00	2.08	2.08	2.10	2.16	1.93	2.29	2.09	24	
16	2.18	2.23	2.30	2.31	2.30	2.31	2.35	S	2.23	2.16	2.23	2.10	1.99	2.02	2.02	2.04	2.03	2.02	1.96	2.01	2.20	2.22	2.17	2.20	1.96	2.35	2.16	24	
17	2.32	2.27	2.38	2.45	2.52	2.41	S	2.30	2.35	2.12	2.12	2.20	2.19	2.07	2.04	2.03	2.02	2.03	2.03	1.98	2.10	2.21	2.72	2.59	1.98	2.72	2.24	24	
18	2.25	2.27	2.29	2.37	2.46	S	2.60	2.28	2.35	2.33	2.23	2.21	2.19	2.16	2.14	2.11	2.10	2.08	2.08	2.12	2.15	2.11	2.09	2.10	2.08	2.60	2.22	24	
19	2.08	2.05	2.07	2.12	S	2.21	2.25	2.19	2.29	2.18	2.15	2.12	2.09	2.04	2.01	1.99	1.95	1.94	1.98	2.03	2.02	2.01	2.02	2.00	1.94	2.29	2.08	24	
20	2.07	2.21	2.20	S	2.20	2.17	2.13	2.13	2.12	2.14	2.15	2.14	2.12	2.11	2.12	2.08	2.03	2.02	2.01	2.02	2.04	2.09	2.11	2.12	2.01	2.21	2.11	24	
21	2.15	2.10	S	2.10	2.15	2.22	2.18	2.14	2.05	1.99	2.01	2.02	2.01	2.00	2.03	2.03	2.01	2.03	2.08	2.05	2.06	2.07	2.07	2.07	1.99	2.22	2.07	24	
22	2.06	S	2.06	2.05	2.06	2.08	2.08	2.12	2.11	2.10	2.14	2.16	2.18	2.15	2.18	2.15	2.11	2.14	2.10	2.12	2.13	2.11	2.11	2.10	2.05	2.18	2.11	24	
23	S	2.11	2.09	2.10	2.10	2.08	2.10	2.13	2.13	2.12	2.09	2.09	2.10	2.14	2.16	2.15	2.13	2.12	2.14	2.15	2.14	2.12	2.15	S	2.08	2.16	2.12	24	
24	2.17	2.13	2.08	2.09	2.09	2.10	2.10	2.13	2.13	2.11	2.09	2.11	2.13	2.12	2.11	2.12	2.12	2.08	2.10	2.13	2.14	2.10	S	2.05	2.05	2.17	2.11	24	
25	2.12	2.16	2.19	2.17	2.20	2.17	2.18	2.14	2.14	2.06	2.09	2.12	2.14	2.16	2.14	2.13	2.12	2.15	2.09	2.10	2.13	S	2.12	2.15	2.06	2.20	2.14	24	
26	2.14	2.16	2.13	2.11	2.11	2.07	2.12	Q	Q	Q	2.14	2.07	2.08	2.04	1.96	2.01	1.94	1.94	2.05	2.12	S	2.12	2.09	2.12	1.94	2.16	2.08	24	
27	2.27	2.38	2.48	2.53	2.41	2.39	2.37	2.24	2.17	2.16	2.02	2.04	2.08	2.11	2.14	2.13	2.12	2.19	2.19	S	3.15	2.49	2.29	2.28	2.02	3.15	2.29	24	
28	2.28	2.32	2.38	2.37	2.39	2.42	2.28	2.26	2.03	1.89	1.90	1.86	1.87	1.89	1.92	1.84	1.85	1.82	S	1.95	1.94	2.01	1.96	1.99	1.82	2.42	2.06	24	
29	2.07	2.08	2.07	2.05	2.06	2.04	2.08	2.12	2.10	2.21	2.13	2.13	2.13	2.07	2.07	2.05	2.01	S	2.05	2.05	2.02	2.03	2.08	2.19	2.01	2.21	2.08	24	
30	2.15	2.13	2.17	2.25	2.26	2.23	2.28	2.24	2.26	2.17	2.14	2.16	2.12	2.14	2.12	2.08	S	2.00	2.06	2.03	2.02	2.06	2.13	2.15	2.00	2.28	2.15	24	
HOURLY MAX	2.48	2.38	2.48	2.53	2.52	2.44	2.60	2.50	2.41	2.34	2.38	2.22	2.22	2.16	2.18	2.15	2.17	2.19	2.19	2.15	3.15	2.49	2.72	2.59					
HOURLY AVG	2.16	2.17	2.18	2.19	2.21	2.20	2.22	2.20	2.18	2.14	2.12	2.09	2.07	2.06	2.05	2.05	2.04	2.03	2.04	2.05	2.12	2.12	2.12	2.14					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

24 HOUR AVERAGES FOR April 2016



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	682		
MINIMUM 1-HR AVERAGE:	1.66 PPM	@ HOUR(S)	18 ON DAY(S) 2
MAXIMUM 1-HR AVERAGE:	3.15 PPM	@ HOUR(S)	20 ON DAY(S) 27
MAXIMUM 24-HR AVERAGE:	2.29 PPM		ON DAY(S) 27
			VAR-VARIOUS
IZS CALIBRATION TIME:	31 HRS	OPERATIONAL TIME:	720 HRS
MONTHLY CALIBRATION TIME:	4 HRS	AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	0.13	MONTHLY AVERAGE:	2.12 PPM

THC[ppm] Station: LICA COLD LAKE SOUTH Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— THC[ppm]



TOTAL HYDROCARBONS MAX instantaneous maximum in ppm

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOURLY MAX	HOURLY AVG	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																													
1	5.48	2.91	3.15	3.03	3.32	2.77	2.80	2.86	2.80	2.61	2.36	2.46	2.42	2.36	2.55	2.52	2.43	2.42	2.45	2.55	2.52	3.38	\$	2.34	2.34	2.34	5.48	2.80	2.4
2	2.33	2.51	2.76	2.67	2.83	3.01	3.29	2.63	2.61	2.39	2.49	2.52	2.24	2.22	2.15	2.18	2.15	2.11	2.08	2.22	2.24	\$	2.18	2.27	2.08	3.29	2.44	24	
3	2.33	2.37	2.39	2.55	2.53	2.61	2.64	2.56	2.54	2.53	2.47	2.46	2.46	2.49	2.46	2.43	2.46	2.46	2.55	2.53	\$	2.55	2.73	2.89	2.33	2.89	2.52	24	
4	2.67	2.68	2.58	2.86	2.55	2.58	2.71	2.62	2.64	2.57	2.47	2.43	2.40	2.40	2.39	2.34	2.34	2.36	\$	2.41	2.42	2.40	2.38	2.34	2.86	2.50	24		
5	2.40	2.40	2.40	2.41	2.42	2.43	2.64	2.49	2.46	2.49	2.47	2.64	2.43	2.37	2.35	2.57	2.46	2.38	\$	2.46	2.57	2.52	2.56	2.70	2.35	2.70	2.48	24	
6	2.58	2.52	2.55	2.49	2.27	2.27	2.25	2.21	2.18	2.28	C	C	C	C	2.10	2.08	2.10	\$	2.12	2.13	2.15	2.24	2.31	2.34	2.08	2.58	2.27	24	
7	2.37	2.37	2.36	2.36	2.47	2.62	2.58	2.49	2.37	2.39	2.40	2.67	2.34	2.30	2.24	2.26	\$	2.24	2.31	2.27	2.25	2.25	2.30	2.37	2.24	2.67	2.37	24	
8	2.41	2.34	2.33	2.34	2.32	2.68	2.31	2.29	2.30	2.31	2.21	2.17	2.18	2.12	2.06	\$	2.02	1.94	1.91	1.87	1.90	1.88	1.87	1.87	1.87	2.68	2.16	24	
9	1.89	1.94	1.91	1.94	1.97	2.03	2.00	2.09	2.10	2.12	1.99	1.93	1.94	1.97	\$	2.08	2.12	2.12	2.12	2.11	2.17	2.17	2.15	2.20	1.89	2.20	2.05	24	
10	2.18	2.18	2.19	2.21	2.20	2.21	2.24	2.25	2.27	2.31	2.36	2.30	2.31	\$	2.27	2.27	2.28	2.25	2.31	2.48	2.30	2.30	2.31	2.40	2.18	2.48	2.28	24	
11	2.30	2.27	2.24	2.34	2.52	2.39	4.09	2.52	2.43	2.34	2.23	2.18	\$	2.14	2.12	2.12	2.13	2.13	2.12	2.49	2.03	1.97	2.06	2.31	1.97	4.09	2.32	24	
12	2.18	2.17	2.24	2.21	2.22	2.40	2.34	2.34	2.31	2.31	2.40	\$	2.08	2.06	2.05	2.08	2.06	2.06	2.22	2.03	2.11	2.12	2.08	2.06	2.03	2.40	2.18	24	
13	2.06	2.13	2.05	2.03	2.06	2.06	2.06	2.03	2.02	2.02	\$	2.05	2.02	2.06	2.31	2.00	2.02	1.99	2.00	1.97	1.97	1.97	2.00	2.09	1.97	2.31	2.04	24	
14	2.15	2.15	2.12	2.12	2.13	2.15	2.11	2.09	2.06	\$	2.00	2.02	2.06	2.06	2.08	2.11	2.12	2.09	2.08	2.12	2.36	2.27	2.32	2.34	2.00	2.36	2.14	24	
15	2.36	2.39	2.43	2.46	2.61	2.61	2.52	2.54	\$	2.34	2.34	2.27	2.21	2.52	2.21	2.28	2.26	2.56	2.25	2.34	2.40	2.36	2.33	2.43	2.21	2.61	2.39	24	
16	2.45	2.55	2.58	2.84	2.55	2.55	2.59	\$	2.54	2.42	2.56	2.37	2.30	2.31	2.30	2.31	2.30	2.29	2.25	2.37	2.52	2.55	2.46	2.48	2.25	2.84	2.45	24	
17	2.64	2.62	2.65	2.86	2.95	2.76	\$	2.59	2.62	2.43	2.40	2.67	2.48	2.37	2.30	2.31	2.28	2.30	2.31	2.31	2.77	2.58	3.20	2.93	2.28	3.20	2.58	24	
18	2.58	2.62	2.61	2.67	3.01	\$	3.27	2.58	2.64	3.21	2.54	2.55	2.46	2.42	2.40	2.34	2.37	2.31	2.30	2.36	2.39	2.34	2.33	2.34	2.30	3.27	2.55	24	
19	2.33	2.27	2.21	2.27	\$	2.37	2.37	2.39	2.58	2.39	2.34	2.52	2.30	2.41	2.18	2.16	2.15	2.10	2.18	2.21	2.27	2.17	2.20	2.12	2.10	2.58	2.28	24	
20	2.24	2.43	2.44	\$	2.40	2.37	2.30	2.32	2.33	2.34	2.34	2.36	2.37	2.43	2.59	2.34	2.31	2.31	2.34	2.34	2.40	2.41	2.43	2.50	2.24	2.59	2.38	24	
21	2.54	2.51	\$	2.55	2.55	2.65	2.54	2.47	2.47	2.32	2.32	2.31	2.28	2.28	2.30	2.31	2.27	2.25	2.31	2.29	2.30	2.28	2.27	2.30	2.25	2.65	2.38	24	
22	2.25	\$	2.27	2.29	2.46	2.55	2.31	2.34	2.34	2.27	2.43	2.36	2.36	2.31	2.34	2.31	2.25	2.31	2.30	2.27	2.25	2.27	2.24	2.24	2.24	2.55	2.32	24	
23	\$	2.30	2.28	2.24	2.46	2.21	2.24	2.31	2.30	2.31	2.21	2.27	2.25	2.29	2.28	2.29	2.28	2.24	2.28	2.28	2.27	2.30	2.31	\$	2.21	2.46	2.28	24	
24	2.31	2.28	2.20	2.24	2.20	2.20	2.29	2.33	2.25	2.23	2.21	2.21	2.25	2.23	2.24	2.25	2.30	2.25	2.21	2.31	2.33	2.27	\$	2.15	2.15	2.33	2.25	24	
25	2.27	2.29	2.28	2.28	2.56	2.31	3.76	2.27	2.27	2.18	2.21	2.25	2.27	2.28	2.28	2.31	2.27	2.36	2.22	2.27	\$	2.26	2.30	2.18	3.76	2.35	2.32	24	
26	2.30	2.33	2.31	2.28	2.30	2.24	2.31	Q	Q	Q	2.36	2.24	2.36	2.27	2.15	2.24	2.33	2.24	2.43	2.58	\$	2.36	2.40	2.43	2.15	2.58	2.32	24	
27	2.68	2.61	2.72	2.95	2.68	2.80	2.68	2.55	2.41	2.44	2.29	2.34	2.37	2.41	2.47	2.44	2.41	3.63	3.11	\$	4.72	3.17	2.94	2.86	2.29	4.72	2.77	24	
28	2.74	2.82	2.89	2.82	2.86	2.99	2.80	2.77	2.60	2.40	2.38	2.35	2.38	2.39	2.43	2.34	2.36	2.43	\$	2.36	2.27	2.34	2.33	2.32	2.27	2.99	2.54	24	
29	2.37	2.40	2.42	2.32	2.34	2.32	2.61	2.37	2.43	2.50	2.49	2.37	2.39	2.31	2.32	2.37	2.24	\$	2.30	2.30	2.32	2.29	2.34	2.43	2.24	2.61	2.37	24	
30	2.43	2.40	2.46	2.56	2.50	2.58	2.55	2.52	2.57	2.50	2.50	2.49	2.44	2.52	2.50	2.41	\$	2.37	2.39	2.36	2.37	2.34	2.42	2.44	2.34	2.58	2.46	24	
HOURLY MAX	5.48	2.91	3.15	3.03	3.32	3.01	4.09	2.86	2.80	3.21	2.56	2.67	2.48	2.52	2.59	2.57	2.46	3.63	3.11	2.58	4.72	3.38	3.20	2.93					
HOURLY AVG	2.48	2.41	2.41	2.45	2.49	2.47	2.59	2.42	2.41	2.39	2.35	2.35	2.30	2.30	2.29	2.28	2.25	2.30	2.28	2.29	2.39	2.36	2.35	2.37					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	682
MAXIMUM INSTANTANEOUS VALUE:	5.48 PPM @ HOUR(S) 0 ON DAY(S) 1
	VAR-VARIOUS
IZS CALIBRATION TIME:	31 HRS
MONTHLY CALIBRATION TIME:	4 HRS
STANDARD DEVIATION:	0.29
OPERATIONAL TIME:	720 HRS

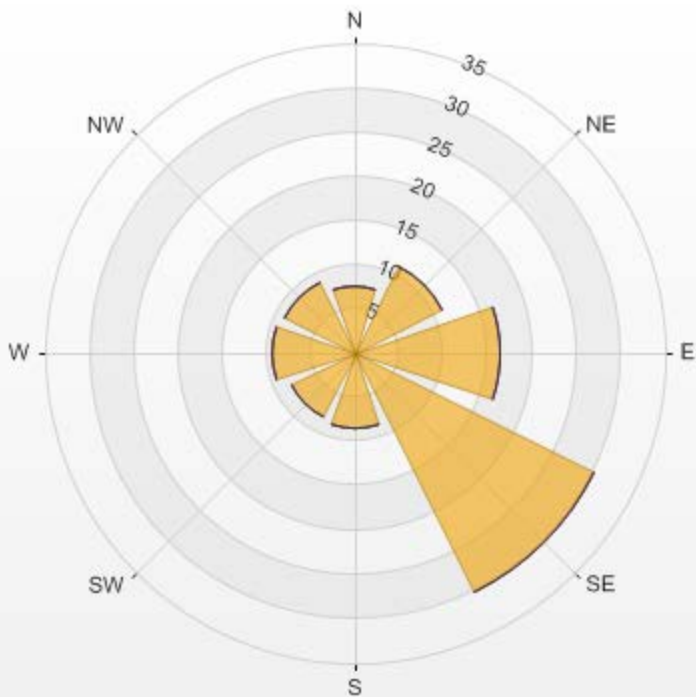
THC MAX[ppm] Station: LICA COLD LAKE SOUTH Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



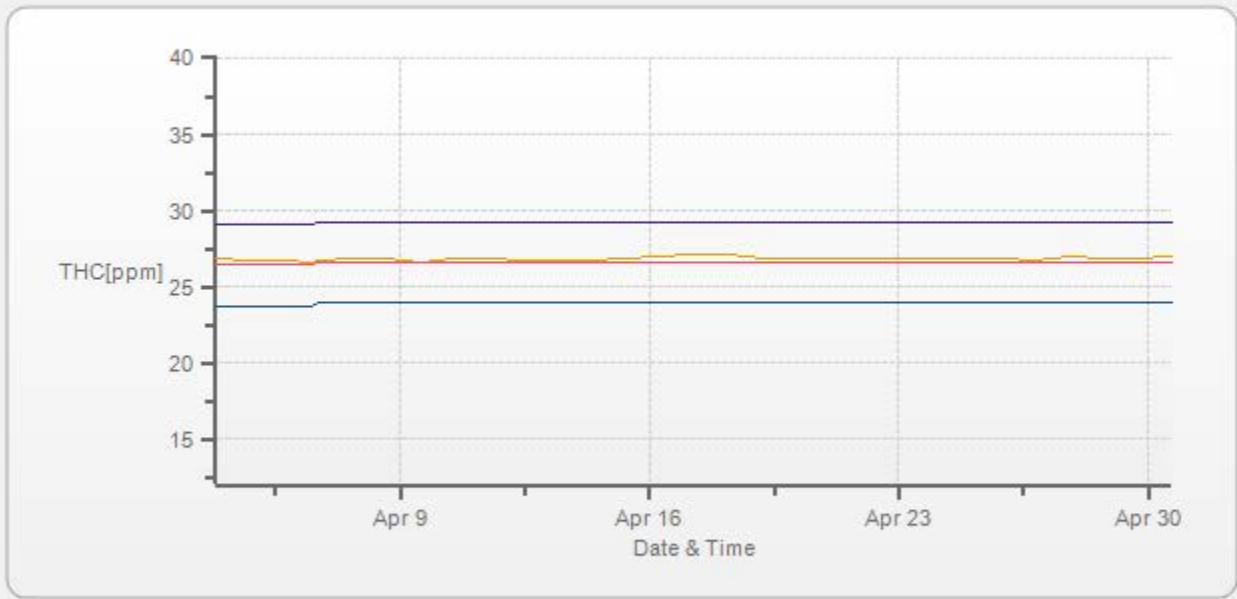
— THC MAX[ppm]

Wind: LICA COLD LAKE SOUTH Monitor: THC [ppm] Monthly: 04/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.72% Calm Avg: 0.00

Direction	0.5-3.0	3.0-10.0	10.0-50.0	>50.0	Total
N	7.48	0	0	0	7.48
NE	11	0	0	0	11
E	16.42	0	0	0	16.42
SE	30.21	0	0	0	30.21
S	8.5	0	0	0	8.5
SW	8.06	0	0	0	8.06
W	9.38	0	0	0	9.38
NW	8.94	0	0	0	8.94
Summary	100	0	0	0	100



THC[ppm] Calibration: LICA COLD LAKE SOUTH Monthly: 04/2016 Type: Span



Span Meas Span Ref -10% +10%

OXIDES OF NITROGEN

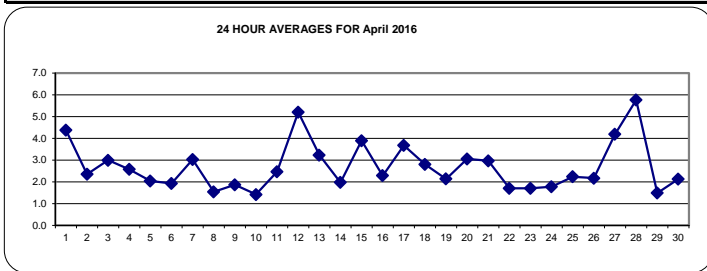
OXIDES OF NITROGEN (NOx) hourly averages in ppb

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
DAY	MIN.	MAX.	AVG.	RDGS.																									
1	2.9	2.1	3.2	2.7	5.4	6.3	7.4	10.3	9.5	5.3	3.4	4.4	2.2	1.5	1.4	1.7	1.7	1.7	3.5	6.2	8.1	8.5	S	1.3	1.3	10.3	4.4	24	
2	0.9	0.8	1.2	2.0	1.9	1.8	3.0	3.7	5.1	5.2	6.3	6.2	3.5	2.2	1.4	1.5	1.0	0.5	0.8	1.6	1.2	S	1.7	0.6	0.5	6.3	2.4	24	
3	0.7	0.8	0.6	0.7	2.0	3.1	2.7	3.7	2.7	3.7	2.6	1.7	1.3	1.3	1.5	1.5	1.4	2.6	3.0	3.8	S	7.4	9.5	10.5	0.6	10.5	3.0	24	
4	4.9	1.1	2.6	1.7	5.9	5.6	6.0	2.5	2.0	1.9	1.4	1.4	1.3	1.9	2.5	1.9	1.8	2.1	2.4	S	2.3	2.3	2.2	1.5	1.1	6.0	2.6	24	
5	1.1	1.0	1.3	1.4	2.6	2.0	3.3	6.7	2.3	1.6	1.3	1.1	1.1	1.2	1.4	1.3	1.3	S	2.8	3.0	3.5	2.1	2.4	1.0	6.7	2.0	24		
6	2.3	2.0	2.7	2.7	2.1	2.4	1.6	1.2	0.8	0.6	C	C	C	C	1.1	1.1	S	1.1	1.1	2.6	3.6	3.1	2.5	0.6	3.6	1.9	24		
7	1.6	1.0	1.4	1.7	2.6	4.5	7.2	3.8	3.2	2.4	2.6	3.5	2.6	1.7	1.6	1.5	S	2.0	5.8	6.0	5.2	3.9	1.9	2.0	1.0	7.2	3.0	24	
8	2.3	1.9	1.8	1.8	2.2	2.1	1.8	1.3	1.2	1.4	1.3	1.1	1.2	1.1	1.0	S	1.3	1.1	1.2	1.8	1.2	1.4	2.2	1.6	1.0	2.3	1.5	24	
9	1.5	1.9	2.5	2.0	1.3	3.2	2.9	3.7	3.2	3.1	2.0	2.0	2.1	1.8	S	1.8	1.0	0.7	0.6	0.7	1.4	1.4	1.3	0.6	3.7	1.9	24		
10	1.3	1.0	1.0	0.9	1.0	1.1	1.0	0.9	0.8	1.0	1.2	0.9	1.0	S	1.3	1.3	1.4	1.2	1.9	2.9	2.1	2.1	1.8	3.5	0.8	3.5	1.4	24	
11	2.7	1.7	1.2	2.1	3.6	4.2	4.9	3.2	2.7	2.5	1.6	1.5	S	1.7	1.7	1.3	1.7	1.8	2.6	2.7	2.3	1.6	3.2	4.3	1.2	4.9	2.5	24	
12	5.6	3.2	3.2	7.3	4.8	11.3	22.1	8.3	5.1	6.1	5.7	S	2.4	2.0	1.5	2.2	1.9	3.1	7.1	6.4	3.3	2.1	2.3	2.8	1.5	22.1	5.2	24	
13	2.6	3.2	2.8	4.7	3.6	6.2	4.8	3.5	2.1	1.1	S	1.4	1.3	4.7	3.5	1.9	2.0	1.7	5.7	4.6	2.8	2.4	4.3	3.3	1.1	6.2	3.2	24	
14	4.2	3.6	3.0	3.0	3.0	2.9	2.5	1.4	1.7	S	1.5	0.9	0.8	0.6	0.6	1.1	1.5	1.5	1.5	1.6	1.1	1.6	3.6	2.1	0.6	4.2	2.0	24	
15	2.5	3.3	3.7	4.0	6.9	9.4	10.0	10.4	S	1.9	1.8	1.6	1.5	1.9	2.2	1.9	2.3	3.3	6.1	8.6	1.3	1.7	1.2	1.2	1.2	10.4	3.9	24	
16	1.5	2.0	4.1	4.3	2.9	2.8	2.5	S	2.9	2.2	2.0	1.5	1.5	1.3	1.2	1.3	1.2	1.2	1.7	2.7	4.2	2.8	2.1	2.6	1.2	4.3	2.3	24	
17	2.4	2.0	3.5	10.3	10.2	4.2	S	2.7	2.5	1.9	1.7	2.0	1.6	1.3	1.0	1.0	1.0	1.1	1.3	2.4	3.9	4.4	13.8	8.3	1.0	13.8	3.7	24	
18	2.8	3.2	3.8	4.7	7.2	S	16.8	3.8	3.1	2.8	1.6	1.2	1.3	1.1	1.0	1.0	1.3	0.7	0.8	0.8	1.4	1.5	1.3	1.3	0.7	16.8	2.8	24	
19	1.3	1.2	1.3	1.4	S	2.4	3.0	3.3	3.7	3.3	2.6	2.3	1.9	1.8	1.7	1.3	1.2	0.8	1.2	2.3	4.1	3.2	1.9	1.9	0.8	4.1	2.1	24	
20	2.7	3.3	3.7	S	7.7	6.6	3.3	1.7	1.1	1.5	3.3	1.9	1.7	11.3	2.6	1.3	1.0	1.1	1.6	2.8	2.9	3.4	2.1	1.7	1.0	11.3	3.1	24	
21	2.1	3.0	S	3.7	9.4	13.8	8.8	2.2	1.5	1.7	1.5	2.1	3.8	1.5	1.1	1.0	0.9	1.6	1.2	1.4	2.3	1.1	1.1	1.3	0.9	13.8	3.0	24	
22	1.2	S	1.5	3.8	2.2	3.1	2.3	2.7	1.9	1.5	1.4	1.2	1.2	1.1	1.7	1.7	1.4	1.3	1.9	0.8	1.3	1.1	1.3	1.4	0.8	3.8	1.7	24	
23	S	1.1	1.5	1.9	2.1	2.0	1.9	1.7	2.4	1.7	1.6	1.8	0.9	1.3	1.4	0.8	0.7	0.6	1.0	1.2	2.2	2.1	5.6	S	0.6	5.6	1.7	24	
24	5.5	1.3	0.6	0.8	0.6	1.3	3.4	2.6	1.1	1.0	0.6	0.8	0.9	1.6	0.9	1.3	1.9	2.5	2.7	2.8	3.2	1.8	S	1.5	0.6	5.5	1.8	24	
25	3.3	3.8	2.4	2.0	4.2	2.5	4.6	4.4	3.1	2.8	1.6	1.7	1.0	0.9	1.0	1.2	1.1	1.1	1.3	1.5	1.5	S	2.6	1.8	0.9	4.6	2.2	24	
26	1.7	2.4	1.5	1.5	1.8	1.2	2.1	Q	Q	Q	Q	1.9	2.0	1.8	1.8	1.8	1.7	1.8	1.9	S	7.1	3.2	2.2	1.2	7.1	2.2	24		
27	3.3	6.5	6.2	6.1	6.5	10.1	3.7	3.9	3.1	2.3	2.0	1.7	1.1	1.7	3.4	1.7	1.3	1.1	1.2	S	5.8	7.5	8.5	7.8	1.1	10.1	4.2	24	
28	7.8	6.8	6.1	9.7	11.6	13.8	15.4	31.1	10.6	2.0	1.0	1.0	0.7	0.9	1.2	1.3	1.2	0.9	S	3.6	1.9	1.4	1.3	1.4	0.7	31.1	5.8	24	
29	1.6	1.5	1.4	1.5	2.3	2.4	2.4	2.0	1.7	1.7	0.9	0.8	0.8	1.0	1.1	0.9	0.9	S	1.3	1.6	2.1	1.7	1.3	1.2	0.8	2.4	1.5	24	
30	1.4	1.3	1.9	4.1	3.0	3.8	2.9	2.9	2.6	1.9	1.4	2.0	1.7	1.5	1.5	1.5	S	1.5	1.5	1.3	2.3	2.1	2.3	2.6	1.3	4.1	2.1	24	
HOURLY MAX	7.8	6.8	6.2	10.3	11.6	13.8	22.1	31.1	10.6	6.1	6.3	6.2	3.8	11.3	3.5	2.2	2.0	3.1	7.1	6.4	8.6	8.5	13.8	10.5					
HOURLY AVG	2.6	2.3	2.5	3.3	4.2	4.7	5.3	4.6	3.0	2.4	2.1	1.8	1.6	1.9	1.6	1.4	1.4	1.5	2.2	2.7	3.0	3.0	3.2	2.7					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

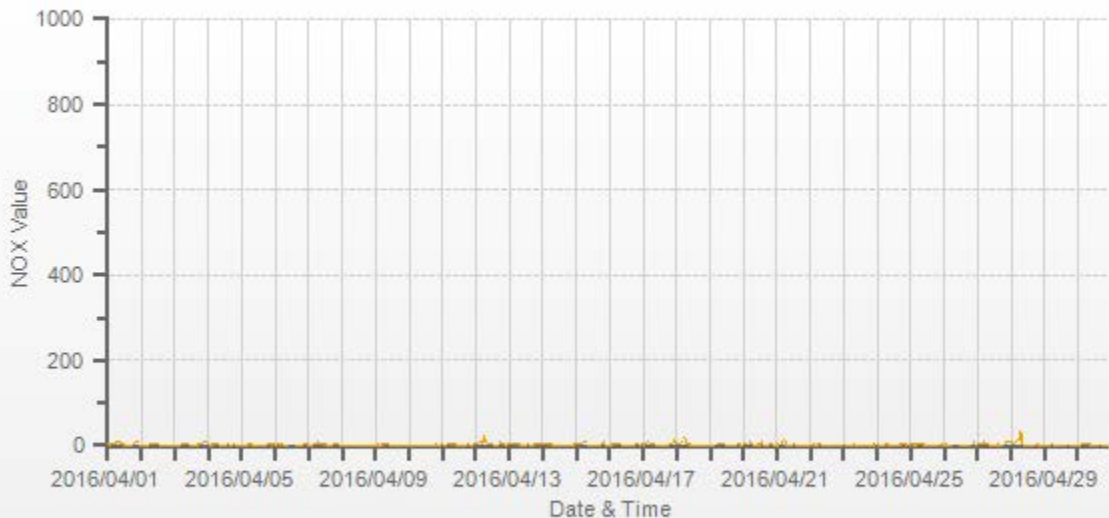
24 HOUR AVERAGES FOR April 2016



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	680		
MINIMUM 1-HR AVERAGE:	0.5	PPB @ HOUR(S)	17 ON DAY(S) 2
MAXIMUM 1-HR AVERAGE:	31.1	PPB @ HOUR(S)	7 ON DAY(S) 28
MAXIMUM 24-HR AVERAGE:	5.8	PPB	ON DAY(S) 28
			VAR-VARIOUS
IZS CALIBRATION TIME:	31	HRS	OPERATIONAL TIME: 720 HRS
MONTHLY CALIBRATION TIME:	5	HRS	AMD OPERATION UPTIME: 100.0 %
STANDARD DEVIATION:	2.58		MONTHLY AVERAGE: 2.7 PPB

NOX[ppb] Station: LICA COLD LAKE SOUTH Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— NOX[ppb]



OXIDES OF NITROGEN MAX instantaneous maximum in ppb

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.	
DAY																														
1		3.6	4.6	9.2	7.9	10.8	10.0	54.7	12.3	12.2	9.5	5.8	10.7	4.0	2.1	1.9	15.3	2.3	2.3	22.4	24.5	10.5	17.7	S	2.3	1.9	54.7	11.2	24	
2		1.7	2.2	4.3	6.8	5.3	3.8	6.3	5.5	6.7	6.6	7.8	15.1	5.8	5.1	1.9	2.3	1.9	1.1	2.4	2.4	2.8	S	4.2	1.2	1.1	15.1	4.5	24	
3		3.2	1.7	2.8	4.2	4.2	4.5	5.0	5.1	4.1	6.4	3.6	2.5	2.2	1.8	2.2	2.2	2.4	5.2	6.5	9.0	S	12.2	15.9	15.6	1.7	15.9	5.3	24	
4		8.3	2.4	6.1	12.9	15.7	10.4	18.2	4.0	3.3	6.0	2.4	4.6	3.1	10.5	5.8	4.1	4.9	3.6	4.5	S	5.1	5.8	4.3	4.6	2.4	18.2	6.5	24	
5		2.8	2.7	4.1	4.1	7.5	3.2	6.8	24.1	10.0	4.1	2.6	3.3	4.6	6.0	2.9	8.3	3.2	2.8	S	6.3	6.3	9.3	3.3	5.1	2.6	24.1	5.8	24	
6		3.6	2.6	5.6	3.8	4.1	4.5	2.3	2.3	2.2	1.7	C	C	C	C	C	2.1	1.8	S	1.7	2.4	5.7	7.3	8.8	5.8	1.7	8.8	3.8	24	
7		2.7	2.0	3.3	6.5	6.4	6.4	31.0	9.9	4.7	4.6	7.9	9.5	4.6	3.7	2.3	2.4	S	3.6	34.4	14.2	17.3	11.3	5.4	4.1	2.0	34.4	8.6	24	
8		4.9	4.0	4.5	2.9	6.6	5.7	11.6	3.1	3.2	2.8	2.2	3.2	19.9	8.7	6.7	S	4.0	2.1	2.7	24.7	2.2	2.3	8.3	3.7	2.1	24.7	6.1	24	
9		3.5	5.8	5.8	3.8	4.0	6.2	5.1	4.9	3.7	3.6	2.4	2.3	2.7	2.3	S	2.7	1.5	1.5	0.9	1.0	1.0	2.2	2.6	1.7	0.9	6.2	3.1	24	
10		1.8	1.5	1.5	1.4	1.5	1.8	1.8	2.7	1.1	3.8	10.9	2.9	2.4	S	3.4	4.5	3.3	3.0	3.5	10.3	6.2	5.7	16.6	8.6	1.1	16.6	4.4	24	
11		8.8	4.1	3.8	16.6	14.1	16.4	12.9	6.2	31.1	37.3	7.5	5.1	S	4.1	11.6	2.0	23.7	4.4	14.2	10.2	5.0	4.5	12.7	13.3	2.0	37.3	11.7	24	
12		12.4	10.7	9.3	14.1	14.1	27.0	45.1	15.5	6.4	11.2	12.1	S	8.2	18.0	14.6	3.5	9.6	8.8	71.9	16.0	8.3	3.5	4.5	17.7	3.5	71.9	15.8	24	
13		17.7	7.6	7.8	46.8	7.5	19.7	21.3	10.3	4.9	1.8	S	3.4	2.1	8.1	5.7	2.9	4.2	8.4	8.6	6.7	3.4	4.0	7.5	5.8	1.8	46.8	9.4	24	
14		7.6	7.8	5.8	5.9	5.3	5.4	4.5	2.9	2.6	S	3.2	1.1	1.2	1.0	1.4	3.7	2.2	2.3	5.8	3.1	2.2	10.2	10.1	5.2	1.0	10.2	4.4	24	
15		9.3	12.1	6.8	7.6	18.6	19.7	16.8	63.2	S	8.5	5.0	4.1	6.9	3.6	3.6	4.5	5.5	19.4	10.1	19.9	23.9	2.8	3.5	2.4	2.4	63.2	12.1	24	
16		3.0	8.1	10.5	9.4	7.0	4.1	3.5	S	4.6	5.8	2.4	3.5	2.4	1.5	1.5	6.9	2.0	3.9	12.3	7.3	8.4	4.5	3.7	4.1	1.5	12.3	5.2	24	
17		4.2	3.3	6.9	30.1	19.1	11.7	S	3.5	4.2	2.7	2.1	14.3	2.7	2.6	1.4	1.3	2.2	1.5	1.9	6.3	15.4	15.4	20.4	9.2	1.3	30.1	7.9	24	
18		5.1	6.1	13.2	10.4	32.4	S	31.9	5.1	4.5	4.6	10.5	2.0	3.4	5.8	2.8	4.8	24.0	0.9	3.7	1.1	2.7	4.5	1.7	1.7	0.9	32.4	8.0	24	
19		1.5	1.7	1.5	1.5	S	2.8	4.2	4.9	5.4	8.7	3.4	11.4	5.4	5.2	2.3	1.8	4.3	1.1	2.2	4.1	7.1	4.9	2.8	2.4	1.1	11.4	3.9	24	
20		3.7	5.2	5.0	S	10.0	8.9	5.0	3.8	2.4	4.5	21.5	6.6	3.7	96.4	30.4	4.6	9.2	3.3	7.1	9.9	4.9	9.6	6.3	4.6	2.4	96.4	11.6	24	
21		3.8	7.2	S	10.9	20.2	53.0	19.7	9.1	9.1	8.5	7.2	11.3	41.8	31.4	4.4	6.5	4.7	5.6	2.2	2.6	10.2	2.2	2.5	4.1	2.2	53.0	12.1	24	
22		4.0	S	3.7	25.6	12.8	5.9	4.1	22.8	17.0	6.4	3.6	3.4	4.8	4.7	7.9	5.4	5.4	2.5	49.4	2.5	6.5	2.8	2.0	3.3	2.0	49.4	9.0	24	
23		S	4.0	3.3	5.6	31.9	4.1	3.6	3.0	19.6	4.1	6.1	12.4	2.6	7.0	17.5	2.0	4.1	1.1	12.5	16.3	16.2	18.7	9.7	S	1.1	31.9	9.3	24	
24		9.9	4.6	1.5	1.9	2.8	8.2	5.5	5.5	4.1	7.1	4.4	2.1	3.9	12.0	3.2	3.1	3.5	3.7	4.9	11.0	13.9	4.1	S	3.7	1.5	13.9	5.4	24	
25		16.4	9.9	5.2	6.5	13.8	5.2	10.2	12.7	3.9	21.0	9.1	5.5	2.3	4.3	8.9	5.2	4.8	2.8	3.6	3.1	2.4	S	4.1	4.4	2.3	21.0	7.2	24	
26		3.8	7.3	2.6	2.7	2.7	1.8	4.0	Q	Q	Q	Q	Q	Q	6.1	5.1	5.7	3.1	4.5	2.6	10.3	9.1	S	24.1	7.0	3.3	1.8	24.1	5.9	24
27		11.4	20.9	19.3	16.8	26.8	28.2	5.0	6.9	7.4	2.8	3.6	15.5	1.3	12.5	67.0	19.3	5.0	1.9	2.9	S	21.5	15.9	15.1	12.3	1.3	67.0	14.8	24	
28		11.7	13.2	9.1	18.7	28.7	21.0	25.8	39.6	30.7	11.1	3.2	8.8	1.2	5.5	2.1	10.2	11.2	1.6	S	64.1	3.1	2.4	7.9	1.7	1.2	64.1	14.5	24	
29		2.1	2.8	2.1	2.8	4.7	6.0	13.9	3.3	2.1	12.1	4.7	2.9	1.3	1.8	3.8	3.7	2.9	S	1.8	2.4	9.4	2.7	2.3	2.5	1.3	13.9	4.1	24	
30		2.6	2.0	4.6	14.0	5.1	7.0	4.5	4.3	4.3	2.9	2.1	5.5	3.3	2.3	2.4	2.8	S	2.0	1.9	1.8	5.4	3.4	2.9	2.9	1.8	14.0	3.9	24	
HOURLY MAX		17.7	20.9	19.3	46.8	32.4	53.0	54.7	63.2	31.1	37.3	21.5	15.5	41.8	96.4	67.0	19.3	24.0	19.4	71.9	64.1	23.9	24.1	20.4	17.7					
HOURLY AVG		6.0	5.8	5.8	10.4	11.9	10.8	13.3	10.6	7.7	7.5	5.8	6.4	5.5	9.8	8.0	4.9	5.7	3.7	10.9	10.4	8.1	7.6	7.0	5.4					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	679
MAXIMUM INSTANTANEOUS VALUE:	96.4 PPB @ HOUR(S) 13 ON DAY(S) 20
	VAR-VARIOUS
IZS CALIBRATION TIME:	31 HRS
MONTHLY CALIBRATION TIME:	5 HRS
STANDARD DEVIATION:	9.33
OPERATIONAL TIME:	720 HRS

NOX MAX[ppb] Station: LICA COLD LAKE SOUTH Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]

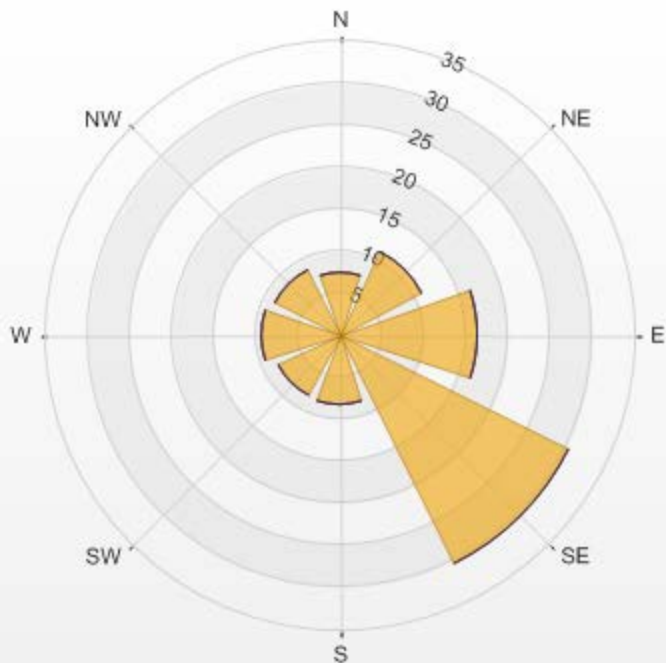


— NOX MAX[ppb]

Wind: LICA COLD LAKE SOUTH Monitor: NOX [ppb] Monthly: 04/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.15% Valid Data: 94.44% Calm Avg: 0.00

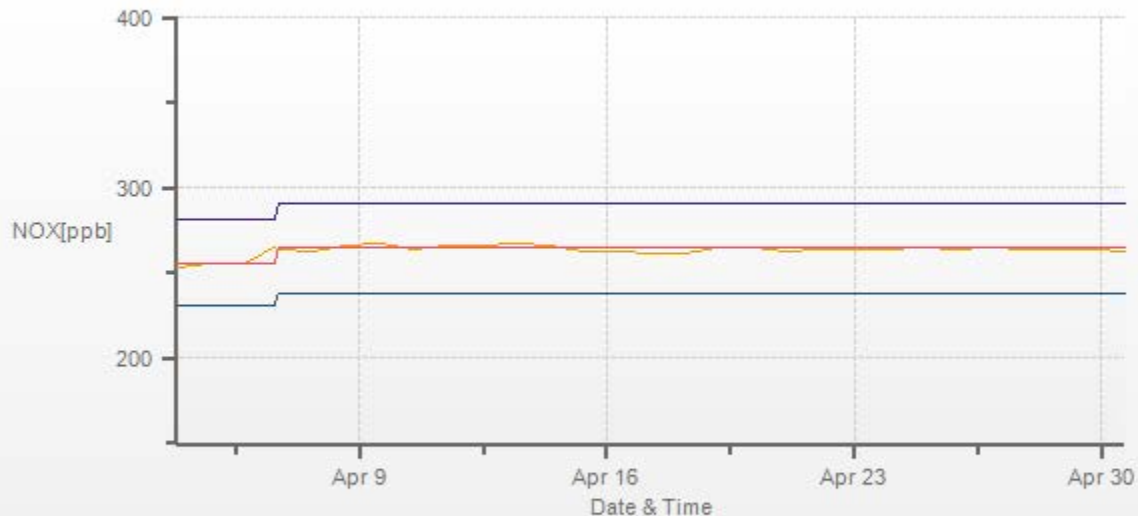
Direction	0.5-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	7.5	0	0	0	7.5
NE	11.03	0	0	0	11.03
E	16.47	0	0	0	16.47
SE	30.29	0	0	0	30.29
S	8.38	0	0	0	8.38
SW	8.09	0	0	0	8.09
W	9.41	0	0	0	9.41
NW	8.68	0	0	0	8.68
Summary	100	0	0	0	100

LICA COLD LAKE SOUTH 2016/04/01 12:00 AM - 2016/04/30 11:00 PM Calm: 0.15% Calm Wind Avg Speed: 0.47(ppb)



% Icon Classes (ppb) 100 0.5-50.0 0 50.0-110.0 0 110.0-210.0 0 >210.0

NOX[ppb] Calibration: LICA COLD LAKE SOUTH Monthly: 04/2016 Type: Span



Span Meas

Span Ref

-10%

+10%

NITRIC OXIDES

NITRIC OXIDE (NO) hourly averages in ppb

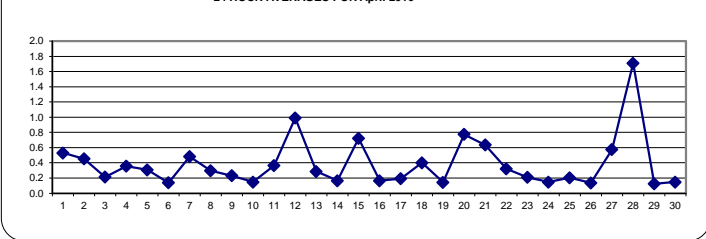
MST

DAY	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.	
1	0.0	0.1	0.1	0.1	0.2	0.2	1.0	1.6	2.0	1.4	1.0	1.5	0.6	0.3	0.3	0.4	0.2	0.2	0.3	0.3	0.1	0.2	S	0.1	0.0	2.0	0.5	24	
2	0.1	0.0	0.1	0.2	0.1	0.0	0.3	0.8	1.5	1.6	2.0	1.9	0.7	0.4	0.2	0.2	0.1	0.0	0.0	0.1	S	0.1	0.0	0.0	0.0	2.0	0.5	24	
3	0.0	0.1	0.0	0.0	0.1	0.1	0.2	0.4	0.2	0.4	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.4	0.3	0.4	S	0.2	0.3	0.5	0.0	0.5	0.2	24	
4	0.1	0.1	0.1	0.2	0.6	0.7	0.9	0.5	0.5	0.6	0.3	0.2	0.2	0.4	0.5	0.4	0.4	0.3	0.2	S	0.2	0.3	0.3	0.2	0.1	0.9	0.4	24	
5	0.1	0.1	0.2	0.2	0.5	0.1	0.4	1.9	0.4	0.4	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.2	S	0.3	0.2	0.2	0.1	0.1	0.1	1.9	0.3	24	
6	0.1	0.0	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.1	C	C	C	C	C	0.1	0.2	S	0.1	0.0	0.1	0.4	0.1	0.1	0.0	0.4	0.1	24	
7	0.1	0.0	0.0	0.1	0.2	0.1	1.2	0.9	0.9	0.7	0.9	1.2	0.8	0.4	0.3	0.2	S	0.2	0.7	0.6	0.5	0.5	0.3	0.3	0.0	1.2	0.5	24	
8	0.3	0.3	0.2	0.3	0.3	0.2	0.4	0.3	0.3	0.4	0.3	0.3	0.2	1.1	0.2	S	0.1	0.2	0.1	0.6	0.1	0.1	0.3	0.2	0.1	1.1	0.3	24	
9	0.1	0.2	0.2	0.1	0.1	0.2	0.2	0.5	0.7	1.1	0.6	0.4	0.4	0.2	S	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.2	24	
10	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.4	0.2	0.2	S	0.2	0.2	0.3	0.2	0.2	0.0	0.1	0.1	0.3	0.4	0.0	0.4	0.1	24	
11	0.3	0.2	0.1	0.2	0.2	0.4	0.7	1.0	0.8	0.7	0.4	0.3	S	0.4	0.4	0.2	0.4	0.2	0.6	0.2	0.1	0.2	0.2	0.2	0.1	1.0	0.4	24	
12	0.2	0.1	0.2	0.3	0.2	2.1	7.5	2.5	1.5	2.0	1.8	S	0.4	0.5	0.2	0.4	0.2	0.3	1.6	0.4	0.1	0.1	0.0	0.2	0.0	7.5	1.0	24	
13	0.2	0.1	0.2	0.6	0.3	0.6	0.7	0.7	0.3	0.1	S	0.1	0.1	0.6	0.4	0.2	0.3	0.1	0.2	0.1	0.1	0.1	0.3	0.2	0.1	0.7	0.3	24	
14	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	S	0.2	0.1	0.1	0.0	0.1	0.1	0.2	0.3	0.2	0.3	0.1	0.0	0.1	0.0	0.1	0.0	0.3	0.2	24
15	0.1	0.2	0.1	0.2	1.1	1.8	3.3	4.4	S	0.3	0.4	0.4	0.4	0.5	0.4	0.4	0.6	0.4	0.4	0.5	0.1	0.1	0.1	0.1	0.1	4.4	0.7	24	
16	0.1	0.2	0.1	0.2	0.1	0.1	0.3	S	0.5	0.4	0.4	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.0	0.5	0.2	24	
17	0.0	0.0	0.1	0.5	0.5	0.3	S	0.5	0.5	0.3	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.2	0.1	0.0	0.5	0.2	24	
18	0.0	0.0	0.1	0.1	0.9	S	5.4	0.6	0.5	0.4	0.3	0.1	0.1	0.1	0.1	0.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.4	0.4	24	
19	0.0	0.0	0.0	0.0	S	0.0	0.2	0.5	0.6	0.6	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.1	24	
20	0.0	0.0	0.0	S	0.0	0.2	0.3	0.2	0.2	0.4	1.4	0.5	0.5	9.2	1.2	0.3	0.3	0.3	0.4	0.7	0.5	0.5	0.4	0.3	0.0	9.2	0.8	24	
21	0.2	0.3	S	0.3	1.1	3.7	2.3	0.5	0.4	0.5	0.5	0.9	2.2	0.5	0.2	0.2	0.1	0.3	0.0	0.0	0.2	0.1	0.0	0.1	0.0	3.7	0.6	24	
22	0.1	S	0.1	0.8	0.2	0.5	0.3	1.0	0.6	0.3	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.1	1.3	0.0	0.2	0.1	0.1	0.1	0.0	1.3	0.3	24	
23	S	0.1	0.2	0.3	0.3	0.2	0.2	0.2	0.6	0.2	0.4	0.4	0.1	0.2	0.3	0.1	0.1	0.0	0.1	0.2	0.1	0.1	0.2	S	0.0	0.6	0.2	24	
24	0.1	0.0	0.0	0.0	0.0	0.1	0.3	0.4	0.2	0.1	0.1	0.1	0.1	0.3	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.1	S	0.1	0.0	0.4	0.1	24	
25	0.3	0.2	0.1	0.0	0.5	0.1	0.4	0.7	0.5	0.6	0.3	0.4	0.1	0.1	0.1	0.2	0.1	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.7	0.2	24	
26	0.0	0.1	0.0	0.0	0.0	0.0	0.1	Q	Q	Q	Q	0.1	0.4	0.3	0.2	0.2	0.2	0.2	0.1	S	0.4	0.1	0.0	0.0	0.4	0.1	24		
27	0.3	1.1	0.9	1.1	1.0	3.0	0.7	1.0	0.7	0.4	0.3	0.2	0.1	0.4	0.8	0.2	0.1	0.1	0.1	S	0.2	0.1	0.2	0.2	0.1	3.0	0.6	24	
28	0.4	0.2	0.5	1.0	2.9	6.4	7.5	14.5	3.7	0.5	0.1	0.4	0.0	0.1	0.1	0.3	0.1	0.0	S	0.4	0.1	0.0	0.1	0.0	0.0	14.5	1.7	24	
29	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.6	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.2	0.1	S	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.6	0.1	24	
30	0.0	0.0	0.1	0.2	0.1	0.2	0.3	0.4	0.5	0.3	0.2	0.3	0.2	0.1	0.2	0.1	S	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.1	24	
HOURLY MAX	0.4	1.1	0.9	1.1	2.9	6.4	7.5	14.5	3.7	2.0	2.0	1.9	2.2	9.2	1.2	0.4	0.4	0.6	1.6	0.7	0.5	0.5	0.4	0.5					
HOURLY AVG	0.1	0.1	0.1	0.3	0.4	0.8	1.2	1.3	0.7	0.5	0.5	0.4	0.3	0.6	0.3	0.2	0.2	0.2	0.3	0.2	0.1	0.1	0.1	0.1					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

24 HOUR AVERAGES FOR April 2016



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	575			
MINIMUM 1-HR AVERAGE:	0.0	PPB @ HOUR(S)	VAR	ON DAY(S)
MAXIMUM 1-HR AVERAGE:	14.5	PPB @ HOUR(S)	7	ON DAY(S)
MAXIMUM 24-HR AVERAGE:	1.7	PPB		ON DAY(S)
				VAR-VARIOUS
IZS CALIBRATION TIME:	31	HRS	OPERATIONAL TIME:	720
MONTHLY CALIBRATION TIME:	5	HRS	AMD OPERATION UPTIME:	100.0
STANDARD DEVIATION:	0.93		MONTHLY AVERAGE:	0.4
				PPB

NO[ppb] Station: LICA COLD LAKE SOUTH Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— NO[ppb]



NITRIC OXIDE MAX instantaneous maximum in ppb

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
DAY	MIN.	MAX.	AVG.	RDGS.																									
1	0.1	1.6	1.4	1.1	2.7	1.7	20.3	4.6	4.6	3.1	1.7	4.9	1.2	0.6	0.5	10.6	1.1	0.4	6.2	6.5	0.9	2.5	S	0.4	0.1	20.3	3.4	24	
2	0.4	0.8	0.7	2.0	1.2	0.3	1.2	2.0	2.2	2.7	2.9	6.3	1.4	2.7	0.4	0.4	0.5	0.3	0.3	0.4	0.6	S	1.4	0.3	0.3	6.3	1.4	24	
3	0.6	0.8	0.6	0.7	1.4	1.3	1.1	1.1	0.6	1.1	0.5	0.5	0.6	0.4	0.5	0.6	0.6	1.9	1.7	3.5	S	2.0	4.3	3.8	0.4	4.3	1.3	24	
4	0.5	0.8	1.4	7.2	4.3	3.0	7.7	1.1	1.3	7.3	1.4	1.2	1.2	3.1	1.8	2.5	3.0	0.8	1.2	S	1.1	1.8	2.1	1.1	0.5	7.7	2.5	24	
5	1.0	1.3	2.3	1.8	2.1	0.4	2.8	29.5	2.2	6.2	1.3	3.6	1.5	9.3	1.9	3.4	0.9	0.7	S	3.8	3.6	2.6	0.4	1.3	0.4	29.5	3.6	24	
6	0.5	0.2	3.1	1.4	1.5	1.0	0.4	1.0	0.9	0.5	C	C	C	C	C	0.3	0.5	S	0.1	0.4	1.6	3.6	1.4	1.1	0.1	3.6	1.1	24	
7	0.4	0.2	0.5	1.3	2.4	0.5	24.1	2.2	1.4	1.8	4.6	3.4	2.2	3.9	0.5	0.4	S	0.8	6.2	11.1	4.7	4.9	2.0	1.4	0.2	24.1	3.5	24	
8	2.0	1.4	0.9	1.6	1.7	4.2	5.1	1.4	1.3	4.5	1.3	2.1	1.0	97.2	2.7	S	2.6	5.1	1.3	26.7	0.8	0.7	4.0	1.4	0.7	97.2	7.4	24	
9	1.4	2.1	1.3	1.1	1.7	2.2	1.6	0.9	1.0	1.3	0.9	0.8	0.7	0.4	S	0.4	0.3	0.4	0.3	0.3	0.2	0.4	0.3	0.3	0.2	2.2	0.9	24	
10	0.4	0.3	0.1	0.3	0.3	0.4	0.4	0.5	0.4	0.7	12.3	0.9	0.9	S	1.4	1.6	1.2	0.9	1.6	0.8	1.2	0.9	6.4	2.0	0.1	12.3	1.6	24	
11	2.1	0.8	1.0	1.3	2.6	7.1	5.1	18.2	16.0	16.1	2.5	1.7	S	7.3	5.2	0.7	13.3	1.0	16.9	5.5	0.3	1.6	2.6	1.4	0.3	18.2	5.7	24	
12	3.3	1.0	1.3	3.5	6.4	10.1	19.7	5.6	2.2	4.0	4.8	S	2.4	7.8	3.1	0.9	0.8	3.0	39.0	3.4	0.7	0.3	0.6	6.7	0.3	39.0	5.7	24	
13	6.9	0.5	1.3	13.3	2.7	4.2	6.7	2.9	0.9	0.4	S	0.5	0.4	1.3	0.7	0.5	1.3	3.3	3.3	0.2	0.3	1.3	2.0	1.8	0.2	13.3	2.5	24	
14	2.6	2.9	1.6	3.1	1.4	1.7	1.6	1.8	1.3	S	0.9	0.3	0.5	0.3	0.8	1.4	0.5	0.5	2.6	0.8	0.8	2.0	0.5	1.8	0.3	3.1	1.4	24	
15	3.1	5.2	1.2	2.4	10.6	8.8	6.4	40.9	S	3.9	1.5	2.8	4.5	1.5	1.3	1.4	2.6	16.2	2.2	3.4	6.8	0.6	0.8	0.5	0.5	40.9	5.6	24	
16	0.9	1.7	1.1	1.1	0.7	0.6	0.9	S	0.9	2.0	0.5	1.0	0.6	0.3	0.3	0.7	1.0	0.5	3.2	0.6	0.7	0.9	0.3	0.7	0.3	3.2	0.9	24	
17	0.4	0.1	0.5	6.0	3.8	2.2	S	3.5	2.3	0.8	0.4	3.0	0.3	0.5	0.4	0.2	1.3	0.2	0.2	1.8	2.6	1.8	1.6	0.3	0.1	6.0	1.5	24	
18	0.2	0.2	2.5	0.9	19.3	S	13.6	0.8	1.0	4.0	10.4	0.5	1.4	1.7	1.4	0.9	16.1	0.1	0.4	0.2	0.7	0.4	0.2	0.1	0.1	19.3	3.3	24	
19	0.2	0.1	0.1	0.2	S	0.2	0.5	1.3	1.0	1.8	0.6	1.0	1.0	1.5	0.4	0.8	0.9	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.1	1.8	0.6	24	
20	0.2	0.2	0.1	S	0.1	1.5	0.6	1.0	0.9	7.4	13.2	1.9	1.0	67.8	25.7	1.3	5.2	1.5	2.6	4.4	7.8	3.9	2.4	2.4	0.1	67.8	6.7	24	
21	1.4	1.5	S	1.9	10.2	33.0	6.0	4.1	3.2	7.4	6.0	8.1	29.3	20.6	1.1	2.8	1.0	4.0	0.8	0.4	3.5	0.9	0.6	1.3	0.4	33.0	6.5	24	
22	1.4	S	1.3	10.2	5.1	5.9	1.7	29.9	18.8	1.3	2.4	1.3	5.2	5.4	3.2	2.8	4.4	0.6	73.5	0.7	3.0	0.6	0.4	2.1	0.4	73.5	7.9	24	
23	S	0.9	1.3	1.8	9.1	1.3	0.9	0.8	9.7	1.3	6.8	8.9	0.5	3.8	9.3	0.8	1.0	0.1	1.5	10.1	8.9	3.1	3.0	S	0.1	10.1	3.9	24	
24	1.1	0.3	0.3	0.3	0.5	1.4	1.3	1.6	1.3	3.1	2.2	1.9	1.3	8.0	2.7	1.3	0.7	1.0	0.8	3.4	3.8	1.6	S	0.5	0.3	8.0	1.8	24	
25	6.7	1.6	1.1	0.5	13.6	0.8	3.3	4.5	0.9	6.9	2.6	3.9	1.5	1.4	1.4	6.4	4.0	0.4	0.6	0.5	0.2	S	1.1	0.5	0.2	13.6	2.8	24	
26	0.5	1.3	0.3	0.3	0.3	1.1	Q	Q	Q	Q	Q	Q	4.9	2.9	3.0	0.9	1.3	0.6	3.1	5.7	S	8.0	0.4	0.4	0.3	8.0	2.0	24	
27	4.4	14.8	6.1	8.6	16.1	15.1	1.3	1.8	1.5	0.6	1.2	4.6	0.4	10.2	9.9	4.9	2.1	0.2	0.2	S	6.3	2.3	1.4	2.1	0.2	16.1	5.0	24	
28	3.7	2.7	2.3	4.9	13.8	13.0	14.8	19.3	12.6	10.9	1.2	19.2	0.2	1.1	0.2	11.6	1.4	0.8	S	21.5	0.3	0.2	5.1	0.2	0.2	21.5	7.0	24	
29	0.1	0.2	0.2	0.4	0.2	4.3	6.2	13.3	0.5	2.1	4.3	1.4	1.1	0.4	1.3	4.4	0.8	S	0.2	0.2	3.2	0.1	0.2	0.5	0.1	13.3	2.0	24	
30	0.3	0.2	0.2	2.7	0.4	0.6	0.8	1.0	0.6	0.5	0.4	1.1	0.8	0.4	1.4	1.8	S	0.2	0.2	0.2	0.1	0.5	0.2	0.1	0.1	2.7	0.6	24	
HOURLY MAX	6.9	14.8	6.1	13.3	19.3	33.0	24.1	40.9	18.8	16.1	13.2	19.2	29.3	97.2	25.7	11.6	16.1	16.2	73.5	26.7	8.9	8.0	6.4	6.7					
HOURLY AVG	1.6	1.6	1.2	2.8	4.7	4.4	5.4	7.0	3.3	3.7	3.3	3.2	2.4	9.4	2.9	2.3	2.5	1.6	6.1	4.2	2.3	1.8	1.6	1.3					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	679				
MAXIMUM INSTANTANEOUS VALUE:	97.2	PPB	@ HOUR(S)	13	ON DAY(S) 8
				VAR-VARIOUS	
IZS CALIBRATION TIME:	31	HRS	OPERATIONAL TIME:	720	HRS
MONTHLY CALIBRATION TIME:	5	HRS			
STANDARD DEVIATION:	7.08				

NO MAX[ppb] Station: LICA COLD LAKE SOUTH Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]

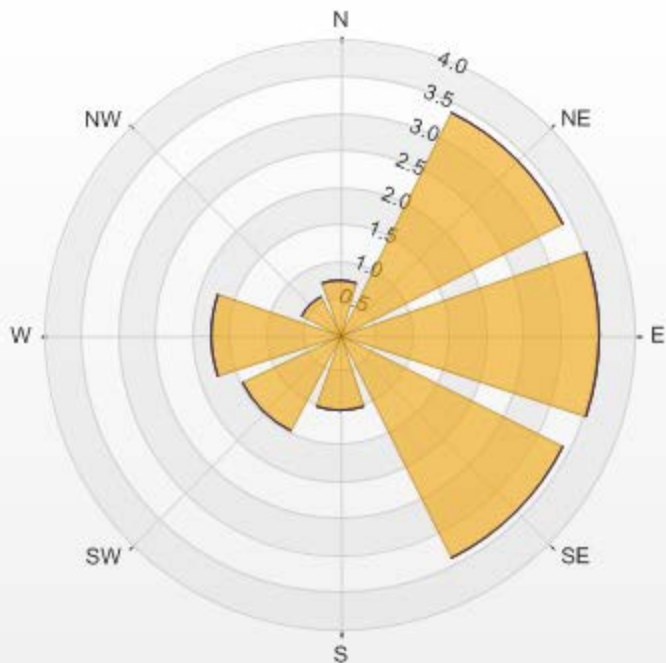


— NO MAX[ppb]

Wind: LICA COLD LAKE SOUTH Monitor: NO [ppb] Monthly: 04/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 84.12% Valid Data: 94.44% Calm Avg: 0.00

Direction	0.5-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	0.74	0	0	0	0.74
NE	3.38	0	0	0	3.38
E	3.53	0	0	0	3.53
SE	3.38	0	0	0	3.38
S	1.03	0	0	0	1.03
SW	1.47	0	0	0	1.47
W	1.76	0	0	0	1.76
NW	0.59	0	0	0	0.59
Summary	15.88	0	0	0	15.88

LICA COLD LAKE SOUTH 2016/04/01 12:00 AM - 2016/04/30 11:00 PM Calm: 84.12% Calm Wind Avg Speed: 0.18(ppb)



% Icon Classes (ppb) 15.9 0.5-50.0 0.0 50.0-110.0 0.0 110.0-210.0 0.0 >210.0

NITROGEN DIOXIDE

NITROGEN DIOXIDE (NO2) hourly averages in ppb

MST

DAY	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.
1	2.9	2.1	3.1	2.6	5.2	6.1	6.5	8.7	7.5	3.9	2.5	2.9	1.6	1.2	1.1	1.3	1.4	1.6	3.2	5.9	8.0	8.3	S	1.2	1.1	8.7	3.9	24
2	0.8	0.8	1.1	1.9	1.8	1.8	2.7	3.0	3.6	3.6	4.3	4.3	2.7	1.9	1.2	1.3	0.9	0.4	0.8	1.5	1.1	S	1.6	0.6	0.4	4.3	1.9	24
3	0.7	0.7	0.6	0.7	1.9	3.0	2.6	3.4	2.5	3.3	2.3	1.6	1.1	1.1	1.3	1.3	1.2	2.2	2.7	3.4	S	7.2	9.2	9.9	0.6	9.9	2.8	24
4	4.8	1.0	2.5	1.5	5.3	4.9	5.1	2.1	1.5	1.3	1.1	1.2	1.1	1.5	2.0	1.5	1.5	1.9	2.1	S	2.2	2.0	1.8	1.3	1.0	5.3	2.2	24
5	1.0	0.9	1.1	1.2	2.1	1.9	2.9	4.9	1.8	1.2	1.1	0.8	0.9	0.8	1.0	1.2	1.1	1.2	S	2.5	2.8	3.2	2.0	2.3	0.8	4.9	1.7	24
6	2.2	2.0	2.5	2.5	2.0	2.2	1.4	1.0	0.7	0.5	C	C	C	C	C	1.0	0.9	S	1.1	1.1	2.5	3.2	3.0	2.4	0.5	3.2	1.8	24
7	1.6	0.9	1.4	1.6	2.5	4.4	6.0	2.9	2.3	1.6	1.7	2.3	1.8	1.3	1.2	1.3	S	1.8	5.0	5.4	4.7	3.4	1.6	1.8	0.9	6.0	2.5	24
8	2.0	1.6	1.6	1.5	2.0	1.8	1.4	1.0	1.0	1.0	1.0	0.8	1.0	0.0	0.8	S	1.1	0.9	1.1	1.2	1.1	1.2	1.9	1.4	0.0	2.0	1.2	24
9	1.3	1.7	2.3	1.8	1.2	3.1	2.7	3.2	2.5	2.0	1.4	1.5	1.7	1.6	S	1.6	0.9	0.7	0.6	0.6	0.7	1.3	1.4	1.3	0.6	3.2	1.6	24
10	1.2	0.9	0.9	0.8	1.0	1.0	0.9	0.7	0.7	0.8	0.8	0.8	0.8	S	1.1	1.0	1.1	1.0	1.7	2.8	2.0	1.9	1.4	3.1	0.7	3.1	1.2	24
11	2.4	1.6	1.0	1.9	3.4	3.7	4.2	2.2	1.9	1.8	1.2	1.2	S	1.3	1.3	1.1	1.3	1.6	2.0	2.4	2.2	1.4	3.0	4.1	1.0	4.2	2.1	24
12	5.4	3.1	3.0	7.0	4.6	9.2	14.6	5.8	3.6	4.1	3.8	S	2.0	1.5	1.3	1.9	1.7	2.9	5.5	6.0	3.2	2.0	2.2	2.6	1.3	14.6	4.2	24
13	2.4	3.1	2.6	4.1	3.3	5.5	4.0	2.9	1.8	1.0	S	1.3	1.2	4.1	3.1	1.7	1.7	1.6	5.5	4.6	2.7	2.4	4.0	3.1	1.0	5.5	2.9	24
14	3.9	3.3	2.8	2.8	2.9	2.7	2.3	1.2	1.4	S	1.3	0.8	0.7	0.6	0.6	0.9	1.2	1.3	1.2	1.5	1.1	1.5	3.6	2.0	0.6	3.9	1.8	24
15	2.4	3.1	3.6	4.0	5.9	7.6	6.8	5.9	S	1.5	1.4	1.2	1.2	1.5	1.7	1.5	1.5	1.7	2.9	5.7	8.1	1.2	1.6	1.1	1.1	8.1	3.2	24
16	1.4	1.8	3.9	4.1	2.8	2.6	2.2	S	2.4	1.8	1.6	1.2	1.3	1.1	1.1	1.2	1.1	1.2	1.6	2.7	4.2	2.7	2.0	2.5	1.1	4.2	2.1	24
17	2.3	1.9	3.4	9.9	9.7	3.9	S	2.1	2.0	1.6	1.4	1.7	1.4	1.2	1.0	0.9	0.9	1.0	1.3	2.4	3.7	4.4	13.6	8.2	0.9	13.6	3.5	24
18	2.8	3.2	3.7	4.7	6.3	S	11.4	3.2	2.6	2.3	1.3	1.1	1.2	1.0	0.9	0.9	1.0	0.7	0.8	0.8	1.4	1.5	1.3	1.3	0.7	11.4	2.4	24
19	1.3	1.2	1.2	1.4	S	2.4	2.8	2.8	3.1	2.7	2.2	2.1	1.7	1.7	1.5	1.2	1.1	0.8	1.1	2.3	4.1	3.2	1.8	1.9	0.8	4.1	2.0	24
20	2.7	3.3	3.7	S	7.7	6.3	3.0	1.4	0.9	1.1	1.9	1.4	1.3	2.2	1.4	1.0	0.8	0.8	1.1	2.1	2.3	2.9	1.8	1.4	0.8	7.7	2.3	24
21	1.9	2.6	S	3.4	8.3	10.1	6.5	1.6	1.1	1.2	1.0	1.2	1.6	1.0	0.9	0.9	0.8	1.3	1.1	1.4	2.1	1.1	1.1	1.2	0.8	10.1	2.3	24
22	1.1	S	1.3	3.1	2.0	2.6	2.0	1.7	1.3	1.2	1.0	1.0	0.9	0.9	1.5	1.5	1.2	1.3	0.6	0.8	1.1	1.0	1.3	1.3	0.6	3.1	1.4	24
23	S	1.1	1.3	1.7	1.8	1.8	1.6	1.5	1.8	1.5	1.3	1.3	0.8	1.1	1.1	0.8	0.6	0.6	0.9	1.1	2.2	2.0	5.4	S	0.6	5.4	1.5	24
24	5.4	1.3	0.6	0.7	0.5	1.2	3.1	2.1	0.9	0.8	0.6	0.7	0.8	1.3	0.7	1.2	1.7	2.4	2.5	2.5	2.9	1.7	S	1.4	0.5	5.4	1.6	24
25	3.1	3.6	2.4	2.0	3.7	2.4	4.1	3.7	2.6	2.2	1.3	1.3	0.9	0.8	0.9	1.0	1.0	1.1	1.2	1.5	1.5	S	2.5	1.8	0.8	4.1	2.0	24
26	1.7	2.3	1.5	1.5	1.7	1.2	1.9	Q	Q	Q	Q	Q	1.7	1.6	1.5	1.6	1.6	1.5	1.6	1.7	S	6.7	3.1	2.1	1.2	6.7	2.0	24
27	3.0	5.5	5.3	5.0	5.5	7.1	3.0	2.9	2.4	1.9	1.7	1.5	1.0	1.3	2.7	1.4	1.2	1.0	1.2	S	5.6	7.4	8.3	7.5	1.0	8.3	3.6	24
28	7.4	6.5	5.6	8.7	8.6	7.4	7.8	16.6	6.9	1.6	0.9	0.6	0.7	0.9	1.1	1.0	1.1	0.9	S	3.2	1.8	1.4	1.2	1.4	0.6	16.6	4.1	24
29	1.6	1.5	1.4	1.5	2.3	2.1	2.0	1.4	1.5	1.4	0.7	0.7	0.7	0.9	1.0	0.7	0.8	S	1.2	1.6	2.0	1.7	1.3	1.1	0.7	2.3	1.4	24
30	1.3	1.3	1.9	3.9	3.0	3.6	2.6	2.5	2.1	1.6	1.3	1.7	1.5	1.4	1.3	1.3	S	1.4	1.4	1.3	2.3	2.1	2.2	2.5	1.3	3.9	2.0	24
HOURLY MAX	7.4	6.5	5.6	9.9	9.7	10.1	14.6	16.6	7.5	4.1	4.3	4.3	2.7	4.1	3.1	1.9	1.7	2.9	5.5	6.0	8.1	8.3	13.6	9.9				
HOURLY AVG	2.5	2.2	2.3	3.0	3.8	3.9	4.1	3.3	2.3	1.8	1.6	1.4	1.3	1.3	1.3	1.2	1.2	1.3	1.9	2.5	2.8	2.9	3.0	2.5				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

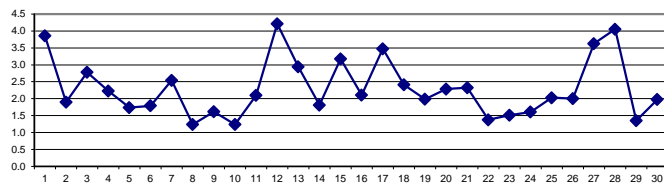
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR 159 PPB

MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0				
NUMBER OF NON-ZERO READINGS:	679				
MINIMUM 1-HR AVERAGE:	0.0	PPB @ HOUR(S)	13	ON DAY(S)	8
MAXIMUM 1-HR AVERAGE:	16.6	PPB @ HOUR(S)	7	ON DAY(S)	28
MAXIMUM 24-HR AVERAGE:	4.2	PPB		ON DAY(S)	12
				VAR-VARIOUS	
IZS CALIBRATION TIME:	31	HRS	OPERATIONAL TIME:	720	HRS
MONTHLY CALIBRATION TIME:	5	HRS	AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	1.96		MONTHLY AVERAGE:	2.3	PPB

24 HOUR AVERAGES FOR April 2016



NO2[ppb] Station: LICA COLD LAKE SOUTH Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— NO2[ppb]



NITROGEN DIOXIDE MAX instantaneous maximum in ppb

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.	
DAY	HOURLY MAX	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
1		3.5	3.2	9.2	6.8	9.6	10.0	46.7	10.5	9.3	7.1	4.0	5.8	2.7	1.4	1.4	7.4	1.7	1.9	16.0	17.8	10.3	15.3	S	1.8	1.4	46.7	8.8	24	
2		1.3	1.4	3.9	4.9	4.2	3.8	5.6	4.3	5.0	4.6	5.2	9.1	4.6	4.2	1.6	1.8	1.4	0.8	2.1	2.2	2.5	S	3.8	0.9	0.8	9.1	3.4	24	
3		2.6	1.3	2.2	3.7	3.1	4.4	4.3	4.4	3.6	5.5	3.2	2.2	1.6	1.4	1.7	1.5	1.9	3.2	4.9	5.9	S	10.5	12.8	13.0	1.3	13.0	4.3	24	
4		8.3	2.1	5.6	6.2	13.4	8.7	10.5	3.0	2.2	4.6	1.8	3.9	2.3	7.6	4.3	3.5	2.9	3.0	3.3	S	4.0	4.5	3.1	3.3	1.8	13.4	4.9	24	
5		2.3	1.8	2.3	2.9	5.7	2.9	4.4	10.2	7.7	2.7	1.6	1.8	3.1	2.3	1.6	4.8	2.7	2.1	S	4.0	5.3	6.9	2.9	4.1	1.6	10.2	3.7	24	
6		2.9	2.3	3.9	3.5	2.5	4.2	2.1	1.8	1.7	1.0	C	C	C	C	C	1.9	1.3	S	1.5	1.9	5.4	5.8	8.1	4.8	1.0	8.1	3.1	24	
7		2.3	1.8	2.7	5.7	4.8	6.1	13.8	7.5	3.2	2.8	3.1	6.2	3.0	2.0	1.7	2.1	S	2.9	29.9	10.7	12.6	9.2	3.5	3.1	1.7	29.9	6.1	24	
8		4.0	3.1	4.3	3.5	5.2	4.7	6.8	2.1	2.3	1.9	1.4	1.8	18.7	8.5	4.6	S	2.1	1.3	1.8	6.4	1.8	1.7	7.1	2.7	1.3	18.7	4.3	24	
9		3.1	3.9	5.0	2.8	2.5	5.8	4.2	4.2	3.0	2.5	1.6	1.7	2.1	2.1	S	2.3	1.1	1.2	0.6	0.9	0.9	1.9	2.3	1.4	0.6	5.8	2.5	24	
10		1.7	1.2	1.3	1.0	1.4	1.4	1.3	2.1	0.9	3.1	4.6	2.1	1.8	S	2.9	3.0	2.3	2.5	2.7	9.6	5.1	5.0	10.1	8.0	0.9	10.1	3.3	24	
11		7.0	3.6	2.7	15.3	11.6	12.1	10.3	4.7	14.9	29.9	5.1	3.4	S	2.9	10.4	1.6	14.5	3.5	5.2	5.9	4.9	3.0	10.3	12.6	1.6	29.9	8.5	24	
12		9.5	9.6	8.9	11.8	8.3	18.6	25.7	10.1	4.4	7.3	7.4	S	5.9	14.9	11.6	2.9	9.3	6.4	47.4	13.4	8.1	3.3	4.4	10.9	2.9	47.4	11.3	24	
13		10.9	7.1	6.5	33.3	6.2	15.9	14.5	7.5	4.0	1.3	S	2.7	1.7	6.6	5.0	2.4	3.3	5.1	8.4	6.6	3.1	3.5	6.5	4.4	1.3	33.3	7.2	24	
14		5.9	6.2	4.9	4.7	4.3	4.3	3.4	2.2	1.9	S	2.3	0.9	0.9	0.8	0.8	2.3	1.8	1.8	3.4	2.7	1.8	8.1	9.8	3.6	0.8	9.8	3.4	24	
15		6.4	8.8	6.5	5.6	13.3	14.2	10.4	24.4	S	4.9	4.4	2.4	3.5	2.5	3.0	3.3	3.2	5.4	8.0	16.9	17.6	2.3	2.7	1.9	1.9	24.4	7.5	24	
16		2.1	6.5	9.3	8.2	6.9	3.6	3.0	S	3.5	4.2	2.0	2.5	1.8	1.3	1.2	6.3	1.7	3.4	9.6	6.6	8.1	4.4	3.4	3.8	1.2	9.6	4.5	24	
17		3.8	3.2	6.6	24.1	16.6	9.6	S	2.6	2.6	1.9	1.5	11.4	2.3	2.3	1.2	1.0	1.8	1.4	1.8	6.1	13.5	13.5	19.3	9.2	1.0	24.1	6.8	24	
18		5.1	6.0	10.8	9.7	16.4	S	20.5	4.3	3.4	3.9	5.3	1.5	2.2	4.1	1.9	4.2	9.6	0.8	3.2	1.1	2.0	4.0	1.5	1.4	0.8	20.5	5.3	24	
19		1.4	1.5	1.4	1.4	S	2.6	3.9	3.8	4.5	6.9	2.7	10.7	4.4	4.5	1.9	1.5	3.5	1.0	2.0	3.9	7.1	4.8	2.7	2.3	1.0	10.7	3.5	24	
20		3.5	5.1	4.9	S	9.9	8.2	4.6	2.7	1.8	2.9	13.2	4.6	2.8	51.0	24.4	3.9	4.5	1.9	6.6	7.1	3.4	6.7	4.4	2.7	1.8	51.0	7.9	24	
21		3.5	5.6	S	9.4	13.3	29.9	13.6	6.8	6.5	3.8	3.2	5.1	18.3	11.1	3.5	3.7	3.6	3.6	1.6	2.3	6.6	1.6	1.9	3.7	1.6	29.9	7.1	24	
22		2.5	S	2.6	15.2	7.9	4.4	3.4	4.0	10.2	5.1	2.1	2.2	3.5	2.2	4.5	2.9	3.9	2.3	8.0	1.8	4.1	2.3	1.6	2.5	1.6	15.2	4.3	24	
23		S	3.3	2.2	3.7	22.9	3.2	3.0	2.3	13.2	3.2	4.0	5.1	2.3	4.8	8.1	1.4	3.4	1.1	11.3	7.2	7.2	15.5	9.0	S	1.1	22.9	6.2	24	
24		9.4	4.4	1.3	1.5	2.3	6.6	5.4	4.5	2.8	4.0	2.1	1.3	2.7	6.3	1.8	2.7	2.9	3.5	4.2	8.8	10.1	3.6	S	3.1	1.3	10.1	4.1	24	
25		12.4	8.4	4.5	6.4	8.1	4.6	8.0	9.0	3.2	14.7	6.4	3.9	1.2	2.9	7.7	2.3	2.5	2.4	2.8	2.7	2.3	S	4.0	3.8	1.2	14.7	5.4	24	
26		3.2	6.5	2.3	2.3	2.4	1.5	3.1	Q	Q	Q	Q	Q	Q	4.3	2.3	3.4	2.5	3.1	2.0	7.2	5.6	S	15.9	6.9	3.1	1.5	15.9	4.3	24
27		7.5	14.1	13.9	10.6	17.8	13.9	4.0	5.2	6.0	2.0	2.4	11.7	1.1	7.6	56.7	15.3	2.8	1.6	2.7	S	15.4	13.7	14.1	11.4	1.1	56.7	10.9	24	
28		9.6	11.0	7.6	13.9	16.5	9.4	12.2	20.1	17.9	4.7	2.8	7.3	1.0	4.1	1.8	8.2	9.7	1.1	S	44.6	2.7	2.2	4.7	1.5	1.0	44.6	9.3	24	
29		1.9	2.5	2.0	2.3	4.4	3.6	8.0	2.3	1.7	10.3	2.4	2.0	1.1	1.5	3.6	1.6	2.2	S	1.5	2.2	8.0	2.6	2.1	2.0	1.1	10.3	3.1	24	
30		2.3	1.8	4.4	11.4	5.1	6.5	3.6	3.5	3.6	2.3	1.8	4.5	2.5	1.9	1.8	1.7	S	1.8	1.6	1.6	5.3	3.3	2.7	2.8	1.6	11.4	3.4	24	
HOURLY MAX		12.4	14.1	13.9	33.3	22.9	29.9	46.7	24.4	17.9	29.9	13.2	11.7	18.7	51.0	56.7	15.3	14.5	6.4	47.4	44.6	17.6	15.9	19.3	13.0					
HOURLY AVG		4.8	4.7	5.0	8.0	8.5	7.7	9.0	6.1	5.2	5.3	3.6	4.4	3.7	5.9	6.2	3.4	3.7	2.5	7.1	7.4	6.4	6.3	5.9	4.5					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	679
MAXIMUM INSTANTANEOUS VALUE:	56.7 PPB @ HOUR(S) 14 ON DAY(S) 27
	VAR-VARIOUS
IZS CALIBRATION TIME:	31 HRS
MONTHLY CALIBRATION TIME:	5 HRS
STANDARD DEVIATION:	6.00
OPERATIONAL TIME:	720 HRS

NO2 MAX[ppb] Station: LICA COLD LAKE SOUTH Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]

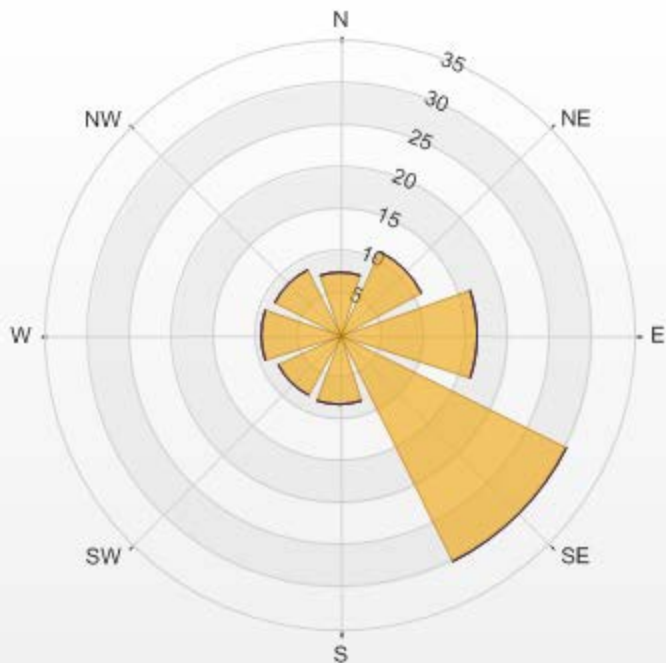


— NO2 MAX[ppb]

Wind: LICA COLD LAKE SOUTH Monitor: NO2 [ppb] Monthly: 04/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.29% Valid Data: 94.44% Calm Avg: 0.00

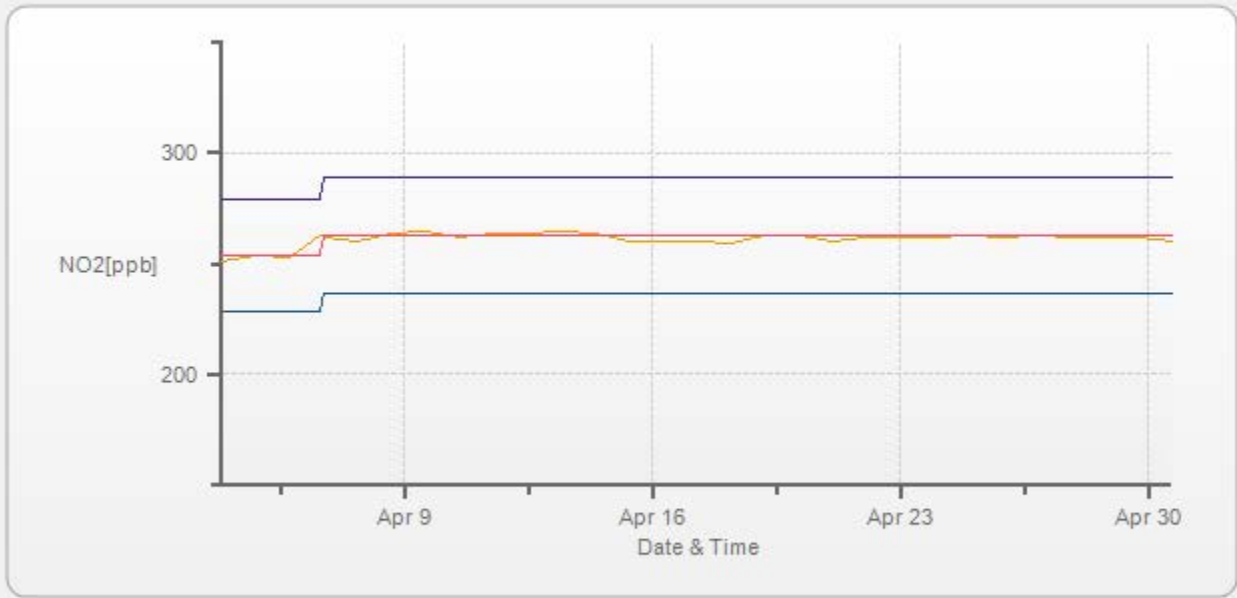
Direction	0.5-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	7.5	0	0	0	7.5
NE	11.03	0	0	0	11.03
E	16.47	0	0	0	16.47
SE	30.15	0	0	0	30.15
S	8.38	0	0	0	8.38
SW	8.09	0	0	0	8.09
W	9.41	0	0	0	9.41
NW	8.68	0	0	0	8.68
Summary	100	0	0	0	100

LICA COLD LAKE SOUTH 2016/04/01 12:00 AM - 2016/04/30 11:00 PM Calm: 0.29% Calm Wind Avg Speed: 0.22(ppb)



% Icon Classes (ppb) 100 0.5-50.0 0 50.0-110.0 0 110.0-210.0 0 >210.0

NO2[ppb] Calibration: LICA COLD LAKE SOUTH Monthly: 04/2016 Type: Span



Span Meas Span Ref -10% +10%

OZONE

OZONE (O3) hourly averages in ppb

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
DAY	MIN.	MAX.	AVG.	RDGS.																									
1	33.1	32.4	26.1	24.4	20.8	26.9	27.5	25.6	27.9	33.2	36.1	36.6	39.0	41.3	41.3	42.7	43.6	41.3	38.7	34.7	30.4	24.4	S	36.5	20.8	43.6	33.2	24	
2	35.9	34.8	32.8	31.4	29.4	24.1	20.1	27.0	27.8	29.9	31.8	34.8	41.5	45.3	42.9	41.1	41.1	41.4	42.1	40.5	36.0	S	35.4	35.2	20.1	45.3	34.9	24	
3	35.9	35.8	35.1	34.2	31.7	29.3	28.1	28.6	31.0	29.3	31.2	32.8	34.7	35.5	35.7	35.8	36.1	34.9	33.7	32.8	S	27.5	20.6	16.6	16.6	36.1	31.6	24	
4	22.5	29.4	26.7	28.1	24.8	25.2	24.8	26.8	27.5	29.4	32.0	32.6	32.9	33.1	33.5	34.1	35.0	34.2	33.6	S	33.0	32.9	32.3	32.7	22.5	35.0	30.3	24	
5	32.1	30.3	27.9	26.8	26.5	28.1	26.7	25.0	30.3	31.8	32.6	33.0	33.3	34.1	33.2	32.0	30.4	28.8	S	23.4	21.6	20.6	20.8	19.3	19.3	34.1	28.2	24	
6	17.0	18.1	18.9	27.9	32.4	32.0	31.6	31.2	31.8	31.6	31.5	29.6	29.7	31.1	33.2	38.5	39.5	S	39.0	37.8	34.9	30.8	30.6	29.5	17.0	39.5	30.8	24	
7	30.4	30.3	29.0	27.2	23.3	19.9	18.9	24.6	C	C	C	C	32.7	33.4	34.9	35.9	S	36.5	31.1	29.7	29.0	28.1	30.9	31.8	18.9	36.5	29.3	24	
8	30.8	31.3	31.2	31.0	31.5	32.2	32.4	32.0	31.6	31.3	31.0	31.3	32.8	33.2	34.8	S	34.5	33.7	32.8	32.0	31.7	31.2	30.0	29.7	29.7	34.8	31.9	24	
9	29.6	28.4	27.1	26.4	25.7	23.5	22.7	21.7	24.0	28.1	31.9	33.0	33.4	32.8	S	32.4	32.9	35.5	37.7	38.4	38.7	38.5	39.2	39.7	21.7	39.7	31.4	24	
10	39.8	40.4	40.5	41.0	40.8	40.6	40.7	41.5	41.8	42.5	43.1	43.5	43.8	S	45.5	46.2	47.1	46.2	44.4	38.0	38.8	39.0	40.0	36.8	36.8	47.1	41.8	24	
11	37.3	37.9	38.1	36.1	32.4	30.9	32.5	34.5	35.3	38.6	41.0	41.8	S	42.7	43.3	43.5	43.4	41.4	39.2	37.9	38.0	38.3	35.0	27.8	27.8	43.5	37.7	24	
12	23.6	24.6	21.0	20.2	18.1	8.5	8.2	22.5	28.1	27.9	29.6	S	41.0	42.4	43.3	44.3	44.4	42.0	37.8	35.2	38.1	40.2	39.8	38.3	8.2	44.4	31.3	24	
13	39.8	37.0	37.6	38.1	37.7	32.7	34.8	37.2	36.9	38.5	S	39.2	39.4	36.5	36.1	36.8	35.4	34.1	25.8	25.2	26.7	27.4	23.4	20.7	20.7	39.8	33.8	24	
14	21.8	23.4	25.3	24.0	27.4	29.2	30.6	31.6	29.0	S	30.9	33.8	35.1	35.2	34.2	32.4	32.0	32.2	30.9	30.4	29.9	29.9	22.0	20.7	20.7	35.2	29.2	24	
15	17.1	14.3	9.9	7.2	5.3	4.6	6.7	23.9	S	32.9	33.1	33.6	35.2	35.4	35.6	36.1	35.7	35.3	33.1	29.2	21.7	33.2	32.8	34.6	4.6	36.1	25.5	24	
16	34.8	33.1	28.1	24.4	26.9	27.3	27.3	S	28.5	33.3	34.3	39.0	40.7	42.7	44.2	46.2	46.2	46.7	46.5	42.8	36.2	38.7	38.9	35.1	24.4	46.7	36.6	24	
17	34.9	34.4	29.1	18.3	16.9	26.4	S	30.5	33.2	38.8	42.6	44.5	45.5	51.1	53.0	52.7	53.1	53.1	52.3	43.6	35.2	30.0	17.0	16.1	16.1	53.1	37.1	24	
18	39.6	32.0	27.8	22.8	15.4	S	13.8	34.4	38.2	44.5	50.5	52.6	53.4	54.2	54.4	54.0	54.4	54.4	54.0	53.2	50.7	48.5	48.7	48.0	13.8	54.4	43.5	24	
19	46.6	46.3	45.6	44.3	S	42.2	41.3	40.8	40.5	40.4	41.9	44.2	45.8	47.2	49.5	48.2	47.2	45.7	44.7	43.7	39.1	39.5	48.3	52.5	39.1	52.5	44.6	24	
20	51.5	47.8	45.9	S	39.3	37.5	37.8	37.6	37.2	36.3	33.7	31.1	30.7	29.4	31.7	33.0	33.0	32.1	30.9	29.2	27.2	25.7	26.0	26.0	25.7	51.5	34.4	24	
21	23.9	23.8	S	15.3	10.6	7.9	19.0	28.0	28.3	28.3	28.7	28.9	29.5	30.7	32.4	34.5	37.4	36.9	37.1	37.3	36.5	36.7	35.8	36.6	7.9	37.4	28.9	24	
22	38.3	S	38.1	35.2	35.6	36.0	37.6	37.3	38.2	39.3	40.3	40.8	40.2	39.6	39.1	39.3	40.1	39.4	40.4	39.9	38.9	39.1	38.6	37.6	35.2	40.8	38.6	24	
23	S	34.9	34.8	33.5	33.7	33.2	33.5	33.3	33.5	34.5	35.2	35.1	35.9	35.4	35.8	36.0	38.8	38.7	37.8	35.7	29.1	25.9	22.7	S	22.7	38.8	34.0	24	
24	22.0	33.4	42.2	40.7	39.3	37.7	34.6	33.7	37.3	38.5	42.2	42.3	41.3	41.0	41.1	41.9	41.1	39.5	38.6	38.2	36.5	37.2	S	38.1	22.0	42.3	38.2	24	
25	33.0	28.2	28.5	31.4	27.8	26.7	27.1	28.4	29.2	33.4	35.6	36.6	38.7	40.6	43.0	42.3	41.1	41.0	37.6	33.7	35.6	S	27.8	28.2	26.7	43.0	33.7	24	
26	29.8	29.9	33.6	34.2	31.7	29.7	28.7	Q	Q	Q	33.4	34.1	34.3	35.9	36.9	37.3	36.7	36.6	35.6	33.4	S	19.1	17.2	22.9	17.2	37.3	31.6	24	
27	15.8	8.0	6.5	8.7	9.6	13.6	21.3	24.7	29.3	34.8	39.5	42.1	43.3	44.3	44.5	45.9	45.3	46.6	46.3	S	28.7	16.9	13.4	10.6	6.5	46.6	27.8	24	
28	6.4	5.7	5.2	3.9	2.1	1.9	4.7	9.4	28.2	39.7	46.5	48.7	51.5	51.2	51.0	50.7	51.1	51.0	S	45.0	44.7	45.7	48.7	49.2	1.9	51.5	32.3	24	
29	48.1	45.5	43.2	41.6	39.0	37.7	36.7	36.9	38.5	40.0	43.5	44.2	46.1	47.2	48.2	49.3	49.6	S	49.8	48.6	47.3	46.0	45.4	43.9	36.7	49.8	44.2	24	
30	42.3	42.0	40.5	33.3	34.5	28.6	33.8	37.5	39.1	42.2	44.7	45.2	47.3	48.3	48.8	47.8	S	44.6	44.4	43.7	39.1	37.2	36.2	31.8	28.6	48.8	40.6	24	
HOURLY MAX	51.5	47.8	45.9	44.3	40.8	42.2	41.3	41.5	41.8	44.5	50.5	52.6	53.4	54.2	54.4	54.0	54.4	54.4	54.0	53.2	50.7	48.5	48.7	52.5					
HOURLY AVG	31.5	30.8	30.2	28.0	26.6	26.7	27.0	30.2	32.7	35.1	36.7	38.0	38.9	39.7	40.7	41.1	40.9	40.1	39.1	36.9	34.8	33.2	32.1	31.9					

STATUS FLAG CODES

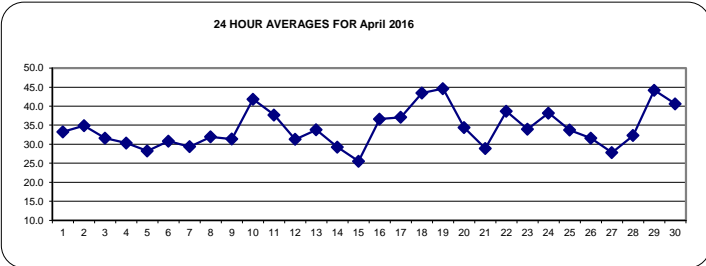
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

OBJECTIVE LIMIT:

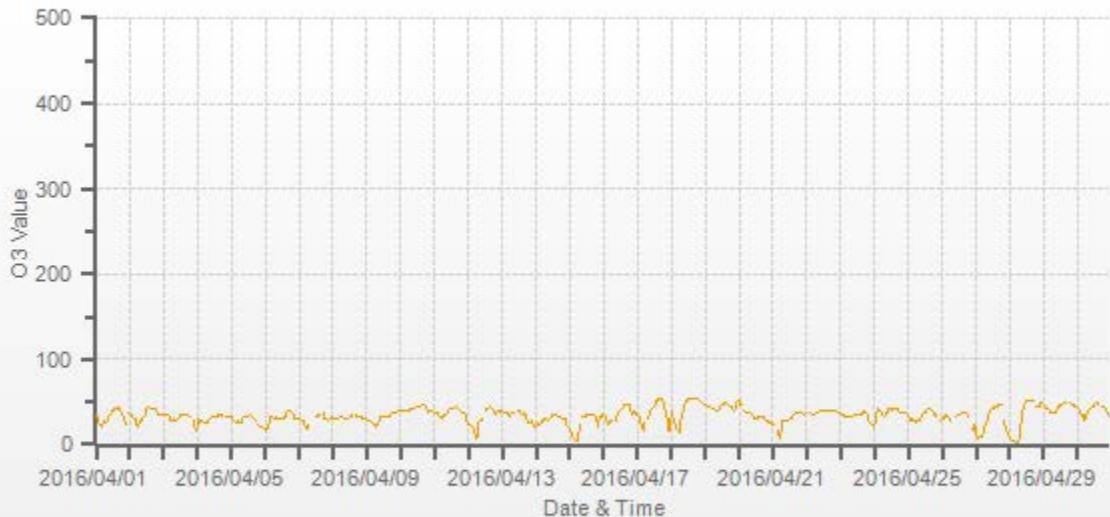
ALBERTA ENVIRONMENT: 1-HR 82 PPB

MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0					
NUMBER OF NON-ZERO READINGS:	682					
MINIMUM 1-HR AVERAGE:	1.9	PPB	@ HOUR(S)	5	ON DAY(S)	28
MAXIMUM 1-HR AVERAGE:	54.4	PPB	@ HOUR(S)	VAR	ON DAY(S)	18
MAXIMUM 24-HR AVERAGE:	44.6	PPB			ON DAY(S)	19
					VAR-VARIOUS	
IZS CALIBRATION TIME:	31	HRS	OPERATIONAL TIME:	720	HRS	
MONTHLY CALIBRATION TIME:	4	HRS	AMD OPERATION UPTIME:	100.0	%	
STANDARD DEVIATION:	9.33		MONTHLY AVERAGE:	34.3	PPB	



O3[ppb] Station: LICA COLD LAKE SOUTH Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



O3[ppb]



OZONE MAX instantaneous maximum in ppb

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.
DAY	HOURLY MAX	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
1	37.9	35.7	32.8	28.8	27.1	29.9	29.8	27.7	30.0	36.8	38.1	38.7	41.1	42.4	42.1	45.2	45.5	42.4	41.4	38.4	37.3	29.9	S	37.7	27.1	45.5	36.4	24	
2	36.8	35.7	34.7	33.2	32.6	27.6	26.5	28.9	29.4	32.2	32.7	36.8	45.4	46.8	44.9	42.1	41.9	42.5	44.8	43.5	37.7	S	37.4	36.2	26.5	46.8	37.0	24	
3	36.8	36.9	36.2	36.2	33.9	31.8	30.5	30.2	32.7	30.9	33.0	34.3	36.2	36.5	36.8	36.6	37.4	36.9	35.1	34.5	S	29.9	26.5	24.3	24.3	37.4	33.7	24	
4	27.7	31.1	29.4	30.2	29.5	27.9	27.1	28.3	29.3	31.1	33.6	33.8	34.2	34.5	35.0	35.6	35.9	35.6	34.8	S	34.2	33.9	33.7	33.7	27.1	35.9	32.2	24	
5	33.3	32.1	30.2	28.4	28.7	29.9	28.3	28.1	33.1	33.0	33.9	34.6	35.4	36.2	35.1	35.1	32.1	30.7	S	25.9	23.9	22.8	22.5	21.6	21.6	36.2	30.2	24	
6	18.7	20.3	25.0	31.8	34.2	33.2	32.6	32.2	33.2	33.2	32.7	31.2	31.3	32.7	39.9	39.9	40.8	S	40.3	39.4	37.9	33.9	33.5	31.9	18.7	40.8	33.0	24	
7	31.9	31.9	30.9	29.2	26.4	22.0	21.6	28.7	C	C	C	C	C	34.7	34.7	36.2	37.1	S	37.9	36.5	31.7	31.6	30.4	33.2	33.5	21.6	37.9	31.6	24
8	32.2	32.2	32.0	32.2	32.7	33.3	33.5	32.9	32.7	32.6	31.8	32.9	34.2	35.0	35.7	S	35.6	34.5	34.2	33.0	32.4	32.3	31.0	30.5	30.5	35.7	33.0	24	
9	31.3	29.9	29.1	28.2	28.3	26.6	24.5	23.3	26.6	30.8	33.0	34.5	34.7	34.1	S	33.6	34.8	37.1	38.7	39.1	39.4	39.8	39.8	40.7	23.3	40.7	33.0	24	
10	41.1	41.1	41.4	41.8	41.7	41.7	41.5	42.5	42.7	43.5	44.6	44.8	45.2	S	47.0	48.1	48.5	48.4	46.8	43.5	41.1	41.8	41.7	40.5	40.5	48.5	43.5	24	
11	38.9	39.4	39.3	38.4	35.7	33.5	34.7	35.6	37.0	40.9	42.3	42.5	S	43.7	44.2	44.5	44.6	43.5	41.0	39.0	39.8	39.4	38.4	36.8	33.5	44.6	39.7	24	
12	27.7	29.9	24.3	23.5	24.7	16.5	19.6	27.7	30.4	30.4	32.2	S	42.7	43.8	44.5	45.7	45.8	44.6	43.3	39.5	41.3	42.1	42.0	40.1	16.5	45.8	34.9	24	
13	41.7	40.7	40.0	41.8	40.9	36.2	37.0	39.9	39.1	40.2	S	40.0	40.6	40.4	37.9	38.1	37.0	35.6	32.9	28.2	28.0	28.9	28.0	22.3	22.3	41.8	36.3	24	
14	23.2	25.8	28.8	25.9	29.4	32.4	35.7	34.8	30.3	S	33.0	37.0	37.0	37.0	35.1	34.3	33.3	33.0	32.7	31.9	31.3	31.6	28.6	24.8	23.2	37.0	31.6	24	
15	22.2	18.3	14.0	10.4	8.1	7.3	9.3	33.2	S	34.2	34.2	34.6	37.3	37.4	37.3	37.3	38.4	37.4	35.0	32.7	32.0	34.7	34.4	36.2	7.3	38.4	28.5	24	
16	35.9	35.1	32.1	29.0	29.5	28.4	28.1	S	33.3	34.4	36.7	41.2	42.7	44.1	46.6	48.3	47.4	48.3	47.8	47.5	42.1	41.1	41.5	38.1	28.1	48.3	39.1	24	
17	36.4	35.9	34.0	26.9	28.0	30.2	S	31.6	36.7	41.3	46.0	46.1	48.6	53.9	54.2	53.7	54.5	54.1	53.9	51.0	42.2	37.3	26.5	32.6	26.5	54.5	41.5	24	
18	44.6	40.7	35.6	31.7	23.3	S	33.0	37.3	41.1	47.8	53.4	53.8	55.4	56.1	56.0	55.2	55.8	55.5	55.2	54.2	53.3	50.3	49.8	49.4	23.3	56.1	47.3	24	
19	47.7	47.1	46.6	45.5	S	42.9	42.2	42.1	41.8	41.8	43.6	45.8	47.5	49.2	51.1	50.5	48.8	46.9	46.4	45.7	44.6	47.4	51.5	53.7	41.8	53.7	46.5	24	
20	53.3	51.0	47.9	S	41.8	40.0	38.8	38.5	38.4	37.4	36.3	32.4	31.4	31.7	33.1	33.9	33.7	33.4	32.1	31.2	29.1	27.7	27.2	26.9	26.9	53.3	36.0	24	
21	25.3	25.2	S	21.2	13.5	12.5	26.6	29.3	29.3	29.3	29.8	30.0	30.8	32.2	34.3	36.5	39.1	38.4	38.5	38.5	38.0	37.7	36.8	38.2	12.5	39.1	30.9	24	
22	39.7	S	39.6	38.7	37.0	38.2	38.8	38.8	39.3	40.6	41.8	42.2	41.7	40.8	40.6	41.9	41.7	41.8	42.2	41.4	40.5	40.2	39.9	39.1	37.0	42.2	40.3	24	
23	S	36.1	36.7	35.0	35.3	34.5	34.8	34.7	35.1	36.0	37.0	36.7	37.2	37.1	38.5	39.6	39.7	40.1	39.1	38.2	34.3	33.3	26.9	S	26.9	40.1	36.2	24	
24	30.1	42.7	44.4	43.8	40.3	40.2	36.7	37.7	38.9	39.8	44.1	43.5	42.7	42.4	42.3	43.5	42.7	41.2	41.1	40.3	39.4	42.3	S	41.4	30.1	44.4	40.9	24	
25	38.9	32.7	33.6	35.4	30.3	29.8	30.3	30.4	31.1	36.5	37.6	38.2	41.6	44.9	44.9	43.7	43.0	43.0	41.5	37.8	38.3	S	34.5	35.4	29.8	44.9	37.1	24	
26	36.8	34.5	36.5	35.9	33.5	32.4	30.8	Q	Q	Q	35.3	35.9	36.3	38.2	38.2	38.7	38.8	37.7	37.1	34.8	S	27.1	28.6	29.3	27.1	38.8	34.8	24	
27	25.3	20.2	9.8	17.7	17.7	21.6	23.1	28.4	31.9	38.1	42.4	43.6	45.5	45.7	46.9	47.6	46.7	48.5	48.1	S	36.5	26.0	23.0	15.9	9.8	48.5	32.6	24	
28	9.1	8.8	8.5	9.4	3.9	3.7	8.4	16.7	36.2	45.2	49.5	50.1	53.5	52.6	52.2	52.2	52.3	52.5	S	48.7	46.6	47.5	50.4	50.0	3.7	53.5	35.1	24	
29	49.9	47.5	44.6	43.0	41.2	39.1	38.0	38.2	40.0	42.3	44.8	45.5	47.8	48.4	50.1	50.1	50.8	S	51.0	49.6	48.7	48.3	46.6	45.1	38.0	51.0	45.7	24	
30	43.3	42.7	42.1	40.0	37.4	34.8	38.0	38.4	41.4	43.4	48.2	47.9	50.7	49.6	49.9	49.6	S	46.1	45.9	45.0	43.0	39.7	38.6	34.6	34.6	50.7	43.1	24	
HOURLY MAX	53.3	51.0	47.9	45.5	41.8	42.9	42.2	42.5	42.7	47.8	53.4	53.8	55.4	56.1	56.0	55.2	55.8	55.5	55.2	54.2	53.3	50.3	51.5	53.7					
HOURLY AVG	34.4	33.8	33.1	31.5	29.9	29.6	30.3	32.7	34.9	37.2	38.6	39.6	40.8	41.5	42.4	42.7	42.4	41.7	41.3	39.4	38.0	36.3	35.4	35.2					

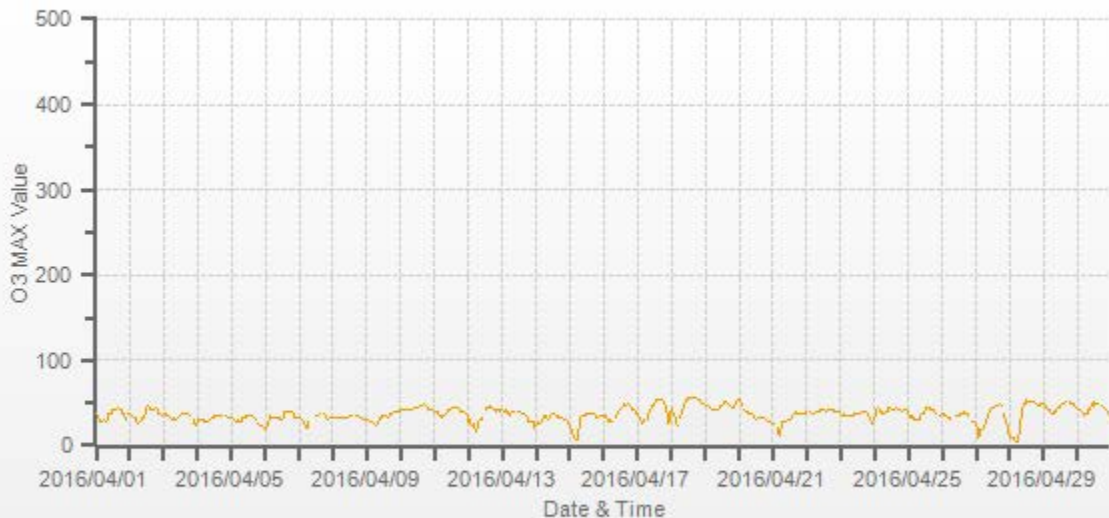
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	682
MAXIMUM INSTANTANEOUS VALUE:	56.1 PPB @ HOUR(S) 13 ON DAY(S) 18
VAR-VARIOUS	
IZS CALIBRATION TIME:	31 HRS
MONTHLY CALIBRATION TIME:	4 HRS
STANDARD DEVIATION:	8.54
OPERATIONAL TIME:	720 HRS

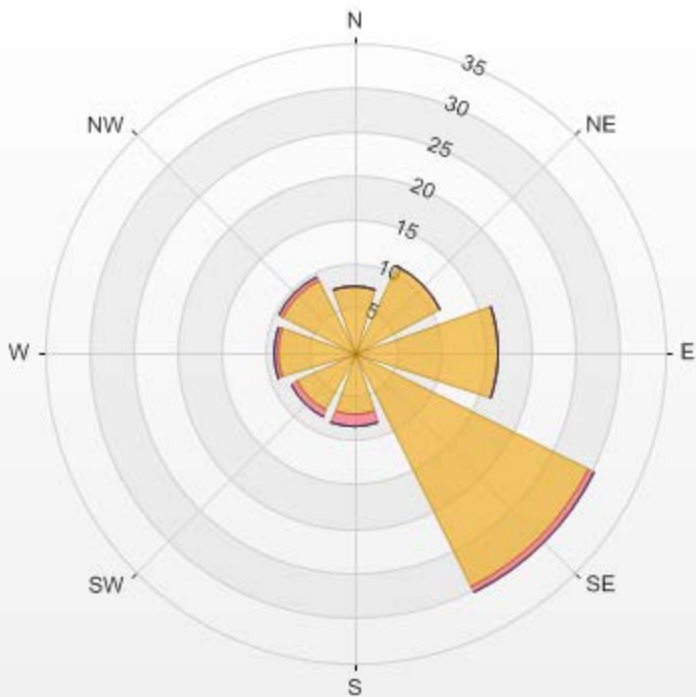
O3 MAX[ppb] Station: LICA COLD LAKE SOUTH Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— O3 MAX[ppb]

Wind: LICA COLD LAKE SOUTH Monitor: O3 [ppb] Monthly: 04/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.72% Calm Avg: 0.00

Direction	0.5-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	7.48	0	0	0	7.48
NE	10.85	0	0	0	10.85
E	16.28	0	0	0	16.28
SE	29.62	0.59	0	0	30.21
S	6.89	1.47	0	0	8.36
SW	7.33	0.73	0	0	8.06
W	8.65	0.59	0	0	9.24
NW	9.24	0.29	0	0	9.53
Summary	96.34	3.67	0	0	100



% Icon Classes (ppb)	96	0.5-50.0	4	50.0-110.0	0	110.0-210.0	0	>210.0
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O3[ppb] Calibration: LICA COLD LAKE SOUTH Monthly: 04/2016 Type: Span



Span Meas

Span Ref

-10%

+10%

PARTICULATE MATTER 2.5

PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM2.5) hourly averages in ug/m3

MST

DAY	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.	
1	6.0	8.9	0.0	0.5	12.4	8.4	6.9	7.5	2.4	9.4	13.9	0.0	14.0	6.0	X	X	0.0	6.0	6.5	12.0	13.5	9.9	8.4	4.0	0.0	14.0	7.1	22	
2	0.0	9.9	1.9	2.5	X	7.9	7.5	7.0	0.0	29.0	X	79.5	63.0	X	2.9	12.5	X	20.5	13.9	13.0	4.0	9.4	0.0	1.0	0.0	79.5	14.3	20	
3	X	7.5	10.9	2.4	5.4	15.4	8.9	7.9	8.4	7.5	3.9	7.5	7.9	6.4	8.4	10.9	16.4	15.9	3.4	2.4	5.5	9.9	3.4	13.5	2.4	16.4	8.2	23	
4	10.5	X	X	X	19.5	X	28.5	5.4	5.4	4.9	8.4	6.0	18.5	12.0	5.5	10.5	10.5	12.0	9.0	12.9	7.5	6.9	12.9	1.4	1.4	28.5	10.4	20	
5	11.4	8.4	9.4	5.4	6.9	1.4	8.4	5.9	10.9	6.9	1.0	0.0	2.4	0.0	5.9	8.9	X	X	9.0	10.4	5.4	6.9	9.9	6.4	0.0	11.4	6.4	22	
6	3.4	3.9	6.4	5.4	4.0	0.0	1.9	10.5	7.5	14.0	11.5	7.9	8.4	15.0	0.0	X	9.4	14.9	20.0	5.0	7.5	1.9	1.0	1.9	0.0	20.0	7.0	23	
7	5.9	0.0	6.9	X	X	17.9	X	0.0	7.3	5.9	0.0	C	0.0	0.0	18.0	10.2	6.4	4.8	0.0	16.9	16.5	3.6	2.3	5.5	0.0	18.0	6.4	21	
8	7.7	12.4	12.4	12.3	20.1	4.3	7.6	7.9	12.0	5.1	5.8	15.1	1.2	8.2	X	0.6	19.4	4.3	7.2	20.8	7.5	29.1	27.2	20.1	0.6	29.1	11.7	23	
9	9.9	8.3	24.0	8.9	3.3	5.0	26.0	20.6	6.4	2.4	4.2	17.0	17.0	15.6	16.6	13.7	X	20.9	0.0	12.5	5.3	X	0.0	34.7	0.0	34.7	12.4	22	
10	6.5	10.0	X	13.5	10.5	0.0	13.6	19.2	24.0	7.3	X	13.9	10.9	0.0	0.4	0.0	10.5	3.4	1.9	16.0	11.5	8.4	13.5	X	0.0	24.0	9.3	21	
11	X	25.0	0.0	5.5	32.0	5.0	20.0	10.9	0.0	9.0	1.4	7.9	14.5	5.5	25.5	9.4	2.5	1.9	7.5	9.9	15.0	20.0	22.5	20.0	0.0	32.0	11.8	23	
12	6.5	9.4	5.5	7.9	11.5	22.0	11.5	9.0	X	0.0	9.9	6.5	7.9	7.0	6.0	7.0	X	35.0	12.5	25.0	22.5	20.5	12.0	17.5	0.0	35.0	12.4	22	
13	29.5	24.5	12.5	8.4	9.0	7.0	6.0	7.9	9.9	9.4	19.5	10.9	13.0	1.9	5.0	13.0	5.0	13.5	7.5	17.0	20.0	22.5	19.5	16.0	1.9	29.5	12.9	24	
14	32.0	11.5	5.0	5.5	4.0	5.5	9.4	7.5	9.4	15.5	13.0	18.5	16.5	26.0	20.5	12.5	10.9	30.5	30.0	14.4	19.5	1.9	5.9	11.9	1.9	32.0	14.1	24	
15	19.5	7.5	26.5	37.0	27.0	7.9	22.5	1.9	9.0	10.9	12.4	6.5	12.5	14.5	17.5	26.5	20.5	19.0	14.0	20.0	26.5	14.5	21.5	16.5	1.9	37.0	17.2	24	
16	4.4	10.9	8.4	9.9	0.4	1.9	3.9	7.5	0.0	6.0	4.0	5.0	5.5	27.4	X	32.5	25.5	30.5	13.5	18.5	21.0	7.9	17.5	18.0	0.0	32.5	12.2	23	
17	26.5	20.5	27.5	26.5	34.5	15.5	1.9	0.0	1.4	1.4	X	9.4	X	8.4	13.0	6.0	14.9	9.9	0.0	13.5	16.0	14.9	24.5	42.5	0.0	42.5	14.9	22	
18	11.5	29.5	49.0	12.5	16.0	28.5	6.5	11.5	3.4	X	17.4	6.4	18.9	25.4	2.9	15.9	6.4	0.0	26.9	0.0	12.5	25.5	11.0	19.0	0.0	49.0	15.5	23	
19	18.5	13.5	11.0	19.0	23.0	22.5	4.4	X	8.9	11.4	10.4	5.4	C	C	5.4	5.4	18.9	17.4	15.9	15.9	X	15.5	18.0	16.0	4.4	23.0	13.8	22	
20	X	X	1.4	9.9	0.0	X	14.4	14.4	3.4	0.0	20.0	24.9	17.9	23.4	2.9	8.9	X	13.5	5.0	11.5	X	11.4	0.0	12.4	0.0	24.9	10.3	19	
21	2.9	X	3.4	X	X	29.4	5.4	8.4	0.0	8.4	4.4	4.4	26.4	X	0.0	20.0	X	24.9	8.4	13.9	4.9	14.9	11.9	15.9	0.0	29.4	10.9	19	
22	19.5	11.5	9.0	10.5	17.0	9.0	19.0	6.5	14.0	8.9	X	13.5	5.9	8.9	11.4	1.0	3.4	1.4	6.4	18.9	15.4	12.4	8.4	14.9	1.0	19.5	10.7	23	
23	20.9	14.9	18.5	9.0	7.9	9.9	11.5	15.0	7.9	13.9	13.0	X	16.4	25.9	21.4	1.4	8.9	1.4	10.9	18.0	17.0	6.4	12.4	15.5	1.4	25.9	13.0	23	
24	15.0	21.0	13.0	5.0	7.5	10.9	9.9	9.0	14.5	7.9	7.0	17.5	14.9	14.0	9.9	10.9	6.0	9.4	10.5	16.5	20.0	12.0	15.0	8.4	5.0	21.0	11.9	24	
25	6.5	4.9	7.9	15.9	14.9	13.5	6.4	10.4	7.9	17.5	1.4	8.4	2.9	6.9	10.4	4.9	4.9	10.4	X	10.9	7.5	11.0	7.5	6.0	1.4	17.5	8.6	23	
26	7.9	8.4	8.4	5.0	6.0	14.9	13.0	X	5.5	15.0	16.5	7.9	Q	Q	Q	Q	Q	Q	Q	4.9	4.4	7.9	4.4	5.4	3.9	3.9	16.5	8.2	23
27	2.4	4.4	7.5	5.9	5.4	6.4	6.4	3.4	7.9	6.4	4.0	2.4	2.4	3.4	0.0	7.5	4.9	0.4	2.9	7.0	6.4	4.9	5.9	8.4	0.0	8.4	4.9	24	
28	3.9	7.5	7.9	9.4	9.4	7.5	8.9	8.4	8.9	7.9	8.9	2.4	4.4	6.4	3.9	1.9	6.9	8.4	7.9	4.4	6.5	3.4	7.0	5.4	1.9	9.4	6.6	24	
29	7.9	6.9	6.4	6.4	6.9	6.9	7.9	6.9	7.5	8.9	8.9	5.4	6.4	5.5	7.5	11.4	7.9	6.4	3.9	9.0	6.4	3.9	8.9	3.9	3.9	11.4	7.2	24	
30	3.4	6.4	1.9	2.4	5.9	5.4	7.9	8.4	3.9	3.9	0.0	11.4	2.4	4.4	1.9	3.9	6.4	1.4	4.4	4.4	4.4	3.9	4.9	1.4	0.0	11.4	4.2	24	
HOURLY MAX	32.0	29.5	49.0	37.0	34.5	29.4	28.5	20.6	24.0	29.0	20.0	79.5	63.0	27.4	25.5	32.5	25.5	35.0	30.0	25.0	26.5	29.1	27.2	42.5					
HOURLY AVG	11.1	11.4	10.8	9.7	11.9	10.4	10.6	8.5	7.2	8.7	8.5	11.6	12.3	10.7	8.5	9.8	10.0	12.1	9.1	12.3	12.0	11.0	10.4	12.7					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

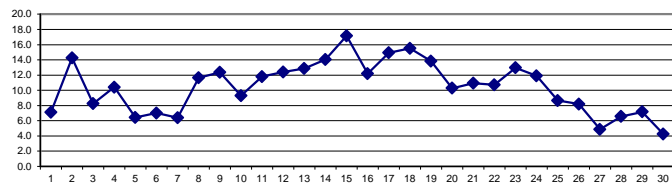
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 24-HR 30 ug/m3

MONTHLY SUMMARY

NUMBER OF 24-HR EXCEEDENCES:	0			
NUMBER OF NON-ZERO READINGS:	629			
MINIMUM 1-HR AVERAGE:	0.0 ug/m3 @ HOUR(S)	VAR	ON DAY(S)	VAR
MAXIMUM 1-HR AVERAGE:	79.5 ug/m3 @ HOUR(S)	11	ON DAY(S)	2
MAXIMUM 24-HR AVERAGE:	17.2 ug/m3		ON DAY(S)	15
			VAR-VARIOUS	
MONTHLY CALIBRATION TIME:	3 HRS	OPERATIONAL TIME:	674 HRS	
STANDARD DEVIATION:	8.20	AMD OPERATION UPTIME:	93.6 %	
		MONTHLY AVERAGE:	10.5 ug/m3	

24 HOUR AVERAGES FOR April 2016



PM2[ug/m3(L)] Station: LICA COLD LAKE SOUTH Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]

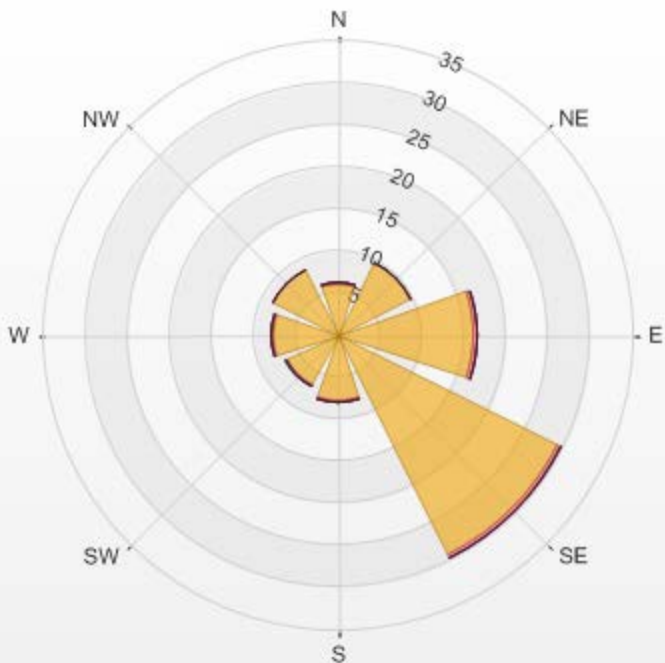



PM2[ug/m3(L)]

Wind: LICA COLD LAKE SOUTH Monitor: PM2 [ug/m3(L)] Monthly: 04/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 6.09% Valid Data: 93.47% Calm Avg: 0.00

Direction	0.5-30.0	30.0-60.0	60.0-80.0	80.0-120.0	120.0-240.0	>240.0	Total
N	6.09	0.3	0	0	0	0	6.39
NE	9.66	0	0	0	0	0	9.66
E	16.2	0.3	0	0	0	0	16.5
SE	29.12	0.45	0	0	0	0	29.57
S	7.73	0.3	0	0	0	0	8.03
SW	6.69	0.15	0.15	0	0	0	6.99
W	7.73	0.15	0.15	0	0	0	8.03
NW	8.77	0	0	0	0	0	8.77
Summary	91.99	1.65	0.3	0	0	0	93.94

LICA COLD LAKE SOUTH 2016/04/01 12:00 AM - 2016/04/30 11:00 PM Calm: 6.09% Calm Wind Avg Speed: 0.04(ug/m3 (L))



% Icon Classes (ug/m3(L))	92	 0.5-30.0	2	 30.0-60.0	0	 60.0-80.0	0	 80.0-120.0	0	 120.0-240.0	0	 >240.0
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WIND SPEED

WIND SPEED (WS) hourly averages in km/hr

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOURLY START	HOURLY END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																													
1		2.8	2.9	0.8	3.1	2.5	5.1	4.7	5.7	4.3	5.4	5.9	8.3	9.5	12.5	10.6	7.3	8.5	5.0	0.2	3.5	2.2	3.0	4.1	7.4	0.2	12.5	5.2	24
2		9.4	7.9	3.9	3.7	1.4	0.5	1.1	2.3	6.2	7.4	8.5	8.1	9.1	9.9	10.8	10.0	15.1	15.1	10.8	4.9	5.9	7.4	6.0	10.0	0.5	15.1	7.3	24
3		8.3	6.5	5.4	1.9	3.3	2.9	3.8	4.9	6.0	3.1	8.5	11.5	12.7	14.7	12.3	10.6	7.0	9.4	7.3	6.1	4.0	2.7	1.7	2.2	1.7	14.7	6.5	24
4		2.0	4.2	2.7	4.6	3.3	4.1	4.2	7.4	8.3	8.5	11.3	10.4	10.2	10.0	9.1	9.8	10.4	9.0	9.8	9.0	9.7	7.3	6.4	7.5	2.0	11.3	7.5	24
5		7.8	9.4	8.2	6.5	5.7	4.7	3.8	2.3	6.5	4.8	5.9	4.6	4.7	5.9	4.3	5.8	3.8	5.3	2.8	3.5	3.3	2.8	5.4	2.0	2.0	9.4	5.0	24
6		3.0	2.4	5.0	11.6	11.6	10.6	12.1	13.9	16.0	16.7	18.5	18.4	18.5	16.9	16.9	20.4	20.5	18.7	12.6	8.7	3.9	4.8	4.3	3.4	2.4	20.5	12.1	24
7		6.7	7.0	5.5	3.8	2.7	3.7	1.0	2.0	2.0	3.4	0.9	2.7	6.0	7.3	8.3	5.8	6.0	3.5	3.9	3.6	3.2	4.9	7.7	6.6	0.9	8.3	4.5	24
8		6.6	6.6	6.6	6.8	4.9	7.2	9.9	12.3	10.7	10.2	10.6	12.6	14.0	13.8	18.4	18.1	19.6	17.1	12.8	11.0	11.1	8.8	7.8	10.3	4.9	19.6	11.2	24
9		4.3	3.6	4.3	3.3	1.5	3.4	4.9	10.9	14.5	16.4	16.5	14.4	14.9	15.4	18.1	19.4	18.9	18.1	19.1	17.0	19.1	18.3	15.5	13.9	1.5	19.4	12.7	24
10		15.3	12.7	9.9	12.3	10.3	10.2	8.4	10.8	11.3	9.3	9.9	7.6	7.7	5.8	6.4	6.3	6.4	5.7	5.2	1.5	3.6	3.9	4.8	3.2	1.5	15.3	7.9	24
11		3.6	5.4	6.0	3.8	2.0	3.3	4.5	7.1	6.6	8.3	9.8	9.5	11.3	9.7	12.7	13.1	11.4	8.0	5.1	5.1	6.7	5.3	2.2	1.8	1.8	13.1	6.8	24
12		2.6	1.2	0.3	1.0	0.3	0.3	0.7	0.8	3.2	4.3	4.5	3.8	3.0	5.7	4.8	6.5	2.8	4.2	2.9	4.2	4.4	6.0	4.2	3.2	0.3	6.5	3.1	24
13		3.2	2.8	3.4	5.4	5.6	4.6	5.5	9.7	5.1	8.0	6.6	6.4	7.4	7.9	7.3	6.2	6.7	4.1	7.7	10.0	8.4	6.5	5.7	7.0	2.8	10.0	6.3	24
14		5.1	5.4	6.2	7.0	9.2	7.9	9.0	11.8	11.8	11.9	12.0	13.0	13.7	16.8	14.7	13.5	9.3	9.7	6.9	5.2	6.4	4.5	0.2	1.1	0.2	16.8	8.8	24
15		1.3	0.4	0.1	0.4	0.8	0.5	0.5	4.5	4.9	3.1	3.9	1.6	3.0	3.8	5.9	4.0	5.8	5.8	4.6	1.7	2.9	6.8	6.4	7.5	0.1	7.5	3.3	24
16		7.7	5.0	1.9	3.2	4.5	8.7	9.2	7.6	2.4	6.2	7.3	9.2	11.1	9.1	7.8	6.9	5.8	6.5	6.2	3.1	4.2	6.7	5.4	3.7	1.9	11.1	6.2	24
17		2.6	2.4	2.4	1.5	1.8	3.6	5.2	6.7	5.5	6.3	8.7	12.4	11.8	14.0	12.7	11.9	11.6	10.2	5.6	1.4	1.4	1.2	1.4	2.0	1.2	14.0	6.0	24
18		2.2	1.5	0.9	0.6	0.5	0.4	1.0	2.8	3.5	5.0	8.5	10.2	10.1	12.0	9.9	9.8	9.7	8.9	6.4	4.9	3.7	4.4	4.4	7.4	0.4	12.0	5.4	24
19		8.5	8.3	8.3	8.1	8.3	8.4	6.7	7.1	8.1	7.6	7.1	5.1	5.0	9.7	10.0	11.0	10.7	10.3	6.2	7.6	2.5	5.7	10.4	10.4	2.5	11.0	8.0	24
20		6.1	4.4	6.1	7.3	5.8	4.4	7.1	11.9	11.5	12.1	14.4	16.0	15.7	13.6	8.4	8.5	8.9	9.8	10.1	7.1	5.3	4.6	5.8	5.5	4.4	16.0	8.8	24
21		2.8	3.6	0.9	1.0	0.9	1.0	4.1	6.3	5.1	5.3	7.6	8.5	10.1	9.5	10.0	9.1	9.6	9.7	7.6	9.0	8.6	10.5	10.6	7.5	0.9	10.6	6.6	24
22		6.8	7.8	8.0	5.6	4.4	6.0	8.4	8.3	9.0	11.3	14.1	12.2	11.3	10.7	9.6	10.0	11.1	8.6	8.6	10.0	9.9	9.3	8.0	6.5	4.4	14.1	9.0	24
23		6.1	7.3	5.4	6.3	6.8	6.0	8.4	7.2	7.7	7.1	8.6	6.8	6.2	3.9	6.7	6.7	10.0	7.4	5.9	2.6	0.9	0.4	1.6	1.5	0.4	10.0	5.7	24
24		1.5	6.7	7.9	4.7	4.3	0.8	3.9	6.6	7.9	8.6	11.3	9.5	8.6	7.6	8.3	6.4	6.2	4.4	4.3	3.4	2.3	3.0	6.7	4.7	0.8	11.3	5.8	24
25		1.5	2.3	3.1	1.4	3.7	2.5	2.8	1.4	1.5	2.3	3.6	4.2	2.2	5.0	7.0	10.0	4.4	2.4	1.1	1.7	3.0	1.4	1.1	1.2	1.1	10.0	3.0	24
26		2.3	2.1	4.2	4.8	2.8	2.1	2.0	3.3	4.0	4.7	4.8	5.0	6.1	7.0	6.3	5.9	5.5	7.6	5.1	3.4	1.8	1.8	3.1	2.7	1.8	7.6	4.1	24
27		1.7	1.0	1.4	2.5	1.2	4.3	3.0	4.0	3.2	3.6	2.6	6.1	4.9	2.1	4.3	3.3	4.6	4.1	5.1	2.4	1.0	0.8	1.1	1.3	0.8	6.1	2.9	24
28		0.5	0.6	0.4	0.6	0.7	0.8	0.1	1.0	3.5	7.1	11.1	13.1	13.0	8.8	10.5	8.8	8.4	6.0	6.3	4.4	5.3	6.1	8.5	7.1	0.1	13.1	5.5	24
29		8.0	7.7	7.6	8.2	6.2	10.0	10.9	11.9	11.4	9.8	12.6	11.8	14.5	13.1	10.8	9.2	10.2	8.9	9.1	6.5	6.1	4.4	5.9	6.1	4.4	14.5	9.2	24
30		6.5	8.1	5.0	2.1	2.7	0.9	2.2	3.1	3.1	4.8	3.1	6.6	8.1	8.3	10.3	9.4	10.4	7.4	6.0	6.6	2.5	2.0	2.7	2.9	0.9	10.4	5.2	24
HOURLY MAX		15.3	12.7	9.9	12.3	11.6	10.6	12.1	13.9	16.0	16.7	18.5	18.4	18.5	16.9	18.4	20.4	20.5	18.7	19.1	17.0	19.1	18.3	15.5	13.9				
HOURLY AVG		4.9	4.9	4.4	4.4	4.0	4.3	5.0	6.5	6.8	7.4	8.6	9.0	9.5	9.7	9.8	9.5	9.3	8.4	6.8	5.6	5.1	5.2	5.3	5.3				

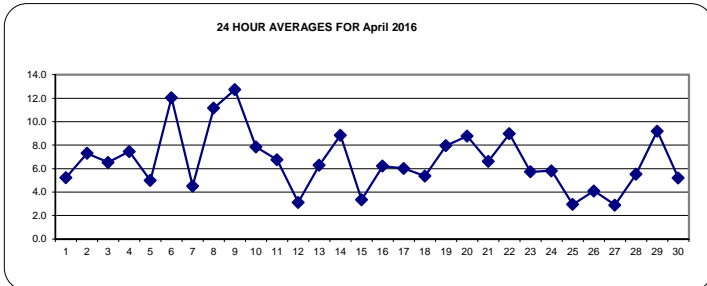
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

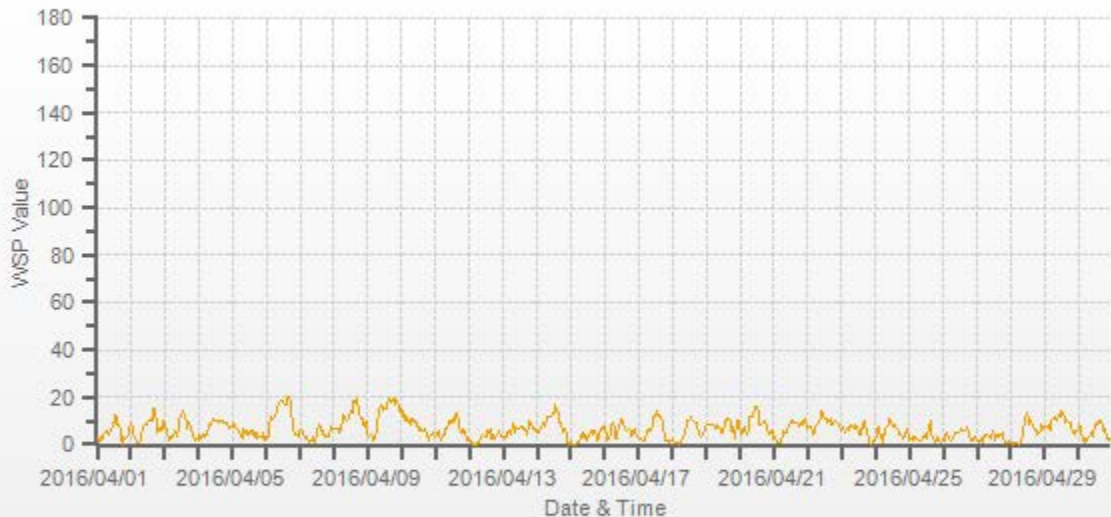
LAST CALIBRATION:	April 1, 2015
DECLINATION :	MAGNETIC DECLINATION 19 DEGREE EAST

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	720
MINIMUM 1-HR AVERAGE:	0.1 KPH @ HOUR(S) 2 , 28 ON DAY(S) 15 , 28
MAXIMUM 1-HR AVERAGE:	20.5 KPH @ HOUR(S) 16 ON DAY(S) 6
MAXIMUM 24-HR AVERAGE:	12.7 KPH ON DAY(S) 9
	VAR-VARIOUS
MONTHLY CALIBRATION TIME:	0 HRS
	OPERATIONAL TIME: 720 HRS
	AMD OPERATION UPTIME: 100.0 %
STANDARD DEVIATION:	4.11
	MONTHLY AVERAGE: 6.7 KPH



WSP[kph] Station: LICA COLD LAKE SOUTH Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— WSP[kph]



VECTOR WIND SPEED MAX instantaneous maximum in km/hr

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
DAY	MIN.	MAX.	AVG.	RDGS.																									
1	7.1	4.7	3.9	5.0	6.4	8.2	8.2	8.5	8.0	10.8	13.2	14.9	16.2	21.8	16.8	15.1	13.2	10.6	7.9	5.8	6.1	5.2	7.8	11.0	3.9	21.8	9.9	24	
2	14.4	11.1	7.8	6.8	3.8	2.1	3.1	6.9	9.1	11.8	13.4	12.8	14.0	15.2	17.5	15.6	23.9	28.1	20.5	10.8	12.2	11.0	9.7	14.4	2.1	28.1	12.3	24	
3	14.2	10.3	9.2	5.3	14.1	4.3	6.3	8.7	11.3	10.8	15.2	18.7	20.8	21.1	21.9	17.9	14.3	12.6	12.3	8.9	5.8	4.6	4.2	4.7	4.2	21.9	11.6	24	
4	5.1	6.5	5.1	7.1	5.5	6.5	9.5	13.1	12.3	16.2	19.1	18.0	17.7	18.3	15.7	16.0	16.1	13.6	14.7	15.2	17.5	13.5	9.7	11.2	5.1	19.1	12.6	24	
5	11.4	13.8	14.0	10.2	8.0	7.5	6.6	4.6	12.0	8.4	10.1	9.8	9.0	10.0	8.2	9.5	7.5	8.8	5.9	5.5	5.1	5.3	8.8	7.9	4.6	14.0	8.7	24	
6	8.4	5.4	13.9	14.9	18.3	16.9	18.1	20.5	23.8	29.1	30.3	30.5	32.6	26.4	26.9	29.2	29.2	28.7	18.9	14.7	7.6	8.2	6.5	6.7	5.4	32.6	19.4	24	
7	12.6	11.6	9.8	5.7	4.5	6.1	3.2	5.8	6.8	9.4	8.8	12.5	12.3	12.9	15.2	12.0	12.3	10.9	6.3	6.7	6.0	8.7	12.5	11.0	3.2	15.2	9.3	24	
8	12.4	11.7	10.2	10.8	7.6	12.8	17.1	19.4	19.6	15.8	18.0	19.8	26.1	23.1	25.2	29.6	30.1	26.5	21.2	20.4	19.3	15.8	12.5	22.4	7.6	30.1	18.6	24	
9	11.6	7.7	7.6	5.8	3.9	6.8	8.6	21.0	21.7	23.3	27.4	21.7	22.7	21.8	26.6	29.8	30.5	25.5	28.4	28.4	31.4	28.6	24.6	21.9	3.9	31.4	20.3	24	
10	22.6	20.6	14.3	17.1	19.0	15.7	15.3	15.2	18.3	16.6	18.8	15.1	17.4	14.8	11.7	11.2	11.0	10.7	8.5	3.4	5.5	5.9	6.4	6.2	3.4	22.6	13.4	24	
11	5.8	8.9	8.3	7.9	4.5	5.9	7.1	10.9	10.5	15.7	15.6	16.7	16.7	19.8	19.8	22.0	17.8	14.2	8.6	9.0	11.1	8.4	5.0	4.2	4.2	22.0	11.4	24	
12	4.7	3.3	5.6	4.8	3.2	2.4	3.0	4.3	5.9	8.4	10.3	9.3	10.2	14.7	14.0	13.3	8.3	8.3	9.7	6.6	10.5	10.5	9.3	5.0	2.4	14.7	7.7	24	
13	5.8	6.1	7.1	8.6	9.7	8.6	9.7	18.6	12.8	12.0	12.0	13.5	13.2	15.4	12.7	10.9	16.3	8.0	13.4	13.8	14.2	12.5	10.0	9.3	5.8	18.6	11.4	24	
14	9.0	8.8	11.2	12.4	14.4	12.0	16.4	19.5	17.2	20.2	18.5	21.1	20.4	25.9	20.3	20.7	17.4	15.5	12.4	9.0	9.9	9.3	2.8	2.2	2.2	25.9	14.4	24	
15	3.9	2.2	1.3	1.1	2.8	2.0	1.7	10.0	9.3	8.2	10.6	9.8	12.2	12.6	13.2	8.9	10.6	10.0	7.6	3.3	8.0	9.5	8.9	10.2	1.1	13.2	7.4	24	
16	10.6	7.8	4.5	6.6	10.0	11.4	13.0	13.1	8.6	12.1	17.6	19.5	21.1	16.0	17.2	17.5	11.6	12.7	15.8	6.9	6.2	8.5	7.7	6.4	4.5	21.1	11.8	24	
17	5.4	5.2	4.2	3.7	3.9	5.7	10.0	9.6	10.3	13.4	14.5	22.8	21.2	22.7	21.2	22.2	18.4	14.3	11.1	2.6	2.4	6.5	3.9	5.9	2.4	22.8	10.9	24	
18	6.6	4.2	2.8	2.1	2.4	1.9	3.5	6.3	7.3	9.8	20.9	18.6	20.3	22.8	24.7	17.1	16.6	15.8	12.0	8.5	6.2	5.8	9.7	16.4	1.9	24.7	10.9	24	
19	13.4	12.8	18.7	14.7	13.4	12.4	12.4	13.8	14.5	13.7	12.9	10.3	10.9	17.1	16.6	19.3	18.5	15.4	10.9	12.9	5.3	15.4	21.7	14.8	5.3	21.7	14.2	24	
20	10.6	8.9	9.2	10.0	10.5	8.3	12.5	20.1	17.9	19.2	21.0	21.7	27.6	25.6	16.3	16.3	17.7	15.3	14.8	11.0	7.2	8.5	10.8	8.1	7.2	27.6	14.5	24	
21	4.9	5.9	3.0	3.7	3.8	2.6	7.6	9.7	9.6	12.8	13.2	12.8	14.4	16.7	16.4	15.4	15.4	17.5	12.8	13.6	12.2	14.6	16.8	11.0	2.6	17.5	11.1	24	
22	10.6	15.0	12.9	9.3	7.1	13.6	13.9	13.5	12.8	17.7	23.0	20.2	18.0	18.1	16.2	16.5	21.0	16.7	17.0	20.9	17.2	18.8	12.4	10.4	7.1	23.0	15.5	24	
23	10.5	13.8	12.2	10.7	13.9	11.4	12.7	12.8	13.2	14.8	18.7	14.7	11.8	8.9	14.2	15.2	14.3	13.8	10.4	8.0	1.9	2.5	2.9	2.8	1.9	18.7	11.1	24	
24	4.8	13.9	14.4	10.1	9.0	3.9	6.8	12.2	16.0	15.0	20.8	18.5	17.2	16.1	12.7	12.6	11.3	8.0	10.8	7.4	8.7	8.3	13.9	13.6	3.9	20.8	11.9	24	
25	3.2	4.8	9.2	5.9	6.1	4.3	6.3	5.2	4.6	9.9	8.8	10.9	10.4	17.9	15.0	19.9	10.9	5.5	2.8	4.0	6.1	3.5	3.1	2.9	2.8	19.9	7.6	24	
26	5.0	3.5	7.2	7.3	6.0	3.7	3.9	7.1	7.7	10.1	9.5	9.9	14.7	12.2	13.7	12.2	12.4	14.2	10.2	7.6	4.6	3.9	6.5	5.0	3.5	14.7	8.3	24	
27	3.3	2.3	3.0	4.8	4.6	8.5	5.7	8.2	8.3	10.2	13.5	16.0	14.3	13.8	15.0	10.0	8.5	10.2	9.3	4.8	2.4	1.5	2.5	2.9	1.5	16.0	7.7	24	
28	5.5	3.0	3.5	7.0	2.1	1.8	1.6	2.9	7.9	16.7	21.0	24.6	20.8	20.2	17.9	18.9	16.6	11.2	11.2	6.9	7.5	7.7	13.8	10.3	1.6	24.6	10.9	24	
29	10.7	10.1	10.3	10.5	9.6	12.5	15.4	19.4	16.7	16.5	27.2	23.6	23.0	23.4	22.4	18.1	17.3	16.8	12.6	10.1	8.7	7.7	7.9	9.5	7.7	27.2	15.0	24	
30	8.6	10.6	9.5	4.3	5.7	7.2	6.0	6.6	7.7	11.3	16.6	14.4	13.8	15.1	16.6	16.8	15.5	14.8	17.3	11.5	5.0	3.8	4.6	5.7	3.8	17.3	10.4	24	
HOURLY MAX	22.6	20.6	18.7	17.1	19.0	16.9	18.1	21.0	23.8	29.1	30.3	30.5	32.6	26.4	26.9	29.8	30.5	28.7	28.4	28.4	31.4	28.6	24.6	22.4					
HOURLY AVG	8.8	8.5	8.5	7.8	7.8	7.6	8.8	11.6	12.1	14.0	16.7	16.8	17.4	18.0	17.4	17.0	16.2	14.5	12.5	9.9	9.1	9.1	9.2	9.1					

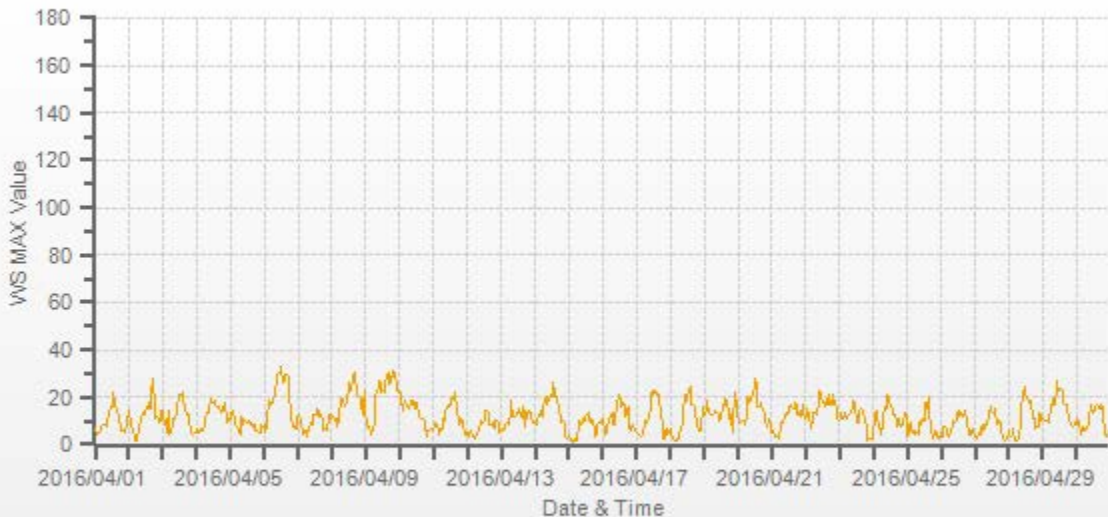
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

MAXIMUM INSTANTANEOUS VALUE:	32.6	KPH	@ HOUR(S)	12	ON DAY(S)	6
					VAR-VARIOUS	
OPERATIONAL TIME:					720	HRS

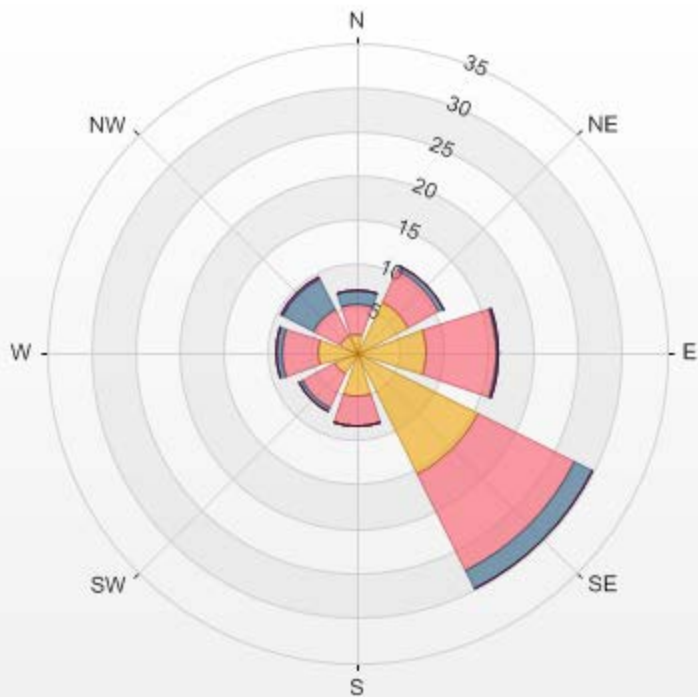
WS MAX[kph] Station: LICA COLD LAKE SOUTH Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— WS MAX[kph]

Wind: LICA COLD LAKE SOUTH Monitor: WSP [kph] Monthly: 04/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 1.81% Valid Data: 100.00% Calm Avg: 0.00

Direction	0.5-6.0	6.0-12.0	12.0-20.0	20.0-29.0	29.0-39.0	>39.0	Total
N	2.08	3.47	1.67	0	0	0	7.22
NE	6.53	3.89	0.56	0	0	0	10.98
E	7.92	7.78	0.28	0	0	0	15.98
SE	15.28	12.22	2.22	0	0	0	29.72
S	4.86	3.47	0	0	0	0	8.33
SW	2.78	4.17	0.42	0	0	0	7.37
W	4.31	4.17	0.56	0	0	0	9.04
NW	2.22	3.33	3.75	0.28	0	0	9.58
Summary	45.98	42.5	9.46	0.28	0	0	98.22



% Icon	Classes (kph)	46	0.5-6.0	43	6.0-12.0	9	12.0-20.0	0	20.0-29.0	0	29.0-39.0	0	>39.0

WIND DIRECTION



WIND DIRECTION (WD) hourly averages

MST																										24-HOUR AVG	
HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	QUADRANT	RDGS.	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59			
DAY																											
1	SW	WSW	SW	W	W	WSW	WSW	WSW	W	NNW	W	WNW	WSW	NW	NW	W	SW	SW	SE	ENE	E	E	ESE	SE	WSW	24	
2	SE	SE	SE	SE	SE	WSW	SE	SSW	WSW	WSW	WSW	WSW	SW	SW	W	W	WNW	WNW	NW	N	NNE	NE	NNE	NNE	WSW	24	
3	NNE	NNE	NNE	NNW	W	W	WSW	WSW	WNW	NW	NNW	NNW	NW	NNW	NW	NNW	NNE	ENE	ENE	ENE	ENE	E	E	E	N	24	
4	SE	SE	ESE	SE	ESE	ESE	SE	SE	SE	SE	SE	SE	SE	SE	SE	ESE	ESE	E	E	E	E	E	E	E	ESE	24	
5	NE	NE	NE	NE	NE	NNE	NE	ENE	SE	ESE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SSE	ESE	24
6	SSE	S	WSW	W	W	W	WNW	W	WNW	WNW	NW	NW	NW	NW	NW	NW	NNW	NW	NW	NW	WNW	W	WNW	NNW	WNW	24	
7	NNW	NW	NW	N	WNW	NW	N	N	NE	ENE	SSE	W	W	WSW	WSW	W	SW	WNW	NE	NE	ENE	E	E	NNW	NNW	24	
8	E	E	E	E	ESE	ESE	SE	SE	SE	SE	ESE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	ESE	E	E	ESE	24
9	ENE	E	E	NE	NW	WSW	WNW	WNW	NW	NW	NW	NW	NW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	N	NNW	N	NNW	NNW	24
10	N	NNW	NNW	NNW	NNW	N	N	N	N	N	NNE	NNE	NE	ENE	NE	ENE	E	E	SE	SE	SE	SE	SE	SE	NE	NE	24
11	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SSE	SE	SSE	SE	SE	SE	SE	SE	ESE	ESE	SE	SE	ESE	E	SE	SE	24
12	E	ESE	S	ESE	SSE	ESE	WSW	S	WSW	SW	WSW	W	WNW	WSW	WSW	ENE	ENE	E	SE	E	NE	ENE	ENE	NE	SE	SE	24
13	NE	NE	NE	ENE	ENE	NE	ENE	E	NNE	N	NNW	NNW	N	NNW	NNW	N	NE	N	NW	NNW	NNW	NW	WSW	W	N	SE	24
14	W	W	W	WSW	W	W	W	WNW	W	WNW	WNW	NW	WNW	NW	NW	NW	NNW	NNW	NNE	N	N	N	N	SW	SW	WNW	24
15	WSW	WSW	NW	SW	SW	SW	NW	ENE	ENE	NE	ENE	S	NW	NE	E	ENE	ENE	ENE	NNE	ENE	SE	SE	SE	SE	E	SE	24
16	SE	SE	E	SE	SE	SE	SE	SE	SSW	SSW	SSE	SSW	SSE	SW	S	S	S	SSE	SE	SE	SE	SE	SE	SE	SSE	SE	24
17	SSE	SSE	SE	E	ESE	SE	SE	SE	SSE	S	SSE	SW	SW	SW	WSW	WSW	WSW	WSW	WSW	SSE	SE	ESE	E	SE	SSE	SE	24
18	SSE	ESE	ESE	SE	ESE	SE	SE	S	S	SSW	SSW	SSW	SSW	SW	SSW	S	S	S	S	SSE	SE	SSW	SSW	S	S	SSW	24
19	SSW	SSW	SW	SW	SW	SW	SW	SW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	W	WNW	WNW	NNW	NNW	WNW	WNW	NNW	NNW	W	WNW	24
20	NNW	WNW	NW	NW	NW	NW	NNW	N	NNE	NNE	NNE	NNE	NNE	NNE	NE	NE	NE	ENE	ENE	ENE	ENE	ENE	E	ESE	NNE	24	
21	ESE	ESE	ENE	NE	NE	ENE	E	E	ESE	ENE	NE	NE	NE	NE	NE	ENE	ESE	ESE	ESE	E	E	E	E	ENE	E	ENE	24
22	ENE	E	E	ENE	NE	E	E	ENE	ENE	E	E	E	E	E	E	E	ENE	E	E	ESE	SE	ESE	E	E	E	E	24
23	ESE	SE	ESE	E	E	E	E	E	E	ESE	ESE	ESE	SE	SE	SE	SE	SE	SSE	SE	SSE	SSW	W	NE	ENE	ESE	24	
24	E	SE	SE	SSE	SSW	SE	E	E	ESE	SE	SE	SE	ESE	SE	SE	ESE	E	NNE	ENE	NE	ENE	SE	SE	ESE	ESE	24	
25	E	NE	SE	ESE	ENE	N	NE	NNE	NNW	ENE	NE	NE	ENE	SE	SSE	SSE	S	SW	W	WSW	WSW	WNW	SW	SSE	E	24	
26	SE	SE	SE	SE	SSE	SSW	S	S	S	S	S	SSW	SSW	SSW	SSW	SSW	S	SSE	S	SSE	SE	ESE	SSE	SE	S	24	
27	SE	ESE	SE	SE	E	SE	SSE	SSE	S	SSE	SE	SE	ESE	S	ESE	ESE	SSE	S	SSE	SE	ESE	ENE	E	E	SE	24	
28	E	W	ESE	E	ESE	ESE	S	NE	E	SE	SE	SE	SSE	SSE	SE	S	SSE	S	SSE	SE	SE	SE	SE	SE	SE	24	
29	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SSE	SSE	SSE	SSE	SSE	S	SSE	SSE	SSE	SE	SE	SE	SE	SE	SE	SE	24
30	SE	SE	SE	ESE	SE	E	ESE	SE	ESE	SE	SSW	WSW	WSW	WSW	WSW	SW	WSW	SW	SW	SW	SSW	S	SSW	SSW	S	24	

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

LAST CALIBRATION:	April 1, 2015
DECLINATION:	MAGNETIC DECLINATION 19 DEGREE EAST

MONTHLY CALIBRATION TIME:	0 HRS	OPERATIONAL TIME:	720 HRS
STANDARD DEVIATION:	91.85	AMD OPERATION UPTIME:	100.0 %

WDR[Deg] Station: LICA COLD LAKE SOUTH Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— WDR[Deg]

STANDARD DEVIATION WIND DIRECTION



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Site - April 2016

JOB # 2833-2016-04-1 - C

STANDARD DEVIATION WIND DIRECTION (STDWD) hourly averages in degrees

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	RDGS.	
HOUR START	HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59		
DAY																											
1		26	14	61	19	28	16	21	20	26	29	33	25	23	22	24	24	19	48	36	16	51	21	17	16	24	
2		13	13	18	18	46	54	58	42	21	21	20	23	19	19	22	20	21	18	20	33	19	19	20	15	24	
3		19	20	16	25	27	21	19	20	22	27	17	16	19	20	21	21	26	19	18	17	17	17	43	18	24	
4		22	13	19	12	16	19	22	17	17	23	19	20	19	21	23	23	22	20	18	19	21	22	19	18	24	
5		17	17	19	20	20	19	19	22	19	25	18	31	26	22	21	20	32	22	37	14	17	20	12	59	24	
6		43	45	24	17	20	20	20	21	20	19	19	17	18	18	18	16	16	16	16	16	16	17	14	17	29	24
7		15	14	13	14	17	13	45	42	48	53	87	75	38	30	27	31	36	31	17	18	20	18	18	18	24	
8		18	18	18	20	26	21	22	18	21	21	23	22	21	22	17	17	14	18	21	22	22	23	20	20	24	
9		32	27	19	21	28	23	18	17	14	15	17	15	17	16	16	15	16	16	19	17	14	17	18	18	24	
10		19	16	13	16	23	19	18	20	20	24	26	35	32	38	34	35	29	26	21	47	16	16	12	16	24	
11		16	12	12	40	24	14	14	18	21	27	28	32	20	31	22	22	21	22	24	25	18	17	25	21	24	
12		22	38	53	35	49	56	60	53	35	33	50	44	62	39	38	28	47	20	30	16	19	22	26	23	24	
13		24	32	30	18	17	18	17	20	28	18	38	31	22	23	20	18	21	24	21	15	14	16	16	15	24	
14		19	20	20	19	20	21	21	22	20	21	24	21	25	18	18	19	25	18	23	15	16	25	38	53	24	
15		34	59	68	45	32	41	64	33	26	52	46	57	55	55	30	52	30	19	19	19	21	12	12	11	24	
16		13	14	19	17	41	10	13	18	47	41	36	36	28	42	43	45	39	35	21	27	11	11	13	23	24	
17		46	42	26	32	21	14	13	21	36	41	31	27	29	23	24	24	21	21	18	29	19	48	27	28	24	
18		40	42	68	56	55	76	55	41	40	38	38	37	40	32	38	38	39	38	44	39	27	20	45	37	24	
19		33	32	29	25	23	22	24	23	23	26	32	43	41	24	28	29	25	22	16	14	18	17	14	13	24	
20		13	15	11	10	11	13	16	19	23	24	23	20	23	22	30	31	23	21	18	15	15	16	17	20	24	
21		21	19	55	45	35	38	21	25	37	38	32	29	22	30	27	31	26	25	24	19	19	19	20	16	24	
22		19	22	19	21	20	22	21	20	20	21	22	25	26	24	22	23	22	24	30	26	19	22	18	19	24	
23		22	22	19	20	19	21	18	22	24	24	24	26	19	32	30	35	17	22	20	24	26	37	20	23	24	
24		22	17	24	23	42	49	21	21	22	23	21	25	22	27	18	24	22	24	24	41	57	57	29	28	24	
25		31	27	32	37	18	20	21	45	58	55	47	36	50	51	35	24	36	34	30	25	19	50	44	33	24	
26		16	21	14	16	29	35	34	31	35	35	38	35	34	37	39	44	40	34	33	35	22	25	21	23	24	
27		31	51	23	20	40	16	36	34	50	53	68	48	51	71	54	43	29	42	21	12	26	33	24	28	24	
28		56	67	54	70	35	32	67	47	34	34	24	25	27	38	33	37	36	40	26	13	13	12	14	18	24	
29		15	13	11	11	14	11	14	15	17	24	31	35	29	31	36	41	31	31	20	14	12	14	12	12	24	
30		11	11	18	25	26	59	46	56	58	42	70	47	30	28	21	23	21	28	30	20	30	37	37	30	24	

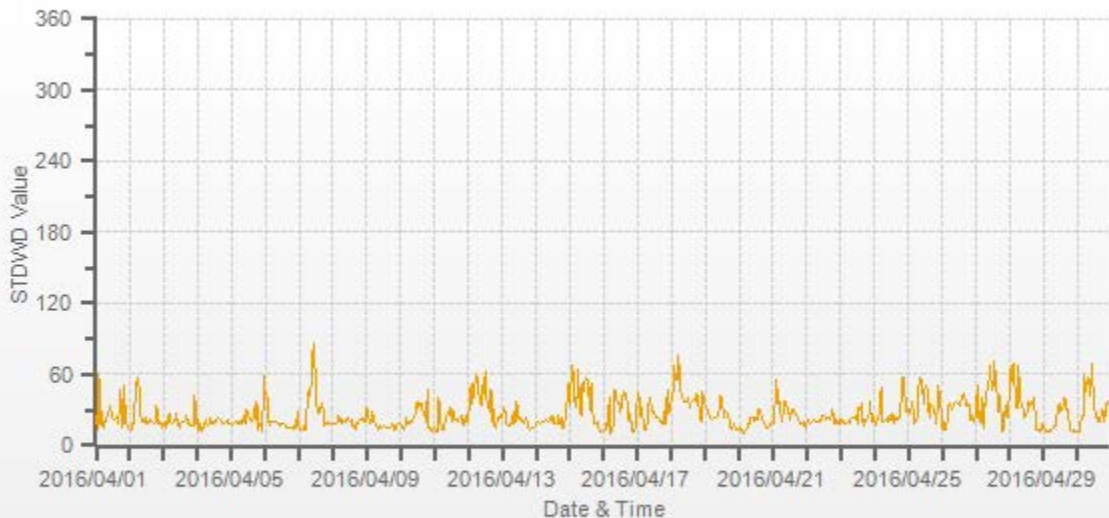
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

LAST CALIBRATION: April 1, 2015

CALIBRATION TIME: 0 HRS OPERATIONAL TIME: 804 HRS

STDWD[Deg] Station: LICA COLD LAKE SOUTH Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— STDWD[Deg]

RELATIVE HUMIDITY

RELATIVE HUMIDITY (RH) hourly averages in %

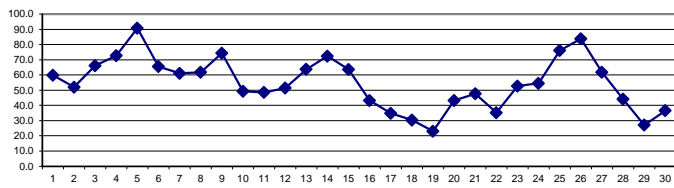
MST

DAY	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.
1	72	80	83	85	84	78	75	72	65	56	49	47	45	40	38	39	42	43	45	52	58	66	62	61	38	85	59.9	24
2	64	67	71	74	77	82	80	64	61	53	44	37	36	34	29	28	27	26	31	43	49	52	60	61	26	82	52.1	24
3	63	65	67	67	67	71	73	72	77	88	79	77	64	54	51	49	49	52	55	61	64	68	75	80	49	88	66.2	24
4	82	84	87	88	87	87	84	82	75	64	61	59	59	57	55	55	53	56	68	74	77	81	85	86	53	88	72.8	24
5	90	94	95	96	96	95	96	96	93	88	90	91	86	83	86	86	86	85	87	90	92	91	93	94	83	96	90.8	24
6	96	96	94	81	75	74	75	74	71	69	64	70	61	52	47	39	40	44	46	50	55	63	67	72	39	96	65.6	24
7	71	74	76	79	82	82	79	68	64	61	56	51	46	47	45	43	41	39	46	61	64	64	62	64	39	82	61.0	24
8	67	68	69	73	74	74	72	69	65	61	58	55	50	48	46	47	50	53	57	61	64	65	67	70	46	74	61.8	24
9	71	78	89	91	94	96	97	97	88	79	69	68	66	64	67	69	71	64	58	60	61	63	61	62	58	97	74.3	24
10	64	65	66	67	69	68	68	64	61	53	47	42	38	36	32	30	26	28	31	42	45	46	45	50	26	69	49.3	24
11	53	56	57	61	66	68	62	56	50	42	37	36	36	36	35	34	34	38	43	47	50	51	55	63	34	68	48.6	24
12	67	68	75	73	79	84	73	57	51	46	43	39	32	29	29	30	30	33	41	44	55	49	50	59	29	84	51.5	24
13	59	63	60	57	58	71	70	53	57	49	43	42	42	47	61	68	61	67	76	80	82	84	87	92	42	92	63.7	24
14	95	95	94	94	93	92	88	82	83	75	67	62	52	51	51	51	50	50	54	60	67	70	78	83	50	95	72.4	24
15	86	88	90	90	89	90	90	77	67	63	59	54	49	48	45	41	40	39	46	54	62	49	55	54	39	90	63.5	24
16	55	59	65	71	69	67	64	58	49	43	39	29	29	27	25	24	24	25	28	34	43	38	35	36	24	71	43.2	24
17	34	33	39	51	55	48	43	38	33	30	28	26	25	21	18	18	18	18	20	31	42	51	56	62	18	62	34.9	24
18	43	54	60	65	73	72	57	42	34	26	19	18	17	14	13	12	12	11	11	12	14	17	17	17	11	73	30.4	24
19	19	20	22	24	27	28	28	26	24	23	22	20	20	19	19	19	19	18	21	26	33	35	23	18	18	35	23.0	24
20	19	24	25	25	29	35	38	42	48	49	53	56	53	51	45	42	42	43	44	48	53	57	57	58	19	58	43.2	24
21	64	65	71	77	79	80	65	57	52	50	48	43	40	36	33	30	28	29	30	30	31	32	36	38	28	80	47.7	24
22	36	35	34	46	53	40	35	36	34	31	28	26	25	24	23	26	31	30	34	40	45	46	44	43	23	53	35.2	24
23	36	39	62	45	40	41	47	55	57	61	65	71	65	59	51	53	46	46	43	45	55	60	62	62	36	71	52.8	24
24	61	47	46	45	61	64	60	46	41	40	41	48	53	64	64	55	51	63	55	56	57	52	56	82	40	82	54.5	24
25	89	93	92	90	91	91	87	83	77	56	47	42	38	37	45	64	79	80	84	88	91	93	94	95	37	95	76.1	24
26	96	96	97	97	97	97	98	97	94	93	88	83	80	73	68	65	63	62	64	71	78	82	87	87	62	98	83.9	24
27	90	92	93	95	95	95	86	78	67	57	48	43	37	33	31	30	33	31	32	41	57	67	74	77	30	95	61.8	24
28	82	86	89	88	89	86	80	70	48	32	23	19	17	17	20	19	19	18	19	24	27	28	28	30	17	89	44.1	24
29	33	36	40	44	47	47	44	38	31	26	19	17	16	16	15	15	15	16	17	19	21	24	26	28	15	47	27.1	24
30	31	32	35	40	41	46	38	34	32	32	29	29	28	28	30	32	35	35	36	37	44	48	50	56	28	56	36.6	24
HOURLY MAX	96	96	97	97	97	97	98	97	94	93	90	91	86	83	86	86	86	85	87	90	92	93	94	95				
HOURLY AVG	62.9	65.1	68.1	69.3	71.2	71.6	68.4	62.8	58.3	53.2	48.8	46.7	43.5	41.5	40.6	40.4	40.5	41.4	44.1	49.4	54.5	56.4	58.2	61.3				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

24 HOUR AVERAGES FOR April 2016

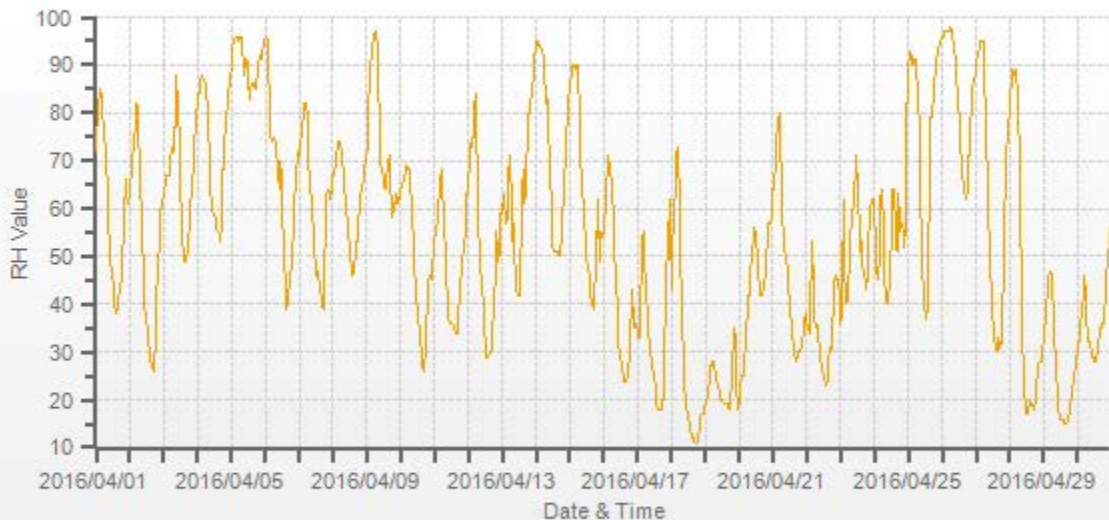


MONTHLY SUMMARY

Hour of th
720

MINIMUM 1-HR AVERAGE:	11	%	@ HOUR(S)	16 , 17	ON DAY(S)	18 , 18
MAXIMUM 1-HR AVERAGE:	98	%	@ HOUR(S)	6	ON DAY(S)	26
MAXIMUM 24-HR AVERAGE:	90.8	%			ON DAY(S)	5
					VAR-VARIOUS	
OPERATIONAL TIME:					720	HRS
AMD OPERATION UPTIME:					100.0	%
STANDARD DEVIATION:	22.29		MONTHLY AVERAGE:		55	%

RH[%RH] Station: LICA COLD LAKE SOUTH Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— RH[%RH]

AMBIENT TEMPERATURE

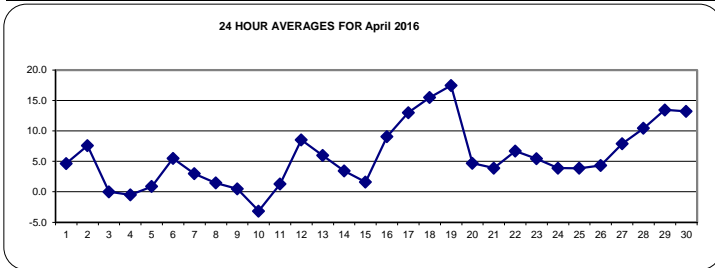
AMBIENT TEMPERATURE (AmbTPX) hourly averages in Degrees Celsius

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
DAY	HR	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
1		1.0	-0.6	-1.6	-2.4	-2.5	-1.1	-0.4	0.6	2.4	4.8	7.3	8.6	9.6	11.1	12.0	12.0	11.1	10.9	9.9	6.7	4.7	2.4	2.7	2.7	-2.5	12.0	4.7	24
2		1.9	0.8	-0.1	-0.7	-1.2	-2.3	-1.5	2.7	5.3	8.7	11.4	14.0	14.7	16.3	18.2	18.3	17.2	16.8	14.5	10.5	7.1	5.1	2.9	1.4	-2.3	18.3	7.6	24
3		-0.1	-0.7	-1.0	-1.3	-0.6	-0.3	0.0	1.1	1.8	1.6	1.7	1.1	1.6	2.0	2.3	2.3	2.4	1.2	0.1	-1.3	-2.0	-2.8	-3.9	-4.8	-4.8	2.4	0.0	24
4		-5.0	-4.7	-5.3	-5.5	-5.5	-5.8	-4.8	-3.2	-1.3	1.2	2.3	2.8	2.8	3.0	3.5	3.6	3.2	2.9	1.9	1.2	0.5	0.1	-0.1	-0.1	-5.8	3.6	-0.5	24
5		-0.3	-0.4	-0.3	-0.3	-0.2	-0.2	-0.2	0.1	0.1	0.2	0.0	0.5	1.0	1.6	1.6	2.0	2.4	2.7	2.5	1.6	1.4	1.6	1.7	1.9	-0.4	2.7	0.9	24
6		1.9	2.5	2.9	4.6	5.4	5.1	5.0	5.6	5.8	6.3	7.0	6.4	7.4	8.7	8.7	8.9	8.7	7.7	7.1	5.7	4.7	2.6	2.0	0.9	0.9	8.9	5.5	24
7		0.7	-0.1	-1.0	-1.8	-2.6	-2.6	-1.6	0.4	1.0	2.0	3.5	5.2	7.1	7.6	8.5	8.8	9.8	10.0	8.0	4.1	2.7	2.0	0.8	-0.8	-2.6	10.0	3.0	24
8		-1.6	-2.2	-2.7	-3.2	-3.6	-3.8	-3.3	-2.3	-1.1	0.0	1.3	2.6	4.5	6.0	6.7	6.6	6.0	5.7	4.7	3.7	3.3	3.2	2.8	1.8	-3.8	6.7	1.5	24
9		1.5	1.0	-0.1	-0.3	-0.3	-0.4	0.2	0.9	2.1	3.0	4.2	4.4	4.6	3.9	2.9	1.6	0.5	-0.2	-1.0	-1.7	-2.2	-3.3	-4.6	-4.4	-4.6	4.6	0.5	24
10		-4.8	-5.9	-6.3	-6.0	-5.9	-6.0	-5.9	-5.5	-5.2	-4.1	-3.0	-2.1	-1.2	-0.3	0.2	0.8	1.0	0.8	0.1	-1.9	-2.7	-3.3	-3.8	-4.7	-6.3	1.0	-3.2	24
11		-5.3	-5.7	-6.2	-6.7	-7.4	-7.7	-5.8	-3.6	-1.1	1.5	3.9	5.2	6.1	6.9	7.5	8.2	8.6	7.9	6.6	5.5	4.5	3.8	2.8	1.1	-7.7	8.6	1.3	24
12		0.2	0.3	-0.7	-0.2	-1.7	-2.4	-0.2	4.2	6.6	9.1	11.6	14.5	16.3	17.4	17.9	17.4	17.1	16.1	15.0	13.2	9.5	9.4	8.4	5.5	-2.4	17.9	8.5	24
13		4.6	3.3	3.4	4.1	4.0	2.2	2.6	5.8	5.4	7.3	9.9	10.6	10.4	10.4	9.4	9.1	8.5	7.1	6.8	5.9	4.4	3.3	2.7	2.1	2.1	10.6	6.0	24
14		2.1	2.5	2.8	2.6	2.5	2.4	2.7	2.8	3.2	4.1	5.6	5.8	7.4	6.9	6.4	6.1	6.1	5.7	4.7	3.1	1.3	0.1	-1.7	-2.8	-2.8	7.4	3.4	24
15		-3.8	-4.4	-5.1	-5.7	-6.2	-6.4	-4.3	-0.8	0.0	0.9	1.9	3.6	5.0	6.2	7.4	8.6	9.3	9.3	7.2	4.3	1.9	4.2	2.9	2.9	-6.4	9.3	1.6	24
16		2.6	1.4	0.2	-0.8	0.4	0.8	2.1	4.1	7.6	9.7	10.9	13.5	14.8	15.7	16.7	17.4	16.9	17.1	15.6	13.6	10.3	9.7	9.3	8.1	-0.8	17.4	9.1	24
17		8.2	8.2	6.2	3.2	2.2	3.3	5.3	7.9	11.5	15.1	17.8	19.1	20.1	21.6	22.1	22.6	22.4	22.2	21.4	16.5	11.9	9.3	7.7	6.3	2.2	22.6	13.0	24
18		10.2	7.1	5.4	4.0	2.4	2.2	7.0	12.3	15.5	19.1	21.6	22.0	22.4	23.0	23.3	23.1	23.2	22.8	21.3	19.7	17.5	15.7	15.4	15.7	2.2	23.3	15.5	24
19		15.0	14.3	13.5	12.3	11.2	10.6	11.3	13.0	14.8	17.0	19.4	21.8	23.2	24.1	25.0	24.9	24.8	24.1	22.2	18.7	15.3	13.8	15.2	13.5	10.6	25.0	17.5	24
20		11.6	9.0	7.7	7.4	5.9	5.0	6.5	6.9	6.7	6.5	4.7	3.2	3.2	2.9	3.9	4.8	5.0	4.6	3.9	2.6	1.4	0.6	-0.1	-1.0	-1.0	11.6	4.7	24
21		-1.8	-2.2	-3.3	-4.6	-5.1	-5.0	-1.8	-0.2	1.7	3.1	4.4	5.6	6.9	8.5	9.8	10.6	10.5	10.2	9.6	8.9	8.2	7.5	6.6	5.5	-5.1	10.6	3.9	24
22		4.8	4.6	4.2	3.1	2.1	2.9	3.6	3.9	4.9	6.6	8.0	8.9	9.8	10.3	10.0	9.8	9.4	9.6	9.0	7.9	7.0	6.7	6.8	6.7	2.1	10.3	6.7	24
23		6.0	5.1	4.1	4.0	3.7	3.4	3.5	3.7	4.2	4.9	5.2	5.3	6.0	7.0	7.8	7.6	7.5	7.5	7.4	7.0	5.9	5.1	4.6	4.4	3.4	7.8	5.5	24
24		4.2	4.8	5.0	4.8	3.4	3.0	3.4	3.7	4.1	4.4	4.5	4.0	3.8	3.1	3.1	4.0	4.5	3.4	4.1	4.1	4.0	4.3	4.1	2.0	2.0	5.0	3.9	24
25		1.3	1.1	1.1	1.0	0.9	1.0	1.6	2.3	3.6	5.5	6.2	6.9	7.8	8.3	7.8	5.6	4.5	4.7	4.9	4.3	3.5	3.3	3.0	2.8	0.9	8.3	3.9	24
26		2.5	2.2	1.9	1.4	1.2	1.1	1.4	2.4	2.9	3.5	4.5	4.9	5.4	6.8	7.8	8.3	8.8	8.6	8.2	6.4	5.0	4.0	2.7	2.5	1.1	8.8	4.4	24
27		1.1	-0.3	-1.2	-1.5	-1.3	-0.5	2.5	4.4	7.2	9.9	12.1	13.5	14.7	15.7	16.4	15.6	15.0	15.9	15.4	13.1	8.9	6.1	4.2	2.9	-1.5	16.4	7.9	24
28		1.6	0.5	-0.3	-0.6	-1.2	-0.6	2.1	6.0	10.9	14.2	16.1	16.7	17.0	17.4	17.7	18.0	17.7	17.5	16.5	14.8	13.2	12.3	12.0	11.4	-1.2	18.0	10.5	24
29		10.5	9.8	8.3	7.5	6.5	6.3	7.7	9.7	12.1	14.7	16.7	17.6	18.2	18.8	19.2	19.5	19.4	18.7	18.0	16.4	14.1	12.3	10.8	10.3	6.3	19.5	13.5	24
30		9.1	8.8	8.1	7.0	7.2	6.6	9.7	12.3	14.6	16.6	18.1	18.6	18.5	18.0	17.8	17.1	16.6	16.8	16.2	15.5	13.4	11.2	10.6	9.2	6.6	18.6	13.2	24
HOURLY MAX		15.0	14.3	13.5	12.3	11.2	10.6	11.3	13.0	15.5	19.1	21.6	22.0	23.2	24.1	25.0	24.9	24.8	24.1	22.2	19.7	17.5	15.7	15.4	15.7				
HOURLY AVG		2.7	2.0	1.3	0.8	0.5	0.4	1.6	3.4	4.9	6.6	8.0	8.8	9.6	10.3	10.7	10.8	10.6	10.3	9.4	7.7	6.0	5.0	4.3	3.4				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

24 HOUR AVERAGES FOR April 2016



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	-7.7 °C	@ HOUR(S)	5	ON DAY(S)	11
MAXIMUM 1-HR AVERAGE:	25.0 °C	@ HOUR(S)	14	ON DAY(S)	19
MAXIMUM 24-HR AVERAGE:	17.5 °C			ON DAY(S)	19
				VAR-VARIOUS	
OPERATIONAL TIME:				720	HRS
AMD OPERATION UPTIME:				100.0	%
STANDARD DEVIATION:	6.71	MONTHLY AVERAGE:		5.8	°C

TPX[C°] Station: LICA COLD LAKE SOUTH Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— TPX[C°]

APPENDIX II
NON-CONTINUOUS MONITORING DATA RESULTS

VOC RESULTS

Sample ID: 16040046-002

Customer ID: LICA
Cust Samp ID: LICA/VOC/CLS/Mar 31, 2016



Maxxam

VOC Sample Collection Data Sheet

Client: LICA Sampler S/N: 6167
Location: Cold Lake South Canister ID: 17132
Station ID: LICA 01 Canister Installation Date/Time: Mar 28, 2016 / 09:09
Field Sample ID: LICA/VOC/CLS/Mar 31, 2016 Canister Removal Date/Time: Apr 04, 2016 / 08:35

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
<u>Mar 31, 2016</u>	<u>00:00 Mar 31, 2016</u>	<u>00:00 Apr 01, 2016</u>	<u>24.0</u>

Flow Settings		
Meter Reading (sccm)	Pot Set Pt.	Pump Pressure Setting (psig)
<u>10.0</u>	<u>6.52</u>	<u>24</u>

Canister Information	
Initial Canister Vacuum (inHg)	Final Canister Pressure (psig)
<u>-28.0</u>	<u>+22.1</u>

Canister valve open prior to sampling?: YES / NO
Timer set to 0.00 minutes prior to sampling? YES / NO
Canister valve closed prior to disconnection?: YES / NO

Comments: Mar 28, 2016: 24 hour leak check performed.
Initial leak check deployment vacuum: -28.0 in. Hg at 09:09 (Mar 28, 2016)
Final leak check deployment vacuum: -28.0 in. Hg at 09:12 (Mar 29, 2016)
Total leak rate: 0.0 psi over 24 hours 03 min.

Technician Signature: Sample in - by Alex Yakupov
Sample out - by Alex Yakupov

Date: Apr 04, 2016

Volatile Organics Data Results

Date: March 31, 2016
Canister ID: 17132

PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.02
1,1,2,2-Tetrachloroethane	< 0.02
1,1,2-Trichloroethane	< 0.02
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	< 0.04
1,2,3-Trimethylbenzene	< 0.05
1,2,4-Trichlorobenzene	< 0.8
1,2,4-Trimethylbenzene	< 0.03
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.02
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	< 0.02
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	0.03
1-Hexene	< 0.02
1-Pentene	< 0.01
2,2,4-Trimethylpentane	< 0.01
2,2-Dimethylbutane	< 0.01
2,3,4-Trimethylpentane	< 0.01
2,3-Dimethylbutane	< 0.02
2,3-Dimethylpentane	< 0.02
2,4-Dimethylpentane	< 0.01
2-Methylheptane	< 0.01
2-Methylhexane	< 0.01
2-Methylpentane	< 0.01
3-Methylheptane	< 0.02
3-Methylhexane	< 0.02
3-Methylpentane	< 0.01
Acetone	2.1
Acrolein	< 0.3
Benzene	0.23
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	0.02
Carbon disulfide	< 0.01
Carbon tetrachloride	0.12
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.03
Chloromethane	0.98
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	< 0.02
cis-2-Pentene	< 0.02
Cyclohexane	< 0.02
Cyclopentane	< 0.01
Dibromochloromethane	< 0.01
Ethanol	0.5
Ethyl acetate	< 0.4
Ethylbenzene	< 0.01
Freon-11	0.37

Volatile Organics Data Results

Date: March 31, 2016
Canister ID: 17132

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.11
Freon-114	0.03
Freon-12	0.86
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.19
Isopentane	0.14
Isoprene	< 0.01
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	< 0.03
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	< 0.3
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.02
Methylcyclopentane	< 0.02
Methylene chloride	< 0.3
n-Butane	0.25
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	< 0.01
n-Hexane	0.01
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane	< 0.1
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	< 0.01
o-Xylene	< 0.01
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	< 0.01
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	< 0.01
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02

Sample ID: 16040128-003

AIR FCD-01320/2

Customer ID: LICA

Cust Samp ID: LICA/VOC/CLS/Apr 06, 2016

Maxxam

VOC Sample Collection Data Sheet

Client: LICA
 Location: cold Lake South
 Station ID: LICA 01
 Field Sample ID: LICA/VOC/CLS/Apr 06, 2016

Sampler S/N: 6167
 Canister ID: H 3294
 Canister Installation Date/Time: Apr 04, 2016 / 08:38
 Canister Removal Date/Time: Apr 07, 2016 / 12:20

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
<u>Apr 06, 2016</u>	<u>00:00</u>	<u>00:00 Apr 7, 2016</u>	<u>24.0</u>

Flow Settings		
Meter Reading (scm)	Pot Set Pt.	Pump Pressure Setting (psig)
<u>10.0</u>	<u>6.52</u>	<u>24</u>

Canister Information	
Initial Canister Vacuum (inHg)	Final Canister Pressure (psig)
<u>-28.0</u>	<u>+22.5</u>



Canister valve open prior to sampling?: YES / NO
 Timer set to 0.00 minutes prior to sampling? YES / NO
 Canister valve closed prior to disconnection?: YES / NO

Comments: n/a

Technician Signature: Sample in - by Alex Yakupov
Sample out - by Alex Yakupov

Date: Apr 07, 2016

Volatile Organics Data Results

Date: April 6, 2016
Canister ID: H3294

PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.02
1,1,2,2-Tetrachloroethane	< 0.02
1,1,2-Trichloroethane	< 0.02
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	< 0.04
1,2,3-Trimethylbenzene	< 0.05
1,2,4-Trichlorobenzene	< 0.8
1,2,4-Trimethylbenzene	< 0.03
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.02
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	< 0.02
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	0.03
1-Hexene	< 0.02
1-Pentene	< 0.01
2,2,4-Trimethylpentane	< 0.01
2,2-Dimethylbutane	< 0.01
2,3,4-Trimethylpentane	< 0.01
2,3-Dimethylbutane	< 0.02
2,3-Dimethylpentane	< 0.02
2,4-Dimethylpentane	< 0.01
2-Methylheptane	< 0.01
2-Methylhexane	< 0.01
2-Methylpentane	< 0.01
3-Methylheptane	< 0.02
3-Methylhexane	< 0.02
3-Methylpentane	< 0.01
Acetone	1.8
Acrolein	< 0.3
Benzene	0.04
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	0.02
Carbon disulfide	0.06
Carbon tetrachloride	0.13
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.03
Chloromethane	1.03
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	< 0.02
cis-2-Pentene	< 0.02
Cyclohexane	< 0.02
Cyclopentane	< 0.01
Dibromochloromethane	< 0.01
Ethanol	0.4
Ethyl acetate	< 0.4
Ethylbenzene	< 0.01
Freon-11	0.40

Volatile Organics Data Results

Date: April 6, 2016
Canister ID: H3294

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.12
Freon-114	0.04
Freon-12	0.92
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.25
Isopentane	0.18
Isoprene	< 0.01
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	< 0.03
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	< 0.3
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.01
Methylcyclopentane	< 0.02
Methylene chloride	< 0.3
n-Butane	0.34
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	< 0.01
n-Hexane	0.02
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane	< 0.1
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	< 0.01
o-Xylene	< 0.01
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	0.01
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	< 0.01
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02

Sample ID: 16040172-001

Customer ID: LICA

Cust Samp ID: LICA/VOC/CLS/Apr 12, 2016



Maxxam

VOC Sample Collection Data Sheet

Client: LICA
 Location: Cold Lake South
 Station ID: LICA 01
 Field Sample ID: LICA/VOC/CLS/Apr 12, 2016

Sampler S/N: 6167
 Canister ID: 15757
 Canister Installation Date/Time: Apr 07, 2016 / 12:21
 Canister Removal Date/Time: Apr 14, 2016 / 07:51

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
<u>Apr 12, 2016</u>	<u>00:00</u>	<u>00:00 Apr 13, 2016</u>	<u>24.0</u>

Flow Settings		
Meter Reading (sccm)	Pot Set Pt.	Pump Pressure Setting (psig)
<u>10.0</u>	<u>6.52</u>	<u>24</u>

Canister Information	
Initial Canister Vacuum (inHg)	Final Canister Pressure (psig)
<u>-28.0</u>	<u>+22.1</u>

Canister valve open prior to sampling?: YES / NO
 Timer set to 0.00 minutes prior to sampling? YES / NO
 Canister valve closed prior to disconnection?: YES / NO

Comments: n/a

Technician Signature: Sample in - by Alex Yakupov
Sample out - by Alex Yakupov Date: April 14, 2016

Volatile Organics Data Results

Date: April 12, 2016
Canister ID: 15757

PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.02
1,1,2-Tetrachloroethane	< 0.02
1,1,2-Trichloroethane	< 0.02
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	< 0.04
1,2,3-Trimethylbenzene	< 0.05
1,2,4-Trichlorobenzene	< 0.8
1,2,4-Trimethylbenzene	< 0.03
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.03
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	< 0.02
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	0.12
1-Hexene	< 0.02
1-Pentene	0.03
2,2,4-Trimethylpentane	< 0.01
2,2-Dimethylbutane	< 0.01
2,3,4-Trimethylpentane	< 0.01
2,3-Dimethylbutane	< 0.02
2,3-Dimethylpentane	0.04
2,4-Dimethylpentane	< 0.01
2-Methylheptane	< 0.01
2-Methylhexane	< 0.01
2-Methylpentane	0.11
3-Methylheptane	< 0.02
3-Methylhexane	0.03
3-Methylpentane	0.03
Acetone	4.4
Acrolein	< 0.3
Benzene	0.08
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	0.01
Carbon disulfide	< 0.01
Carbon tetrachloride	0.12
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.05
Chloromethane	0.93
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	< 0.02
cis-2-Pentene	< 0.02
Cyclohexane	< 0.02
Cyclopentane	0.01
Dibromochloromethane	< 0.01
Ethanol	1.7
Ethyl acetate	< 0.4
Ethylbenzene	0.01
Freon-11	0.36

Volatile Organics Data Results

Date: April 12, 2016
Canister ID: 15757

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.09
Freon-114	0.03
Freon-12	0.86
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.64
Isopentane	0.52
Isoprene	< 0.01
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	0.03
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	0.3
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.02
Methylcyclopentane	0.03
Methylene chloride	< 0.3
n-Butane	1.31
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	0.01
n-Hexane	0.05
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane	0.2
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	< 0.01
o-Xylene	0.01
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	0.08
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	0.01
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02

Maxxam Analytics

VOC Sample Collection Data Sheet Alberta Air FCD AIR FCD-01320 / 2

Client: LICA Sampler S/N: 6167
 Location: Cold Lake South Canister ID: 2478
 Station ID: LICA 01 Installation Date/Time (mst): Apr 14, 2016 @ 07:52
 Sample ID: LICA/VOC/CLS/Apr 18, 2016 Removal Date/Time (mst): Apr 19, 2016 @ 11:20

Date and Time Information

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
<u>Apr 18, 2016</u>	<u>00:00</u>	<u>00:00</u> <u>Apr 19, 2016</u>	<u>24.0</u>

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
<u>-28.0</u>	<u>+22.6</u>

Flow Settings		
Flow Reading (sccm)	Pot Set Point	Pump Set (psi)
<u>10.0</u>	<u>6.52</u>	<u>24</u>

Deployment/Collection and Maintenance Checklist

Initial leak check deployment vacuum (in. Hg) = - @ - mst
 Final leak check deployment vacuum (in. Hg) = - @ - mst
 Total leak rate = - psi over - minutes
 Timer reset to zero prior to sampling? Yes (yes/no)
 Date of last flow calibration: n/a (due every 3 months)
 Last date of sample line & fitting replacement: Mar 29, 2016 (due every 6 months)

****Leak rate must be 0.0 psi over a minimum of 5 minutes or repair is required****

Comments: Date of last audit: Mar 29, 2016

Deployment Technician Signature: Alex Yakupov

Collection Technician Signature: Alex Yakupov Date: April 19, 2016

Sample ID: 16040201-001

Customer ID: LICA
 Cust Samp ID: LICA/VOC/CLS/Apr 18, 2016



Volatile Organics Data Results

Date: April 18 , 2016
Canister ID: 2478

PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.02
1,1,2,2-Tetrachloroethane	< 0.02
1,1,2-Trichloroethane	< 0.02
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	< 0.04
1,2,3-Trimethylbenzene	< 0.05
1,2,4-Trichlorobenzene	< 0.8
1,2,4-Trimethylbenzene	< 0.03
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.02
1,2-Dichloropropane	0.01
1,3,5-Trimethylbenzene	< 0.02
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	0.23
1-Hexene	< 0.02
1-Pentene	0.02
2,2,4-Trimethylpentane	0.04
2,2-Dimethylbutane	< 0.01
2,3,4-Trimethylpentane	< 0.01
2,3-Dimethylbutane	< 0.02
2,3-Dimethylpentane	0.03
2,4-Dimethylpentane	0.01
2-Methylheptane	< 0.01
2-Methylhexane	< 0.01
2-Methylpentane	0.06
3-Methylheptane	< 0.02
3-Methylhexane	0.04
3-Methylpentane	0.03
Acetone	5.2
Acrolein	< 0.3
Benzene	0.08
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	0.01
Carbon disulfide	0.19
Carbon tetrachloride	0.09
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.03
Chloromethane	0.87
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	< 0.02
cis-2-Pentene	< 0.02
Cyclohexane	< 0.02
Cyclopentane	< 0.01
Dibromochloromethane	< 0.01
Ethanol	2.8
Ethyl acetate	< 0.4
Ethylbenzene	0.02
Freon-11	0.27

Volatile Organics Data Results

Date: April 18 , 2016
Canister ID: 2478

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.08
Freon-114	0.02
Freon-12	0.64
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.53
Isopentane	0.46
Isoprene	< 0.01
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	0.11
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	0.4
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.02
Methylcyclopentane	0.03
Methylene chloride	< 0.3
n-Butane	0.88
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	0.02
n-Hexane	0.04
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane	0.1
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	0.8
o-Ethyltoluene	< 0.01
o-Xylene	0.03
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	0.12
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	< 0.01
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02

Sample ID: 16050011-001

Customer ID: LICA

Cust Samp ID: LICA/VOC/CLS/Apr 24, 2016

Maxxam Analytics

Sample Collection Data Sheet Alberta Air FCD AIR FCD-01320 / 2

Client: LICA Sampler S/N: 6167
 Location: Cold Lake South Canister ID: H3286
 Station ID: LICA 01 Installation Date/Time (mst): Apr 19, 2016 @ 11:21
 Sample ID: LICA/VOC/CLS/Apr 24, 2016 Removal Date/Time (mst): Apr 29, 2016 @ 09:12

Date and Time Information

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
<u>Apr 24, 2016</u>	<u>00:00</u>	<u>00:00</u> <u>Apr 25, 2016</u>	<u>24.0</u>

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
<u>-28.0</u>	<u>+23.8</u>

Flow Settings		
Flow Reading (sccm)	Pot Set Point	Pump Set (psi)
<u>10.0</u>	<u>6.52</u>	<u>24</u>

Deployment/Collection and Maintenance Checklist

Initial leak check deployment vacuum (in. Hg) = — @ — mst
 Final leak check deployment vacuum (in. Hg) = — @ — mst
 Total leak rate = — psi over — minutes
 Timer reset to zero prior to sampling? yes (yes/no)
 Date of last flow calibration: n/a (due every 3 months)
 Last date of sample line & fitting replacement: Mar 29, 2016 (due every 6 months)

Leak rate must be 0.0 psi over a minimum of 5 minutes or repair is required

Comments: Date of last audit: Mar 29, 2016

Deployment Technician Signature: Alex Yakupov

Collection Technician Signature: Alex Yakupov Date: Apr 29, 2016



Volatile Organics Data Results

Date: April 24, 2016
Canister ID: H3286

PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.02
1,1,2-Tetrachloroethane	< 0.02
1,1,2-Trichloroethane	< 0.02
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	< 0.04
1,2,3-Trimethylbenzene	< 0.05
1,2,4-Trichlorobenzene	< 0.8
1,2,4-Trimethylbenzene	< 0.03
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.02
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	< 0.02
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	0.04
1-Hexene	< 0.02
1-Pentene	< 0.01
2,2,4-Trimethylpentane	< 0.01
2,2-Dimethylbutane	< 0.01
2,3,4-Trimethylpentane	< 0.01
2,3-Dimethylbutane	< 0.02
2,3-Dimethylpentane	< 0.02
2,4-Dimethylpentane	< 0.01
2-Methylheptane	< 0.01
2-Methylhexane	< 0.01
2-Methylpentane	0.01
3-Methylheptane	< 0.02
3-Methylhexane	< 0.02
3-Methylpentane	< 0.01
Acetone	3.0
Acrolein	< 0.3
Benzene	0.03
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	0.01
Carbon disulfide	0.33
Carbon tetrachloride	0.12
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.03
Chloromethane	0.99
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	< 0.02
cis-2-Pentene	< 0.02
Cyclohexane	< 0.02
Cyclopentane	< 0.01
Dibromochloromethane	< 0.01
Ethanol	1.0
Ethyl acetate	< 0.4
Ethylbenzene	< 0.01
Freon-11	0.39

Volatile Organics Data Results

Date: April 24, 2016
Canister ID: H3286

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.09
Freon-114	0.03
Freon-12	0.90
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.29
Isopentane	0.19
Isoprene	< 0.01
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	< 0.03
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	< 0.3
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	< 0.01
Methylcyclopentane	< 0.02
Methylene chloride	< 0.3
n-Butane	0.41
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	< 0.01
n-Hexane	< 0.01
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane	< 0.1
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	< 0.01
o-Xylene	< 0.01
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	0.03
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	0.01
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02

Sample ID: 16050026-003

Customer ID: LICA
Cust Samp ID: LICA/VOC/CLS/Apr 30, 2016

Maxxam Analytics

VOC Sample Collection Data Sheet Alberta Air FCD AIR FCD-01320 / 2

Client: <u>LICA</u>	Sampler S/N: <u>6167</u>
Location: <u>Cold Lake South</u>	Canister ID: <u>2535</u>
Station ID: <u>LICA 01</u>	Installation Date/Time (mst): <u>Apr 29, 2016 @ 09:14</u>
Sample ID: <u>LICA/VOC/CLS/Apr 30, 2016</u>	Removal Date/Time (mst): <u>May 3, 2016 @ 12:53</u>

Date and Time Information

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
<u>Apr 30, 2016</u>	<u>00:00</u>	<u>11:00:00</u> <u>Apr May 1, 2016</u>	<u>24.0</u>

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
<u>-28.0</u>	<u>+23.3</u>

Flow Settings		
Flow Reading (sccm)	Pot Set Point	Pump Set (psi)
<u>10.0</u>	<u>6.52</u>	<u>24</u>

Deployment/Collection and Maintenance Checklist

Initial leak check deployment vacuum (in. Hg) = — @ — mst

Final leak check deployment vacuum (in. Hg) = — @ — mst

Total leak rate = — psi over — minutes

Timer reset to zero prior to sampling? YES (yes/no)

Date of last flow calibration: Mar 29, 2016 (due every 3 months)

Last date of sample line & fitting replacement: Mar 29, 2016 (due every 6 months)

****Leak rate must be 0.0 psi over a minimum of 5 minutes or repair is required****

Comments: Date of last audit: Mar 29, 2016
Sample lines and fittings were renewed on May 3, 2016

Deployment Technician Signature: Alex Yakupov

Collection Technician Signature: Alex Yakupov Date: May 3, 2016



Volatile Organics Data Results

Date: April 30, 2016
Canister ID: 2535

PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.02
1,1,2,2-Tetrachloroethane	< 0.02
1,1,2-Trichloroethane	< 0.02
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	< 0.04
1,2,3-Trimethylbenzene	< 0.05
1,2,4-Trichlorobenzene	< 0.8
1,2,4-Trimethylbenzene	< 0.03
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.02
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	< 0.02
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	0.09
1-Hexene	0.03
1-Pentene	0.02
2,2,4-Trimethylpentane	< 0.01
2,2-Dimethylbutane	0.01
2,3,4-Trimethylpentane	< 0.01
2,3-Dimethylbutane	0.02
2,3-Dimethylpentane	0.04
2,4-Dimethylpentane	0.01
2-Methylheptane	< 0.01
2-Methylhexane	0.14
2-Methylpentane	0.07
3-Methylheptane	< 0.02
3-Methylhexane	0.11
3-Methylpentane	0.04
Acetone	4.9
Acrolein	< 0.3
Benzene	0.04
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	0.01
Carbon disulfide	0.05
Carbon tetrachloride	0.11
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.03
Chloromethane	0.84
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	< 0.02
cis-2-Pentene	< 0.02
Cyclohexane	0.02
Cyclopentane	0.01
Dibromochloromethane	< 0.01
Ethanol	1.7
Ethyl acetate	< 0.4
Ethylbenzene	< 0.01
Freon-11	0.33

Volatile Organics Data Results

Date: April 30 , 2016
Canister ID: 2535

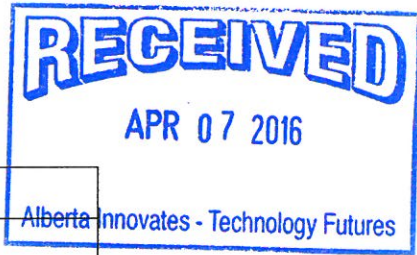
PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.08
Freon-114	0.03
Freon-12	0.78
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.52
Isopentane	0.53
Isoprene	0.01
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	< 0.03
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	0.3
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.07
Methylcyclopentane	0.05
Methylene chloride	0.3
n-Butane	1.37
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	0.13
n-Hexane	0.08
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane	0.2
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	< 0.01
o-Xylene	0.01
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	0.08
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	0.01
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02

PAH RESULTS

Sample ID: 16040046-003

Customer ID: LICA

Cust Samp ID: LICA/PUF/CLS/Mar 31, 2016



TISCH PUF PLUS Sample Collection Data Sheet

Client:	<u>LICA</u>	Puf+ S/N:	<u>TE-08</u>
Location:	<u>Cold Lake South</u>	Motor S/N:	<u>1138/100-1020</u>
Station ID:	<u>LICA 01</u>	Installation Date/Time:	<u>Mar 28, 2016 / 11:41</u>
Field Sample ID:	<u>LICA/PUF/CLS/Mar 31, 2016</u>	Removal Date/Time:	<u>Apr 04, 2016 / 08:25</u>

Sample Data Collection Information

Sample Date:	<u>Mar 31, 2016</u>	Average Pressure (mmHg)	<u>716</u>
Start Time (mst):	<u>00:00</u>	Average Flow (Q _{std})	<u>229</u>
End Time (mst):	<u>00:00 Apr 01, 2016</u>	Average Temperature (°C)	<u>+ 2.2°</u>
Elapsed Time (Hours):	<u>24.0</u>	Volume (V _{std} m ³)	<u>330.18</u>

Sample Recovery Checklist

(circle one)

Flow Rate 230 slpm +/- 0.2 slpm ?	<u>YES</u>	NO
Average temperature appears correct?	<u>YES</u>	NO
Average pressure appears correct?	<u>YES</u>	NO
Any error messages? (if yes list below)	YES	<u>NO</u>
Sample duration 24 hours?	<u>YES</u>	NO
Date of last calibration/audit:	<u>Mar 28, 2016</u>	
Other observations?	<u>n/a</u>	

Deployed By: Alex Yakupov

Collected By: Alex Yakupov Date: Apr 04, 2016

Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: March 31, 2016
PUF S/N: TE08

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.04
2-Methylnaphthalene	0.06
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	0.02
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	< 0.01
Benzo(a)anthracene	0.02
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	< 0.01
Benzo(c)phenanthrene	< 0.01
Benzo(e)pyrene	< 0.01
Benzo(ghi)perylene	< 0.01
Chrysene	< 0.01
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.01
Fluorene	0.03
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.03
Perylene	< 0.01
Phenanthrene	0.09
Pyrene	0.01
Retene	0.01

Sample ID: 16040128-004

Customer ID: LICA

Cust Samp ID: LICA/PUF/CLS/Apr 06, 2016

RECEIVED

APR 13 2016

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TISCH PUF PLUS Sample Collection Data Sheet

Client:	<u>LICA</u>	Puf+ S/N:	<u>TE-01</u>
Location:	<u>Cold Lake South</u>	Motor S/N:	<u>1138/100-1020</u>
Station ID:	<u>LICA 01</u>	Installation Date/Time:	<u>Apr 04, 2016/08:26</u>
Field Sample ID:	<u>LICA/PUF/CLS/Apr 06, 2016</u>	Removal Date/Time:	<u>Apr 07, 2016/12:13</u>

Sample Data Collection Information

Sample Date:	<u>Apr 06, 2016</u>	Average Pressure (mmHg)	<u>710</u>
Start Time (mst):	<u>00:00</u>	Average Flow (Q _{std})	<u>229</u>
End Time (mst):	<u>00:00 Apr 07, 2016</u>	Average Temperature (°C)	<u>6.0°</u>
Elapsed Time (Hours):	<u>24.0</u>	Volume (V _{std} m ³)	<u>330.21</u>

Sample Recovery Checklist

(circle one)

Flow Rate 230 slpm +/- 0.2 slpm ?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Average temperature appears correct?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Average pressure appears correct?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Any error messages? (if yes list below)	<input type="radio"/> YES	<input checked="" type="radio"/> NO
Sample duration 24 hours?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Date of last calibration/audit:	<u>Mar 28, 2016</u>	
Other observations?	<u>n/a</u>	

Deployed By:	<u>Alex Yakupov</u>	
Collected By:	<u>Alex Yakupov</u>	<u>Date: Apr 07, 2016</u>

Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

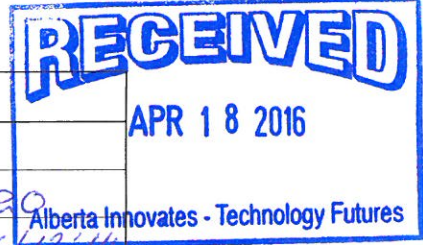
Date: April 6, 2016
PUF S/N: TE01

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.03
2-Methylnaphthalene	0.07
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	0.01
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	0.01
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	< 0.01
Benzo(c)phenanthrene	< 0.01
Benzo(e)pyrene	< 0.01
Benzo(ghi)perylene	< 0.01
Chrysene	< 0.01
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.05
Fluorene	0.04
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.04
Perylene	< 0.01
Phenanthrene	0.10
Pyrene	0.03
Retene	0.03

Sample ID: 16040172-002

Customer ID: LICA

Cust Samp ID: LICA/PUF/CLS/Apr 12, 2016



TISCH PUF PLUS Sample Collection Data Sheet

Client: LICA Puf+ S/N: TE-02
Location: Cold Lake South Motor S/N: 1138/100-1020
Station ID: LICA 01 Installation Date/Time: Apr 07, 2016/12:44
Field Sample ID: LICA/PUF/CLS/Apr 12, 2016 Removal Date/Time: Apr 14, 2016/07:57

Sample Data Collection Information

Sample Date:	<u>Apr 12, 2016</u>	Average Pressure (mmHg)	<u>708</u>
Start Time (mst):	<u>00:00</u>	Average Flow (Q _{std})	<u>229</u>
End Time (mst):	<u>00:00 Apr 13, 2016</u>	Average Temperature (°C)	<u>10.4°</u>
Elapsed Time (Hours):	<u>24.0</u>	Volume (V _{std} m ³)	<u>330.19</u>

Sample Recovery Checklist

(circle one)

Flow Rate 230 slpm +/- 0.2 slpm ?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Average temperature appears correct?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Average pressure appears correct?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Any error messages? (if yes list below)	<input type="radio"/> YES	<input checked="" type="radio"/> NO
Sample duration 24 hours?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Date of last calibration/audit:	<u>Mar 28, 2016</u>	
Other observations?	<u>n/a</u>	

Deployed By: Alex Yakupov

Collected By: Alex Yakupov Date: Apr 14, 2016

Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: April 12, 2016
PUF S/N: TE02

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.07
2-Methylnaphthalene	0.13
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	0.02
Acenaphthene	0.04
Acenaphthylene	0.08
Acridine	< 0.01
Anthracene	0.04
Benzo(a)anthracene	0.02
Benzo(a)pyrene	0.02
Benzo(b,j,k)fluoranthene	0.04
Benzo(c)phenanthrene	< 0.01
Benzo(e)pyrene	0.01
Benzo(ghi)perylene	< 0.01
Chrysene	0.01
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	0.01
Fluoranthene	0.14
Fluorene	0.11
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.09
Perylene	< 0.01
Phenanthrene	0.37
Pyrene	0.10
Retene	0.09

Sample ID: 16040201-002

Customer ID: LICA

Cust Samp ID: LICA/PUF/CLS/Apr 18, 2016

TISCH PUF PLUS Sample Collection Data Sheet

Client:	<u>LICA</u>	Puff S/N:	<u>TE-07</u>
Location:	<u>Cold Lake South</u>	Motor S/N:	<u>1138/100-1020</u>
Station ID:	<u>LICA 01</u>	Installation Date/Time:	<u>Apr 14, 2016/07:58</u>
Field Sample ID:	<u>LICA/PUF/CLS/Apr 18, 2016</u>	Removal Date/Time:	<u>Apr 19, 2016/10:55</u>

Sample Data Collection Information

Sample Date:	<u>Apr 18, 2016</u>	Average Pressure (mmHg)	<u>718</u>
Start Time (mst):	<u>00:00</u>	Average Flow (Q _{std})	<u>229</u>
End Time (mst):	<u>00:00 Apr 19, 2016</u>	Average Temperature (°C)	<u>16.2°</u>
Elapsed Time (Hours):	<u>24.0</u>	Volume (V _{std} m ³)	<u>330.20</u>

Sample Recovery Checklist

(circle one)

Flow Rate 230 slpm +/- 0.2 slpm ?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Average temperature appears correct?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Average pressure appears correct?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Any error messages? (if yes list below)	<input type="radio"/> YES	<input checked="" type="radio"/> NO
Sample duration 24 hours?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Date of last calibration/audit:	<u>Mar 28, 2016</u>	
Other observations?	<u>n/a</u>	



Deployed By:	<u>Alex Yakupov</u>
Collected By:	<u>Alex Yakupov</u>
Date:	<u>April 19, 2016</u>

Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: April 18, 2016
PUF S/N: TE07

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.03
2-Methylnaphthalene	0.06
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	< 0.01
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	0.01
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	0.02
Benzo(c)phenanthrene	< 0.01
Benzo(e)pyrene	< 0.01
Benzo(ghi)perylene	< 0.01
Chrysene	< 0.01
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.07
Fluorene	0.03
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.04
Perylene	< 0.01
Phenanthrene	0.22
Pyrene	0.04
Retene	0.04

Sample ID: 16050011-002

Customer ID: LICA

Cust Samp ID: LICA/PUF/CLS/Apr 24, 2016

TISCH PUF PLUS Sample Collection Data Sheet

Client:	<u>LICA</u>	Puf+ S/N:	<u>P13-01</u>
Location:	<u>Cold Lake South</u>	Motor S/N:	<u>1138/100-1020</u>
Station ID:	<u>LICA 01</u>	Installation Date/Time:	<u>Apr 19, 2016 / 10:56</u>
Field Sample ID:	<u>LICA/PUF/CLS/Apr 24, 2016</u>	Removal Date/Time:	<u>Apr 29, 2016 / 09:20</u>

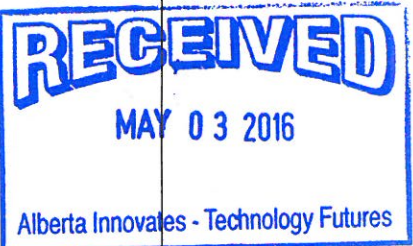
Sample Data Collection Information

Sample Date:	<u>Apr 24, 2016</u>	Average Pressure (mmHg)	<u>715</u>
Start Time (mst):	<u>00:00</u>	Average Flow (Q _{std})	<u>229</u>
End Time (mst):	<u>00:00 Apr 25, 2016</u>	Average Temperature (°C)	<u>4.5°</u>
Elapsed Time (Hours):	<u>24.0</u>	Volume (V _{std} m ³)	<u>330.18</u>

Sample Recovery Checklist

(circle one)

Flow Rate 230 slpm +/- 0.2 slpm ?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Average temperature appears correct?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Average pressure appears correct?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Any error messages? (if yes list below)	<input type="radio"/> YES	<input checked="" type="radio"/> NO
Sample duration 24 hours?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Date of last calibration/audit:	<u>Mar 28, 2016</u>	
Other observations?	<u>n/a</u>	



Deployed By:	<u>Alex Yakupov</u>	
Collected By:	<u>Alex Yakupov</u>	Date: <u>Apr 29, 2016</u>

Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: April 24, 2016
PUF S/N: P1301

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.02
2-Methylnaphthalene	0.03
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	0.01
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	0.02
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	< 0.01
Benzo(c)phenanthrene	0.01
Benzo(e)pyrene	< 0.01
Benzo(ghi)perylene	< 0.01
Chrysene	< 0.01
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.04
Fluorene	0.04
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.02
Perylene	< 0.01
Phenanthrene	0.10
Pyrene	0.03
Retene	0.03

Sample ID: 16050026-004

Customer ID: LICA
Cust Samp ID: LICA/PUF/CLS/Apr 30, 2016

TISCH PUF PLUS Sample Collection Data Sheet

Client:	<u>LICA</u>	Puf+ S/N:	<u>TE-08</u>
Location:	<u>Cold Lake South</u>	Motor S/N:	<u>1138/100-1020</u>
Station ID:	<u>LICA 01</u>	Installation Date/Time:	<u>Apr 29, 2016 / 09:21</u>
Field Sample ID:	<u>LICA/PUF/CLS/Apr 30, 2016</u>	Removal Date/Time:	<u>May 3, 2016 / 12:57</u>

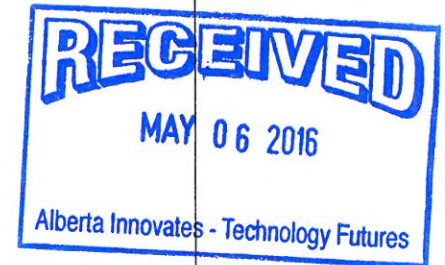
Sample Data Collection Information

Sample Date:	<u>Apr 30, 2016</u>	Average Pressure (mmHg)	<u>718</u>
Start Time (mst):	<u>00:00</u>	Average Flow (Q _{std})	<u>229</u>
End Time (mst):	<u>00:00 Apr-May 1, 2016</u>	Average Temperature (°C)	<u>14.4°</u>
Elapsed Time (Hours):	<u>24.0 A.Y.</u>	Volume (V _{std} m ³)	<u>330.20</u>

Sample Recovery Checklist

(circle one)

Flow Rate 230 slpm +/- 0.2 slpm ?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Average temperature appears correct?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Average pressure appears correct?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Any error messages? (if yes list below)	<input type="radio"/> YES	<input checked="" type="radio"/> NO
Sample duration 24 hours?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Date of last calibration/audit:	<u>Mar 28, 2016</u>	
Other observations?		



Deployed By:	<u>Alex Yakupov</u>	
Collected By:	<u>Alex Yakupov</u>	<u>Date: May 3, 2016</u>

Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: April 30, 2016
PUF S/N: TE08

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.02
2-Methylnaphthalene	0.05
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	0.01
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	< 0.01
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	< 0.01
Benzo(c)phenanthrene	< 0.01
Benzo(e)pyrene	< 0.01
Benzo(ghi)perylene	< 0.01
Chrysene	< 0.01
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.04
Fluorene	0.03
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.02
Perylene	< 0.01
Phenanthrene	0.08
Pyrene	0.02
Retene	0.03

PARTISOL RESULTS

Partisol Sample Data Sheet

Sample ID: 16040051-001

Date Sampled: March 31, 2016
Location: Cold Lake South
Parameter: TSP PM10
Filter #: LICA P509 9828

Customer ID: LICA
Cust Samp ID: LICA filter # P5099828
Priority: Normal

PM2.5

Start Time 00:00 Mar 31, 2016
End Time 00:00 Apr 01, 2016
Status OK
Std Vol 24.716
Valid Time 24:00
Total Time 24.0



Comments: Weather Conditions, etc.

n/a

Technician Signature: Alex Yakupov
Date: Apr 04, 2016

- Programming
- 1) Make sure system is in "Stop Mode"
- 2) "ESC" to Time Screen then "Program"
- 3) Enter Beg 1 0:00
- 4) Enter Dur 24:00:00
- 5) Enter Beg D dd-Aug
- 6) Enter End D dd-Aug
- 7) "Stop/Run"

Note: Beginning & End Date should be same date

Sample ID: 16040121-001

AIR FCD-01318/2

Customer ID: LICA

Partisol Sample Data Sheet

Cust Samp ID: LICA P5099829

Priority: Normal

Date Sampled: April 06, 2016
 Location: Cold Lake South
 Parameter: TSP PM10
 Filter #: LICA P509 98 29

PM2.5

Start Time 00:00 Apr 06, 2016
 End Time 00:00 Apr 07, 2016
 Status OK
 Std Vol 24.117
 Valid Time 24:00
 Total Time 24.0



Comments: Weather Conditions, etc.

n/a

Technician Signature: Alex Yakupov

Date: April 07, 2016
12:46

Programming

- 1) Make sure system is in "Stop Mode"
- 2) "ESC" to Time Screen then "Program"
- 3) Enter Beg 1 0:00
- 4) Enter Dur 24:00:00
- 5) Enter Beg D dd-Aug
- 6) Enter End D dd-Aug
- 7) "Stop/Run"

Note: Beginning & End Date should be same date

Sample ID: 16040170-001

Customer ID: LICA
Cust Samp ID: LICA P5099827

AIR FCD-01318/2

artisol Sample Data Sheet

Priority: Normal

Date Sampled: April 12, 2016
Location: Cold Lake South
Parameter: TSP PM10
Filter #: LICA P5099827

PM2.5

Start Time 00:00 Apr 12, 2016
End Time 00:00 Apr 13, 2016
Status OK
Std Vol 23.786
Valid Time 24:00
Total Time 24.0



Comments: Weather Conditions, etc.

n/a

Technician Signature:

Alex Yakupov
Date: April 14, 2016
at 08:08

Programming

- 1) Make sure system is in "Stop Mode"
- 2) "ESC" to Time Screen then "Program"
- 3) Enter Beg 1 0:00
- 4) Enter Dur 24:00:00
- 5) Enter Beg D dd-Aug
- 6) Enter End D dd-Aug
- 7) "Stop/Run"

Note: Beginning & End Date should be same date

Sample ID: 16040203-001

Customer ID: LICA

AIR FCD-01318/2

Cust Samp ID: LICA P4149577

Partisol Sample Data Sheet

Priority: Normal

Date Sampled: April 18, 2016

Location: Cold Lake South

Parameter: TSP PM10

PM2.5

Filter #: LICA P44 95 77

Start Time 00:00 Apr 18, 2016

End Time 00:00 Apr 19, 2016

Status OK

Std Vol 23.556

Valid Time 24:00

Total Time 24.0



Comments: Weather Conditions, etc.

n/a

Date of last audit: April 08, 2016

Technician Signature: Alex Yakupov
Date: April 19, 2016
at 11:41

Programming

- 1) Make sure system is in "Stop Mode"
- 2) "ESC" to Time Screen then "Program"
- 3) Enter Beg 1 0:00
- 4) Enter Dur 24:00:00
- 5) Enter Beg D dd-Aug
- 6) Enter End D dd-Aug
- 7) "Stop/Run"

Note: Beginning & End Date should be same date

Sample ID: 16050010-001

Customer ID: LICA

AIR FCD-01318/2

Cust Samp ID: LICA P6055850

Partisol Sample Data Sheet

Priority: Normal

Date Sampled: April 24, 2016
 Location: Cold Lake South
 Parameter: TSP PM10
 Filter #: LICA P60 55 850

PM2.5

Start Time 00:00 Apr 24, 2016
 End Time 00:00 Apr 25, 2016
 Status OK
 Std Vol 24.389
 Valid Time 24:00
 Total Time 24.0



Comments: Weather Conditions, etc.

n/a

Date of last calibration/audit: April 08, 2016

Technician Signature: Alex Yakupov

Date: Apr 29, 2016
09:36

Programming

- 1) Make sure system is in "Stop Mode"
- 2) "ESC" to Time Screen then "Program"
- 3) Enter Beg 1 0:00
- 4) Enter Dur 24:00:00
- 5) Enter Beg D dd-Aug
- 6) Enter End D dd-Aug
- 7) "Stop/Run"

Note: Beginning & End Date should be same date

Sample ID: 16050029-001

AIR FCD-01318/2

Customer ID: LICA

Partisol Sample Data Sheet

Cust Samp ID: LICA #P6055848

Priority: Normal

Date Sampled: Apr 30, 2016

Location: Cold Lake South

Parameter: TSP PM10

PM2.5

Filter #: LICA P6055 848

Start Time 00:00 Apr 30, 2016

End Time 00:00 May 1, 2016

Status OK

Std Vol 23.698

Valid Time 24:00

Total Time 24.0



Comments: Weather Conditions, etc.

Sample inlet head PM 10/2.5 cleaned on April 29, 2016

Date of last calibration: April 08, 2016

Technician Signature: Alex Yakupov

Date: May 3, 2016
13:04

Programming

- 1) Make sure system is in "Stop Mode"
- 2) "ESC" to Time Screen then "Program"
- 3) Enter Beg 1 0:00
- 4) Enter Dur 24:00:00
- 5) Enter Beg D dd-Aug
- 6) Enter End D dd-Aug
- 7) "Stop/Run"


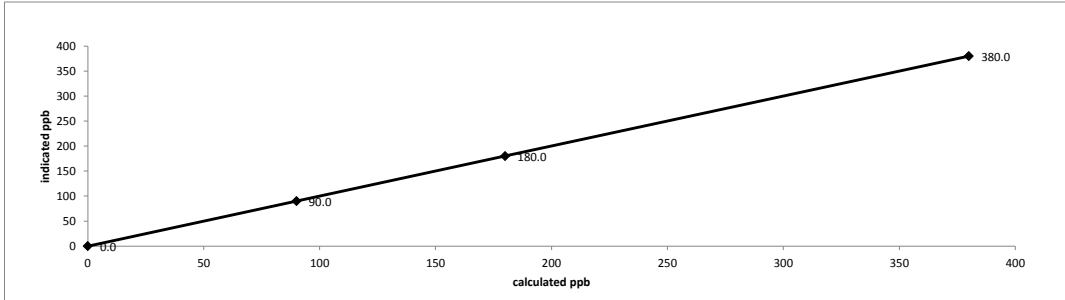
Note: Beginning & End Date should be same date

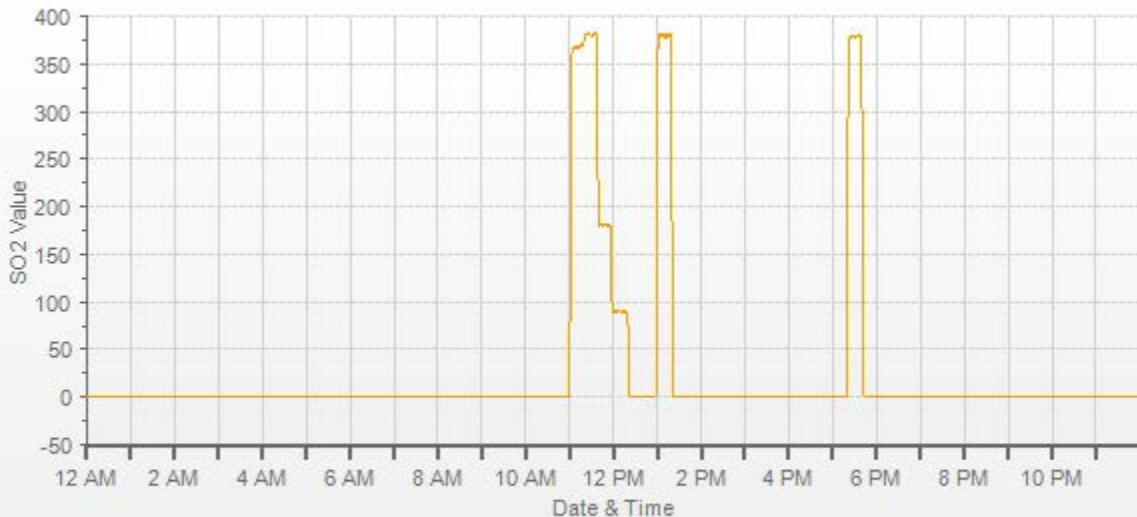
Partisol Sampler Results

Date	Filter NO.	Concentration (mg)
March 31	P5099828	0.024
April 6	P5099829	0.011
April 12	P5099827	0.089
April 18	P4149577	0.097
April 24	P6055850	0.071
April 30	P6055848	0.086

APPENDIX III
EQUIPMENT CALIBRATION RESULTS

SULPHUR DIOXIDE

 Thermo 43i Sulphur Dioxide Analyzer Calibration																																																																
Date: April 6, 2016 Company/Airshed: LICA Location/Station Name: Cold Lake South Parameter: Sulphur Dioxide Start Time 24 hr. (mst): 10:17 End Time 24 hr. (mst): 13:24 Calibration Method: Gas Dilution	Barometric Pressure: 0.931 atm Station Temperature °C: 21 Weather Conditions: A few clouds Calibration Purpose: routine monthly Performed By/Reviewer: Alex Yakupov / Trina Whitsitt Cal Gas Expiry Date: December 2, 2023 Converter Model & s/n (if applicable): n/a																																																															
Analyzer: Serial Number: 806528242 Range ppb: 500 Last Calibration Date: March 8, 2016 As Found C.F.: 1.033 Previous C.F.: 1.000 New C.F.: 1.000																																																																
Calibrator: Flow Meter ID's: n/a Make & Model: SABIO 2010 D Serial #: 11900613 Cal Gas Cylinder I.D. #: LL119346 Cal Gas Conc. (ppm): 50.0																																																																
Standard Calibration Points for Ranges																																																																
<table border="1" style="margin: auto;"> <thead> <tr> <th>Point</th> <th>Sulphur Dioxide Standard Calibration Points</th> </tr> </thead> <tbody> <tr> <td>High</td> <td>380</td> </tr> <tr> <td>Mid</td> <td>180</td> </tr> <tr> <td>Low</td> <td>90</td> </tr> </tbody> </table>		Point	Sulphur Dioxide Standard Calibration Points	High	380	Mid	180	Low	90																																																							
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Thermo 43i Sulphur Dioxide Analyzer Calibration																																																																
																																																																
As found: BKG: 7.2 COEF: 1.117 PMT: -632.0 FLASH: 705 INTERNAL: 28.6 CHAMBER: 45.0 PERM OVEN GAS: 45.00 PERM OVEN HEATER: 44.19 PRESSURE: 675.6 SAMPLE FLOW: 0.473 LAMP INTENSITY: 77 CONVERTER: n/a CONVERTER SET: n/a Internal Span: 372	As left: BKG: 7.4 COEF: 1.150 PMT: -632.0 FLASH: 705 INTERNAL: 28.5 CHAMBER: 45.0 PERM OVEN GAS: 45.00 PERM OVEN HEATER: 44.19 PRESSURE: 676.2 SAMPLE FLOW: 0.474 LAMP INTENSITY: 77 CONVERTER: n/a CONVERTER SET: n/a Internal Span: 380.4																																																															
Comments: Sample filter changed. No ZERO adjustment made.																																																																



— SO2[ppb]



Thermo 43i Sulphur Dioxide Analyzer Calibration

Date: April 19, 2016	Barometric Pressure: 0.936 atm
Company/Airshed: LICA	Station Temperature °C: 23
Location/Station Name: Cold Lake South	Weather Conditions: Clear
Parameter: Sulphur Dioxide	Calibration Purpose: shut down
Start Time 24 hr. (mst): 8:40	Performed By/Reviewer: Alex Yakupov Trina Whitsitt
End Time 24 hr. (mst): 10:05	Cal Gas Expiry Date: December 2, 2023
Calibration Method: Gas Dilution	Converter Model & s/n (if applicable): n/a

Analyzer:	
Serial Number: 806528242	Range ppb: 500
Last Calibration Date: April 6, 2016	As Found C.F.: 0.997
Previous C.F.: 1.000	New C.F.: n/a

Calibrator:	Standard Calibration Points for Ranges								
Flow Meter ID's: n/a	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Point</th> <th>Sulphur Dioxide Standard Calibration Points</th> </tr> </thead> <tbody> <tr> <td>High</td> <td>380</td> </tr> <tr> <td>Mid</td> <td>180</td> </tr> <tr> <td>Low</td> <td>90</td> </tr> </tbody> </table>	Point	Sulphur Dioxide Standard Calibration Points	High	380	Mid	180	Low	90
Point		Sulphur Dioxide Standard Calibration Points							
High		380							
Mid		180							
Low		90							
Make & Model: SABIO 2010 D									
Serial #: 11900613									
Cal Gas Cylinder I.D. #: LL119346									
Cal Gas Conc. (ppm): 50.0									

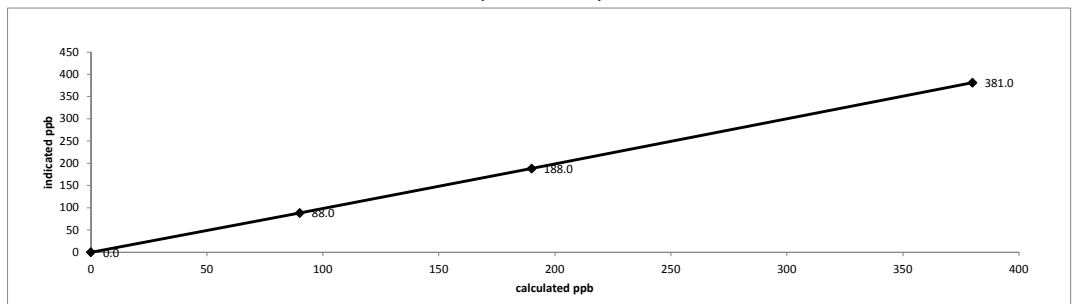
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Point	Calibrator Flow Rates (cc/min)			Calculated Concentration: (ppb)	Indicated Concentration: (ppb)	Correction Factors (C.F.):
	Diluent	Cal Gas	Total			
as found zero	5000	0.00	5000	0.0	0.0	N/A
as found high	4962	38.00	5000	380.0	381.0	0.997
mid	4981	19.00	5000	190.0	188.0	1.011
low	4990	9.00	4999	90.0	88.0	1.023
Average C.F.=						1.010

Linear Regression/Calibration Results:

Correlation Coefficient = 1.000	LIMITS > or = 0.995
Slope = 0.996	0.90-1.10
b (Intercept as % of full scale) = 0.28%	± 3% F.S.
% change in C.F. from last cal = 0.26%	± 10%

Thermo 43i Sulphur Dioxide Analyzer Calibration



As found:	As left:
BKG: 7.4	BKG: n/a
COEF: 1.150	COEF: n/a
PMT: -632.0	PMT: n/a
FLASH: 705	FLASH: n/a
INTERNAL: 27.0	INTERNAL: n/a
CHAMBER: 45.0	CHAMBER: n/a
PERM OVEN GAS: 44.99	PERM OVEN GAS: n/a
PERM OVEN HEATER: 44.19	PERM OVEN HEATER: n/a
PRESSURE: 679.8	PRESSURE: n/a
SAMPLE FLOW: 0.408	SAMPLE FLOW: n/a
LAMP INTENSITY: 76	LAMP INTENSITY: n/a
CONVERTER: n/a	CONVERTER: n/a
CONVERTER SET: n/a	CONVERTER SET: n/a
Internal Span: 380.4	Internal Span: n/a

Comments:
Shutdown calibration performed to rebuild a sample pump. According to a daily report a SPAN check result was over 10%. In comparison to the previous calibration sample flow dropped by 64 cc/m (0.472 vs 0.408). The sample pump required maintenance. No alarms found on the screen of the analyzer.



Thermo 43i Sulphur Dioxide Analyzer Calibration

Date: April 19, 2016	Barometric Pressure: 0.936 atm
Company/Airshed: LICA	Station Temperature °C: 23
Location/Station Name: Cold Lake South	Weather Conditions: Clear
Parameter: Sulphur Dioxide	Calibration Purpose: post repair
Start Time 24 hr. (mst): 10:24	Performed By/Reviewer: Alex Yakupov Trina Whitsitt
End Time 24 hr. (mst): 13:11	Cal Gas Expiry Date: December 2, 2023
Calibration Method: Gas Dilution	Converter Model & s/n (if applicable): n/a

Analyzer:	
Serial Number: 806528242	Range ppb: 500
Last Calibration Date: n/a	As Found C.F.: n/a
Previous C.F.: n/a	New C.F.: 0.997

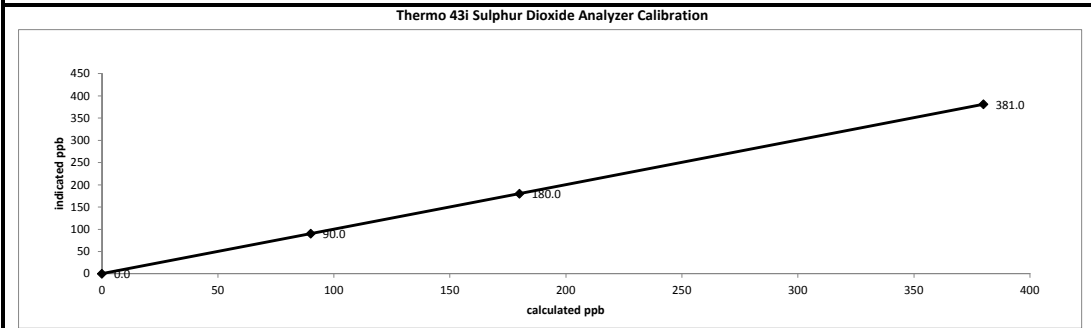
Calibrator:	Standard Calibration Points for Ranges								
Flow Meter ID's: n/a	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr><th>Point</th><th>Sulphur Dioxide Standard Calibration Points</th></tr> <tr><td>High</td><td>380</td></tr> <tr><td>Mid</td><td>180</td></tr> <tr><td>Low</td><td>90</td></tr> </table>	Point	Sulphur Dioxide Standard Calibration Points	High	380	Mid	180	Low	90
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High	380								
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Make & Model: SABIO 2010 D									
Serial #: 11900613									
Cal Gas Cylinder I.D. #: LL119346									
Cal Gas Conc. (ppm): 50.0									

ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
adjusted zero	5000	0.00	5000	0.0	0.0	N/A
adjusted high	4962	38.00	5000	380.0	381.0	0.997
mid	4981	18.00	4999	180.0	180.0	1.000
low	4990	9.00	4999	90.0	90.0	1.000
calibrator zero	5000	0.00	5000	0.0	0.0	n/a
Average C.F.=						0.999

Linear Regression/Calibration Results:

Correlation Coefficient = <u>1.000</u>	LIMITS
Slope = <u>0.997</u>	> or = 0.995
b (Intercept as % of full scale) = <u>0.04%</u>	.95-1.05
% change in C.F. from last cal = <u>n/a</u>	± 3% F.S.
	± 10%



<p style="text-align: center; font-weight: bold; font-size: small;">As found:</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>BKG:</td><td><u>n/a</u></td></tr> <tr><td>COEF:</td><td><u>n/a</u></td></tr> <tr><td>PMT:</td><td><u>n/a</u></td></tr> <tr><td>FLASH:</td><td><u>n/a</u></td></tr> <tr><td>INTERNAL:</td><td><u>n/a</u></td></tr> <tr><td>CHAMBER:</td><td><u>n/a</u></td></tr> <tr><td>PERM OVEN GAS:</td><td><u>n/a</u></td></tr> <tr><td>PERM OVEN HEATER:</td><td><u>n/a</u></td></tr> <tr><td>PRESSURE:</td><td><u>n/a</u></td></tr> <tr><td>SAMPLE FLOW:</td><td><u>n/a</u></td></tr> <tr><td>LAMP INTENSITY:</td><td><u>n/a</u></td></tr> <tr><td>CONVERTER:</td><td><u>n/a</u></td></tr> <tr><td>CONVERTER SET:</td><td><u>n/a</u></td></tr> <tr><td>Internal Span:</td><td><u>n/a</u></td></tr> </table>	BKG:	<u>n/a</u>	COEF:	<u>n/a</u>	PMT:	<u>n/a</u>	FLASH:	<u>n/a</u>	INTERNAL:	<u>n/a</u>	CHAMBER:	<u>n/a</u>	PERM OVEN GAS:	<u>n/a</u>	PERM OVEN HEATER:	<u>n/a</u>	PRESSURE:	<u>n/a</u>	SAMPLE FLOW:	<u>n/a</u>	LAMP INTENSITY:	<u>n/a</u>	CONVERTER:	<u>n/a</u>	CONVERTER SET:	<u>n/a</u>	Internal Span:	<u>n/a</u>	<p style="text-align: center; font-weight: bold; font-size: small;">As left:</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>BKG:</td><td><u>7.6</u></td></tr> <tr><td>COEF:</td><td><u>1.169</u></td></tr> <tr><td>PMT:</td><td><u>-632.0</u></td></tr> <tr><td>FLASH:</td><td><u>705</u></td></tr> <tr><td>INTERNAL:</td><td><u>27.9</u></td></tr> <tr><td>CHAMBER:</td><td><u>45.0</u></td></tr> <tr><td>PERM OVEN GAS:</td><td><u>45.00</u></td></tr> <tr><td>PERM OVEN HEATER:</td><td><u>44.19</u></td></tr> <tr><td>PRESSURE:</td><td><u>675.9</u></td></tr> <tr><td>SAMPLE FLOW:</td><td><u>0.471</u></td></tr> <tr><td>LAMP INTENSITY:</td><td><u>77</u></td></tr> <tr><td>CONVERTER:</td><td><u>n/a</u></td></tr> <tr><td>CONVERTER SET:</td><td><u>n/a</u></td></tr> <tr><td>Internal Span:</td><td><u>387.7</u></td></tr> </table>	BKG:	<u>7.6</u>	COEF:	<u>1.169</u>	PMT:	<u>-632.0</u>	FLASH:	<u>705</u>	INTERNAL:	<u>27.9</u>	CHAMBER:	<u>45.0</u>	PERM OVEN GAS:	<u>45.00</u>	PERM OVEN HEATER:	<u>44.19</u>	PRESSURE:	<u>675.9</u>	SAMPLE FLOW:	<u>0.471</u>	LAMP INTENSITY:	<u>77</u>	CONVERTER:	<u>n/a</u>	CONVERTER SET:	<u>n/a</u>	Internal Span:	<u>387.7</u>
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Comments:

Post-repair calibration was performed after a sample pump had been rebuilt. 11:27 - calibration stopped to correct a midpoint of the calibration program from 190 ppb to 180 ppb. The midpoint starts at 11:30.

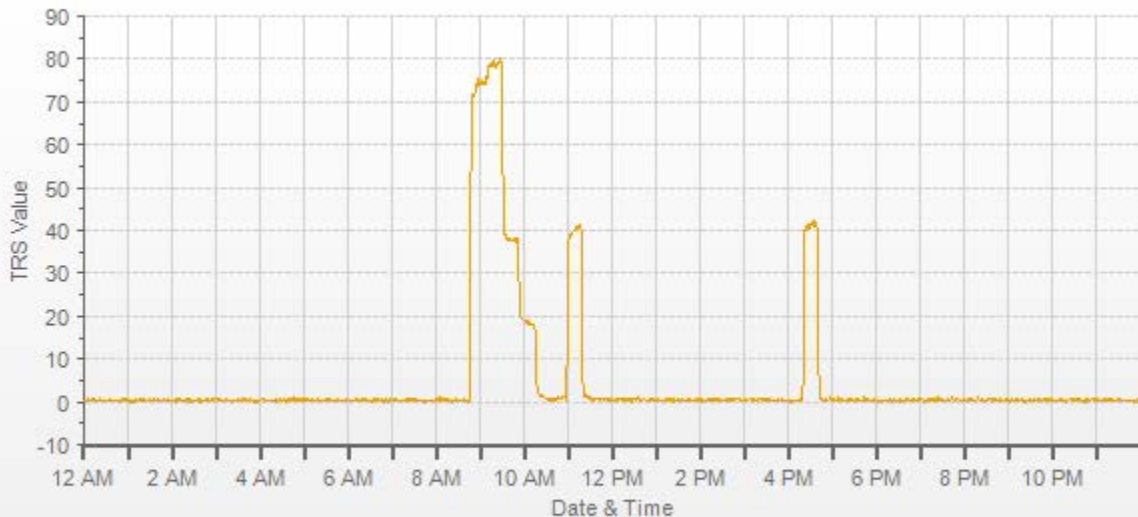
SO2[ppb] Station: LICA COLD LAKE SOUTH Periodically: 2016/04/19 7:00 AM-2016/04/19 5:00 PM Type: AVG 1 Min. [1 Min.]



SO2[ppb]

TOTAL REDUCED SULPHUR

Thermo 450i Total Reduced Sulphur Analyzer Calibration																																																																
Date: April 7, 2016 Company/Airshed: LUCA Location/Station Name: Cold Lake South Parameter: Total Reduced Sulphur Start Time 24 hr. (mst): 8:14 End Time 24 hr. (mst): 11:22 Calibration Method: Gas Dilution	Barometric Pressure: 0.946 atm Station Temperature °C: 22 Weather Conditions: Mainly clear Calibration Purpose: routine monthly Performed By/Reviewer: Alex Yakupov / Trina Whitsitt Cal Gas Expiry Date: July 15, 2017 Converter Model & s/n (if applicable): CDNova CDN-101 #501																																																															
Analyzer: Serial Number: 812728560 Range ppb: 100 Last Calibration Date: March 8, 2016 As Found C.F.: 1.026 Previous C.F.: 1.000 New C.F.: 1.000																																																																
Calibrator: Flow Meter ID's: n/a Make & Model: API 700 Serial #: 830 Cal Gas Cylinder I.D. # : LL36837 Cal Gas Conc. (ppm): 10.0																																																																
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— TRS[ppb]



Thermo 450i Total Reduced Sulphur Analyzer Calibration

Date: April 29, 2016	Barometric Pressure: 0.948 atm
Company/Airshed: LICA	Station Temperature °C: 22
Location/Station Name: Cold Lake South	Weather Conditions: Mix of sun and clouds
Parameter: Total Reduced Sulphur	Calibration Purpose: shut down
Start Time 24 hr. (mst): 10:02	Performed By/Reviewer: Alex Yakupov Trina Whitsitt
End Time 24 hr. (mst): 11:55	Cal Gas Expiry Date: July 15, 2017
Calibration Method: Gas Dilution	Converter Model & s/n (if applicable): CDNova CDN-101 #501

Analyzer:	
Serial Number: 812728560	Range ppb: 100
Last Calibration Date: April 26, 2016	As Found C.F.: 1.013
Previous C.F.: 1.000	New C.F.: n/a

Calibrator:		Standard Calibration Points for Ranges	
Flow Meter ID's: n/a		Point	Total Reduced Sulphur Standard Calibration Points
Make & Model: API 700		High	78
Serial #: 627		Mid	38
Cal Gas Cylinder I.D. #: LL36837		Low	19
Cal Gas Conc. (ppm): 10.0			

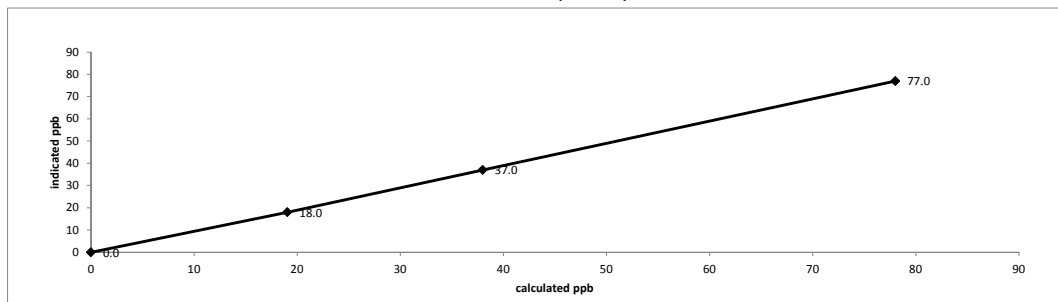
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Point	Calibrator Flow Rates (cc/min)			Calculated Concentration: (ppb)	Indicated Concentration: (ppb)	Correction Factors (C.F.):
	Diluent	Cal Gas	Total			
as found zero	7500	0.00	7500	0.0	0.0	N/A
as found high	7440	58.50	7499	78.0	77.0	1.013
mid	7472	28.50	7501	38.0	37.0	1.027
low	7489	14.30	7503	19.1	18.0	1.059
Average C.F.=						1.033

Linear Regression/Calibration Results:

Correlation Coefficient =	1.000	LIMITS	> or = 0.995
Slope =	1.010		0.90-1.10
b (Intercept as % of full scale)=	0.44%		± 3% F.S.
% change in C.F. from last cal=	-1.32%		± 10%

Thermo 450i Total Reduced Sulphur Analyzer Calibration



<p style="text-align: center;">As found:</p> BKG: 15.2 COEF: 1.051 PMT: -650.5 FLASH: 743 INTERNAL: 30.9 CHAMBER: 45.0 CONVERTER TEMP: 810 CONVERTER SET: 810 PERM OVEN GAS: 45.00 PERM OVEN HTR: 44.38 PRESSURE: 657.8 SAMPLE FLOW: 0.512 LAMP INTENSITY: 92 Internal Span: 41.6	<p style="text-align: center;">As left:</p> BKG: n/a COEF: n/a PMT: n/a FLASH: n/a INTERNAL: n/a CHAMBER: n/a CONVERTER TEMP: n/a CONVERTER SET: n/a PERM OVEN GAS: n/a PERM OVEN HTR: n/a PRESSURE: n/a SAMPLE FLOW: n/a LAMP INTENSITY: n/a Internal Span: n/a
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Comments:

Shutdown calibration performed to renew an external SO2 scrubber. According to the daily report, TRS span check was 36.9/41.6, -11.29%. Previous calibrations showed slow stabilizing at the High Point. SO2 scrubber set required maintenance.



Thermo 450i Total Reduced Sulphur Analyzer Calibration

Date: April 29, 2016	Barometric Pressure: 0.948 atm
Company/Airshed: LICA	Station Temperature °C: 22
Location/Station Name: Cold Lake South	Weather Conditions: Mix of sun and clouds
Parameter: Total Reduced Sulphur	Calibration Purpose: post repair
Start Time 24 hr. (mst): 12:32	Performed By/Reviewer: Alex Yakupov Trina Whitsitt
End Time 24 hr. (mst): 15:36	Cal Gas Expiry Date: July 15, 2017
Calibration Method: Gas Dilution	Converter Model & s/n (if applicable): CDNova CDN-101 #501

Analyzer:	
Serial Number: 812728560	Range ppb: 100
Last Calibration Date: n/a	As Found C.F.: n/a
Previous C.F.: n/a	New C.F.: 1.000

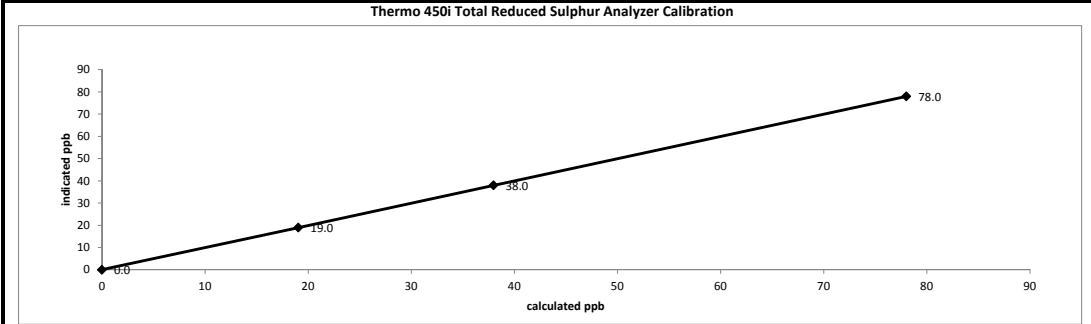
Calibrator:	Standard Calibration Points for Ranges								
Flow Meter ID's: n/a	<table border="1" style="margin: auto;"><thead><tr><th>Point</th><th>Total Reduced Sulphur Standard Calibration Points</th></tr></thead><tbody><tr><td>High</td><td>78</td></tr><tr><td>Mid</td><td>38</td></tr><tr><td>Low</td><td>19</td></tr></tbody></table>	Point	Total Reduced Sulphur Standard Calibration Points	High	78	Mid	38	Low	19
Point	Total Reduced Sulphur Standard Calibration Points								
High	78								
Mid	38								
Low	19								
Make & Model: API 700									
Serial #: 627									
Cal Gas Cylinder I.D. #: LL36837									
Cal Gas Conc. (ppm): 10.0									

ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
adjusted zero	7500	0.00	7500	0.0	0.0	N/A
adjusted high	7440	58.50	7499	78.0	78.0	1.000
mid	7474	28.50	7503	38.0	38.0	1.000
low	7489	14.30	7503	19.1	19.0	1.003
calibrator zero	7500	0.00	7500	0.0	0.0	n/a
Average C.F.=						1.001

Linear Regression/Calibration Results:

Correlation Coefficient = 1.000	LIMITS
Slope = 1.000	> or = 0.995
b (Intercept as % of full scale) = 0.02%	.95-1.05
% change in C.F. from last cal = n/a	± 3% F.S.
	± 10%

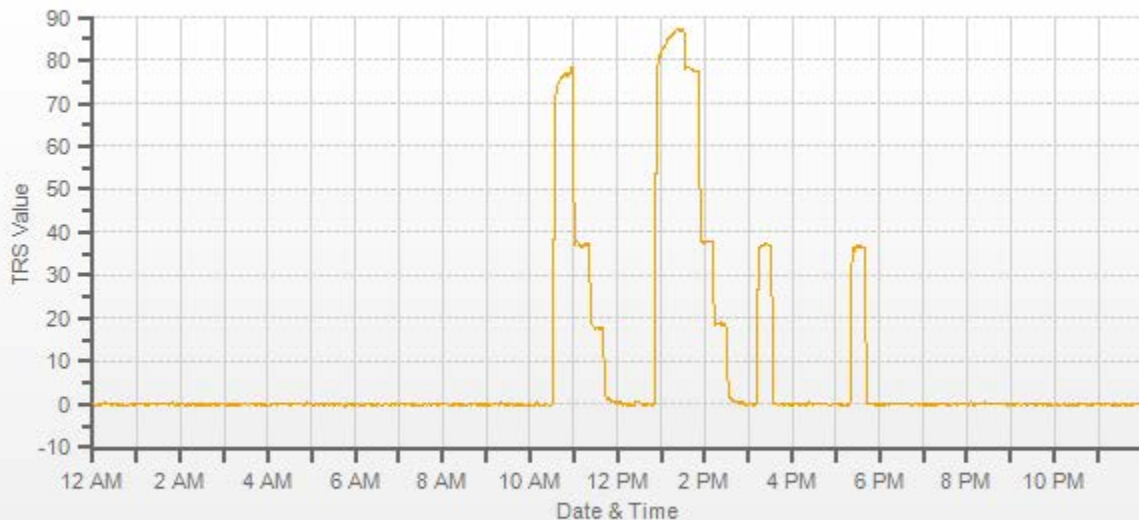


As found:	As left:
BKG: n/a	BKG: 13.6
COEF: n/a	COEF: 0.942
PMT: n/a	PMT: -650.8
FLASH: n/a	FLASH: 743
INTERNAL: n/a	INTERNAL: 31.9
CHAMBER: n/a	CHAMBER: 45.0
CONVERTER TEMP: n/a	CONVERTER TEMP: 810
CONVERTER SET: n/a	CONVERTER SET: 810
PERM OVEN GAS: n/a	PERM OVEN GAS: 45.0
PERM OVEN HTR: n/a	PERM OVEN HTR: 44.38
PRESSURE: n/a	PRESSURE: 658.4
SAMPLE FLOW: n/a	SAMPLE FLOW: 0.510
LAMP INTENSITY: n/a	LAMP INTENSITY: 92
Internal Span: n/a	Internal Span: 37.0

Comments:

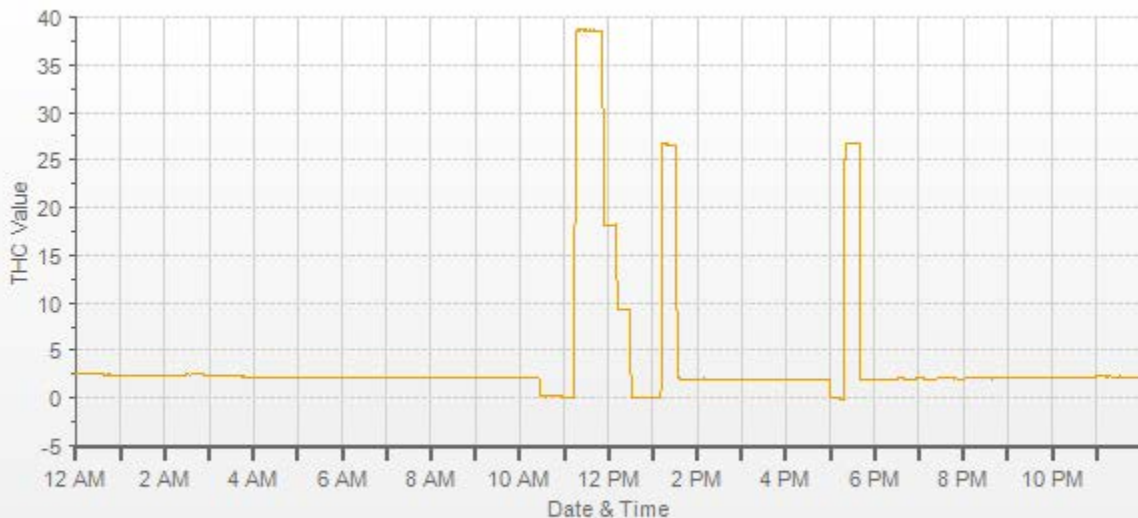
Sample inlet filter changed on April 26, 2016. Post-repair calibration performed after the SO2 scrubber had been renewed.

TRS[ppb] Station: LICA COLD LAKE SOUTH Daily: 2016/04/29 Type: AVG 1 Min. [1 Min.]




— TRS[ppb]

TOTAL HYDROCARBON



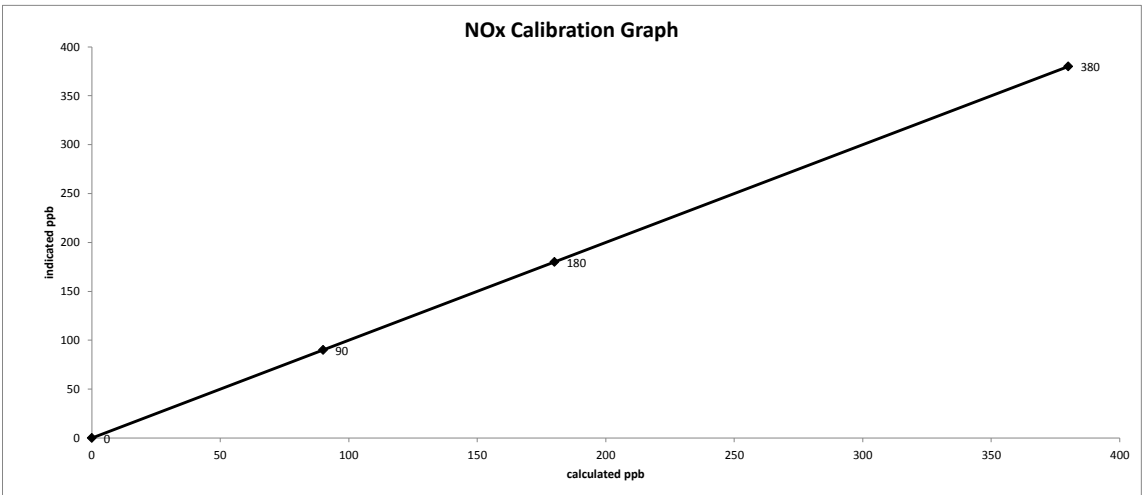
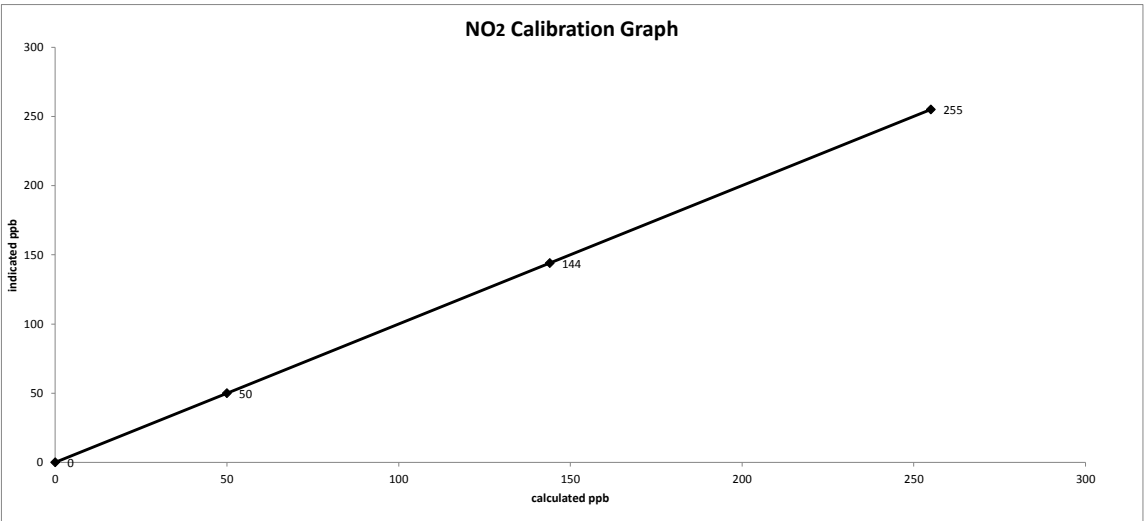
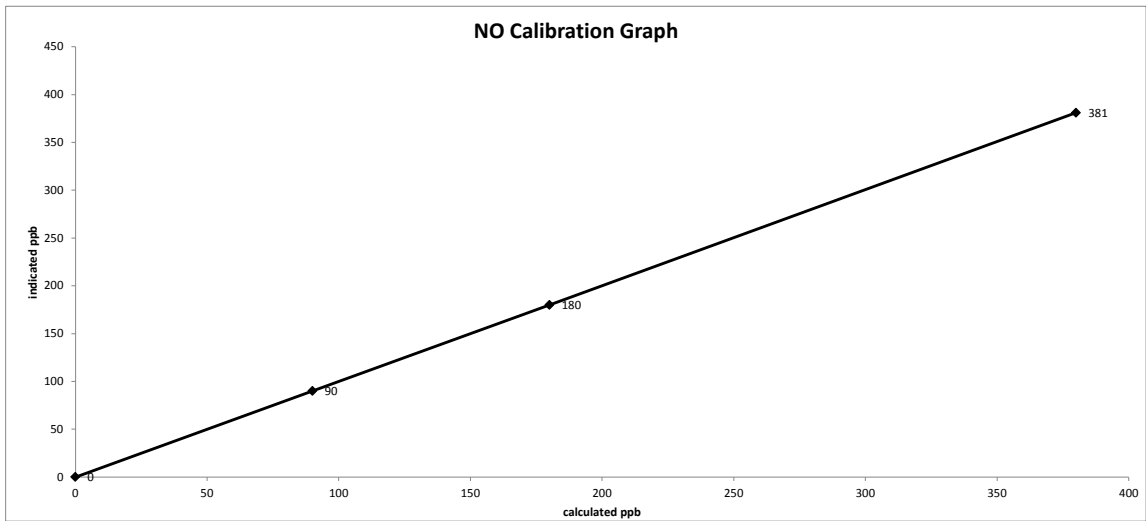
— THC[ppm]

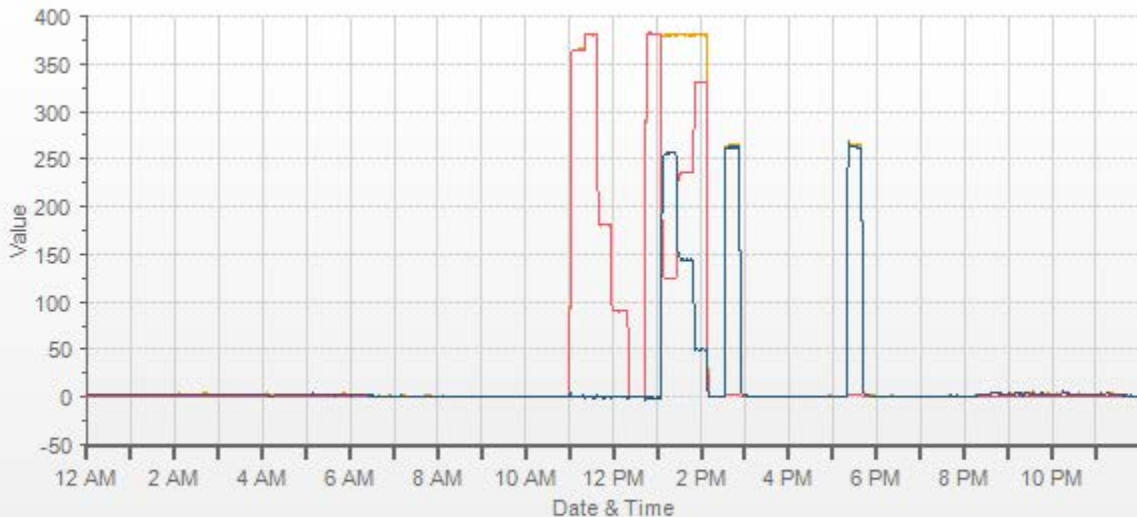
NITROGEN DIOXIDE

 Thermo 42i NO-NO2-NOx Analyzer Calibration																																																																																											
Date: April 6, 2016 Company/Airshed: LICA Location/Station Name: Cold Lake South Start/End Time 24 hr. (mst): 10:17 / 14:57 G.P.T. to be used for Ozone? No Calibration Method: Gas Dilution & Varying UV Lamp Power	Barometric Pressure: 0.931 atm Station Temperature °C: 21 Weather Conditions: A few clouds Calibration Purpose: routine monthly Performed By/Reviewer: Alex Yakupov / Trina Whitsitt Cal Gas Expiry Date: December 2, 2023																																																																																										
Analyzer:																																																																																											
Serial Number: 1505664393 Last Calibration Date: March 8, 2016 Range ppb: 500	Correction Factors: <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Previous C.F.:</th> <th>As Found C.F.:</th> <th>New C.F.:</th> </tr> </thead> <tbody> <tr> <td>NO =</td> <td>1.000</td> <td>1.041</td> <td>0.997</td> </tr> <tr> <td>NO₂ =</td> <td>1.000</td> <td>1.000</td> <td>1.000</td> </tr> <tr> <td>NOx =</td> <td>1.000</td> <td>1.041</td> <td>1.000</td> </tr> </tbody> </table>		Previous C.F.:	As Found C.F.:	New C.F.:	NO =	1.000	1.041	0.997	NO ₂ =	1.000	1.000	1.000	NOx =	1.000	1.041	1.000																																																																										
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Flow Meter ID's: n/a Make & Model: SABIO 2010 D Serial #: 11900613 Cal Gas Cylinder I.D. #: LL119346 NO/NOx Gas Conc. (ppm): 50.0 50.0	Standard Calibration Points for a Range of: 500 ppb <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Point</th> <th>Target NO (ppb)</th> <th>Target NO₂ (ppb)</th> <th>Cc Ozone ?</th> </tr> </thead> <tbody> <tr> <td>High</td> <td>380</td> <td>250</td> <td>n/a</td> </tr> <tr> <td>Mid</td> <td>180</td> <td>145</td> <td>n/a</td> </tr> <tr> <td>Low</td> <td>90</td> <td>50</td> <td>n/a</td> </tr> <tr> <td>Extra Point #1</td> <td>n/a</td> <td>n/a</td> <td>n/a</td> </tr> <tr> <td>Extra Point #2</td> <td>n/a</td> <td>n/a</td> <td>n/a</td> </tr> </tbody> </table>	Point	Target NO (ppb)	Target NO ₂ (ppb)	Cc Ozone ?	High	380	250	n/a	Mid	180	145	n/a	Low	90	50	n/a	Extra Point #1	n/a	n/a	n/a	Extra Point #2	n/a	n/a	n/a																																																																		
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Date: April 6, 2016
Company/Airshed: LICA
Location/Station Name: Cold Lake South

Start/End Time 24 hr. (mst): 10:17 / 14:57
Calibration Purpose: routine monthly
Calibration Method: Gas Dilution & Varying UV Lamp Power



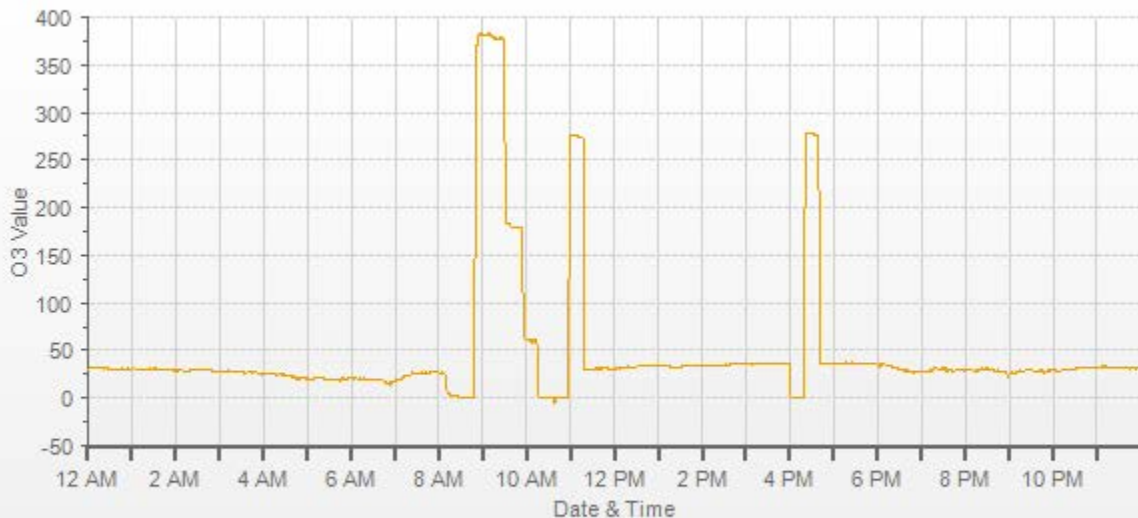


— NOX[ppb] — NO[ppb] — NO2[ppb]

OZONE

Thermo 49i Ozone Analyzer Calibration <small>A Bureau Veritas Group Company</small>																																																														
Date: April 7, 2016 Company/Airshed: LICA Location/Station Name: Cold Lake South Start/End Time 24 hr. (mst): 8:14 / 11:22 Ozone Calibration Method: Varying UV Lamp Power G.P.T. Date: n/a-done by Varying UV Lamp Power	Barometric Pressure: 0.946 atm Station Temperature °C: 22 Weather Conditions: Mainly clear Calibration Purpose: routine monthly Performed By/Reviewer: Alex Yakupov Trina Whitsitt Cal Gas Expiry Date: n/a																																																													
Analyzer: Serial Number: 700419951 Ozone Range ppb: 500 Last Calibration Date: March 9, 2016 As Found C.F.: 0.995 Previous Cal High Point C.F.: 1.000 New C.F.: 1.003																																																														
Calibrator: Flow Meter ID's: n/a Make & Model: SABIO 2010 D Serial #: 11900613 Cal Gas Cylinder I.D. #: n/a																																																														
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O3[ppb] Station: LICA COLD LAKE SOUTH Daily: 2016/04/07 Type: AVG 1 Min. [1 Min.]



O3[ppb]

PARTICULATE MATTER



R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date: April 7, 2016
 Company: LICA
 Station Name/Location: Cold Lake South
 Previous Audit Date: March 18, 2016
 Parameter: PM 2.5

Performed By/Reviewer: Alex Yakupov | Trina Whitsitt
 Start Time (mst): 10:48
 End Time (mst): 11:43
 Calibration Purpose: Bi-monthly #1
 Weather Conditions: Mainly clear

1400A Information and Status:

Serial Number: 1405A201620804 As Found Filter Loading %: 32.72
 Ko Factor: 14578 As Left Filter Loading %: 19.21
 Ambient Temperature °C: 4.46 As Found Noise: 0.007
 Ambient Pressure atm: 0.946 As Left Noise: 0.000
 Main Flow Reading lpm: 3.00 Pump Vacuum: 0.32
 Aux Flow Reading lpm: 13.67 Warnings: None

Reference Standards:

	Flow:	Pressure:	Temperature:
Make:	<u>Dwyer</u>	<u>Fisher</u>	<u>Fisher</u>
Model:	<u>475 Mark III</u>	<u>FB1291</u>	<u>FB 1291</u>
Serial Number:	<u>#2</u>	<u>130168457</u>	<u>130168457</u>
Calibration Date:	<u>15-Jan-16</u>	<u>7-Feb-16</u>	<u>7-Feb-16</u>

As found leak check:

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	0.02	0.11	0.02	0.11
	limit	0.15	0.15	0.15	0.15
Bypass Flow	actual	0.10	-0.07	0.08	-0.07
	limit	0.60	0.60	0.60	0.60

As left leak check (same as above if as found passes):

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	0.02	0.11	0.02	0.11
	limit	0.15	0.15	0.15	0.15
Bypass Flow	actual	0.10	-0.07	0.08	-0.07
	limit	0.60	0.60	0.60	0.60

As found temperature and pressure:

tolerance +/- 2.0°C	tolerance +/- 0.01 atm
1405F temperature °C: <u>4.5</u>	1405F pressure atm: <u>0.946</u>
reference temperature °C: <u>4.2</u>	reference pressure: <u>0.946</u>
difference °C: <u>-0.3</u>	difference: <u>0.000</u>

As left temperature and pressure (same as above if as found adequate):

tolerance +/- 2.0°C	tolerance +/- 0.01 atm
1405F temperature °C: <u>4.2</u>	1405F pressure atm: <u>0.946</u>
reference temperature °C: <u>4.2</u>	reference pressure: <u>0.946</u>
difference °C: <u>0.0</u>	difference: <u>0.000</u>

As found flows:

main flow tolerance 3.00 lpm +/- 0.20 lpm	total/aux flow tolerance 16.67/13.67 lpm +/- 1.00 lpm +/- 7%
1405F main flow lpm: <u>3.00</u>	1400A total/aux flow lpm: <u>16.67</u>
reference main flow lpm: <u>3.00</u>	reference total/aux flow lpm: <u>16.68</u>
difference lpm: <u>0.00</u>	difference lpm: <u>0.01</u>

As left flows (same as above if as found adequate):

main flow tolerance 3.00 lpm +/- 0.20 lpm	total/aux flow tolerance 16.67/13.67 lpm +/- 1.00 lpm +/- 7%
1405F main flow lpm: <u>3.00</u>	1400A total/aux flow lpm: <u>16.67</u>
reference main flow lpm: <u>3.00</u>	reference total/aux flow lpm: <u>16.68</u>
difference lpm: <u>0.00</u>	difference lpm: <u>0.01</u>

K_o Audit:

Last K_o audit date: 10-Feb-16
 1405F K_o factor: 14578
 Measured K_o factor: 14752.6000
 % difference: 1.20

Comments:

47 mm FDMS filter changed and TEOM sample filter changed.



R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date: April 19, 2016
 Company: LICA
 Station Name/Location: Cold Lake South
 Previous Audit Date: April 7, 2016
 Parameter: PM 2.5

Performed By/Reviewer: Alex Yakupov | Trina Whitsitt
 Start Time (mst): 12:26
 End Time (mst): 13:14
 Calibration Purpose: Bi-monthly #2
 Weather Conditions: Clear

1400A Information and Status:

Serial Number: 1405A201620804 As Found Filter Loading %: 22.46
 Ko Factor: 14578 As Left Filter Loading %: 23.28
 Ambient Temperature °C: 21.97 As Found Noise: 0.005
 Ambient Pressure atm: 0.935 As Left Noise: 0.000
 Main Flow Reading lpm: 3.00 Pump Vacuum: 0.32
 Aux Flow Reading lpm: 13.67 Warnings: None

Reference Standards:

	Flow:	Pressure:	Temperature:
Make:	<u>Dwyer</u>	<u>Fisher</u>	<u>Fisher</u>
Model:	<u>475 Mark III</u>	<u>FB1291</u>	<u>FB 1291</u>
Serial Number:	<u>#2</u>	<u>130168457</u>	<u>130168457</u>
Calibration Date:	<u>January 15, 2016</u>	<u>February 7, 2016</u>	<u>February 7, 2016</u>

As found leak check:

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	0.03	0.11	0.03	0.11
	limit	0.15	0.15	0.15	0.15
Bypass Flow	actual	0.12	-0.06	0.10	-0.06
	limit	0.60	0.60	0.60	0.60

As left leak check (same as above if as found passes):

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	0.03	0.11	0.03	0.11
	limit	0.15	0.15	0.15	0.15
Bypass Flow	actual	0.12	-0.06	0.10	-0.06
	limit	0.60	0.60	0.60	0.60

As found temperature and pressure:

tolerance +/- 2.0°C	tolerance +/- 0.01 atm
1405F temperature °C: <u>22.0</u>	1405F pressure atm: <u>0.935</u>
reference temperature °C: <u>22.2</u>	reference pressure: <u>0.936</u>
difference °C: <u>0.2</u>	difference : <u>-0.001</u>

As left temperature and pressure (same as above if as found adequate):

tolerance +/- 2.0°C	tolerance +/- 0.01 atm
1405F temperature °C: <u>22.2</u>	1405F pressure atm: <u>0.936</u>
reference temperature °C: <u>22.2</u>	reference pressure: <u>0.936</u>
difference °C: <u>0.0</u>	difference : <u>0.000</u>

As found flows:

main flow tolerance 3.00 lpm +/- 0.20 lpm	total/aux flow tolerance 16.67/13.67 lpm +/- 1.00 lpm +/- 7%
1405F main flow lpm: <u>3.00</u>	1400A total/aux flow lpm: <u>16.67</u>
reference main flow lpm: <u>3.00</u>	reference total/aux flow lpm: <u>16.69</u>
difference lpm: <u>0.00</u>	difference lpm: <u>0.02</u>

As left flows (same as above if as found adequate):

main flow tolerance 3.00 lpm +/- 0.20 lpm	total/aux flow tolerance 16.67/13.67 lpm +/- 1.00 lpm +/- 7%
1405F main flow lpm: <u>3.00</u>	1400A total/aux flow lpm: <u>16.67</u>
reference main flow lpm: <u>3.00</u>	reference total/aux flow lpm: <u>16.69</u>
difference lpm: <u>0.00</u>	difference lpm: <u>0.02</u>

K_o Audit:

Last K_o audit date: February 10, 2016
 1405F K_o factor: 14578
 Measured K_o factor: 14752.6000
 % difference: 1.20

Comments:

47 mm FDMS filter changed.

WIND SYSTEM



Met One Instruments
1600 NW Washington Blvd.
Grants Pass, Oregon 97526
Telephone 541-471-7111
Facsimile 541-471-7116

Regional Service
3206 Main St. Suite 106
Rowlett, Texas 75088
Telephone 972-412-4715
Facsimile 972-412-4716

Sonic Wind Sensor Certificate of Calibration

Sensor Model No: 50.5H Sonic Sensor Serial No: F1644
 Customer: _____ P.O. No: _____ Sales Order: _____
 Final Calibration By: Kevin Ricks Calibration Date: 04-01-15
 Quality Control Inspected By: AJR Inspection Date: APR 03 2015
 New Unit Repair/Adjust Re-Calibration As Found
 Unit Within Tolerance as Found Unit Within Tolerance as Left

Calibration Equipment

Equipment	Manufacturer	Model No.	Serial No.	Cal. Due
Digital Multimeter 1	Agilent/HP	34401A	MY41039534	4/11/2015
Digital Multimeter 2	Agilent/HP	34401A	US36094551	8/26/2015
Frequency Counter	Agilent/HP	53131A	MY40009285	5/22/2015
Standard Sensor	MOI	010C-1	P22383	7/11/2017
Temperature Probe	MOI	920005/PC8340	E3402	9/03/2015

Test 1: Average Wind Tunnel Speed: 3.08 Meters per Second FirmwareVersion: 3194-01 R2.62

WD Setting (Deg)	WD Output (Volts)	WD Indication (Deg)	WD Error (+/- 3 Deg)	WS Standard (m/s)	WS Output (Volts)	WS Indication (m/s)	WS Error (+/- .20 m/s)	Output Type:
30	.084	30.3	.3	3.06	.059	2.96	-.1	0 to 1 volt <input checked="" type="checkbox"/>
60	.165	59.3	-.7	3.07	.059	2.94	-.13	0 to 2.5 volt <input type="checkbox"/>
120	.334	120.2	.2	3.08	.059	2.94	-.14	0 to 5 volt <input type="checkbox"/>
150	.415	149.5	-.5	3.07	.059	2.94	-.13	RS-232 <input checked="" type="checkbox"/>
210	.583	210	0	3.08	.059	2.95	-.12	SDI-12 <input type="checkbox"/>
240	.668	240.3	.3	3.08	.06	2.98	-.1	RS-422 <input type="checkbox"/>
300	.834	300.4	.4	3.07	.06	3.02	-.04	RS-485 <input type="checkbox"/>
330	.916	329.8	-.2	3.09	.059	2.97	-.12	<input type="checkbox"/>

Test 2: Average Wind Tunnel Speed: 11.85 Meters per Second Output Range: 0-50 m/s

WD Setting (Deg)	WD Output (Volts)	WD Indication (Deg)	WD Error (+/- 3 Deg)	WS Standard (m/s)	WS Output (Volts)	WS Indication (m/s)	WS Error (+/- .24 m/s)	Test Items:
30	.081	29.3	-.7	11.79	.235	11.76	-.04	Array Alignment <input checked="" type="checkbox"/>
60	.165	59.5	-.5	11.85	.237	11.87	.01	Jumper Config <input checked="" type="checkbox"/>
120	.331	119.1	-.9	11.85	.236	11.81	-.03	Firmware Config <input checked="" type="checkbox"/>
150	.415	149.3	-.7	11.88	.236	11.8	-.08	Zero Calibration <input checked="" type="checkbox"/>
210	.582	209.5	-.5	11.81	.236	11.79	-.02	Low Speed Test OK <input checked="" type="checkbox"/>
240	.666	239.9	-.1	11.88	.235	11.73	-.16	High Speed Test OK <input checked="" type="checkbox"/>
300	.833	299.7	-.3	11.87	.235	11.73	-.13	Sensor Function <input checked="" type="checkbox"/>
330	.915	329.6	-.4	11.84	.238	11.9	.06	Physical Inspection <input checked="" type="checkbox"/>

The standards used for this calibration have accuracies equal to or greater than the instruments tested. These standards are on record and traceable to NIST to the extent allowed by the institute's calibration facility. Unless otherwise stated herein, all instruments are calibrated to meet the manufacturer's published specifications. The calibration system complies with MIL-STD-45662A. Calibration performed by direct comparison to the above standard following test procedure: 50.5-6100 Rev E

PARTISOL SAMPLER

PARTISOL 2000

Date: April 8, 2016	Reference Standard: Streamline FTS / #2	
Company: LICA	Reference Standard s/n: Orifice #2	
Station: Cold Lake South	Weather Conditions: A few clouds	
Parameter: PM 2.5	Start/End Time (mst): 10:21 / 11:06	
Calibration Purpose: routine monthly	Performed By/Reviewer: Alex Yakupov	Trina Whitsitt

Sampler	Instrument Data
Make/Model: R & P	Temperature (°C): -0.4
Unit #: #2873	Pressure (ATM): 0.95
S/N: 2000B206140102	Set Flow (l/min): 16.7

Item	Calculated		Offset		Span	
	Initial	Final	Initial	Final	Initial	Final
	Analog Input	0.000	n/a	-0.0019	n/a	0.9987
Temperature	-0.4	n/a	XXXXXXXXXX	XXXXXXXXXX	0.9967	n/a
Pressure	0.945	n/a	XXXXXXXXXX	XXXXXXXXXX	1.0003	n/a
Flow	0.10	n/a	-0.0098	n/a	1.0028	n/a

Interface Board Calibration			
Item	Acceptable	Pre Calibration	Post Calibration
R21	6.000 VDC (±0.05 V)	n/a	n/a
R44	10.000 VDC (±0.002 V)	n/a	n/a

Analog Input Calibration			
Item	Acceptable	Pre Calibration	Post Calibration
"AO" Offset	0.050 - 0.150 VDC (±0.005 V)	n/a	n/a
"AO" Span	4.800 - 4.900 VDC (±0.002 V)	n/a	n/a

Temperature/Pressure Calibration			
Reference Temperature: (±2 °C)	0.1	Δ °C	0.5
Reference Pressure: (±0.02 ATM)	0.943	Δ ATM	-0.002

Leak Check				
Unit	Flow Controller Valve Closed (V1) in Hg	Pump Valve Closed after 10 Secs. (V2) in Hg	VL=1/2*V1 in Hg	Leakage Calculation (V2 > VL) After 10 Secs in Hg
Hub	23.0	23.0	11.5	11.5

Flow Calibration			
Item	Acceptable	Calculated	Actual
"Zero" Offset	0.1 lpm to -0.1 lpm	0.0	0.1
"Flow" Span	±7.0 % Adjust to 16.7 L	16.7	16.52

Other Checks:				
	Condition	Condition	Condition	Condition
Rubber Seals:	OK	Inlet: OK	Inline Filter: OK	Status: OK

Comments:

Quarterly audit performed.

Calibration Performed By: Alex Yakupov

CALIBRATORS



Calibrator Performance Audit

OZONE

File No. 2015-163

Company: Maxxam

Operator: Chris Wesson

Calibrator:
 Make/Model Sabio 2010D
 Serial Number 11900613
 Oven Temperature 49.8
 Last Verification Date May 21, 2015

Flow Measurement Device:
 Make/Model NA
 Serial Number NA
 Temperature (°C) 24
 Barometric Pressure 700 mmHg

Flow Measurements

Pt. No. 1 5000 Pt. No. 2 5000 Pt. No. 3 5000

Calibrator Flow (sccm)	Calculated Concentration (ppm)	Indicated Concentration (ppm)	% Difference	
			vs Audit Gas	% Diff. Limit
4999	0.000	-0.001		
5000	0.381	0.385	1%	± 10%
5000	0.180	0.182	2%	± 10%
5000	0.090	0.091	2%	± 10%
Absolute Average Percent Difference			2%	± 10%

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

O₃	LIMITS
Correlation= 1.0000	≥ 0.995
m (Slope)= 1.0119	0.90-1.10
b (Intercept % of FS)= -0.0724	± 3% F.S.

AENV Standards	Ozone Analyzer
Audit Calibrator	Make/Model <u>Thermo 49i</u>
Make/Model <u>Thermo 49i PS</u>	Serial/AMU Number <u>1843</u>
Serial/AMU Number <u>1808</u>	Last Calibration Date <u>March 30, 2016</u>
Ozone Standard <u>Thermo 49i PS 1808</u>	Full Scale (ppm) <u>0.5</u>

COMMENTS: _____

Auditor: Shea Beaton
 Operator Signature: _____

Date: March 30, 2016
 Location: McIntyre Center Edmonton



Calibrator Performance Audit

Sulphur Dioxide (by Cylinder Dilution)

File No. 2016-093A

Company: Maxxam

Operator: Christopher Wesson

Calibrator:
 Make/Model API 700
 Serial Number 830
 Last Verification Date December 2014
 SO₂ Cylinder Conc. 50.3
 SO₂ Cylinder S/N LL42475

Flow Measurement Device:
 Make/Model N/A
 Serial Number N/A
 Temperature (°C) N/A
 Barometric Pressure N/A

Flow Measurements

Pt. No. 1 77.5 **Pt. No. 2** 37.8 **Pt. No. 3** 18.9

Calibrator Flow (sccm)	Calculated Concentration (ppm)	Indicated Concentration (ppm)	% Difference	
			vs Audit Gas	% Diff. Limit
Zero Air	0.000	0.000		
4998	0.780	0.746	-4%	± 10%
5002	0.380	0.365	-4%	± 10%
4997	0.190	0.182	-4%	± 10%
Absolute Average Percent Difference			4%	± 10%

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

SO₂	LIMITS
Correlation= 1.0000	≥ 0.995
m (Slope)= 0.9565	0.90-1.10
b (Intercept % of FS)= 0.0436	± 3% F.S.

AENV Standards	SO ₂ Analyzer
Audit Calibrator	Make/Model <u>Teco 43C</u>
Make/Model <u>R&R MFC 201</u>	Serial/AMU Number <u>AMU 1623</u>
Serial/AMU Number <u>AMU 1690</u>	Last Calibration Date <u>January 19, 2016</u>
	Full Scale (ppm) <u>1.0</u>

COMMENTS: Gas was check for accuracy - 1% low from stated cylinder gas concentration.
Flows are not measured at each pt - AMD not being followed as per section 5.0.
Checked SO2 high pt using a Sabio 2010 - found a significantly higher response.
Both MFC's need to be re-calibrated.

Auditor: Al Clark Date: January 19, 2016
 Operator Signature: *Christopher Wesson* Location: McIntyre Center Edmonton



Calibrator Performance Audit

Oxides Of Nitrogen

File No. 2015-119

Company <u>Maxxam</u>		Operator: <u>Chris Wesson</u>	
Calibrator:		Flow Measurement Device:	
Make/Model	<u>API 700</u>	Make/Model	<u>NA</u>
Serial Number	<u>627</u>	Serial Number	<u>NA</u>
Last Verification Date	<u>April 1 2015</u>	Temperature (°C)	<u>NA</u>
NO Cylinder S/N	<u>LL119317</u>	Barometric Pressure	<u>NA</u>
NO/NOx Concentration	<u>50.3/50.3</u>		

Dilution Flow (sccm)			
Pt. #1	<u>5000</u>	Pt. #2	<u>5000</u>
		Pt. #3	<u>5000</u>
Gas Flow (sccm)			
Pt. #1	<u>77.5</u>	Pt. #2	<u>37.8</u>
		Pt. #3	<u>18.9</u>

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO ₂	NOx	NO	NOx
5007	0.0	0.000	0.000	0.000	0.000	0.000	Limit ± 10%	
5003	77.5	0.779	0.779	0.787	-0.001	0.786	1%	1%
5004	37.8	0.380	0.380	0.383	0.000	0.383	1%	1%
5001	18.9	0.190	0.190	0.191	0.000	0.191	1%	1%
Absolute Average Percent Difference							1%	1%

LINEAR REGRESSION ANALYSIS				<i>y=mx+b (where x=calculated concentration, y=indicated concentration)</i>			
NO		LIMITS		NOx			
Correlation=	1.0000	≥ 0.990		Correlation=	1.0000		
m (Slope)=	1.0106	0.90-1.10		m (Slope)=	1.0092		
b (Intercept % of FS)=	-0.0566	± 3% F.S.		b (Intercept % of FS)=	-0.0368		

Flow	O ₂ Conc	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
5003	0	0.000	0.787	0.001	0.788	NO ₂	% Diff. Limit
5003	0.5	0.493	0.294	0.498	0.792	1%	± 10%
5003	0.25	0.256	0.531	0.262	0.792	2%	± 10%
5003	0.1	0.108	0.679	0.110	0.789	1%	± 10%
Absolute Average Percent Difference						1.2%	± 10%

LINEAR REGRESSION ANALYSIS				<i>y=mx+b (where x=calculated concentration, y=indicated concentration)</i>			
NO₂		LIMITS					
Correlation=	1.0000	≥ 0.995					
m (Slope)=	1.0089	0.90-1.10					
b (Intercept % of FS)=	0.1591	± 3% F.S.					

AENV Standards	NO_x Analyzer
Audit Calibrator	
Make/Model	<u>Thermo 146i</u>
Serial/AMU Number	<u>1809</u>
	Make/Model <u>Thermo 42i</u>
	Serial/AMU Number <u>1868</u>
	Last Calibration Date <u>February 1, 2016</u>
	Full Scale (ppm) <u>1</u>

COMMENTS: Flows not manually measured - calibration system audited as it is currently being operated.

Auditor: Shea Beaton
 Operator Signature: [Signature]

Date: February 3, 2016
 Location: McIntyre Center Edmonton

CALIBRATION GASES



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2014-251CGA

Company: Maxxam Operator's Name: Limin Li
 Cylinder #: LL36837 Concentration PPM: 10.0 Tolerance(%): 2 Certified By: Air Liquide

Reference Calibrator and Gas:
 Make/Model: R&R MFC 201
 Serial Number: AMU 1690
 Last Verification Date: December 15, 2014
 Gas Type: H2S Conc. 20.43
 Cylinder Number: CAL015106

Flow Measurement Device:
 Make/Model: Bios DC2
 Serial Number: AMU 1659
 Temp. °C: 23.0 C
 B.P.: 702 mmhg

Reference Analyzer:
 Make/Model: Teco 45C Serial/AMU Number: 1624
 Instrument Settings: Zero: 6.4 Span: 1.160 Range: 0.1
 Last Calibration: Date: Dec15/14 C.F.: 1.000 Done By: Al Clark

Calibrator Flows (scem)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.0000	0.00755	132.442	10.0
5099	38.5	0.0754	0.00755	132.442	10.0
5092	18.0	0.0349	0.00353	282.889	9.9
5066	9.2	0.0178	0.00182	550.652	9.8
Average Cylinder Concentration:					9.9

Previous Stated Concentration PPM: 10.0

Percent variance from Stated: 1.1

Meets Manufacturer Tolerance. Use manufacturers stated concentration COMMENTS: _____
 < =5% Outside Manufacturer Tolerance. Use manufacturers concentration _____
 > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder _____

Auditor: Al Clark
 Operator Signature: *Al Clark*

Date: December 16, 2014
 Location: McIntyre Center Edmonton



Calibration Gas Audit

CH4 / C3H8 Cylinder Gas

File No. 2015-092CGA

Company: Maxxam Operators name: Chris Wesson
Cylinder #: LL165372 Conc CH4 (PPM) 606/212 Tolerance (%) 0.5 Certified By: Praxair

Reference Calibrator and Gas:

Make/Model R&R MFC 201
Serial Number AMU 1698
Last Verification Date January 18, 2016
Gas Type CH4 Conc. 999.2
Cylinder Number D751932
Gas Type C3H8 Conc. 246.5
Cylinder Number XF0037998

Flow Measurement Device:

Make/Model Bios DC-2
Serial Number Blos D
Temp. °C 24.5
B.P. 688mmHg

Reference Analyzer:

Make/Model Thermo 55C Serial/AMU Number: 1643
Instrument Settings Zero: NA Span: NA Range: 20.0
Last Calibration: Date: 18-Jan-16 C.F. 1.000 Done By: SB

Calibrator Flows (scem)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	CH4	C3H8			CH4	C3H8
2568	0.00	0.00	0.00	0.02140	46.722	607	214
2630	56.29	12.99	12.62	0.02140	46.722	607	214
2588	19.73	4.62	4.50	0.00762	131.171	606	215
2580	9.69	2.29	2.24	0.00376	266.254	610	217
Average Cylinder Concentration:						608	215

CH4	C3H8
Previous Stated Concentration PPM: <u>606</u>	<u>212</u>
Percent variance from Stated: <u>0.3</u>	<u>1.6</u>

Cylinder gas tolerances based on CH4 only

Meets Manufacturer Tolerance. Use manufacturers stated concentration COMMENTS: _____
 <=5% Outside Manufacturer Tolerance. Use manufacturers concentration C3H8 manufacturers tolerance 1.1%
 > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Shea Beaton Date: January 19, 2016
Operator Signature: _____ Location: McIntyre Center Edmonton



Calibration Gas Audit

NO Cylinder Gas

File No. 2015-115CGA

Company: Maxxam **Operators name:** Chris Wesson
Cylinder #: LL119346 **Conc (PPM)** 50.0/50.0 **Tolerance (%)** 2 **Certified By:** Air Liquide

Reference Calibrator and Gas:				Flow Measurement Device:	
Make/Model	<u>Thermo 146i</u>			Make/Model	<u>Bios DC-2</u>
Serial Number	<u>AMU 1809</u>			Serial Number	<u>Bios D</u>
Last Verification Date	<u>February 2, 2016</u>			Temp. °C	<u>24.5</u>
Gas Type	<u>NO</u>	Conc.	<u>48.79</u>	B.P.	<u>702mmHg</u>
Cylinder Number	<u>CAL018024</u>				

Reference Analyzer:

Make/Model	<u>Thermo 42i</u>	Serial/AMU Number:	<u>1868</u>
Instrument Settings	Zero: <u>4.2</u>	Span:	<u>1.014</u> Range: <u>1.0</u>
Last Calibration:	Date: <u>02-Feb-16</u>	C.F.	<u>1.000</u> Done By: <u>SB</u>

Calibrator Flows (sccm)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	NO	NOX			NO	NOX
4952	0.0	0.000	0.000				
4946	79.54	0.809	0.809	0.01608	62.183	50.3	50.3
4941	39.35	0.403	0.402	0.00796	125.565	50.6	50.5
4940	19.57	0.200	0.200	0.00396	252.427	50.5	50.5
Average Cylinder Concentration:						50.5	50.4

NO	NOx
Previous Stated Concentration PPM: <u>50.0</u>	<u>50.0</u>
Percent variance from Stated: <u>0.9</u>	<u>0.8</u>

Cylinder gas tolerances based on NO only

- Meets Manufacturer Tolerance. Use manufacturers stated concentration **COMMENTS: SO2/NO Blend 50.0PPM SO2**
- < =5% Outside Manufacturer Tolerance. Use manufacturers concentration
- > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Shea Beaton Date: February 2, 2016
 Operator Signature: [Signature] Location: McIntyre Center Edmonton

APPENDIX IV
ANALYTICAL RESULTS

VOCS SAMPLES

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/CLS/Mar 31, 2016	17132	Ambient Air	31-Mar-16	0:00
DESCRIPTION:	Cold Lake South			
REPORT NUMBER:	16040046	REPORT CREATED:	22-Apr-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040046-002	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-002	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-002	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-002	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-002	1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Apr-16
16040046-002	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	14-Apr-16
16040046-002	1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	14-Apr-16
16040046-002	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Apr-16
16040046-002	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-002	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Apr-16
16040046-002	1,2-Dichloroethane	I	0.02	ppbv	0.01	AC-058	14-Apr-16
16040046-002	1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-002	1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-002	1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-002	1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Apr-16
16040046-002	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Apr-16
16040046-002	1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Apr-16
16040046-002	1-Butene	I	0.03	ppbv	0.02	AC-058	14-Apr-16
16040046-002	1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-002	1-Pentene	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-002	2,2,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-002	2,2-Dimethylbutane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-002	2,3,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-002	2,3-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-002	2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16

Report certified by:

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: April 22, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/CLS/Mar 31, 2016	17132	Ambient Air	31-Mar-16	0:00
DESCRIPTION:	Cold Lake South			
REPORT NUMBER:	16040046	REPORT CREATED:	22-Apr-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040046-002	2,4-Dimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-002	2-Methylheptane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-002	2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-002	2-Methylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-002	3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-002	3-Methylhexane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-002	3-Methylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-002	Acetone		2.1	ppbv	0.4	AC-058	14-Apr-16
16040046-002	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Apr-16
16040046-002	Benzene	I	0.23	ppbv	0.01	AC-058	14-Apr-16
16040046-002	Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Apr-16
16040046-002	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-002	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-002	Bromomethane	I	0.02	ppbv	0.01	AC-058	14-Apr-16
16040046-002	Carbon disulfide	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-002	Carbon tetrachloride	I	0.12	ppbv	0.01	AC-058	14-Apr-16
16040046-002	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-002	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-002	Chloroform	I	0.03	ppbv	0.02	AC-058	14-Apr-16
16040046-002	Chloromethane		0.98	ppbv	0.02	AC-058	14-Apr-16
16040046-002	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-002	cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Apr-16
16040046-002	cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-002	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-002	Cyclohexane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16

Report certified by:

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: April 22, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/CLS/Mar 31, 2016	17132	Ambient Air	31-Mar-16	0:00
DESCRIPTION:	Cold Lake South			
REPORT NUMBER:	16040046	REPORT CREATED:	22-Apr-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040046-002	Cyclopentane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-002	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-002	Ethanol		0.5	ppbv	0.3	AC-058	14-Apr-16
16040046-002	Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Apr-16
16040046-002	Ethylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-002	Freon-11		0.37	ppbv	0.02	AC-058	14-Apr-16
16040046-002	Freon-113	I	0.11	ppbv	0.01	AC-058	14-Apr-16
16040046-002	Freon-114	I	0.03	ppbv	0.02	AC-058	14-Apr-16
16040046-002	Freon-12		0.86	ppbv	0.02	AC-058	14-Apr-16
16040046-002	Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.50	AC-058	14-Apr-16
16040046-002	Isobutane	I	0.19	ppbv	0.02	AC-058	14-Apr-16
16040046-002	Isopentane	I	0.14	ppbv	0.03	AC-058	14-Apr-16
16040046-002	Isoprene	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-002	Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Apr-16
16040046-002	Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-002	m,p-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Apr-16
16040046-002	m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Apr-16
16040046-002	m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	14-Apr-16
16040046-002	Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.50	AC-058	14-Apr-16
16040046-002	Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Apr-16
16040046-002	Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Apr-16
16040046-002	Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	14-Apr-16
16040046-002	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Apr-16
16040046-002	Methylcyclohexane	I	0.02	ppbv	0.01	AC-058	14-Apr-16
16040046-002	Methylcyclopentane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16

Report certified by:

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CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/CLS/Mar 31, 2016	17132	Ambient Air	31-Mar-16	0:00
DESCRIPTION:	Cold Lake South			
REPORT NUMBER:	16040046	REPORT CREATED:	22-Apr-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040046-002	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Apr-16
16040046-002	n-Butane	I	0.25	ppbv	0.03	AC-058	14-Apr-16
16040046-002	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	14-Apr-16
16040046-002	n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Apr-16
16040046-002	n-Heptane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-002	n-Hexane	I	0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-002	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-002	n-Pentane	K, T, U	< 0.1	ppbv	0.1	AC-058	14-Apr-16
16040046-002	n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	14-Apr-16
16040046-002	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	14-Apr-16
16040046-002	Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	14-Apr-16
16040046-002	n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-002	o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-002	o-Xylene	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-002	p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Apr-16
16040046-002	p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	14-Apr-16
16040046-002	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Apr-16
16040046-002	Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Apr-16
16040046-002	Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Apr-16
16040046-002	Toluene	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-002	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-002	trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Apr-16
16040046-002	trans-2-Butene	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-002	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-002	Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Apr-16

Report certified by:

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: April 22, 2016

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CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/CLS/Mar 31, 2016	17132	Ambient Air	31-Mar-16	0:00
DESCRIPTION:	Cold Lake South			
REPORT NUMBER:	16040046	REPORT CREATED:	22-Apr-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
16040046-002	Vinyl acetate	K, T, U	< 0.4 ppbv	0.4	AC-058	14-Apr-16
16040046-002	Vinyl chloride	K, T, U	< 0.02 ppbv	0.02	AC-058	14-Apr-16

Report certified by:

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: April 22, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/CLS/Apr 06, 2016	H3294	Ambient Air	06-Apr-16	0:00
DESCRIPTION:	Cold Lake South			
REPORT NUMBER:	16040128	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040128-003	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-003	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-003	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-003	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-003	1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Apr-16
16040128-003	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	14-Apr-16
16040128-003	1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	14-Apr-16
16040128-003	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Apr-16
16040128-003	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-003	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Apr-16
16040128-003	1,2-Dichloroethane	I	0.02	ppbv	0.01	AC-058	14-Apr-16
16040128-003	1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-003	1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-003	1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-003	1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Apr-16
16040128-003	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Apr-16
16040128-003	1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Apr-16
16040128-003	1-Butene	I	0.03	ppbv	0.02	AC-058	14-Apr-16
16040128-003	1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-003	1-Pentene	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-003	2,2,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-003	2,2-Dimethylbutane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-003	2,3,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-003	2,3-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-003	2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/CLS/Apr 06, 2016	H3294	Ambient Air	06-Apr-16	0:00
DESCRIPTION:	Cold Lake South			
REPORT NUMBER:	16040128	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040128-003	2,4-Dimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-003	2-Methylheptane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-003	2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-003	2-Methylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-003	3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-003	3-Methylhexane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-003	3-Methylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-003	Acetone		1.8	ppbv	0.4	AC-058	14-Apr-16
16040128-003	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Apr-16
16040128-003	Benzene	I	0.04	ppbv	0.01	AC-058	14-Apr-16
16040128-003	Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Apr-16
16040128-003	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-003	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-003	Bromomethane	I	0.02	ppbv	0.01	AC-058	14-Apr-16
16040128-003	Carbon disulfide	I	0.06	ppbv	0.01	AC-058	14-Apr-16
16040128-003	Carbon tetrachloride	I	0.13	ppbv	0.01	AC-058	14-Apr-16
16040128-003	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-003	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-003	Chloroform	I	0.03	ppbv	0.02	AC-058	14-Apr-16
16040128-003	Chloromethane		1.03	ppbv	0.02	AC-058	14-Apr-16
16040128-003	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-003	cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Apr-16
16040128-003	cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-003	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-003	Cyclohexane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

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CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/CLS/Apr 06, 2016	H3294	Ambient Air	06-Apr-16	0:00
DESCRIPTION:	Cold Lake South			
REPORT NUMBER:	16040128	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040128-003	Cyclopentane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-003	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-003	Ethanol		0.4	ppbv	0.3	AC-058	14-Apr-16
16040128-003	Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Apr-16
16040128-003	Ethylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-003	Freon-11		0.40	ppbv	0.02	AC-058	14-Apr-16
16040128-003	Freon-113	I	0.12	ppbv	0.01	AC-058	14-Apr-16
16040128-003	Freon-114	I	0.04	ppbv	0.02	AC-058	14-Apr-16
16040128-003	Freon-12		0.92	ppbv	0.02	AC-058	14-Apr-16
16040128-003	Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.50	AC-058	14-Apr-16
16040128-003	Isobutane	I	0.25	ppbv	0.02	AC-058	14-Apr-16
16040128-003	Isopentane	I	0.18	ppbv	0.03	AC-058	14-Apr-16
16040128-003	Isoprene	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-003	Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Apr-16
16040128-003	Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-003	m,p-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Apr-16
16040128-003	m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Apr-16
16040128-003	m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	14-Apr-16
16040128-003	Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.50	AC-058	14-Apr-16
16040128-003	Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Apr-16
16040128-003	Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Apr-16
16040128-003	Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	14-Apr-16
16040128-003	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Apr-16
16040128-003	Methylcyclohexane	I	0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-003	Methylcyclopentane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

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CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/CLS/Apr 06, 2016	H3294	Ambient Air	06-Apr-16	0:00
DESCRIPTION:	Cold Lake South			
REPORT NUMBER:	16040128	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040128-003	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Apr-16
16040128-003	n-Butane		0.34	ppbv	0.03	AC-058	14-Apr-16
16040128-003	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	14-Apr-16
16040128-003	n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Apr-16
16040128-003	n-Heptane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-003	n-Hexane	I	0.02	ppbv	0.01	AC-058	14-Apr-16
16040128-003	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-003	n-Pentane	K, T, U	< 0.1	ppbv	0.1	AC-058	14-Apr-16
16040128-003	n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	14-Apr-16
16040128-003	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	14-Apr-16
16040128-003	Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	14-Apr-16
16040128-003	n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-003	o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-003	o-Xylene	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-003	p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Apr-16
16040128-003	p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	14-Apr-16
16040128-003	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Apr-16
16040128-003	Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Apr-16
16040128-003	Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Apr-16
16040128-003	Toluene	I	0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-003	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-003	trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Apr-16
16040128-003	trans-2-Butene	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-003	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-003	Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Apr-16

Report certified by: Graham Knox, Team Lead	On behalf of: PJ Pretorius, Manager, Analysis and Testing Services
Date: May 18, 2016	Inquiries: (780) 632 8455 E-mail: EAS.Results@albertainnovates.ca

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/CLS/Apr 06, 2016	H3294	Ambient Air	06-Apr-16	0:00
DESCRIPTION:	Cold Lake South			
REPORT NUMBER:	16040128	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040128-003	Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Apr-16
16040128-003	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16

Report certified by: Graham Knox, Team Lead	On behalf of: PJ Pretorius, Manager, Analysis and Testing Services
Date: May 18, 2016	Inquiries: (780) 632 8455 E-mail: EAS.Results@albertainnovates.ca

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Apr 12, 2016	15757	Ambient Air	12-Apr-16 0:00
DESCRIPTION:	Cold Lake South		
REPORT NUMBER:	16040172	REPORT CREATED:	18-May-16
			VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040172-001	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Apr-16
16040172-001	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Apr-16
16040172-001	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Apr-16
16040172-001	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Apr-16
16040172-001	1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	20-Apr-16
16040172-001	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	20-Apr-16
16040172-001	1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	20-Apr-16
16040172-001	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Apr-16
16040172-001	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Apr-16
16040172-001	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Apr-16
16040172-001	1,2-Dichloroethane	I	0.03	ppbv	0.01	AC-058	20-Apr-16
16040172-001	1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Apr-16
16040172-001	1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Apr-16
16040172-001	1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Apr-16
16040172-001	1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	20-Apr-16
16040172-001	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	20-Apr-16
16040172-001	1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	20-Apr-16
16040172-001	1-Butene	I	0.12	ppbv	0.02	AC-058	20-Apr-16
16040172-001	1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Apr-16
16040172-001	1-Pentene	I	0.03	ppbv	0.01	AC-058	20-Apr-16
16040172-001	2,2,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Apr-16
16040172-001	2,2-Dimethylbutane	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Apr-16
16040172-001	2,3,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Apr-16
16040172-001	2,3-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Apr-16
16040172-001	2,3-Dimethylpentane	I	0.04	ppbv	0.02	AC-058	20-Apr-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/CLS/Apr 12, 2016	15757	Ambient Air	12-Apr-16	0:00
DESCRIPTION:	Cold Lake South			
REPORT NUMBER:	16040172	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040172-001	2,4-Dimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Apr-16
16040172-001	2-Methylheptane	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Apr-16
16040172-001	2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Apr-16
16040172-001	2-Methylpentane	I	0.11	ppbv	0.01	AC-058	20-Apr-16
16040172-001	3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Apr-16
16040172-001	3-Methylhexane	I	0.03	ppbv	0.02	AC-058	20-Apr-16
16040172-001	3-Methylpentane	I	0.03	ppbv	0.01	AC-058	20-Apr-16
16040172-001	Acetone		4.4	ppbv	0.4	AC-058	20-Apr-16
16040172-001	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	20-Apr-16
16040172-001	Benzene	I	0.08	ppbv	0.01	AC-058	20-Apr-16
16040172-001	Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	20-Apr-16
16040172-001	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Apr-16
16040172-001	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Apr-16
16040172-001	Bromomethane	I	0.01	ppbv	0.01	AC-058	20-Apr-16
16040172-001	Carbon disulfide	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Apr-16
16040172-001	Carbon tetrachloride	I	0.12	ppbv	0.01	AC-058	20-Apr-16
16040172-001	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Apr-16
16040172-001	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Apr-16
16040172-001	Chloroform	I	0.05	ppbv	0.02	AC-058	20-Apr-16
16040172-001	Chloromethane		0.93	ppbv	0.02	AC-058	20-Apr-16
16040172-001	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Apr-16
16040172-001	cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	20-Apr-16
16040172-001	cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Apr-16
16040172-001	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Apr-16
16040172-001	Cyclohexane	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Apr-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

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E-mail: EAS.Results@albertainnovates.ca

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/CLS/Apr 12, 2016	15757	Ambient Air	12-Apr-16	0:00
DESCRIPTION:	Cold Lake South			
REPORT NUMBER:	16040172	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040172-001	Cyclopentane	I	0.01	ppbv	0.01	AC-058	20-Apr-16
16040172-001	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Apr-16
16040172-001	Ethanol		1.7	ppbv	0.3	AC-058	20-Apr-16
16040172-001	Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	20-Apr-16
16040172-001	Ethylbenzene	I	0.01	ppbv	0.01	AC-058	20-Apr-16
16040172-001	Freon-11		0.36	ppbv	0.02	AC-058	20-Apr-16
16040172-001	Freon-113	I	0.09	ppbv	0.01	AC-058	20-Apr-16
16040172-001	Freon-114	I	0.03	ppbv	0.02	AC-058	20-Apr-16
16040172-001	Freon-12		0.86	ppbv	0.02	AC-058	20-Apr-16
16040172-001	Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.50	AC-058	20-Apr-16
16040172-001	Isobutane		0.64	ppbv	0.02	AC-058	20-Apr-16
16040172-001	Isopentane		0.52	ppbv	0.03	AC-058	20-Apr-16
16040172-001	Isoprene	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Apr-16
16040172-001	Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	20-Apr-16
16040172-001	Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Apr-16
16040172-001	m,p-Xylene	I	0.03	ppbv	0.03	AC-058	20-Apr-16
16040172-001	m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	20-Apr-16
16040172-001	m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	20-Apr-16
16040172-001	Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.50	AC-058	20-Apr-16
16040172-001	Methyl ethyl ketone		0.3	ppbv	0.3	AC-058	20-Apr-16
16040172-001	Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	20-Apr-16
16040172-001	Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	20-Apr-16
16040172-001	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Apr-16
16040172-001	Methylcyclohexane	I	0.02	ppbv	0.01	AC-058	20-Apr-16
16040172-001	Methylcyclopentane	I	0.03	ppbv	0.02	AC-058	20-Apr-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

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E-mail: EAS.Results@albertainnovates.ca

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/CLS/Apr 12, 2016	15757	Ambient Air	12-Apr-16	0:00
DESCRIPTION:	Cold Lake South			
REPORT NUMBER:	16040172	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040172-001	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	20-Apr-16
16040172-001	n-Butane		1.31	ppbv	0.03	AC-058	20-Apr-16
16040172-001	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	20-Apr-16
16040172-001	n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	20-Apr-16
16040172-001	n-Heptane	I	0.01	ppbv	0.01	AC-058	20-Apr-16
16040172-001	n-Hexane	I	0.05	ppbv	0.01	AC-058	20-Apr-16
16040172-001	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Apr-16
16040172-001	n-Pentane	I	0.2	ppbv	0.1	AC-058	20-Apr-16
16040172-001	n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	20-Apr-16
16040172-001	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	20-Apr-16
16040172-001	Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	20-Apr-16
16040172-001	n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Apr-16
16040172-001	o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Apr-16
16040172-001	o-Xylene	I	0.01	ppbv	0.01	AC-058	20-Apr-16
16040172-001	p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	20-Apr-16
16040172-001	p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	20-Apr-16
16040172-001	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	20-Apr-16
16040172-001	Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	20-Apr-16
16040172-001	Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	20-Apr-16
16040172-001	Toluene	I	0.08	ppbv	0.01	AC-058	20-Apr-16
16040172-001	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Apr-16
16040172-001	trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	20-Apr-16
16040172-001	trans-2-Butene	I	0.01	ppbv	0.01	AC-058	20-Apr-16
16040172-001	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Apr-16
16040172-001	Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	20-Apr-16

Report certified by: Graham Knox, Team Lead	On behalf of: PJ Pretorius, Manager, Analysis and Testing Services
Date: May 18, 2016	Inquiries: (780) 632 8455 E-mail: EAS.Results@albertainnovates.ca

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Apr 12, 2016	15757	Ambient Air	12-Apr-16 0:00
DESCRIPTION:	Cold Lake South		
REPORT NUMBER:	16040172	REPORT CREATED:	18-May-16
			VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
16040172-001	Vinyl acetate	K, T, U	< 0.4 ppbv	0.4	AC-058	20-Apr-16
16040172-001	Vinyl chloride	K, T, U	< 0.02 ppbv	0.02	AC-058	20-Apr-16

Report certified by: Graham Knox, Team Lead	On behalf of: PJ Pretorius, Manager, Analysis and Testing Services
Date: May 18, 2016	Inquiries: (780) 632 8455 E-mail: EAS.Results@albertainnovates.ca

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Apr 18, 2016	2478	Ambient Air	18-Apr-16 0:00
DESCRIPTION:	Cold Lake South		
REPORT NUMBER:	16040201	REPORT CREATED:	18-May-16
			VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040201-001	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-001	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-001	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-001	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-001	1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Apr-16
16040201-001	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	28-Apr-16
16040201-001	1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	28-Apr-16
16040201-001	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Apr-16
16040201-001	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-001	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Apr-16
16040201-001	1,2-Dichloroethane	I	0.02	ppbv	0.01	AC-058	28-Apr-16
16040201-001	1,2-Dichloropropane	I	0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-001	1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-001	1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-001	1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	28-Apr-16
16040201-001	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	28-Apr-16
16040201-001	1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	28-Apr-16
16040201-001	1-Butene	I	0.23	ppbv	0.02	AC-058	28-Apr-16
16040201-001	1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-001	1-Pentene	I	0.02	ppbv	0.01	AC-058	28-Apr-16
16040201-001	2,2,4-Trimethylpentane	I	0.04	ppbv	0.01	AC-058	28-Apr-16
16040201-001	2,2-Dimethylbutane	K, T, U	< 0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-001	2,3,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-001	2,3-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-001	2,3-Dimethylpentane	I	0.03	ppbv	0.02	AC-058	28-Apr-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

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CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/CLS/Apr 18, 2016	2478	Ambient Air	18-Apr-16	0:00
DESCRIPTION:	Cold Lake South			
REPORT NUMBER:	16040201	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040201-001	2,4-Dimethylpentane	I	0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-001	2-Methylheptane	K, T, U	< 0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-001	2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-001	2-Methylpentane	I	0.06	ppbv	0.01	AC-058	28-Apr-16
16040201-001	3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-001	3-Methylhexane	I	0.04	ppbv	0.02	AC-058	28-Apr-16
16040201-001	3-Methylpentane	I	0.03	ppbv	0.01	AC-058	28-Apr-16
16040201-001	Acetone		5.2	ppbv	0.4	AC-058	28-Apr-16
16040201-001	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	28-Apr-16
16040201-001	Benzene	I	0.08	ppbv	0.01	AC-058	28-Apr-16
16040201-001	Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	28-Apr-16
16040201-001	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-001	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-001	Bromomethane	I	0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-001	Carbon disulfide	I	0.19	ppbv	0.01	AC-058	28-Apr-16
16040201-001	Carbon tetrachloride	I	0.09	ppbv	0.01	AC-058	28-Apr-16
16040201-001	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-001	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-001	Chloroform	I	0.03	ppbv	0.02	AC-058	28-Apr-16
16040201-001	Chloromethane		0.87	ppbv	0.02	AC-058	28-Apr-16
16040201-001	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-001	cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Apr-16
16040201-001	cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-001	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-001	Cyclohexane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16

Report certified by: Graham Knox, Team Lead	On behalf of: PJ Pretorius, Manager, Analysis and Testing Services
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CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Apr 18, 2016	2478	Ambient Air	18-Apr-16 0:00
DESCRIPTION:	Cold Lake South		
REPORT NUMBER:	16040201	REPORT CREATED:	18-May-16
			VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040201-001	Cyclopentane	K, T, U	< 0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-001	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-001	Ethanol		2.8	ppbv	0.3	AC-058	28-Apr-16
16040201-001	Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	28-Apr-16
16040201-001	Ethylbenzene	I	0.02	ppbv	0.01	AC-058	28-Apr-16
16040201-001	Freon-11	I	0.27	ppbv	0.02	AC-058	28-Apr-16
16040201-001	Freon-113	I	0.08	ppbv	0.01	AC-058	28-Apr-16
16040201-001	Freon-114	I	0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-001	Freon-12		0.64	ppbv	0.02	AC-058	28-Apr-16
16040201-001	Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.50	AC-058	28-Apr-16
16040201-001	Isobutane		0.53	ppbv	0.02	AC-058	28-Apr-16
16040201-001	Isopentane		0.46	ppbv	0.03	AC-058	28-Apr-16
16040201-001	Isoprene	K, T, U	< 0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-001	Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	28-Apr-16
16040201-001	Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-001	m,p-Xylene	I	0.11	ppbv	0.03	AC-058	28-Apr-16
16040201-001	m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Apr-16
16040201-001	m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	28-Apr-16
16040201-001	Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.50	AC-058	28-Apr-16
16040201-001	Methyl ethyl ketone		0.4	ppbv	0.3	AC-058	28-Apr-16
16040201-001	Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	28-Apr-16
16040201-001	Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	28-Apr-16
16040201-001	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Apr-16
16040201-001	Methylcyclohexane	I	0.02	ppbv	0.01	AC-058	28-Apr-16
16040201-001	Methylcyclopentane	I	0.03	ppbv	0.02	AC-058	28-Apr-16

Report certified by: Graham Knox, Team Lead	On behalf of: PJ Pretorius, Manager, Analysis and Testing Services
Date: May 18, 2016	Inquiries: (780) 632 8455 E-mail: EAS.Results@albertainnovates.ca

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/CLS/Apr 18, 2016	2478	Ambient Air	18-Apr-16	0:00
DESCRIPTION:	Cold Lake South			
REPORT NUMBER:	16040201	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040201-001	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	28-Apr-16
16040201-001	n-Butane		0.88	ppbv	0.03	AC-058	28-Apr-16
16040201-001	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	28-Apr-16
16040201-001	n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	28-Apr-16
16040201-001	n-Heptane	I	0.02	ppbv	0.01	AC-058	28-Apr-16
16040201-001	n-Hexane	I	0.04	ppbv	0.01	AC-058	28-Apr-16
16040201-001	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-001	n-Pentane	I	0.1	ppbv	0.1	AC-058	28-Apr-16
16040201-001	n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	28-Apr-16
16040201-001	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	28-Apr-16
16040201-001	Naphthalene		0.8	ppbv	0.5	AC-058	28-Apr-16
16040201-001	n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-001	o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-001	o-Xylene	I	0.03	ppbv	0.01	AC-058	28-Apr-16
16040201-001	p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Apr-16
16040201-001	p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	28-Apr-16
16040201-001	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Apr-16
16040201-001	Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Apr-16
16040201-001	Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	28-Apr-16
16040201-001	Toluene	I	0.12	ppbv	0.01	AC-058	28-Apr-16
16040201-001	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-001	trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Apr-16
16040201-001	trans-2-Butene	K, T, U	< 0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-001	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-001	Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Apr-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/CLS/Apr 18, 2016	2478	Ambient Air	18-Apr-16	0:00
DESCRIPTION:	Cold Lake South			
REPORT NUMBER:	16040201	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040201-001	Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	28-Apr-16
16040201-001	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16

Report certified by: Graham Knox, Team Lead

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Date: May 18, 2016

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CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/CLS/Apr 24, 2016	H3286	Ambient Air	24-Apr-16	0:00
DESCRIPTION:	Cold Lake South			
REPORT NUMBER:	16050011	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050011-001	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-001	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-001	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-001	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-001	1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	05-May-16
16050011-001	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	05-May-16
16050011-001	1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	05-May-16
16050011-001	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	05-May-16
16050011-001	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-001	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	05-May-16
16050011-001	1,2-Dichloroethane	I	0.02	ppbv	0.01	AC-058	05-May-16
16050011-001	1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-001	1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-001	1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-001	1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	05-May-16
16050011-001	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	05-May-16
16050011-001	1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	05-May-16
16050011-001	1-Butene	I	0.04	ppbv	0.02	AC-058	05-May-16
16050011-001	1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-001	1-Pentene	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-001	2,2,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-001	2,2-Dimethylbutane	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-001	2,3,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-001	2,3-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-001	2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/CLS/Apr 24, 2016	H3286	Ambient Air	24-Apr-16	0:00
DESCRIPTION:	Cold Lake South			
REPORT NUMBER:	16050011	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050011-001	2,4-Dimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-001	2-Methylheptane	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-001	2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-001	2-Methylpentane	I	0.01	ppbv	0.01	AC-058	05-May-16
16050011-001	3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-001	3-Methylhexane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-001	3-Methylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-001	Acetone		3.0	ppbv	0.4	AC-058	05-May-16
16050011-001	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	05-May-16
16050011-001	Benzene	I	0.03	ppbv	0.01	AC-058	05-May-16
16050011-001	Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	05-May-16
16050011-001	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-001	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-001	Bromomethane	I	0.01	ppbv	0.01	AC-058	05-May-16
16050011-001	Carbon disulfide		0.33	ppbv	0.01	AC-058	05-May-16
16050011-001	Carbon tetrachloride	I	0.12	ppbv	0.01	AC-058	05-May-16
16050011-001	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-001	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-001	Chloroform	I	0.03	ppbv	0.02	AC-058	05-May-16
16050011-001	Chloromethane		0.99	ppbv	0.02	AC-058	05-May-16
16050011-001	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-001	cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	05-May-16
16050011-001	cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-001	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-001	Cyclohexane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16

Report certified by: Graham Knox, Team Lead	On behalf of: PJ Pretorius, Manager, Analysis and Testing Services
Date: May 18, 2016	Inquiries: (780) 632 8455 E-mail: EAS.Results@albertainnovates.ca

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/CLS/Apr 24, 2016	H3286	Ambient Air	24-Apr-16	0:00
DESCRIPTION:	Cold Lake South			
REPORT NUMBER:	16050011	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050011-001	Cyclopentane	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-001	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-001	Ethanol		1.0	ppbv	0.3	AC-058	05-May-16
16050011-001	Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	05-May-16
16050011-001	Ethylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-001	Freon-11		0.39	ppbv	0.02	AC-058	05-May-16
16050011-001	Freon-113	I	0.09	ppbv	0.01	AC-058	05-May-16
16050011-001	Freon-114	I	0.03	ppbv	0.02	AC-058	05-May-16
16050011-001	Freon-12		0.90	ppbv	0.02	AC-058	05-May-16
16050011-001	Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.50	AC-058	05-May-16
16050011-001	Isobutane	I	0.29	ppbv	0.02	AC-058	05-May-16
16050011-001	Isopentane	I	0.19	ppbv	0.03	AC-058	05-May-16
16050011-001	Isoprene	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-001	Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	05-May-16
16050011-001	Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-001	m,p-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	05-May-16
16050011-001	m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	05-May-16
16050011-001	m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	05-May-16
16050011-001	Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.50	AC-058	05-May-16
16050011-001	Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	05-May-16
16050011-001	Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	05-May-16
16050011-001	Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	05-May-16
16050011-001	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	05-May-16
16050011-001	Methylcyclohexane	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-001	Methylcyclopentane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

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CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/CLS/Apr 24, 2016	H3286	Ambient Air	24-Apr-16	0:00
DESCRIPTION:	Cold Lake South			
REPORT NUMBER:	16050011	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050011-001	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	05-May-16
16050011-001	n-Butane		0.41	ppbv	0.03	AC-058	05-May-16
16050011-001	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	05-May-16
16050011-001	n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	05-May-16
16050011-001	n-Heptane	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-001	n-Hexane	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-001	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-001	n-Pentane	K, T, U	< 0.1	ppbv	0.1	AC-058	05-May-16
16050011-001	n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	05-May-16
16050011-001	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	05-May-16
16050011-001	Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	05-May-16
16050011-001	n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-001	o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-001	o-Xylene	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-001	p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	05-May-16
16050011-001	p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	05-May-16
16050011-001	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	05-May-16
16050011-001	Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	05-May-16
16050011-001	Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	05-May-16
16050011-001	Toluene	I	0.03	ppbv	0.01	AC-058	05-May-16
16050011-001	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-001	trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	05-May-16
16050011-001	trans-2-Butene	I	0.01	ppbv	0.01	AC-058	05-May-16
16050011-001	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-001	Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	05-May-16

Report certified by: Graham Knox, Team Lead	On behalf of: PJ Pretorius, Manager, Analysis and Testing Services
Date: May 18, 2016	Inquiries: (780) 632 8455 E-mail: EAS.Results@albertainnovates.ca

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/CLS/Apr 24, 2016	H3286	Ambient Air	24-Apr-16	0:00
DESCRIPTION:	Cold Lake South			
REPORT NUMBER:	16050011	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050011-001	Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	05-May-16
16050011-001	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16

Report certified by: Graham Knox, Team Lead	On behalf of: PJ Pretorius, Manager, Analysis and Testing Services
Date: May 18, 2016	Inquiries: (780) 632 8455 E-mail: EAS.Results@albertainnovates.ca

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/CLS/Apr 30, 2016	2535	Ambient Air	30-Apr-16	0:00
DESCRIPTION:	COLD LAKE SOUTH			
REPORT NUMBER:	16050026	REPORT CREATED:	20-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050026-003	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-003	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-003	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-003	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-003	1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	12-May-16
16050026-003	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	12-May-16
16050026-003	1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	12-May-16
16050026-003	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	12-May-16
16050026-003	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-003	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	12-May-16
16050026-003	1,2-Dichloroethane	I	0.02	ppbv	0.01	AC-058	12-May-16
16050026-003	1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	12-May-16
16050026-003	1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-003	1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-003	1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	12-May-16
16050026-003	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	12-May-16
16050026-003	1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	12-May-16
16050026-003	1-Butene	I	0.09	ppbv	0.02	AC-058	12-May-16
16050026-003	1-Hexene	I	0.03	ppbv	0.02	AC-058	12-May-16
16050026-003	1-Pentene	I	0.02	ppbv	0.01	AC-058	12-May-16
16050026-003	2,2,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	12-May-16
16050026-003	2,2-Dimethylbutane	I	0.01	ppbv	0.01	AC-058	12-May-16
16050026-003	2,3,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	12-May-16
16050026-003	2,3-Dimethylbutane	I	0.02	ppbv	0.02	AC-058	12-May-16
16050026-003	2,3-Dimethylpentane	I	0.04	ppbv	0.02	AC-058	12-May-16

Report certified by:	Graham Knox, Team Lead	On behalf of:	PJ Pretorius, Manager, Analysis and Testing Services
Date:	May-20-16	Inquiries:	(780) 632 8455
		E-mail:	EAS.Results@albertainnovates.ca

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/Apr 30, 2016	2535	Ambient Air	30-Apr-16 0:00
DESCRIPTION:	COLD LAKE SOUTH		
REPORT NUMBER:	16050026	REPORT CREATED:	20-May-16
			VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050026-003	2,4-Dimethylpentane	I	0.01	ppbv	0.01	AC-058	12-May-16
16050026-003	2-Methylheptane	K, T, U	< 0.01	ppbv	0.01	AC-058	12-May-16
16050026-003	2-Methylhexane	I	0.14	ppbv	0.01	AC-058	12-May-16
16050026-003	2-Methylpentane	I	0.07	ppbv	0.01	AC-058	12-May-16
16050026-003	3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-003	3-Methylhexane	I	0.11	ppbv	0.02	AC-058	12-May-16
16050026-003	3-Methylpentane	I	0.04	ppbv	0.01	AC-058	12-May-16
16050026-003	Acetone		4.9	ppbv	0.4	AC-058	12-May-16
16050026-003	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	12-May-16
16050026-003	Benzene	I	0.04	ppbv	0.01	AC-058	12-May-16
16050026-003	Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	12-May-16
16050026-003	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-003	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-003	Bromomethane	I	0.01	ppbv	0.01	AC-058	12-May-16
16050026-003	Carbon disulfide	I	0.05	ppbv	0.01	AC-058	12-May-16
16050026-003	Carbon tetrachloride	I	0.11	ppbv	0.01	AC-058	12-May-16
16050026-003	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-003	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-003	Chloroform	I	0.03	ppbv	0.02	AC-058	12-May-16
16050026-003	Chloromethane		0.84	ppbv	0.02	AC-058	12-May-16
16050026-003	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	12-May-16
16050026-003	cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	12-May-16
16050026-003	cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-003	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-003	Cyclohexane	I	0.02	ppbv	0.02	AC-058	12-May-16

Report certified by:	Graham Knox, Team Lead	On behalf of:	PJ Pretorius, Manager, Analysis and Testing Services
Date:	May-20-16	Inquiries:	(780) 632 8455
		E-mail:	EAS.Results@albertainnovates.ca

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/CLS/Apr 30, 2016	2535	Ambient Air	30-Apr-16	0:00
DESCRIPTION:	COLD LAKE SOUTH			
REPORT NUMBER:	16050026	REPORT CREATED:	20-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050026-003	Cyclopentane	I	0.01	ppbv	0.01	AC-058	12-May-16
16050026-003	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	12-May-16
16050026-003	Ethanol		1.7	ppbv	0.3	AC-058	12-May-16
16050026-003	Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	12-May-16
16050026-003	Ethylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	12-May-16
16050026-003	Freon-11		0.33	ppbv	0.02	AC-058	12-May-16
16050026-003	Freon-113	I	0.08	ppbv	0.01	AC-058	12-May-16
16050026-003	Freon-114	I	0.03	ppbv	0.02	AC-058	12-May-16
16050026-003	Freon-12		0.78	ppbv	0.02	AC-058	12-May-16
16050026-003	Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.50	AC-058	12-May-16
16050026-003	Isobutane		0.52	ppbv	0.02	AC-058	12-May-16
16050026-003	Isopentane		0.53	ppbv	0.03	AC-058	12-May-16
16050026-003	Isoprene	I	0.01	ppbv	0.01	AC-058	12-May-16
16050026-003	Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	12-May-16
16050026-003	Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	12-May-16
16050026-003	m,p-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	12-May-16
16050026-003	m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	12-May-16
16050026-003	m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	12-May-16
16050026-003	Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.50	AC-058	12-May-16
16050026-003	Methyl ethyl ketone		0.3	ppbv	0.3	AC-058	12-May-16
16050026-003	Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	12-May-16
16050026-003	Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	12-May-16
16050026-003	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	12-May-16
16050026-003	Methylcyclohexane	I	0.07	ppbv	0.01	AC-058	12-May-16
16050026-003	Methylcyclopentane	I	0.05	ppbv	0.02	AC-058	12-May-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May-20-16

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/CLS/Apr 30, 2016	2535	Ambient Air	30-Apr-16	0:00
DESCRIPTION:	COLD LAKE SOUTH			
REPORT NUMBER:	16050026	REPORT CREATED:	20-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050026-003	Methylene chloride		0.3	ppbv	0.3	AC-058	12-May-16
16050026-003	n-Butane		1.37	ppbv	0.03	AC-058	12-May-16
16050026-003	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	12-May-16
16050026-003	n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	12-May-16
16050026-003	n-Heptane	I	0.13	ppbv	0.01	AC-058	12-May-16
16050026-003	n-Hexane	I	0.08	ppbv	0.01	AC-058	12-May-16
16050026-003	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-003	n-Pentane	I	0.2	ppbv	0.1	AC-058	12-May-16
16050026-003	n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	12-May-16
16050026-003	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	12-May-16
16050026-003	Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	12-May-16
16050026-003	n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	12-May-16
16050026-003	o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	12-May-16
16050026-003	o-Xylene	I	0.01	ppbv	0.01	AC-058	12-May-16
16050026-003	p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	12-May-16
16050026-003	p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	12-May-16
16050026-003	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	12-May-16
16050026-003	Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	12-May-16
16050026-003	Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	12-May-16
16050026-003	Toluene	I	0.08	ppbv	0.01	AC-058	12-May-16
16050026-003	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	12-May-16
16050026-003	trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	12-May-16
16050026-003	trans-2-Butene	I	0.01	ppbv	0.01	AC-058	12-May-16
16050026-003	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-003	Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	12-May-16

Report certified by:	Graham Knox, Team Lead	On behalf of:	PJ Pretorius, Manager, Analysis and Testing Services	
Date:	May-20-16	Inquiries:	(780) 632 8455	E-mail: EAS.Results@albertainnovates.ca

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/CLS/Apr 30, 2016	2535	Ambient Air	30-Apr-16	0:00
DESCRIPTION:	COLD LAKE SOUTH			
REPORT NUMBER:	16050026	REPORT CREATED:	20-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
16050026-003	Vinyl acetate	K, T, U	< 0.4 ppbv	0.4	AC-058	12-May-16
16050026-003	Vinyl chloride	K, T, U	< 0.02 ppbv	0.02	AC-058	12-May-16

Report certified by: Graham Knox, Team Lead	On behalf of: PJ Pretorius, Manager, Analysis and Testing Services
Date: May-20-16	Inquiries: (780) 632 8455 E-mail: EAS.Results@albertainnovates.ca

PAHS SAMPLES

<p>RESULTS: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>CLIENT SAMPLE ID LICA/PUF/CLS/Mar 31, 2016</p> <p>CANISTER ID TE-08</p> <p>Matrix Air Filter</p> <p>Priority Normal</p> <p>DESCRIPTION: Cold Lake South</p> <p>DATE SAMPLED: 31-Mar-16 0:00</p> <p>REPORT CREATED: 22-Apr-16</p> <p>DATE RECEIVED: 07-Apr-16</p> <p>REPORT NUMBER: 16040046</p> <p>VERSION: Version 01</p>
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Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040046-003	1-Methylnaphthalene		0.04	ug/puf	0.01	NA-017	16-Apr-16
16040046-003	2-Methylnaphthalene		0.06	ug/puf	0.01	NA-017	16-Apr-16
16040046-003	3-Methylcholanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-003	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-003	Acenaphthene		0.02	ug/puf	0.01	NA-017	16-Apr-16
16040046-003	Acenaphthylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-003	Acridine	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-003	Anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-003	Benzo(a)anthracene		0.02	ug/puf	0.01	NA-017	16-Apr-16
16040046-003	Benzo(a)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-003	Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-003	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-003	Benzo(e)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-003	Benzo(ghi)perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-003	Chrysene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-003	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-003	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-003	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Apr-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: April 22, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/PUF/CLS/Mar 31, 2016	TE-08	Air Filter	31-Mar-16 0:00
DESCRIPTION:	Cold Lake South		
REPORT NUMBER:	16040046	REPORT CREATED:	22-Apr-16
			VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040046-003	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-003	Fluoranthene		0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-003	Fluorene		0.03	ug/puf	0.01	NA-017	16-Apr-16
16040046-003	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-003	Naphthalene		0.03	ug/puf	0.01	NA-017	16-Apr-16
16040046-003	Perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-003	Phenanthrene		0.09	ug/puf	0.01	NA-017	16-Apr-16
16040046-003	Pyrene		0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-003	Retene		0.01	ug/puf	0.01	NA-017	16-Apr-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: April 22, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca

<p>RESULTS: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>CLIENT SAMPLE ID LICA/PUF/CLS/Apr 06, 2016</p> <p>CANISTER ID TE-01</p> <p>Matrix Air Filter</p> <p>Priority Normal</p> <p>DESCRIPTION: Cold Lake South</p> <p>DATE SAMPLED: 06-Apr-16 0:00</p> <p>REPORT CREATED: 18-May-16</p> <p>DATE RECEIVED: 13-Apr-16</p> <p>REPORT NUMBER: 16040128</p> <p>VERSION: Version 01</p>
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Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040128-004	1-Methylnaphthalene		0.03	ug/puf	0.01	NA-017	12-May-16
16040128-004	2-Methylnaphthalene		0.07	ug/puf	0.01	NA-017	12-May-16
16040128-004	3-Methylcholanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040128-004	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040128-004	Acenaphthene		0.01	ug/puf	0.01	NA-017	12-May-16
16040128-004	Acenaphthylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040128-004	Acridine	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040128-004	Anthracene		0.01	ug/puf	0.01	NA-017	12-May-16
16040128-004	Benzo(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040128-004	Benzo(a)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040128-004	Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040128-004	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040128-004	Benzo(e)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040128-004	Benzo(ghi)perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040128-004	Chrysene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040128-004	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040128-004	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040128-004	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/PUF/CLS/Apr 06, 2016	TE-01	Air Filter	06-Apr-16	0:00
DESCRIPTION:	Cold Lake South			
REPORT NUMBER:	16040128	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040128-004	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040128-004	Fluoranthene		0.05	ug/puf	0.01	NA-017	12-May-16
16040128-004	Fluorene		0.04	ug/puf	0.01	NA-017	12-May-16
16040128-004	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040128-004	Naphthalene		0.04	ug/puf	0.01	NA-017	12-May-16
16040128-004	Perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040128-004	Phenanthrene		0.10	ug/puf	0.01	NA-017	12-May-16
16040128-004	Pyrene		0.03	ug/puf	0.01	NA-017	12-May-16
16040128-004	Retene		0.03	ug/puf	0.01	NA-017	12-May-16

Report certified by: Graham Knox, Team Lead	On behalf of: PJ Pretorius, Manager, Analysis and Testing Services
Date: May 18, 2016	Inquiries: (780) 632 8455 E-mail: EAS.Results@albertainnovates.ca

<p>RESULTS: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>CLIENT SAMPLE ID LICA/PUF/CLS/Apr 12, 2016</p> <p>CANISTER ID TE-02</p> <p>Matrix Air Filter</p> <p>Priority Normal</p> <p>DESCRIPTION: Cold Lake South</p> <p>DATE SAMPLED: 12-Apr-16 0:00</p> <p>REPORT CREATED: 18-May-16</p> <p>DATE RECEIVED: 18-Apr-16</p> <p>REPORT NUMBER: 16040172</p> <p>VERSION: Version 01</p>
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Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040172-002	1-Methylnaphthalene		0.07	ug/puf	0.01	NA-017	12-May-16
16040172-002	2-Methylnaphthalene		0.13	ug/puf	0.01	NA-017	12-May-16
16040172-002	3-Methylcholanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040172-002	7,12-Dimethylbenz(a)anthracene		0.02	ug/puf	0.01	NA-017	12-May-16
16040172-002	Acenaphthene		0.04	ug/puf	0.01	NA-017	12-May-16
16040172-002	Acenaphthylene		0.08	ug/puf	0.01	NA-017	12-May-16
16040172-002	Acridine	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040172-002	Anthracene		0.04	ug/puf	0.01	NA-017	12-May-16
16040172-002	Benzo(a)anthracene		0.02	ug/puf	0.01	NA-017	12-May-16
16040172-002	Benzo(a)pyrene		0.02	ug/puf	0.01	NA-017	12-May-16
16040172-002	Benzo(b,j,k)fluoranthene		0.04	ug/puf	0.01	NA-017	12-May-16
16040172-002	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040172-002	Benzo(e)pyrene		0.01	ug/puf	0.01	NA-017	12-May-16
16040172-002	Benzo(ghi)perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040172-002	Chrysene		0.01	ug/puf	0.01	NA-017	12-May-16
16040172-002	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040172-002	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040172-002	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/PUF/CLS/Apr 12, 2016	TE-02	Air Filter	12-Apr-16	0:00
DESCRIPTION:	Cold Lake South			
REPORT NUMBER:	16040172	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040172-002	Dibenzo(ah)anthracene		0.01	ug/puf	0.01	NA-017	12-May-16
16040172-002	Fluoranthene		0.14	ug/puf	0.01	NA-017	12-May-16
16040172-002	Fluorene		0.11	ug/puf	0.01	NA-017	12-May-16
16040172-002	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040172-002	Naphthalene		0.09	ug/puf	0.01	NA-017	12-May-16
16040172-002	Perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040172-002	Phenanthrene		0.37	ug/puf	0.01	NA-017	12-May-16
16040172-002	Pyrene		0.10	ug/puf	0.01	NA-017	12-May-16
16040172-002	Retene		0.09	ug/puf	0.01	NA-017	12-May-16

Report certified by: Graham Knox, Team Lead	On behalf of: PJ Pretorius, Manager, Analysis and Testing Services
Date: May 18, 2016	Inquiries: (780) 632 8455 E-mail: EAS.Results@albertainnovates.ca

<p>RESULTS: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>CLIENT SAMPLE ID LICA/PUF/CLS/Apr 18, 2016</p> <p>CANISTER ID TE-07</p> <p>Matrix Air Filter</p> <p>Priority Normal</p> <p>DESCRIPTION: Cold Lake South</p> <p>DATE SAMPLED: 18-Apr-16 0:00</p> <p>REPORT CREATED: 18-May-16</p> <p>DATE RECEIVED: 21-Apr-16</p> <p>REPORT NUMBER: 16040201</p> <p>VERSION: Version 01</p>
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Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040201-002	1-Methylnaphthalene		0.03	ug/puf	0.01	NA-017	12-May-16
16040201-002	2-Methylnaphthalene		0.06	ug/puf	0.01	NA-017	12-May-16
16040201-002	3-Methylcholanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040201-002	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040201-002	Acenaphthene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040201-002	Acenaphthylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040201-002	Acridine	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040201-002	Anthracene		0.01	ug/puf	0.01	NA-017	12-May-16
16040201-002	Benzo(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040201-002	Benzo(a)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040201-002	Benzo(b,j,k)fluoranthene		0.02	ug/puf	0.01	NA-017	12-May-16
16040201-002	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040201-002	Benzo(e)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040201-002	Benzo(ghi)perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040201-002	Chrysene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040201-002	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040201-002	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040201-002	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/PUF/CLS/Apr 18, 2016	TE-07	Air Filter	18-Apr-16	0:00
DESCRIPTION:	Cold Lake South			
REPORT NUMBER:	16040201	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040201-002	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040201-002	Fluoranthene		0.07	ug/puf	0.01	NA-017	12-May-16
16040201-002	Fluorene		0.03	ug/puf	0.01	NA-017	12-May-16
16040201-002	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040201-002	Naphthalene		0.04	ug/puf	0.01	NA-017	12-May-16
16040201-002	Perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040201-002	Phenanthrene		0.22	ug/puf	0.01	NA-017	12-May-16
16040201-002	Pyrene		0.04	ug/puf	0.01	NA-017	12-May-16
16040201-002	Retene		0.04	ug/puf	0.01	NA-017	12-May-16

Report certified by: Graham Knox, Team Lead	On behalf of: PJ Pretorius, Manager, Analysis and Testing Services
Date: May 18, 2016	Inquiries: (780) 632 8455 E-mail: EAS.Results@albertainnovates.ca

<p>RESULTS: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>CLIENT SAMPLE ID LICA/PUF/CLS/Apr 24, 2016</p> <p>CANISTER ID P13-01</p> <p>Matrix Air Filter</p> <p>Priority Normal</p> <p>DESCRIPTION: Cold Lake South</p> <p>DATE SAMPLED: 24-Apr-16 0:00</p> <p>REPORT CREATED: 18-May-16</p> <p>DATE RECEIVED: 03-May-16</p> <p>REPORT NUMBER: 16050011</p> <p>VERSION: Version 01</p>
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Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050011-002	1-Methylnaphthalene		0.02	ug/puf	0.01	NA-017	12-May-16
16050011-002	2-Methylnaphthalene		0.03	ug/puf	0.01	NA-017	12-May-16
16050011-002	3-Methylcholanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050011-002	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050011-002	Acenaphthene		0.01	ug/puf	0.01	NA-017	12-May-16
16050011-002	Acenaphthylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050011-002	Acridine	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050011-002	Anthracene		0.02	ug/puf	0.01	NA-017	12-May-16
16050011-002	Benzo(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050011-002	Benzo(a)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050011-002	Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050011-002	Benzo(c)phenanthrene		0.01	ug/puf	0.01	NA-017	12-May-16
16050011-002	Benzo(e)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050011-002	Benzo(ghi)perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050011-002	Chrysene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050011-002	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050011-002	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050011-002	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/PUF/CLS/Apr 24, 2016	P13-01	Air Filter	24-Apr-16	0:00
DESCRIPTION:	Cold Lake South			
REPORT NUMBER:	16050011	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050011-002	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050011-002	Fluoranthene		0.04	ug/puf	0.01	NA-017	12-May-16
16050011-002	Fluorene		0.04	ug/puf	0.01	NA-017	12-May-16
16050011-002	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050011-002	Naphthalene		0.02	ug/puf	0.01	NA-017	12-May-16
16050011-002	Perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050011-002	Phenanthrene		0.10	ug/puf	0.01	NA-017	12-May-16
16050011-002	Pyrene		0.03	ug/puf	0.01	NA-017	12-May-16
16050011-002	Retene		0.03	ug/puf	0.01	NA-017	12-May-16

Report certified by: Graham Knox, Team Lead	On behalf of: PJ Pretorius, Manager, Analysis and Testing Services
Date: May 18, 2016	Inquiries: (780) 632 8455 E-mail: EAS.Results@albertainnovates.ca

<p>RESULTS: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>CLIENT SAMPLE ID LICA/PUF/CLS/Apr 30, 2016</p> <p>CANISTER ID TE-08</p> <p>Matrix Air Filter</p> <p>Priority Normal</p> <p>DESCRIPTION: COLD LAKE SOUTH</p> <p>DATE SAMPLED: 30-Apr-16 0:00</p> <p>REPORT CREATED: 20-May-16</p> <p>DATE RECEIVED: 06-May-16</p> <p>REPORT NUMBER: 16050026</p> <p>VERSION: Version 01</p>
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Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
16050026-004	1-Methylnaphthalene		0.02 ug/puf	0.01	NA-017	12-May-16
16050026-004	2-Methylnaphthalene		0.05 ug/puf	0.01	NA-017	12-May-16
16050026-004	3-Methylcholanthrene	K, T, U	< 0.01 ug/puf	0.01	NA-017	12-May-16
16050026-004	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01 ug/puf	0.01	NA-017	12-May-16
16050026-004	Acenaphthene		0.01 ug/puf	0.01	NA-017	12-May-16
16050026-004	Acenaphthylene	K, T, U	< 0.01 ug/puf	0.01	NA-017	12-May-16
16050026-004	Acridine	K, T, U	< 0.01 ug/puf	0.01	NA-017	12-May-16
16050026-004	Anthracene	K, T, U	< 0.01 ug/puf	0.01	NA-017	12-May-16
16050026-004	Benzo(a)anthracene	K, T, U	< 0.01 ug/puf	0.01	NA-017	12-May-16
16050026-004	Benzo(a)pyrene	K, T, U	< 0.01 ug/puf	0.01	NA-017	12-May-16
16050026-004	Benzo(b,j,k)fluoranthene	K, T, U	< 0.01 ug/puf	0.01	NA-017	12-May-16
16050026-004	Benzo(c)phenanthrene	K, T, U	< 0.01 ug/puf	0.01	NA-017	12-May-16
16050026-004	Benzo(e)pyrene	K, T, U	< 0.01 ug/puf	0.01	NA-017	12-May-16
16050026-004	Benzo(ghi)perylene	K, T, U	< 0.01 ug/puf	0.01	NA-017	12-May-16
16050026-004	Chrysene	K, T, U	< 0.01 ug/puf	0.01	NA-017	12-May-16
16050026-004	Dibenzo(a,h)pyrene	K, T, U	< 0.01 ug/puf	0.01	NA-017	12-May-16
16050026-004	Dibenzo(a,i)pyrene	K, T, U	< 0.01 ug/puf	0.01	NA-017	12-May-16
16050026-004	Dibenzo(a,l)pyrene	K, T, U	< 0.01 ug/puf	0.01	NA-017	12-May-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May-20-16

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/PUF/CLS/Apr 30, 2016	TE-08	Air Filter	30-Apr-16	0:00
DESCRIPTION:	COLD LAKE SOUTH			
REPORT NUMBER:	16050026	REPORT CREATED:	20-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050026-004	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050026-004	Fluoranthene		0.04	ug/puf	0.01	NA-017	12-May-16
16050026-004	Fluorene		0.03	ug/puf	0.01	NA-017	12-May-16
16050026-004	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050026-004	Naphthalene		0.02	ug/puf	0.01	NA-017	12-May-16
16050026-004	Perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050026-004	Phenanthrene		0.08	ug/puf	0.01	NA-017	12-May-16
16050026-004	Pyrene		0.02	ug/puf	0.01	NA-017	12-May-16
16050026-004	Retene		0.03	ug/puf	0.01	NA-017	12-May-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May-20-16

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca

PARTISOL SAMPLES

RESULTS: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE Calgary AB T2E 6P8	CLIENT SAMPLE ID LICA filter # P5099828	CANISTER ID	Matrix Air Filter	Priority Normal
	INVOICE: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5	DESCRIPTION: Cold Lake South	DATE SAMPLED: 31-Mar-16 0:00 REPORT CREATED: 18-May-16	DATE RECEIVED: 07-Apr-16 REPORT NUMBER: 16040051 VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
16040051-001	Particulate Weight		0.024 mg	0.004	AC-029	08-Apr-16

<p>RESULTS: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>CLIENT SAMPLE ID LICA P5099829</p> <p>CANISTER ID</p> <p>Matrix Air Filter</p> <p>Priority Normal</p> <p>DESCRIPTION:</p> <p>DATE SAMPLED: 06-Apr-16 0:00 DATE RECEIVED: 13-Apr-16</p> <p>REPORT CREATED: 10-May-16 REPORT NUMBER: 16040121</p> <p>VERSION: Version 01</p>
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Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040121-001	Particulate Weight		0.011	mg	0.004	AC-029	25-Apr-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 10, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca

<p>RESULTS: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>CLIENT SAMPLE ID LICA P5099827</p> <p>CANISTER ID</p> <p>Matrix Air Filter</p> <p>Priority Normal</p> <p>DESCRIPTION:</p> <p>DATE SAMPLED: 12-Apr-16 0:00 DATE RECEIVED: 18-Apr-16</p> <p>REPORT CREATED: 04-May-16 REPORT NUMBER: 16040170</p> <p>VERSION: Version 01</p>
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Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040170-001	Particulate Weight		0.089	mg	0.004	AC-029	25-Apr-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 4, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca

<p>RESULTS: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>CLIENT SAMPLE ID LICA P4149577</p> <p>CANISTER ID</p> <p>Matrix Air Filter</p> <p>Priority Normal</p> <p>DESCRIPTION: Cold Lake South</p> <p>DATE SAMPLED: 18-Apr-16 0:00</p> <p>REPORT CREATED: 04-May-16</p> <p>DATE RECEIVED: 21-Apr-16</p> <p>REPORT NUMBER: 16040203</p> <p>VERSION: Version 01</p>
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Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
16040203-001	Particulate Weight		0.097 mg	0.004	AC-029	25-Apr-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 4, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca

<p>RESULTS: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>CLIENT SAMPLE ID LICA P6055850</p> <p>CANISTER ID</p> <p>Matrix Air Filter</p> <p>Priority Normal</p> <p>DESCRIPTION: Cold Lake South</p> <p>DATE SAMPLED: 24-Apr-16 0:00</p> <p>REPORT CREATED: 19-May-16</p> <p>DATE RECEIVED: 03-May-16</p> <p>REPORT NUMBER: 16050010</p> <p>VERSION: Version 01</p>
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Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
16050010-001	Particulate Weight		0.071 mg	0.004	AC-029	09-May-16

<p>RESULTS: Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p>INVOICE: Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p>CLIENT SAMPLE ID LICA #P6055848</p> <p>CANISTER ID</p> <p>Matrix Air Filter</p> <p>Priority Normal</p> <p>DESCRIPTION: Cold Lake South</p> <p>DATE SAMPLED: 30-Apr-16 0:00</p> <p>REPORT CREATED: 03-Jun-16</p> <p>DATE RECEIVED: 06-May-16</p> <p>REPORT NUMBER: 16050029</p> <p>VERSION: Version 01</p>
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Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
16050029-001	Particulate Weight		0.086 mg	0.004	AC-029	09-May-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: June-03-16

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca

APPENDIX V
EXTERNAL AUDIT RESULTS

Station Performance Audit Summary

Company: Lica Facility Name: NA
 Approval No.: NA Site Name: Cold Lake South
 Region: Lower Athabasca District: Lica
 Parameters audited:

H ₂ S		SO ₂	X	NO _x	X	NH ₃		O ₃	X
CO	X	CH ₄		NonCH ₄		THC	X	TRS	X
PM _{2.5}	X	PM ₁₀		TSP		BTEX		Wind Speed	X
Wind Dir	X	Amb. Temp	X	Stn. Temp	X	RH	X	Solar Radiation	
Rainfall		Precip		VWS		Other		Partisol	
All parameters monitored as per approval: Yes <u> </u> No <u> </u> N/A <u> X </u>									

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:	<u> February 10, 2016 </u>	

COMMENTS: - Station analyzer inlet filters have been bypassed and replaced with old ML 8850 inlet filters; these filter holders are more than 25 years old. Fitting on the filters were found to be loose. The inlet filters need to be put back to AENV design.

AUDITOR: Shea Beaton DATE: April 26, 2016



Station Site Documents Audit Checklist

Station	
Name: <u> Cold Lake South </u>	Location: <u> Cold Lake </u>
Facility/Zone: <u> Lica </u>	Operator: <u> Maxxam </u>

<p>Required Elements of AMD Chapter 3 SS 4-B Do the Site Documents Contain the Following:</p> <p>(a) Name of Owner/ Approval Holder</p> <p>(b) Name of Operating Agency</p> <p>(c) Contact Information</p> <p>(d) Date the Site or Station was Established</p> <p>(e) Date the information was last updated</p> <p>(f) Location including Latitude and Longitude</p> <p>(g) Four Colour Photos Looking N, E, S, W From Manifold Inlet</p> <p>(h) Additional Photos/Sketches of AMD Standard Site Non-Conformance</p> <p>(i) List of Instruments Located at the Site</p> <p>(j) Site Description Including the following:</p> <p style="margin-left: 20px;">(i) Land Use By Sector</p> <p style="margin-left: 20px;">(ii) Site Elevation</p> <p style="margin-left: 20px;">(iii) Greatest Angle of Elevation & Direction to Nearby Buildings</p> <p style="margin-left: 20px;">(iv) Average Building height in the area</p> <p style="margin-left: 20px;">(v) Distance to Nearest Trees</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Meets AMD</th> <th rowspan="2">NA</th> <th colspan="2">Current</th> </tr> <tr> <th>YES</th> <th>NO</th> <th>YES</th> <th>NO</th> </tr> </thead> <tbody> <tr><td>X</td><td></td><td></td><td>X</td><td></td></tr> <tr><td>X</td><td></td><td></td><td>X</td><td></td></tr> <tr><td></td><td>X</td><td></td><td>X</td><td></td></tr> <tr><td>X</td><td></td><td></td><td>X</td><td></td></tr> <tr><td>X</td><td></td><td></td><td>X</td><td></td></tr> <tr><td>X</td><td></td><td></td><td></td><td>X</td></tr> <tr><td></td><td></td><td>X</td><td></td><td></td></tr> <tr><td>X</td><td></td><td></td><td></td><td>X</td></tr> <tr style="background-color: #cccccc;"><td colspan="5"></td></tr> <tr><td>X</td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td>X</td><td></td><td></td><td></td></tr> <tr><td>X</td><td></td><td></td><td>X</td><td></td></tr> <tr><td>X</td><td></td><td></td><td>X</td><td></td></tr> <tr><td>X</td><td></td><td></td><td>X</td><td></td></tr> </tbody> </table>	Meets AMD		NA	Current		YES	NO	YES	NO	X			X		X			X			X		X		X			X		X			X		X				X			X			X				X						X						X				X			X		X			X		X			X	
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<p>Required Elements of AMD Chapter 3 SS 4-D Do the Station Site Documents Contain the Following:</p> <p>(a) Recent Area Map Covering Approximately 1Km²</p> <p>(b) Plan View Sketch</p> <p>(c) Cross-Sectional Sketch of Area Within 500 m Radius</p> <p>(d) Colour Photos Showing Sample Manifold/Inlet</p> <p>(e) Colour Photo of the Station</p> <p>(f) Additional Photos/Sketches of AMD Standard Station Non-Conformance</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Meets AMD</th> <th rowspan="2">NA</th> <th colspan="2">Current</th> </tr> <tr> <th>YES</th> <th>NO</th> <th>YES</th> <th>NO</th> </tr> </thead> <tbody> <tr><td>X</td><td></td><td></td><td>X</td><td></td></tr> <tr><td>X</td><td></td><td></td><td>X</td><td></td></tr> <tr><td></td><td>X</td><td></td><td></td><td></td></tr> <tr><td>X</td><td></td><td></td><td></td><td>X</td></tr> <tr><td>X</td><td></td><td></td><td></td><td>X</td></tr> <tr><td></td><td></td><td>X</td><td></td><td></td></tr> </tbody> </table>	Meets AMD		NA	Current		YES	NO	YES	NO	X			X		X			X			X				X				X	X				X			X		
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COMMENTS: Site Docs need updating. Outdated station & manifold photos, instrument list
- SS4-B(g) photos taken from passive not manifold inlet, need updating
- Missing Contact info, Site Elevation, cross-sectional sketch.

AUDITOR: Shea Beaton DATE: April 26, 2016



STATION AUDIT

File No. 2016 - 27A - 033A

Date: 26-Apr-16

Performed by: Shea Beaton

Station

Name: Cold Lake South

Location: Cold Lake

Facility/Zone: Lica

Operator: Maxxam

Temp: 21.5

Barometric Press: 714mmHg

Location

Latitude N 54°24'50.4"

Longitude W 110°13'58.6"

Elevation 523m

Status of Site Documentation Needs Update

Status of Network Documentation Meets AMD SS 4-C

Status of QAP Reviewed within last 3 yrs

Manifold Material Glass

Manifold Condition Good

Meteorological

	Observed	Audit Value
Wind Speed Direction	<u>234° 4.3kph</u>	<u>SSW 1-5kph</u>
Station Temperature	<u>24.6 C</u>	<u>24.2 C</u>
Relative Humidity	<u>74.3%</u>	<u>71.2%</u>
Ambient Temperature	<u>6.4 C</u>	<u>7.2 C</u>
Solar Radiation	<u>NA</u>	<u>NA</u>
Precipitation	<u>NA</u>	<u>NA</u>

Remarks:

- Analyzer inlet filter system modified to antiquated filter holders without approval from ESRD/AEMERA. Analyzer inlet filter system must be restored to standard in place when Lica received the station from AENV.
- TRS system has unnecessary duplicate SO2 scrubbing system modification



SO₂ ANALYZER AUDIT

File No. 2016 - 029A

Date: April 26, 2016

Performed by: Shea Beaton

Station

Name: Cold Lake South

Location: Cold Lake

Facility/Zone: Lica

Operator: Maxxam

Temp. 21.5

Barometric Press. 714 mmHg

Monitor

Make/Model: Thermo 43i Serial No: 806528242

Inlet flow (sccm): 473 Full Scale Range ppm: 0.5

Last cal. Date: 19-Apr-16 Old Correction Factor: 0.997

Zero/Bkg 7.5

Span Coef 1.169

Calibrator

Calibration Method: GAS DILUTION

Make/Model: R&R MFC 201

AMU #: 1698

Cylinder #: CAL9745

SO₂ Concentration PPM: 51.0

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
3531	0.00	3531	0.000	0.000		
3554	27.79	3582	0.396	0.389	-2%	± 10%
3535	17.27	3552	0.248	0.245	-1%	± 10%
3536	9.79	3546	0.141	0.138	-2%	± 10%
Absolute Average Percent Difference					2%	

Linear Regression Analysis:

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

Correlation Coeff.= 1.0000

m (Slope)= 0.9839

b (Intercept as % of full scale)= 0.0129

LIMITS

≥ **0.995**

0.90-1.10

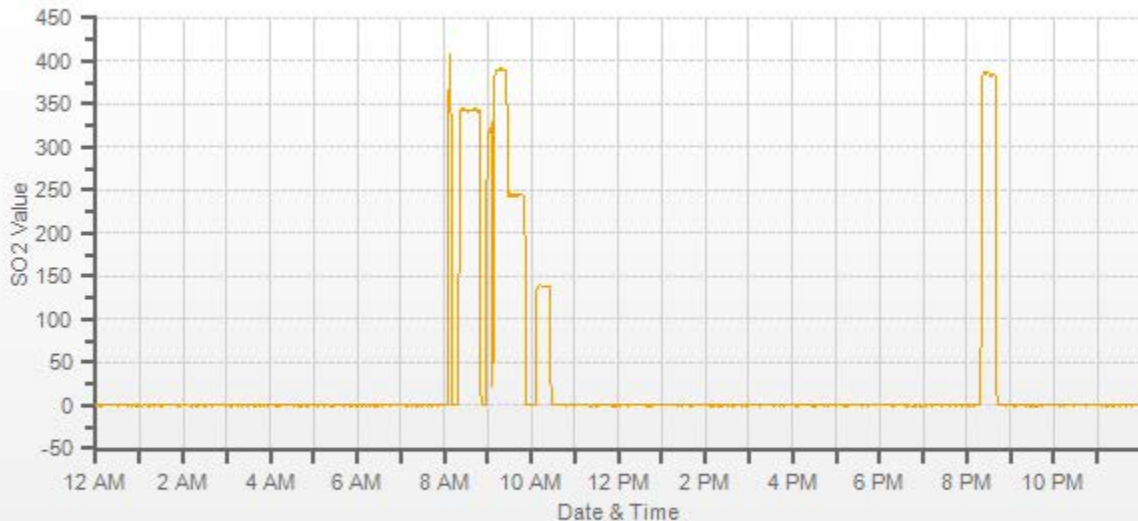
± **3% F.S.**

Remarks:

- Initially the SO₂ audit calibration line was leaking, found problem and repaired
- Analyzer sample inlet filter fittings loose in filter body



SO2[ppb] Station: LICA COLD LAKE SOUTH Daily: 2016/04/26 Type: AVG 1 Min. [1 Min.]



— SO2[ppb]

TRS ANALYZER AUDIT

File No. 2016 - 028A

Date: April 26, 2016

Performed by: Shea Beaton

Station

Name: Cold Lake South

Location: Cold Lake

Facility/Zone: Lica

Operator: Maxxam

Temp. 21.5

Barometric Press. 714 mmHg

Monitor

Make/Model: Thermo 450i Serial No: 812728560

Inlet flow (sccm): 509 Full Scale Range ppm: 0.1

Last cal. Date: 7-Apr-16 Old Correction Factor: 1.000

Zero/Bkg 15.3

Span Coef 1.094

Calibrator

Calibration Method: GAS DILUTION

Make/Model: R&R MFC 201

AMU #: 1698

Cylinder #: CAL013624

H₂S Concentration PPM: 10.7

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
3531	0.00	3531	0.0000	0.0005		
3556	25.96	3582	0.0775	0.0906	16%	± 10%
3538	13.65	3552	0.0411	0.0484	16%	± 10%
3539	6.81	3546	0.0205	0.0236	12%	± 10%
Absolute Average Percent Difference					15%	

Linear Regression Analysis:

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

Correlation Coeff.= 0.9999

m (Slope)= 1.1655

b (Intercept as % of full scale)= 0.2116

LIMITS

≥ **0.995**

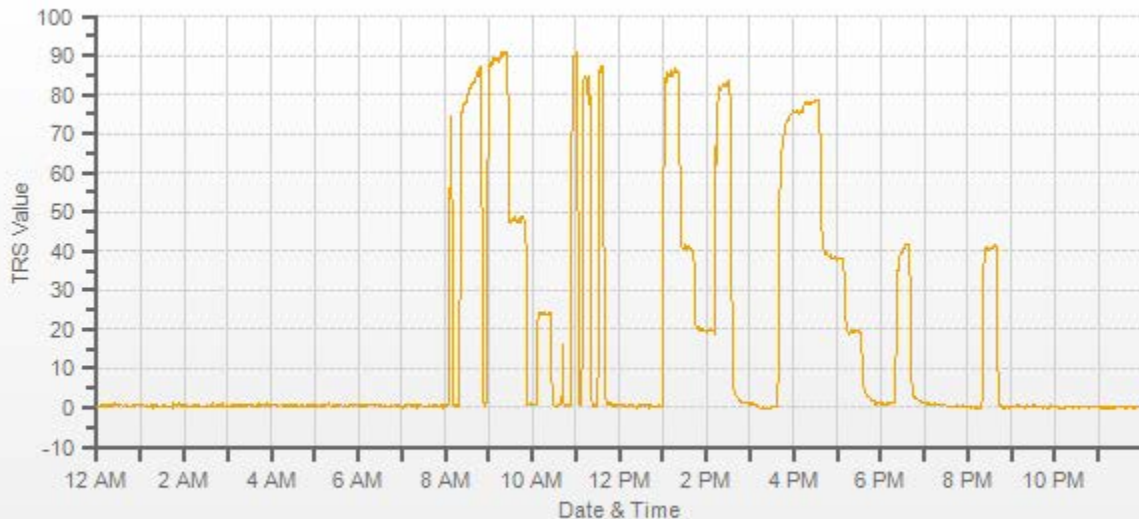
0.90-1.10

± **3% F.S.**

Remarks:

- Analyzer failed audit - greater than 10% high on all points, slope above 1.10
- Analyzer being operated in 60sec averaging time; noisy, recommend 120sec ave time
- Completed On-Site checklist
- Analyzer sample inlet filter fittings loose in filter body





— TRS[ppb]

HC ANALYZER AUDIT

File No. 2016 - 030A

Date: April 26, 2016 Performed by: Shea Beaton

Station

Name: Cold Lake South Location: Cold Lake
 Facility/Zone: Lica Operator: Maxxam
 Temp. 21.5 Barometric Press. 714mmHg

Monitor

Make/Model: Thermo 51cLT Serial No: 427408718
 Inlet flow (sccm): 6.51psi Full Scale Range ppm: 50
 Last cal. Date: 6-Apr-16 Old Correction Factor: 1.002

Calibrator

Calibration Method: Gas Dilution
 Make/Model: Sabio 2010 AMU #: 1749
 HC cylinder #: FF27932 HC concentration ppm: 1050.0

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
2961	0.0	2961	0.00	0.00		
2960	88.5	3049	30.49	31.30	3%	± 10%
2972	49.7	3022	17.28	17.60	2%	± 10%
2979	24.9	3004	8.72	8.91	2%	± 10%
Absolute Average Percent Difference					2%	

Linear Regression Analysis:

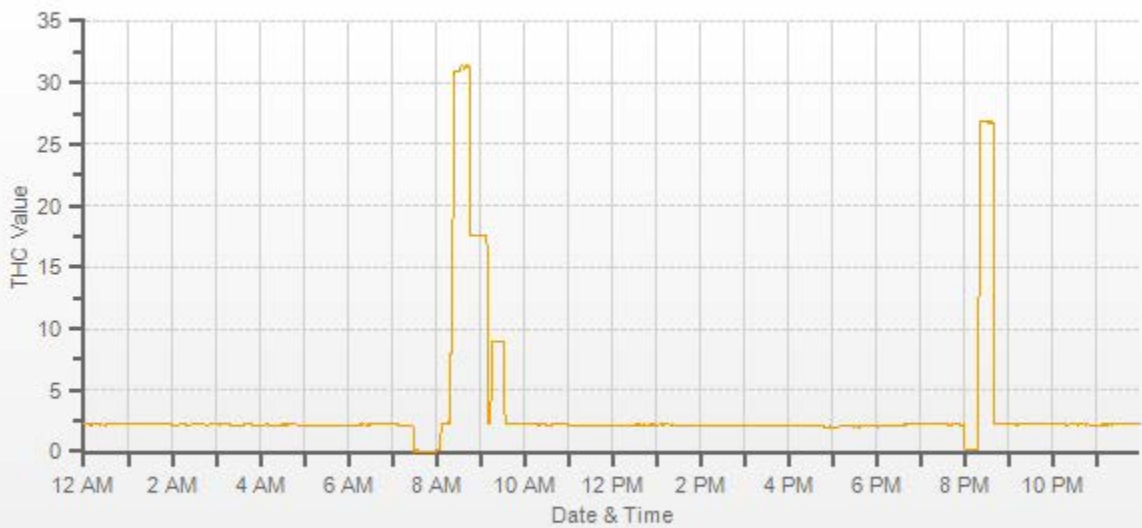
$y=mx+b$ (where x =calculated concentration, y =indicated concentration)

Correlation Coeff.= 1.0000
 m (Slope)= 1.0261
 b (Intercept as % of full scale)= -0.0766

LIMITS
≥ 0.995
0.90-1.10
± 3% F.S.

Remarks:





— THC[ppm]

NO-NOx-NO2 Analyzer Audit

File No. 2016 - 027A

Date: April 26, 2016 Performed by: Shea Beaton

Station:

Name: Cold Lake South Location: Cold Lake Operator: Maxxam
Facility/Zone: Lica Temp. 21.5 BP: 714mmHg

Monitor:

Make/Model: Thermo 42i Serial No. 1055664393
Inlet flow (sccm): 0.797 Range ppm: 0.5
Last cal. Date: 26-Apr-16 Old CF: NO: 0.997
NOx: 1.000
NO2: 1.000

NO Bkg 3.4
NOx Bkg 3.5
NO Coef 1.015
NOx Coef 1.000
NO2 Coef 0.997

Calibration Method:

Gas Dilution / GPT

Calibrator: Make/Model: Sabio 2010 AMU# 1778
NO cylinder # FF23271 NO conc. ppm 51.0 NOx conc. ppm 51.3

Calibrator Flows			Calc. Conc.		Indicated Concentration		% Difference vs Audit Gas	
Air	Gas	Total	NO (ppm)	NOx (ppm)	NO (ppm)	NOx (ppm)	NO	NOx
5022	0.00	5022	0.0000	0.0000	0.0001	0.0001	Limit ± 10%	
5021	40.21	5061	0.4052	0.4076	0.4120	0.4130	2%	1%
5042	20.46	5062	0.2061	0.2073	0.2092	0.2100	1%	1%
5037	10.30	5047	0.1041	0.1047	0.1063	0.1076	2%	3%
Absolute Average Percent Difference							2%	2%

Linear Regression Analysis:

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

	NO	NOx	NO ₂	LIMITS
Correlation Coeff.=	<u>1.0000</u>	<u>1.0000</u>	<u>1.0000</u>	≥ 0.995
m (Slope)=	<u>1.0161</u>	<u>1.0118</u>	<u>0.9983</u>	0.90-1.10
b (Intercept as % of full scale)=	<u>0.0343</u>	<u>0.1290</u>	<u>0.2137</u>	± 3% F.S.

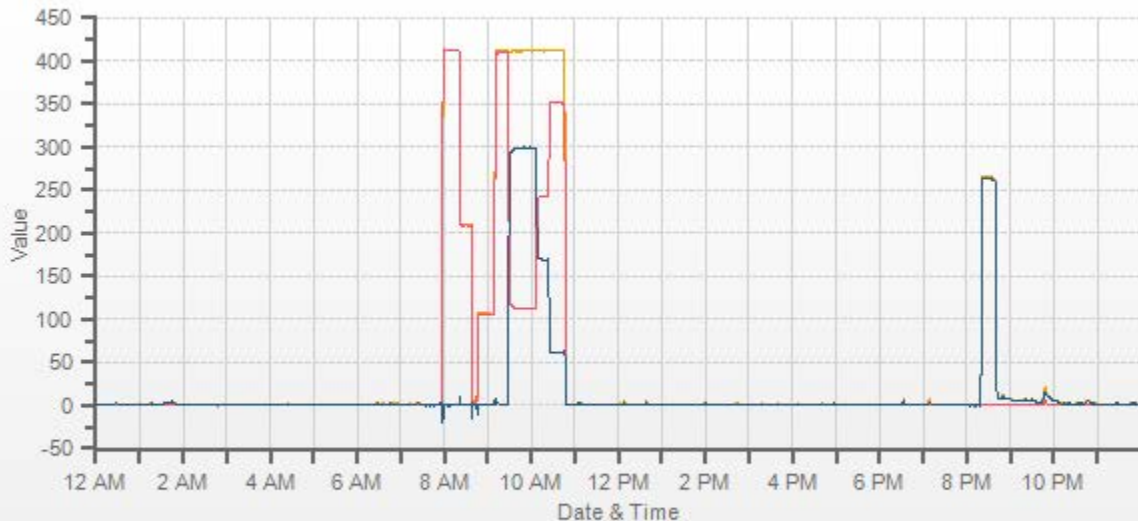
O ₃ Setting	Flow Rate	Indicated Conc. (ppm)			NO Decrease	NO ₂ Increase	% Difference vs Audit Gas	
		NO	NOx	NO ₂				
0.000	5061	0.4104	0.4116	0.0013	0.2982	0.2987	0%	%Dif Limit
0.555	5061	0.1122	0.4119	0.3000	0.2982	0.2987	0%	± 10%
0.350	5061	0.2434	0.4125	0.1692	0.1670	0.1679	1%	± 10%
0.175	5061	0.3508	0.4128	0.0618	0.0596	0.0605	2%	± 10%
Absolute Average Percent Difference							1%	

Converter Efficiency

Average Converter Efficiency 100.7%

Remarks:





— NOX[ppb] — NO[ppb] — NO2[ppb]

O₃ ANALYZER AUDIT

File No. 2016 - 031A

Date: 26-Apr-16

Performed by: Shea Beaton

Station

Name: Cold Lake South

Location: Cold Lake

Facility/Zone: Lica

Operator: Maxxam

Temp. 21.5

Barometric Press. 715mmHg

Monitor

Make/Model: Thermo 49i Serial No: 1505664393

Inlet flow (sccm): 715/754 Full Scale Range ppm: 0.5

Last cal. Date: 7-Apr-16 Old Correction Factor: 1.003

Zero/Bkg -0.1

Span Coeff. 1.000

Calibrator

Calibration Method: Generator / Photometer

Make/Model: Thermo 49iPS AMU #: 1808

NO cylinder #: NA NO concentration ppm: NA

Ozone Setting PPB/Current	Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Conc. (ppm)	% Difference	
	Air	Gas	Total			vs Audit Gas	Limits
0	NA	NA	NA	0.000	0.000		
400	NA	NA	NA	0.400	0.394	-2%	± 10%
200	NA	NA	NA	0.200	0.197	-2%	± 10%
100	NA	NA	NA	0.100	0.099	-1%	± 10%
Absolute Average Percent Difference						2%	

Linear Regression Analysis:

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

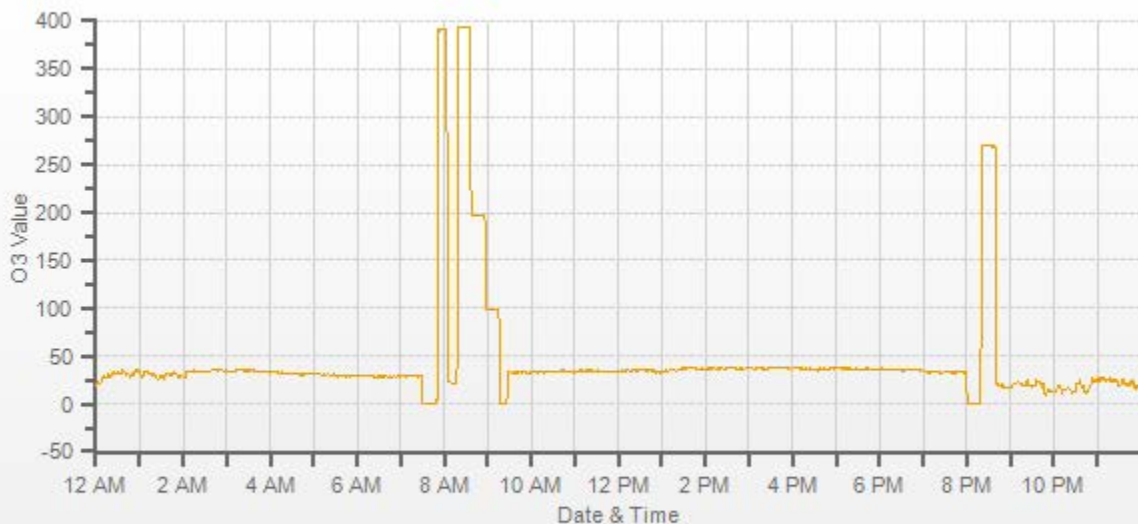
Correlation Coeff.= 1.0000
m (Slope)= 1.0163
b (Intercept as % of full scale)= 0.0760

LIMITS
≥ **0.995**
0.90-1.10
± **3% F.S.**

Remarks:

- inlet filter has stainless nuts on teflon filter connections - nuts must be teflon if connecting sample lines to a teflon filter connection





TEOM AUDIT

Date: April 26, 2016 File #: 2016 - 032A
 Performed by: Shea Beaton

Station

Name: Cold Lake South Location: Cold Lake
 Facility/Zone: Lica Operator: Maxxam
 Temperature: 21.5 Barometric Press. 701mmHg

Audit Transfer Standard

Make/Model: Delta Cal Cell s/n: 1002
 Serial Number: AMU 1858

Sampler Set-up and Current Readings

Make/Model: <u>Thermo 1405F</u>	F-Main Set Pt (l/min) <u>3.00</u>
Unit #: <u>AMU 1775</u>	F-Aux Set Pt (l/min) <u>13.67</u>
Control unit s/n: <u>1405A20160804</u>	Filter Load (%) <u>27.57%</u>
Transducer s/n: <u>NA</u>	K _O Factor <u>14578</u>
	Temp (°C) <u>4.9</u>
	Press (ATM) <u>0.947</u>

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

$ATM = (mm\ Hg) \times (1.316 \times 10^{-3})$ or $ATM = ("Hg) \times (3.34207 \times 10^{-2})$
 Note: Tolerances are noted as **BOLD** in Brackets

Zero Flow

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

Temperature/Pressure

Measured Temp (± 2 °C) <u>5.7</u>	Δ°C <u>0.8</u>
Measured Press ($\pm 1.5\%$ ATM) <u>0.94</u>	Δ% ATM <u>-0.7%</u>

Flow Audit

Indicated Main/Aux Flow (l/min) <u>3.00</u> <u>13.68</u>	Δ% of Measured Flow from Set-point
	($\pm 2\%$) <u>0.0%</u> <u>0.1%</u>
Total Flow = Main + Aux (l/min) <u>16.68</u>	($\pm 2\%$) <u>0.1%</u>

Measured Total Flow (l/min) <u>16.6</u>	Δ of Measured Flow from Indicated
	(± 1.00 l/min) <u>0.08</u>
Measured Main Flow (l/min) <u>3</u>	(± 0.20 l/min.) <u>0.00</u>

Leak Check

Main (< 0.15 l/min) <u>Base</u>	Actual leakage = Pump On – Pump Off
Aux (< 0.65 l/min) <u>Ref</u>	Main = 0.03 / Bypass = 0.1
	Main = 0.02 / Bypass = 0.13

K_O Factor

Measured <u>14505.7</u>	Heads: <u>Dusty</u>
K _O % Difference ($\pm 2.5\%$) <u>0.50%</u>	

Remarks:

Teflon Tape on PM2.5 cyclone
- Electrical tape on quick connect fittings, needs to be removed
- PM impactor and cyclone not being cleaned in accordance with AMD
Chapter 4 SS 3-N



Partisol 2000 PM 10/2.5 Audit

File #: 2016 - 033A

	<u>Station</u>		<u>Audit Transfer Standard</u>
Date:	<u>April 26, 2016</u>	Make/Model:	<u>Delta Cal</u>
Station Name:	<u>Cold Lake South</u>	Serial Number:	<u>AMU 1858</u>
Location:	<u>Cold Lake South</u>	Cell s/n:	<u>1002</u>
Operator:	<u>Maxxam Analytics</u>		

	<u>Sampler</u>		<u>Instrument Data</u>
Make/Model:	<u>R&P 2000H</u>	Temperature (°C):	<u>4.9</u>
Unit #	<u>2873</u>	Pressure (ATM)	<u>0.942</u>
Software Ver.	<u>2000B206140102</u>	Set Flow (l/min)	<u>16.7</u>

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

ATM= (mm Hg) X .001316 or ATM= ("Hg) X .0334207

Note: Tolerances are noted as BOLD in Brackets

Audit

Temperature/Pressure Audit

Measured Temp (± 2°C)	<u>5.0</u>	Δ°C	<u>0.1</u>
Measured Press (± .02 ATM)	<u>0.940</u>	Δ ATM	<u>0.002</u>

Leak Check

Unit	Flow Controller	Valve	Pump Valve Closed	VL=1/2*V1	Leakage Calculation
Hub	23		23	11.5	0.0psi
S1	NA		NA	NA	NA
S2	NA		NA	NA	NA
S3	NA		NA	NA	NA

Flow Audit

(Audit Screen) Indicated Flow (l/min)	<u>16.6</u>	± Difference from Set Flow	<u>0.1lpm</u>
Measured Volumetric Flow (l/min)	<u>16.1</u>	Δ% ± 7%	<u>0.5lpm 3%</u>

Other Inspections

	<u>Condition</u>
Rubber Seals in Hub and Satellite	<u>Upper and lower OK</u>
PM Inlet Condition	<u>Dusty</u>
Large Inline Filter	<u>OK</u>
Air Screens Located Under Rain Hoods	<u>OK</u>

Comments: Inlet dusty, needs cleaning
- Impactor and cyclone not being cleaned as per AMD SS 3-N

Auditor/s: Shea Beaton



APPENDIX VI
REPORT CERTIFICATION FORM

Report Certification Form

Alberta Airshed (if applicable)	EPA Approval or Code of Practice Registration # (if applicable)
YES	NA
Company Name (if applicable)	Industrial Operation Name (if applicable)
Lakeland Industry & Community Association	Cold Lake South Site
Name of the Representative of the Person Responsible (Last, First, Middle)	Position / Title of the Representative of the Person Responsible
Wunmi Adekanmbi	Project Manager Assistant, Customer Service, Air Services
Is an External Party Certifying the Report? (If 'Yes', fill in the fields below for the external person.)	
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Name of External Person Certifying the Report (Last, First, Middle)	Position / Title of External Person Certifying the Report
NA	NA
Company Name for the External Person Certifying the Report	Identification of Qualifications / Professional Designations of the External Person Certifying the Report
NA	NA

I certify that I have reviewed and verified the submitted report. I also certify that the report presented with this certification form is complete, accurate and representative of the monitoring results and timeframe.

wadmbg

Signature of the Representative of the Person Responsible / External Person Certifying the Report

14-June-2016

Report Issued Date (dd-mm-yyyy)

APPENDIX VII
DATA VALIDATION CERTIFICATION FORM



Validation Certificate Form

Client: <u>Lakeland Industry & Community Association</u>	Project #: <u>2833-2016-04-1- C</u>
Site: <u>Cold Lake South Site</u>	Contact: <u>Mike Bisaga</u>

Level 0 Preliminary Verification	<u>msclmha</u>	Date <u>15-May-16</u>
Level 1 Primary Validation	<u>msclmha</u>	Date <u>25-May-16</u>
Level 2 Final Validation	<u>msclmha</u>	Date <u>14-June-16</u>
Level 3 Independent Data Review	<u>for Tom Bourque</u> <u>msclmha</u>	Date <u>14-June-16</u>
Post-Final Validation	<u>NA</u>	Date <u>NA</u>

Notes
The Post-Final Validation step serves to re-evaluate the data that errors or omissions are discovered and/or suspected after the initial submittal of data. This validation is performed on an annual basis.

AMBIENT AIR MONITORING MONTHLY DATA REPORT
LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
MASKWA SITE

JOB #:2833-2016-04-30- C

April 2016

Prepared for:

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Attention: MIKE BISAGA

DATE: **May 25, 2016**

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Reviewed by:



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SUMMARY

In April 2016, the Air Services Group of Maxxam Analytics conducted an ambient air monitoring program on the Maskwa Site at Lakeland Industry & Community Association, near Cold Lake. Sampling was carried out to determine the concentrations of non-compliance parameters as requested by the Project Coordinator.

All data collected this month were within the objectives outlined in the AMD 1989, AMD 2006 and AMD 2015.

An external station audit was conducted by AEMERA on April 28. Audit results are included in this report.

The operational uptime for all analyzers and meteorological system were above the AMD's 90% requirement.

NOX/NO/NO2: Twenty-six hours of data collected between April 14 and April 15 were discarded due to an error that occurred during the sample filter change.

Wind System: The MetOne wind system, S/N: H10703, was installed back onsite on April 18 after it was sent in March to the manufacturer for routine calibration.

The summary of results is presented on the following pages.

Any deviations or modifications made to the sampling or analytical methods are outlined in Section 1.0 Discussion. On this basis, Maxxam is issuing this completed report to Lakeland Industry & Community Association, Maskwa Site.

Should you have any questions concerning the results or if we can be of further assistance, please contact us at 403-219-3677 or toll-free at 1-800-386-7247.

Monthly Continuous Data Summary

Lakeland Industry & Community Association						MAXIMUM VALUES							OPERATIONAL TIME (%)
Maskwa Site						1-HOUR					24-HOUR		
PARAMETER	OBJECTIVES		EXCEEDENCES		MONTHLY AVERAGE	READING	DAY	HOUR	WIND SPEED (KPH)	WIND DIRECTION (DEGREES)	READING	DAY	
	1-HR	24-HR	1-HR	24-HR									
SO2 (PPB)	172	48	0	0	0.4	18.3	20	3	4.6	WNW	2.8	6	100.0
H2S (PPB)	10	3	0	0	0.1	2.8	19	4	7.5	SSW	0.5	19, 30	100.0
THC (PPM)	-	-	-	-	2.16	2.51	18	6	1.3	SSW	2.30	17	100.0
NO2 (PPB)	159	-	0	-	2.2	28.5	20	3	4.6	WNW	6.8	6	96.4
NO (PPB)	-	-	-	-	0.7	17.5	12	9	0.9	WSW	3.1	6	96.4
NOX (PPB)	-	-	-	-	2.8	32.9	12	9	0.9	WSW	9.9	6	96.4
RELATIVE HUMIDITY (%)	-	-	-	-	55.9	91	26, 26	4, 5	4 5	S S	85.4	5	100.0
BAROMETRIC PRESSURE (MILIBAR)	-	-	-	-	943	955	17, 18	VAR	VAR	VAR	954	17	100.0
AMBIENT TEMPERATURE (DEG C)	-	-	-	-	5.2	25.0	19, 19	13, 15	9 9.7	SW WNW	16.8	19	100.0
PRECIPITATION (MM)	-	-	-	-	0.0	4.5	9	5	2.2	WSW	0.5	9	100.0
VECTOR WS (KPH)	-	-	-	-	5.8	18.4	18	12	-	SSW	9.3	29	99.6
VECTOR WD (DEG)	-	-	-	-	-	-	-	-	-	-	-	-	99.6

NA-NOT AVAILABLE VAR-VARIOUS

Exceedence Summary Report

SO₂ 1- Hour Exceedences

No Exceedences Recorded During the Month

SO₂ 24- Hour Exceedences

No Exceedences Recorded During the Month

H2S 1- Hour Exceedences

No Exceedences Recorded During the Month

H2S 24- Hour Exceedences

No Exceedences Recorded During the Month

NO₂ 1- Hour Exceedences

No Exceedences Recorded During the Month

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1.0 Discussion

This monthly report consists of data for parameters Sulphur Dioxide (SO₂), Hydrogen Sulphide (H₂S), Total Hydrocarbon (THC), Oxides of Nitrogen (NO_x), Nitric Oxides (NO), Nitrogen Dioxide (NO₂), Relative Humidity (RH), Barometric Pressure (BP), Precipitation, Ambient Temperature (AmbTPX), Wind Speed (WS), Wind Direction (WD) and Standard Deviation Wind Direction (STDWD).

Sample filters for all continuous air monitors are changed before the calibration begins. The sample manifold is cleaned during the site visit each month.

Control checks, consisting of a zero and span, are conducted daily on all continuous air monitors. In place of the air sample, zero air (from scrubbed air or gas cylinders) is used for zero checks, and a known concentration of the pollutant being analyzed is used for span checks. These checks are controlled by automatic timers and valves. The total zero span cycle is completed within an hour, the commencement of the zero span cycle is at the beginning of the hour.

Multipoint calibrations are done a minimum of once a month for each continuous air monitor. An additional calibration is required under the following conditions: 1) within three days after the initial start-up and stabilization of a newly installed instrument, 2) prior to shut-down or moving of an instrument which has been working to specification, and 3) when major repair has been done on the instrument.

Time during the first multi-point calibration is not considered downtime (Data is flagged as C). If more than one calibration is performed during the month, the time during the additional calibration is considered as downtime (Data is flagged as C1).

Only one zero/span check is run per day. Time during the zero/span check is not considered as downtime (Data is flagged as S). If an extra zero/span check is performed, the time during the additional check is considered as downtime (Data is flagged as S1).

The AMD requires each instrument and accompanying data recording system to be operational 90% of the time (minimum), on a monthly basis.

All sampling, analysis, and QA/QC for this project was performed by Maxxam Analytics and complies with the Alberta Air Monitoring Directive.

Data contained in this monthly report has undergone the verification and validation based on the requirements of the AMD Chapter 6: Ambient Data Quality for Verification and Validation of Continuous Ambient Air Quality Data. The descriptions of the data verification and validation process can be found in Section 5 of this report. Instantaneous data, where applicable, is provided for reference purposes and has not undergone zero correction.

Hourly and minute data have been reviewed based on daily zero/span results and multi-point calibration results. Data may be considered invalid if a zero-corrected span check in excess of +/- 10% of the span concentration (established by the previous multi-point calibration) is encountered and/or significant differences in the calibration factor occurs (greater than 10%).

Trailer inspection was conducted on April 14. No issues were identified.

SULPHUR DIOXIDE (SO₂)

The analyzer was working well throughout the month. The routine monthly calibration was performed on April 14. An external audit was conducted by AEMERA on April 28. Audit results are included in this report.

HYDROGEN SULPHIDE (H₂S)

The analyzer was working well throughout the month. The routine monthly calibration was performed on April 15. An external audit was conducted by AEMERA on April 28. Audit results are included in this report.

TOTAL HYDROCARBONS (THC)

The analyzer was working well throughout the month. The routine monthly calibration was performed on April 14. An external audit was conducted by AEMERA on April 28. Audit results are included in this report.

NITROGEN DIOXIDE (NO₂)

A calibration was attempted on April 14. However, the as-found high point did not meet AMD requirements. Troubleshooting was performed and the problem was traced to a leaking filter holder. The full monthly calibration was completed on April 15 and the calibration met requirements. No further issues were identified. Twenty-six hours of data collected between April 14 and April 15 were discarded due to this event.

An external audit was conducted by AEMERA on April 28. Audit results are included in this report.

WIND SPEED (WS), WIND DIRECTION (WD) and STANDARD DEVIATION WIND DIRECTION (STDWD)

The wind system is reported as vector wind speed and vector wind direction. The wind direction data included in this report represents where the wind was coming from.

The wind system was working well throughout the month. The MetOne wind system, S/N: H10703, was installed back onsite on April 18 after it was sent in March to the manufacturer for routine calibration. The Maxxam-supplied replacement, RM Young S/N: 110980, was returned to Maxxam shop. The wind speed range was set to 180 kph before the MetOne wind system was installed.

RELATIVE HUMIDITY (RH)

The humidity sensor was working well throughout the month.

BAROMETRIC PRESSURE (BP)

The pressure sensor was working well throughout the month.

PRECIPITATION

The rain gauge system was working well throughout the month.

AMBIENT TEMPERATURE (TPX)

The temperature sensor was working well throughout the month. The temperature sensor was audited on April 18 using the reference thermometer Fisher Scientific FB1291, S/N: 130168457.

2.0 Project Personnel

Mike Bisaga was the contact for Lakeland Industry & Community Association, and the Maxxam field sampling technician was Alexander Yakupov.

3.0 Plant Monthly Required AMD Summary

All data collected this month were within the objectives outlined in the AMD 1989, AMD 2006 and AMD 2015.

The operational uptime for all analyzers and meteorological system were above the AMD's 90% requirement.

4.0 Calculations and Results

All calculations and reporting of results follow the method described in the Air Monitoring Directive, 1989, 2006 Amendments to the Air Monitoring Directive, 1989 (AMD 2006) as well as AMD 2015.

5.0 Methods and Procedures

The following methods and procedures were used to complete the test program:

- Maxxam AIR SOP-00208: RM Young Monitor Calibration
- Maxxam AIR SOP-00209: Ambient H₂S Monitoring
- Maxxam AIR SOP-00211: Ambient SO₂ Monitoring
- Maxxam AIR SOP-00213: Ambient NO/NO₂/NO_x Monitoring
- Maxxam AIR SOP-00214: Ambient Hydrocarbon (THC) Monitoring
- Maxxam AIR SOP-00242: Precipitation Collector Installation /Maintenance

There were no deviations from the prescribed methods.

The following instruments were used to perform the test program:

- Sulphur Dioxide - API 100E UV Fluorescent Analyzer
- Hydrogen Sulphide - API 101E UV Fluorescent Analyzer
- Total Hydrocarbons - Thermo 51C FID Analyzer
- Oxides of Nitrogen - API 200A Chemiluminescent Analyzer
- Wind System - Met One Unit
- Relative Humidity - Met One Unit
- Barometric Pressure - Met One Unit
- Ambient Temperature - Met One Unit
- Precipitation - Met One Unit
- Datalogger - ESC 8832

The following steps were used to complete the data verification and validation process:

Level 0 Preliminary Verification

Level 0 data are raw data obtained directly from the data acquisition system (DAS). Under the step of Level 0, these data undergo a certain amount of manual or automated screening and flagging. It included a) identification of periods of missing data; b) verification of time stamps against reference time; c) verification that instrument diagnostics/datalogger flags indicate normal operation; d) comparison of data to upper and lower limits; e) rate of change flagging indicating that data changed too rapidly or not at all; and f) verification that zero, span and multipoint performance checks are within specifications. This level of verification is performed on a daily basis.

Level 1 Primary Validation

Validation actions under the step of Level 1 include a) review of all screening flags assigned during preliminary verification; b) review of all supporting site information and documentation; c) review of operational acceptance limits for each parameter/analyzer; d) review of daily zero/span and monthly calibration results for all gaseous parameters; and e) application of any necessary adjustments to data (e.g. baseline adjustments, below zero adjustments). This level of validation is performed on a monthly basis.

Level 2 Final Validation

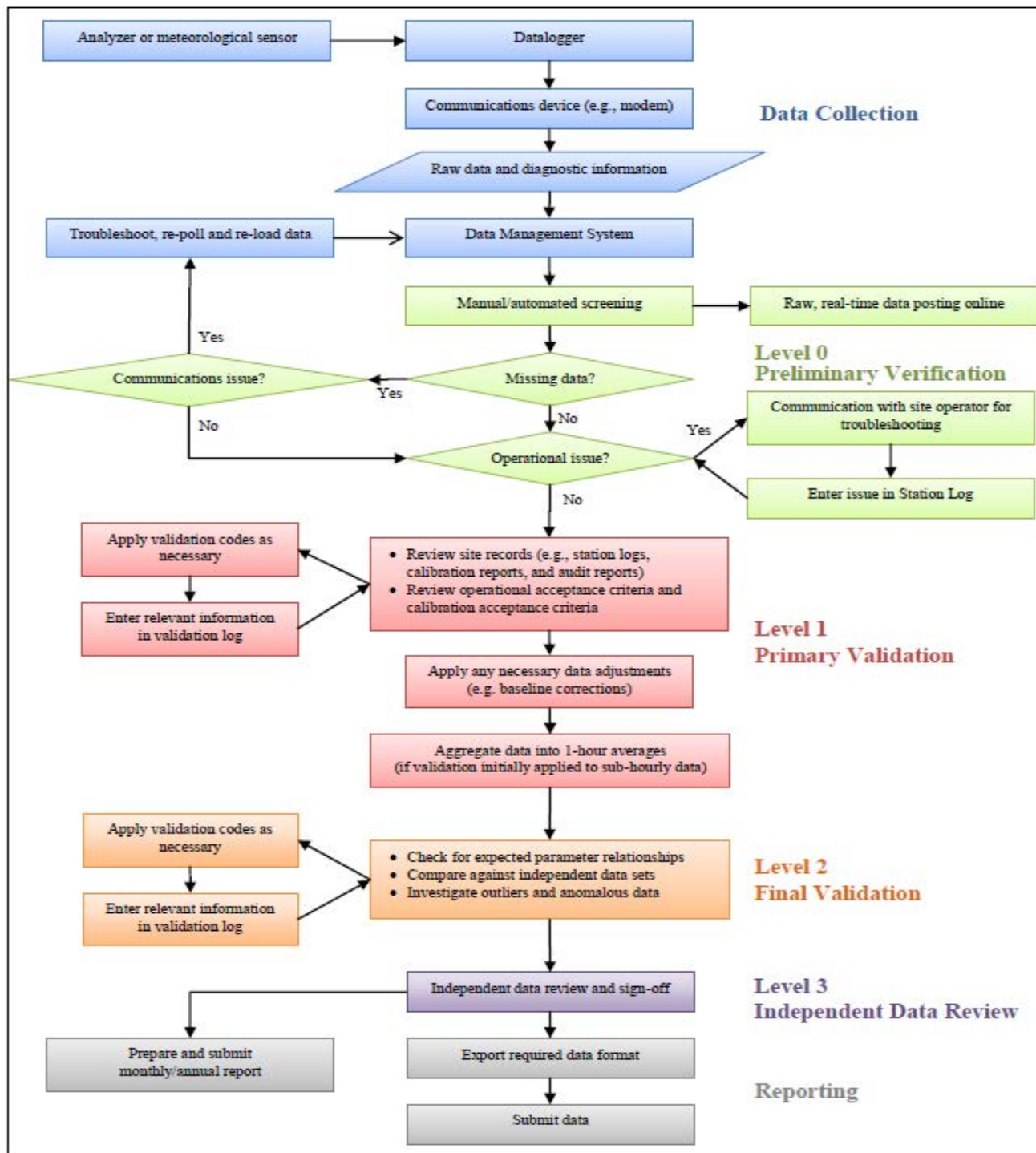
The purpose of Level 2 validation is to verify that there are no inconsistencies among related data, or among regional data measured at nearby sites.

Level 3 Independent Data Review

Level 3 validation is the last step of data review, and it is completed by an individual that is independent of both field operations and primary data validation. A final independent QA review and endorsement is performed during this step before data is submitted to Alberta Environment.

Post-Final Validation

The Post-Final Validation step serves to re-evaluate the data that errors or omissions are discovered and/or suspected after the initial submittal of data. Any data issues or patterns which were not clear on a monthly basis are highlighted during this step. This validation is performed on an annual basis.



Source: AMD Chapter 6: Ambient Data Quality for Verification and Validation of Continuous Ambient Air Quality Data; Figure 1 Data Collection and Management Process Flow Chart

APPENDIX I
CONTINUOUS MONITORING DATA RESULTS

SULPHUR DIOXIDE

SULPHUR DIOXIDE (SO2) hourly averages in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	RDGS.	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY 1	0.0	0.0	0.0	0.0	0.0	0.5	3.4	S	0.0	0.0	0.0	0.5	2.0	1.0	0.0	0.0	0.0	0.0	0.0	1.0	1.1	0.0	2.2	1.2	0.0	3.4	0.6	24	
2	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.5	0.2	0.4	0.2	0.1	0.0	0.0	0.0	0.0	9.0	6.9	1.8	0.0	0.0	0.0	0.0	0.0	0.0	9.0	0.8	24
3	0.0	0.0	0.0	0.4	4.3	S	0.0	1.7	0.1	0.0	0.0	0.1	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	0.3	24
4	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	24
5	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
6	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	4.8	5.8	2.5	2.6	6.1	1.5	4.1	6.4	9.5	6.1	4.6	3.7	4.4	0.0	0.0	9.5	2.8	24
7	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.3	0.5	0.5	1.3	0.3	0.0	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	0.4	24
8	S	0.0	0.6	1.0	0.5	1.8	0.9	0.3	0.5	0.7	1.0	0.9	0.3	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.3	2.6	0.0	S	0.0	2.6	0.6	24	
9	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.7	0.1	0.7	1.7	2.1	4.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	4.5	0.5	24	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	24	
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	0.8	S	0.0	0.0	0.0	0.0	2.6	0.1	24	
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	17.9	4.9	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	17.9	1.1	24	
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	1.0	0.0	0.0	0.0	0.0	1.7	S	0.0	0.0	0.0	0.8	0.0	0.0	2.4	0.3	24	
14	0.5	1.5	3.1	0.9	0.1	0.2	0.1	0.0	0.1	0.1	C	C	C	C	C	C	C	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	3.1	0.4	24	
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.2	S	0.0	0.0	0.0	2.1	0.2	24	
16	0.1	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.3	0.0	0.0	0.3	0.0	24	
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.1	0.0	24	
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.4	4.7	12.3	0.0	0.0	0.0	12.3	0.8	24	
20	0.8	3.1	10.3	18.3	6.9	8.0	0.1	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.3	2.1	24	
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	S	0.0	1.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.1	24	
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	1.0	0.1	24	
23	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.5	0.7	0.4	1.8	1.2	S	0.8	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.3	24	
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.9	1.5	0.2	0.0	S	1.0	1.2	1.3	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.3	24	
25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.5	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.1	24	
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	1.1	S	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.1	24	
28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Q	Q	Q	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	S	0.8	0.0	0.8	0.1	24	
29	0.5	0.6	0.3	0.0	0.0	0.0	0.5	0.7	0.7	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.6	S	0.0	0.0	0.0	0.7	0.2	24	
30	0.3	0.8	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.8	0.1	24	
HOURLY MAX	0.8	3.1	10.3	18.3	6.9	8.0	3.4	1.7	2.5	17.9	4.9	5.8	4.5	2.6	6.1	1.5	4.1	9.0	9.5	6.1	4.7	12.3	4.4	1.2					
HOURLY AVG	0.1	0.2	0.5	0.7	0.4	0.4	0.2	0.2	0.3	0.9	0.6	0.6	0.5	0.2	0.4	0.1	0.2	0.7	0.8	0.5	0.4	0.7	0.3	0.1					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

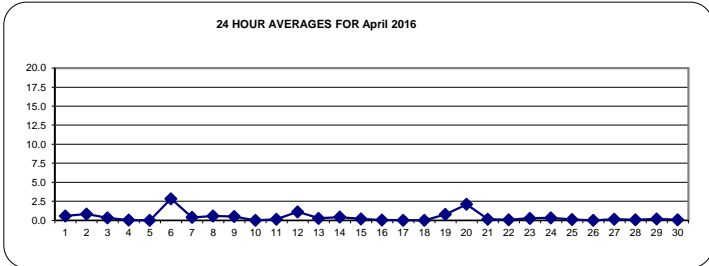
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT:	1-HR	172	PPB	24-HR	48	PPB
-----------------------------	------	-----	-----	-------	----	-----

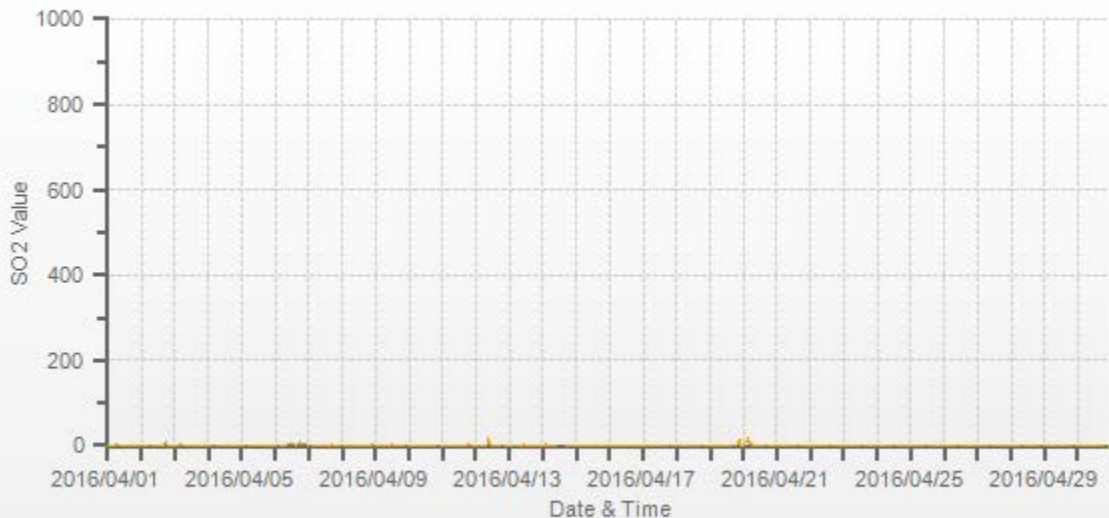
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0					
NUMBER OF 24-HR EXCEEDENCES:	0					
NUMBER OF NON-ZERO READINGS:	153					
MINIMUM 1-HR AVERAGE:	0.0	PPB	@ HOUR(S)	VAR	ON DAY(S)	ALL
MAXIMUM 1-HR AVERAGE:	18.3	PPB	@ HOUR(S)	3	ON DAY(S)	20
MAXIMUM 24-HR AVERAGE:	2.8	PPB			ON DAY(S)	6
					VAR-VARIOUS	
IZS CALIBRATION TIME:	31	HRS	OPERATIONAL TIME:	720	HRS	
MONTHLY CALIBRATION TIME:	7	HRS	AMD OPERATION UPTIME:	100.0	%	
STANDARD DEVIATION:	1.56		MONTHLY AVERAGE:	0.4	PPB	

24 HOUR AVERAGES FOR April 2016



SO2[ppb] Station: LICA MASKWA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— SO2[ppb]



SULPHUR DIOXIDE MAX instantaneous maximum in ppb

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.
DAY	HOURLY MAX	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
1		1.0	1.1	1.0	1.8	1.5	4.1	11.8	S	1.6	1.7	2.6	3.9	9.2	9.3	1.6	8.8	6.4	3.3	1.3	9.1	9.4	2.6	7.0	6.4	1.0	11.8	4.6	24
2		3.7	1.2	1.8	1.5	1.6	1.6	S	2.0	2.9	2.5	3.2	2.6	2.2	2.2	2.0	2.1	2.2	22.8	21.6	18.1	2.1	2.0	1.8	1.6	1.2	22.8	4.6	24
3		1.5	1.5	1.5	3.3	13.9	S	2.7	10.6	7.0	1.7	1.4	6.9	8.8	1.2	1.2	3.4	3.3	2.1	2.7	1.1	1.0	0.8	0.8	0.8	0.8	13.9	3.4	24
4		0.8	0.8	0.8	0.7	S	0.8	1.1	1.3	1.6	1.8	3.0	2.5	2.7	3.4	4.4	1.8	1.4	1.6	4.2	5.4	1.6	1.5	1.2	1.4	0.7	5.4	2.0	24
5		1.3	1.3	1.3	S	1.2	1.3	1.3	1.3	1.4	3.9	3.6	1.4	1.5	1.4	1.4	1.6	1.3	1.6	1.6	1.3	1.2	1.6	2.8	3.1	1.2	3.9	1.7	24
6		1.8	1.8	S	1.9	1.9	1.9	1.8	1.9	2.8	11.3	11.7	12.7	8.3	8.3	15.3	12.2	15.3	15.6	17.7	16.4	10.7	14.6	20.2	1.8	1.8	20.2	9.0	24
7		1.8	S	1.3	1.3	1.0	1.5	1.2	1.5	1.2	3.0	4.9	5.1	3.9	6.5	6.7	3.7	3.7	19.5	10.0	0.8	0.9	0.7	0.8	0.8	0.7	19.5	3.2	24
8		S	1.0	3.6	3.7	3.6	3.9	3.7	2.6	5.3	3.8	4.4	4.4	3.2	5.1	2.7	1.8	1.8	1.8	2.1	2.0	4.0	6.4	3.8	S	1.0	6.4	3.4	24
9		3.4	2.5	3.0	2.4	2.4	2.6	8.0	5.0	2.6	6.4	6.4	10.4	14.6	6.2	2.2	2.0	2.0	1.8	1.8	1.6	1.8	1.8	S	1.5	1.5	14.6	4.0	24
10		1.4	1.2	1.2	1.2	1.2	1.2	1.3	1.2	1.0	1.0	1.3	2.6	5.0	1.2	1.1	1.1	1.2	1.1	1.3	1.9	1.1	S	1.0	2.6	1.0	5.0	1.5	24
11		2.8	1.0	1.0	1.2	1.0	1.0	1.6	2.1	1.8	2.0	1.5	1.2	1.5	1.6	2.1	1.9	1.9	2.2	9.4	4.3	S	2.6	3.5	1.9	1.0	9.4	2.2	24
12		1.9	1.8	1.8	1.9	1.9	1.8	1.9	1.9	11.1	29.2	24.9	2.7	2.1	2.1	2.1	2.3	2.2	2.0	2.9	S	2.1	2.0	2.0	1.9	1.8	29.2	4.6	24
13		1.8	1.8	1.8	1.9	1.9	2.0	2.0	1.9	1.9	2.2	2.1	13.2	11.3	2.5	3.2	2.4	3.0	11.0	S	2.1	2.1	5.6	7.5	2.2	1.8	13.2	3.8	24
14		3.9	7.4	10.1	6.2	2.2	2.7	2.2	1.9	1.9	1.8	C	C	C	C	C	C	C	C	1.3	1.0	1.0	1.0	S	0.9	0.9	10.1	2.9	24
15		1.0	1.0	0.9	0.8	0.8	0.8	0.7	0.6	2.6	2.1	3.4	1.9	1.4	1.0	0.8	1.1	1.1	0.9	3.3	5.3	3.6	S	0.5	1.4	0.5	5.3	1.6	24
16		1.3	1.4	1.4	0.8	0.5	0.5	1.5	1.2	0.8	1.1	1.0	0.8	0.9	0.8	1.0	1.2	1.0	0.7	1.0	0.6	S	1.0	1.6	1.6	0.5	1.6	1.0	24
17		1.1	0.8	0.8	0.6	0.5	0.4	0.4	1.1	0.7	1.2	1.0	0.9	0.8	0.8	0.6	0.8	0.7	0.7	0.5	S	0.5	0.6	0.3	0.5	0.3	1.2	0.7	24
18		0.5	0.6	0.6	0.4	0.4	0.4	0.6	0.7	0.8	0.6	0.6	0.6	0.6	0.6	0.7	1.1	1.0	0.8	S	0.8	0.8	1.1	1.1	1.2	0.4	1.2	0.7	24
19		1.4	1.3	1.4	1.4	1.2	1.5	1.6	1.7	2.3	2.4	2.4	2.2	1.6	1.5	1.5	S	1.6	6.2	29.8	35.1	2.7	1.4	1.2	35.1	4.6	24		
20		15.4	15.3	23.1	27.2	17.9	20.1	1.9	1.3	9.5	1.1	1.1	1.0	0.8	0.7	0.7	S	0.8	0.8	0.5	0.5	0.6	0.5	0.4	0.4	27.2	6.2	24	
21		0.5	0.5	0.5	0.5	0.5	0.6	0.6	2.1	1.9	4.7	0.7	1.8	1.7	1.5	2.9	S	2.0	5.1	9.2	0.8	0.8	0.8	0.8	0.7	0.5	9.2	1.8	24
22		0.8	0.7	0.8	0.8	0.8	0.8	0.9	0.9	0.8	0.7	3.7	5.6	7.2	2.6	S	0.9	1.0	0.8	0.8	1.2	3.0	3.3	0.9	1.0	0.7	7.2	1.7	24
23		0.8	1.0	2.4	3.7	1.0	1.0	0.8	0.8	2.9	5.3	3.2	6.4	5.4	S	4.7	2.1	3.7	2.9	1.5	1.0	1.4	1.0	1.0	1.1	0.8	6.4	2.4	24
24		2.0	1.5	1.3	1.4	1.3	1.2	1.4	5.6	6.4	8.8	3.2	1.4	S	4.9	6.0	4.1	1.7	1.4	3.8	3.0	3.6	1.4	1.4	1.3	1.2	8.8	3.0	24
25		1.3	1.3	1.3	1.3	1.8	1.2	1.2	1.3	1.3	4.6	4.3	S	1.4	2.0	1.4	1.2	1.2	1.2	1.0	1.0	1.1	1.3	1.3	1.1	1.0	4.6	1.6	24
26		1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	S	1.3	1.3	1.2	1.2	1.4	1.4	1.3	1.3	1.4	1.3	1.6	1.4	1.4	1.1	1.6	1.3	24
27		1.2	1.4	1.2	1.1	1.1	1.1	1.9	3.7	3.7	S	1.6	1.6	1.5	2.8	1.8	4.9	1.5	1.4	1.6	1.5	1.2	1.2	1.1	1.1	1.1	4.9	1.8	24
28		1.0	1.0	1.1	1.0	1.1	1.0	1.2	Q	Q	Q	1.5	2.3	1.1	1.2	1.2	1.3	1.4	1.3	1.4	1.4	1.3	3.4	S	3.0	1.0	3.4	1.5	24
29		3.2	2.6	2.9	1.4	1.6	1.8	2.5	2.7	2.6	2.3	1.6	1.4	1.3	1.8	1.9	1.6	1.6	1.4	1.6	2.2	3.7	S	2.1	1.8	1.3	3.7	2.1	24
30		2.2	2.6	2.5	1.5	1.2	1.1	1.6	1.6	1.3	1.0	1.0	1.0	1.1	1.0	1.0	1.3	1.3	1.4	1.2	1.3	S	1.0	1.3	1.1	1.0	2.6	1.4	24
HOURLY MAX		15.4	15.3	23.1	27.2	17.9	20.1	11.8	10.6	11.1	29.2	24.9	13.2	14.6	9.3	15.3	12.2	15.3	22.8	21.6	18.1	29.8	35.1	20.2	6.4				
HOURLY AVG		2.1	2.0	2.5	2.6	2.4	2.1	2.1	2.2	2.9	3.9	3.6	3.6	3.7	2.7	2.6	2.5	2.4	3.8	3.5	3.3	3.4	3.6	2.6	1.6				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	679
MAXIMUM INSTANTANEOUS VALUE:	35.1 PPB @ HOUR(S) 21 ON DAY(S) 19
	VAR-VARIOUS
IZS CALIBRATION TIME:	31 HRS
MONTHLY CALIBRATION TIME:	7 HRS
STANDARD DEVIATION:	3.98
OPERATIONAL TIME:	720 HRS

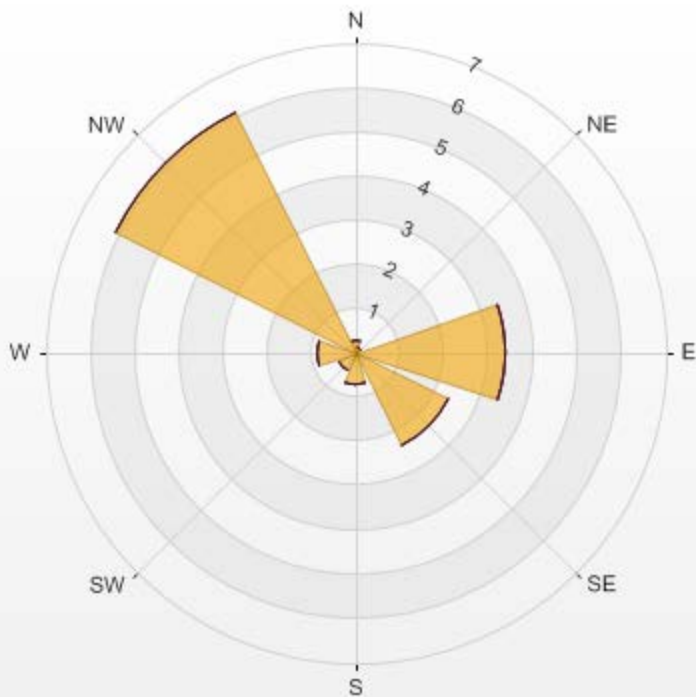
SO2 MAX[ppb] Station: LICA MASKWA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



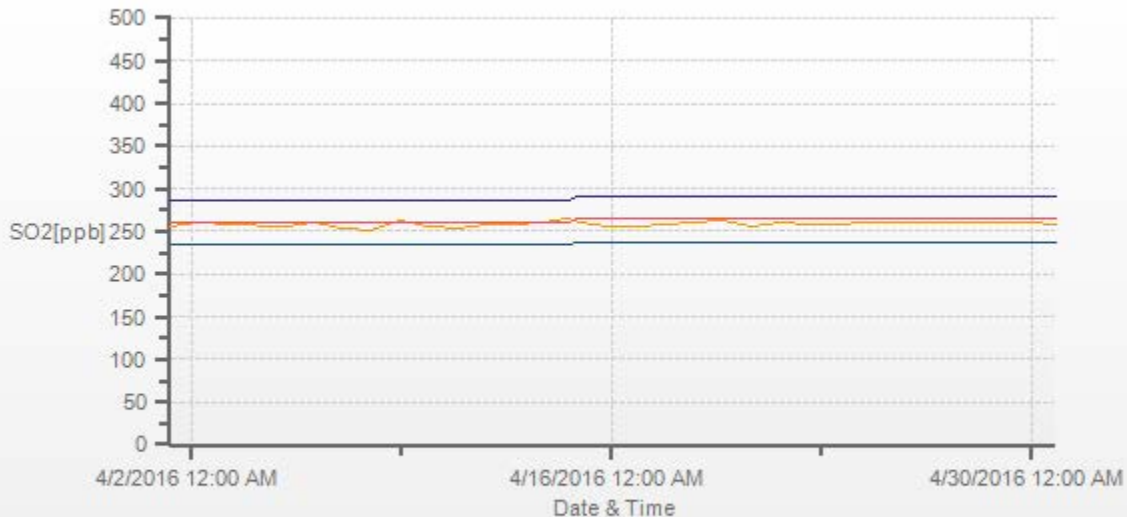
— SO2 MAX[ppb]

Wind: LICA MASKWA Monitor: SO2 [ppb] Monthly: 04/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 85.65% Valid Data: 93.89% Calm Avg: 0.00

Direction	0.5-20.0	20.0-60.0	60.0-110.0	110.0-170.0	170.0-340.0	>340.0	Total
N	0.3	0	0	0	0	0	0.3
NE	0.15	0	0	0	0	0	0.15
E	3.4	0	0	0	0	0	3.4
SE	2.37	0	0	0	0	0	2.37
S	0.74	0	0	0	0	0	0.74
SW	0.44	0	0	0	0	0	0.44
W	0.89	0	0	0	0	0	0.89
NW	6.07	0	0	0	0	0	6.07
Summary	14.36	0	0	0	0	0	14.36



SO2[ppb] Calibration: LICA MASKWA Monthly: 04/2016 Type: Span



Span Meas

Span Ref

-10%

+10%

HYDROGEN SULPHIDE

HYDROGEN SULPHIDE (H2S) hourly averages in ppb

MST

DAY	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.	
1	0.0	0.0	0.0	0.0	0.0	0.0	0.6	S	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	24
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.1	0.0	0.0	0.1	0.2	0.2	0.0	0.0	0.2	0.0	24
3	0.0	0.0	0.0	0.0	0.0	0.0	S	0.2	0.1	0.0	0.0	0.4	0.0	0.0	0.2	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.1	24
4	0.0	0.2	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.6	0.4	0.2	0.3	0.1	0.0	0.0	0.0	0.6	0.1	24	
5	0.1	0.1	0.0	S	0.2	0.1	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.3	0.1	24
6	0.2	0.1	S	0.0	0.3	0.3	0.2	0.3	0.0	0.0	0.1	0.6	0.2	0.3	0.2	0.0	0.0	0.1	0.2	0.2	0.2	0.0	0.3	0.3	0.0	0.6	0.2	24	
7	0.0	S	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	24
8	S	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	S	0.0	0.4	0.0	24	
9	0.1	0.3	0.0	0.0	0.4	0.3	0.1	0.2	0.0	0.1	0.2	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.4	0.1	24
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.1	0.1	0.0	0.1	0.0	24	
11	0.0	0.0	0.0	0.0	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.7	0.2	S	0.1	0.7	0.4	0.0	0.7	0.1	24	
12	0.0	0.2	0.7	0.1	0.2	0.2	0.1	0.3	0.6	2.2	1.1	0.3	0.4	0.5	0.6	0.5	0.0	0.2	0.3	S	0.5	0.5	0.3	0.2	0.0	2.2	0.4	24	
13	0.1	0.4	0.3	0.1	0.0	0.6	0.4	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.1	0.0	0.0	S	0.0	0.0	0.1	0.0	0.0	0.0	0.6	0.1	24	
14	0.1	0.5	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.5	0.0	24	
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	C	C	C	C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	24
16	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	S	0.0	0.0	0.2	0.0	0.0	0.2	0.0	24	
17	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.1	0.3	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.1	24	
18	0.9	0.2	0.2	0.1	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.2	0.0	0.0	S	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.9	0.1	24
19	0.3	0.5	0.8	2.1	2.8	1.3	0.7	0.9	0.5	0.4	0.2	0.2	0.1	0.2	0.2	0.0	0.0	S	0.0	0.0	0.4	0.4	0.0	0.3	0.0	2.8	0.5	24	
20	0.0	0.0	0.0	0.1	0.0	0.4	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	24	
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
23	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.3	0.0	24	
24	0.0	1.1	0.3	0.0	0.0	0.3	0.3	0.2	0.2	0.8	0.8	0.3	S	0.7	0.7	0.4	0.6	0.3	0.3	0.6	0.1	0.2	0.6	0.1	0.0	1.1	0.4	24	
25	0.0	0.3	0.0	0.0	0.1	0.3	0.1	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	24	
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	24	
28	0.0	0.6	0.8	0.7	0.4	0.1	0.0	Q	Q	Q	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.3	0.0	0.0	S	0.0	0.0	0.8	0.2	24	
29	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.2	0.0	24	
30	0.0	0.1	0.0	0.0	0.2	0.1	0.5	0.6	0.5	0.5	0.6	0.6	0.0	0.2	0.7	0.7	0.9	0.9	1.0	0.2	S	0.8	1.3	1.3	0.0	1.3	0.5	24	
HOURLY MAX	0.9	1.1	0.8	2.1	2.8	1.3	0.7	0.9	0.6	2.2	1.1	0.6	0.4	0.7	0.7	0.7	0.9	0.9	1.0	0.6	0.5	0.8	1.3	1.3					
HOURLY AVG	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

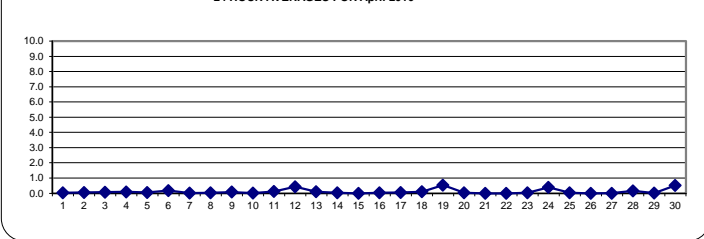
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT:	1-HR	10	PPB	24-HR	3	PPB
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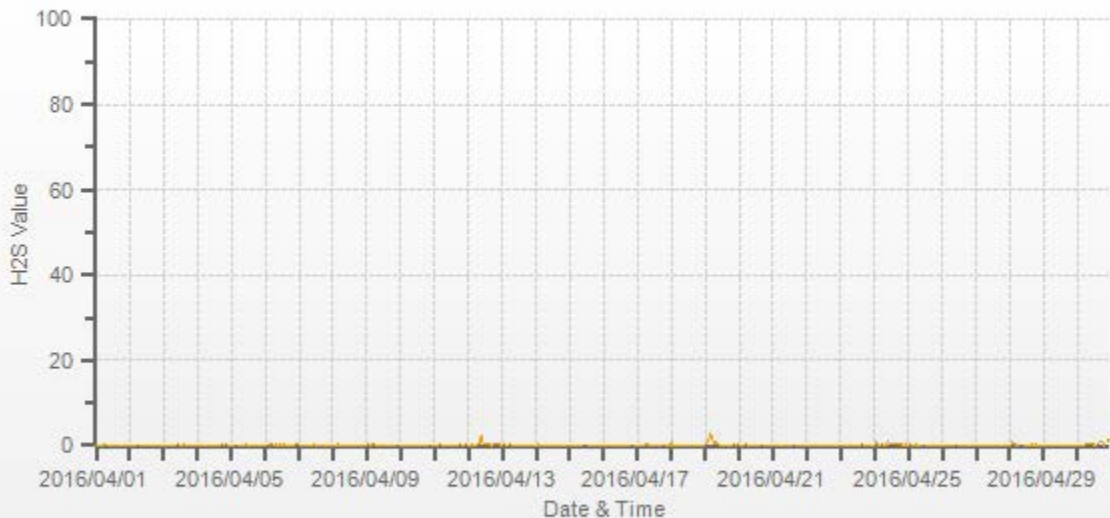
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0					
NUMBER OF 24-HR EXCEEDENCES:	0					
NUMBER OF NON-ZERO READINGS:	204					
MINIMUM 1-HR AVERAGE:	0.0	PPB	@ HOUR(S)	VAR	ON DAY(S)	ALL
MAXIMUM 1-HR AVERAGE:	2.8	PPB	@ HOUR(S)	4	ON DAY(S)	19
MAXIMUM 24-HR AVERAGE:	0.5	PPB			ON DAY(S)	19, 30
					VAR-VARIOUS	
IZS CALIBRATION TIME:	31	HRS	OPERATIONAL TIME:	720	HRS	
MONTHLY CALIBRATION TIME:	4	HRS	AMD OPERATION UPTIME:	100.0	%	
STANDARD DEVIATION:	0.25		MONTHLY AVERAGE:	0.1	PPB	

24 HOUR AVERAGES FOR April 2016



H2S[ppb] Station: LICA MASKWA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— H2S[ppb]



HYDROGEN SULPHIDE MAX instantaneous maximum in ppb

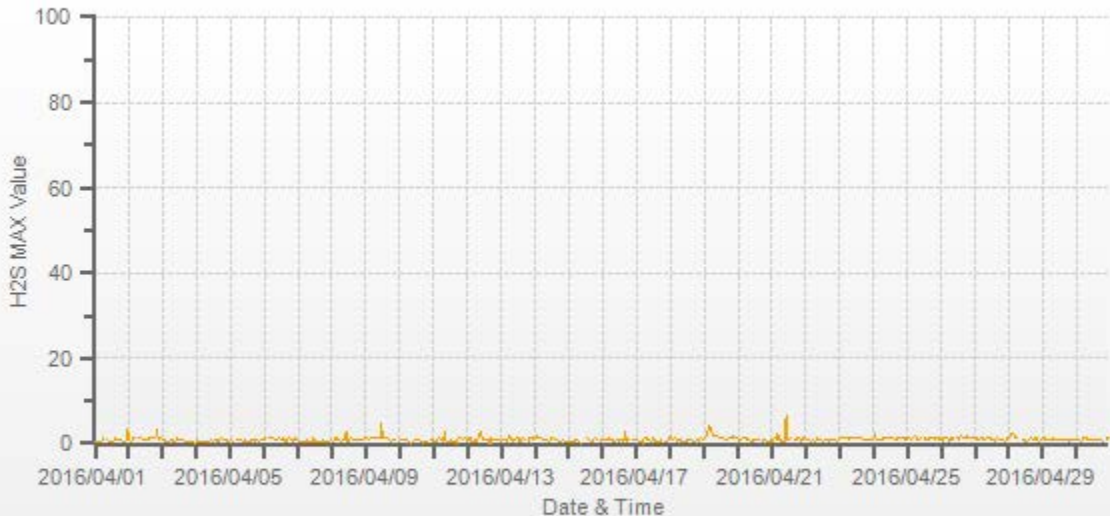
MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.	
HOUR START	HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY																														
1		0.5	0.4	0.4	0.3	0.3	1.0	1.5	S	0.8	0.8	0.4	0.6	0.5	0.6	1.2	1.1	1.1	1.0	1.0	0.9	0.6	0.6	1.1	3.2	0.3	3.2	0.9	24	
2		1.0	0.7	0.4	1.3	1.3	1.2	S	1.3	1.4	1.6	1.1	0.9	0.8	1.1	1.1	1.2	1.3	1.2	1.3	1.5	3.3	1.1	1.3	1.2	0.4	3.3	1.2	24	
3		1.0	0.6	1.0	0.4	0.5	S	1.0	0.9	0.5	0.4	1.2	0.9	0.8	1.0	1.1	1.0	0.7	0.6	0.5	0.6	0.5	0.5	0.6	0.1	0.1	1.2	0.7	24	
4		0.4	0.8	0.7	0.4	S	0.5	0.4	0.5	0.5	0.6	0.8	0.6	0.6	0.9	1.0	0.5	0.5	1.3	1.2	0.8	1.1	1.1	0.5	0.7	0.4	1.3	0.7	24	
5		0.8	1.0	0.7	S	0.8	0.8	0.8	0.8	0.9	0.7	1.0	0.7	0.7	0.6	0.6	1.1	0.9	0.7	0.8	0.9	0.5	1.0	1.0	0.8	0.5	1.1	0.8	24	
6		1.0	1.2	S	1.2	1.2	1.2	1.3	1.1	1.0	0.8	1.2	1.5	1.0	1.1	1.4	0.7	0.6	1.2	1.2	1.0	1.0	0.5	1.2	0.9	0.5	1.5	1.1	24	
7		0.6	S	0.5	0.6	0.5	0.6	1.1	0.6	0.7	0.4	1.3	0.6	0.5	0.3	0.7	0.7	1.0	0.5	0.5	0.6	0.6	0.4	0.9	0.3	1.3	0.6	24		
8		S	0.6	1.2	1.5	1.0	0.8	0.5	0.4	0.8	1.1	2.7	0.5	0.4	1.6	1.5	1.0	1.1	1.1	1.0	1.0	1.1	1.1	1.1	S	0.4	2.7	1.1	24	
9		1.3	1.5	1.0	1.6	1.5	1.5	1.4	1.4	1.4	1.4	4.7	1.3	1.2	1.3	1.2	0.9	0.9	0.6	1.0	1.0	1.0	S	0.7	0.6	4.7	1.4	24		
10		0.7	0.8	0.8	0.8	0.9	1.0	0.7	0.4	0.2	0.6	0.4	0.9	0.9	0.8	0.8	0.3	0.0	0.4	0.7	0.4	0.7	S	0.9	0.9	0.0	1.0	0.7	24	
11		0.6	0.4	0.4	1.0	1.3	0.8	0.9	0.5	2.8	0.6	0.5	0.6	0.7	0.8	0.7	0.7	0.0	0.8	1.6	1.2	S	1.0	1.4	1.3	0.0	2.8	0.9	24	
12		0.3	1.2	1.3	0.7	0.7	0.8	0.7	1.2	2.9	2.5	0.9	0.8	1.0	1.0	1.1	0.2	1.2	0.9	S	0.9	0.9	1.1	1.1	0.8	0.2	2.9	1.0	24	
13		0.7	1.0	1.0	0.8	0.7	1.6	1.7	0.9	0.7	0.9	0.9	1.3	1.2	0.4	0.4	1.4	1.5	0.9	S	0.7	1.3	1.2	1.1	1.2	0.4	1.7	1.0	24	
14		1.4	2.0	1.3	1.4	1.4	0.9	0.8	0.9	0.8	0.8	0.5	1.0	1.2	1.5	1.0	1.0	1.1	0.7	0.6	0.3	1.1	0.6	S	0.7	0.3	2.0	1.0	24	
15		0.7	0.6	0.7	0.7	0.7	0.9	0.9	0.6	0.1	C	C	C	C	1.5	1.1	0.7	0.6	0.7	1.2	1.3	1.1	S	0.6	0.8	0.1	1.5	0.8	24	
16		1.1	0.9	0.9	1.0	1.2	1.0	1.0	0.5	0.7	0.9	1.0	0.7	0.8	1.0	0.3	2.8	0.7	0.8	1.0	S	0.9	0.8	1.0	0.3	2.8	1.0	24		
17		0.8	0.9	0.7	0.4	0.2	1.1	1.3	1.3	1.1	0.9	0.5	1.1	1.2	0.6	0.7	0.7	0.7	0.9	S	0.6	0.6	0.4	1.6	0.2	1.6	0.8	24		
18		1.8	1.5	1.1	1.2	0.8	0.6	1.1	1.0	0.6	0.7	0.5	0.7	1.1	1.0	1.1	0.5	0.6	S	1.1	0.7	1.2	1.4	0.9	0.5	1.8	1.0	24		
19		1.3	1.5	2.2	3.8	4.1	2.6	1.7	1.9	1.9	1.7	1.4	1.5	1.2	1.2	1.3	0.9	1.0	S	1.2	1.4	1.4	2.0	1.3	1.4	0.9	4.1	1.7	24	
20		0.8	0.6	0.8	1.2	1.5	1.6	1.2	1.0	1.1	0.7	0.5	1.0	0.8	0.9	0.8	0.8	S	0.7	1.0	0.9	0.6	0.6	0.7	0.8	0.5	1.6	0.9	24	
21		0.6	0.9	1.2	1.0	2.4	0.9	0.7	0.8	0.7	0.5	6.4	0.8	0.8	1.3	1.3	S	1.1	1.0	1.3	1.2	1.1	0.7	1.2	1.2	0.5	6.4	1.3	24	
22		1.2	0.9	0.8	0.7	0.7	1.0	0.5	0.5	1.2	0.8	1.0	1.1	0.3	1.0	S	0.9	0.7	0.8	0.8	0.9	1.0	0.8	0.6	0.9	0.3	1.2	0.8	24	
23		1.1	1.5	1.4	1.4	1.4	1.4	0.8	1.3	1.4	1.4	1.5	1.5	1.4	S	1.2	1.6	1.0	1.1	1.0	0.9	0.8	0.8	1.1	1.1	0.8	1.6	1.2	24	
24		1.1	2.3	1.1	1.0	0.8	1.0	1.0	1.2	1.3	1.5	1.2	1.3	S	1.3	1.2	1.1	1.3	1.1	1.2	1.5	1.6	1.5	1.4	1.0	0.8	2.3	1.3	24	
25		1.2	1.3	0.9	1.0	1.3	1.7	1.7	0.8	0.8	1.5	1.2	S	1.2	1.1	1.1	1.1	1.3	1.2	1.3	1.3	1.0	1.4	1.5	0.8	0.8	1.7	1.2	24	
26		1.1	0.7	1.3	1.4	1.6	0.9	0.6	1.4	1.4	1.0	S	1.5	0.9	1.3	1.9	1.6	1.3	1.3	1.3	1.7	1.2	1.5	1.3	1.4	0.6	1.9	1.3	24	
27		1.3	1.6	1.1	1.1	1.6	1.5	1.0	1.0	1.5	S	1.2	0.9	1.2	1.0	0.7	1.5	1.4	0.9	0.8	0.9	0.8	0.7	0.9	1.6	0.7	1.6	1.1	24	
28		1.5	2.1	2.4	2.2	1.7	1.5	1.2	Q	Q	Q	0.9	0.8	0.6	0.6	1.1	1.5	1.2	0.8	1.1	1.4	1.3	0.7	S	0.8	0.6	2.4	1.3	24	
29		1.4	1.4	0.8	1.1	0.9	0.9	1.1	0.9	1.2	1.1	1.0	1.0	1.1	0.9	0.9	1.0	0.8	0.8	0.7	1.0	1.0	S	1.0	0.9	0.7	1.4	1.0	24	
30		0.8	1.1	1.1	0.6	1.1	1.2	1.2	1.5	1.1	1.0	1.0	1.0	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.7	1.0	S	0.8	1.4	1.5	0.6	1.5	1.0	24
HOURLY MAX		1.8	2.3	2.4	3.8	4.1	2.6	1.7	1.9	2.8	2.9	6.4	4.7	1.4	1.6	1.9	1.6	2.8	1.3	1.6	1.7	3.3	2.0	1.5	3.2					
HOURLY AVG		1.0	1.1	1.0	1.1	1.2	1.1	1.0	1.0	1.0	1.0	1.2	1.1	0.9	1.0	1.0	1.0	0.9	0.9	1.0	1.0	1.0	0.9	1.0	1.1					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

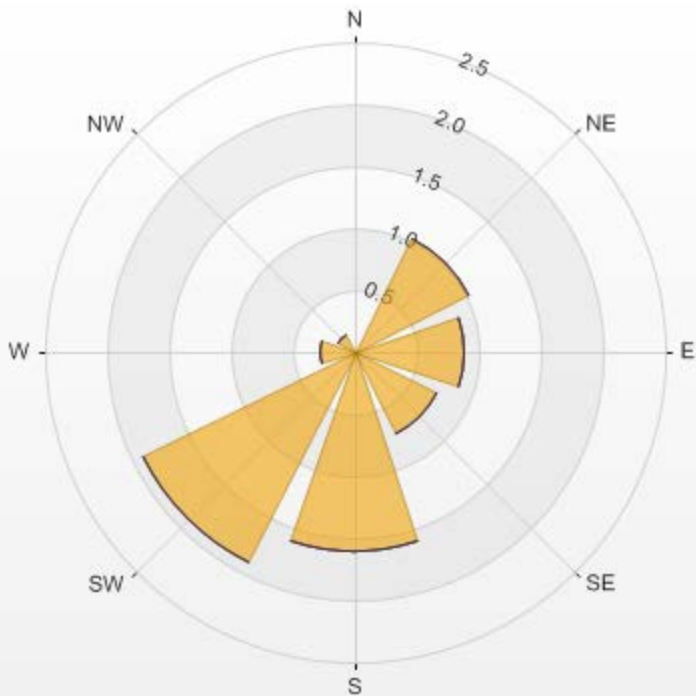
NUMBER OF NON-ZERO READINGS:	680
MAXIMUM INSTANTANEOUS VALUE:	6.4 PPB @ HOUR(S) 10 ON DAY(S) 21
	VAR-VARIOUS
IZS CALIBRATION TIME:	31 HRS
MONTHLY CALIBRATION TIME:	4 HRS
STANDARD DEVIATION:	0.51
OPERATIONAL TIME:	720 HRS



— H2S MAX[ppb]

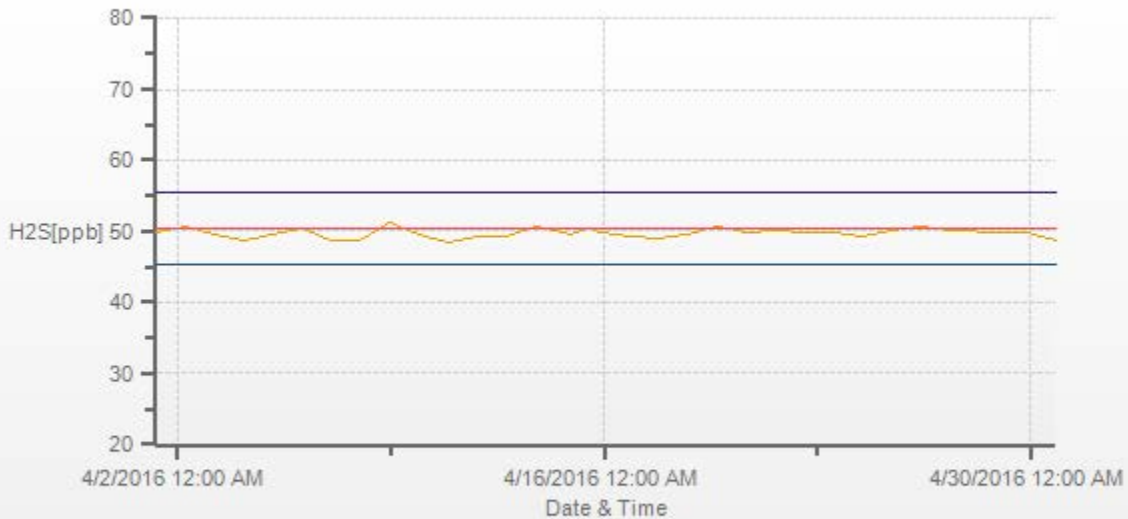
Wind: LICA MASKWA Monitor: H2S [ppb] Monthly: 04/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 93.37% Valid Data: 94.31% Calm Avg: 0.00 [ppb]

Direction	0.5-3.0	3.0-10.0	10.0-50.0	>50.0	Total
N	0	0	0	0	0
NE	1.03	0	0	0	1.03
E	0.88	0	0	0	0.88
SE	0.74	0	0	0	0.74
S	1.62	0	0	0	1.62
SW	1.91	0	0	0	1.91
W	0.29	0	0	0	0.29
NW	0.15	0	0	0	0.15
Summary	6.62	0	0	0	6.62



% Icon Classes (ppb)	6.6	0.5-3.0	0.0	3.0-10.0	0.0	10.0-50.0	0.0	>50.0
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H2S[ppb] Calibration: LICA MASKWA Monthly: 04/2016 Type: Span



Span Meas Span Ref -10% +10%

TOTAL HYDROCARBON



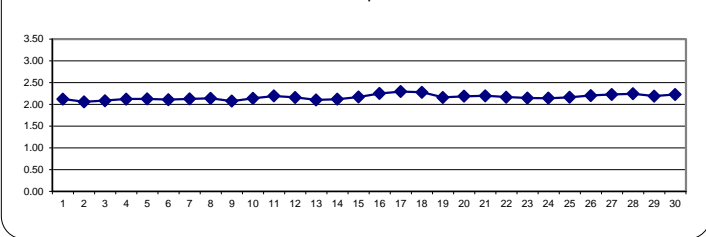
TOTAL HYDROCARBONS (THC) hourly averages in ppm

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
DAY	MIN.	MAX.	AVG.	RDGS.																									
1	2.13	2.17	2.21	2.27	2.26	2.26	2.31	S	2.14	2.10	2.09	2.07	2.07	2.05	2.03	2.03	2.04	2.05	2.06	2.08	2.11	2.08	2.11	2.10	2.03	2.31	2.12	24	
2	2.07	2.06	2.07	2.16	2.15	2.09	S	2.19	2.19	2.15	2.02	1.97	1.94	1.93	1.93	1.92	1.92	2.21	2.21	2.04	2.02	2.03	2.03	2.02	1.92	2.21	2.06	24	
3	2.04	2.04	2.05	2.07	2.09	S	2.07	2.07	2.05	2.06	2.07	2.08	2.09	2.09	2.09	2.08	2.09	2.09	2.11	2.12	2.12	2.12	2.12	2.13	2.04	2.13	2.08	24	
4	2.13	2.16	2.14	2.20	S	2.14	2.16	2.17	2.18	2.16	2.15	2.14	2.12	2.12	2.10	2.08	2.08	2.07	2.09	2.10	2.08	2.08	2.08	2.08	2.07	2.20	2.12	24	
5	2.09	2.09	2.10	S	2.09	2.10	2.11	2.11	2.10	2.11	2.10	2.10	2.12	2.12	2.12	2.12	2.13	2.14	2.15	2.16	2.17	2.21	2.19	2.20	2.09	2.21	2.13	24	
6	2.25	2.31	S	2.22	2.06	2.02	2.02	2.02	2.06	2.11	2.09	2.06	2.06	2.05	2.08	2.07	2.08	2.11	2.14	2.09	2.17	2.16	2.16	2.11	2.02	2.31	2.11	24	
7	2.12	S	2.14	2.15	2.16	2.18	2.18	2.18	2.16	2.14	2.14	2.13	2.11	2.10	2.10	2.08	2.07	2.09	2.11	2.11	2.12	2.11	2.12	2.13	2.07	2.18	2.13	24	
8	S	2.14	2.18	2.20	2.18	2.21	2.18	2.15	2.16	2.17	2.18	2.16	2.12	2.13	2.11	2.11	2.10	2.09	2.09	2.08	2.09	2.12	2.08	S	2.08	2.21	2.14	24	
9	2.08	2.06	2.06	2.04	2.04	2.05	2.14	2.08	2.08	2.07	2.06	2.04	2.06	2.06	2.06	2.11	2.07	2.08	2.08	2.09	2.09	2.10	2.13	S	2.13	2.04	2.14	2.08	24
10	2.14	2.15	2.15	2.15	2.15	2.15	2.16	2.16	2.16	2.15	2.14	2.13	2.14	2.13	2.13	2.11	2.11	2.11	2.13	2.15	2.14	S	2.15	2.16	2.11	2.16	2.14	24	
11	2.17	2.17	2.17	2.22	2.20	2.21	2.28	2.32	2.31	2.28	2.22	2.21	2.20	2.17	2.15	2.13	2.13	2.15	2.18	2.16	S	2.12	2.14	2.15	2.12	2.32	2.19	24	
12	2.13	2.19	2.21	2.19	2.14	2.14	2.15	2.20	2.29	2.40	2.25	2.15	2.13	2.10	2.10	2.14	2.13	2.09	2.10	S	2.10	2.12	2.12	2.11	2.09	2.40	2.16	24	
13	2.13	2.12	2.11	2.10	2.10	2.10	2.09	2.09	2.09	2.10	2.09	2.08	2.08	2.09	2.08	2.07	2.10	2.27	S	2.07	2.11	2.10	2.10	2.10	2.07	2.27	2.10	24	
14	2.14	2.14	2.10	2.08	2.06	2.06	2.07	2.07	2.08	2.10	C	C	C	C	2.18	2.15	2.11	2.12	2.12	2.14	2.15	2.15	S	2.22	2.06	2.22	2.12	24	
15	2.21	2.21	2.21	2.23	2.23	2.22	2.19	2.15	2.15	2.16	2.15	2.13	2.11	2.12	2.12	2.12	2.14	2.15	2.14	2.18	2.16	S	2.18	2.22	2.11	2.23	2.17	24	
16	2.26	2.27	2.29	2.32	2.26	2.31	2.33	2.36	2.37	2.34	2.27	2.26	2.21	2.17	2.14	2.15	2.15	2.15	2.14	2.16	S	2.21	2.30	2.32	2.14	2.37	2.25	24	
17	2.33	2.35	2.36	2.36	2.39	2.42	2.48	2.36	2.38	2.33	2.30	2.28	2.28	2.18	2.16	2.17	2.17	2.16	2.15	S	2.18	2.26	2.40	2.35	2.15	2.48	2.30	24	
18	2.28	2.27	2.29	2.41	2.38	2.44	2.51	2.44	2.40	2.36	2.26	2.23	2.24	2.19	2.18	2.18	2.17	2.16	S	2.18	2.19	2.19	2.23	2.21	2.16	2.51	2.28	24	
19	2.22	2.20	2.20	2.20	2.21	2.24	2.25	2.21	2.20	2.21	2.19	2.16	2.15	2.08	2.09	2.09	2.07	S	2.07	2.08	2.09	2.23	2.09	2.11	2.07	2.25	2.16	24	
20	2.13	2.20	2.25	2.29	2.20	2.20	2.15	2.14	2.15	2.17	2.19	2.20	2.19	2.19	2.18	2.17	S	2.16	2.17	2.18	2.19	2.19	2.20	2.20	2.13	2.29	2.19	24	
21	2.20	2.20	2.23	2.24	2.24	2.25	2.24	2.21	2.19	2.20	2.18	2.19	2.18	2.16	2.17	S	2.15	2.17	2.20	2.17	2.18	2.19	2.18	2.19	2.15	2.25	2.20	24	
22	2.19	2.19	2.19	2.19	2.19	2.18	2.18	2.18	2.18	2.18	2.17	2.16	2.16	2.15	S	2.15	2.15	2.15	2.15	2.16	2.16	2.14	2.14	2.15	2.14	2.19	2.17	24	
23	2.16	2.16	2.16	2.15	2.14	2.15	2.15	2.15	2.16	2.16	2.14	2.15	2.15	S	2.14	2.13	2.13	2.13	2.13	2.13	2.14	2.14	2.15	2.17	2.12	2.17	2.15	24	
24	2.19	2.16	2.15	2.13	2.14	2.14	2.14	2.15	2.17	2.16	2.15	2.14	S	2.14	2.14	2.12	2.12	2.13	2.13	2.13	2.14	2.13	2.13	2.12	2.12	2.19	2.14	24	
25	2.14	2.17	2.18	2.17	2.17	2.14	2.16	2.15	2.13	2.14	2.15	S	2.12	2.13	2.15	2.14	2.18	2.19	2.18	2.19	2.19	2.18	2.20	2.22	2.12	2.22	2.16	24	
26	2.20	2.19	2.18	2.24	2.26	2.25	2.27	2.25	2.28	2.29	S	2.28	2.22	2.14	2.13	2.13	2.13	2.13	2.14	2.16	2.16	2.18	2.21	2.23	2.13	2.29	2.20	24	
27	2.30	2.27	2.29	2.31	2.34	2.36	2.31	2.26	2.25	S	2.20	2.16	2.15	2.14	2.15	2.16	2.14	2.17	2.17	2.17	2.16	2.20	2.22	2.25	2.27	2.14	2.36	2.23	24
28	2.28	2.27	2.34	2.33	2.36	2.35	2.34	Q	Q	Q	2.18	2.18	2.15	2.18	2.20	2.23	2.21	2.19	2.19	2.16	2.19	2.23	S	2.23	2.15	2.37	2.24	24	
29	2.24	2.27	2.29	2.26	2.25	2.25	2.24	2.23	2.20	2.18	2.15	2.12	2.15	2.16	2.15	2.15	2.14	2.13	2.13	2.14	2.18	S	2.18	2.17	2.12	2.29	2.19	24	
30	2.22	2.26	2.27	2.30	2.22	2.26	2.33	2.38	2.37	2.25	2.20	2.18	2.19	2.23	2.23	2.16	2.15	2.13	2.14	2.14	S	2.17	2.18	2.20	2.13	2.38	2.22	24	
HOURLY MAX	2.33	2.37	2.36	2.41	2.39	2.44	2.51	2.44	2.40	2.40	2.30	2.28	2.28	2.23	2.23	2.23	2.21	2.27	2.21	2.19	2.20	2.26	2.40	2.35					
HOURLY AVG	2.18	2.19	2.19	2.21	2.20	2.20	2.21	2.19	2.19	2.19	2.16	2.15	2.14	2.13	2.12	2.12	2.12	2.14	2.14	2.13	2.14	2.16	2.16	2.17					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

24 HOUR AVERAGES FOR April 2016



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	682			
MINIMUM 1-HR AVERAGE:	1.92 PPM	@ HOUR(S)	15 , 16	ON DAY(S) 2 , 2
MAXIMUM 1-HR AVERAGE:	2.51 PPM	@ HOUR(S)	6	ON DAY(S) 18
MAXIMUM 24-HR AVERAGE:	2.30 PPM			ON DAY(S) 17
				VAR-VARIOUS
IZS CALIBRATION TIME:	31 HRS	OPERATIONAL TIME:	720 HRS	
MONTHLY CALIBRATION TIME:	4 HRS	AMD OPERATION UPTIME:	100.0 %	
STANDARD DEVIATION:	0.08	MONTHLY AVERAGE:	2.16 PPM	

THC[ppm] Station: LICA MASKWA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— THC[ppm]



TOTAL HYDROCARBONS MAX instantaneous maximum in ppm

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
DAY	MIN.	MAX.	AVG.	RDGS.																									
1	2.17	2.24	2.26	2.35	2.33	2.38	2.46	S	2.17	2.17	2.15	2.15	2.20	2.14	2.08	2.15	2.11	2.09	2.11	2.21	2.32	2.17	2.23	2.18	2.08	2.46	2.21	24	
2	2.15	2.12	2.14	2.35	2.26	2.38	S	2.29	2.24	2.26	2.11	2.05	2.03	2.02	2.00	2.01	1.99	3.51	3.63	2.42	2.08	2.10	2.10	2.10	1.99	3.63	2.28	24	
3	2.10	2.12	2.12	2.21	2.23	S	2.15	2.20	2.17	2.12	2.12	2.17	2.17	2.17	2.15	2.17	2.17	2.17	2.20	2.20	2.20	2.20	2.20	2.26	2.10	2.26	2.17	24	
4	2.23	2.29	2.23	2.32	S	2.21	2.23	2.24	2.24	2.23	2.21	2.21	2.17	2.20	2.20	2.14	2.12	2.11	2.20	2.20	2.12	2.12	2.11	2.12	2.11	2.32	2.19	24	
5	2.12	2.12	2.12	S	2.11	2.12	2.12	2.12	2.17	2.14	2.12	2.12	2.14	2.15	2.12	2.15	2.15	2.15	2.17	2.21	2.21	2.24	2.21	2.23	2.11	2.24	2.15	24	
6	2.29	2.33	S	2.26	2.17	2.09	2.05	2.08	2.18	2.20	2.20	2.15	2.11	2.11	2.20	2.14	2.23	2.21	2.26	2.24	2.32	2.29	2.32	2.17	2.05	2.33	2.20	24	
7	2.18	S	2.21	2.24	2.23	2.27	2.24	2.49	2.29	2.20	2.23	2.24	2.20	2.18	2.20	2.20	2.23	2.26	2.20	2.20	2.20	2.20	2.20	2.20	2.18	2.49	2.23	24	
8	S	2.23	2.29	2.29	2.26	2.27	2.26	2.20	2.29	2.23	2.29	2.29	2.17	2.17	2.12	2.11	2.10	2.09	2.07	2.07	2.08	2.11	2.05	S	2.05	2.29	2.18	24	
9	2.09	2.04	2.07	2.04	2.04	2.05	2.26	2.09	2.10	2.08	2.09	2.07	2.12	2.08	2.08	2.11	2.11	2.12	2.12	2.14	2.15	2.18	S	2.18	2.04	2.26	2.10	24	
10	2.18	2.20	2.20	2.20	2.20	2.20	2.20	2.23	2.23	2.20	2.20	2.18	2.20	2.18	2.18	2.17	2.17	2.17	2.21	2.26	2.20	S	2.20	2.21	2.17	2.26	2.20	24	
11	2.23	2.20	2.24	2.28	2.26	2.29	2.35	2.35	2.35	2.33	2.26	2.23	2.23	2.20	2.17	2.17	2.15	2.17	2.23	2.17	S	2.15	2.18	2.17	2.15	2.35	2.23	24	
12	2.17	2.38	2.32	2.23	2.17	2.17	2.20	2.26	2.36	2.52	2.54	2.17	2.17	2.12	2.17	2.17	2.18	2.12	2.12	S	2.12	2.17	2.14	2.14	2.12	2.54	2.22	24	
13	2.20	2.14	2.12	2.12	2.12	2.12	2.12	2.11	2.12	2.12	2.12	2.12	2.11	2.10	2.10	2.09	2.64	2.78	S	2.20	2.23	2.23	2.17	2.12	2.09	2.78	2.19	24	
14	2.29	2.29	2.23	2.20	2.08	2.09	2.08	2.07	2.09	2.17	C	C	C	C	3.36	2.21	2.17	2.21	2.17	2.17	2.17	2.20	S	2.27	2.07	2.36	2.19	24	
15	2.23	2.24	2.26	2.29	2.29	2.26	2.26	2.23	2.23	2.21	2.21	2.20	2.18	2.18	2.23	2.20	2.23	2.26	2.21	2.32	2.24	S	2.26	2.32	2.18	2.32	2.24	24	
16	2.35	2.38	2.42	2.57	2.38	2.51	2.41	2.44	2.45	2.44	2.38	2.35	2.33	2.24	2.23	2.23	2.23	2.23	2.23	2.23	S	2.29	2.48	2.46	2.23	2.57	2.36	24	
17	2.41	2.44	2.45	2.44	2.60	2.66	2.67	2.52	2.46	2.41	2.38	2.38	2.38	2.29	2.23	2.23	2.23	2.23	2.21	S	2.24	2.51	2.52	2.45	2.21	2.67	2.41	24	
18	2.49	2.63	2.45	2.63	2.70	2.58	2.82	2.54	2.46	2.45	2.38	2.29	2.31	2.26	2.23	2.23	2.23	2.21	S	2.23	2.23	2.26	2.26	2.26	2.21	2.82	2.40	24	
19	2.26	2.24	2.23	2.23	2.26	2.28	2.29	2.27	2.29	2.24	2.26	2.23	2.20	2.15	2.12	2.20	2.10	S	2.11	2.12	2.17	2.48	2.14	2.15	2.10	2.48	2.22	24	
20	2.33	2.29	2.35	2.41	2.29	2.32	2.20	2.18	2.23	2.23	2.26	2.26	2.24	2.26	2.24	2.23	S	2.23	2.21	2.21	2.17	2.20	2.18	2.20	2.21	2.23	2.21	24	
21	2.26	2.25	2.28	2.29	2.29	2.32	2.29	2.24	2.21	2.26	2.21	2.24	2.21	2.20	2.21	S	2.18	2.23	2.26	2.20	2.21	2.23	2.20	2.20	2.18	2.32	2.24	24	
22	2.20	2.21	2.23	2.23	2.23	2.21	2.21	2.21	2.21	2.21	2.23	2.23	2.21	2.20	S	2.17	2.18	2.18	2.20	2.21	2.21	2.20	2.18	2.20	2.17	2.23	2.21	24	
23	2.20	2.23	2.23	2.23	2.18	2.20	2.20	2.20	2.24	2.29	2.20	2.23	2.23	S	2.23	2.21	2.21	2.17	2.20	2.18	2.20	2.20	2.21	2.23	2.17	2.29	2.21	24	
24	2.29	2.21	2.20	2.18	2.20	2.18	2.18	2.24	2.24	2.23	2.20	2.18	S	2.20	2.21	2.20	2.17	2.17	2.20	2.21	2.21	2.18	2.17	2.17	2.17	2.29	2.20	24	
25	2.20	2.23	2.23	2.23	2.24	2.20	2.20	2.18	2.21	2.20	S	2.17	2.18	2.20	2.20	2.24	2.23	2.23	2.24	2.24	2.24	2.26	2.29	2.17	2.29	2.22	24		
26	2.26	2.23	2.24	2.32	2.32	2.32	2.32	2.31	2.35	2.35	S	2.33	2.33	2.20	2.20	2.18	2.17	2.17	2.20	2.23	2.21	2.23	2.29	2.33	2.17	2.35	2.26	24	
27	2.49	2.39	2.46	2.44	2.57	2.51	2.38	2.32	2.31	S	2.26	2.23	2.20	2.20	2.20	2.21	2.20	2.23	2.23	2.23	2.24	2.26	2.30	2.32	2.20	2.57	2.31	24	
28	2.35	2.44	2.41	2.39	2.45	2.41	2.45	Q	Q	Q	2.23	2.23	2.20	2.23	2.26	2.24	2.23	2.23	2.18	2.23	2.26	S	2.35	2.18	2.45	2.30	24		
29	2.32	2.33	2.32	2.31	2.28	2.28	2.26	2.26	2.23	2.21	2.20	2.17	2.20	2.21	2.20	2.20	2.18	2.17	2.17	2.18	2.26	S	2.23	2.23	2.17	2.33	2.23	24	
30	2.29	2.29	2.39	2.46	2.29	2.38	2.41	2.46	2.44	2.35	2.29	2.26	2.26	2.33	2.36	2.23	2.23	2.20	2.20	2.20	S	2.23	2.23	2.29	2.20	2.46	2.31	24	
HOURLY MAX	2.49	2.63	2.46	2.63	2.70	2.66	2.82	2.54	2.46	2.52	2.54	2.38	2.38	2.33	2.36	2.26	2.64	3.51	3.63	2.42	2.32	2.51	2.52	2.46					
HOURLY AVG	2.25	2.27	2.27	2.30	2.28	2.28	2.29	2.26	2.26	2.25	2.23	2.21	2.20	2.18	2.19	2.18	2.19	2.25	2.24	2.21	2.21	2.23	2.23	2.24					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	682
MAXIMUM INSTANTANEOUS VALUE:	3.63 PPM @ HOUR(S) 18 ON DAY(S) 2
VAR-VARIOUS	
IZS CALIBRATION TIME:	31 HRS
MONTHLY CALIBRATION TIME:	4 HRS
STANDARD DEVIATION:	0.13
OPERATIONAL TIME:	720 HRS

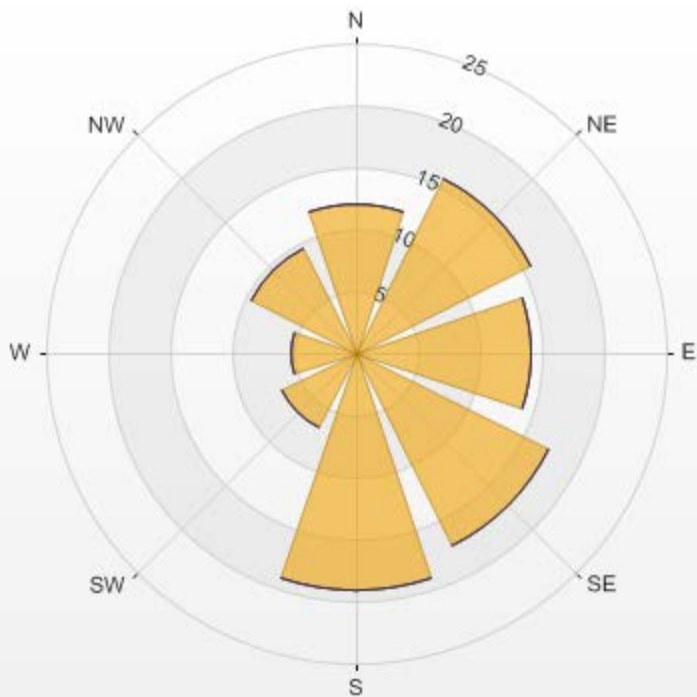
THC MAX[ppm] Station: LICA MASKWA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— THC MAX[ppm]

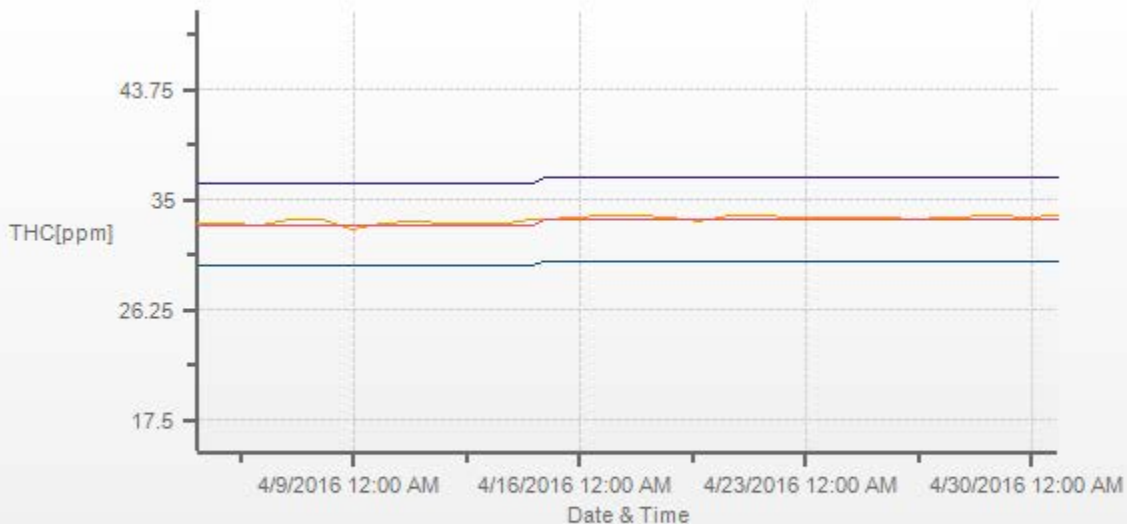
Wind: LICA MASKWA Monitor: THC [ppm] Monthly: 04/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.31% Calm Avg: 0.00

Direction	0.5-3.0	3.0-10.0	10.0-50.0	>50.0	Total
N	12.08	0	0	0	12.08
NE	15.76	0	0	0	15.76
E	14.14	0	0	0	14.14
SE	17.38	0	0	0	17.38
S	19.15	0	0	0	19.15
SW	6.77	0	0	0	6.77
W	5.3	0	0	0	5.3
NW	9.43	0	0	0	9.43
Summary	100	0	0	0	100



% Icon Classes (ppm) 100 0.5-3.0 0 3.0-10.0 0 10.0-50.0 0 >50.0

THC[ppm] Calibration: LICA MASKWA Monthly: 04/2016 Type: Span



Span Meas

Span Ref

-10%

+10%

OXIDES OF NITROGEN

OXIDES OF NITROGEN (NOx) hourly averages in ppb

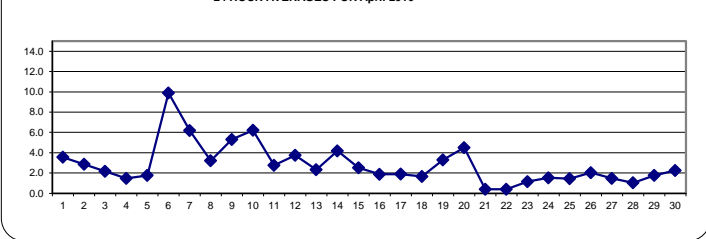
MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR		
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.	
DAY 1	1.2	1.7	2.4	4.0	3.2	10.3	12.2	S	3.8	2.6	2.9	3.6	6.2	4.0	0.7	1.1	2.4	1.1	0.8	2.7	4.3	0.7	5.5	4.3	0.7	12.2	3.6	24	
2	1.3	0.3	0.6	1.3	1.1	0.5	S	3.9	6.1	4.4	4.3	2.3	1.2	0.7	0.8	0.5	0.0	16.6	14.6	4.6	0.5	0.2	0.0	0.0	0.0	0.0	16.6	2.9	24
3	0.0	0.0	0.0	2.8	10.2	S	4.9	9.1	2.3	1.5	1.3	3.8	4.2	1.4	0.6	0.9	0.8	1.5	1.3	0.8	0.6	0.6	0.6	0.6	0.0	10.2	2.2	24	
4	0.6	0.6	0.6	1.0	S	2.1	1.6	2.1	2.2	2.0	3.6	2.2	2.6	1.6	2.7	0.7	0.6	0.6	1.2	2.7	0.6	0.7	0.6	0.6	0.6	0.6	3.6	1.5	24
5	0.5	0.6	0.2	S	2.1	0.9	0.6	0.6	1.0	2.5	2.3	0.7	1.3	1.2	1.6	2.0	1.4	1.6	2.6	2.1	1.7	3.3	2.9	6.7	0.2	6.7	1.8	24	
6	3.2	2.9	S	4.5	1.8	1.2	1.3	2.7	5.5	11.8	16.9	17.6	7.0	7.1	13.2	5.2	9.8	14.1	19.9	17.5	12.4	13.6	25.8	12.7	1.2	25.8	9.9	24	
7	12.2	S	11.5	13.2	5.2	15.3	7.2	7.1	9.0	4.7	5.5	6.1	4.4	3.7	4.4	6.2	4.5	11.2	4.5	0.9	0.7	2.0	0.8	2.1	0.7	15.3	6.2	24	
8	S	2.4	4.4	4.3	4.5	7.6	5.9	3.4	3.1	3.2	3.6	4.3	3.6	3.8	1.4	0.6	0.6	0.6	0.7	0.6	3.1	7.8	1.3	S	0.6	7.8	3.2	24	
9	3.6	1.8	1.5	2.1	2.6	1.7	9.1	6.4	3.9	3.6	6.0	6.5	12.3	3.9	3.8	5.4	6.0	4.6	5.5	4.6	7.1	9.4	S	10.6	1.5	12.3	5.3	24	
10	7.6	8.5	10.4	8.7	9.2	15.6	12.6	17.2	13.3	5.3	4.7	6.4	3.5	5.8	3.3	1.7	1.5	1.7	1.3	0.5	0.0	S	1.9	2.0	0.0	17.2	6.2	24	
11	3.7	0.8	4.0	13.2	7.2	4.9	2.1	2.5	2.7	2.4	1.3	0.8	0.7	0.7	0.4	0.2	0.7	6.0	1.5	S	2.7	2.6	1.4	0.2	13.2	2.7	24		
12	0.7	0.8	0.7	0.3	0.2	0.3	3.4	2.2	9.1	32.9	13.5	3.3	2.4	1.8	1.6	1.7	1.4	1.2	1.4	S	3.0	1.8	1.3	1.2	0.2	32.9	3.7	24	
13	0.9	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.9	1.3	5.2	4.8	2.6	4.2	2.3	3.0	8.0	S	2.9	2.8	2.2	6.4	1.2	0.6	8.0	2.3	24	
14	7.1	11.2	12.6	3.8	0.9	2.6	1.2	1.0	0.8	0.7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	0.7	12.6	4.2	10
15	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	C	C	C	C	C	2.1	4.3	1.8	S	2.7	1.7	1.7	1.7	4.3	2.5	12	
16	2.1	2.0	2.1	1.3	0.9	0.9	2.6	2.9	2.2	2.3	1.9	1.9	1.3	1.2	1.1	1.1	1.1	1.2	1.6	1.1	S	4.1	2.9	3.2	0.9	4.1	1.9	24	
17	2.7	2.1	2.4	2.3	1.7	1.6	1.5	2.7	3.0	2.5	1.8	2.4	2.3	1.3	0.9	1.0	1.1	1.0	1.1	S	3.1	1.8	1.6	1.5	0.9	3.1	1.9	24	
18	1.1	1.2	1.1	0.6	0.7	1.8	2.0	4.7	3.6	3.4	2.9	1.2	1.2	0.8	0.9	0.7	0.6	0.6	S	2.5	1.7	1.7	1.5	1.8	0.6	4.7	1.7	24	
19	1.8	1.8	1.8	1.8	1.8	2.9	3.1	2.9	3.7	4.8	4.0	2.7	3.4	1.1	1.0	0.6	0.6	S	2.7	2.6	8.4	21.1	0.9	0.4	0.4	21.1	3.3	24	
20	1.9	9.5	19.1	31.5	11.7	15.1	1.9	0.8	3.1	0.9	1.1	1.0	0.8	0.6	0.5	0.5	S	2.3	0.9	0.2	0.1	0.1	0.1	0.0	0.0	31.5	4.5	24	
21	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.7	0.3	1.0	0.0	0.0	0.0	0.0	0.1	S	2.5	1.8	2.3	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.4	24	
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	1.6	0.2	S	1.8	0.8	0.2	0.2	0.3	0.7	1.5	0.3	0.3	0.0	1.8	0.4	24	
23	0.3	0.1	0.8	0.7	0.0	0.0	0.0	1.6	1.7	1.3	3.6	2.7	S	4.0	1.5	1.7	1.2	1.0	0.7	0.8	0.9	1.0	0.9	0.0	4.0	1.2	24		
24	1.6	0.4	0.5	0.4	0.4	0.5	0.9	1.1	3.5	2.6	1.1	0.4	S	4.7	4.0	4.4	1.0	1.0	2.0	1.0	1.5	0.5	0.7	0.8	0.4	4.7	1.5	24	
25	1.2	1.4	1.1	1.0	1.7	0.6	0.6	0.6	0.6	2.4	3.4	S	2.8	2.0	1.5	1.6	1.7	1.2	1.2	1.2	1.2	1.3	1.2	1.6	0.6	3.4	1.4	24	
26	1.6	1.2	1.4	2.1	1.8	1.5	2.1	2.1	2.5	2.5	S	4.1	3.0	1.9	2.0	1.8	1.8	1.8	1.8	1.8	1.8	1.8	2.1	2.3	1.2	4.1	2.0	24	
27	1.4	0.9	0.6	0.6	0.4	1.3	2.1	2.9	2.1	S	3.2	2.1	1.8	1.8	1.3	2.3	0.9	0.9	1.2	1.2	1.2	1.2	1.2	1.0	0.4	3.2	1.5	24	
28	0.7	1.0	1.1	0.6	0.6	0.6	0.7	Q	Q	Q	Q	Q	Q	0.6	0.6	0.7	0.9	0.8	0.7	0.6	0.6	1.2	1.9	S	4.7	0.6	4.7	1.0	24
29	4.0	4.1	2.8	1.7	1.7	1.9	2.5	2.9	2.7	1.6	1.4	0.6	0.5	0.7	0.7	0.4	0.5	0.4	0.4	0.6	2.7	S	3.7	2.0	0.4	4.1	1.8	24	
30	3.0	3.3	3.2	2.4	1.3	2.0	2.2	3.5	3.6	2.4	2.1	1.7	1.2	1.4	2.2	2.1	1.4	1.2	1.2	1.2	S	4.0	2.4	2.6	1.2	4.0	2.2	24	
HOURLY MAX	12.2	11.2	19.1	31.5	11.7	15.6	12.6	17.2	13.3	32.9	16.9	17.6	12.3	7.1	13.2	6.2	9.8	16.6	19.9	17.5	12.4	21.1	25.8	12.7					
HOURLY AVG	2.4	2.2	3.1	3.8	2.6	3.4	3.0	3.2	3.4	3.9	3.5	3.3	2.9	2.1	2.2	1.8	1.8	2.9	3.0	2.3	2.4	3.3	2.7	2.4					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

24 HOUR AVERAGES FOR April 2016



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	617				
MINIMUM 1-HR AVERAGE:	0.0	PPB @ HOUR(S)	VAR	ON DAY(S)	VAR
MAXIMUM 1-HR AVERAGE:	32.9	PPB @ HOUR(S)	9	ON DAY(S)	12
MAXIMUM 24-HR AVERAGE:	9.9	PPB		ON DAY(S)	6
				VAR-VARIOUS	
IZS CALIBRATION TIME:	30	HRS	OPERATIONAL TIME:	694	HRS
MONTHLY CALIBRATION TIME:	6	HRS	AMD OPERATION UPTIME:	96.4	%
STANDARD DEVIATION:	3.77		MONTHLY AVERAGE:	2.8	PPB

NOX[ppb] Station: LICA MASKWA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— NOX[ppb]



OXIDES OF NITROGEN MAX instantaneous maximum in ppb

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.	
HOUR START	HOUR END	0:00	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
DAY 1		1.2	2.4	3.0	6.5	6.5	24.1	35.2	S	6.4	3.5	5.3	6.5	13.5	11.2	1.8	8.2	8.2	3.0	1.2	13.5	16.4	2.4	11.2	10.6	1.2	35.2	8.8	24	
2		5.3	0.6	0.6	1.8	1.8	0.6	S	4.7	7.1	5.9	9.4	7.1	1.2	1.2	7.1	0.6	0.6	42.8	29.9	42.2	0.6	0.6	0.0	0.0	0.0	42.8	7.5	24	
3		0.0	0.1	0.0	7.6	18.8	S	11.2	20.0	8.2	3.0	1.8	24.1	23.5	3.5	1.8	2.4	3.0	1.8	2.4	1.8	1.2	1.2	0.6	0.6	0.0	24.1	6.0	24	
4		0.6	0.6	0.6	1.2	S	4.1	2.4	2.4	2.4	2.4	5.3	4.7	4.1	4.1	5.9	1.2	0.6	0.6	5.9	8.2	0.6	1.8	0.6	0.6	0.6	8.2	2.6	24	
5		0.6	0.6	0.6	S	3.6	1.2	0.6	0.6	2.4	7.6	7.1	1.3	1.8	1.8	3.0	2.4	2.4	2.4	3.0	2.4	2.4	4.7	8.2	11.2	0.6	11.2	3.1	24	
6		3.5	3.0	S	6.4	3.5	1.2	2.4	8.2	11.2	21.1	32.2	29.3	14.6	14.1	20.5	18.2	24.1	27.6	31.7	28.7	18.8	37.0	65.1	16.4	1.2	65.1	19.1	24	
7		19.4	S	23.5	22.9	21.2	34.0	16.4	13.0	26.4	7.6	8.2	9.4	7.1	7.6	8.2	12.4	6.5	29.3	21.2	3.0	3.5	4.1	2.4	4.7	2.4	34.0	13.6	24	
8		S	4.7	7.6	6.5	7.0	8.8	7.6	5.3	7.1	5.9	5.3	5.9	5.9	6.5	3.0	0.6	0.6	0.6	0.6	1.2	0.6	5.9	9.4	5.9	S	0.6	9.4	5.1	24
9		5.3	3.0	2.4	4.7	6.4	1.8	25.3	23.5	5.3	8.2	9.4	32.2	40.4	8.2	8.2	13.5	12.9	6.5	8.2	5.9	10.0	22.3	S	12.4	1.8	40.4	12.0	24	
10		12.4	11.8	34.6	14.1	17.0	30.5	36.4	32.9	25.2	8.8	9.4	20.0	10.6	22.9	5.9	4.7	3.0	3.0	4.7	1.8	0.6	S	4.1	4.7	0.6	36.4	13.9	24	
11		7.6	1.8	28.2	25.2	48.7	20.5	3.0	3.6	3.6	3.6	2.4	1.3	1.2	1.2	1.2	1.3	1.2	1.8	13.5	3.6	S	6.4	5.9	2.4	1.2	48.7	8.2	24	
12		1.8	1.2	1.2	1.2	0.6	0.6	28.1	4.1	19.4	48.1	44.5	4.1	3.0	2.4	1.8	2.4	1.8	1.2	2.4	S	5.9	1.8	1.8	1.2	0.6	48.1	7.9	24	
13		1.2	0.6	0.6	0.6	0.6	0.6	0.6	0.6	1.2	1.2	2.4	18.8	17.6	3.0	6.5	3.5	4.1	22.3	S	3.5	3.5	11.2	18.2	1.2	0.6	22.3	5.4	24	
14		14.1	21.2	25.3	13.5	3.5	5.9	1.2	1.8	1.8	1.2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1.2	25.3	9.0	10
15		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	C	C	C	C	C	C	C	4.1	7.7	6.5	S	5.3	3.0	3.0	7.7	5.3	12
16		3.0	3.0	3.0	2.4	1.2	1.8	3.6	3.6	3.0	3.5	3.5	2.4	1.8	1.8	1.8	1.3	1.3	1.2	1.8	1.2	S	5.3	5.3	4.1	1.2	5.3	2.6	24	
17		3.0	2.4	2.4	2.4	2.4	2.4	1.8	3.0	3.5	3.5	2.4	2.4	3.0	1.8	1.2	1.2	1.2	1.2	1.2	1.2	S	4.7	2.4	1.8	1.8	1.2	4.7	2.3	24
18		1.2	1.2	1.2	1.2	1.2	3.6	4.7	19.4	4.1	4.1	11.8	1.8	1.2	1.2	1.8	1.2	1.2	0.6	S	4.7	1.8	1.8	1.8	1.8	0.6	19.4	3.2	24	
19		1.8	1.8	1.8	1.8	1.8	3.5	3.5	3.5	5.3	5.3	4.7	4.7	13.5	2.4	2.4	1.2	0.6	S	5.3	8.8	39.3	51.0	8.8	0.6	0.6	51.0	7.5	24	
20		18.2	21.2	34.6	41.6	26.3	28.7	3.0	1.8	13.5	1.8	1.8	1.8	1.3	1.2	1.2	1.2	S	4.7	1.8	1.2	0.6	0.6	0.6	0.6	0.6	41.6	9.1	24	
21		0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	3.0	1.8	4.1	0.6	1.2	1.2	0.6	1.2	S	5.9	3.5	7.1	1.2	0.6	0.6	0.6	0.6	7.1	1.7	24	
22		0.6	0.6	0.6	0.6	0.0	0.6	0.6	0.1	0.1	0.6	1.8	3.6	4.1	3.0	S	4.7	1.2	1.2	0.6	1.2	1.8	3.0	0.6	0.6	0.0	4.7	1.4	24	
23		0.6	0.6	2.4	3.0	0.6	0.6	0.6	0.6	3.0	4.7	2.4	8.8	4.7	S	5.9	3.0	4.1	3.0	1.8	1.2	1.2	2.4	1.3	1.2	0.6	8.8	2.5	24	
24		3.0	0.6	1.3	1.2	1.2	1.2	1.2	5.3	6.4	9.4	3.0	0.6	S	7.6	8.8	7.1	1.8	1.2	4.7	4.1	6.5	0.6	1.2	1.2	0.6	9.4	3.4	24	
25		1.8	1.8	1.8	1.8	3.6	1.2	1.2	0.6	0.6	5.9	5.3	S	4.1	2.4	1.8	3.5	1.8	1.8	1.2	1.2	1.2	1.8	1.2	1.8	0.6	5.9	2.1	24	
26		1.8	1.2	2.4	2.4	2.4	1.8	3.0	3.0	3.0	3.0	S	4.7	4.1	2.4	2.4	1.8	1.8	1.8	1.8	1.8	1.8	1.8	2.4	2.4	1.2	4.7	2.4	24	
27		1.8	1.8	0.6	0.6	0.6	3.0	3.0	3.6	3.0	S	4.1	3.0	2.4	3.0	5.9	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	0.6	5.9	2.1	24	
28		1.2	1.2	1.2	1.2	0.6	0.6	1.2	Q	Q	Q	Q	Q	1.3	1.2	1.3	1.2	1.3	1.2	0.6	0.6	1.8	2.4	S	5.9	0.6	5.9	1.4	24	
29		4.7	4.7	4.1	2.4	1.8	2.4	3.0	3.6	3.0	3.0	1.8	1.2	1.2	1.2	1.3	0.6	1.2	1.2	0.6	1.8	3.5	S	7.1	3.0	0.6	7.1	2.5	24	
30		3.5	4.1	3.6	3.0	1.8	5.3	4.1	4.1	5.3	3.0	2.4	2.4	1.8	1.8	14.6	8.8	1.8	1.3	1.2	1.8	S	6.4	3.0	3.0	1.2	14.6	3.8	24	
HOURLY MAX		19.4	21.2	34.6	41.6	48.7	34.0	36.4	32.9	26.4	48.1	44.5	32.2	40.4	22.9	20.5	18.2	24.1	42.8	31.7	42.2	39.3	51.0	65.1	16.4					
HOURLY AVG		4.3	3.5	6.8	6.4	6.6	6.8	7.3	6.5	6.5	6.7	7.2	7.8	7.0	4.4	4.6	4.2	3.5	6.2	5.9	5.7	5.5	7.1	6.2	3.5					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	648
MAXIMUM INSTANTANEOUS VALUE:	65.1 PPB @ HOUR(S) 22 ON DAY(S) 6
	VAR-VARIOUS
IZS CALIBRATION TIME:	30 HRS
MONTHLY CALIBRATION TIME:	6 HRS
STANDARD DEVIATION:	8.61
OPERATIONAL TIME:	694 HRS

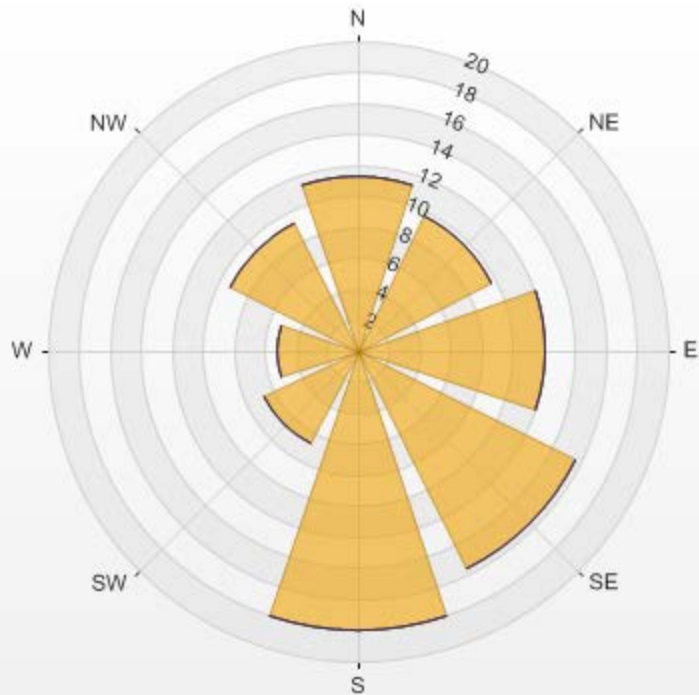
NOX MAX[ppb] Station: LICA MASKWA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— NOX MAX[ppb]

Wind: LICA MASKWA Monitor: NOX [ppb] Monthly: 04/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 12.00% Valid Data: 90.28% Calm Avg: 0.00

Direction	0.5-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	11.23	0	0	0	11.23
NE	9.69	0	0	0	9.69
E	12.15	0	0	0	12.15
SE	15.69	0	0	0	15.69
S	18	0	0	0	18
SW	6.77	0	0	0	6.77
W	5.23	0	0	0	5.23
NW	9.23	0	0	0	9.23
Summary	87.99	0	0	0	87.99



% Icon Classes (ppb)	88	0	0	0	0
	 0.5-50.0	 50.0-110.0	 110.0-210.0	 >210.0	

NOX[ppb] Calibration: LICA MASKWA Monthly: 04/2016 Type: Span



Span Meas Span Ref -10% +10%

NITRIC OXIDES

NITRIC OXIDE (NO) hourly averages in ppb

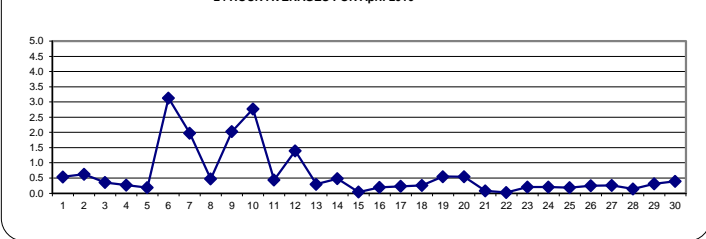
MST

DAY	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.	
1	0.0	0.0	0.0	0.0	0.0	0.6	2.6	S	0.5	0.6	1.0	1.4	2.5	1.7	0.1	0.3	0.8	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	2.6	0.5	24
2	0.0	0.0	0.0	0.0	0.0	0.0	S	0.7	1.9	1.5	1.4	0.7	0.2	0.0	0.2	0.0	0.0	4.8	2.4	0.6	0.0	0.0	0.0	0.0	0.0	0.0	4.8	0.6	24
3	0.0	0.0	0.0	0.0	1.7	S	0.2	1.7	0.3	0.1	0.2	0.9	1.4	0.5	0.1	0.3	0.2	0.1	0.1	0.0	0.0	0.2	0.0	0.1	0.0	0.1	1.7	0.4	24
4	0.0	0.0	0.0	0.1	S	0.0	0.2	0.6	0.6	0.6	1.3	0.7	0.5	0.4	0.7	0.3	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	1.3	0.3	24
5	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.2	0.6	0.6	0.1	0.4	0.4	0.6	0.6	0.2	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.2	24
6	0.0	0.0	S	0.0	0.0	0.0	0.1	0.8	1.4	4.8	7.9	9.4	3.6	3.5	6.2	2.2	3.5	4.6	4.9	3.1	1.4	1.7	8.2	4.7	0.0	9.4	3.1	24	
7	4.6	S	1.8	1.3	0.5	4.6	1.5	2.9	4.7	2.2	2.4	2.7	2.0	1.6	1.4	2.6	1.7	3.4	1.5	0.1	0.2	0.9	0.4	0.5	0.1	4.7	2.0	24	
8	S	0.1	0.1	0.0	0.2	0.6	0.8	0.6	0.7	0.7	1.3	1.5	1.3	1.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.2	S	0.0	1.5	0.5	24	
9	0.1	0.1	0.0	0.3	0.3	0.0	2.1	2.1	1.8	1.7	2.8	2.7	4.8	1.4	1.6	2.7	3.3	2.5	2.9	1.7	3.2	4.3	S	4.2	0.0	4.8	2.0	24	
10	3.4	3.6	4.0	3.4	3.6	6.6	5.5	8.7	7.1	2.9	2.6	3.4	1.7	2.7	1.6	0.8	0.7	0.7	0.3	0.2	0.0	S	0.1	0.1	0.0	8.7	2.8	24	
11	0.4	0.0	0.7	1.6	0.9	0.8	0.5	0.6	1.0	1.1	0.6	0.3	0.4	0.3	0.5	0.0	0.0	0.0	0.4	0.0	S	0.0	0.0	0.0	0.0	0.0	1.6	0.4	24
12	0.0	0.0	0.0	0.1	0.0	0.0	1.2	0.8	3.6	17.5	6.2	1.0	0.6	0.2	0.6	0.2	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	17.5	1.4	24
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.6	1.1	0.5	0.7	0.2	0.1	1.6	S	0.0	0.0	0.2	0.6	0.0	0.0	1.6	0.3	24	
14	0.3	1.1	2.4	0.3	0.0	0.2	0.1	0.1	0.2	0.1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	0.0	2.4	0.5	10
15	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	C	C	C	C	C	C	0.1	0.0	0.0	S	0.0	0.1	0.0	0.1	0.0	0.1	12
16	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.7	0.6	0.7	0.6	0.6	0.2	0.2	0.2	0.0	0.0	0.0	0.1	0.0	S	0.0	0.1	0.1	0.0	0.7	0.2	24	
17	0.0	0.0	0.0	0.0	0.0	0.4	0.6	0.6	0.8	0.7	0.6	0.6	0.4	0.4	0.0	0.0	0.1	0.1	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.2	24
18	0.0	0.0	0.0	0.0	0.0	0.2	0.5	1.2	1.0	1.0	0.9	0.2	0.1	0.1	0.2	0.1	0.4	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.3	24
19	0.0	0.1	0.0	0.1	0.3	0.5	0.5	0.6	1.0	1.2	1.2	0.7	1.0	0.3	0.4	0.1	0.0	S	0.2	0.1	1.0	3.3	0.0	0.0	0.0	3.3	0.5	24	
20	0.1	0.0	1.1	3.0	0.8	1.5	0.5	0.4	1.2	0.5	0.6	0.6	0.6	0.5	0.5	0.5	S	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	3.0	0.5	24	
21	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.4	0.3	0.6	0.0	0.0	0.0	0.0	0.1	S	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.1	24	
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	24
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.6	0.4	1.1	0.8	S	0.4	0.2	0.3	0.1	0.2	0.1	0.2	0.1	0.0	0.0	0.1	0.0	1.1	0.2	24	
24	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.2	0.6	0.6	0.4	0.0	S	0.6	0.4	0.6	0.2	0.4	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.6	0.2	24	
25	0.1	0.1	0.0	0.1	0.2	0.0	0.0	0.1	0.2	0.7	1.0	S	0.1	0.3	0.2	0.3	0.1	0.0	0.0	0.2	0.2	0.3	0.0	0.1	0.0	1.0	0.2	24	
26	0.3	0.0	0.0	0.1	0.1	0.0	0.2	0.2	0.6	0.6	S	0.6	0.5	0.3	0.6	0.5	0.6	0.2	0.2	0.0	0.0	0.0	0.0	0.2	0.0	0.6	0.3	24	
27	0.1	0.1	0.2	0.0	0.0	0.7	0.6	0.6	0.7	S	0.5	0.3	0.3	0.2	0.2	0.5	0.0	0.2	0.2	0.0	0.1	0.2	0.2	0.0	0.0	0.7	0.3	24	
28	0.1	0.2	0.2	0.1	0.1	0.3	0.3	Q	Q	Q	Q	Q	Q	0.1	0.2	0.0	0.2	0.0	0.3	0.1	0.1	0.0	0.1	S	0.1	0.0	0.3	0.1	24
29	0.1	0.2	0.2	0.3	0.3	0.1	0.6	0.6	0.6	0.5	0.6	0.1	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3	S	0.0	0.0	0.0	0.6	0.3	24	
30	0.3	0.2	0.6	0.4	0.2	0.2	0.6	0.6	0.8	0.6	0.6	0.5	0.5	0.4	0.8	0.4	0.4	0.5	0.3	0.0	S	0.0	0.0	0.1	0.0	0.8	0.4	24	
HOURLY MAX	4.6	3.6	4.0	3.4	3.6	6.6	5.5	8.7	7.1	17.5	7.9	9.4	4.8	3.5	6.2	2.7	3.5	4.8	4.9	3.1	3.2	4.3	8.2	4.7					
HOURLY AVG	0.4	0.2	0.4	0.4	0.3	0.6	0.7	1.0	1.2	1.6	1.4	1.2	1.0	0.7	0.7	0.5	0.5	0.8	0.6	0.3	0.3	0.4	0.4	0.4					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

24 HOUR AVERAGES FOR April 2016



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	420				
MINIMUM 1-HR AVERAGE:	0.0	PPB @ HOUR(S)	VAR	ON DAY(S)	VAR
MAXIMUM 1-HR AVERAGE:	17.5	PPB @ HOUR(S)	9	ON DAY(S)	12
MAXIMUM 24-HR AVERAGE:	3.1	PPB		ON DAY(S)	6
				VAR-VARIOUS	
IZS CALIBRATION TIME:	30	HRS	OPERATIONAL TIME:	694	HRS
MONTHLY CALIBRATION TIME:	6	HRS	AMD OPERATION UPTIME:	96.4	%
STANDARD DEVIATION:	1.38		MONTHLY AVERAGE:	0.7	PPB

NO[ppb] Station: LICA MASKWA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— NO[ppb]



NITRIC OXIDE MAX instantaneous maximum in ppb

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR		
DAY	MIN.	MAX.	AVG.	RDGS.																										
1	0.0	0.0	0.0	0.0	0.0	1.7	12.2	S	0.5	0.5	2.3	2.8	5.7	4.6	0.5	2.8	2.8	0.5	0.0	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.0	12.2	1.7	24
2	0.0	0.0	0.0	0.0	0.0	0.0	S	1.1	2.3	1.7	3.3	2.3	0.5	0.0	3.9	0.0	0.0	14.5	8.7	9.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.5	2.1	24
3	0.0	0.0	0.0	0.5	4.5	S	0.5	8.6	1.7	0.5	0.5	9.3	10.5	1.7	0.5	1.1	1.1	0.5	0.5	0.0	0.0	0.5	0.0	0.5	0.0	0.5	0.0	10.5	1.9	24
4	0.0	0.5	0.0	0.5	S	0.0	0.5	0.5	0.5	1.1	1.7	1.7	1.1	1.1	1.1	0.5	0.5	0.0	0.5	0.5	0.5	0.5	0.0	0.5	0.0	0.0	1.7	0.6	24	
5	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.5	1.7	1.7	0.5	0.5	1.1	0.5	0.5	0.5	0.5	0.5	0.5	0.0	0.5	0.5	0.0	0.0	0.0	1.7	0.4	24	
6	0.0	0.0	S	0.0	0.0	0.5	0.5	2.3	3.4	9.9	17.4	15.1	7.5	7.5	9.3	8.1	8.7	9.9	9.9	6.3	2.8	12.2	35.6	6.9	0.0	35.6	7.6	24		
7	8.1	S	6.9	6.9	5.1	13.4	2.8	6.3	15.7	3.9	3.4	3.9	3.4	3.3	2.8	5.7	2.8	8.6	9.9	0.5	1.7	1.7	1.1	1.1	0.5	15.7	5.2	24		
8	S	0.5	0.5	0.0	0.5	0.5	1.1	1.1	1.7	1.1	1.7	2.3	1.7	2.3	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	S	0.0	2.3	0.8	24		
9	0.5	0.5	0.0	1.1	1.1	0.5	10.5	9.9	2.3	3.4	4.6	17.4	18.7	2.8	3.4	7.5	6.9	3.4	3.9	2.3	4.5	18.0	S	5.7	0.0	18.7	5.6	24		
10	5.7	5.1	14.0	5.1	8.6	11.1	16.8	18.0	11.0	4.6	5.7	12.2	4.5	9.3	3.4	2.3	1.1	1.1	1.1	0.5	0.5	S	0.5	0.5	0.5	18.0	6.2	24		
11	1.1	0.0	5.7	3.4	11.7	2.8	0.5	1.1	1.1	1.1	1.1	0.5	0.5	0.5	0.5	0.0	0.0	1.1	0.0	S	0.0	0.5	0.0	0.0	0.0	11.7	1.5	24		
12	0.0	0.0	0.5	0.5	0.0	0.0	15.1	1.1	8.6	27.4	24.5	1.1	0.5	0.5	0.5	0.5	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	27.4	3.5	24		
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	5.7	5.1	0.5	1.1	0.5	0.5	6.9	S	0.0	0.0	1.7	2.8	0.0	0.0	6.9	1.1	24		
14	1.1	5.1	5.7	1.7	0.0	1.1	0.5	0.5	1.1	0.5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	0.0	5.7	1.7	10	
15	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	0.0	0.5	0.2	12	
16	0.5	0.0	0.0	0.0	0.0	0.0	0.5	1.1	0.5	1.1	1.1	0.5	0.5	1.1	1.1	0.5	0.0	0.5	0.5	0.0	S	0.0	0.5	0.5	0.0	1.1	0.5	24		
17	0.0	0.0	0.0	0.5	0.5	0.5	0.5	1.1	1.1	1.1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	S	0.0	0.0	0.0	0.0	0.0	1.1	0.4	24		
18	0.0	0.0	0.0	0.0	0.0	0.5	1.1	6.3	1.1	1.1	8.6	0.5	0.5	0.5	0.5	0.5	0.5	0.0	S	0.0	0.4	0.0	0.0	0.0	0.0	8.6	1.0	24		
19	0.5	0.5	0.0	0.5	0.5	0.5	0.5	0.5	1.1	1.7	1.1	1.1	5.7	0.5	1.1	0.5	0.0	S	0.5	0.5	6.3	13.4	0.5	0.0	0.0	13.4	1.6	24		
20	0.5	0.5	2.8	5.8	2.3	3.4	0.5	0.5	4.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	S	0.5	0.5	0.0	0.5	0.0	0.5	0.5	0.0	5.8	1.2	24		
21	0.5	0.5	0.5	0.5	0.0	0.5	0.5	1.1	0.5	1.7	0.5	0.5	0.5	0.5	0.5	0.5	S	0.5	0.5	0.5	0.5	0.0	0.5	0.5	0.0	1.7	0.5	24		
22	0.0	0.5	0.0	0.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.1	1.1	1.1	S	0.0	0.5	0.0	0.5	0.5	0.5	0.5	0.5	0.5	0.0	1.1	0.5	24		
23	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.1	0.5	2.3	1.1	S	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	0.0	0.5	2.3	0.6	24		
24	0.0	0.0	0.0	0.5	0.5	0.0	0.0	1.1	1.1	1.7	0.5	0.5	S	1.1	1.1	0.5	0.5	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	1.7	0.5	24		
25	0.5	0.5	0.0	0.5	0.5	0.5	0.0	0.5	0.5	1.7	1.6	S	0.5	0.5	0.5	1.1	0.5	0.0	0.5	0.5	0.5	0.5	0.5	0.0	0.5	1.7	0.5	24		
26	0.5	0.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	S	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	0.5	0.5	0.5	24		
27	0.5	0.5	0.5	0.0	0.0	2.3	0.5	1.1	1.1	S	0.5	0.5	0.5	0.5	0.5	1.1	0.0	0.5	0.5	0.0	0.5	0.5	0.5	0.0	0.0	2.3	0.5	24		
28	0.5	0.5	0.5	0.5	0.5	0.5	0.5	Q	Q	Q	Q	Q	Q	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	S	0.5	0.5	0.5	24	
29	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	S	0.0	0.5	0.5	24		
30	0.5	0.5	0.5	0.5	0.5	0.5	1.1	1.1	1.7	0.5	0.5	0.5	0.5	0.5	0.5	9.9	1.6	0.5	0.5	0.5	0.5	0.5	S	0.5	0.5	0.5	9.9	1.1	24	
HOURLY MAX	8.1	5.1	14.0	6.9	11.7	13.4	16.8	18.0	15.7	27.4	24.5	17.4	18.7	9.3	9.9	8.1	8.7	14.5	9.9	9.3	6.3	18.0	35.6	6.9						
HOURLY AVG	0.8	0.6	1.4	1.1	1.4	1.5	2.5	2.5	2.3	2.7	3.3	3.2	2.7	1.6	1.8	1.4	1.1	1.9	1.6	0.9	0.8	2.0	1.7	0.7						

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	502				
MAXIMUM INSTANTANEOUS VALUE:	35.6	PPB	@ HOUR(S)	22	ON DAY(S) 6
					VAR-VARIOUS
IZS CALIBRATION TIME:	30	HRS	OPERATIONAL TIME:	694	HRS
MONTHLY CALIBRATION TIME:	6	HRS			
STANDARD DEVIATION:	3.58				

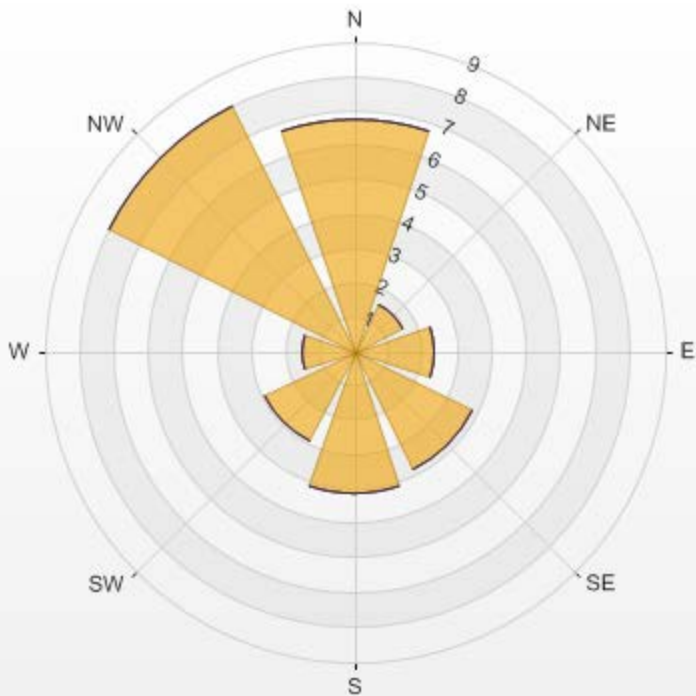
NO MAX[ppb] Station: LICA MASKWA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— NO MAX[ppb]

Wind: LICA MASKWA Monitor: NO [ppb] Monthly: 04/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 68.92% Valid Data: 90.28% Calm Avg: 0.00

Direction	0.5-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	6.77	0	0	0	6.77
NE	1.54	0	0	0	1.54
E	2.31	0	0	0	2.31
SE	3.85	0	0	0	3.85
S	4.15	0	0	0	4.15
SW	2.92	0	0	0	2.92
W	1.54	0	0	0	1.54
NW	8	0	0	0	8
Summary	31.08	0	0	0	31.08



% Icon Classes (ppb)	31	0	0	0	0
	0.5-50.0	50.0-110.0	110.0-210.0	>210.0	

NITROGEN DIOXIDE

NITROGEN DIOXIDE (NO2) hourly averages in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR		
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.	
DAY 1	1.2	1.7	2.4	4.0	3.2	9.8	9.6	S	3.3	2.0	2.0	2.2	3.7	2.4	0.6	0.9	1.6	1.0	0.8	2.6	4.2	0.7	5.4	4.3	0.6	9.8	3.0	24	
2	1.3	0.3	0.6	1.3	1.1	0.5	S	3.2	4.3	3.0	2.9	1.6	1.0	0.7	0.6	0.5	0.0	11.8	12.2	4.0	0.5	0.2	0.0	0.0	0.0	12.2	2.2	24	
3	0.0	0.0	0.0	2.8	8.6	S	4.8	7.4	2.0	1.4	1.1	2.8	2.7	0.9	0.5	0.6	0.7	0.7	1.5	1.3	0.8	0.4	0.6	0.5	0.0	8.6	1.8	24	
4	0.6	0.6	0.6	0.9	S	2.1	1.3	1.5	1.7	1.4	2.3	1.5	2.1	1.2	1.9	0.5	0.6	0.6	1.2	2.5	0.6	0.7	0.5	0.6	0.5	2.5	1.2	24	
5	0.5	0.6	0.2	S	2.1	0.9	0.6	0.6	0.9	2.0	1.7	0.6	0.9	0.8	1.0	1.5	1.2	1.2	2.4	2.1	1.7	3.3	2.9	6.7	0.2	6.7	1.6	24	
6	3.2	2.9	S	4.5	1.8	1.2	1.2	1.9	4.1	7.1	9.0	8.2	3.4	3.5	7.0	3.0	6.3	9.5	15.0	14.4	11.0	11.9	17.6	8.0	1.2	17.6	6.8	24	
7	7.6	S	9.7	12.0	4.7	10.7	5.8	4.2	4.3	2.5	3.1	3.4	2.4	2.1	3.0	3.6	2.8	7.8	3.0	0.8	0.5	1.1	0.4	1.5	0.4	12.0	4.2	24	
8	S	2.3	4.2	4.3	4.3	7.0	5.0	2.8	2.4	2.5	2.3	2.8	2.3	2.3	1.0	0.6	0.6	0.6	0.7	0.6	3.1	7.4	1.1	S	0.6	7.4	2.7	24	
9	3.5	1.7	1.5	1.8	2.2	1.6	6.9	4.2	2.1	1.9	3.2	3.8	7.6	2.5	2.2	2.6	2.8	2.1	2.6	2.9	3.9	5.1	S	6.3	1.5	7.6	3.3	24	
10	4.2	4.9	6.4	5.3	5.6	8.9	7.2	8.5	6.2	2.4	2.1	3.0	1.8	3.1	1.6	0.8	0.8	1.0	1.0	0.3	0.0	S	1.8	1.9	0.0	8.9	3.4	24	
11	3.3	0.8	3.3	11.7	6.3	4.1	1.5	1.9	1.8	1.3	0.7	0.4	0.3	0.5	0.2	0.4	0.2	0.7	5.6	1.5	S	2.7	2.5	1.4	0.2	11.7	2.3	24	
12	0.7	0.8	0.7	0.2	0.2	0.3	2.1	1.5	5.5	15.3	7.3	2.3	1.9	1.6	1.0	1.6	1.4	1.2	1.4	S	3.0	1.8	1.3	1.2	0.2	15.3	2.4	24	
13	0.9	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.8	1.0	3.7	3.7	2.1	3.5	2.1	2.8	6.4	S	2.9	2.8	2.0	5.7	1.1	0.6	6.4	2.0	24	
14	6.7	10.1	10.2	3.5	0.9	2.4	1.1	0.8	0.6	0.6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	0.6	10.2	3.7	10
15	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	C	C	C	C	C	C	2.1	4.3	1.8	S	2.7	1.7	1.7	4.3	2.5	12	
16	2.1	2.0	2.1	1.3	0.9	0.9	2.2	2.2	1.7	1.5	1.2	1.4	1.1	1.0	1.0	1.1	1.1	1.1	1.5	1.0	S	4.1	2.8	3.1	0.9	4.1	1.7	24	
17	2.7	2.1	2.4	2.3	1.7	1.2	1.0	2.1	2.3	1.8	1.2	1.8	1.9	0.9	0.9	1.0	1.0	0.9	1.1	S	3.1	1.8	1.6	1.5	0.9	3.1	1.7	24	
18	1.1	1.2	1.1	0.6	0.7	1.6	1.5	3.5	2.6	2.4	2.0	1.0	1.1	0.7	0.7	0.7	0.2	0.6	S	2.5	1.7	1.7	1.5	1.8	0.2	3.5	1.4	24	
19	1.7	1.6	1.8	1.7	1.5	2.4	2.6	2.3	2.7	3.5	2.8	1.9	2.4	0.8	0.6	0.6	0.6	S	2.5	2.5	7.4	17.8	0.9	0.4	0.4	17.8	2.7	24	
20	1.8	9.4	17.9	28.5	10.9	13.6	1.4	0.4	2.0	0.5	0.5	0.4	0.2	0.0	0.0	0.0	S	2.3	0.8	0.2	0.1	0.1	0.0	0.0	0.0	28.5	4.0	24	
21	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.3	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	S	2.4	1.6	2.2	0.0	0.0	0.0	0.0	0.0	2.4	0.3	24	
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	1.2	0.2	S	1.8	0.7	0.2	0.2	0.3	0.7	1.5	0.3	0.3	0.0	1.8	0.4	24	
23	0.3	0.1	0.8	0.7	0.0	0.0	0.0	0.0	1.2	1.2	0.9	2.6	1.9	S	3.6	1.3	1.4	1.1	0.8	0.7	0.8	0.9	1.0	0.8	0.0	3.6	1.0	24	
24	1.6	0.4	0.5	0.4	0.2	0.5	0.9	0.9	2.9	2.0	0.7	0.4	S	4.1	3.5	3.8	0.8	0.6	1.6	0.8	1.5	0.5	0.7	0.8	0.2	4.1	1.3	24	
25	1.1	1.2	1.1	0.9	1.5	0.6	0.6	0.5	0.3	1.6	2.4	S	2.7	1.7	1.3	1.3	1.6	1.2	1.1	1.0	1.0	1.1	1.2	1.5	0.3	2.7	1.2	24	
26	1.3	1.2	1.4	1.9	1.7	1.4	1.8	1.9	1.9	S	3.5	2.6	1.6	1.4	1.3	1.2	1.5	1.6	1.8	1.7	1.7	2.1	2.1	1.2	3.5	1.8	24		
27	1.3	0.8	0.4	0.6	0.4	0.7	1.6	2.3	1.5	S	2.7	1.8	1.5	1.6	1.1	1.9	0.9	0.8	1.0	1.2	1.1	1.0	1.0	1.0	0.4	2.7	1.2	24	
28	0.6	0.8	0.9	0.5	0.5	0.3	0.4	Q	Q	Q	Q	Q	0.5	0.3	0.6	0.8	0.8	0.4	0.5	0.4	1.2	1.8	S	4.6	0.3	4.6	0.9	24	
29	3.9	3.9	2.6	1.4	1.4	1.8	1.9	2.4	2.1	1.1	0.8	0.5	0.1	0.4	0.4	0.1	0.2	0.1	0.1	0.2	2.3	S	3.7	2.0	0.1	3.9	1.5	24	
30	2.7	3.1	2.6	2.1	1.1	1.8	1.6	2.9	2.8	1.8	1.5	1.2	0.7	1.0	1.5	1.6	1.0	0.6	0.9	1.2	S	4.0	2.4	2.5	0.6	4.0	1.9	24	
HOURLY MAX	7.6	10.1	17.9	28.5	10.9	13.6	9.6	8.5	6.2	15.3	9.0	8.2	7.6	4.1	7.0	3.8	6.3	11.8	15.0	14.4	11.0	17.8	17.6	8.0					
HOURLY AVG	2.0	2.0	2.7	3.4	2.3	2.7	2.3	2.3	2.3	2.4	2.1	2.1	1.9	1.4	1.5	1.3	1.3	2.1	2.4	2.0	2.2	2.9	2.3	2.1					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

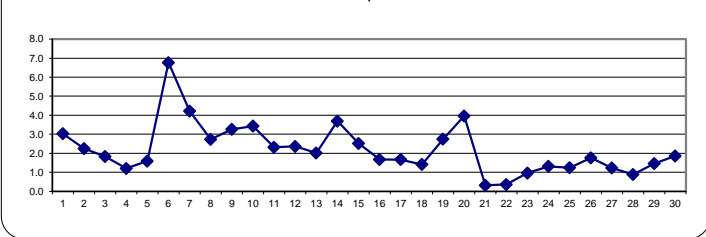
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR 159 PPB

MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0					
NUMBER OF NON-ZERO READINGS:	610					
MINIMUM 1-HR AVERAGE:	0.0	PPB	@ HOUR(S)	VAR	ON DAY(S)	VAR
MAXIMUM 1-HR AVERAGE:	28.5	PPB	@ HOUR(S)	3	ON DAY(S)	20
MAXIMUM 24-HR AVERAGE:	6.8	PPB			ON DAY(S)	6
					VAR-VARIOUS	
IZS CALIBRATION TIME:	30	HRS	OPERATIONAL TIME:	694	HRS	
MONTHLY CALIBRATION TIME:	6	HRS	AMD OPERATION UPTIME:	96.4	%	
STANDARD DEVIATION:	2.75		MONTHLY AVERAGE:	2.2	PPB	

24 HOUR AVERAGES FOR April 2016



NO2[ppb] Station: LICA MASKWA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— NO2[ppb]

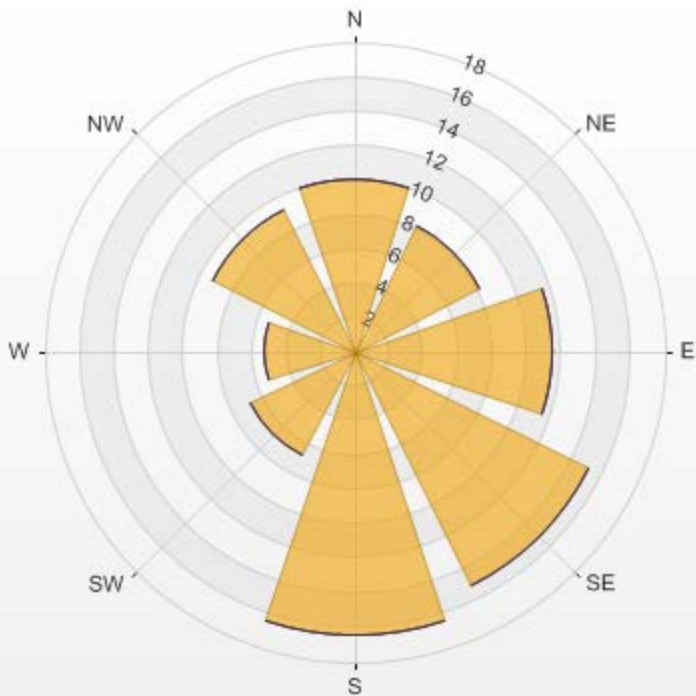
NO2 MAX[ppb] Station: LICA MASKWA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— NO2 MAX[ppb]

Wind: LICA MASKWA Monitor: NO2 [ppb] Monthly: 04/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 17.38% Valid Data: 90.28% Calm Avg: 0.00

Direction	0.5-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	10	0	0	0	10
NE	8.15	0	0	0	8.15
E	11.54	0	0	0	11.54
SE	15.23	0	0	0	15.23
S	16.46	0	0	0	16.46
SW	6.77	0	0	0	6.77
W	5.23	0	0	0	5.23
NW	9.23	0	0	0	9.23
Summary	82.61	0	0	0	82.61



% Icon Classes (ppb)	83	0.5-50.0	0	50.0-110.0	0	110.0-210.0	0	>210.0

NO2[ppb] Calibration: LICA MASKWA Monthly: 04/2016 Type: Span



Span Meas

Span Ref

-10%

+10%

WIND SPEED

WIND SPEED (WS) hourly averages in km/hr

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.
HOUR START	HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																													
1		3.3	3.0	2.5	2.6	1.9	5.3	4.8	5.0	4.8	5.0	5.6	5.2	6.5	7.1	6.9	6.0	5.8	4.6	3.7	4.7	4.1	4.0	3.4	3.0	1.9	7.1	4.5	24
2		3.3	2.7	1.6	1.1	0.3	0.1	0.7	1.8	4.5	3.6	7.3	7.0	7.1	10.4	9.3	12.1	12.8	9.1	9.8	5.3	5.5	4.1	5.8	8.5	0.1	12.8	5.6	24
3		5.6	5.6	0.9	3.5	4.9	3.9	2.4	5.1	4.2	4.8	5.5	7.7	7.6	7.5	6.9	6.5	6.2	3.9	2.7	4.4	4.2	3.0	2.9	3.1	0.9	7.7	4.7	24
4		0.9	1.2	2.0	1.2	2.3	3.0	1.8	5.0	5.6	6.6	8.5	6.8	7.4	7.0	7.3	8.2	7.8	6.3	5.6	5.5	4.1	4.7	5.6	7.4	0.9	8.5	5.1	24
5		7.1	8.0	6.8	6.6	8.2	5.7	3.4	3.1	3.7	4.7	3.8	4.0	5.0	5.4	4.2	3.5	4.4	2.9	2.0	1.8	1.4	3.2	3.1	4.0	1.4	8.2	4.4	24
6		5.3	6.3	4.9	4.3	8.4	9.4	11.7	13.7	13.8	13.3	12.6	12.7	12.0	11.8	12.1	11.4	9.3	9.3	7.4	4.8	4.7	5.7	3.7	4.7	3.7	13.8	8.9	24
7		5.1	3.4	1.1	0.3	0.6	0.6	1.2	4.6	5.1	4.6	4.0	3.5	3.1	4.4	4.8	5.3	5.5	4.6	5.1	4.1	5.2	7.4	5.7	4.3	0.3	7.4	3.9	24
8		3.6	3.0	4.4	4.4	5.8	5.2	5.3	7.8	7.9	6.4	7.6	9.0	9.7	10.8	10.3	12.6	12.9	12.0	9.7	9.3	9.3	6.5	6.6	7.0	3.0	12.9	7.8	24
9		5.0	3.8	3.3	4.1	1.3	2.2	3.9	7.7	8.8	9.5	8.5	9.1	9.7	8.6	9.7	9.6	11.3	12.3	11.4	9.6	8.9	12.5	11.7	11.7	1.3	12.5	8.1	24
10		11.0	8.4	6.6	7.2	7.2	6.8	8.3	11.3	10.5	8.4	6.9	7.5	6.9	7.9	6.9	5.3	5.5	5.1	3.2	3.2	3.0	3.8	5.0	5.3	3.0	11.3	6.7	24
11		2.6	2.9	2.0	1.2	1.0	1.2	2.4	4.2	5.8	7.6	8.8	9.2	9.3	9.6	9.5	10.9	8.2	5.3	5.3	5.6	4.9	3.8	2.3	2.7	1.0	10.9	5.3	24
12		2.4	1.0	0.9	0.3	0.3	0.2	0.2	0.2	1.8	0.9	4.7	5.5	5.2	4.3	5.0	3.5	4.6	0.4	3.0	3.7	5.8	5.6	5.6	5.3	0.2	5.8	2.9	24
13		4.5	4.2	3.8	4.5	4.7	5.1	5.7	3.5	4.6	5.3	5.5	4.9	5.4	4.3	3.7	3.7	2.4	4.4	4.4	4.9	4.9	3.9	3.3	3.1	2.4	5.7	4.4	24
14		7.0	7.3	6.8	5.8	6.7	6.1	7.6	7.8	7.8	7.2	8.7	8.0	9.6	10.4	9.5	7.8	6.7	7.0	5.7	7.2	4.5	1.3	0.8	0.6	0.6	10.4	6.6	24
15		0.5	0.1	0.7	0.7	0.9	0.7	2.5	3.4	2.9	0.2	3.0	4.0	1.4	2.6	1.9	2.8	5.2	5.1	4.3	3.0	4.4	6.1	6.1	7.5	0.1	7.5	2.9	24
16		6.7	4.7	1.7	2.1	2.5	2.0	5.0	5.7	6.7	6.8	10.7	10.1	9.3	11.4	11.1	10.4	7.4	5.3	2.8	2.6	3.6	3.3	3.3	5.7	1.7	11.4	5.9	24
17		7.4	5.6	5.8	4.9	1.8	0.8	1.1	5.0	5.5	6.2	10.0	13.1	14.1	10.5	9.6	8.2	6.6	6.6	3.7	2.4	0.6	1.2	1.0	0.3	0.3	14.1	5.5	24
18		0.5	0.5	1.1	2.3	0.5	2.3	1.3	7.8	8.0	Y	Y	Y	18.4	16.3	15.2	15.2	16.6	15.7	10.6	7.9	8.4	10.1	9.1	15.3	0.5	18.4	8.7	21
19		15.7	13.8	11.6	10.1	7.5	6.9	7.4	6.4	7.3	5.6	6.1	5.8	8.7	9.0	8.2	9.7	9.1	6.1	4.5	4.7	5.4	8.6	7.4	5.4	4.5	15.7	8.0	24
20		3.3	3.7	4.9	4.6	4.6	4.2	6.4	8.9	8.4	12.7	13.0	11.2	11.5	12.0	11.4	8.2	8.8	7.6	6.1	4.4	3.8	4.4	3.6	4.2	3.3	13.0	7.2	24
21		2.5	2.8	1.9	1.8	2.3	1.9	3.6	4.0	3.4	5.3	8.5	7.2	8.6	9.0	9.3	8.0	7.1	6.9	4.8	4.6	5.0	6.7	7.9	7.6	1.8	9.3	5.4	24
22		6.3	6.8	6.1	6.7	6.7	6.4	8.5	8.4	9.7	9.7	9.9	9.2	8.0	8.7	6.9	7.5	7.5	5.0	4.3	2.7	5.2	5.9	6.3	4.3	2.7	9.9	6.9	24
23		3.5	3.0	4.0	4.0	4.3	4.7	4.7	5.5	7.4	7.0	7.1	7.4	7.4	6.5	7.1	7.7	7.8	6.9	5.2	4.5	2.5	2.0	0.9	2.6	0.9	7.8	5.2	24
24		3.1	5.0	7.6	5.3	6.7	6.7	1.8	5.0	6.2	6.8	7.2	8.4	7.0	6.5	6.9	5.6	5.0	4.1	6.8	3.4	2.9	0.5	6.3	4.5	0.5	8.4	5.4	24
25		3.4	2.5	2.5	2.3	2.6	3.6	3.9	3.5	4.2	2.2	2.4	3.5	5.0	3.0	4.7	5.4	7.6	5.4	4.4	3.3	2.0	4.5	4.0	4.2	2.0	7.6	3.8	24
26		3.3	2.6	2.8	3.3	4.0	5.0	4.6	4.7	4.9	7.4	9.1	9.7	10.1	11.0	10.3	9.6	9.1	7.7	7.8	5.7	4.4	4.0	5.1	4.3	2.6	11.0	6.3	24
27		0.5	0.9	1.4	2.0	1.1	0.8	2.7	4.0	6.5	5.6	4.5	5.1	5.8	5.9	5.4	4.5	1.6	5.3	5.7	3.6	3.9	3.3	0.7	1.3	0.5	6.5	3.4	24
28		0.8	0.3	1.0	1.4	1.1	2.4	3.8	3.5	4.6	5.6	7.7	8.3	11.0	11.4	12.2	10.6	10.9	9.3	8.0	4.3	4.6	6.5	8.1	9.1	0.3	12.2	6.1	24
29		7.9	6.9	7.0	7.5	8.1	9.0	9.2	8.0	10.3	9.6	9.6	12.6	13.0	13.6	12.3	12.5	12.0	11.2	10.8	5.5	5.4	7.0	6.5	7.8	5.4	13.6	9.3	24
30		8.2	5.2	1.8	1.8	1.2	0.6	2.4	1.4	3.6	4.6	5.7	7.8	10.0	10.9	7.9	6.1	6.2	8.2	10.1	6.9	6.0	6.2	7.7	6.8	0.6	10.9	5.7	24
HOURLY MAX		15.7	13.8	11.6	10.1	8.4	9.4	11.7	13.7	13.8	13.3	13.0	13.1	18.4	16.3	15.2	15.2	16.6	15.7	11.4	9.6	9.3	12.5	11.7	15.3				
HOURLY AVG		4.7	4.2	3.7	3.6	3.7	3.8	4.3	5.5	6.3	6.3	7.3	7.7	8.5	8.6	8.2	7.9	7.7	6.8	6.0	4.8	4.6	5.0	5.0	5.4				

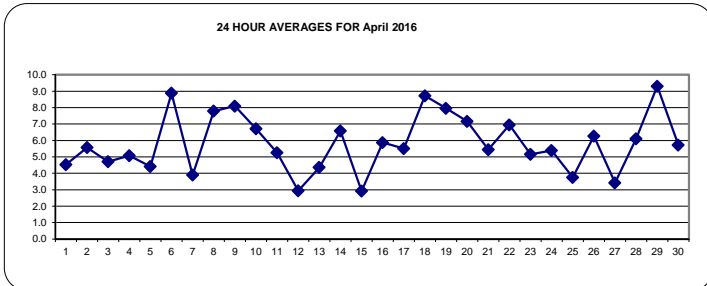
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

LAST CALIBRATION:	March 30, 2016
DECLINATION :	MAGNETIC DECLINATION 19 DEGREE EAST

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	717
MINIMUM 1-HR AVERAGE	0.1 KPH @ HOUR(S) 5 , 15 ON DAY(S) 2 , 15
MAXIMUM 1-HR AVERAGE:	18.4 KPH @ HOUR(S) 12 ON DAY(S) 18
MAXIMUM 24-HR AVERAGE:	9.3 KPH ON DAY(S) 29
	VAR-VARIOUS
MONTHLY CALIBRATION TIME:	0 HRS
OPERATIONAL TIME:	717 HRS
AMD OPERATION UPTIME:	99.6 %
STANDARD DEVIATION:	3.24
MONTHLY AVERAGE:	5.8 KPH



WSP[kph] Station: LICA MASKWA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— WSP[kph]



VECTOR WIND SPEED MAX instantaneous maximum in km/hr

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY 1	10.9	10.0	10.3	14.8	8.0	21.5	16.7	15.8	17.4	16.9	19.7	19.0	22.3	28.2	26.3	23.0	19.5	15.5	10.3	17.1	15.8	15.9	9.6	11.0	8.0	28.2	16.5	24
2	14.7	11.3	7.3	4.5	3.9	2.0	3.7	13.1	12.1	16.8	24.3	21.0	23.9	29.4	30.7	50.3	43.5	30.0	36.3	23.0	14.0	11.1	16.2	18.9	2.0	50.3	19.3	24
3	17.2	14.9	4.3	19.1	25.1	14.4	10.6	18.5	18.2	23.7	25.7	32.1	26.2	24.6	23.0	23.5	20.6	16.5	10.4	17.3	15.0	9.2	6.6	7.7	4.3	32.1	17.7	24
4	5.3	6.3	7.3	5.1	8.7	7.0	11.7	15.5	16.9	18.0	22.8	23.5	21.6	22.3	27.8	23.6	23.8	22.1	17.4	19.3	18.1	13.2	15.7	14.9	5.1	27.8	16.2	24
5	18.0	16.9	13.3	13.2	17.8	18.1	12.0	7.7	14.2	14.6	13.1	12.2	12.5	15.0	11.2	11.0	11.3	8.7	8.2	6.0	6.7	8.4	12.9	12.0	6.0	18.1	12.3	24
6	16.5	17.9	19.8	20.4	31.8	32.4	34.4	44.6	43.9	44.3	48.0	48.3	41.7	46.3	49.3	44.9	36.5	35.6	31.0	22.3	14.6	23.2	14.4	18.4	14.4	49.3	32.5	24
7	14.6	10.8	10.8	4.6	3.8	5.2	6.0	15.4	17.7	16.0	15.1	20.5	19.8	19.7	20.0	21.5	27.6	28.4	14.6	10.5	16.6	20.1	15.8	11.6	3.8	28.4	15.3	24
8	10.6	10.6	14.6	16.2	17.5	17.3	22.2	29.1	24.7	23.7	25.7	24.3	27.3	30.0	29.9	37.2	38.7	37.2	28.8	30.8	36.1	25.1	21.0	21.2	10.6	38.7	25.0	24
9	18.0	13.0	11.3	17.6	5.5	8.3	19.7	36.0	40.0	37.4	35.8	33.5	41.4	42.5	41.6	35.9	36.5	44.0	38.6	37.5	32.6	41.2	37.4	35.2	5.5	44.0	30.9	24
10	43.2	34.6	23.1	27.8	21.0	21.8	24.0	30.7	25.0	25.9	23.3	23.4	24.8	23.9	21.6	20.7	19.2	17.7	9.9	9.8	7.1	10.6	13.1	13.3	7.1	43.2	21.5	24
11	10.6	9.5	6.9	5.0	3.1	5.8	11.1	14.4	17.2	22.3	25.5	24.5	23.7	26.1	25.4	30.2	23.4	20.4	15.7	15.1	14.0	12.3	6.1	5.7	3.1	30.2	15.6	24
12	7.7	4.3	5.1	4.0	3.2	2.1	3.8	3.3	7.0	6.9	15.1	15.7	14.8	17.2	17.3	18.1	11.5	10.4	16.6	11.8	16.7	14.8	18.6	14.3	2.1	18.6	10.8	24
13	9.3	9.9	9.3	9.4	11.9	14.9	17.5	17.9	14.0	15.8	15.5	17.6	22.0	15.6	15.9	12.0	12.0	19.4	19.6	17.9	22.3	17.6	12.3	16.5	9.3	22.3	15.3	24
14	23.4	20.5	22.6	21.0	23.2	19.3	23.8	25.2	24.8	22.8	24.0	27.9	32.8	32.8	28.1	29.7	22.0	23.3	20.8	19.5	13.8	6.8	6.4	5.7	5.7	32.8	21.7	24
15	2.7	1.8	3.2	3.9	4.4	4.4	7.6	12.0	10.5	8.4	14.1	15.1	12.7	14.3	12.4	16.0	16.9	15.1	12.6	9.9	13.3	15.8	17.1	20.1	1.8	20.1	11.0	24
16	23.6	17.2	6.3	6.0	6.5	11.5	19.0	16.7	18.7	20.3	27.1	28.3	31.9	32.0	26.9	28.5	23.9	17.9	17.8	8.4	8.6	9.8	10.9	17.5	6.0	32.0	18.1	24
17	18.0	16.4	15.7	14.1	9.8	3.8	7.9	16.0	18.5	21.5	27.7	33.5	36.6	33.6	36.8	30.6	29.0	21.1	14.7	4.7	6.4	3.6	3.3	3.1	3.1	36.8	17.8	24
18	3.2	3.4	4.0	5.8	4.3	5.2	16.2	19.8	17.9	Y	Y	Y	Y	47.4	40.2	41.9	47.2	43.3	34.1	25.1	28.4	32.6	31.9	46.1	3.2	47.4	24.9	20
19	45.9	39.6	38.2	29.5	19.4	21.8	19.6	19.4	18.8	15.5	19.8	18.8	24.4	33.8	35.1	38.0	32.5	29.9	18.1	19.4	20.3	30.8	32.1	27.7	15.5	45.9	27.0	24
20	18.1	11.9	19.3	17.2	16.1	15.3	37.4	36.3	29.5	34.3	37.2	33.7	35.4	40.9	32.8	27.3	23.8	25.9	19.5	12.4	9.3	13.9	12.0	14.6	9.3	40.9	23.9	24
21	10.5	11.6	10.0	10.3	12.2	9.6	10.2	18.6	15.7	28.2	21.6	25.1	30.2	29.5	26.9	25.2	21.5	22.6	14.7	15.7	13.3	18.3	24.2	20.3	9.6	30.2	18.6	24
22	21.2	15.9	18.6	17.9	16.6	19.1	22.4	24.7	32.6	32.6	37.4	30.8	27.5	23.1	19.0	23.3	18.3	18.3	13.9	16.6	21.2	19.9	21.6	10.3	10.3	37.4	21.8	24
23	12.9	9.6	13.3	13.1	13.3	12.4	16.8	14.6	22.1	24.7	24.4	26.7	27.1	25.8	27.5	30.2	26.3	25.2	18.6	13.9	6.5	5.2	3.0	6.1	3.0	30.2	17.5	24
24	17.9	14.8	28.6	21.4	24.0	20.5	10.7	17.8	21.7	22.0	22.0	33.2	22.9	28.9	26.2	16.6	13.9	11.3	22.3	19.4	10.2	10.5	23.1	16.8	10.2	33.2	19.9	24
25	12.0	10.2	11.3	10.7	10.2	10.9	10.4	7.6	10.3	11.9	13.1	17.2	23.6	19.4	17.9	24.0	27.9	17.0	13.5	9.3	7.6	12.4	14.6	12.9	7.6	27.9	14.0	24
26	9.2	8.9	8.9	8.7	12.0	14.8	13.7	14.2	13.7	18.8	26.9	24.7	27.0	28.0	32.7	32.1	26.9	27.9	24.2	17.2	12.0	11.3	12.9	12.0	8.7	32.7	18.3	24
27	5.4	10.4	10.2	10.0	9.4	10.4	14.4	14.4	15.9	19.2	20.5	18.5	21.1	23.3	18.8	16.1	15.2	21.4	19.0	10.2	9.8	8.0	3.4	4.1	3.4	23.3	13.7	24
28	2.8	2.2	5.2	10.7	9.6	6.9	8.3	6.7	11.3	22.5	31.7	28.8	39.1	35.4	34.1	36.3	34.7	34.5	27.1	10.7	11.8	20.1	21.9	30.2	2.2	39.1	20.1	24
29	25.4	18.9	18.6	20.1	22.3	31.7	27.7	24.9	36.7	30.6	35.4	41.9	36.0	44.6	41.9	39.5	38.7	31.7	32.8	19.2	15.5	16.8	17.9	21.2	15.5	44.6	28.8	24
30	27.5	16.8	7.8	6.1	5.9	7.2	5.0	8.7	12.2	17.0	23.1	22.7	32.8	31.0	26.2	23.8	21.8	24.9	29.7	17.9	12.4	15.2	18.3	15.5	5.0	32.8	17.9	24
HOURLY MAX	45.9	39.6	38.2	29.5	31.8	32.4	37.4	44.6	43.9	44.3	48.0	48.3	41.7	47.4	49.3	50.3	47.2	44.0	38.6	37.5	36.1	41.2	37.4	46.1				
HOURLY AVG	15.9	13.3	12.8	12.9	12.7	13.2	15.5	18.7	20.0	21.8	24.7	25.6	27.0	28.8	27.5	27.7	25.5	23.9	20.4	16.3	15.0	15.8	15.8	16.2				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

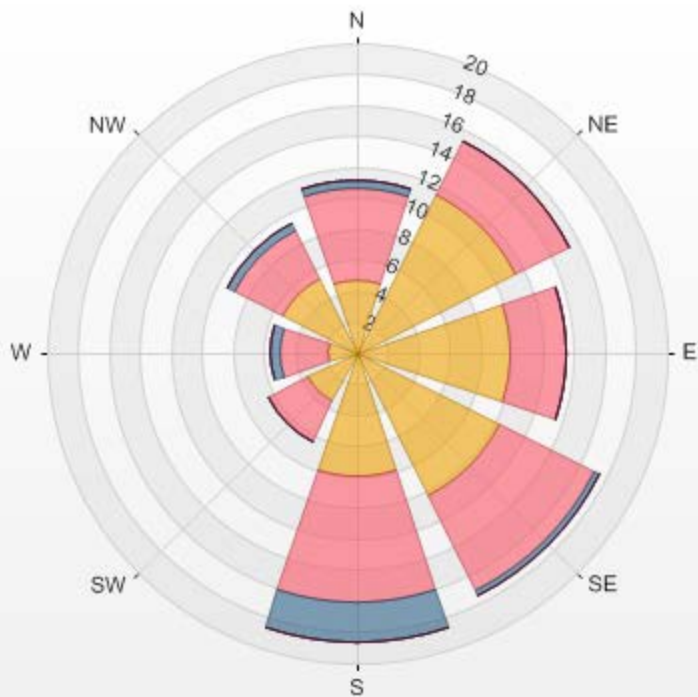
MONTHLY SUMMARY

MAXIMUM INSTANTANEOUS VALUE:	50.3	KPH	@ HOUR(S)	15	ON DAY(S)	2
					VAR-VARIOUS	
OPERATIONAL TIME:				716	HRS	

WS MAX[kph] Station: LICA MASKWA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— WS MAX[kph]



% Icon	Classes (kph)	55		0.5-6.0	38		6.0-12.0	5		12.0-20.0	0		20.0-29.0	0		29.0-39.0	0		>39.0
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Wind: LICA MASKWA Monitor: WSP [kph] Monthly: 04/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 2.37% Valid Data: 99.58% Calm Avg: 0.00

Direction	0.5-6.0	6.0-12.0	12.0-20.0	20.0-29.0	29.0-39.0	>39.0	Total
N	4.74	5.86	0.56	0	0	0	11.16
NE	11.44	3.91	0	0	0	0	15.35
E	9.9	3.63	0	0	0	0	13.53
SE	10.32	6.83	0.42	0	0	0	17.57
S	7.95	8.23	2.51	0	0	0	18.69
SW	3.49	2.93	0	0	0	0	6.42
W	1.81	3.21	0.56	0	0	0	5.58
NW	5.3	3.49	0.56	0	0	0	9.35
Summary	54.95	38.09	4.61	0	0	0	97.65

WIND DIRECTION



WIND DIRECTION (WD) hourly averages

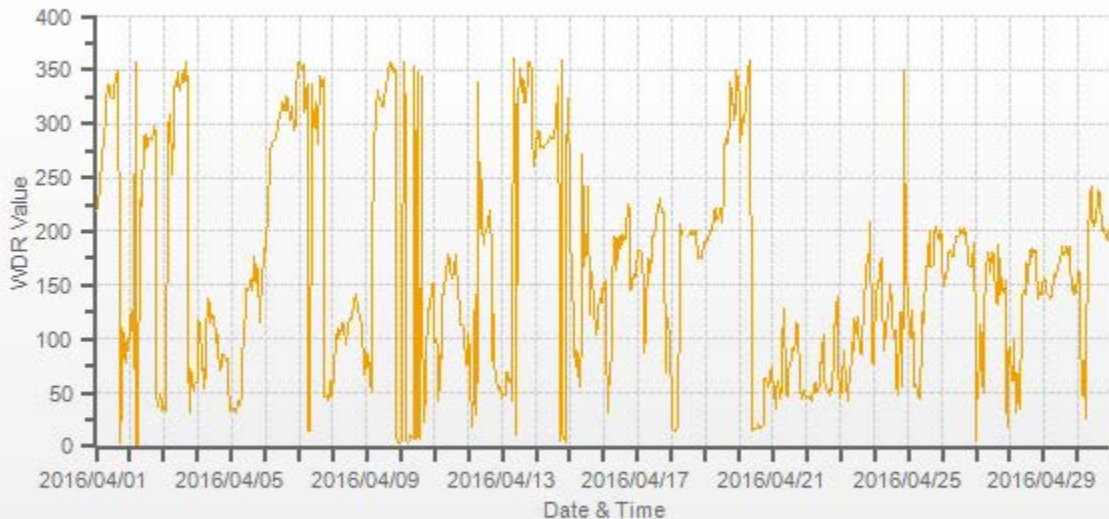
MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24-HOUR AVG	RDGS.	
HOUR START	HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	QUADRANT		
DAY																												
1		SW	SW	SW	WSW	W	W	WNW	NW	NNW	NNW	NW	NW	NW	NNW	NNW	NNW	N	N	NNE	ESE	E	ENE	E	E	NNW	24	
2		ESE	SE	ESE	ENE	N	N	NNE	SW	SW	WSW	WNW	WNW	W	WNW	WNW	WNW	WNW	WNW	WNW	NE	NE	NE	NE	NNE	NNW	24	
3		NE	NE	E	WNW	NW	WNW	WSW	WNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	N	NNW	NNE	ENE	ENE	NE	ENE	ENE	N	24	
4		ENE	ESE	ESE	ENE	ENE	NE	E	SE	SE	ESE	ESE	ESE	E	ESE	E	ENE	ENE	E	E	E	E	NE	NE	E	E	24	
5		NE	NE	NE	NNE	NE	NE	NE	NE	E	ESE	ESE	SE	SE	SSE	SSE	SE	S	SSE	SSE	SSE	ESE	SE	SSE	S	ESE	24	
6		S	SSW	SW	WSW	W	W	WNW	WNW	WNW	WNW	NW	NW	NW	NW	NW	NW	NW	NW	WNW	NW	WNW	WNW	NNW	N	WNW	24	
7		N	N	N	N	NW	NNW	NNE	NNE	NNW	NW	WNW	NW	W	NW	NNW	NNW	NNW	NNW	NE	NE	NE	NE	ENE	NE	N	24	
8		ENE	ENE	ESE	E	ESE	ESE	ESE	ESE	E	ESE	ESE	ESE	ESE	ESE	ESE	SE	SE	SE	SE	ESE	ESE	E	ENE	ENE	ESE	24	
9		E	ENE	ENE	NE	SW	WSW	WNW	NW	NNW	NW	NW	NW	NNW	NNW	NNW	N	N	N	NNW	N	N	N	N	N	NNW	24	
10		N	N	N	N	N	N	N	NNE	N	N	N	N	NNW	N	N	NNW	NNE	NNE	ENE	SE	SE	SSE	SSE	NNE	NNE	24	
11		E	E	E	NE	E	E	SE	SSE	SSE	S	S	SSE	SSE	SSE	SSE	S	SSE	SSE	ESE	ESE	ESE	ESE	ENE	ENE	SE	24	
12		ESE	E	NE	NNE	E	SE	NNE	NNW	SSW	WSW	SSW	S	SSW	SSW	SSW	SW	SSW	E	ESE	ENE	ENE	NE	NE	NE	ESE	24	
13		NE	NE	NE	ENE	ENE	ENE	NE	N	NNW	NNE	NW	NNW	N	NNW	NNW	NW	NNW	NW	NNW	N	N	NNW	W	WSW	N	24	
14		WNW	WNW	WNW	W	W	W	W	W	W	WNW	WNW	WNW	WNW	WNW	WNW	NW	NNW	N	N	NNE	N	N	NW	NW	NW	24	
15		SSW	SSE	SE	E	ENE	E	ENE	NE	E	W	SSE	S	SSW	WSW	ESE	SSE	SE	SE	ESE	ESE	SE	SE	SE	SE	SE	24	
16		SE	SSE	ENE	ENE	ENE	ENE	SE	S	SSW	SSE	S	SSW	S	SSW	SSW	S	SSW	SW	SW	SE	SE	SSE	SSE	SSE	SSE	24	
17		S	S	S	S	SSE	E	ESE	SSE	S	SSE	S	SSW	SSW	SSW	SW	SW	SW	SW	SW	S	ENE	ESE	ESE	E	S	24	
18		NE	NNE	NNE	NNE	NNE	NNE	SSW	SSW	SSW	Y	Y	Y	SSW	SSW	SSW	SSW	SSW	SSW	S	S	S	S	S	S	S	21	
19		S	S	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	24
20		NNW	W	WNW	WNW	NW	NW	N	NNW	N	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	ENE	ENE	ENE	NE	ENE	ENE	N	24
21		ENE	NE	NE	ENE	ENE	NE	NE	ESE	SE	NE	NE	ENE	ENE	E	E	E	E	ESE	E	ENE	NE	NE	NE	NE	ENE	24	
22		NE	NE	NE	NE	NE	NE	ENE	NE	NE	ENE	ENE	E	ESE	NE	NE	NE	NE	NE	NE	E	ESE	SE	SE	NE	ENE	24	
23		NE	NE	E	ENE	ENE	NE	ENE	ENE	E	E	ESE	ESE	ESE	E	E	E	ESE	SE	SSE	S	S	SSW	E	ENE	E	24	
24		ESE	SE	SSE	SSE	SSE	S	ESE	E	ESE	ESE	SE	SSE	SE	ESE	E	ESE	NE	ENE	SE	ESE	NE	NNW	SSE	SSE	ESE	24	
25		SE	ESE	E	SE	NE	ENE	NE	NE	ENE	SE	ESE	SSE	SSE	SSE	SSE	SSW	SSE	SSE	SSE	SSW	SSW	SSW	S	SSW	SE	24	
26		S	SSE	SSE	SSE	S	S	S	S	S	S	SSW	SSW	SSW	SSW	SSW	SSW	SSW	S	S	SSE	SSE	SSE	S	S	S	24	
27		N	ENE	ENE	ESE	E	NE	SE	SSE	S	S	SSE	S	S	SSE	SE	SE	S	SE	SSE	SE	SE	SSE	NNE	E	SE	24	
28		E	ENE	ENE	E	NNE	ENE	NE	NE	E	SE	SE	S	SSE	S	S	S	S	S	SSE	SE	SE	SE	SSE	SSE	SE	24	
29		SSE	SSE	SE	SE	SE	SE	SE	SSE	SSE	SSE	SSE	S	S	S	S	S	S	S	SSE	SE	SE	SE	SE	SE	SSE	24	
30		SSE	SSE	E	NE	E	NE	NNE	SSW	SSW	SW	WSW	SSW	SSW	SSW	SW	SW	SW	SSW	SSW	SSW	S	S	SSW	SSW	SSW	24	

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

LAST CALIBRATION:	March 30, 2016
DECLINATION:	MAGNETIC DECLINATION 19 DEGREE EAST

MONTHLY CALIBRATION TIME:	0 HRS	OPERATIONAL TIME:	717 HRS
STANDARD DEVIATION:	99.46	AMD OPERATION UPTIME:	99.6 %



— WDR[Deg]

STANDARD DEVIATION WIND DIRECTION



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - April 2016

JOB # 2833-2016-04-30- C

STANDARD DEVIATION WIND DIRECTION (STDWD) hourly averages in degrees

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	RDGS.	
HOUR START	HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59		
DAY																											
1		22	20	33	30	28	25	29	33	34	35	38	40	37	39	39	36	33	33	14	18	19	20	23	26	24	
2		30	30	23	18	6	0	4	29	25	29	33	33	37	31	31	29	31	32	30	27	17	17	20	15	24	
3		23	18	22	34	41	24	28	33	37	32	35	37	37	38	34	41	36	36	30	20	20	18	14	17	24	
4		14	26	17	17	20	12	26	29	30	33	28	31	28	31	32	29	27	31	28	28	40	29	23	15	24	
5		17	15	17	15	18	21	18	26	33	28	32	29	27	28	26	32	22	27	30	19	38	22	23	22	24	
6		18	23	28	35	28	27	26	30	29	29	35	36	40	40	37	39	39	38	35	34	28	28	32	28	24	
7		29	25	24	12	26	15	25	27	34	40	47	54	53	49	40	42	42	36	23	16	19	23	24	19	24	
8		21	29	23	22	26	27	33	30	28	29	34	28	30	28	30	28	28	30	26	30	31	30	25	28	24	
9		35	26	25	22	54	26	26	39	39	43	38	39	38	39	38	35	32	32	31	35	33	26	26	27	24	
10		27	26	31	28	25	26	25	23	24	32	33	35	37	33	37	38	38	34	23	19	18	17	20	18	24	
11		29	22	25	27	15	17	29	31	32	30	29	30	29	31	28	28	28	30	24	24	23	25	16	19	24	
12		16	36	49	34	20	11	14	30	52	75	48	30	40	52	42	32	22	25	40	23	22	22	22	20	24	
13		16	16	13	14	18	20	23	47	29	33	28	37	36	29	35	31	42	43	37	29	28	28	28	27	24	
14		27	28	33	31	29	27	28	29	28	33	31	35	31	32	31	39	36	27	31	18	16	14	11	28	24	
15		22	9	9	12	20	22	18	31	37	75	50	53	77	57	78	59	37	31	22	17	15	17	17	22	24	
16		22	26	24	20	22	35	30	26	26	32	28	31	34	26	24	28	33	33	31	17	11	13	21	20	24	
17		19	18	20	19	21	13	28	30	32	34	28	23	23	29	34	38	37	31	27	9	28	12	21	19	24	
18		29	27	12	9	53	23	45	19	21	Y	Y	Y	21	22	23	21	21	17	22	20	21	20	21	21	21	
19		19	20	21	19	18	20	21	29	23	29	29	39	26	35	35	34	33	35	37	35	34	29	32	39	24	
20		34	26	27	27	31	34	32	35	33	23	24	24	22	26	29	32	30	31	30	18	18	20	26	24	24	
21		19	21	20	24	18	17	21	34	58	50	32	38	37	33	32	34	38	33	26	23	16	22	22	19	24	
22		22	20	21	19	20	22	23	22	25	28	35	32	32	29	27	28	23	34	25	45	34	27	25	22	24	
23		23	24	26	27	24	21	26	25	30	33	34	35	30	33	31	29	33	30	25	21	18	19	38	16	24	
24		24	22	25	29	25	24	51	31	29	33	33	28	36	33	28	29	27	25	25	36	39	66	26	24	24	
25		24	22	26	35	25	19	21	26	22	58	68	66	55	56	56	33	26	25	24	21	18	19	21	20	24	
26		20	21	19	19	21	23	25	24	27	24	19	20	21	19	21	23	22	23	21	20	22	17	17	14	24	
27		61	37	30	22	61	37	34	34	30	36	55	44	41	45	39	42	49	41	25	12	10	19	49	21	24	
28		41	64	42	50	44	24	16	16	32	38	37	39	31	31	28	31	25	27	24	16	13	17	20	22	24	
29		21	21	21	21	21	23	26	28	25	30	34	28	29	29	29	30	31	26	23	19	16	16	19	17	24	
30		21	24	36	24	41	66	15	43	36	42	40	33	34	26	33	35	34	26	20	20	15	14	15	14	24	

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

LAST CALIBRATION: March 30, 2016

CALIBRATION TIME: 0 HRS OPERATIONAL TIME: 849 HRS

STDWD[Deg] Station: LICA MASKWA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— STDWD[Deg]

RELATIVE HUMIDITY

RELATIVE HUMIDITY (RH) hourly averages in %

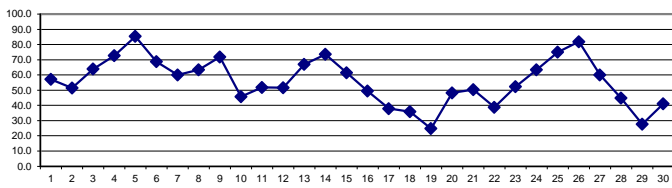
MST

DAY	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.
1	71	77	78	75	76	73	69	64	59	53	49	43	38	38	37	37	37	41	48	56	59	63	63	68	37	78	57.2	24
2	69	70	74	80	83	84	82	67	57	44	34	29	26	26	27	26	28	31	30	43	51	55	58	61	26	84	51.5	24
3	63	64	65	67	69	71	73	71	78	75	75	64	57	54	51	46	45	46	53	62	66	68	74	77	45	78	63.9	24
4	81	85	85	84	84	85	84	76	66	58	56	58	58	59	58	59	64	65	67	71	81	86	87	88	56	88	72.7	24
5	88	89	90	90	89	89	89	88	85	84	82	78	76	74	79	80	83	84	86	88	89	90	90	89	74	90	85.4	24
6	90	89	89	87	84	82	81	77	76	75	74	72	59	53	45	45	49	49	53	57	62	64	67	71	45	90	68.8	24
7	75	78	80	85	87	86	80	68	63	54	49	46	41	39	39	33	31	36	49	57	62	66	68	71	31	87	60.1	24
8	72	75	74	74	74	75	70	65	64	63	60	58	53	50	49	47	50	53	59	64	66	67	70	72	47	75	63.5	24
9	71	72	73	80	87	89	89	87	81	73	69	68	66	68	72	69	70	61	61	62	63	67	63	63	61	89	71.8	24
10	63	65	67	68	69	69	66	63	56	46	38	35	29	26	26	24	23	24	27	39	43	44	43	43	23	69	45.7	24
11	51	57	63	69	73	76	67	51	48	45	41	39	37	36	36	36	36	39	45	50	54	57	65	71	36	76	51.8	24
12	70	73	74	78	80	82	76	57	48	40	37	34	29	28	27	27	33	40	43	51	52	54	52	53	27	82	51.6	24
13	57	63	67	69	71	69	66	57	53	47	45	40	45	51	67	74	78	81	81	82	83	85	87	89	40	89	67.0	24
14	90	88	87	87	87	85	84	85	86	80	73	62	57	54	55	53	52	56	58	66	72	80	84	84	52	90	73.5	24
15	86	87	87	87	87	87	86	76	67	62	57	51	45	41	36	35	38	39	45	54	59	53	57	55	35	87	61.5	24
16	54	57	69	75	78	78	65	57	54	48	40	37	32	31	29	28	27	29	32	44	50	58	65	49	27	78	49.4	24
17	39	38	38	38	51	65	64	37	33	31	29	29	26	22	20	20	19	19	22	34	44	54	67	71	19	71	37.9	24
18	72	74	77	79	80	81	70	43	38	33	24	18	17	14	13	13	10	10	12	14	16	15	19	18	10	81	35.8	24
19	20	23	26	30	33	34	31	28	27	24	20	18	20	19	19	18	18	22	27	31	33	28	24	21	18	34	24.8	24
20	25	29	30	34	38	45	48	50	51	54	58	59	55	50	46	42	42	43	46	55	63	66	66	64	25	66	48.3	24
21	69	74	80	81	81	83	73	58	50	46	45	39	34	32	31	29	29	30	34	38	46	43	40	45	29	83	50.4	24
22	47	47	48	50	52	54	49	46	39	34	28	26	25	24	26	26	27	30	32	37	42	44	48	50	24	54	38.8	24
23	47	49	46	46	46	53	54	49	53	58	57	55	55	51	48	49	44	45	49	51	54	62	67	68	44	68	52.3	24
24	65	49	50	55	54	69	69	60	46	43	44	49	61	64	72	74	73	70	65	79	81	79	70	81	43	81	63.4	24
25	87	88	88	87	87	88	88	85	80	68	51	42	40	43	43	49	71	86	87	87	89	89	89	90	40	90	75.1	24
26	90	90	90	90	91	91	90	90	89	88	86	84	81	76	73	70	67	65	66	72	76	82	82	85	65	91	81.8	24
27	88	90	90	90	90	89	89	74	65	57	48	43	38	34	32	27	21	26	33	42	53	66	76	81	21	90	60.1	24
28	85	88	89	90	89	88	76	63	42	28	24	22	18	16	17	22	21	20	21	26	34	32	32	32	16	90	44.8	24
29	35	39	42	46	48	47	39	34	30	27	22	17	15	16	16	14	16	16	17	21	27	26	27	29	14	48	27.8	24
30	28	30	40	52	57	61	49	40	36	36	35	33	29	31	33	36	38	37	37	40	48	51	53	56	28	61	41.1	24
HOURLY MAX	90	90	90	90	91	91	90	90	89	88	86	84	81	76	79	80	83	86	87	88	89	90	90	90				
HOURLY AVG	64.9	66.6	68.5	70.8	72.5	74.3	70.5	62.2	57.3	52.5	48.3	44.9	42.1	40.7	40.7	40.3	41.3	46.2	52.4	57.3	59.8	61.8	63.2					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

24 HOUR AVERAGES FOR April 2016



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	10	%	@ HOUR(S)	16 , 17	ON DAY(S)	18 , 18
MAXIMUM 1-HR AVERAGE:	91	%	@ HOUR(S)	4 , 5	ON DAY(S)	26 , 26
MAXIMUM 24-HR AVERAGE:	85.4	%			ON DAY(S)	5
					VAR-VARIOUS	
OPERATIONAL TIME:					720	HRS
AMD OPERATION UPTIME:					100.0	%
STANDARD DEVIATION:	21.52		MONTHLY AVERAGE:		56	%

RH[%RH] Station: LICA MASKWA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— RH[%RH]

BAROMETRIC PRESSURE

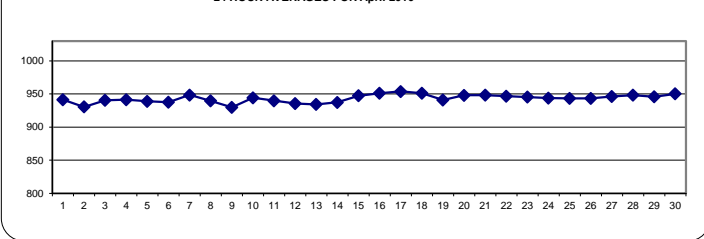
BAROMETRIC PRESSURE (BP) hourly averages in millibar

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR			
DAY	MIN.	MAX.	AVG.	RDGS.																											
1	942	941	941	940	940	940	941	941	942	943	943	943	943	943	943	942	942	941	941	940	940	939	938	938	938	938	938	938	943	941	24
2	937	936	935	934	932	931	931	930	930	930	930	930	929	929	928	928	928	928	928	929	929	930	931	932	932	932	932	932	937	931	24
3	933	934	935	936	937	937	937	937	938	939	940	941	942	943	944	944	945	945	945	945	945	945	945	945	945	945	945	945	945	941	24
4	945	945	945	945	944	944	944	944	943	943	943	942	941	941	940	939	939	938	938	938	938	938	938	938	937	937	937	937	945	941	24
5	938	938	938	938	938	939	940	940	941	941	941	941	941	941	941	940	939	938	937	936	936	936	936	935	935	935	935	941	939	24	
6	934	932	932	932	933	933	933	933	934	935	936	937	938	939	940	941	941	942	942	943	943	944	944	945	945	945	945	945	945	938	24
7	946	946	947	947	948	948	948	949	949	950	950	950	950	950	949	949	949	949	948	948	948	949	949	949	949	949	949	946	950	949	24
8	949	949	949	948	948	947	947	946	945	945	944	943	942	940	938	936	935	933	931	929	928	927	926	925	925	925	925	949	940	24	
9	925	924	923	922	922	922	923	925	926	927	928	929	930	930	931	932	933	935	936	937	938	939	940	940	922	922	940	930	24		
10	941	941	942	943	943	943	944	944	945	945	946	946	946	946	946	946	945	945	945	944	944	944	944	944	944	944	941	946	944	24	
11	944	944	943	943	943	942	942	942	942	942	941	941	940	940	939	938	938	937	937	936	936	936	936	935	935	935	935	944	940	24	
12	934	934	934	934	934	934	934	935	936	936	937	937	937	937	937	937	937	936	936	936	936	936	936	937	937	937	937	934	937	936	24
13	937	936	936	935	935	935	935	935	935	935	936	936	935	935	934	934	933	933	934	934	933	933	933	933	933	933	933	937	935	24	
14	933	933	933	933	934	934	935	935	936	936	937	937	938	938	938	939	940	940	940	941	942	942	942	942	942	942	942	933	942	937	24
15	943	943	944	944	944	945	946	947	948	949	949	949	949	949	949	949	949	949	949	948	948	949	949	949	949	949	949	943	949	947	24
16	949	949	949	949	949	949	950	951	952	952	952	952	952	952	952	952	952	952	952	952	952	952	952	952	952	952	949	952	951	24	
17	953	953	953	953	953	953	953	953	954	955	955	955	955	955	955	955	954	954	954	954	954	954	953	953	953	953	953	955	954	24	
18	953	953	953	953	953	953	953	953	953	955	955	955	955	954	954	953	952	951	950	949	948	947	946	946	945	944	944	955	951	24	
19	944	943	942	942	941	941	941	942	942	942	942	942	942	941	941	940	940	939	939	939	939	940	941	941	939	944	941	941	939	944	24
20	941	941	942	943	944	944	946	947	948	949	950	950	951	951	951	951	951	951	951	951	951	951	951	951	951	951	941	951	948	24	
21	950	949	949	949	949	949	949	950	950	949	949	949	948	948	947	947	947	946	947	947	947	947	947	947	947	946	946	950	948	24	
22	947	947	947	947	947	946	947	947	947	948	948	948	947	947	947	946	946	946	946	946	946	946	946	946	946	946	946	946	948	947	24
23	946	946	946	945	945	945	945	945	945	945	946	946	946	946	946	946	945	945	945	945	945	945	945	945	944	944	946	945	24		
24	944	944	945	945	944	944	944	944	944	944	944	944	944	944	944	943	943	943	943	943	943	943	943	943	943	943	943	945	944	24	
25	943	943	943	943	943	943	943	943	943	943	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	944	943	944	944	24	
26	944	944	944	943	943	943	943	943	943	943	943	943	943	943	943	944	944	944	943	943	943	943	943	943	943	943	943	944	943	24	
27	943	943	943	943	944	944	945	946	947	947	947	947	948	948	948	948	948	948	948	948	947	947	947	947	947	947	943	948	946	24	
28	947	947	948	948	948	948	949	949	950	951	951	950	950	949	949	949	948	948	947	947	946	946	946	946	946	946	946	951	948	24	
29	946	946	946	945	945	945	945	946	946	946	946	946	946	946	945	945	945	945	946	946	946	946	947	947	947	945	947	946	24		
30	948	948	948	948	948	949	950	951	952	952	952	952	952	952	951	951	951	951	951	951	950	950	950	950	950	948	952	950	24		
HOURLY MAX	953	953	953	953	953	953	953	953	955	955	955	955	955	955	955	955	954	954	954	954	954	954	953	953	953	953	953	955	954	24	
HOURLY AVG	943	942	943	942	942	942	943	943	944	944	944	944	944	944	944	944	943	943	943	943	943	943	943	943	943	943	943	943	943	943	24

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

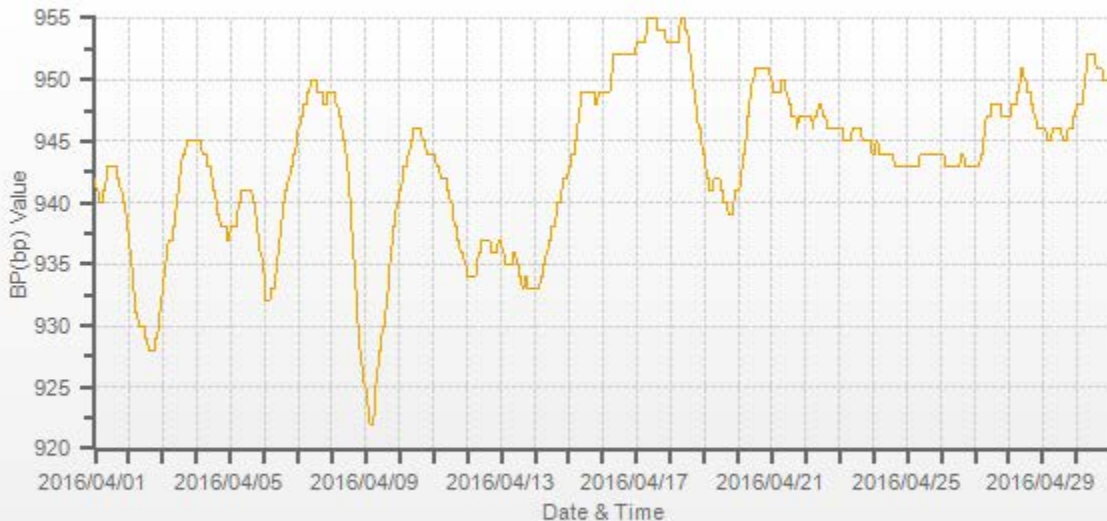
24 HOUR AVERAGES FOR April 2016



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	922	MB	@ HOUR(S)	VAR	ON DAY(S)	9
MAXIMUM 1-HR AVERAGE:	955	MB	@ HOUR(S)	VAR	ON DAY(S)	17 , 18
MAXIMUM 24-HR AVERAGE:	954	MB			ON DAY(S)	17
					VAR-VARIOUS	
OPERATIONAL TIME:						720 HRS
AMD OPERATION UPTIME:						100.0 %
STANDARD DEVIATION:	6.50				MONTHLY AVERAGE:	943 MB

BP(bp)[mb] Station: LICA MASKWA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



BP(bp)[mb]

AMBIENT TEMPERATURE

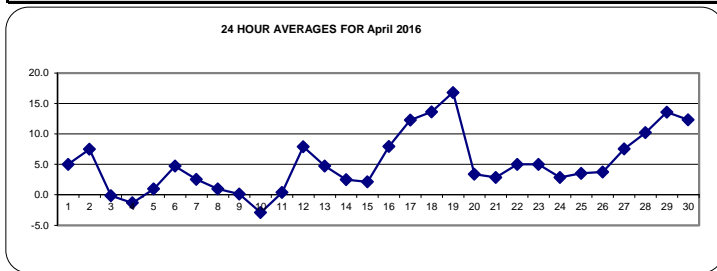
AMBIENT TEMPERATURE (AmbTPX) hourly averages in Degrees Celsius

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	RDGS.
DAY	DAY	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
1	1	0.2	-1.2	-1.6	-1.4	-1.8	-0.7	0.3	1.8	3.4	6.1	8.2	10.6	12.5	12.8	13.0	13.1	12.8	11.3	8.6	5.4	3.7	1.9	1.4	0.1	-1.8	13.1	5.0	24
2	2	0.0	-0.1	-1.4	-2.9	-3.5	-3.9	-3.1	2.2	6.5	11.9	15.6	17.8	19.1	19.2	18.7	18.2	16.7	16.3	13.7	8.6	5.4	3.3	1.6	0.1	-3.9	19.2	7.5	24
3	3	-0.7	-1.1	-1.1	-1.0	0.1	-0.2	0.1	1.5	1.3	1.3	0.8	1.1	1.9	1.8	2.5	3.7	3.4	2.6	0.3	-2.2	-3.3	-4.2	-5.4	-6.1	-6.1	3.7	-0.1	24
4	4	-7.9	-8.3	-8.0	-8.5	-8.5	-8.0	-6.9	-2.6	0.2	2.7	3.5	3.3	3.1	2.9	3.3	3.2	2.3	2.1	1.4	1.0	0.1	-0.5	-0.8	-0.7	-8.5	3.5	-1.3	24
5	5	-0.6	-0.7	-0.7	-0.7	-0.8	-1.0	-0.9	-0.1	1.2	1.3	1.7	2.8	3.0	3.1	2.3	2.4	2.2	2.2	1.7	1.1	0.5	0.9	1.3	1.7	-1.0	3.1	1.0	24
6	6	1.5	1.7	2.0	2.7	3.5	3.7	4.0	4.9	5.1	5.7	5.6	6.3	8.2	8.9	9.4	8.2	7.4	7.0	5.5	4.4	3.2	2.5	1.5	0.5	0.5	9.4	4.7	24
7	7	-0.6	-1.7	-2.8	-4.4	-4.8	-4.2	-2.2	0.1	1.2	3.7	5.8	7.5	9.4	10.2	9.3	10.4	11.1	9.1	5.7	2.6	0.9	-0.6	-1.7	-2.4	-4.8	11.1	2.6	24
8	8	-3.0	-3.7	-3.9	-4.2	-4.3	-4.6	-3.4	-1.9	-1.2	-0.4	1.0	2.0	4.3	5.9	6.5	7.3	6.5	5.9	4.1	2.9	2.6	2.4	1.5	0.8	-4.6	7.3	1.0	24
9	9	0.8	0.5	0.2	-0.4	-0.9	-0.3	0.4	1.3	2.1	4.1	4.8	4.7	4.0	3.0	1.2	0.7	-0.2	-0.8	-1.7	-2.7	-3.5	-4.2	-4.8	-5.0	-5.0	4.8	0.1	24
10	10	-6.1	-6.8	-6.7	-6.5	-6.6	-6.6	-6.5	-6.1	-4.7	-2.5	-0.6	0.0	1.3	1.7	2.1	2.7	2.4	1.4	-0.3	-3.0	-4.2	-4.7	-4.6	-4.8	-6.8	2.7	-2.9	24
11	11	-6.3	-7.6	-8.5	-9.7	-10.9	-11.3	-7.7	-2.3	-0.3	1.7	3.9	5.2	6.7	8.1	8.8	8.7	8.9	7.9	6.1	4.3	3.1	2.2	-0.2	-1.3	-11.3	8.9	0.4	24
12	12	-0.9	-0.9	-1.0	-2.3	-3.5	-4.0	-1.8	3.8	8.0	12.2	14.3	15.4	16.9	17.6	17.9	17.9	15.8	13.9	12.9	10.4	8.7	7.3	6.3	5.2	-4.0	17.9	7.9	24
13	13	3.5	1.8	0.9	0.6	0.5	1.3	2.3	4.8	6.4	8.5	9.1	11.9	10.0	9.1	7.8	7.3	6.4	5.6	5.2	4.1	3.2	2.1	1.4	0.4	0.4	11.9	4.8	24
14	14	1.9	2.9	2.8	2.3	2.1	2.2	2.0	2.1	2.2	3.3	4.2	6.6	6.5	5.8	5.6	5.7	5.7	4.4	3.6	1.3	-1.0	-3.2	-4.3	-4.3	-4.3	6.6	2.5	24
15	15	-5.3	-5.3	-5.4	-6.2	-5.3	-5.2	-3.3	-1.0	0.3	1.4	3.2	5.2	6.9	8.6	10.5	10.5	10.4	10.1	7.5	3.8	1.9	2.8	2.1	3.0	-6.2	10.5	2.1	24
16	16	3.0	2.0	-1.1	-2.8	-3.3	-2.7	1.9	4.7	6.4	9.2	11.9	13.0	15.3	16.0	16.8	16.8	18.0	16.9	14.9	10.1	7.8	5.3	3.7	6.8	-3.3	18.0	7.9	24
17	17	8.5	7.8	7.1	6.5	3.2	-0.1	2.0	8.7	11.5	14.3	16.8	18.6	19.7	21.2	22.0	22.3	22.4	21.7	19.6	14.4	10.4	7.6	4.9	3.4	-0.1	22.4	12.3	24
18	18	2.5	1.6	0.8	-0.3	-0.8	-1.1	2.8	12.0	14.3	17.1	20.5	22.1	22.1	22.9	23.1	23.0	23.0	22.2	20.2	18.1	16.4	16.0	14.5	14.6	-1.1	23.1	13.7	24
19	19	14.2	13.4	12.2	10.9	9.5	8.7	10.5	12.9	14.7	18.1	21.7	24.3	23.4	25.0	24.6	25.0	24.4	22.0	18.5	16.1	14.8	14.9	13.1	10.9	8.7	25.0	16.8	24
20	20	8.5	6.0	5.9	4.6	4.0	3.6	4.6	5.8	6.3	4.8	2.9	1.9	2.1	3.1	4.5	6.0	5.8	5.3	3.9	1.1	-1.2	-2.3	-2.7	-2.9	-2.9	8.5	3.4	24
21	21	-4.3	-5.2	-6.7	-7.4	-7.7	-7.8	-4.1	0.5	3.2	4.7	5.0	7.0	8.5	9.7	10.6	11.3	11.6	10.7	8.7	6.8	4.5	3.9	3.6	1.9	-7.8	11.6	2.9	24
22	22	0.8	0.5	0.3	-0.7	-1.4	-1.2	0.2	1.2	3.2	5.9	8.9	9.5	9.7	9.6	9.2	9.4	9.1	8.5	7.7	6.5	6.5	6.4	5.8	4.9	-1.4	9.7	5.0	24
23	23	3.9	3.4	3.4	3.0	2.5	2.0	2.1	3.0	4.2	5.1	6.2	7.1	6.9	7.1	7.2	7.4	8.6	8.1	6.9	6.1	5.3	4.2	3.5	3.1	2.0	8.6	5.0	24
24	24	2.9	4.2	4.1	3.5	3.4	2.1	2.4	3.4	4.2	4.4	4.8	4.5	3.5	3.3	2.3	1.9	2.2	2.1	2.6	1.3	1.0	1.2	2.1	1.2	1.0	4.8	2.9	24
25	25	0.6	0.5	0.5	0.5	0.5	0.2	0.5	1.3	2.3	4.6	7.0	8.3	9.6	8.6	8.8	7.6	5.0	3.1	3.3	3.0	2.6	2.4	2.0	1.7	0.2	9.6	3.5	24
26	26	1.4	1.1	0.8	0.4	0.4	0.4	0.6	0.9	1.7	2.7	3.2	4.1	5.1	6.1	7.2	7.9	8.7	8.7	8.0	6.3	5.1	3.4	3.4	2.3	0.4	8.7	3.7	24
27	27	-0.7	-2.0	-2.7	-3.0	-3.4	-2.7	0.9	5.9	8.1	10.8	13.4	14.8	16.3	17.1	15.4	16.3	17.3	16.6	14.8	11.1	7.9	5.0	2.6	1.2	-3.4	17.3	7.5	24
28	28	0.0	-1.1	-1.6	-1.9	-2.1	-1.5	2.1	6.9	12.4	16.3	17.4	18.4	18.1	18.6	18.5	18.2	17.6	17.0	15.5	13.2	10.6	11.1	10.8	10.7	-2.1	18.6	10.2	24
29	29	10.1	9.2	8.0	7.0	6.3	6.7	9.3	11.5	13.5	15.1	17.2	18.7	19.1	19.6	20.0	19.8	19.4	19.2	17.8	15.0	12.2	11.4	10.4	9.6	6.3	20.0	13.6	24
30	30	10.2	9.7	6.8	3.2	2.9	2.5	7.3	11.3	13.8	16.2	17.2	17.8	19.2	17.7	17.3	16.5	16.5	16.7	16.1	14.4	11.9	10.7	10.3	9.4	2.5	19.2	12.3	24
HOURLY MAX		14.2	13.4	12.2	10.9	9.5	8.7	10.5	12.9	14.7	18.1	21.7	24.3	23.4	25.0	24.6	25.0	24.4	22.2	20.2	18.1	16.4	16.0	14.5	14.6				
HOURLY AVG		1.3	0.7	0.1	-0.6	-1.0	-1.1	0.5	3.3	5.1	7.0	8.5	9.7	10.4	10.8	10.9	11.0	10.7	9.9	8.4	6.2	4.6	3.6	2.8	2.2				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

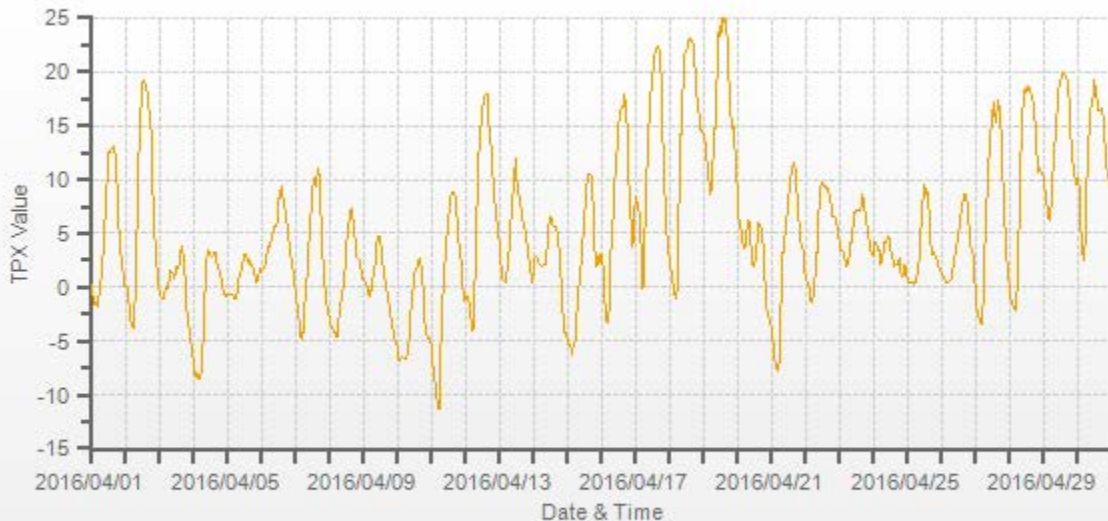
24 HOUR AVERAGES FOR April 2016



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	-11.3 °C	@ HOUR(S)	5	ON DAY(S)	11
MAXIMUM 1-HR AVERAGE:	25.0 °C	@ HOUR(S)	13, 15	ON DAY(S)	19, 19
MAXIMUM 24-HR AVERAGE:	16.8 °C			ON DAY(S)	19
				VAR-VARIOUS	
OPERATIONAL TIME:				720	HRS
AMD OPERATION UPTIME:				100.0	%
STANDARD DEVIATION:	7.09			MONTHLY AVERAGE:	5.2 °C

TPX[C°] Station: LICA MASKWA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



TPX[C°]

PRECIPITATION

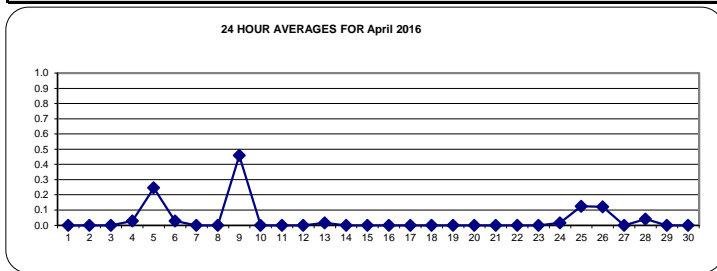
PRECIPITATION hourly averages (mm)

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR		
DAY	MIN.	MAX.	AVG.	RDGS.																										
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.2	0.0	0.0	0.3	0.0	24
5	0.5	0.6	0.7	0.1	0.0	0.7	0.7	0.6	0.3	0.3	0.8	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.8	0.2	24	
6	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	24	
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
9	0.0	0.0	0.0	1.7	3.8	4.5	0.8	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5	0.5	24	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	24	
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.0	0.2	0.0	24		
25	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.3	0.2	0.3	0.5	0.4	0.3	0.0	0.5	0.1	0.1	24		
26	0.3	0.4	0.4	0.6	0.6	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.1	24		
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24		
28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	24		
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24		
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24		
HOURLY MAX	0.5	0.6	0.7	1.7	3.8	4.5	0.8	0.6	1.0	0.3	0.8	0.2	0.0	0.0	0.4	0.1	0.4	0.4	0.3	0.2	0.3	0.5	0.4	0.4						
HOURLY AVG	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

24 HOUR AVERAGES FOR April 2016



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	0.0	MM	@ HOUR(S)	VAR	ON DAY(S)	ALL
MAXIMUM 1-HR AVERAGE:	4.5	MM	@ HOUR(S)	5	ON DAY(S)	9
MAXIMUM 24-HR AVERAGE:	0.5	MM			ON DAY(S)	9
MONTHLY TOTAL	26.0	MM			VAR-VARIOUS	
OPERATIONAL TIME:					720	HRS
AMD OPERATION UPTIME:					100.0	%
STANDARD DEVIATION:	0.25				MONTHLY AVERAGE:	0.0
						MM

PRECIP[mm] Station: LICA MASKWA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



PRECIP[mm]

APPENDIX II
EQUIPMENT CALIBRATION RESULTS

SULPHUR DIOXIDE



API 101E Sulphur Dioxide Analyzer Calibration

Date: April 14, 2016	Barometric Pressure: 0.925 atm
Company/Airshed: LICA	Station Temperature °C: 23
Location/Station Name: Maskwa	Weather Conditions: Mix of sun and clouds
Parameter: Sulphur Dioxide	Calibration Purpose: routine monthly
Start Time 24 hr. (mst): 10:36	Performed By/Reviewer: Alex Yakupov Trina Whitsitt
End Time 24 hr. (mst): 14:24	Cal Gas Expiry Date: December 2, 2023
Calibration Method: Gas Dilution	Converter Model & s/n (if applicable): n/a

Analyzer: Serial Number: 508	Range ppb: 1000
Last Calibration Date: March 15, 2016	As Found C.F.: 1.025
Previous C.F.: 0.999	New C.F.: 1.000

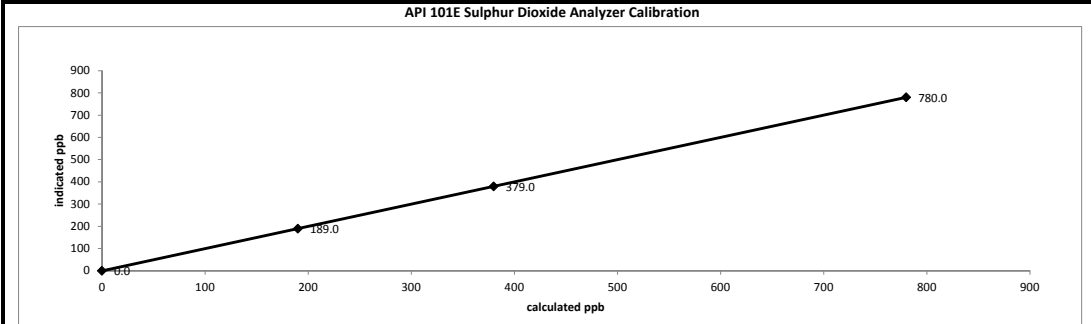
Calibrator: Flow Meter ID's: n/a Make & Model: SABIO 2010 D Serial #: 11900613 Cal Gas Cylinder I.D. #: LL119346 Cal Gas Conc. (ppm): 50.0	Standard Calibration Points for Ranges <table border="1" style="margin: auto;"> <thead> <tr> <th>Point</th> <th>Sulphur Dioxide Standard Calibration Points</th> </tr> </thead> <tbody> <tr> <td>High</td> <td>780</td> </tr> <tr> <td>Mid</td> <td>380</td> </tr> <tr> <td>Low</td> <td>190</td> </tr> </tbody> </table>	Point	Sulphur Dioxide Standard Calibration Points	High	780	Mid	380	Low	190
Point	Sulphur Dioxide Standard Calibration Points								
High	780								
Mid	380								
Low	190								

ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
as found zero	5000	0.00	5000	0.0	1.0	N/A
as found high	4922	78.00	5000	780.0	762.0	1.025
adjusted zero	5000	0.00	5000	0.0	0.0	n/a
adjusted high	4922	78.00	5000	780.0	780.0	1.000
mid	4962	38.00	5000	380.0	379.0	1.003
low	4981	19.00	5000	190.0	189.0	1.005
calibrator zero	5000	0.00	5000	0.0	0.0	n/a
Average C.F. =						1.003

Linear Regression/Calibration Results:

Correlation Coefficient = <u>1.000</u>	LIMITS
Slope = <u>1.000</u>	> or = 0.995
b (Intercept as % of full scale) = <u>0.06%</u>	.95-1.05
% change in C.F. from last cal = <u>-2.60%</u>	± 3% F.S.
	± 10%

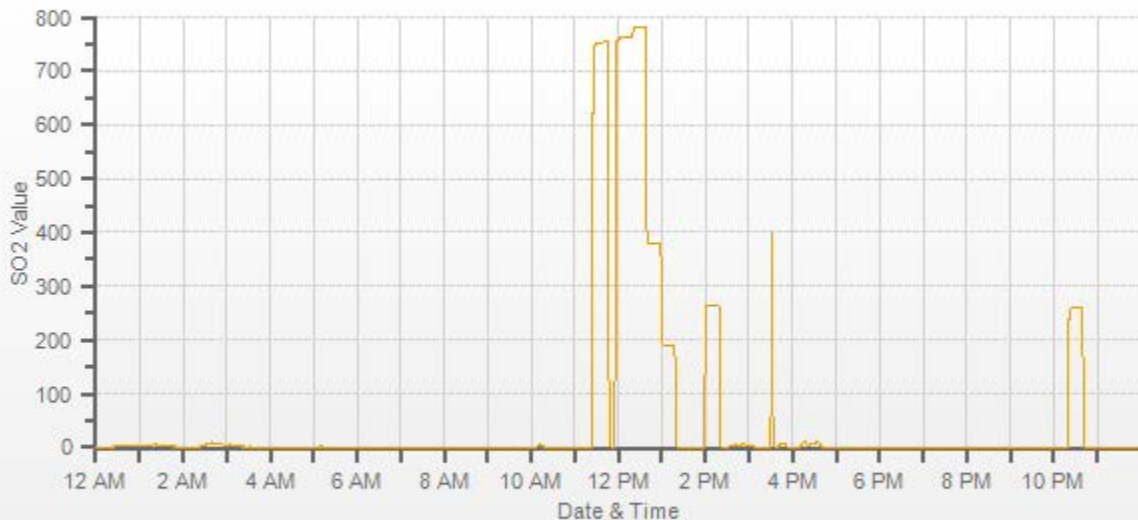


As found:	As left:
SLOPE: <u>0.999</u>	SLOPE: <u>1.022</u>
OFFSET: <u>93.9</u>	OFFSET: <u>94.9</u>
HVPS: <u>479</u>	HVPS: <u>479</u>
RCCELL TEMP: <u>50.0</u>	RCCELL TEMP: <u>50.0</u>
BOX TEMP: <u>30.3</u>	BOX TEMP: <u>32.2</u>
PMT TEMP: <u>7.7</u>	PMT TEMP: <u>7.7</u>
IZS TEMP: <u>45.0</u>	IZS TEMP: <u>45.0</u>
Converter Temp: <u>n/a</u>	Converter Temp: <u>n/a</u>
PRES: <u>24.6</u>	PRES: <u>24.6</u>
SAMP FL: <u>590</u>	SAMP FL: <u>591</u>
UV LAMP: <u>3449.3</u>	UV LAMP: <u>3447.7</u>
LAMP RATIO: <u>98.5</u>	LAMP RATIO: <u>98.7</u>
STR. LGT: <u>46.9</u>	STR. LGT: <u>48.5</u>
DRK PMT: <u>10.1</u>	DRK PMT: <u>10.7</u>
DRK LMP: <u>-0.9</u>	DRK LMP: <u>-0.7</u>
Internal Span: <u>260</u>	Internal Span: <u>264.7</u>

Comments:

Sample filter changed.

SO2[ppb] Station: LICA MASKWA Daily: 2016/04/14 Type: AVG 1 Min. [1 Min.]



— SO2[ppb]

HYDROGEN SULPHIDE



API 101E Hydrogen Sulphide Analyzer Calibration

Date: April 15, 2016	Barometric Pressure: 936 atm
Company/Airshed: LICA	Station Temperature °C: 22
Location/Station Name: Maskwa	Weather Conditions: Mix of sun and clouds
Parameter: Hydrogen Sulphide	Calibration Purpose: routine monthly
Start Time 24 hr. (mst): 9:27	Performed By/Reviewer: Alex Yakupov Trina Whitsitt
End Time 24 hr. (mst): 12:58	Cal Gas Expiry Date: July 15, 2017
Calibration Method: Gas Dilution	Converter Model & s/n (if applicable): n/a

Analyzer: Serial Number: 511	Range ppb: 100
Last Calibration Date: March 15, 2016	As Found C.F.: 1.012
Previous C.F.: 0.999	New C.F.: 1.000

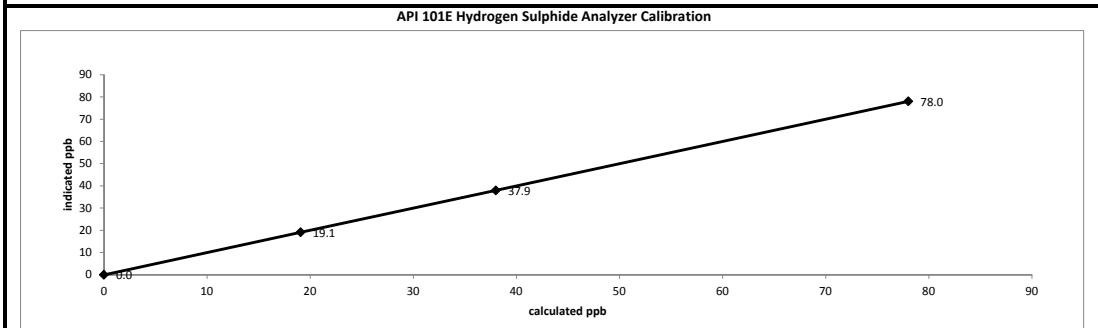
Calibrator: Flow Meter ID's: n/a Make & Model: API 700 Serial #: 830 Cal Gas Cylinder I.D. #: LL36837 Cal Gas Conc. (ppm): 10.0	Standard Calibration Points for Ranges <table border="1" style="margin: auto;"> <thead> <tr> <th>Point</th> <th>Hydrogen Sulphide Standard Calibration Points</th> </tr> </thead> <tbody> <tr> <td>High</td> <td>78</td> </tr> <tr> <td>Mid</td> <td>38</td> </tr> <tr> <td>Low</td> <td>19</td> </tr> </tbody> </table>	Point	Hydrogen Sulphide Standard Calibration Points	High	78	Mid	38	Low	19
Point	Hydrogen Sulphide Standard Calibration Points								
High	78								
Mid	38								
Low	19								

ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
as found zero	7498	0.00	7498	0.0	-0.4	N/A
as found high	7439	58.50	7498	78.0	76.7	1.012
adjusted zero	7498	0.00	7498	0.0	0.0	n/a
adjusted high	7439	58.50	7498	78.0	78.0	1.000
mid	7470	28.50	7499	38.0	37.9	1.003
low	7482	14.30	7496	19.1	19.1	0.999
calibrator zero	7498	0.00	7498	0.0	0.0	n/a
Average C.F.=						1.001

Linear Regression/Calibration Results:

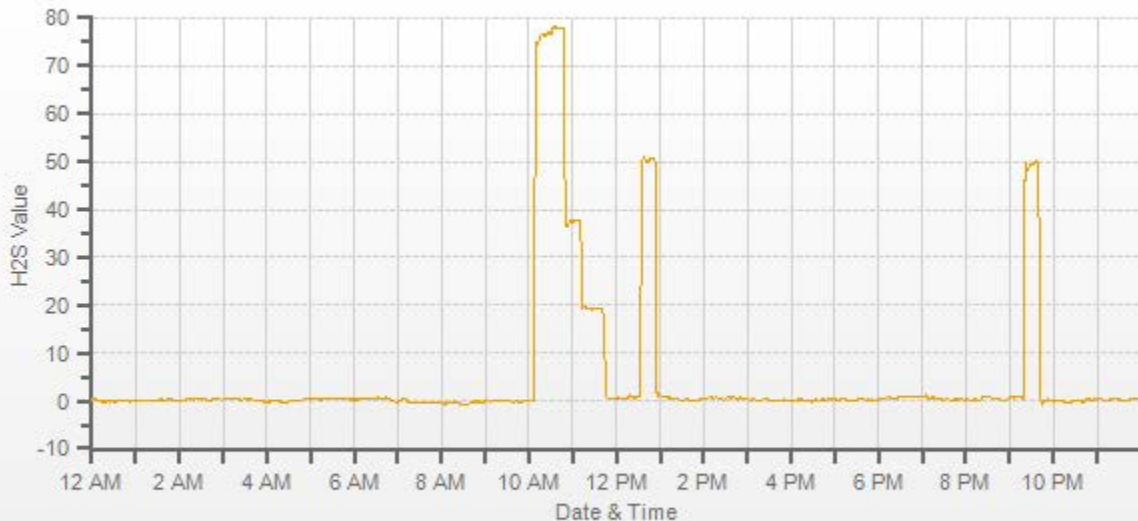
Correlation Coefficient = 1.000	LIMITS
Slope = 1.001	> or = 0.995
b (Intercept as % of full scale) = 0.01%	.95-1.05
% change in C.F. from last cal = -1.30%	± 3% F.S.
	± 10%



As found: SLOPE: 0.953 OFFSET: 48.5 HVPS: 616 RCELL TEMP: 50.0 BOX TEMP: 32.1 PMT TEMP: 7.9 IZS TEMP: 45.0 Converter Temp: 314.5 PRES: 27.6 SAMP FL: 649 UV LAMP: 3154.4 LAMP RATIO: 98.6 STR. LGT: 23.1 DRK PMT: 37.6 DRK LMP: 7.2 Internal Span: 50.4	As left: SLOPE: 0.964 OFFSET: 47.7 HVPS: 616 RCELL TEMP: 50.0 BOX TEMP: 32.8 PMT TEMP: 7.9 IZS TEMP: 45.0 Converter Temp: 315.0 PRES: 27.6 SAMP FL: 648 UV LAMP: 3148.0 LAMP RATIO: 98.4 STR. LGT: 23.0 DRK PMT: 37.0 DRK LMP: 7.3 Internal Span: 50.5
--	---

Comments:

Sample filter changed.



— H2S[ppb]

TOTAL HYDROCARBON



Thermo 51C Total Hydrocarbon Analyzer Calibration

Date:	April 14, 2016	Barometric Pressure:	0.925 atm
Company/Airshed:	LCA	Station Temperature °C:	23
Location/Station Name:	Maskwa	Weather Conditions:	Mix of sun and clouds
Parameter:	Total Hydrocarbon	Calibration Purpose:	routine monthly
Start/End Time 24 hr. (mst):	10:36 / 13:34	Performed By/Reviewer:	Alex Yakupov / Trina Whitsitt
Calibration Method:	Gas Dilution	Cal Gas Expiry Date:	November 25, 2023

Analyzer:	Serial Number:	436609738	Range ppm:	50
	Last Calibration Date:	March 15, 2016	As Found C.F.:	1.003
	Previous Cal High Point C.F.:	0.998	New C.F.:	1.000

Calibrator:	Flow Meter ID's:	n/a	Standard Calibration Points for a Range of 50 ppm	
	Make & Model:	API 700		
	Serial #:	830		
	Cal Gas Cylinder I.D. #:	LL165372		
	CH ₄ /C ₂ H ₆ Cylinder Conc. (ppm):	606.0 212.0	Point	Target ppm
	CH ₄ as propane/total CH ₄ equivalents (ppm):	583.0 1189.0	High	38
			Mid	18
			Low	9

ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Point	Calibrator Flow Rates (cc/min)			Calculated Concentration:	Indicated Concentration:	Correction Factors:
	Diluent	Cal Gas	Total	(ppm)	(ppm)	
as found zero	1999	0.00	1999	0.0	0.00	n/a
as found high	1931	65.00	1996	38.72	38.62	1.003
adjusted high	1931	65.00	1996	38.72	38.73	1.000
mid	1969	31.00	2000	18.43	18.40	1.002
low	1984	16.00	2000	9.51	9.38	1.014
calibrator zero	1999	0.00	1999	0.0	0.00	n/a
Average C.F. =						1.005

Linear Regression/Calibration Results:

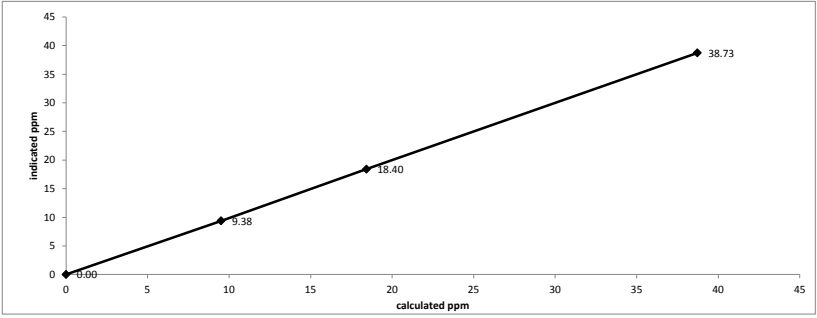
Correlation Coefficient = 1.000 LIMITS > or = 0.995

Slope = 0.999 .95-1.05

b (Intercept as % of full scale) = 0.12% ± 3% F.S.

% change in C.F. from last cal = -0.46% ± 10%

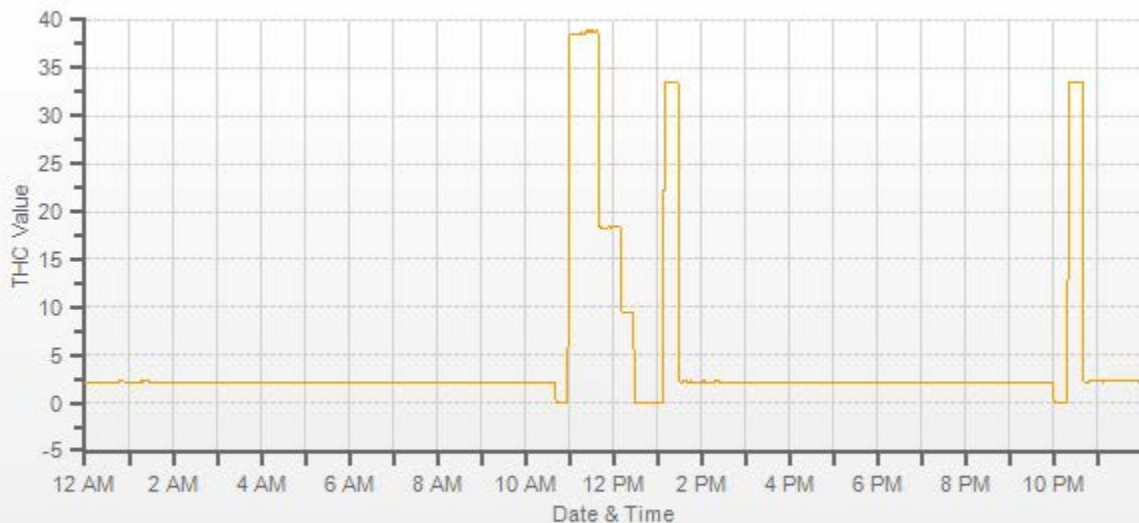
Thermo 51C Total Hydrocarbon Analyzer Calibration



As found:	As left:
H2 cylinder (psi): 1300	H2 cylinder (psi): 1300
H2 cylinder reg set (psi): 22	H2 cylinder reg set (psi): 22
Span Cylinder (psi): 1100	Span Cylinder (psi): 1100
Span Cylinder Reg Set (psi): 23	Span Cylinder Reg Set (psi): 23
Zero Air Gen Pressure: 35	Zero Air Gen Pressure: 35
measurement alarms: None	measurement alarms: None
service alarms: None	service alarms: None
cnt: 1072	cnt: 1071
rng: 1	rng: 1
try: 0	try: 0
flm: 186.6	flm: 186.0
det: 125.4	det: 125.3
Flame: 186	Flame: 186
Filter: 125	Filter: 125
Base: 125	Base: 125
Sample psi: 07.52	Sample psi: 07.52
Internal Air Pressure: 20	Internal Air Pressure: 20
Internal Fuel Pressure: 12	Internal Fuel Pressure: 12
Intenal Pressure Gauge psi: 28	Intenal Pressure Gauge psi: 28
Internal Span: 33.05	Internal Span: 33.45

Comments:

Sample filter changed. No ZERO adjustment made.



— THC[ppm]

NITROGEN DIOXIDE



API 200A NO-NO2-NOx Analyzer Calibration

Date: April 15, 2016	Barometric Pressure: 0.936 atm
Company/Airshed: LICA	Station Temperature °C: 22
Location/Station Name: Maskwa	Weather Conditions: Mix of sun and clouds
Start/End Time 24 hr. (mst): 12:18/ 17:28	Calibration Purpose: routine monthly
G.P.T. to be used for Ozone? No	Performed By/Reviewer: Alex Yakupov Trina Whitsitt
Calibration Method: Gas Dilution & Varying UV Lamp Power	Cal Gas Expiry Date: December 2, 2023

Analyzer: Serial Number: 1899 Last Calibration Date: March 15, 2016 Range ppb: 1000	Correction Factors: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Previous C.F.:</th> <th>As Found C.F.:</th> <th>New C.F.:</th> </tr> </thead> <tbody> <tr> <td>NO =</td> <td>1.000</td> <td>1.026</td> <td>0.999</td> </tr> <tr> <td>NO₂ =</td> <td>1.000</td> <td>1.000</td> <td>1.000</td> </tr> <tr> <td>NOx =</td> <td>1.000</td> <td>1.026</td> <td>0.999</td> </tr> </tbody> </table>		Previous C.F.:	As Found C.F.:	New C.F.:	NO =	1.000	1.026	0.999	NO ₂ =	1.000	1.000	1.000	NOx =	1.000	1.026	0.999
	Previous C.F.:	As Found C.F.:	New C.F.:														
NO =	1.000	1.026	0.999														
NO ₂ =	1.000	1.000	1.000														
NOx =	1.000	1.026	0.999														

Calibrator: Flow Meter ID's: n/a Make & Model: SABIO 2010 D Serial #: 11900613 Cal Gas Cylinder I.D. #: LL119346 NO/NOx Gas Conc. (ppm): 50.0 50.0	Standard Calibration Points for a Range of: 1000 ppb <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Point</th> <th>Target NO (ppb)</th> <th>Target NO₂ (ppb)</th> <th>Cc Ozone ?</th> </tr> </thead> <tbody> <tr> <td>High</td> <td>780</td> <td>500</td> <td>n/a</td> </tr> <tr> <td>Mid</td> <td>380</td> <td>275</td> <td>n/a</td> </tr> <tr> <td>Low</td> <td>190</td> <td>100</td> <td>n/a</td> </tr> <tr> <td>Extra Point #1</td> <td>n/a</td> <td>n/a</td> <td>n/a</td> </tr> <tr> <td>Extra Point #2</td> <td>n/a</td> <td>n/a</td> <td>n/a</td> </tr> </tbody> </table>	Point	Target NO (ppb)	Target NO ₂ (ppb)	Cc Ozone ?	High	780	500	n/a	Mid	380	275	n/a	Low	190	100	n/a	Extra Point #1	n/a	n/a	n/a	Extra Point #2	n/a	n/a	n/a
Point	Target NO (ppb)	Target NO ₂ (ppb)	Cc Ozone ?																						
High	780	500	n/a																						
Mid	380	275	n/a																						
Low	190	100	n/a																						
Extra Point #1	n/a	n/a	n/a																						
Extra Point #2	n/a	n/a	n/a																						

ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated NO	Calculated NOx	Indicated NO	Indicated NOx	NO C.F.	NOx C.F.
Point	Diluent	Cal Gas	Total Flow	(ppb)	(ppb)	(ppb)	(ppb)		
as found zero	5000	0.0	5000	0	0	0.0	0.0	n/a	n/a
as found high	4922	78.0	5000	780.0	780.0	760.0	760.0	1.026	1.026
adjusted high	4922	78.00	5000	780.0	780.0	781.0	781.0	0.999	0.999
mid	4962	38.00	5000	380.0	380.0	375.0	376.0	1.013	1.011
low	4981	19.00	5000	190.0	190.0	186.0	186.0	1.022	1.022
calibrator zero	5000	0.00	5000	0	0	0.0	0.0	n/a	n/a
Average C.F.=								1.011	1.010

ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calibrator Setting	Indicated NO	Indicated NOx	Indicated NO ₂	NO drop	NO ₂ gain	NO ₂ C.F.
Point	Diluent	Cal Gas	Total Flow	volts or ppb	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)
NOx reference	4922	78.00	5000	0.0	784.0	784.0	0.0	0.0	0.0	
as found high NO2	4922	78.00	5000	490.0	280.0	784.0	504.0	504.0	504.0	1.000
gpt mid	4922	78.00	5000	260.0	512.0	785.0	273.0	272.0	273.0	0.996
gpt low	4922	78.00	5000	94.0	679.0	785.0	106.0	105.0	106.0	0.991
Average NO₂ C.F.=									0.996	

Linear Regression/Calibration Results:

	NO	NOx	NO ₂	LIMITS
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995
Slope =	0.997	0.997	1.000	.95-1.05
b (Intercept as % of full scale)=	-0.28%	-0.26%	0.06%	± 3% F.S.
% change in C.F. from last cal=	-2.63%	-2.63%	0.00%	± 10%
NO2 converter efficiency			1.00	0.96 to 1.04

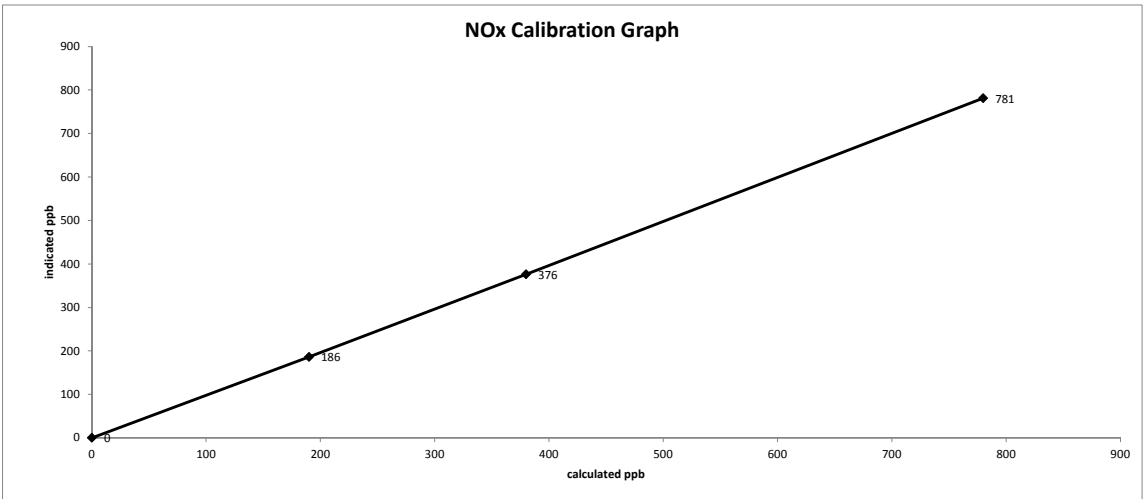
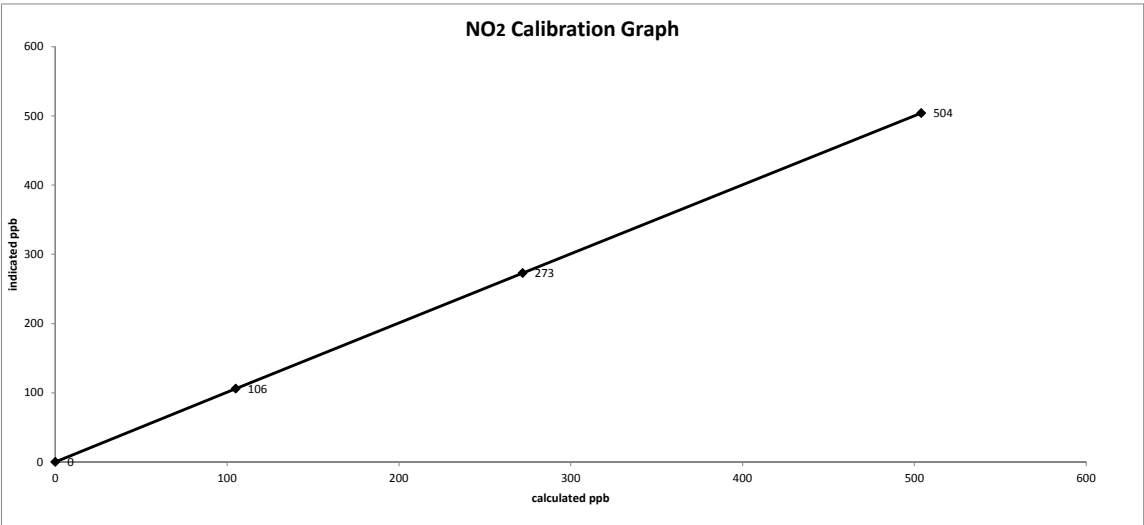
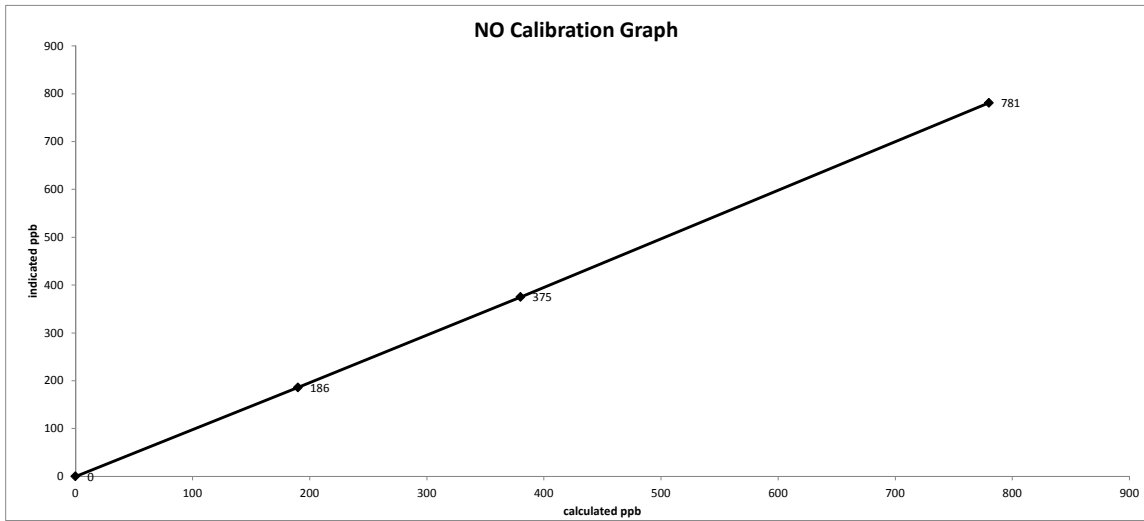
As found:	As left:
NOx SLOPE: 0.914	NOx SLOPE: 0.936
NOx OFFS: -1.2	NOx OFFS: -1.2
NO SLOPE: 0.923	NO SLOPE: 0.946
NO OFFS: -2.3	NO OFFS: -2.3
SAMP FLW: 557	SAMP FLW: 558
OZONE FL: 78	OZONE FL: 78
NORM PMT: -2.0	NORM PMT: -2.1
AZERO: 23.3	AZERO: 23.7
HVPS: 682	HVPS: 682
DCPS: 2578	DCPS: 2573
RCELL: 50.1	RCELL: 50.5
BOX TEMP: 32.3	BOX TEMP: 31.9
IZS TEMP: 40.1	IZS TEMP: 40.4
MOLY TEMP: 315.1	MOLY TEMP: 316.4
RCEL: 5.4	RCEL: 5.6
SAMP: 26.8	SAMP: 26.8
Internal Span NO: 3.3	Internal Span NO: 3.2
Internal Span NO2: 354.3	Internal Span NO2: 352.8
Internal Span NOx: 357.6	Internal Span NOx: 355.8

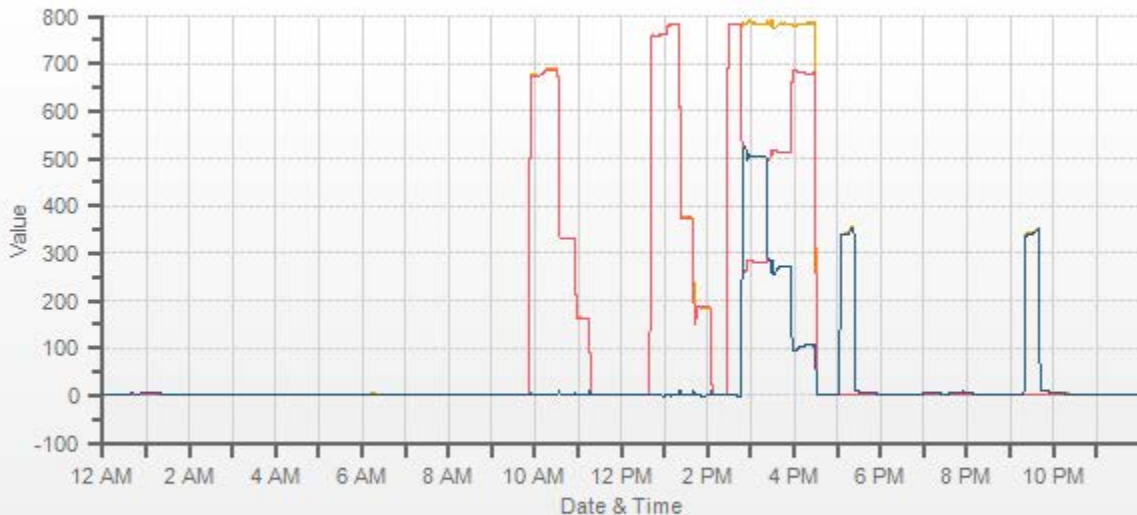
Comments:

Sample filter changed. No ZERO adjustment made. No NO2 adjustment made.

Date: April 15, 2016
Company/Airshed: LICA
Location/Station Name: Maskwa

Start/End Time 24 hr. (mst): 12:18/ 17:28
Calibration Purpose: routine monthly
Calibration Method: Gas Dilution & Varying UV Lamp Power





— NOX[ppb] — NO[ppb] — NO2[ppb]

WIND SYSTEM

**Met One Instruments Inc.
Certificate of Calibration**

Instrument: Sonic Wind Sensor

Model No.: 50.5H

Manufacturer: Met One Instruments Inc.

Serial No.: H10703

Sales Order No.: 101530

Customer: Maxxam Analytics

Tested per P.O. No.:

35-54786

Instrument Condition Within Tolerance: As Found () As Left (X)
 Corrective Action: No Adjustment () Adjust (X) Repair ()
 Preventative Maintenance ()

Quality Control Manual Revision: September 16, 2013 MP42201Rev. G

All Work Performed per Customers Purchase Order Requirements

Calibration Document No. 50.5-6100

Date (As Found): n/a

Date (As Left Test): 3/4/2014

Calibrated by:

Dan Fitch

Date:

3/4/14

Test Equipment Used for Calibration of Instruments

Description	Manufacturer	Model No.	Serial No.	Cal Date	Cal Due	Accuracy
Digital Multimeter	keithley	197A	490833	3/8/2013	3/8/2014	+/- .02% of input
Counter	Hewlett Packard	5245L	71616181	3/8/2013	3/8/2014	+/- 0.0001%
Standard Cup Assembly	Met One Instruments	170.41	3309	4/24/2012	4/24/2017	< .15mph or 1% ws

Environmental Data: Temperature 65 to 80 DegF

Vibration none

Humidity 20 to 70 %

Radiation none

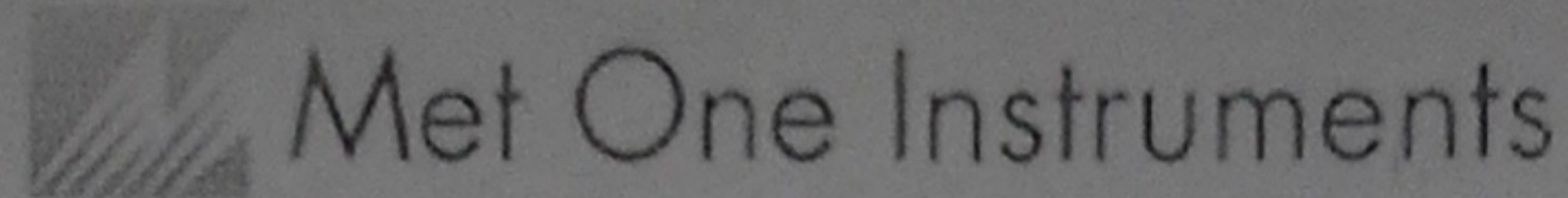
The standards used for calibration have accuracies equal to or greater than the instruments tested. These standards are on record and are traceable to NIST to the extent allowed by the institute's calibration facility. Unless otherwise stated hereon, all instruments are calibrated to meet the manufacturer's published specifications. The calibration system complies with MIL-STD-45662A (8/1/88). Instruments accuracy meets the requirements of Regulatory Guide 1.23 (2/72). Compliant with ISO 9001:2008 requirements.

QC Inspection by:

Byron Pearson

Date:

3/10/14



Sonic Wind Sensor Certificate of Calibration

Sensor Model No.: 50.5H Sensor Serial No.: H10703
 Sensor Output Swing 0V - 1.0V Sensor Output Range: 0 - 50.0 MPS
 Customer: Maxxam Analytics Sales Order No.: 115035
 Tested per PO: 35-62828 Calibration Date: 03/30/2016
 Calibrated by: David Frith *DF*

QC Inspection *Byron Dawson*

Instrument Condition Within Tolerance: As Found As Left
 Corrective Action: No Adjustment Adjust Repair
 Preventative Maintenance

As Found Test Date: N/A As Left Test Date 03/30/2016

Quality Control Manual Revision: September 16, 2013 MP42201 Rev. G.

All Work Performed per Customer Purchase Order Requirements.

Calibration Document No. 50.5-6100

Test Equipment Used for Calibration of Instruments

Description	Manufacturer	Model No.	Serial No.	Cal Date	Cal Due	Voltage Accuracy	Time Base Accuracy
Data Acquisition	Campbell Scientific	CR1000	6569	4/06/2015	4/06/2018	+/- 3mV	< 6 ppm
NIST Cupset	Met One Instruments	170-41	3309	4/24/2012	4/24/2017	Accuracy < 0.15 mph or 1% WS	

Environmental Data: Temperature 65 to 80 Deg F Vibration none

Humidity 20 to 70% Radiation none

The standards used for calibration have accuracies equal to or greater than the instruments tested. These standards are on record and are traceable to NIST to the extent allowed by the institute's calibration facility. Unless otherwise stated heron, all instruments are calibrated to meet the manufacturer's published specifications. The calibration system complies with MIL-STD-45662A (8/1/88). Instrument's accuracy meets the requirements of Regulatory Guide 1.23 (2/72). Compliant with IS) 9001:2008 requirements

CALIBRATORS



Calibrator Performance Audit

OZONE

File No. 2015-163

Company: Maxxam

Operator: Chris Wesson

Calibrator:
 Make/Model Sabio 2010D
 Serial Number 11900613
 Oven Temperature 49.8
 Last Verification Date May 21, 2015

Flow Measurement Device:
 Make/Model NA
 Serial Number NA
 Temperature (°C) 24
 Barometric Pressure 700 mmHg

Flow Measurements
 Pt. No. 1 5000 Pt. No. 2 5000 Pt. No. 3 5000

Calibrator Flow (scm)	Calculated Concentration (ppm)	Indicated Concentration (ppm)	% Difference	
			vs Audit Gas	% Diff. Limit
4999	0.000	-0.001		
5000	0.381	0.385	1%	± 10%
5000	0.180	0.182	2%	± 10%
5000	0.090	0.091	2%	± 10%
Absolute Average Percent Difference			2%	± 10%

LINEAR REGRESSION ANALYSIS
 $y=mx+b$ (where x=calculated concentration, y=indicated concentration)

O₃		LIMITS
Correlation=	1.0000	≥ 0.995
m (Slope)=	1.0119	0.90-1.10
b (Intercept % of FS)=	-0.0724	± 3% F.S.

AENV Standards	Ozone Analyzer
Audit Calibrator	Make/Model <u>Thermo 49i</u>
Make/Model <u>Thermo 49i PS</u>	Serial/AMU Number <u>1843</u>
Serial/AMU Number <u>1808</u>	Last Calibration Date <u>March 30, 2016</u>
Ozone Standard <u>Thermo 49i PS 1808</u>	Full Scale (ppm) <u>0.5</u>

COMMENTS: _____

Auditor: Shea Beaton
 Operator Signature: _____

Date: March 30, 2016
 Location: McIntyre Center Edmonton



Calibrator Performance Audit

Sulphur Dioxide (by Cylinder Dilution)

File No. 2016-093A

Company: Maxxam

Operator: Christopher Wesson

Calibrator:	Flow Measurement Device:
Make/Model <u>API 700</u>	Make/Model <u>N/A</u>
Serial Number <u>830</u>	Serial Number <u>N/A</u>
Last Verification Date <u>December 2014</u>	Temperature (°C) <u>N/A</u>
SO ₂ Cylinder Conc. <u>50.3</u>	Barometric Pressure <u>N/A</u>
SO ₂ Cylinder S/N <u>LL42475</u>	

Flow Measurements

Pt. No. 1 77.5 **Pt. No. 2** 37.8 **Pt. No. 3** 18.9

Calibrator Flow (scm)	Calculated Concentration (ppm)	Indicated Concentration (ppm)	% Difference	
			vs Audit Gas	% Diff. Limit
Zero Air	0.000	0.000		
4998	0.780	0.746	-4%	± 10%
5002	0.380	0.365	-4%	± 10%
4997	0.190	0.182	-4%	± 10%
Absolute Average Percent Difference			4%	± 10%

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

<u>SO₂</u>		<u>LIMITS</u>
Correlation=	1.0000	≥ 0.995
m (Slope)=	0.9565	0.90-1.10
b (Intercept % of FS)=	0.0436	± 3% F.S.

AENV Standards	SO ₂ Analyzer
Audit Calibrator	Make/Model <u>Teco 43C</u>
Make/Model <u>R&R MFC 201</u>	Serial/AMU Number <u>AMU 1623</u>
Serial/AMU Number <u>AMU 1690</u>	Last Calibration Date <u>January 19, 2016</u>
	Full Scale (ppm) <u>1.0</u>

COMMENTS: Gas was check for accuracy - 1% low from stated cylinder gas concentration.
Flows are not measured at each pt - AMD not being followed as per section 5.0.
Checked SO2 high pt using a Sabio 2010 - found a significantly higher response.
Both MFC's need to be re-calibrated.

Auditor: Al Clark Date: January 19, 2016
 Operator Signature: *Al Clark* Location: McIntyre Center Edmonton

CALIBRATION GASES



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2015-116CGA

Company: Maxxam **Operator's Name:** Chris Wesson
Cylinder #: LL119346 **Concentration PPM:** 50.0 **Tolerance(%):** 2 **Certified By:** Air Liquide

Reference Calibrator and Gas:	Flow Measurement Device:
Make/Model: <u>Thermo146i</u>	Make/Model: <u>Bios DC-2</u>
Serial Number: <u>1809</u>	Serial Number: <u>Bios D</u>
Last Verification Date: <u>February 2, 2016</u>	Temp. °C: <u>24.5</u>
Gas Type: <u>SO2</u> Conc. <u>98.07</u>	B.P. <u>702mmHg</u>
Cylinder Number: <u>CAL016625</u>	

Reference Analyzer:
 Make/Model: Thermo 43C Serial/AMU Number: 1623
 Instrument Settings: Zero: 8.7 Span: 1.027 Range: 1.0
 Last Calibration: Date: 1-Feb-16 C.F. 1.000 Done By: SB

Calibrator Flows (sccm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
4952	0.0	0.000	0.0000	0.000	0.0
4946	79.54	0.793	0.01608	62.183	49.3
4941	39.35	0.396	0.00796	125.565	49.7
4940	19.57	0.195	0.00396	252.427	49.2
Average Cylinder Concentration:					49.4

Previous Stated Concentration PPM: 50.0
 Percent variance from Stated: 1.2

Meets Manufacturer Tolerance. Use manufacturers stated concentration **COMMENTS:** SO2/NO blend 50.0ppm NO
 <=5% Outside Manufacturer Tolerance. Use manufacturers concentration
 > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Shea Beaton Date: February 2, 2016
 Operator Signature: [Signature] Location: McIntyre Center Edmonton



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2014-251CGA

Company: Maxxam Operator's Name: Limin Li
 Cylinder #: LL36837 Concentration PPM: 10.0 Tolerance(%): 2 Certified By: Air Liquide

Reference Calibrator and Gas:
 Make/Model: R&R MFC 201
 Serial Number: AMU 1690
 Last Verification Date: December 15, 2014
 Gas Type: H2S Conc. 20.43
 Cylinder Number: CAL015106

Flow Measurement Device:
 Make/Model: Bios DC2
 Serial Number: AMU 1659
 Temp. °C: 23.0 C
 B.P.: 702 mmhg

Reference Analyzer:
 Make/Model: Teco 45C Serial/AMU Number: 1624
 Instrument Settings: Zero: 6.4 Span: 1.160 Range: 0.1
 Last Calibration: Date: Dec15/14 C.F.: 1.000 Done By: Al Clark

Calibrator Flows (scem)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.0000	0.0000	100.000	10.0
5099	38.5	0.0754	0.00755	132.442	10.0
5092	18.0	0.0349	0.00353	282.889	9.9
5066	9.2	0.0178	0.00182	550.652	9.8
Average Cylinder Concentration:					9.9

Previous Stated Concentration PPM: 10.0

Percent variance from Stated: 1.1

Meets Manufacturer Tolerance. Use manufacturers stated concentration COMMENTS: _____
 < =5% Outside Manufacturer Tolerance. Use manufacturers concentration _____
 > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder _____

Auditor: Al Clark
 Operator Signature: *Al Clark*

Date: December 16, 2014
 Location: McIntyre Center Edmonton



Calibration Gas Audit

CH4 / C3H8 Cylinder Gas

File No. 2015-092CGA

Company: Maxxam Operators name: Chris Wesson
 Cylinder #: LL165372 Conc CH4 (PPM) 606/212 Tolerance (%) 0.5 Certified By: Praxair

Reference Calibrator and Gas:

Make/Model R&R MFC 201
 Serial Number AMU 1698
 Last Verification Date January 18, 2016

Gas Type	<u>CH4</u>	Conc.	<u>999.2</u>
Cylinder Number	<u>D751932</u>		
Gas Type	<u>C3H8</u>	Conc.	<u>246.5</u>
Cylinder Number	<u>XF0037998</u>		

Flow Measurement Device:

Make/Model Bios DC-2
 Serial Number Blos D
 Temp. °C 24.5
 B.P. 688mmHg

Reference Analyzer:

Make/Model Thermo 55C Serial/AMU Number: 1643
 Instrument Settings Zero: NA Span: NA Range: 20.0
 Last Calibration: Date: 18-Jan-16 C.F. 1.000 Done By: SB

Calibrator Flows (scem)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	CH4	C3H8			CH4	C3H8
2568	0.00	0.00	0.00	0.02140	46.722	607	214
2630	56.29	12.99	12.62	0.02140	46.722	607	214
2588	19.73	4.62	4.50	0.00762	131.171	606	215
2580	9.69	2.29	2.24	0.00376	266.254	610	217
Average Cylinder Concentration:						608	215

CH4	C3H8
Previous Stated Concentration PPM: <u>606</u>	<u>212</u>
Percent variance from Stated: <u>0.3</u>	<u>1.6</u>

Cylinder gas tolerances based on CH4 only

Meets Manufacturer Tolerance. Use manufacturers stated concentration COMMENTS: _____
 <=5% Outside Manufacturer Tolerance. Use manufacturers concentration C3H8 manufacturers tolerance 1.1%
 > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Shea Beaton Date: January 19, 2016
 Operator Signature: _____ Location: McIntyre Center Edmonton



Calibration Gas Audit

NO Cylinder Gas

File No. 2015-115CGA

Company: Maxxam **Operators name:** Chris Wesson
Cylinder #: LL119346 **Conc (PPM)** 50.0/50.0 **Tolerance (%)** 2 **Certified By:** Air Liquide

Reference Calibrator and Gas:				Flow Measurement Device:	
Make/Model	<u>Thermo 146i</u>			Make/Model	<u>Bios DC-2</u>
Serial Number	<u>AMU 1809</u>			Serial Number	<u>Bios D</u>
Last Verification Date	<u>February 2, 2016</u>			Temp. °C	<u>24.5</u>
Gas Type	<u>NO</u>	Conc.	<u>48.79</u>	B.P.	<u>702mmHg</u>
Cylinder Number	<u>CAL018024</u>				

Reference Analyzer:

Make/Model	<u>Thermo 42i</u>	Serial/AMU Number:	<u>1868</u>
Instrument Settings	Zero: <u>4.2</u>	Span:	<u>1.014</u> Range: <u>1.0</u>
Last Calibration:	Date: <u>02-Feb-16</u>	C.F.	<u>1.000</u> Done By: <u>SB</u>

Calibrator Flows (sccm)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	NO	NOX			NO	NOX
4952	0.0	0.000	0.000				
4946	79.54	0.809	0.809	0.01608	62.183	50.3	50.3
4941	39.35	0.403	0.402	0.00796	125.565	50.6	50.5
4940	19.57	0.200	0.200	0.00396	252.427	50.5	50.5
Average Cylinder Concentration:						50.5	50.4

NO	NOx
Previous Stated Concentration PPM: <u>50.0</u>	<u>50.0</u>
Percent variance from Stated: <u>0.9</u>	<u>0.8</u>

Cylinder gas tolerances based on NO only

- Meets Manufacturer Tolerance. Use manufacturers stated concentration **COMMENTS: SO2/NO Blend 50.0PPM SO2**
- <=5% Outside Manufacturer Tolerance. Use manufacturers concentration
- > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Shea Beaton Date: February 2, 2016
 Operator Signature: [Signature] Location: McIntyre Center Edmonton

APPENDIX III
EXTERNAL AUDIT RESULTS

STATION AUDIT

File No. 2016 040A/043A

Date: 28-Apr-16

Performed by: Shea Beaton

Station

Name: Maskwa

Location: IOL Cold Lake

Facility/Zone: Lica

Operator: Maxxam

Temp: 24

Barometric Press: 714mmHg

Location

Latitude N 54° 36' 18.4"

Longitude W 110° 27' 9.8"

Elevation 610m

Status of Site Documentation On-Site, Needs Update

Status of Network Documentation Meets AMD SS 4-C

Status of QAP Reviewed within last 3yrs

Manifold Material Glass

Manifold Condition Good

Meteorological

	Observed	Audit Value
Wind Speed Direction	<u>171° 11.8 kph</u>	<u>South 10 - 15 kph</u>
Station Temperature	<u>23.9 C</u>	<u>23.7 C</u>
Relative Humidity	<u>36.6%</u>	<u>34%</u>
Ambient Temperature	<u>13.3 C</u>	<u>13.2 C</u>
Solar Radiation	<u>NA</u>	<u>NA</u>
Precipitation	<u>1.0mm</u>	<u>10 tips @ 0.1mm/tip</u>

Remarks:

- Lica needs to confirm that the Maskwa site still meets AMD sitting criteria as per AMD Chapter 3 SS 2-D and SS 2-G (specifically Table 3 elements B and C)



Station Performance Audit Summary

Company: Lica Facility Name: NA
 Approval No.: NA Site Name: Maswka
 Region: Lower Athabasca District: Lica
 Parameters audited:

H ₂ S	X	SO ₂	X	NO _x	X	NH ₃		O ₃	
CO		CH ₄		NonCH ₄		THC	X	TRS	
PM _{2.5}		PM ₁₀		TSP		BTEX		Wind Speed	X
Wind Dir	X	Amb. Temp	X	Stn.Temp	X	RH	X	Solar Radiation	
Rainfall		Precip	X	VWS		Other			
All parameters monitored as per approval: Yes <u> </u> No <u> </u> N/A <u> X </u>									

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: <u> March 30, 2016 </u>		

COMMENTS:

AUDITOR: Shea Beaton DATE: April 28, 2016



Station Site Documents Audit Checklist

Station	
Name: <u>Maskwa</u>	Location: <u>IOL Cold Lake</u>
Facility/Zone: <u>Lica</u>	Operator: <u>Maxxam</u>

Required Elements of AMD Chapter 3 SS 4-B						
Do the Site Documents Contain the Following:						
(a) Name of Owner/ Approval Holder		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(b) Name of Operating Agency		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Contact Information		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d) Date the Site or Station was Established		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(e) Date the information was last updated		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(f) Location including Latitude and Longitude		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(g) Four Colour Photos Looking N, E, S, W From Manifold Inlet		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(h) Additional Photos/Sketches of AMD Standard Site Non-Conformance		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(i) List of Instruments Located at the Site		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(j) Site Description Including the following:		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(i) Land Use By Sector		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(ii) Site Elevation		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(iii) Greatest Angle of Elevation & Direction to Nearby Buildings		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(iv) Average Building height in the area		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(v) Distance to Nearest Trees		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Required Elements of AMD Chapter 3 SS 4-D						
Do the Station Site Documents Contain the Following:						
(a) Recent Area Map Covering Approximately 1Km ²		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(b) Plan View Sketch		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(c) Cross-Sectional Sketch of Area Within 500 m Radius		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(d) Colour Photos Showing Sample Manifold/Inlet		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
(e) Colour Photo of the Station		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(f) Additional Photos/Sketches of AMD Standard Station Non-Conformance		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

COMMENTS: -Site doc needs updating. Manifold photo from Cold Lake South; needs updating
- Missing contact info, site elevation, 1Km2 area map, cross-sectional sketch
- Lica needs to verify site still meets AMD chapter 3 criteria and document non-conformances

AUDITOR: Shea Beaton DATE: April 28, 2016



SO₂ ANALYZER AUDIT

File No. 2016 - 042A

Date: April 28, 2016

Performed by: Shea Beaton

Station

Name: Maskwa

Location: IOL Cold Lake

Facility/Zone: Lica

Operator: Maxxam

Temp. 24

Barometric Press. 714mmHg

Monitor

Make/Model: TAPI 100E Serial No: 508

Inlet flow (sccm): 594 Full Scale Range ppm: 1

Last cal. Date: April 14, 2016 Old Correction Factor: 1.000

Zero/Bkg 94.9

Span Coef 1.022

Calibrator

Calibration Method: GAS DILUTION

Make/Model: R&R MFC 201

AMU #: 1698

Cylinder #: CAL9745

SO₂ Concentration PPM: 51.0

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
3514	0.0	3514	0.0000	0.0002		
3548	56.68	3605	0.8019	0.8116	1%	± 10%
3524	27.7	3552	0.3977	0.4022	1%	± 10%
3532	17.3	3549	0.2479	0.2508	1%	± 10%
Absolute Average Percent Difference					1%	

Linear Regression Analysis:

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

Correlation Coeff.= 1.0000

m (Slope)= 1.0119

b (Intercept as % of full scale)= 0.0015

LIMITS

≥ **0.995**

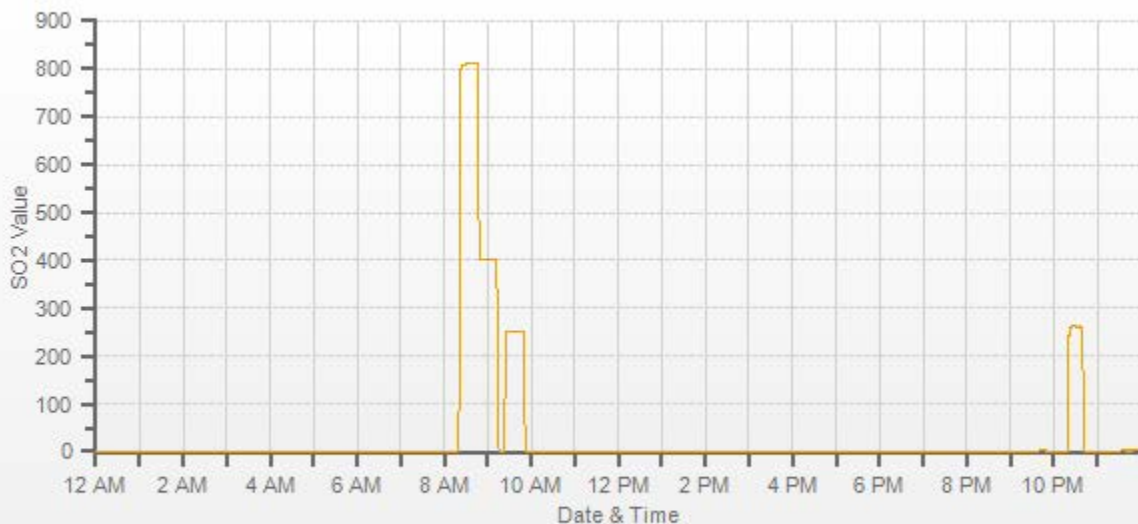
0.90-1.10

± **3% F.S.**

Remarks:



SO2[ppb] Station: LICA MASKWA Daily: 2016/04/28 Type: AVG 1 Min. [1 Min.]



— SO2[ppb]

H₂S ANALYZER AUDIT

File No. 2016 - 041A

Date: April 28, 2016 Performed by: Shea Beaton

Station

Name: Maskwa Location: IOL Cold Lake
 Facility/Zone: Lica Operator: Maxxam
 Temp. 24 Barometric Press. 714 mmHg

Monitor

Make/Model: TAPI 101ED Serial No: 511
 Inlet flow (sccm): 650 Full Scale Range ppm: 0.1
 Last cal. Date: 15-Apr-16 Old Correction Factor: 1.000
 Zero/Bkg 47.7
 Span Coef 0.964

Calibrator

Calibration Method: GAS DILUTION
 Make/Model: R&R MFC 201 AMU # : 1698
 Cylinder # : CAL013624 H₂S Concentration PPM: 10.7

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
3514	0.00	3514	0.0000	0.0005		
3579	25.95	3605	0.0770	0.0832	7%	± 10%
3539	13.49	3552	0.0406	0.0442	8%	± 10%
3542	6.77	3549	0.0204	0.0220	5%	± 10%
Absolute Average Percent Difference					7%	

Linear Regression Analysis:

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

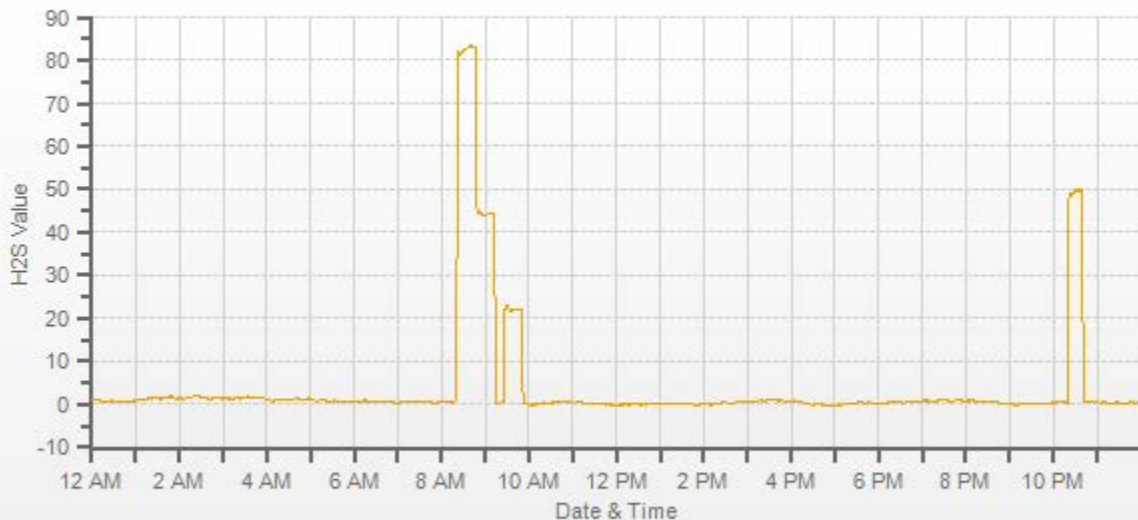
Correlation Coeff.= 1.0000
 m (Slope)= 1.0757
 b (Intercept as % of full scale)= 0.3514

LIMITS
≥ 0.995
0.90-1.10
± 3% F.S.

Remarks:



H2S[ppb] Station: LICA MASKWA Daily: 2016/04/28 Type: AVG 1 Min. [1 Min.]



— H2S[ppb]

HC ANALYZER AUDIT

File No. 2016 - 043A

Date: April 28, 2016

Performed by: Shea Beaton

Station

Name: Maskwa

Location: IOL Cold Lake

Facility/Zone: Lica

Operator: Maxxam

Temp. 24

Barometric Press. 714mmHg

Monitor

Make/Model: Thermo 51C-LT Serial No: 436609738

Inlet flow (sccm): 7.47 psi Full Scale Range ppm: 50

Last cal. Date: 14-Apr-16 Old Correction Factor: 1.000

Calibrator

Calibration Method: Gas Dilution

Make/Model: Sabio 2010

HC cylinder #: FF27932

AMU #: 1778

HC concentration ppm: 1050

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
2963	0.00	2963	0.00	0.21		
2967	89.23	3056	30.66	31.96	4%	± 10%
2967	44.76	3012	15.60	16.00	1%	± 10%
2980	24.71	3005	8.63	8.86	0%	± 10%
Absolute Average Percent Difference					2%	

Linear Regression Analysis:

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

Correlation Coeff.= 0.9999

m (Slope)= 1.0372

b (Intercept as % of full scale)= 0.0466

LIMITS

≥ **0.995**

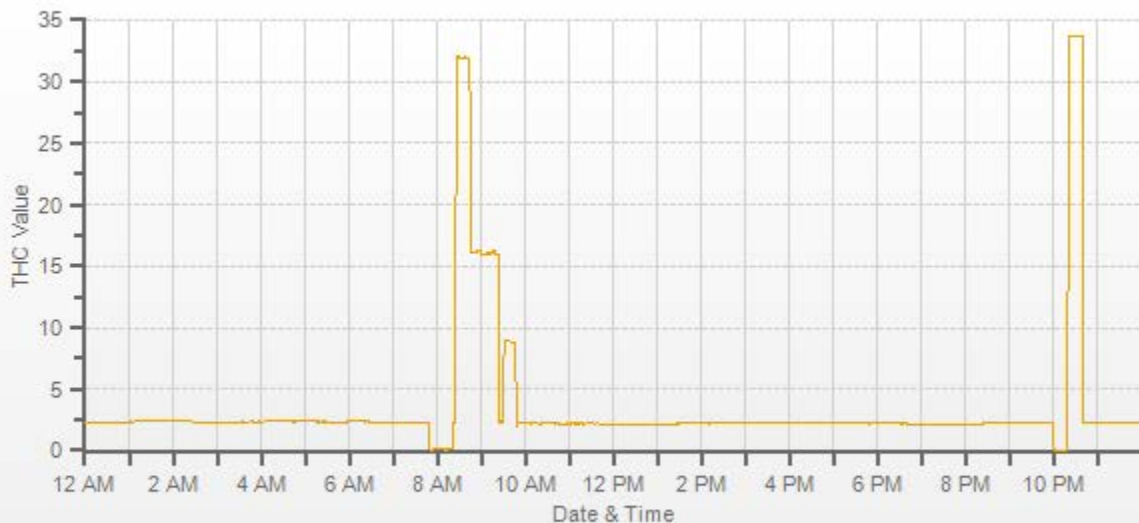
0.90-1.10

± **3% F.S.**

Remarks:

- Strong hydrocarbon odour at times during calibration, zero air supply may have had difficulty scrubbing all hydrocarbon from the air, resulted in elevated hydrocarbon audit zero point.





— THC[ppm]

NO-NOx-NO2 Analyzer Audit

File No. 2016 - 040A

Date: April 28, 2016 Performed by: Shea Beaton

Station:

Name: Maskwa Location: IOL Cold Lake Operator: Maxxam
Facility/Zone: Lica Temp. 24 BP: 714mmHg

Monitor:

Make/Model: API 200A Serial No. 1899
Inlet flow (sccm): 546 Range ppm: 1.0
Last cal. Date: 15-Apr-16 Old CF: NO: 0.999
NOx: 1.000
NO2: 0.999

NO Bkg -2.300
NOx Bkg -1.200
NO Coef 0.946
NOx Coef 0.936
NO2 Coef 0.9955

Calibration Method: Gas Dilution / GPT

Calibrator: Make/Model: Sabio 2010 AMU# 1778
NO cylinder # FF23271 NO conc. ppm 51.0 NOx conc. ppm 51.3

Calibrator Flows			Calc. Conc.		Indicated Concentration		% Difference vs Audit Gas	
			NO (ppm)	NOx (ppm)	NO (ppm)	NOx (ppm)	NO	NOx
Air	Gas	Total						
4986	0.00	4986	0.0000	0.0000	-0.0001	0.0000	Limit ± 10%	
4984	81.50	5065	0.8206	0.8255	0.8179	0.8431	0%	2%
5020	40.80	5061	0.4111	0.4136	0.3974	0.4182	-3%	1%
5032	20.50	5052	0.2069	0.2082	0.1945	0.2069	-6%	-1%
Absolute Average Percent Difference							3%	1%

Linear Regression Analysis:

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

	NO	NOx	NO ₂	LIMITS
Correlation Coeff.=	<u>0.9998</u>	<u>1.0000</u>	<u>1.0000</u>	≥ 0.995
m (Slope)=	<u>0.9999</u>	<u>1.0231</u>	<u>0.9985</u>	0.90-1.10
b (Intercept as % of full scale)=	<u>-0.7227</u>	<u>-0.3121</u>	<u>-0.0152</u>	± 3% F.S.

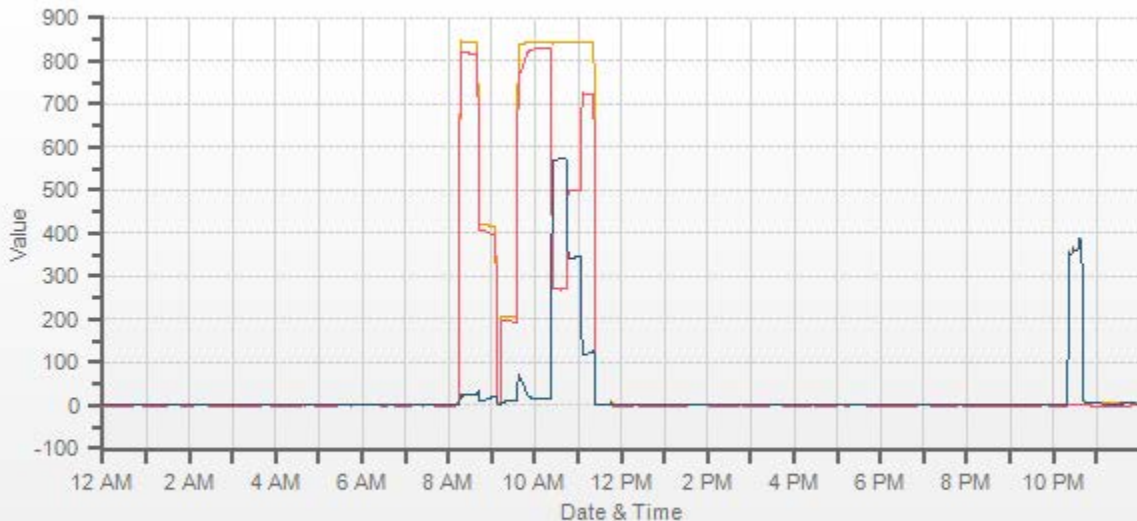
O ₃ Setting	Flow Rate	Indicated Conc. (ppm)			NO Decrease	NO ₂ Increase	% Difference vs Audit Gas	
		NO	NOx	NO ₂				
0.000	5065	0.8299	0.8435	0.0143	0.5597	0.5587	0%	± 10%
0.950	5065	0.2702	0.8429	0.5730	0.5597	0.5587	0%	± 10%
0.590	5065	0.4989	0.8437	0.3446	0.3310	0.3303	0%	± 10%
0.245	5065	0.7227	0.8438	0.1212	0.1072	0.1069	0%	± 10%
Absolute Average Percent Difference							0%	

Converter Efficiency

Average Converter Efficiency 99.8%

Remarks:





— NOX[ppb] — NO[ppb] — NO2[ppb]

***APPENDIX IV
REPORT CERTIFICATION FORM***

Report Certification Form

Alberta Airshed (if applicable)	EPA Approval or Code of Practice Registration # (if applicable)
YES	NA
Company Name (if applicable)	Industrial Operation Name (if applicable)
Lakeland Industry & Community Association	Maskwa Site
Name of the Representative of the Person Responsible (Last, First, Middle)	Position / Title of the Representative of the Person Responsible
Wunmi Adekanmbi	Project Manager Assistant, Customer Service, Air Services
Is an External Party Certifying the Report? (If 'Yes', fill in the fields below for the external person.)	
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Name of External Person Certifying the Report (Last, First, Middle)	Position / Title of External Person Certifying the Report
NA	NA
Company Name for the External Person Certifying the Report	Identification of Qualifications / Professional Designations of the External Person Certifying the Report
NA	NA

I certify that I have reviewed and verified the submitted report. I also certify that the report presented with this certification form is complete, accurate and representative of the monitoring results and timeframe.

Wunmi Adekanmbi

Signature of the Representative of the Person
Responsible / External Person Certifying the Report


25-May-2016

Report Issued Date (dd-mm-yyyy)

APPENDIX V
DATA VALIDATION CERTIFICATION FORM

Validation Certificate Form

Client: <u>Lakeland Industry & Community Association</u> Site: <u>Maskwa Site</u>	Project #: <u>2833-2016-04-30- C</u> Contact: <u>Mike Bisaga</u>
--	---

Level 0 Preliminary Verification	<u>msdntg</u> <hr style="border: 0; border-top: 1px solid black;"/>	Date <u>17-May-16</u>
Level 1 Primary Validation	<u>msdntg</u> <hr style="border: 0; border-top: 1px solid black;"/>	Date <u>17-May-16</u>
Level 2 Final Validation	<u>msdntg</u> <hr style="border: 0; border-top: 1px solid black;"/>	Date <u>25-May-16</u>
Level 3 Independent Data Review	 <hr style="border: 0; border-top: 1px solid black;"/>	Date <u>27-May-16</u>
Post-Final Validation	<u>NA</u> <hr style="border: 0; border-top: 1px solid black;"/>	Date <u>NA</u>

Notes
The Post-Final Validation step serves to re-evaluate the data that errors or omissions are discovered and/or suspected after the initial submittal of data. This validation is performed on an annual basis.

AMBIENT AIR MONITORING MONTHLY DATA REPORT
LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
ST. LINA SITE

JOB #:2833-2016-04-31- C

April 2016

Prepared for:

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
BOX 8237, 5107W - 50 STREET
BONNYVILLE, ALBERTA
T9N 2J5

Attention: MIKE BISAGA

DATE: May 27, 2016

Prepared by:



Wunmi Adekanmbi, M.Sc.
Project Manager Assistant, Customer Service, Air Services

Reviewed by:



Tom Bourque, C. Tech.
Interim Supervisor, Customer Service, Air Services

SUMMARY

In April 2016, the Air Services Group of Maxxam Analytics conducted an ambient air monitoring program at the St. Lina Site for the Lakeland Industry & Community Association, located near St. Paul, Alberta. Sampling was carried out to determine the concentrations of non-compliance parameters requested by the Project Coordinator.

All data collected this month were within the objectives outlined in the AMD 1989, AMD 2006 and AMD 2015.

The operational uptime for all analyzers and meteorological system were above the AMD's 90% requirement.

An external station audit was conducted by AEMERA on April 25 and April 28. The audit results are included in this report.

All Parameters: Maximum instantaneous data collected on April 12 at hour 19 and April 23 at hour 11 were invalidated as the analyzers and wind system were recovering from short power outages.

SO₂: The LICA-owned analyzer, API 100E S/N: 468, was installed back on site after it had been removed for maintenance in March. The analyzer was allowed time to stabilize and an installation calibration was completed on April 13. Nineteen hours of data, collected while the analyzer was stabilizing, are invalid.

PM 2.5: Sixteen hours of data collected between April 13 and April 14 were discarded as the Teom unit malfunctioned after a short power outage. Fifteen hours of data were invalidated as the data was below -3 ug/m^3 this month.

The summary of results is presented on the following pages.

Any deviations or modifications made to the sampling or analytical methods are outlined in Section 1.0 Discussion. On this basis, Maxxam is issuing this completed report to Lakeland Industry & Community Association, St. Lina Site.

Should you have any questions concerning the results or if we can be of further assistance, please contact us at 403-219-3677 or toll-free at 1-800-386-7247.

Monthly Continuous Data Summary

Lakeland Industry & Community Association						MAXIMUM VALUES							OPERATIONAL TIME (%)
St. Lina Site						1-HOUR					24-HOUR		
PARAMETER	OBJECTIVES		EXCEEDENCES		MONTHLY AVERAGE	READING	DAY	HOUR	WIND SPEED (KPH)	WIND DIRECTION (DEGREES)	READING	DAY	
	1-HR	24-HR	1-HR	24-HR									
SO2 (PPB)	172	48	0	0	0.0	0.8	VAR	VAR	VAR	VAR	0.2	11	97.4
H2S (PPB)	10	3	0	0	0.0	0.7	20	22	11.6	ENE	0.1	9	100.0
THC (PPM)	-	-	-	-	1.97	2.36	30	7	6.7	S	2.09	4	100.0
NO2 (PPB)	159	-	0	-	0.9	5.9	28	6	8.4	ENE	1.8	28	100.0
NO (PPB)	-	-	-	-	0.0	1.0	4, 25	8, 13	12 9.8	ESE SSE	0.1	VAR	100.0
NOX (PPB)	-	-	-	-	1.0	6.4	28	6	8.4	ENE	2.0	28	100.0
O3 (PPB)	82	-	0	-	37.7	59.4	17, 17	19, 20	2.1 1.3	W NNE	49.6	18	99.7
PM2.5 (UG/M3)	-	30	-	0	3.1	34.9	2	20	13.8	WNW	8.6	30	95.7
RELATIVE HUMIDITY (%)	-	-	-	-	56.7	90	VAR	VAR	VAR	VAR	87.2	23	100.0
BAROMETRIC PRESSURE (MILIBAR)	-	-	-	-	931	945	17	VAR	VAR	VAR	943	17	100.0
AMBIENT TEMPERATURE (DEG C)	-	-	-	-	6.1	25.6	19	14	10.3	WSW	17.4	19	100.0
PRECIPITATION (MM)	-	-	-	-	0.1	3.9	9	4	8.2	NW	0.6	9	100.0
VECTOR WS (KPH)	-	-	-	-	12.0	28.3	6	11	-	NW	19.1	6	100.0
VECTOR WD (DEG)	-	-	-	-	-	-	-	-	-	-	-	-	100.0

NA-NOT AVAILABLE VAR-VARIOUS

Exceedence Summary Report

SO₂ 1- Hour Exceedences

No Exceedences Recorded During the Month

SO₂ 24- Hour Exceedences

No Exceedences Recorded During the Month

H2S 1- Hour Exceedences

No Exceedences Recorded During the Month

H2S 24- Hour Exceedences

No Exceedences Recorded During the Month

NO₂ 1- Hour Exceedences

No Exceedences Recorded During the Month

PM_{2.5} 24- Hour Exceedences

No Exceedences Recorded During the Month

O₃ 1- Hour Exceedences

No Exceedences Recorded During the Month

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1.0 Discussion

This monthly report consists of data for parameters Sulphur Dioxide (SO₂), Hydrogen Sulphide (H₂S), Total Hydrocarbon (THC), Oxides of Nitrogen (NO_x), Nitric Oxides (NO), Nitrogen Dioxide (NO₂), Ozone (O₃), Particulate Matter 2.5 (PM_{2.5}), Relative Humidity (RH), Barometric Pressure (BP), Precipitation, Ambient Temperature (AmbTPX), Wind Speed (WS), Wind Direction (WD) and Standard Deviation Wind Direction (STDWD).

Sample filters for all continuous air monitors are changed before the calibration begins. The sample manifold is cleaned during the site visit each month.

Control checks, consisting of a zero and span, are conducted daily on all continuous air monitors. In place of the air sample, zero air (from scrubbed air or gas cylinders) is used for zero checks, and a known concentration of the pollutant being analyzed is used for span checks. These checks are controlled by automatic timers and valves. The total zero span cycle is completed within an hour, the commencement of the zero span cycle is at the beginning of the hour.

Multipoint calibrations are done a minimum of once a month for each continuous air monitor. An additional calibration is required under the following conditions: 1) within three days after the initial start-up and stabilization of a newly installed instrument, 2) prior to shut-down or moving of an instrument which has been working to specification, and 3) when major repair has been done on the instrument.

Time during the first multi-point calibration is not considered downtime (Data is flagged as C). If more than one calibration is performed during the month, the time during the additional calibration is considered as downtime (Data is flagged as C1).

Only one zero/span check is run per day. Time during the zero/span check is not considered as downtime (Data is flagged as S). If an extra zero/span check is performed, the time during the additional check is considered as downtime (Data is flagged as S1).

The AMD requires each instrument and accompanying data recording system to be operational 90% of the time (minimum), on a monthly basis.

All sampling, analysis, and QA/QC for this project was performed by Maxxam Analytics and complies with the Alberta Air Monitoring Directive.

Data contained in this monthly report has undergone the verification and validation based on the requirements of the AMD Chapter 6: Ambient Data Quality for Verification and Validation of Continuous Ambient Air Quality Data. The descriptions of the data verification and validation process can be found in Section 5 of this report. Instantaneous data, where applicable, is provided for reference purposes and has not undergone zero correction.

Hourly and minute data have been reviewed based on daily zero/span results and multi-point calibration results. Data may be considered invalid if a zero-corrected span check in excess of +/- 10% of the span concentration (established by the previous multi-point calibration) is encountered and/or significant differences in the calibration factor occurs (greater than 10%).

A trailer inspection was conducted on April 12. No issues were identified.

SULPHUR DIOXIDE (SO₂)

The analyzer, API 100A S/N: 838, was removed following a removal calibration on April 12. The LICA-owned analyzer, API 100E S/N: 468, was then installed back on site after it had been removed for maintenance in March. The analyzer was allowed time to stabilize and an installation calibration was completed on April 13. Nineteen hours of data, collected while the analyzer was stabilizing, are invalid.

An external audit was conducted by AEMERA on April 25. The audit results are included in this report.

Maximum instantaneous data collected on April 12 at hour 19 and April 23 at hour 11 were invalidated as the analyzer was recovering from short power outages.

HYDROGEN SULPHIDE (H₂S)

The analyzer was working well throughout the month. The routine monthly calibration was performed on April 13. An external audit was conducted by AEMERA on April 25. The audit results are included in this report.

Maximum instantaneous data collected on April 12 at hour 19 and April 23 at hour 11 were invalidated as the analyzer was recovering from short power outages.

TOTAL HYDROCARBONS (THC)

The analyzer was working well throughout the month. The routine monthly calibration was performed on April 12. The span gas cylinder was replaced after the calibration. An external audit was conducted by AEMERA on April 25. The audit results are included in this report.

Maximum instantaneous data collected on April 12 at hour 19 and April 23 at hour 11 were invalidated as the analyzer was recovering from short power outages.

NITROGEN DIOXIDE (NO₂)

The analyzer was working well throughout the month. The routine monthly calibration was performed on April 12. An external audit was conducted by AEMERA on April 25. The audit results are included in this report.

Maximum instantaneous data collected on April 12 at hour 19 and April 23 at hour 11 were invalidated as the analyzer was recovering from short power outages.

OZONE (O3)

The analyzer was working well throughout the month. The routine monthly calibration was performed on April 13. An external audit was conducted by AEMERA on April 25. The audit results are included in this report.

Maximum instantaneous data collected on April 12 at hour 19 and April 23 at hour 11 were invalidated as the analyzer was recovering from short power outages.

PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM2.5)

Two routine audits were performed this month: one was completed on April 11, and the other audit was performed on April 29. Both the inlet filter and the FDMS filter were replaced on April 11. The Teom unit malfunctioned after a short power outage that occurred on April 13. Sixteen hours of data collected from April 13 hour 19 to April 14 hour 10 were discarded due to this issue.

An external audit was conducted by AEMERA on April 28. The audit results are included in this report.

Data was corrected using Alberta air quality guideline. Data between 0 and -3 ug/m^3 , was corrected to 0 ug/m^3 . Data was below -3 ug/m^3 was invalidated. Fifteen hours of data were invalidated as the data was below -3 ug/m^3 this month.

WIND SPEED (WS), WIND DIRECTION (WD) and STANDARD DEVIATION WIND DIRECTION (STDWD)

The wind system is reported as vector wind speed and vector wind direction. The wind direction data included in this report represents where the wind was coming from.

The wind system was working well throughout the month. Maximum instantaneous data collected on April 12 at hour 19 and April 23 at hour 11 were invalidated as the analyzer was recovering from short power outages.

RELATIVE HUMIDITY (RH)

The humidity sensor was working well throughout the month.

BAROMETRIC PRESSURE (BP)

The pressure sensor was working well throughout the month.

PRECIPITATION

The rain gauge system was working well throughout the month.

AMBIENT TEMPERATURE (TPX)

The temperature sensor was working well throughout the month.

2.0 Project Personnel

Mike Bisaga was the contact for Lakeland Industry & Community Association, and the Maxxam field sampling technician was Alexander Yakupov.

3.0 Plant Monthly Required AMD Summary

All data collected this month were within the objectives outlined in the AMD 1989, AMD 2006 and AMD 2015.

The operational uptime for all analyzers and meteorological system were above the AMD's 90% requirement.

4.0 Calculations and Results

All calculations and reporting of results follow the method described in the Air Monitoring Directive, 1989, 2006 Amendments to the Air Monitoring Directive, (AMD 2006) as well as AMD 2015.

5.0 Methods and Procedures

The following methods and procedures were used to complete the test program:

- Maxxam AIR SOP-00209: Ambient H₂S Monitoring
- Maxxam AIR SOP-00211: Ambient SO₂ Monitoring
- Maxxam AIR SOP-00212: Ambient O₃ Monitoring
- Maxxam AIR SOP-00213: Ambient NO/NO₂/NO_x Monitoring
- Maxxam AIR SOP-00214: Ambient Hydrocarbon (THC) Monitoring
- Maxxam AIR SOP-00215: Teom Operation
- Maxxam AIR SOP-00242: Precipitation Collector Installation /Maintenance

There were no deviations from the prescribed methods.

The following instruments were used to perform the test program:

- Sulphur Dioxide - API 100A and API 100E UV Fluorescent Analyzers
- Hydrogen Sulphide - API 101E UV Fluorescent Analyzer
- Total Hydrocarbons - Thermo 51C FID Analyzer
- Oxides of Nitrogen - API 200E Chemiluminescent Analyzer
- Ozone - Thermo 49i Photometric Analyzer
- Particulate Matter (PM_{2.5}) - R&P 1405F Teom Unit
- Wind System - Met One Unit
- Relative Humidity - Met One Unit
- Barometric Pressure - Met One Unit
- Ambient Temperature - Met One Unit
- Precipitation - Met One Unit
- Data Logger - ESC 8832

The following steps were used to complete the data verification and validation process:

Level 0 Preliminary Verification

Level 0 data are raw data obtained directly from the data acquisition system (DAS). Under the step of Level 0, these data undergo a certain amount of manual or automated screening and flagging. It included a) identification of periods of missing data; b) verification of time stamps against reference time; c) verification that instrument diagnostics/data logger flags indicate normal operation; d) comparison of data to upper and lower limits; e) rate of change flagging indicating that data changed too rapidly or not at all; and f) verification that zero, span and multipoint performance checks are within specifications. This level of verification is performed on a daily basis.

Level 1 Primary Validation

Validation actions under the step of Level 1 include a) review of all screening flags assigned during preliminary verification; b) review of all supporting site information and documentation; c) review of operational acceptance limits for each parameter/analyzer; d) review of daily zero/span and monthly calibration results for all gaseous parameters; and e) application of any necessary adjustments to data (e.g. baseline adjustments, below zero adjustments). This level of validation is performed on a monthly basis.

Level 2 Final Validation

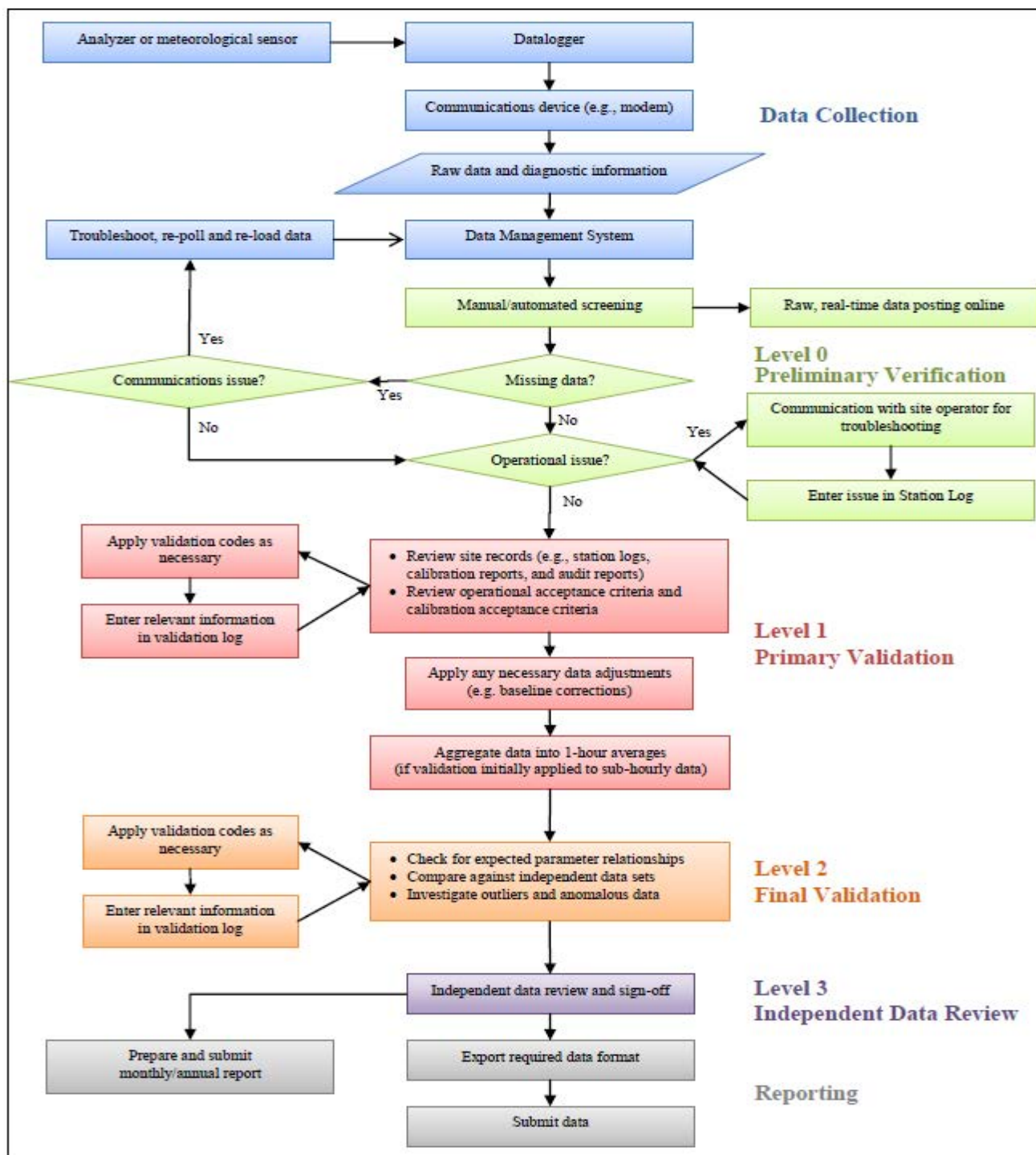
The purpose of Level 2 validation is to verify that there are no inconsistencies among related data, or among regional data measured at nearby sites.

Level 3 Independent Data Review

Level 3 validation is the last step of data review, and it is completed by an individual that is independent of both field operations and primary data validation. A final independent QA review and endorsement is performed during this step before data is submitted to Alberta Environment.

Post-Final Validation

The Post-Final Validation step serves to re-evaluate the data that errors or omissions are discovered and/or suspected after the initial submittal of data. Any data issues or patterns which were not clear on a monthly basis are highlighted during this step. This validation is performed on an annual basis.



Source: AMD Chapter 6: Ambient Data Quality for Verification and Validation of Continuous Ambient Air Quality Data; Figure 1 Data Collection and Management Process Flow Chart

APPENDIX I
CONTINUOUS MONITORING DATA RESULTS

SULPHUR DIOXIDE

SULPHUR DIOXIDE (SO2) hourly averages in ppb

MST

DAY	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.
1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	24
2	0.0	0.0	0.1	0.2	0.1	0.2	0.2	0.7	0.4	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	S	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.7	24
3	0.7	0.8	0.7	0.6	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.1	24
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
5	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	S	0.2	0.1	0.0	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.2	0.0	24
6	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.1	0.0	0.0	S	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	24
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	24
10	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.5	0.4	0.3	S	0.4	0.2	0.3	0.3	0.2	0.0	0.1	0.1	0.1	0.2	0.3	0.0	0.1	0.0	0.5	0.2	24
11	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.6	S	0.6	0.6	0.4	0.6	0.4	0.4	0.4	0.4	0.3	0.3	0.2	0.2	0.0	0.0	0.0	0.6	0.2	24
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	C	C	C	C	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	0.0	0.0	14
13	Y	Y	Y	Y	Y	Y	Y	Y	Y	C	C	C	C	0.0	0.0	S	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15
14	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
15	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
16	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
17	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.2	0.3	0.2	0.0	0.0	0.3	0.1	24
18	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.1	0.3	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.4	0.0	24
19	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.3	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	24
20	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	24	
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	24
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	24
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.7	0.8	0.5	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.1	24
27	0.0	0.0	0.2	0.3	0.3	0.2	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	24
28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	24
HOURLY MAX	0.7	0.8	0.7	0.6	0.3	0.2	0.3	0.7	0.6	0.7	0.8	0.6	0.4	0.6	0.4	0.4	0.4	0.4	0.3	0.3	0.2	0.3	0.2	0.1				
HOURLY AVG	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

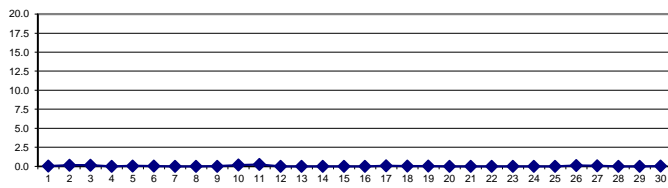
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT:	1-HR	172	PPB	24-HR	48	PPB
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MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0			
NUMBER OF 24-HR EXCEEDENCES:	0			
NUMBER OF NON-ZERO READINGS:	100			
MINIMUM 1-HR AVERAGE:	0.0 PPB @ HOUR(S)	VAR	ON DAY(S)	ALL
MAXIMUM 1-HR AVERAGE:	0.8 PPB @ HOUR(S)	VAR	ON DAY(S)	VAR
MAXIMUM 24-HR AVERAGE:	0.2 PPB		ON DAY(S)	11
			VAR-VARIOUS	
IZS CALIBRATION TIME:	32 HRS	OPERATIONAL TIME:	701 HRS	
MONTHLY CALIBRATION TIME:	8 HRS	AMD OPERATION UPTIME:	97.4 %	
STANDARD DEVIATION:	0.12	MONTHLY AVERAGE:	0.0 PPB	

24 HOUR AVERAGES FOR April 2016



SO2[ppb] Station: LICA ST. LINA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— SO2[ppb]



SULPHUR DIOXIDE MAX instantaneous maximum in ppb

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.	
DAY	HOURLY MAX	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
1	S	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.1	S	0.1	0.1	0.2	0.2	0.1	0.2	0.2	0.2	24	
2		0.2	0.2	0.2	0.2	0.2	0.2	0.8	0.8	0.8	0.2	0.8	0.1	0.1	0.1	0.1	0.1	0.1	0.1	S	0.2	0.2	0.2	0.2	0.7	0.1	0.8	0.3	24	
3		0.8	1.3	1.3	0.8	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	S	0.1	0.0	0.0	0.0	0.2	0.2	0.0	1.3	0.3	24	
4		0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	S	0.2	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.0	0.2	0.2	24	
5		0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.0	0.2	0.2	0.2	0.2	0.1	S	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.0	0.2	0.2	24
6		0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.0	S	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.2	0.1	24	
7		0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0	24	
8		0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	S	0.1	0.1	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.0	0.2	0.1	24	
9		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	S	0.2	0.2	0.0	0.1	0.1	0.2	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.1	24	
10		0.1	0.1	0.0	0.1	0.1	0.2	0.2	0.2	0.2	S	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.0	0.2	0.1	24	
11		0.0	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.1	S	0.2	0.7	0.1	X	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.0	0.7	0.1	23	
12		0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	S	0.1	C	C	C	C	C	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	0.1	0.2	0.2	14
13	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	C1	C1	C1	C1	1.6	1.6	S	S	1.6	1.6	R	1.5	1.5	1.5	1.7	1.5	1.7	1.6	10	
14		1.8	1.6	1.5	1.5	1.5	1.3	S	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.2	1.2	1.0	0.8	0.8	0.9	0.6	0.7	0.5	0.5	0.5	1.8	1.1	24	
15		0.6	0.6	0.6	0.7	0.5	S	0.4	0.7	0.6	0.2	0.5	0.2	0.3	0.3	0.5	0.4	0.4	0.3	0.1	0.0	0.0	0.2	0.3	0.0	0.0	0.7	0.4	24	
16		0.1	0.1	0.1	0.2	S	0.0	0.2	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.3	0.3	0.6	0.2	0.2	0.0	0.2	0.1	0.0	0.0	0.0	0.6	0.2	24	
17		0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.6	0.4	0.6	0.4	0.0	0.0	0.6	0.1	24	
18		0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.2	1.0	1.2	1.0	0.3	0.6	0.9	0.7	0.0	1.2	0.3	24		
19		0.7	S	0.4	0.4	0.4	0.5	0.4	0.4	0.6	0.8	0.8	0.4	1.2	1.1	0.6	0.9	1.1	0.8	0.7	0.6	0.6	0.5	0.4	0.3	0.3	1.2	0.6	24	
20		S	0.1	0.1	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.2	0.0	24	
21		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.1	0.0	0.1	S	0.0	0.0	0.2	0.0	24	
22		0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.1	0.0	24	
23		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	R	0.1	0.1	0.0	0.2	0.2	0.2	0.0	0.4	S	0.2	0.0	0.0	0.0	0.4	0.1	23	
24		0.2	0.0	0.2	0.0	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.2	0.2	0.3	0.2	0.2	0.2	S	0.3	0.2	0.2	0.1	0.1	0.0	0.3	0.2	24	
25		0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.2	Q	Q	Q	Q	0.4	0.4	0.2	0.3	0.1	S	0.2	0.2	0.2	0.4	0.2	0.1	0.4	0.2	24	
26		0.1	0.1	0.1	0.0	0.2	0.2	0.8	0.8	1.3	2.0	1.9	1.7	1.1	0.6	0.4	0.4	0.7	S	0.4	0.2	0.5	0.4	0.2	0.6	0.0	2.0	0.6	24	
27		0.6	0.9	1.2	1.0	0.9	0.8	1.0	0.8	0.6	0.3	0.2	0.1	0.0	0.4	0.3	0.2	S	0.6	0.9	0.6	0.2	0.0	0.3	0.1	0.0	1.2	0.5	24	
28		0.0	0.0	0.0	0.4	0.1	0.0	0.0	0.1	0.2	0.0	0.1	0.0	0.2	0.0	0.0	S	0.5	0.3	0.6	0.4	0.6	0.3	0.3	0.5	0.0	0.6	0.2	24	
29		0.4	0.5	0.5	0.3	0.4	0.4	0.4	0.4	0.4	0.7	0.6	1.1	1.0	1.1	S	0.6	0.4	0.3	0.3	0.3	0.2	0.3	0.3	0.4	0.2	1.1	0.5	24	
30		0.3	0.3	0.2	0.1	0.2	0.2	0.1	0.0	0.0	1.3	2.0	0.6	0.4	S	0.8	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	24
HOURLY MAX		1.8	1.6	1.5	1.5	1.5	1.3	1.0	1.2	1.3	2.0	2.0	1.7	1.2	1.6	1.6	1.2	1.2	1.6	1.6	1.0	1.5	1.5	1.5	1.7					
HOURLY AVG		0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.3					

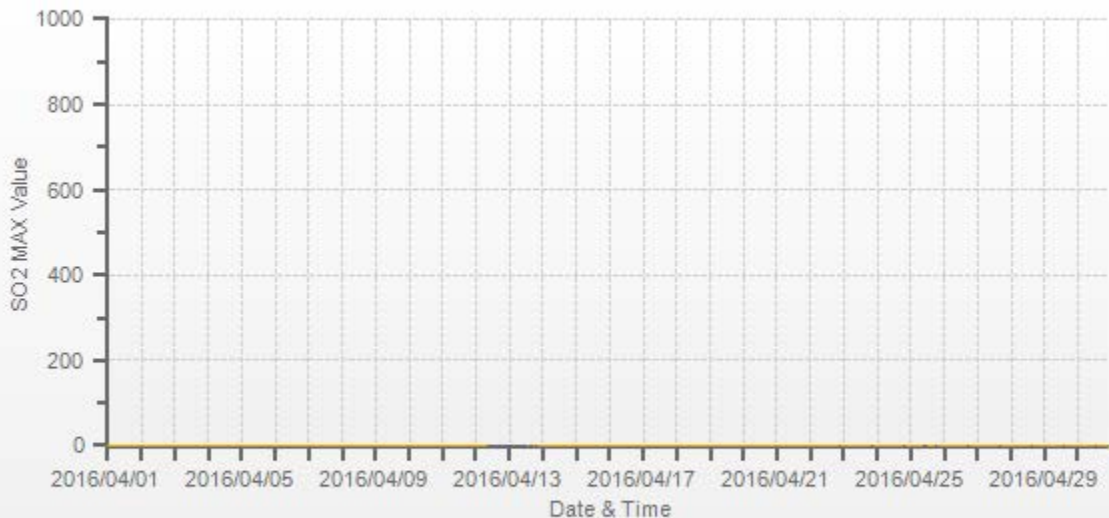
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	479
MAXIMUM INSTANTANEOUS VALUE:	2.0 PPB @ HOUR(S) 9, 10 ON DAY(S) 26, 30
	VAR-VARIOUS
IZS CALIBRATION TIME:	33 HRS
MONTHLY CALIBRATION TIME:	4 HRS
STANDARD DEVIATION:	0.36
OPERATIONAL TIME:	694 HRS

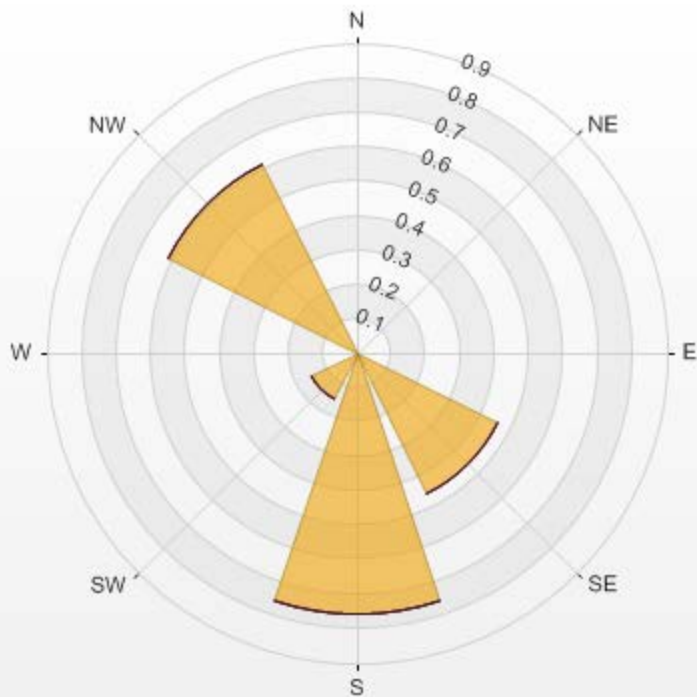
SO2 MAX[ppb] Station: LICA ST. LINA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



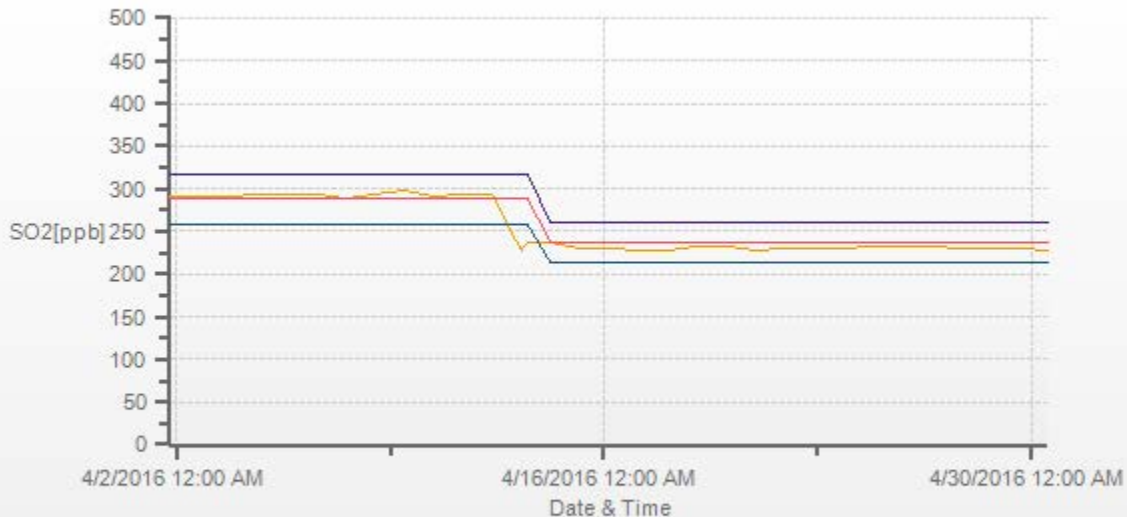
— SO2 MAX[ppb]

Wind: LICA ST. LINA Monitor: SO2 [ppb] Monthly: 04/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 98.03% Valid Data: 91.53% Calm Avg: 0.00 [ppb]

Direction	0.5-20.0	20.0-60.0	60.0-110.0	110.0-170.0	170.0-340.0	>340.0	Total
N	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
SE	0.46	0	0	0	0	0	0.46
S	0.76	0	0	0	0	0	0.76
SW	0.15	0	0	0	0	0	0.15
W	0	0	0	0	0	0	0
NW	0.61	0	0	0	0	0	0.61
Summary	1.98	0	0	0	0	0	1.98



SO2[ppb] Calibration: LICA ST. LINA Monthly: 04/2016 Type: Span



Span Meas

Span Ref

-10%

+10%

HYDROGEN SULPHIDE

HYDROGEN SULPHIDE (H2S) hourly averages in ppb

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR										
DAY	MIN.	MAX.	AVG.	RDGS.																																		
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24								
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24								
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24								
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24									
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24									
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24									
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24									
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.0	0.2	0.0	24							
9	0.2	0.2	0.2	0.1	0.2	0.3	0.2	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	24							
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24							
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.0	0.0	24							
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24						
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	C	C	C	C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.0	0.0	0.0	0.2	0.0	0.0	0.0	24						
14	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24					
15	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24				
16	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24				
17	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24			
18	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24			
19	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24			
20	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	S	0.0	0.7	0.0	0.0	0.0	24				
21	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	S	0.1	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	24			
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24		
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	24		
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24		
25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Q	Q	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24		
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
HOURLY MAX	0.3	0.2	0.2	0.1	0.2	0.3	0.2	0.0	0.1	0.0	0.1	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.7	0.2													
HOURLY AVG	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

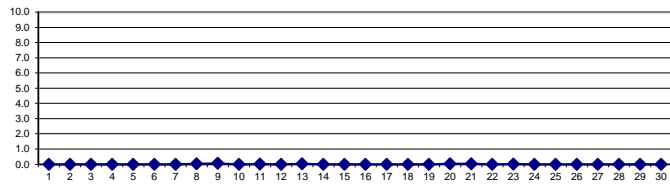
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT:	1-HR	10	PPB	24-HR	3	PPB
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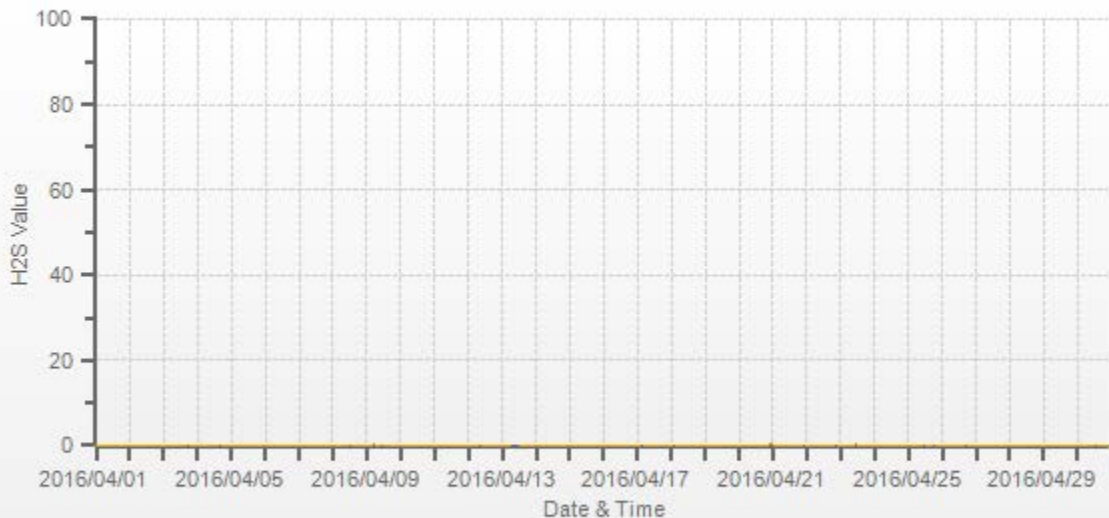
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0					
NUMBER OF 24-HR EXCEEDENCES:	0					
NUMBER OF NON-ZERO READINGS:	27					
MINIMUM 1-HR AVERAGE:	0.0	PPB	@ HOUR(S)	VAR	ON DAY(S)	ALL
MAXIMUM 1-HR AVERAGE:	0.7	PPB	@ HOUR(S)	22	ON DAY(S)	20
MAXIMUM 24-HR AVERAGE:	0.1	PPB			ON DAY(S)	9
					VAR-VARIOUS	
IZS CALIBRATION TIME:	31	HRS	OPERATIONAL TIME:	720	HRS	
MONTHLY CALIBRATION TIME:	4	HRS	AMD OPERATION UPTIME:	100.0	%	
STANDARD DEVIATION:	0.04		MONTHLY AVERAGE:	0.0	PPB	

24 HOUR AVERAGES FOR April 2016



H2S[ppb] Station: LICA ST. LINA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— H2S[ppb]



HYDROGEN SULPHIDE MAX instantaneous maximum in ppb

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.		
DAY	HOURLY MAX	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59						
1		0.5	0.7	0.8	0.8	0.7	0.8	0.7	0.7	0.8	0.6	0.7	0.7	0.7	0.7	0.6	0.7	0.6	0.6	S	0.8	0.7	0.8	0.8	0.5	0.8	0.7	24			
2		0.9	0.9	1.0	1.0	1.0	1.2	1.2	1.2	1.2	1.0	1.0	1.0	1.0	1.0	1.1	1.2	1.2	1.2	S	1.2	1.2	1.1	1.1	1.0	0.9	1.2	1.1	24		
3		1.0	1.0	1.0	0.8	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.6	0.7	S	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6	1.0	0.8	24		
4		0.8	0.7	0.7	0.6	0.7	0.8	0.7	0.7	0.9	0.8	0.9	0.9	1.0	0.9	0.9	S	0.9	0.9	0.9	0.9	1.0	0.9	0.9	0.9	0.8	0.6	1.0	0.8	24	
5		0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	S	0.9	0.9	0.9	0.9	0.9	1.0	1.0	0.9	1.0	0.8	1.0	0.8	24		
6		1.0	1.0	0.9	1.0	1.0	0.9	1.0	1.0	0.9	0.9	0.9	1.0	0.9	S	0.8	0.8	0.8	0.7	0.7	0.7	0.8	0.7	0.7	0.6	0.6	1.0	0.9	24		
7		0.5	0.5	0.6	0.6	0.6	0.5	0.6	0.6	0.6	0.6	0.5	0.5	0.6	S	0.6	0.6	0.6	0.5	0.6	0.6	0.6	0.5	0.8	0.7	0.5	0.8	0.6	24		
8		0.6	0.5	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.8	0.8	0.8	S	0.9	0.9	1.1	1.2	1.2	1.3	1.4	1.4	1.5	1.5	1.5	0.5	1.5	1.0	24		
9		1.5	1.5	1.5	1.5	1.6	2.0	1.7	1.4	1.4	1.3	1.1	S	1.3	1.1	1.2	1.1	1.1	1.0	0.9	0.8	0.8	0.9	0.8	0.8	0.8	2.0	1.2	24		
10		0.7	0.6	0.7	0.7	0.6	0.6	0.6	0.5	0.6	0.6	S	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.6	0.6	0.7	0.6	0.7	0.6	0.7	0.5	0.7	0.6	24	
11		0.8	0.8	0.7	0.8	0.8	0.7	0.7	0.7	0.8	S	0.8	0.9	0.8	0.9	0.9	0.9	1.0	0.9	1.0	1.0	1.0	1.4	1.4	1.1	0.7	1.4	0.9	24		
12		1.0	1.0	1.1	1.1	1.1	1.0	1.0	1.0	S	1.0	1.0	1.0	1.0	1.1	1.0	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	1.1	1.0	24		
13		1.0	1.0	1.1	1.0	1.0	1.0	1.0	S	1.0	C	C	C	C	0.7	0.7	0.7	1.1	0.8	R	1.0	1.0	1.0	1.2	0.9	0.7	1.2	0.9	23		
14		0.9	0.8	0.7	0.6	0.6	0.6	S	0.6	0.7	0.6	0.5	0.6	0.5	0.6	0.6	0.7	0.6	0.5	0.5	0.4	0.5	0.4	0.4	0.4	0.4	0.9	0.6	24		
15		0.3	0.3	0.3	0.4	0.3	S	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.2	0.3	0.3	0.2	0.3	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.4	0.3	24		
16		0.3	0.2	0.3	0.3	S	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.3	0.2	24		
17		0.2	0.2	0.2	S	0.1	0.3	0.3	0.2	0.2	0.3	0.4	0.2	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.0	0.4	0.2	24	
18		0.1	0.1	S	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.1	0.2	0.1	0.2	0.5	0.2	0.3	0.4	0.4	0.7	0.8	0.3	0.4	0.1	0.8	0.3	24		
19		0.5	S	0.5	0.6	0.6	0.7	0.7	0.8	0.7	0.7	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.8	0.6	24	
20		S	0.4	0.4	0.4	0.4	0.5	0.7	0.5	0.2	0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.1	0.2	0.1	0.6	1.6	S	0.1	1.6	0.4	24		
21		0.8	0.8	0.4	0.2	0.2	0.3	0.5	0.5	0.6	0.4	0.3	0.4	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.8	S	1.1	0.2	1.1	0.5	24	
22		0.5	0.4	0.3	0.3	0.3	0.4	0.3	0.3	0.4	0.4	0.4	0.3	0.4	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.3	S	0.4	0.4	0.3	0.5	0.4	24	
23		0.5	0.4	0.5	0.4	0.4	0.5	0.5	0.7	0.6	0.6	0.7	R	0.7	0.4	0.4	0.5	0.5	0.4	0.5	0.4	S	0.5	0.5	0.5	0.4	0.7	0.5	23		
24		0.5	0.5	0.5	0.5	0.6	0.5	0.5	0.5	0.7	0.5	0.5	0.5	0.6	0.5	0.6	0.6	0.5	0.5	S	0.5	0.5	0.6	0.6	0.6	0.5	0.7	0.5	24		
25		0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.6	0.6	Q	Q	Q	Q	0.6	0.6	0.6	0.6	0.6	0.5	S	0.5	0.5	0.5	0.6	0.6	0.5	0.6	0.6	24	
26		0.6	0.7	0.4	0.6	0.6	0.6	0.6	0.7	0.6	0.7	0.7	0.6	0.6	0.7	0.6	0.6	0.7	S	0.6	0.6	0.6	0.6	0.7	0.7	0.4	0.7	0.6	24		
27		0.6	0.6	0.6	0.7	0.6	0.6	0.6	0.5	0.7	0.6	0.6	0.6	0.6	0.4	0.6	0.5	S	0.5	0.5	0.5	0.6	0.5	0.6	0.5	0.4	0.7	0.6	24		
28		0.5	0.6	0.5	0.4	0.5	0.6	0.8	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	S	0.5	0.6	0.6	0.5	0.6	0.6	0.7	0.6	0.4	0.8	0.6	24		
29		0.7	0.7	0.6	0.6	0.6	0.7	0.7	0.8	0.7	0.5	0.6	0.6	0.7	0.6	S	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.8	0.6	24		
30		0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.4	0.4	S	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.6	0.5	24	
HOURLY MAX		1.5	1.5	1.5	1.5	1.6	2.0	1.7	1.4	1.4	1.3	1.1	1.0	1.3	1.1	1.2	1.2	1.2	1.2	1.3	1.4	1.4	1.4	1.5	1.6	1.5					
HOURLY AVG		0.7	0.7	0.7	0.6	0.6	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7				

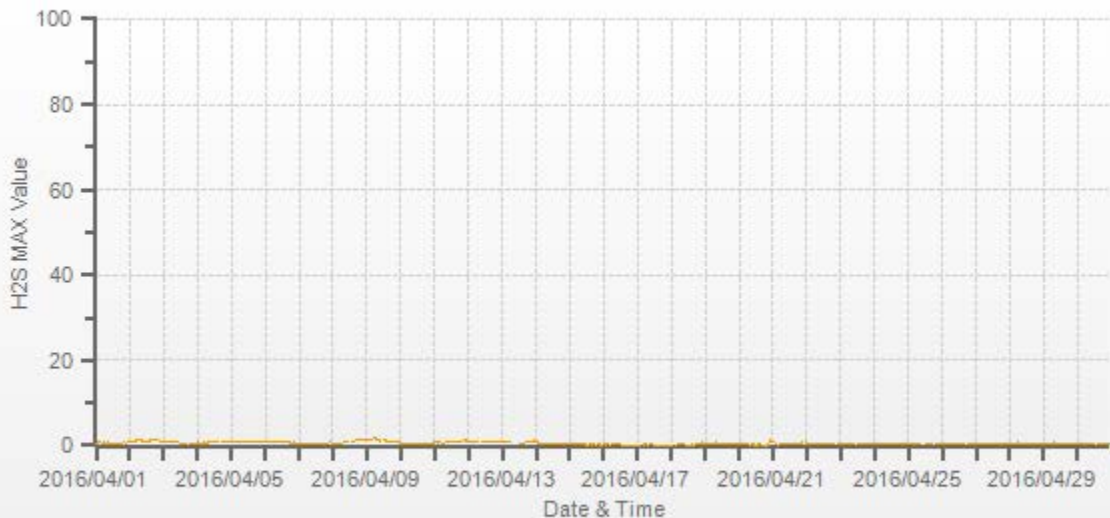
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	678
MAXIMUM INSTANTANEOUS VALUE:	2.0 PPB @ HOUR(S) 5 ON DAY(S) 9
	VAR-VARIOUS
IZS CALIBRATION TIME:	31 HRS
MONTHLY CALIBRATION TIME:	4 HRS
STANDARD DEVIATION:	0.29
OPERATIONAL TIME:	718 HRS

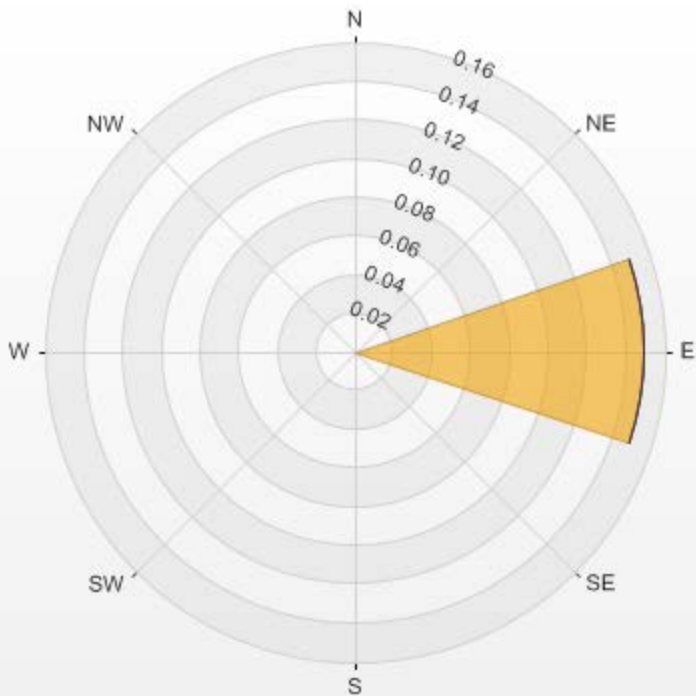
H2S MAX[ppb] Station: LICA ST. LINA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— H2S MAX[ppb]

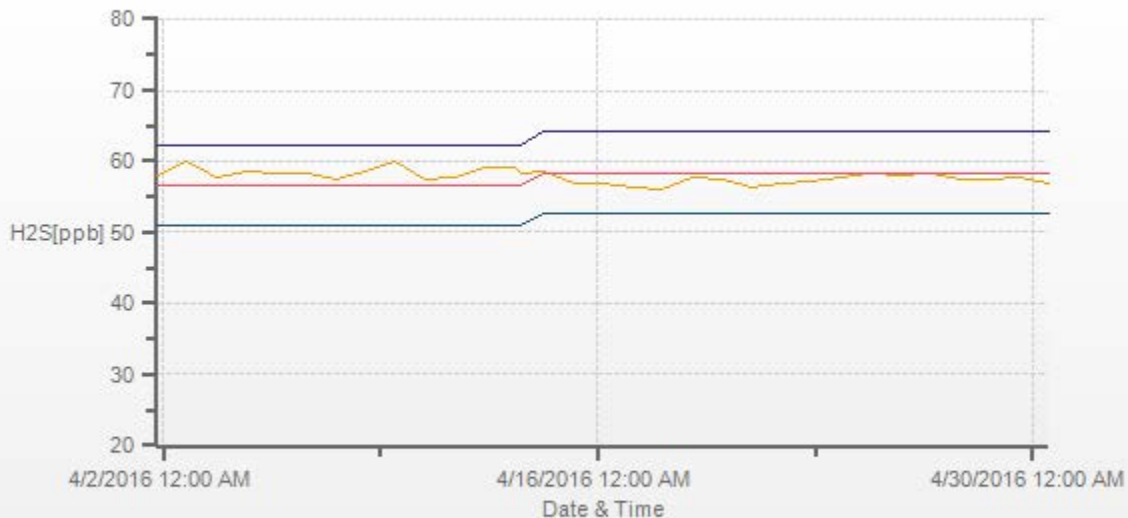
Wind: LICA ST. LINA Monitor: H2S [ppb] Monthly: 04/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 99.85% Valid Data: 94.86% Calm Avg: 0.00 [ppb]

Direction	0.5-3.0	3.0-10.0	10.0-50.0	>50.0	Total
N	0	0	0	0	0
NE	0	0	0	0	0
E	0.15	0	0	0	0.15
SE	0	0	0	0	0
S	0	0	0	0	0
SW	0	0	0	0	0
W	0	0	0	0	0
NW	0	0	0	0	0
Summary	0.15	0	0	0	0.15



% Icon Classes (ppb)	0.15	0.5-3.0	0.00	3.0-10.0	0.00	10.0-50.0	0.00	>50.0
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H2S[ppb] Calibration: LICA ST. LINA Monthly: 04/2016 Type: Span



Span Meas

Span Ref

-10%

+10%

TOTAL HYDROCARBON



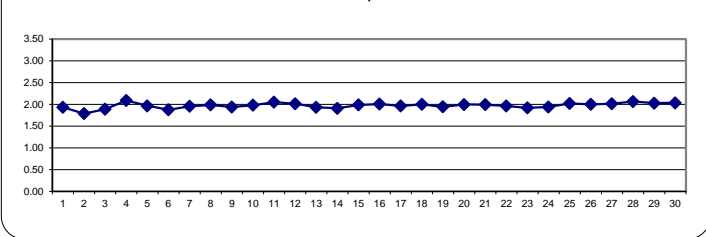
TOTAL HYDROCARBONS (THC) hourly averages in ppm

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
DAY	MIN.	MAX.	AVG.	RDGS.																									
1	1.95	1.94	1.94	1.95	1.97	1.96	1.96	1.95	1.96	1.95	1.93	1.93	1.90	1.92	1.91	1.91	1.91	1.90	1.97	S	1.96	1.93	1.90	1.88	1.88	1.88	1.97	1.93	24
2	1.87	1.86	1.86	1.86	1.84	1.83	1.84	1.87	1.84	1.80	1.77	1.79	1.77	1.75	1.74	1.74	1.71	1.72	S	1.72	1.72	1.72	1.75	1.78	1.71	1.87	1.79	24	
3	1.82	1.85	1.86	1.87	1.85	1.85	1.85	1.84	1.81	1.82	1.84	1.87	1.89	1.90	1.90	1.90	1.91	S	1.93	1.94	1.93	1.99	2.00	2.01	1.81	2.01	1.89	24	
4	2.04	2.08	2.17	2.20	2.20	2.17	2.16	2.24	2.33	2.29	2.25	2.20	2.10	2.06	2.04	2.00	S	1.94	1.94	1.94	1.93	1.93	1.93	1.92	1.92	2.33	2.09	24	
5	1.95	1.97	2.02	2.04	1.97	1.96	1.97	1.97	1.96	1.97	1.98	1.99	1.98	1.96	1.93	S	1.93	1.96	1.97	1.96	1.95	1.94	1.96	1.94	1.93	2.04	1.97	24	
6	1.92	1.83	1.83	1.82	1.83	1.83	1.84	1.84	1.84	1.85	1.86	1.86	1.88	1.88	S	1.89	1.90	1.90	1.92	1.92	1.92	1.92	1.92	1.92	1.82	1.92	1.87	24	
7	1.92	1.92	1.94	1.93	1.94	1.93	1.94	1.96	1.95	2.01	2.00	1.95	1.93	S	1.92	1.92	1.93	1.94	1.96	2.04	1.98	1.97	2.02	2.04	1.92	2.04	1.96	24	
8	2.04	2.00	2.00	2.00	2.01	2.02	2.06	2.09	2.12	2.13	2.15	2.11	S	2.02	1.97	1.94	1.91	1.89	1.88	1.86	1.87	1.88	1.87	1.86	1.86	2.15	1.99	24	
9	1.90	1.95	1.93	1.93	1.90	1.90	1.90	1.92	1.93	1.94	1.94	S	1.89	1.92	1.93	1.95	1.95	1.97	1.97	1.97	1.98	1.97	1.97	1.97	1.89	1.98	1.94	24	
10	1.95	1.94	1.94	1.95	1.95	1.95	1.95	1.97	1.97	1.96	S	1.96	1.96	1.97	1.97	1.98	1.98	1.99	1.99	2.00	2.00	2.03	2.03	2.14	1.94	2.14	1.98	24	
11	2.13	2.13	2.15	2.14	2.08	2.06	2.07	2.05	2.04	S	2.01	2.02	2.02	2.01	1.96	1.98	1.98	1.99	2.01	2.04	2.02	2.06	2.08	2.13	1.96	2.15	2.05	24	
12	2.17	2.17	2.16	2.13	2.08	2.03	1.99	2.04	S	1.98	C	C	C	C	1.96	1.95	1.93	1.93	1.91	1.90	1.90	1.93	2.05	2.01	1.90	2.17	2.01	24	
13	1.98	1.99	1.97	1.96	1.98	1.97	1.98	S	2.01	1.94	1.91	1.95	1.98	1.91	1.90	1.91	1.89	1.88	1.87	1.91	1.89	1.88	1.89	1.90	1.87	2.01	1.93	24	
14	1.89	1.90	1.90	1.91	1.90	1.90	S	1.89	1.91	1.91	1.92	1.90	1.91	1.90	1.91	1.91	1.91	1.92	1.92	1.92	1.92	1.91	1.91	1.91	1.89	1.92	1.91	24	
15	1.91	1.92	1.92	1.93	1.94	S	1.97	1.99	1.97	1.96	1.96	1.96	1.98	1.96	1.97	1.99	1.99	2.00	2.01	2.05	2.01	2.05	2.12	2.14	1.91	2.14	1.99	24	
16	2.11	2.09	2.03	2.03	S	2.06	2.08	2.04	2.02	2.00	2.00	2.00	1.99	2.02	2.00	1.98	1.96	1.94	1.94	1.95	1.97	1.98	1.98	2.02	1.94	2.11	2.01	24	
17	2.01	2.02	1.97	S	1.96	1.95	1.96	1.97	1.98	1.98	1.97	1.99	1.99	1.98	1.97	1.96	1.97	1.97	1.96	1.96	1.91	1.91	1.92	1.93	1.91	2.02	1.96	24	
18	1.99	1.98	S	2.00	2.01	2.01	2.03	2.02	2.02	2.02	2.02	2.02	2.01	2.01	2.01	2.02	2.00	2.00	1.96	1.96	1.96	1.96	1.96	1.95	1.95	2.03	2.00	24	
19	1.95	S	1.95	1.96	1.97	1.97	1.98	1.98	1.99	2.03	1.97	1.94	1.96	1.92	1.90	1.93	1.91	1.90	1.91	1.93	1.90	1.88	1.91	1.94	1.88	2.03	1.94	24	
20	S	1.94	1.96	1.96	2.00	2.00	2.01	1.98	1.98	1.98	2.02	2.01	2.00	1.99	1.99	2.00	2.01	2.01	2.04	2.03	2.03	2.01	1.98	S	1.94	2.04	2.00	24	
21	1.98	2.00	2.00	2.01	2.02	2.05	2.06	2.03	2.05	2.04	2.03	1.99	1.98	1.97	1.96	1.96	1.96	1.96	1.95	1.96	1.97	1.97	S	1.96	1.95	2.06	1.99	24	
22	1.98	1.97	1.97	1.97	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.97	1.97	1.96	1.97	1.97	1.95	1.93	1.93	1.93	S	1.92	1.92	1.92	1.98	1.96	24	
23	1.94	1.93	1.94	1.93	1.92	1.93	1.93	1.93	1.94	1.95	1.93	1.95	1.93	1.91	1.90	1.89	1.89	1.88	1.90	1.89	S	1.89	1.93	1.95	1.88	1.95	1.92	24	
24	1.92	1.95	1.96	1.97	1.96	1.93	1.90	1.90	1.91	1.95	1.93	1.93	1.95	1.93	1.91	1.92	1.92	1.91	1.89	S	1.93	1.96	2.03	2.03	1.89	2.03	1.94	24	
25	2.02	1.99	1.99	1.98	2.00	2.04	2.08	2.07	2.09	2.15	Q	Q	2.09	2.04	2.02	2.00	1.97	1.98	S	1.98	1.99	1.99	2.00	1.99	1.97	2.15	2.02	24	
26	2.01	2.00	2.00	2.00	2.01	2.02	2.03	2.03	2.01	2.00	2.00	1.98	2.00	2.00	2.00	1.99	1.99	S	1.97	1.97	1.99	1.98	1.99	1.99	1.97	2.03	2.00	24	
27	2.01	2.00	2.01	1.99	2.01	2.01	2.05	2.06	2.10	2.08	2.01	1.99	2.03	2.04	2.02	2.00	S	1.96	1.95	1.96	2.00	1.99	2.00	1.99	1.95	2.10	2.01	24	
28	1.99	1.99	1.99	1.98	2.02	2.18	2.20	2.35	2.35	2.29	2.27	2.25	2.06	2.03	2.00	S	1.92	1.93	1.93	1.94	1.93	1.96	1.97	1.98	1.92	2.35	2.07	24	
29	1.99	2.14	2.14	2.07	2.03	2.07	2.13	2.10	2.04	2.01	2.00	1.96	2.00	2.02	S	2.00	2.00	1.98	1.94	1.94	2.00	2.03	2.01	2.03	1.94	2.14	2.03	24	
30	2.02	2.03	2.04	2.04	2.03	2.08	2.28	2.36	2.26	2.05	2.01	2.01	1.96	S	1.93	1.96	1.96	2.00	1.95	1.95	1.97	1.97	1.97	1.98	1.93	2.36	2.04	24	
HOURLY MAX	2.17	2.17	2.17	2.20	2.20	2.18	2.28	2.36	2.35	2.29	2.27	2.25	2.10	2.06	2.04	2.01	2.02	2.01	2.04	2.05	2.07	2.06	2.12	2.14					
HOURLY AVG	1.98	1.98	1.98	1.98	1.98	1.99	2.01	2.01	2.01	2.00	1.99	1.98	1.97	1.96	1.95	1.95	1.94	1.94	1.95	1.95	1.95	1.95	1.96	1.97					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

24 HOUR AVERAGES FOR April 2016



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	683		
MINIMUM 1-HR AVERAGE:	1.71	PPM @ HOUR(S)	16 ON DAY(S) 2
MAXIMUM 1-HR AVERAGE:	2.36	PPM @ HOUR(S)	7 ON DAY(S) 30
MAXIMUM 24-HR AVERAGE:	2.09	PPM	ON DAY(S) 4
			VAR-VARIOUS
IZS CALIBRATION TIME:	31	HRS	OPERATIONAL TIME: 720 HRS
MONTHLY CALIBRATION TIME:	4	HRS	AMD OPERATION UPTIME: 100.0 %
STANDARD DEVIATION:	0.08		MONTHLY AVERAGE: 1.97 PPM

THC[ppm] Station: LICA ST. LINA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— THC[ppm]



TOTAL HYDROCARBONS MAX instantaneous maximum in ppm

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR		
HOURLY MAX	HOURLY AVG	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.	
DAY																														
1		2.17	2.17	2.17	2.17	2.18	2.18	2.18	2.17	2.18	2.18	2.17	2.15	2.13	2.15	2.14	2.14	2.14	2.14	2.27	S	2.20	2.18	2.14	2.11	2.11	2.11	2.27	2.17	24
2		2.11	2.08	2.08	2.09	2.08	2.08	2.09	2.11	2.09	2.05	2.01	2.04	2.01	2.01	2.00	1.98	1.98	1.98	S	1.97	1.98	1.98	2.01	2.04	1.97	2.11	2.04	24	
3		2.08	2.11	2.11	2.11	2.11	2.11	2.11	2.09	2.08	2.09	2.12	2.14	2.15	2.15	2.15	2.17	2.17	S	2.18	2.18	2.21	2.35	2.30	2.27	2.08	2.35	2.15	24	
4		2.29	2.32	2.41	2.42	2.42	2.38	2.36	2.50	2.54	2.51	2.48	2.44	2.30	2.25	2.23	2.18	S	2.12	2.12	2.12	2.11	2.12	2.11	2.09	2.09	2.54	2.30	24	
5		2.14	2.14	2.25	2.26	2.17	2.14	2.15	2.15	2.14	2.17	2.18	2.18	2.17	2.15	2.12	S	2.14	2.20	2.25	2.20	2.15	2.14	2.17	2.14	2.12	2.26	2.17	24	
6		2.14	2.01	2.02	2.02	2.04	2.03	2.04	2.04	2.04	2.05	2.06	2.08	2.08	2.08	S	2.11	2.11	2.14	2.15	2.17	2.15	2.15	2.15	2.17	2.01	2.17	2.09	24	
7		2.17	2.18	2.20	2.20	2.20	2.20	2.21	2.25	2.23	2.33	2.32	2.25	2.23	S	2.20	2.20	2.20	2.21	2.23	2.38	2.25	2.25	2.29	2.29	2.17	2.38	2.24	24	
8		2.28	2.25	2.23	2.23	2.23	2.23	2.27	2.32	2.32	2.32	2.35	2.30	S	2.20	2.14	2.11	2.08	2.05	2.04	2.01	2.01	2.02	1.99	2.01	1.99	2.35	2.17	24	
9		2.06	2.08	2.04	2.04	2.03	2.01	1.99	2.01	2.01	2.02	2.01	S	1.98	2.02	2.04	2.08	2.08	2.09	2.09	2.11	2.11	2.12	2.14	2.12	1.98	2.14	2.06	24	
10		2.12	2.13	2.14	2.15	2.15	2.17	2.17	2.18	2.20	2.20	S	2.18	2.18	2.20	2.20	2.20	2.20	2.20	2.21	2.20	2.20	2.27	2.23	2.35	2.12	2.35	2.19	24	
11		2.32	2.30	2.33	2.33	2.29	2.23	2.23	2.21	2.20	S	2.17	2.18	2.18	2.17	2.14	2.14	2.12	2.13	2.15	2.18	2.23	2.21	2.23	2.27	2.12	2.33	2.21	24	
12		2.32	2.30	2.30	2.27	2.25	2.17	2.14	2.20	S	2.12	C	C	C	C	C	2.07	2.05	2.04	2.04	2.01	2.01	2.01	2.05	2.18	2.15	2.01	2.32	2.14	24
13		2.08	2.09	2.08	2.07	2.08	2.08	S	2.14	2.04	2.04	2.11	2.11	2.04	1.99	2.04	2.01	1.98	1.98	R	2.01	1.98	1.99	2.01	1.98	1.98	2.14	2.05	23	
14		1.99	2.01	2.01	2.02	2.01	2.01	S	2.01	2.04	2.04	2.06	2.05	2.05	2.06	2.08	2.10	2.08	2.11	2.11	2.14	2.14	2.12	2.11	1.99	2.14	2.06	24		
15		2.12	2.15	2.15	2.17	2.20	S	2.24	2.26	2.23	2.23	2.21	2.20	2.23	2.21	2.22	2.25	2.23	2.26	2.29	2.29	2.27	2.32	2.36	2.38	2.12	2.38	2.24	24	
16		2.35	2.35	2.29	2.26	S	2.29	2.32	2.27	2.27	2.25	2.25	2.25	2.26	2.27	2.28	2.26	2.23	2.21	2.23	2.26	2.25	2.26	2.30	2.32	2.21	2.35	2.27	24	
17		2.29	2.32	2.26	S	2.26	2.26	2.26	2.26	2.27	2.27	2.29	2.29	2.29	2.29	2.26	2.26	2.27	2.26	2.26	2.26	2.27	2.22	2.22	2.30	2.22	2.32	2.27	24	
18		2.32	2.29	S	2.29	2.29	2.29	2.29	2.29	2.29	2.29	2.28	2.27	2.26	2.26	2.25	2.23	2.23	2.20	2.20	2.18	2.14	2.14	2.12	2.11	2.11	2.32	2.24	24	
19		2.11	S	2.11	2.11	2.12	2.12	2.14	2.14	2.14	2.14	2.60	2.42	2.38	2.35	2.30	2.08	2.11	2.11	2.09	2.08	2.11	2.05	2.04	2.08	2.09	2.04	2.60	2.17	24
20		S	2.11	2.14	2.14	2.20	2.20	2.23	2.18	2.17	2.17	2.97	2.55	2.51	2.20	2.20	2.55	2.23	2.23	2.28	2.26	2.26	2.26	2.23	S	2.11	2.97	2.29	24	
21		2.23	2.26	2.26	2.26	2.26	2.28	2.29	2.29	2.29	2.26	2.26	2.23	2.20	2.18	2.17	2.17	2.17	2.15	2.17	2.17	2.17	2.20	S	2.17	2.15	2.29	2.22	24	
22		2.18	2.17	2.17	2.17	2.17	2.17	2.17	2.18	2.17	2.17	2.17	2.17	2.17	2.17	2.14	2.15	2.17	2.14	2.12	2.11	2.11	S	2.11	2.11	2.11	2.18	2.15	24	
23		2.14	2.12	2.14	2.14	2.11	2.14	2.14	2.14	2.15	2.15	2.15	R	2.18	2.14	2.12	2.11	2.12	2.11	2.14	2.14	S	2.12	2.17	2.20	2.11	2.20	2.14	23	
24		2.17	2.23	2.21	2.21	2.21	2.20	2.14	2.14	2.15	2.26	2.17	2.18	2.20	2.17	2.14	2.17	2.15	2.14	2.12	S	2.17	2.23	2.25	2.26	2.12	2.26	2.19	24	
25		2.25	2.21	2.20	2.17	2.20	2.26	2.27	2.26	2.29	Q	Q	Q	2.26	2.20	2.15	2.14	2.11	2.09	S	2.11	2.11	2.12	2.11	2.11	2.09	2.29	2.18	24	
26		2.12	2.12	2.12	2.14	2.14	2.15	2.15	2.15	2.14	2.12	2.14	2.11	2.12	2.12	2.11	2.11	2.11	S	2.11	2.11	2.14	2.12	2.14	2.14	2.11	2.15	2.13	24	
27		2.15	2.15	2.17	2.15	2.18	2.18	2.26	2.25	2.29	2.29	2.22	2.18	2.25	2.25	2.23	2.23	S	2.17	2.14	2.18	2.23	2.20	2.20	2.20	2.14	2.29	2.21	24	
28		2.20	2.20	2.20	2.20	2.30	2.41	2.44	2.64	2.63	2.54	2.54	2.55	2.33	2.26	2.27	S	2.14	2.14	2.14	2.14	2.14	2.14	2.17	2.17	2.20	2.14	2.64	2.30	24
29		2.23	2.35	2.35	2.29	2.21	2.29	2.32	2.30	2.22	2.20	2.17	2.17	2.17	2.17	S	2.17	2.17	2.17	2.12	2.14	2.20	2.21	2.20	2.23	2.12	2.35	2.22	24	
30		2.22	2.23	2.23	2.26	2.25	2.32	2.54	2.60	2.53	2.36	2.23	2.23	2.20	S	2.14	2.20	2.20	2.23	2.18	2.17	2.18	2.18	2.20	2.20	2.14	2.60	2.26	24	
HOURLY MAX		2.35	2.35	2.41	2.42	2.42	2.41	2.54	2.64	2.63	2.60	2.97	2.55	2.51	2.30	2.28	2.55	2.27	2.26	2.29	2.38	2.27	2.35	2.36	2.38					
HOURLY AVG		2.18	2.19	2.19	2.18	2.18	2.19	2.21	2.23	2.22	2.22	2.24	2.23	2.20	2.17	2.15	2.16	2.14	2.14	2.16	2.16	2.15	2.16	2.17	2.18					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	680
MAXIMUM INSTANTANEOUS VALUE:	2.97 PPM @ HOUR(S) 10 ON DAY(S) 20
	VAR-VARIOUS
IZS CALIBRATION TIME:	31 HRS
MONTHLY CALIBRATION TIME:	4 HRS
STANDARD DEVIATION:	0.11
OPERATIONAL TIME:	718 HRS

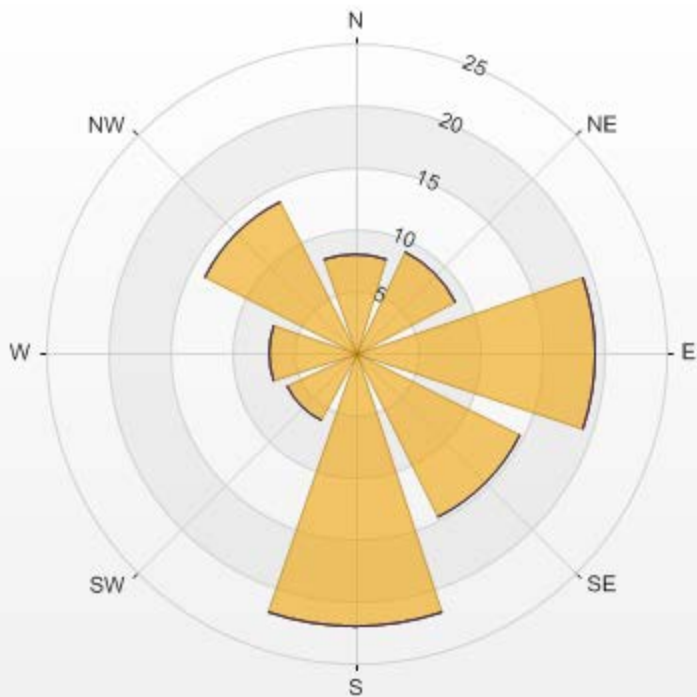
THC MAX[ppm] Station: LICA ST. LINA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— THC MAX[ppm]

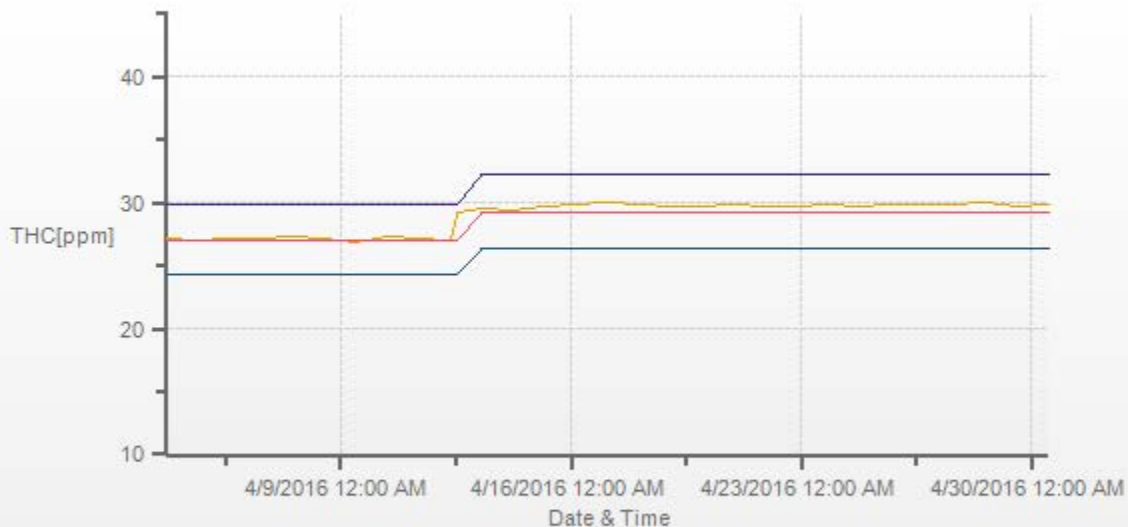
Wind: LICA ST. LINA Monitor: THC [ppm] Monthly: 04/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.86% Calm Avg: 0.00 [ppb]

Direction	0.5-3.0	3.0-10.0	10.0-50.0	>50.0	Total
N	7.91	0	0	0	7.91
NE	9.08	0	0	0	9.08
E	19.33	0	0	0	19.33
SE	14.79	0	0	0	14.79
S	22.11	0	0	0	22.11
SW	6.15	0	0	0	6.15
W	7.03	0	0	0	7.03
NW	13.62	0	0	0	13.62
Summary	100	0	0	0	100



% Icon Classes (ppm) 100 0.5-3.0 0 3.0-10.0 0 10.0-50.0 0 >50.0

THC[ppm] Calibration: LICA ST. LINA Monthly: 04/2016 Type: Span



Span Meas

Span Ref

-10%

+10%

OXIDES OF NITROGEN

OXIDES OF NITROGEN (NOx) hourly averages in ppb

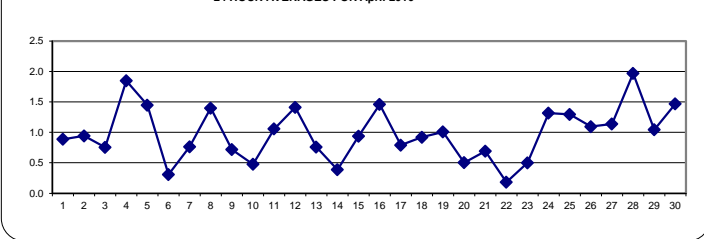
MST

DAY	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.	
1	0.6	0.8	0.9	1.1	1.0	1.8	1.8	1.8	1.4	1.3	0.6	0.6	0.1	0.4	0.4	0.2	0.1	0.6	1.0	S	0.8	1.0	1.2	0.9	0.1	1.8	0.9	24	
2	0.8	0.9	1.4	1.7	1.5	1.8	2.1	3.7	3.4	1.6	0.7	0.4	0.3	0.1	0.1	0.0	0.0	0.1	S	0.2	0.0	0.2	0.2	0.5	0.0	3.7	0.9	24	
3	1.2	1.5	1.3	1.2	0.9	0.9	0.8	0.4	0.1	0.1	0.4	0.3	0.4	0.2	0.2	0.2	0.2	S	1.3	1.1	0.4	0.8	1.5	2.0	0.1	2.0	0.8	24	
4	1.8	1.9	2.9	3.0	2.5	2.0	2.1	3.1	4.3	3.7	3.0	2.8	1.9	1.4	1.3	0.8	S	0.9	0.5	0.8	0.4	0.3	0.5	0.6	0.3	4.3	1.8	24	
5	1.3	1.4	2.0	3.3	2.5	1.9	1.5	1.6	1.2	1.3	1.5	1.3	0.9	1.0	0.7	S	0.8	0.8	1.3	1.4	1.1	1.3	1.7	1.5	0.7	3.3	1.4	24	
6	1.2	0.4	0.4	0.4	0.4	0.2	0.2	0.1	0.3	0.1	0.1	0.2	0.4	0.2	S	0.5	0.2	0.2	0.5	0.2	0.2	0.4	0.0	0.3	0.0	1.2	0.3	24	
7	0.1	0.4	0.3	0.4	0.6	0.4	0.2	0.6	0.8	1.8	2.2	1.0	0.7	S	0.5	0.5	0.3	0.6	0.5	0.4	0.7	0.8	1.9	1.9	0.1	2.2	0.8	24	
8	1.7	0.7	0.6	0.7	0.7	0.9	1.3	1.8	2.2	2.2	2.0	1.9	S	1.8	1.5	1.3	1.6	1.4	1.5	1.3	1.3	1.2	1.2	1.4	0.6	2.2	1.4	24	
9	1.5	2.5	2.7	2.3	1.5	0.9	0.7	0.4	0.7	0.4	0.3	S	0.7	0.3	0.4	0.3	0.3	0.0	0.2	0.0	0.2	0.0	0.2	0.0	0.0	2.7	0.7	24	
10	0.2	0.1	0.0	0.1	0.3	0.5	0.5	0.7	0.6	0.6	S	0.7	0.5	0.2	0.3	0.0	0.0	0.0	0.1	0.5	0.7	0.7	1.4	2.3	0.0	2.3	0.5	24	
11	1.6	0.9	1.0	0.8	0.2	0.2	0.5	0.8	1.0	S	1.1	1.1	0.7	0.9	0.7	0.6	0.6	0.8	1.3	1.4	2.1	1.9	1.8	2.3	0.2	2.3	1.1	24	
12	2.1	1.9	2.1	2.2	1.8	1.7	2.4	2.4	S	1.2	C	C	C	C	C	C	C	0.5	0.1	0.2	0.1	0.5	2.0	1.4	0.1	2.4	1.4	24	
13	1.0	0.7	0.6	0.6	0.6	0.9	0.6	S	2.5	1.2	1.2	1.3	2.0	0.5	0.3	0.2	0.4	0.2	0.4	0.5	0.5	0.3	0.5	0.5	0.2	2.5	0.8	24	
14	0.4	0.5	0.6	0.5	0.5	0.7	S	0.8	0.6	0.4	0.5	0.5	0.2	0.2	0.4	0.3	0.3	0.4	0.4	0.3	0.2	0.1	0.1	0.0	0.0	0.8	0.4	24	
15	0.0	0.1	0.3	0.0	0.0	S	1.4	2.4	1.8	1.4	0.9	1.0	1.6	1.0	1.0	0.8	0.9	0.9	0.7	0.9	0.4	0.9	1.7	1.5	0.0	2.4	0.9	24	
16	1.4	1.3	0.8	1.0	S	1.7	1.9	2.2	2.2	2.4	2.6	2.4	2.3	1.7	1.1	1.0	0.9	1.1	1.1	0.8	1.0	0.8	0.9	1.0	0.8	2.6	1.5	24	
17	0.8	1.1	0.8	S	0.8	0.6	1.3	1.5	1.7	2.0	1.9	0.6	0.7	0.4	0.2	0.2	0.4	0.5	0.6	0.4	0.5	0.6	0.4	0.2	0.2	2.0	0.8	24	
18	0.4	0.4	S	1.7	1.6	2.2	2.1	1.9	1.7	1.4	0.8	0.4	0.2	0.3	0.3	0.3	0.6	0.5	0.8	0.6	0.5	0.9	0.8	0.8	0.2	2.2	0.9	24	
19	0.8	S	1.0	0.9	1.1	1.4	1.5	1.7	2.1	2.3	1.8	0.4	1.5	1.8	0.3	1.6	1.2	0.4	0.5	0.4	0.0	0.3	0.2	0.0	0.0	2.3	1.0	24	
20	S	0.3	0.1	0.0	0.4	0.6	0.4	0.4	0.4	0.1	0.0	0.2	0.0	0.1	0.1	0.2	0.3	0.5	1.3	1.5	2.1	1.3	0.8	S	0.0	2.1	0.5	24	
21	1.0	1.1	0.8	0.5	0.8	1.5	1.7	1.6	1.3	1.2	0.8	0.6	0.3	0.3	0.2	0.3	0.3	0.2	0.1	0.2	0.5	0.5	S	0.1	0.1	1.7	0.7	24	
22	0.5	0.3	0.2	0.0	0.4	0.7	0.5	0.4	0.5	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	S	0.3	0.2	0.0	0.7	0.2	24
23	0.0	0.1	0.3	0.0	0.1	0.3	0.3	0.3	0.8	0.9	0.4	0.5	0.6	0.6	0.4	0.5	0.6	0.4	0.6	0.6	S	1.0	1.2	1.0	0.0	1.2	0.5	24	
24	1.0	0.9	1.3	1.0	1.0	0.9	0.9	1.1	1.3	1.8	1.8	1.7	1.6	1.2	1.2	1.1	1.2	1.2	0.9	S	1.5	1.5	2.0	2.2	0.9	2.2	1.3	24	
25	2.2	1.7	1.5	2.0	1.7	1.5	1.7	1.8	2.2	2.5	Q	Q	Q	1.8	0.6	0.7	0.4	0.4	S	0.9	0.8	0.5	0.6	0.4	0.4	2.5	1.3	24	
26	0.5	0.4	0.5	0.4	1.2	1.0	1.2	2.7	2.3	1.9	2.0	1.7	1.9	1.0	0.7	0.9	0.5	S	1.0	0.6	0.8	0.6	0.6	0.6	0.8	0.4	2.7	1.1	24
27	0.6	0.8	0.8	0.8	0.8	1.2	1.6	2.5	2.8	2.4	2.1	1.4	1.0	0.9	0.7	0.5	S	0.8	0.8	0.6	0.6	0.7	0.8	1.0	0.5	2.8	1.1	24	
28	1.2	1.1	1.5	1.2	1.3	3.9	6.4	4.3	3.6	3.1	3.4	2.4	1.2	1.0	1.9	S	1.2	0.8	0.7	0.8	0.9	0.9	1.1	1.4	0.7	6.4	2.0	24	
29	1.4	2.0	1.9	1.1	1.0	1.8	2.0	1.8	1.6	0.9	0.8	0.7	0.4	0.4	S	0.6	0.3	0.4	0.6	0.6	0.5	1.0	1.0	1.2	0.3	2.0	1.0	24	
30	1.2	0.8	1.4	1.5	1.4	1.4	4.6	5.0	3.8	1.6	1.5	0.6	0.5	S	0.6	0.6	0.4	0.7	0.4	0.6	1.0	1.6	1.4	1.2	0.4	5.0	1.5	24	
HOURLY MAX	2.2	2.5	2.9	3.3	2.5	3.9	6.4	5.0	4.3	3.7	3.4	2.8	2.3	1.8	1.9	1.6	1.6	1.4	1.5	1.5	2.1	1.9	2.0	2.3					
HOURLY AVG	1.0	0.9	1.0	1.0	1.0	1.2	1.5	1.7	1.7	1.4	1.3	1.0	0.8	0.7	0.6	0.5	0.5	0.5	0.7	0.6	0.7	0.8	1.0	1.0					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

24 HOUR AVERAGES FOR April 2016



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	645				
MINIMUM 1-HR AVERAGE:	0.0	PPB @ HOUR(S)	VAR	ON DAY(S)	VAR
MAXIMUM 1-HR AVERAGE:	6.4	PPB @ HOUR(S)	6	ON DAY(S)	28
MAXIMUM 24-HR AVERAGE:	2.0	PPB		ON DAY(S)	28
				VAR-VARIOUS	
IZS CALIBRATION TIME:	31	HRS	OPERATIONAL TIME:	720	HRS
MONTHLY CALIBRATION TIME:	7	HRS	AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	0.81		MONTHLY AVERAGE:	1.0	PPB

NOX[ppb] Station: LICA ST. LINA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— NOX[ppb]



OXIDES OF NITROGEN MAX instantaneous maximum in ppb

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.
HOUR START	HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
DAY																													
1		1.1	1.3	1.3	1.9	1.6	17.3	2.2	2.2	2.0	2.0	7.5	1.6	0.5	1.0	1.1	0.8	0.6	4.8	4.3	S	1.4	1.7	1.7	1.5	0.5	17.3	2.7	24
2		1.3	1.7	2.4	2.4	2.2	4.3	3.6	5.2	5.2	2.8	1.7	1.5	1.3	1.0	1.0	1.1	0.8	1.4	S	1.4	0.9	0.9	1.0	1.6	0.8	5.2	2.0	24
3		1.9	2.2	2.1	2.0	4.1	3.9	1.7	1.7	1.0	0.9	2.7	1.0	2.0	1.1	1.0	0.8	0.8	S	6.3	4.3	1.1	1.5	2.3	2.6	0.8	6.3	2.1	24
4		2.4	3.0	3.9	3.7	3.6	2.5	2.8	4.5	5.0	4.6	3.8	3.8	3.0	2.2	2.2	1.7	S	1.7	1.3	1.7	1.1	1.0	1.6	1.6	1.0	5.0	2.7	24
5		2.2	2.0	3.6	4.1	3.8	7.0	3.1	3.0	2.6	2.0	27.5	2.9	1.6	1.7	1.2	S	1.3	1.4	1.9	1.8	1.9	1.9	2.7	3.0	1.2	27.5	3.7	24
6		1.8	0.9	1.1	0.9	0.9	0.8	1.1	1.2	1.3	0.7	0.5	0.7	1.1	0.9	S	1.7	1.4	0.9	2.2	0.9	0.8	1.4	0.5	0.9	0.5	2.2	1.1	24
7		0.8	0.9	1.0	0.9	1.4	1.1	0.9	1.4	1.3	3.0	3.0	1.9	1.4	S	1.1	1.1	0.9	1.1	1.0	1.0	1.2	1.3	2.6	2.6	0.8	3.0	1.4	24
8		2.2	1.4	0.9	1.2	1.3	1.6	1.9	2.2	2.8	2.7	2.7	2.5	S	2.4	2.1	2.1	2.1	2.0	2.1	1.9	1.9	1.9	1.7	2.0	0.9	2.8	2.0	24
9		2.5	3.2	3.3	3.0	2.4	1.6	1.9	1.1	2.2	1.2	0.9	S	1.6	1.1	1.3	1.0	1.3	1.0	1.3	1.1	0.9	0.9	0.9	0.7	0.7	3.3	1.6	24
10		0.9	1.1	0.7	1.1	1.1	1.3	1.3	1.5	1.4	1.7	S	1.7	1.4	1.0	1.1	1.1	0.5	0.9	0.9	1.4	1.7	1.5	2.2	3.3	0.5	3.3	1.3	24
11		2.8	1.7	1.9	1.5	1.0	0.8	1.2	1.7	1.8	S	2.0	2.0	1.7	1.6	1.7	1.4	1.5	1.5	2.0	2.2	2.8	2.6	2.6	2.8	0.8	2.8	1.9	24
12		2.8	2.4	2.7	3.0	2.4	2.4	20.6	3.3	S	1.9	C	C	C	C	C	C	C	2.2	1.3	1.3	1.4	1.8	3.7	2.7	1.3	20.6	3.5	24
13		2.0	1.7	1.6	1.6	1.6	2.2	2.0	S	4.4	2.1	2.0	3.0	3.0	2.0	1.1	1.0	2.9	1.3	1.9	R	1.4	1.0	1.2	1.1	1.0	4.4	1.9	23
14		1.3	0.9	0.9	1.1	1.0	1.3	S	1.7	1.1	0.9	1.3	1.2	0.6	0.9	1.1	0.9	0.9	1.2	1.0	1.0	0.9	1.1	0.9	0.8	0.6	1.7	1.0	24
15		0.4	0.9	0.9	0.5	1.1	S	2.9	3.7	2.5	2.4	2.0	1.7	2.3	2.2	1.8	1.7	1.6	1.9	1.4	1.3	1.0	1.8	2.2	2.0	0.4	3.7	1.7	24
16		1.8	1.9	1.3	1.5	S	2.3	2.4	5.1	2.9	3.2	3.3	3.2	3.9	2.8	2.2	1.8	1.8	1.9	3.7	1.9	2.0	1.8	1.9	2.2	1.3	5.1	2.5	24
17		2.0	2.1	2.3	S	1.9	1.7	3.7	4.1	2.9	3.6	3.7	1.8	3.3	1.9	1.6	1.5	1.8	2.1	2.1	1.8	1.8	2.1	1.8	1.4	1.4	4.1	2.3	24
18		1.7	1.7	S	3.1	2.9	3.8	3.5	3.5	3.0	2.8	2.1	1.5	1.3	1.8	1.5	1.5	1.7	1.7	2.0	1.7	1.3	1.9	2.0	1.5	1.3	3.8	2.2	24
19		1.7	S	2.0	2.0	3.4	14.7	3.7	4.1	22.4	3.1	1.6	3.5	4.0	1.5	3.6	3.8	1.9	3.6	3.3	1.7	1.8	1.5	1.3	1.3	22.4	4.0	24	
20		S	1.5	1.3	1.1	1.5	2.7	1.7	1.5	1.5	1.2	0.9	1.5	0.7	0.8	0.9	1.0	0.9	1.0	2.1	2.1	3.2	2.2	1.5	S	0.7	3.2	1.5	24
21		1.7	1.7	1.6	1.1	1.3	2.2	2.4	2.3	2.1	1.9	1.6	1.5	1.0	1.2	0.9	1.3	1.2	1.0	1.3	1.3	1.8	1.7	S	1.1	0.9	2.4	1.5	24
22		1.5	1.5	1.3	1.1	1.5	1.8	1.5	1.3	1.6	1.3	1.0	0.8	0.9	1.2	1.5	1.5	1.1	1.0	1.1	1.1	1.0	S	1.2	1.6	0.8	1.8	1.3	24
23		0.9	1.2	1.5	1.3	1.1	1.3	1.2	1.0	1.8	2.0	1.2	R	1.5	1.3	1.0	1.2	1.1	1.0	1.2	0.9	S	1.5	1.8	1.6	0.9	2.0	1.3	23
24		1.5	1.3	1.7	1.4	1.3	1.2	1.4	1.6	1.6	2.4	2.0	2.2	2.3	1.8	1.4	1.4	1.6	1.7	1.1	S	1.9	2.0	2.4	2.4	1.1	2.4	1.7	24
25		2.6	2.0	2.0	2.6	2.2	1.9	2.2	2.8	3.2	Q	Q	Q	Q	Q	1.3	2.5	1.1	1.1	S	1.8	1.6	1.3	1.4	1.2	1.1	3.2	1.9	24
26		1.3	1.3	1.3	1.3	2.2	2.0	2.8	4.4	3.1	2.9	3.0	2.8	26.3	2.0	1.7	2.1	1.5	S	2.1	1.7	1.9	1.7	1.6	1.9	1.3	26.3	3.2	24
27		1.4	1.7	1.7	1.7	1.6	2.1	2.8	3.6	3.6	3.6	3.8	2.4	2.2	1.7	1.6	1.4	S	1.9	2.4	1.8	1.4	1.6	1.5	2.0	1.4	3.8	2.2	24
28		2.0	2.0	2.5	2.3	2.2	5.9	8.8	5.9	4.6	3.9	4.9	3.6	2.2	1.7	48.4	S	1.9	1.3	1.3	1.3	1.8	2.0	1.7	2.1	1.3	48.4	5.0	24
29		2.1	2.8	2.8	2.1	1.6	2.8	3.0	3.0	2.3	2.0	1.7	1.7	1.4	1.4	S	1.6	1.1	1.3	1.7	1.4	1.9	1.7	1.9	2.2	1.1	3.0	2.0	24
30		2.2	1.8	2.4	2.2	2.2	2.8	10.8	7.6	5.1	3.4	2.8	2.2	1.6	S	1.9	2.0	1.4	12.9	1.7	1.7	2.0	5.3	2.3	2.2	1.4	12.9	3.5	24
HOURLY MAX		2.8	3.2	3.9	4.1	4.1	17.3	20.6	7.6	5.2	22.4	27.5	3.8	26.3	4.0	48.4	3.6	3.8	12.9	6.3	4.3	3.2	5.3	3.7	3.3				
HOURLY AVG		1.8	1.7	1.9	1.9	1.9	3.0	3.8	3.0	2.7	3.1	3.4	2.0	2.7	1.6	3.2	1.5	1.4	2.0	2.0	1.7	1.6	1.8	1.8	1.9				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

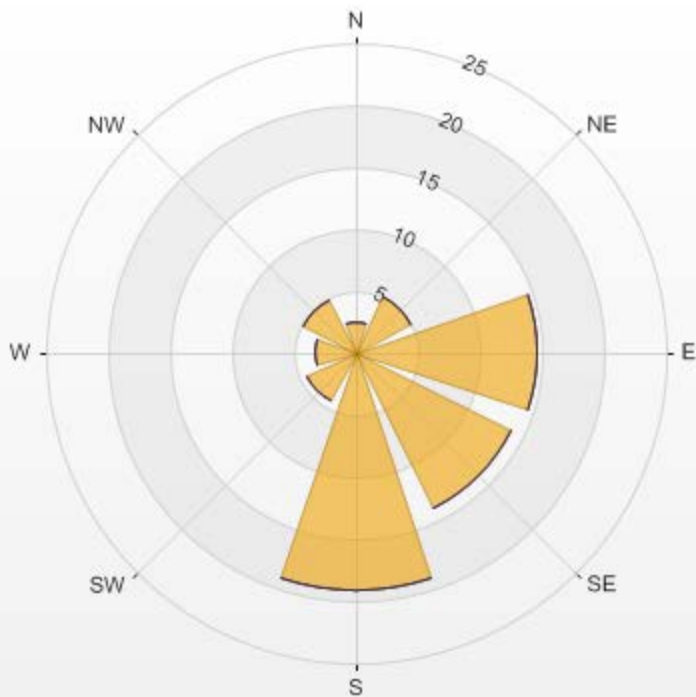
NUMBER OF NON-ZERO READINGS:	675
MAXIMUM INSTANTANEOUS VALUE:	48.4 PPB @ HOUR(S) 14 ON DAY(S) 28
	VAR-VARIOUS
IZS CALIBRATION TIME:	31 HRS
MONTHLY CALIBRATION TIME:	7 HRS
STANDARD DEVIATION:	2.83
OPERATIONAL TIME:	718 HRS



— NOX MAX[ppb]

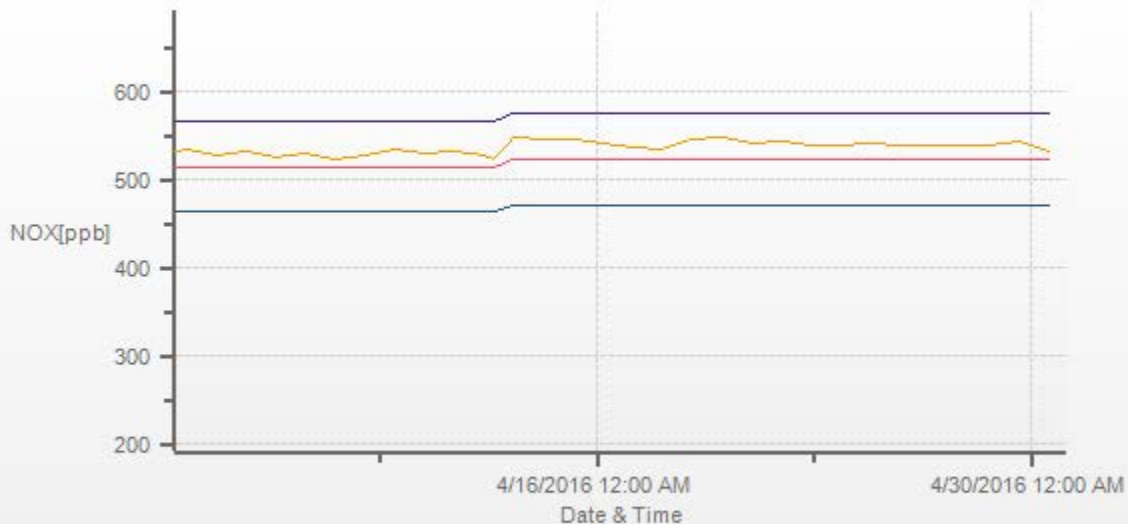
Wind: LICA ST. LINA Monitor: NOX [ppb] Monthly: 04/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 32.25% Valid Data: 94.31% Calm Avg: 0.00 [ppb]

Direction	0.5-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	2.5	0	0	0	2.5
NE	5.01	0	0	0	5.01
E	14.73	0	0	0	14.73
SE	13.99	0	0	0	13.99
S	19.15	0	0	0	19.15
SW	4.42	0	0	0	4.42
W	3.24	0	0	0	3.24
NW	4.71	0	0	0	4.71
Summary	67.75	0	0	0	67.75



% Icon Classes (ppb) 68 0.5-50.0 0 50.0-110.0 0 110.0-210.0 0 >210.0

NOX[ppb] Calibration: LICA ST. LINA Monthly: 04/2016 Type: Span



Span Meas Span Ref -10% +10%

NITRIC OXIDES

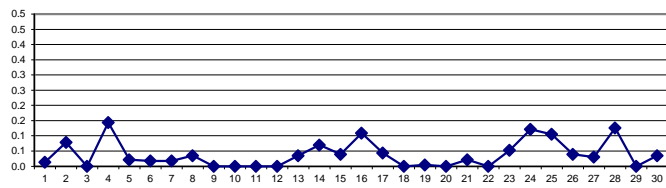
NITRIC OXIDE (NO) hourly averages in ppb

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR		
DAY	MIN.	MAX.	AVG.	RDGS.																										
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	S	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.5	0.9	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.1
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.0	0.7	0.4	0.5	0.2	0.0	0.1	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.1	
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.3	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	S	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.3	S	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	0.0	0.0	
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.1	0.0	0.0	0.5	0.0		
14	0.0	0.1	0.1	0.0	0.0	0.2	S	0.3	0.4	0.1	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.1	
15	0.0	0.0	0.0	0.0	0.0	S	0.1	0.3	0.2	0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	
16	0.0	0.0	0.0	0.0	S	0.2	0.4	0.3	0.4	0.4	0.4	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.1	
17	0.0	0.0	0.0	S	0.0	0.0	0.1	0.2	0.3	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	
18	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
19	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	
20	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0		
21	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.3	0.0	
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0		
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.0	0.1	0.1	S	0.3	0.2	0.0	0.0	0.0	0.0	0.3	0.1	
24	0.2	0.0	0.2	0.0	0.0	0.0	0.0	0.3	0.2	0.3	0.4	0.3	0.3	0.1	0.2	0.0	0.0	0.0	0.0	S	0.1	0.0	0.1	0.1	0.0	0.0	0.4	0.1		
25	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.2	0.3	0.4	Q	Q	Q	1.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.1		
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	S	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0		
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0		
28	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.3	0.3	0.3	0.4	0.2	0.0	0.0	0.6	S	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.6	0.1		
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
30	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.3	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	
HOURLY MAX	0.2	0.1	0.2	0.0	0.2	0.2	0.4	0.5	1.0	0.7	0.4	0.5	0.3	1.0	0.6	0.2	0.2	0.0	0.2	0.5	0.1	0.3	0.2	0.1						
HOURLY AVG	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

24 HOUR AVERAGES FOR April 2016



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	106				
MINIMUM 1-HR AVERAGE:	0.0	PPB @ HOUR(S)	VAR	ON DAY(S) ALL	
MAXIMUM 1-HR AVERAGE:	1.0	PPB @ HOUR(S)	8, 13	ON DAY(S) 4, 25	
MAXIMUM 24-HR AVERAGE:	0.1	PPB		ON DAY(S) VAR	
				VAR-VARIOUS	
IZS CALIBRATION TIME:	31	HRS	OPERATIONAL TIME:	720	HRS
MONTHLY CALIBRATION TIME:	7	HRS	AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	0.11		MONTHLY AVERAGE:	0.0	PPB

NO[ppb] Station: LICA ST. LINA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— NO[ppb]



NITRIC OXIDE MAX instantaneous maximum in ppb

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR		
DAY	MIN.	MAX.	AVG.	RDGS.																										
1	0.0	0.0	0.0	0.0	0.0	0.0	8.9	0.0	0.1	0.0	0.2	7.2	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.5	S	0.1	0.0	0.0	0.0	0.0	0.0	8.9	0.8	24
2	0.0	0.0	0.0	0.0	0.0	0.0	3.8	0.1	0.8	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.1	0.0	0.0	0.0	0.0	0.0	0.0	3.8	0.3	24
3	0.0	0.0	0.0	0.0	0.0	0.7	0.7	0.0	0.2	0.0	0.0	0.7	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.1	24
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.0	0.6	0.3	0.8	0.3	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.1	24
5	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.5	0.5	0.0	0.0	25.2	4.1	0.0	0.1	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.2	1.4	24
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	S	0.4	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	24
7	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.4	0.5	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	24
8	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.2	0.1	0.1	0.4	S	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.1	24
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	S	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	24
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	S	0.4	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.4	0.0	24
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	24
12	0.0	0.0	0.0	0.0	0.0	0.0	7.6	0.6	S	0.2	C	C	C	C	C	C	C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.6	0.5	24
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	R	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	23
14	0.0	0.0	0.0	0.0	0.0	0.0	S	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	24
15	0.0	0.0	0.0	0.0	0.0	S	0.4	0.3	0.3	0.1	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.1	24
16	0.0	0.0	0.0	0.0	S	0.2	0.1	0.9	0.1	0.1	0.2	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.1	24
17	0.0	0.0	0.0	S	0.0	0.0	0.4	0.4	0.2	0.4	0.2	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.1	24
18	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
19	0.0	S	0.0	0.0	0.0	0.0	0.0	0.3	0.6	19.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.6	0.9	24
20	S	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.9	0.0	24	
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.2	0.0	24	
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	24	
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	R	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	23	
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	24
25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2	Q	Q	Q	Q	Q	Q	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	24
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.2	0.3	14.7	0.0	0.0	0.0	0.0	S	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.7	0.7	24
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.0	0.1	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	24
28	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.3	0.2	0.2	0.7	0.0	0.0	0.0	45.8	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.8	2.1	24
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	24
30	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2	0.2	24
HOURLY MAX	0.0	0.0	0.0	0.0	0.7	8.9	7.6	0.9	1.0	19.6	25.2	4.1	14.7	0.4	45.8	0.4	0.1	4.2	1.5	0.1	0.1	0.0	0.2	0.0						
HOURLY AVG	0.0	0.0	0.0	0.0	0.6	0.4	0.2	0.2	0.8	1.3	0.2	0.6	0.0	1.7	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0						

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	103
MAXIMUM INSTANTANEOUS VALUE:	45.8 PPB @ HOUR(S) 14 ON DAY(S) 28
	VAR-VARIOUS
IZS CALIBRATION TIME:	31 HRS
MONTHLY CALIBRATION TIME:	7 HRS
OPERATIONAL TIME:	718 HRS
STANDARD DEVIATION:	2.29

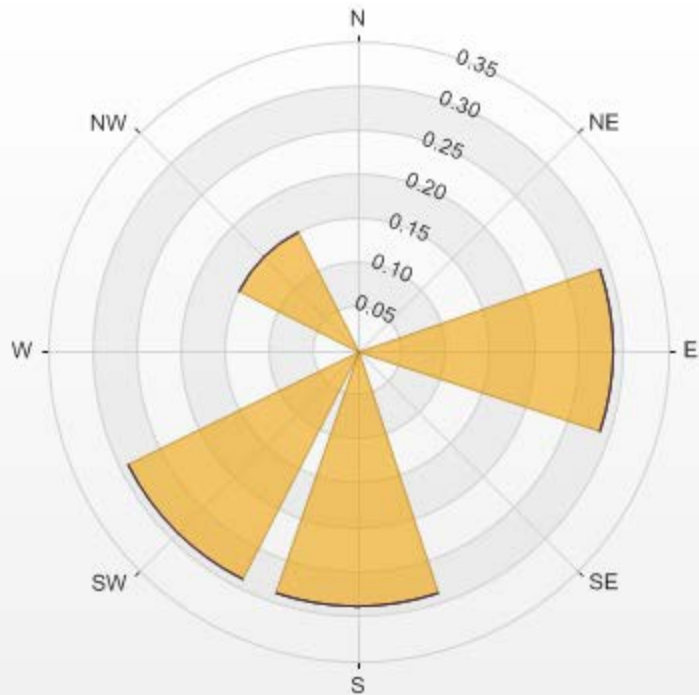
NO MAX[ppb] Station: LICA ST. LINA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— NO MAX[ppb]

Wind: LICA ST. LINA Monitor: NO [ppb] Monthly: 04/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 98.97% Valid Data: 94.31% Calm Avg: 0.00 [ppb]

Direction	0.5-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	0	0	0	0	0
NE	0	0	0	0	0
E	0.29	0	0	0	0.29
SE	0	0	0	0	0
S	0.29	0	0	0	0.29
SW	0.29	0	0	0	0.29
W	0	0	0	0	0
NW	0.15	0	0	0	0.15
Summary	1.02	0	0	0	1.02



% Icon Classes (ppb)	1.02	0.5-50.0	0.00	50.0-110.0	0.00	110.0-210.0	0.00	>210.0

NITROGEN DIOXIDE

NITROGEN DIOXIDE (NO2) hourly averages in ppb

MST

DAY	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.	
1	0.6	0.8	0.9	1.1	1.0	1.8	1.8	1.7	1.4	1.2	0.6	0.6	0.1	0.4	0.4	0.2	0.1	0.6	0.9	S	0.8	1.0	1.2	0.9	0.1	1.8	0.9	24	
2	0.8	0.9	1.4	1.7	1.5	1.7	2.1	3.2	2.5	1.4	0.7	0.4	0.3	0.1	0.1	0.0	0.0	0.1	S	0.2	0.0	0.2	0.2	0.5	0.0	3.2	0.9	24	
3	1.2	1.5	1.3	1.2	0.9	0.9	0.8	0.4	0.1	0.1	0.4	0.3	0.4	0.2	0.2	0.2	0.2	S	1.3	1.1	0.4	0.8	1.5	2.0	0.1	2.0	0.8	24	
4	1.8	1.9	2.9	3.0	2.5	2.0	2.1	2.7	3.3	3.0	2.6	2.3	1.7	1.4	1.3	0.8	S	0.9	0.5	0.8	0.4	0.3	0.5	0.6	0.3	3.3	1.7	24	
5	1.3	1.4	2.0	3.3	2.5	1.9	1.5	1.4	1.2	1.3	1.3	1.3	0.9	1.0	0.7	S	0.8	0.8	1.3	1.4	1.1	1.3	1.7	1.5	0.7	3.3	1.4	24	
6	1.2	0.4	0.4	0.4	0.4	0.2	0.2	0.1	0.3	0.1	0.1	0.2	0.3	0.2	S	0.3	0.2	0.2	0.4	0.2	0.2	0.4	0.0	0.3	0.0	1.2	0.3	24	
7	0.1	0.4	0.3	0.4	0.6	0.4	0.2	0.6	0.8	1.8	1.9	1.0	0.7	S	0.5	0.5	0.3	0.6	0.5	0.4	0.7	0.8	1.9	1.9	0.1	1.9	0.8	24	
8	1.7	0.7	0.6	0.7	0.7	0.9	1.3	1.8	2.1	2.0	1.9	1.6	S	1.7	1.5	1.3	1.6	1.4	1.5	1.3	1.3	1.2	1.2	1.4	0.6	2.1	1.4	24	
9	1.5	2.5	2.7	2.3	1.5	0.9	0.7	0.4	0.7	0.4	0.3	S	0.7	0.3	0.4	0.3	0.3	0.0	0.2	0.0	0.2	0.0	0.2	0.0	0.0	2.7	0.7	24	
10	0.2	0.1	0.0	0.1	0.3	0.5	0.5	0.7	0.6	0.6	S	0.7	0.5	0.2	0.3	0.0	0.0	0.0	0.1	0.5	0.7	0.7	1.4	2.3	0.0	2.3	0.5	24	
11	1.6	0.9	1.0	0.8	0.2	0.2	0.5	0.8	1.0	S	1.1	1.1	0.7	0.9	0.7	0.6	0.6	0.8	1.3	1.4	2.1	1.9	1.8	2.3	0.2	2.3	1.1	24	
12	2.1	1.9	2.1	2.2	1.8	1.7	2.4	2.4	S	1.2	C	C	C	C	C	C	C	0.5	0.1	0.2	0.1	0.5	2.0	1.4	0.1	2.4	1.4	24	
13	1.0	0.7	0.6	0.6	0.6	0.9	0.6	S	2.3	1.2	1.2	1.3	2.0	0.5	0.3	0.2	0.4	0.2	0.4	0.0	0.5	0.3	0.4	0.5	0.0	2.3	0.7	24	
14	0.4	0.4	0.5	0.5	0.5	0.5	S	0.5	0.3	0.3	0.3	0.4	0.2	0.2	0.4	0.3	0.3	0.4	0.4	0.3	0.2	0.1	0.1	0.0	0.0	0.5	0.3	24	
15	0.0	0.1	0.3	0.0	0.0	S	1.3	2.1	1.6	1.3	0.9	1.0	1.5	1.0	1.0	0.8	0.9	0.9	0.7	0.9	0.4	0.9	1.7	1.5	0.0	2.1	0.9	24	
16	1.4	1.3	0.8	1.0	S	1.5	1.5	1.9	1.8	2.0	2.2	2.2	2.1	1.7	1.1	1.0	0.9	1.1	1.1	0.8	1.0	0.8	0.9	1.0	0.8	2.2	1.4	24	
17	0.8	1.1	0.8	S	0.8	0.6	1.2	1.3	1.4	1.8	1.7	0.6	0.7	0.4	0.2	0.2	0.4	0.5	0.6	0.4	0.5	0.6	0.4	0.2	0.2	1.8	0.7	24	
18	0.4	0.4	S	1.7	1.6	2.2	2.1	1.9	1.7	1.4	0.8	0.4	0.2	0.3	0.3	0.3	0.6	0.5	0.8	0.6	0.5	0.9	0.8	0.8	0.2	2.2	0.9	24	
19	0.8	S	1.0	0.9	1.1	1.4	1.5	1.7	2.1	2.2	1.8	0.4	1.5	1.8	0.3	1.6	1.2	0.4	0.5	0.4	0.0	0.3	0.2	0.0	0.0	2.2	1.0	24	
20	S	0.3	0.1	0.0	0.4	0.6	0.4	0.4	0.4	0.1	0.0	0.2	0.0	0.1	0.1	0.2	0.3	0.5	1.3	1.5	2.1	1.3	0.8	S	0.0	2.1	0.5	24	
21	1.0	1.1	0.8	0.5	0.8	1.5	1.6	1.3	1.2	1.2	0.8	0.6	0.3	0.3	0.2	0.3	0.3	0.2	0.1	0.2	0.5	0.5	S	0.1	0.1	1.6	0.7	24	
22	0.5	0.3	0.2	0.0	0.4	0.7	0.5	0.4	0.5	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	S	0.3	0.2	0.0	0.7	0.2	24	
23	0.0	0.1	0.3	0.0	0.1	0.3	0.3	0.3	0.8	0.9	0.4	0.5	0.6	0.5	0.3	0.4	0.5	0.4	0.5	0.5	S	0.7	1.0	1.0	0.0	1.0	0.5	24	
24	0.8	0.9	1.1	1.0	1.0	0.9	0.9	0.9	1.1	1.5	1.4	1.4	1.3	1.1	0.9	1.1	1.2	1.2	0.9	S	1.4	1.5	1.9	2.0	0.8	2.0	1.2	24	
25	2.2	1.7	1.5	2.0	1.6	1.5	1.7	1.6	1.9	2.1	Q	Q	Q	0.8	0.6	0.7	0.4	0.4	S	0.9	0.8	0.5	0.6	0.4	0.4	2.2	1.2	24	
26	0.5	0.4	0.5	0.4	1.2	1.0	1.2	2.5	2.3	1.9	1.9	1.6	1.6	1.0	0.7	0.9	0.5	S	0.8	0.6	0.8	0.6	0.6	0.6	0.8	0.4	2.5	1.1	24
27	0.6	0.8	0.8	0.8	0.8	1.2	1.6	2.2	2.4	2.3	2.1	1.4	1.0	0.9	0.7	0.5	S	0.8	0.8	0.6	0.6	0.7	0.8	1.0	0.5	2.4	1.1	24	
28	1.2	1.1	1.5	1.2	1.3	3.9	5.9	4.0	3.3	2.7	2.9	2.3	1.2	1.0	1.3	S	1.0	0.8	0.7	0.8	0.9	0.9	1.1	1.3	0.7	5.9	1.8	24	
29	1.4	2.0	1.9	1.1	1.0	1.8	2.0	1.8	1.5	0.9	0.8	0.7	0.4	0.4	S	0.6	0.3	0.4	0.6	0.6	0.5	1.0	1.0	1.2	0.3	2.0	1.0	24	
30	1.2	0.8	1.4	1.5	1.4	1.4	4.3	4.8	3.5	1.6	1.5	0.6	0.5	S	0.6	0.6	0.4	0.7	0.4	0.6	1.0	1.6	1.4	1.2	0.4	4.8	1.4	24	
HOURLY MAX	2.2	2.5	2.9	3.3	2.5	3.9	5.9	4.8	3.5	3.0	2.9	2.3	2.1	1.8	1.5	1.6	1.6	1.4	1.5	1.5	2.1	1.9	2.0	2.3					
HOURLY AVG	1.0	0.9	1.0	1.0	1.0	1.2	1.5	1.6	1.5	1.3	1.2	0.9	0.8	0.7	0.6	0.5	0.5	0.5	0.7	0.6	0.7	0.8	1.0	1.0					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

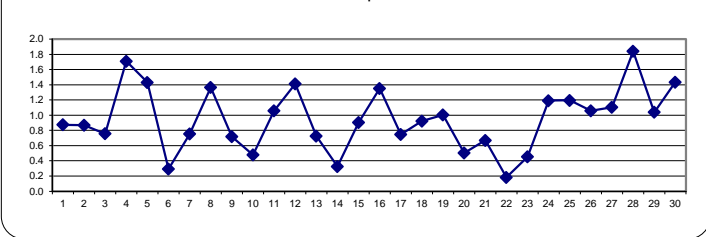
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR 159 PPB

MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0				
NUMBER OF NON-ZERO READINGS:	644				
MINIMUM 1-HR AVERAGE:	0.0	PPB	@ HOUR(S)	VAR	ON DAY(S)
MAXIMUM 1-HR AVERAGE:	5.9	PPB	@ HOUR(S)	6	28
MAXIMUM 24-HR AVERAGE:	1.8	PPB			28
				VAR-VARIOUS	
IZS CALIBRATION TIME:	31	HRS	OPERATIONAL TIME:	720	HRS
MONTHLY CALIBRATION TIME:	7	HRS	AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	0.75		MONTHLY AVERAGE:	0.9	PPB

24 HOUR AVERAGES FOR April 2016



NO2[ppb] Station: LICA ST. LINA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— NO2[ppb]



NITROGEN DIOXIDE MAX instantaneous maximum in ppb

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.	
DAY	HOUR START	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
1		1.3	1.3	1.5	1.7	1.6	8.3	2.3	2.1	1.8	1.6	3.8	1.5	1.0	1.0	1.0	0.9	2.8	2.3	S	1.3	1.9	1.8	1.7	0.9	8.3	2.0	24		
2		1.5	1.5	2.5	2.3	2.3	3.4	2.9	4.0	4.0	2.2	1.3	1.3	1.3	1.1	1.1	1.2	0.9	1.2	S	1.0	1.1	1.0	1.3	1.8	0.9	4.0	1.8	24	
3		2.3	2.3	2.3	2.3	2.8	2.8	1.8	1.3	1.0	0.9	1.6	0.9	1.5	1.0	0.9	0.7	1.0	S	5.9	3.8	1.2	1.5	2.3	2.6	0.7	5.9	1.9	24	
4		2.5	3.3	4.0	3.7	3.5	2.9	2.9	3.7	4.0	3.8	3.0	2.9	2.6	2.1	1.7	1.6	S	1.5	1.5	1.8	1.4	1.2	1.7	1.7	1.2	4.0	2.6	24	
5		2.1	2.3	3.8	4.3	3.7	5.1	2.7	2.5	2.4	2.1	1.9	2.1	1.7	1.3	1.2	S	1.2	1.5	1.8	1.9	1.8	2.1	2.5	3.0	1.2	5.1	2.4	24	
6		1.9	1.0	1.1	1.1	1.0	1.0	1.0	1.1	1.1	0.7	0.9	0.9	0.9	1.0	S	1.0	1.2	0.8	1.2	1.0	0.7	1.2	0.9	1.0	0.7	1.9	1.0	24	
7		1.0	1.0	1.1	1.1	1.3	1.0	0.9	1.3	1.5	2.3	2.3	1.2	1.2	S	1.2	0.8	0.8	1.2	1.2	1.2	1.2	1.3	2.6	2.7	0.8	2.7	1.4	24	
8		2.4	1.6	1.3	1.2	1.3	1.4	1.8	2.0	2.4	2.2	2.1	1.6	S	2.1	1.9	1.9	2.1	1.8	2.0	1.8	2.1	2.0	1.9	1.9	1.2	2.4	1.9	24	
9		2.7	3.2	3.4	3.2	2.6	1.9	1.7	1.5	1.4	1.2	1.0	S	1.3	1.0	1.5	1.2	0.9	1.0	1.0	1.3	0.8	1.0	0.8	0.9	0.8	3.4	1.6	24	
10		1.0	1.0	0.9	1.2	1.3	1.2	1.2	1.3	1.3	1.3	S	1.4	1.1	1.1	1.0	1.5	0.7	0.8	1.0	1.3	1.6	1.5	2.4	3.5	0.7	3.5	1.3	24	
11		2.7	2.1	1.8	1.7	1.2	1.0	1.3	1.5	1.6	S	1.6	1.7	1.6	1.6	1.5	1.3	1.3	1.3	2.1	2.3	2.9	2.7	2.7	2.7	1.0	2.9	1.8	24	
12		2.7	2.7	2.5	2.6	2.6	2.6	12.4	2.6	S	1.7	C	C	C	C	C	C	C	C	2.1	1.2	1.2	1.3	2.1	3.8	3.2	1.2	12.4	3.0	24
13		2.4	2.2	2.0	1.9	1.9	1.9	2.1	S	4.1	2.4	2.1	3.2	2.9	2.3	1.5	1.5	2.3	1.3	1.7	R	1.4	1.2	1.4	1.4	1.2	4.1	2.1	23	
14		1.3	1.2	1.5	1.3	1.3	1.3	S	1.4	1.1	1.2	1.2	1.3	1.3	1.1	1.2	1.0	1.0	1.3	1.1	1.4	1.5	1.3	1.3	1.2	1.0	1.5	1.3	24	
15		1.1	1.2	1.3	1.1	1.1	S	2.5	3.1	2.3	2.1	1.7	1.7	2.2	1.6	1.7	1.9	1.6	2.0	1.7	1.7	1.7	2.3	2.7	2.6	1.1	3.1	1.9	24	
16		2.1	1.9	1.7	1.9	S	2.3	2.4	4.1	2.6	2.9	3.0	3.0	3.0	2.7	2.3	2.0	2.0	2.1	3.3	2.3	2.3	2.0	2.3	2.3	1.7	4.1	2.5	24	
17		2.1	2.5	2.5	S	1.9	2.3	3.0	3.3	2.6	3.0	2.9	2.3	2.3	2.0	1.8	1.7	1.9	2.0	2.6	1.9	2.0	2.3	2.0	1.7	1.7	3.3	2.3	24	
18		2.1	2.2	S	3.1	3.0	3.7	3.4	3.2	2.8	2.7	2.1	1.5	1.7	1.4	1.4	1.6	1.9	1.7	2.0	1.9	1.8	2.1	2.5	2.0	1.4	3.7	2.3	24	
19		2.2	S	2.2	2.2	2.1	3.0	14.4	3.1	3.2	5.1	2.8	1.7	3.8	3.8	1.5	3.7	3.8	1.9	3.6	3.3	2.0	1.7	1.6	1.5	1.5	14.4	3.2	24	
20		S	1.7	1.5	1.4	1.6	2.0	1.8	1.5	1.6	1.5	1.2	1.4	1.0	1.2	1.1	1.2	1.2	1.4	2.1	2.3	3.2	2.5	1.8	S	1.0	3.2	1.6	24	
21		1.9	1.8	1.5	1.6	1.6	2.2	2.3	2.1	2.0	1.8	1.7	1.5	1.4	1.3	1.3	1.2	1.4	1.3	1.3	1.7	1.9	2.0	S	1.4	1.2	2.3	1.7	24	
22		1.6	1.6	1.6	1.5	1.3	1.9	1.8	1.7	1.7	1.3	1.2	1.1	1.3	1.1	1.2	1.1	1.1	1.2	1.2	1.2	1.4	S	1.4	1.6	1.1	1.9	1.4	24	
23		1.1	1.1	1.5	1.4	1.3	1.5	1.5	1.2	2.1	1.9	1.4	R	1.6	1.7	1.3	1.3	1.5	1.3	1.5	1.4	S	1.5	2.1	1.9	1.1	2.1	1.5	23	
24		1.6	1.9	1.9	1.9	1.7	1.9	1.8	1.6	1.7	2.3	2.2	2.2	2.1	1.7	1.7	1.9	1.7	1.6	1.5	S	1.9	2.2	2.5	2.8	1.5	2.8	1.9	24	
25		3.1	2.7	2.4	2.8	2.1	2.2	2.5	2.4	2.7	Q	Q	Q	Q	Q	1.3	2.3	1.3	1.5	S	1.6	1.6	1.5	2.1	1.3	1.3	3.1	2.1	24	
26		1.5	1.5	1.5	1.5	2.6	2.0	2.9	3.9	3.3	2.9	2.9	2.4	13.8	2.1	2.0	1.8	1.8	S	2.0	1.9	1.8	2.0	1.8	2.0	1.5	13.8	2.7	24	
27		1.7	1.8	2.0	1.9	1.8	2.5	2.7	3.2	3.2	3.3	2.9	2.3	2.1	1.9	1.6	1.7	S	1.6	2.6	2.3	1.7	1.8	1.9	2.0	1.6	3.3	2.2	24	
28		2.1	2.1	2.4	2.3	2.7	5.8	8.5	5.3	4.0	3.7	3.6	3.1	2.3	1.8	2.5	S	1.6	1.8	1.8	1.8	1.7	2.0	1.9	2.1	1.6	8.5	2.9	24	
29		2.6	3.1	3.2	2.3	2.1	3.1	3.3	2.8	2.4	1.8	1.9	1.8	1.5	1.7	S	1.6	1.3	1.5	1.6	1.5	1.7	2.0	2.0	2.4	1.3	3.3	2.1	24	
30		2.4	2.4	2.7	2.6	2.4	2.9	9.3	7.2	5.0	3.2	2.8	2.0	1.8	S	1.9	1.7	1.6	8.2	1.5	2.2	2.2	4.9	2.5	2.7	1.5	9.3	3.3	24	
	HOURLY MAX	3.1	3.3	4.0	4.3	3.7	8.3	14.4	7.2	5.0	5.1	3.8	3.2	13.8	3.8	2.5	3.7	3.8	8.2	5.9	3.8	3.2	4.9	3.8	3.5					
	HOURLY AVG	2.0	1.9	2.1	2.0	2.0	2.6	3.4	2.6	2.4	2.3	2.1	1.8	2.2	1.6	1.5	1.5	1.5	1.8	1.9	1.8	1.7	1.9	2.0	2.1					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	675
MAXIMUM INSTANTANEOUS VALUE:	14.4 PPB @ HOUR(S) 6 ON DAY(S) 19
	VAR-VARIOUS
IZS CALIBRATION TIME:	31 HRS
MONTHLY CALIBRATION TIME:	7 HRS
STANDARD DEVIATION:	1.23
OPERATIONAL TIME:	718 HRS

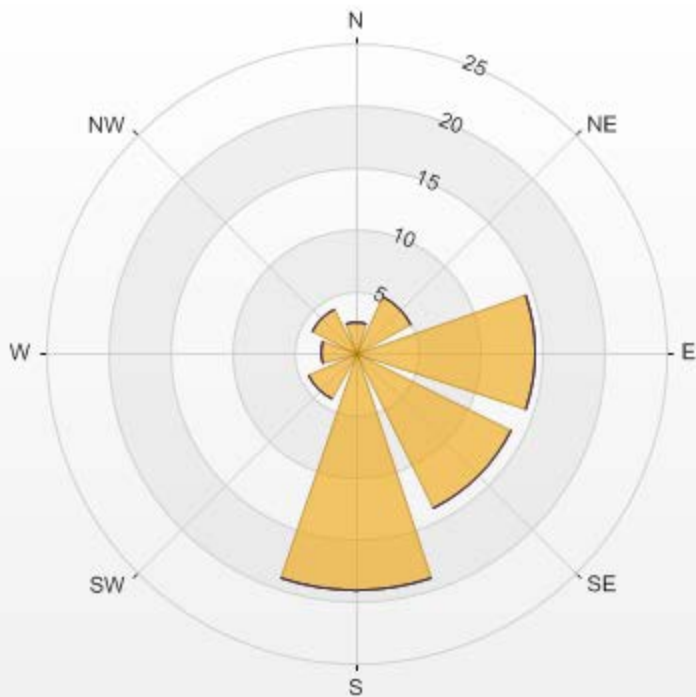
NO2 MAX[ppb] Station: LICA ST. LINA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— NO2 MAX[ppb]

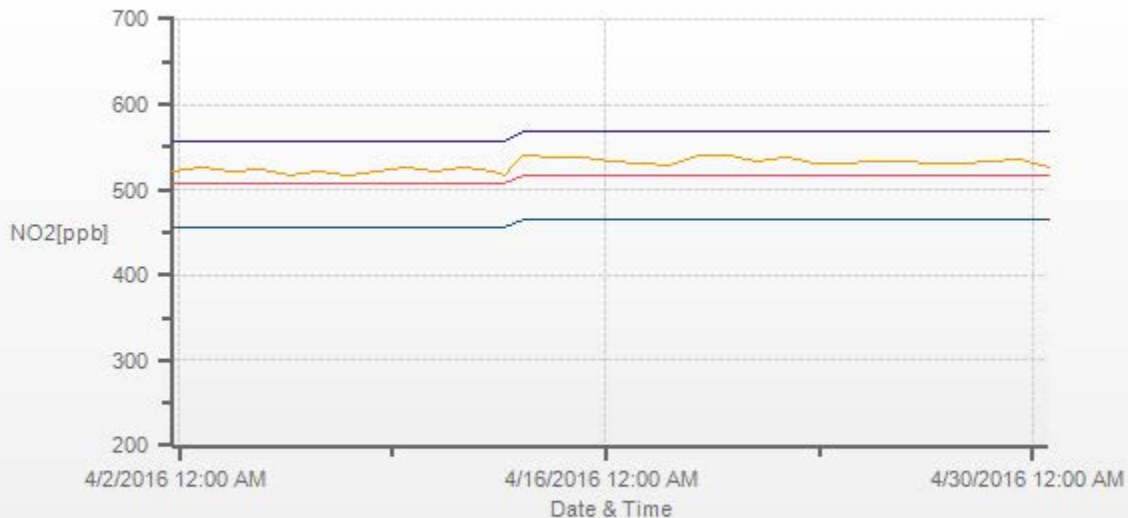
Wind: LICA ST. LINA Monitor: NO2 [ppb] Monthly: 04/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 33.73% Valid Data: 94.31% Calm Avg: 0.00 [ppb]

Direction	0.5-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	2.5	0	0	0	2.5
NE	5.01	0	0	0	5.01
E	14.58	0	0	0	14.58
SE	13.99	0	0	0	13.99
S	19.15	0	0	0	19.15
SW	4.27	0	0	0	4.27
W	2.8	0	0	0	2.8
NW	3.98	0	0	0	3.98
Summary	66.28	0	0	0	66.28



% Icon Classes (ppb)	66	0.5-50.0	0	50.0-110.0	0	110.0-210.0	0	>210.0

NO2[ppb] Calibration: LICA ST. LINA Monthly: 04/2016 Type: Span



Span Meas Span Ref -10% +10%

OZONE

OZONE (O3) hourly averages in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.		
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59						
DAY 1	40.0	38.7	37.0	35.6	34.0	32.5	33.1	34.6	34.4	36.3	38.7	39.1	40.5	41.3	42.1	42.2	42.1	41.7	40.9	S	40.4	39.7	37.9	36.2	32.5	42.2	38.2	24		
2	35.2	34.2	31.4	30.8	31.0	31.3	29.9	29.5	31.5	34.7	37.8	38.3	39.2	41.0	41.8	41.5	40.9	42.7	S	48.3	47.3	45.3	41.2	37.8	29.5	48.3	37.5	24		
3	37.4	36.5	35.3	34.7	34.8	33.5	32.5	32.3	36.2	38.1	33.8	35.3	35.8	36.1	36.8	37.0	36.6	S	34.9	34.8	34.1	34.0	32.5	31.1	31.1	38.1	35.0	24		
4	29.4	27.6	25.6	25.9	25.8	26.6	27.3	25.8	24.2	23.8	24.5	25.3	27.1	28.4	30.7	33.5	S	33.7	34.5	34.4	34.5	34.8	34.0	32.6	23.8	34.8	29.1	24		
5	32.6	33.1	30.6	27.9	27.4	24.8	23.3	24.3	26.2	28.0	28.6	27.6	27.3	29.5	31.8	S	31.8	29.7	28.8	28.8	28.8	28.6	27.4	27.8	23.3	33.1	28.5	24		
6	29.4	29.1	29.7	29.0	36.5	37.2	37.7	38.0	38.8	39.5	39.0	38.9	39.8	41.5	S	43.9	44.0	43.0	40.7	42.1	41.6	41.6	40.8	39.3	29.4	44.0	39.6	24		
7	38.0	37.6	37.3	36.8	34.6	32.2	31.7	31.1	31.5	30.4	31.3	36.0	37.1	S	40.7	41.0	42.2	44.8	42.4	40.8	43.3	42.2	34.6	31.6	30.4	44.8	36.9	24		
8	29.2	29.6	29.3	29.7	29.4	28.7	29.5	29.2	27.7	27.9	28.1	30.2	S	31.9	31.8	31.9	31.6	32.6	31.8	31.2	30.5	30.5	30.1	28.4	27.7	32.6	30.0	24		
9	25.3	23.7	23.4	23.0	28.2	27.2	29.2	31.5	32.1	33.4	35.0	S	32.4	34.4	35.2	34.7	35.1	36.2	36.6	37.3	37.9	38.1	39.8	39.8	23.0	39.8	32.6	24		
10	41.8	42.5	42.2	40.9	40.6	40.2	39.5	39.2	39.6	40.1	S	43.0	44.1	44.7	45.0	45.3	45.5	46.0	46.3	46.2	45.9	43.5	41.6	39.4	39.2	46.3	42.7	24		
11	39.5	39.4	37.3	36.6	36.6	36.4	35.1	35.6	36.3	S	36.6	37.3	39.8	41.5	42.6	43.2	43.4	43.0	41.4	39.1	37.0	36.6	35.8	33.6	33.6	43.4	38.4	24		
12	32.1	30.6	29.5	30.3	29.5	28.6	29.6	26.6	S	35.7	39.6	40.1	41.8	S1	45.7	47.0	47.4	48.0	47.8	46.2	42.0	35.0	37.1	26.6	48.0	37.6	22			
13	37.7	37.5	39.4	40.6	40.3	38.6	39.0	S	38.4	38.7	39.2	36.9	C	C	C	C	C	44.4	43.9	40.3	41.2	41.1	38.5	36.1	36.1	44.4	39.5	24		
14	36.1	32.0	31.4	32.8	34.3	35.9	S	35.2	35.6	38.2	37.6	36.9	35.4	33.3	34.6	32.3	31.8	31.0	31.7	31.8	32.3	30.6	29.8	30.4	29.8	38.2	33.5	24		
15	31.2	31.2	31.2	30.9	30.2	S	28.1	27.5	29.6	30.9	32.9	33.8	34.8	38.0	38.9	40.3	41.6	41.5	41.7	39.7	38.4	37.5	36.4	35.7	27.5	41.7	34.9	24		
16	35.2	33.2	32.1	30.2	S	26.6	26.2	27.6	29.7	31.8	34.9	37.2	42.2	47.4	51.0	52.2	51.9	51.7	51.9	51.3	51.8	52.5	52.2	50.8	26.2	52.5	41.4	24		
17	45.8	40.9	38.9	S	37.1	36.6	34.8	35.5	35.8	37.1	39.6	45.9	52.1	54.7	55.6	56.7	57.5	58.9	58.8	57.2	56.5	54.4	53.6	52.4	50.3	49.4	35.5	58.9	49.6	24
18	52.9	48.1	S	40.0	37.8	35.5	35.8	37.1	39.6	45.9	52.1	54.7	55.6	56.7	57.5	58.9	58.8	57.2	56.5	54.4	53.6	52.4	50.3	49.4	35.5	58.9	49.6	24		
19	48.0	S	45.1	43.9	42.4	40.7	38.9	37.6	36.9	40.6	48.1	46.9	54.0	54.0	48.4	53.2	51.3	49.9	46.7	46.5	49.1	48.6	50.0	53.7	36.9	54.0	46.7	24		
20	S	54.2	54.2	52.1	49.9	47.6	44.7	39.7	38.6	38.4	38.4	38.1	36.8	33.9	32.9	33.5	33.1	33.4	33.3	33.1	30.9	30.3	28.3	S	28.3	54.2	38.9	24		
21	26.3	24.5	24.4	24.3	24.3	23.1	22.6	23.8	25.0	26.8	29.3	31.8	33.8	33.8	34.2	33.9	34.4	35.4	34.6	34.9	34.6	34.7	S	36.2	22.6	36.2	29.9	24		
22	33.9	33.7	36.3	36.8	36.5	35.5	36.0	36.0	37.3	39.1	39.4	40.0	40.3	40.4	40.4	40.5	42.1	42.1	40.7	38.9	38.6	S	34.5	35.3	33.7	42.1	38.0	24		
23	35.9	34.9	33.9	34.7	34.6	34.6	33.8	32.7	29.1	30.1	29.8	28.4	30.1	33.6	34.0	34.5	34.1	34.0	34.8	33.2	S	31.3	31.1	33.5	28.4	35.9	32.9	24		
24	35.1	31.4	29.2	28.0	33.4	34.4	35.1	35.3	34.0	35.4	36.7	36.0	37.3	37.3	36.7	35.3	34.0	34.9	33.1	S	30.9	29.1	29.0	30.9	28.0	37.3	33.6	24		
25	33.7	34.3	34.3	34.6	34.1	31.4	31.4	32.5	33.8	33.9	Q	Q	Q	Q	Q	Q	Q	43.3	43.4	S	41.6	40.5	39.8	37.2	34.9	31.4	43.4	36.2	24	
26	34.1	34.1	34.1	33.3	33.8	32.6	32.0	31.4	33.6	34.3	33.4	34.2	33.2	34.0	35.7	36.1	36.5	S	37.1	36.5	34.9	33.7	33.7	32.3	31.4	37.1	34.1	24		
27	30.8	30.6	30.9	31.2	29.9	28.5	26.1	24.3	23.9	28.9	35.3	39.7	41.7	43.9	46.6	47.7	S	50.0	49.1	47.7	45.7	44.9	44.9	44.5	23.9	50.0	37.7	24		
28	44.5	45.0	46.5	48.1	43.2	38.1	33.9	34.9	38.0	40.5	42.7	44.8	49.0	50.8	51.5	S	52.7	52.7	50.2	47.4	46.6	44.7	44.2	43.0	33.9	52.7	44.9	24		
29	40.9	37.2	35.7	36.0	36.2	35.1	33.8	35.0	39.4	43.4	45.7	48.0	48.2	49.0	S	49.2	50.2	50.9	50.9	50.4	49.6	48.8	48.7	46.9	33.8	50.9	43.9	24		
30	45.1	42.8	39.3	36.7	36.1	34.8	29.5	28.7	30.5	35.9	40.8	45.1	45.2	S	45.7	47.0	43.9	44.5	43.9	42.3	40.8	39.2	37.6	37.5	28.7	47.0	39.7	24		
HOURLY MAX	52.9	54.2	54.2	52.1	49.9	47.6	44.7	39.7	39.6	45.9	52.1	54.7	55.6	56.7	57.5	58.9	58.8	58.8	58.7	59.4	59.4	59.0	58.1	55.7						
HOURLY AVG	36.5	35.8	35.0	34.7	34.6	33.4	32.4	32.2	33.3	35.1	36.8	38.3	39.8	40.4	40.9	42.0	42.1	42.7	41.6	41.4	40.9	39.8	38.5	38.0						

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

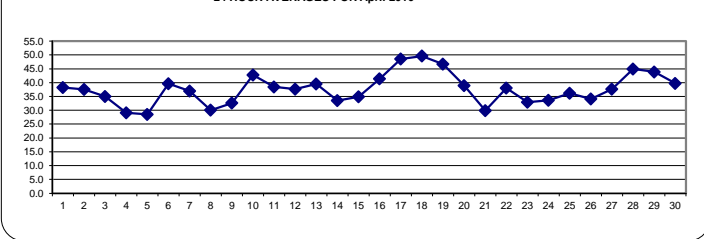
OBJECTIVE LIMIT:

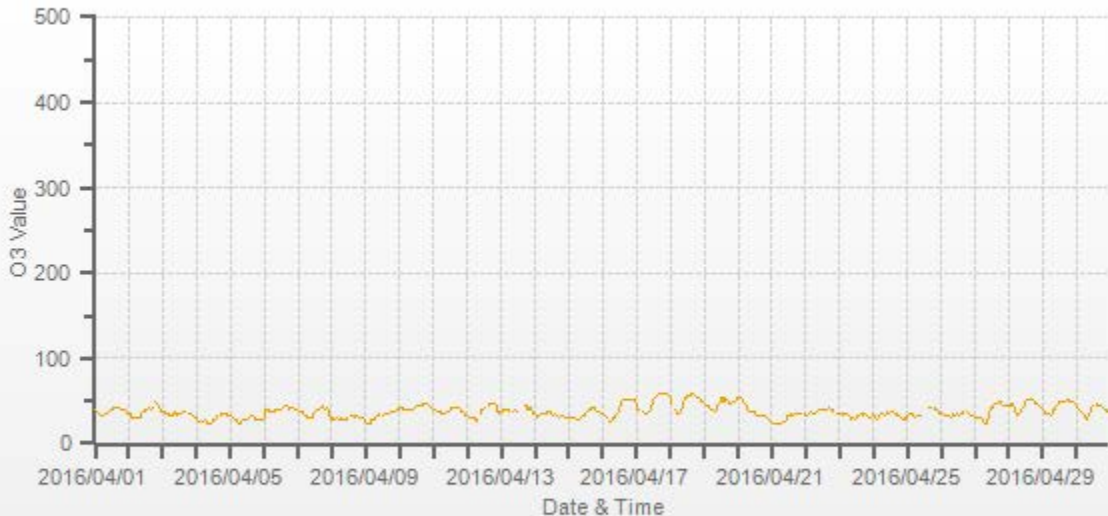
ALBERTA ENVIRONMENT: 1-HR 82 PPB

MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0			
NUMBER OF NON-ZERO READINGS:	676			
MINIMUM 1-HR AVERAGE:	22.6	PPB @ HOUR(S)	6	ON DAY(S) 21
MAXIMUM 1-HR AVERAGE:	59.4	PPB @ HOUR(S)	19, 20	ON DAY(S) 17, 17
MAXIMUM 24-HR AVERAGE:	49.6	PPB		ON DAY(S) 18
				VAR-VARIOUS
IZS CALIBRATION TIME:	31	HRS	OPERATIONAL TIME:	718 HRS
MONTHLY CALIBRATION TIME:	5	HRS	AMD OPERATION UPTIME:	99.7 %
STANDARD DEVIATION:	7.51		MONTHLY AVERAGE:	37.7 PPB

24 HOUR AVERAGES FOR April 2016





O3[ppb]



OZONE MAX instantaneous maximum in ppb

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.	
HOUR START	HOUR END	0:00	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
DAY 1		41.8	40.3	38.9	37.0	35.8	34.3	35.1	36.6	36.7	39.5	40.3	40.7	42.0	43.1	43.9	43.8	43.6	43.5	43.1	S	41.9	41.6	39.4	38.2	34.3	43.9	40.0	24	
2		36.9	35.8	33.9	32.2	33.0	32.9	31.8	31.2	34.5	37.1	39.9	40.2	41.4	43.2	43.4	43.6	42.6	45.6	S	50.0	49.2	47.4	45.1	39.5	31.2	50.0	39.6	24	
3		39.0	38.2	36.9	36.4	36.7	35.6	34.5	35.6	39.4	40.1	38.0	37.1	37.2	37.6	38.2	38.4	38.1	S	37.0	36.9	36.7	35.5	34.9	32.8	32.8	40.1	37.0	24	
4		31.2	29.6	27.2	27.3	27.3	28.2	28.8	28.1	26.0	25.4	25.8	27.2	28.8	30.5	33.4	35.5	S	35.3	36.1	36.1	35.8	36.3	36.6	33.9	25.4	36.6	30.9	24	
5		34.7	34.5	33.9	29.3	29.8	27.7	25.4	26.5	28.3	30.8	30.9	29.2	29.5	32.9	33.2	S	35.1	31.2	30.8	30.3	30.6	30.0	29.4	29.6	25.4	35.1	30.6	24	
6		38.9	40.6	43.1	42.4	38.2	39.3	39.6	39.7	40.6	41.0	40.6	40.6	42.7	43.6	S	45.6	45.4	45.0	42.8	44.2	42.9	43.2	42.6	41.3	38.2	45.6	41.9	24	
7		39.4	39.4	38.9	38.2	37.9	34.4	33.0	32.7	33.0	33.1	34.4	37.6	38.8	S	42.6	43.1	44.7	47.2	46.8	43.1	44.7	45.1	39.5	34.5	32.7	47.2	39.2	24	
8		31.2	31.5	30.8	31.4	30.9	30.4	31.3	31.0	29.6	29.4	30.0	32.5	S	33.9	33.5	33.4	33.1	34.0	33.9	32.7	31.8	32.1	31.5	31.3	29.4	34.0	31.8	24	
9		28.8	25.6	26.4	27.0	31.9	30.8	31.4	33.1	33.9	35.4	36.9	S	34.0	37.1	37.6	36.5	37.1	37.7	38.2	38.8	39.3	39.7	41.6	42.3	25.6	42.3	34.8	24	
10		43.6	44.0	44.4	43.5	42.2	42.0	41.2	41.0	41.4	41.8	S	45.5	45.9	46.8	46.7	46.9	47.5	47.7	47.9	48.1	47.5	46.1	43.5	41.5	41.0	48.1	44.6	24	
11		41.1	41.4	39.3	38.2	38.0	38.0	37.1	37.2	37.7	S	38.4	39.7	41.9	43.3	44.3	44.7	45.0	44.8	43.5	41.4	39.2	38.1	37.9	35.8	35.8	45.0	40.3	24	
12		34.1	32.4	30.9	31.9	31.3	31.0	31.5	32.1	S	39.8	41.9	42.2	43.5	S1	S2	48.0	48.6	49.7	49.8	49.1	48.4	46.1	39.0	39.9	30.9	49.8	40.1	22	
13		39.2	39.2	41.4	42.5	42.2	40.9	41.1	S	41.4	42.2	44.2	39.9	C	C	C	C	C	C	C	R	43.4	43.1	41.1	38.5	38.5	46.4	41.9	23	
14		38.6	36.1	33.2	35.1	35.7	38.8	S	37.1	37.7	41.0	40.7	38.5	37.5	37.6	36.8	34.9	33.6	32.7	34.0	33.9	34.5	33.5	31.5	32.2	31.5	41.0	35.9	24	
15		32.9	33.1	33.0	32.6	32.2	S	30.5	30.5	32.1	34.2	34.9	36.1	37.2	40.5	41.0	42.9	43.6	43.5	43.6	42.0	40.2	39.3	38.1	37.2	30.5	43.6	37.0	24	
16		38.2	35.4	34.0	32.2	S	28.6	28.4	30.0	32.3	34.8	37.5	41.0	45.1	51.6	53.8	54.5	53.8	53.8	54.1	53.5	53.8	54.0	54.4	52.8	28.4	54.5	43.8	24	
17		50.4	44.3	40.7	S	39.0	38.1	36.9	37.2	36.7	40.3	43.8	54.3	54.5	57.8	57.9	59.7	59.9	60.4	60.3	61.0	64.0	61.0	59.7	57.8	36.7	64.0	51.1	24	
18		54.9	50.9	S	42.6	40.2	37.5	37.2	39.8	43.4	51.6	55.4	56.6	57.4	58.4	59.8	61.1	61.3	59.9	58.1	57.4	55.0	54.7	52.2	51.1	37.2	61.3	52.0	24	
19		50.0	S	47.0	45.7	44.4	42.7	40.9	39.3	39.3	44.7	51.6	48.9	60.2	65.5	51.5	60.2	60.3	54.8	50.7	50.0	50.6	50.6	53.1	55.6	39.3	65.5	50.3	24	
20		S	55.7	56.1	54.7	52.0	50.0	48.0	42.0	40.6	40.2	40.1	39.9	38.9	36.7	34.6	35.3	34.7	35.2	34.9	35.2	32.7	32.2	30.3	S	30.3	56.1	40.9	24	
21		28.2	26.3	26.4	25.8	25.8	24.7	24.8	25.6	27.0	29.6	31.5	34.4	35.7	35.6	36.1	35.4	36.2	36.9	36.9	36.4	36.6	36.5	S	38.2	24.7	38.2	31.8	24	
22		36.3	36.0	38.2	38.4	38.2	37.1	37.5	37.9	39.9	40.9	41.0	41.8	42.0	42.3	41.9	42.5	44.4	44.3	43.2	40.9	40.6	S	38.6	37.3	36.0	44.4	40.1	24	
23		38.1	37.0	35.8	37.2	36.7	36.7	36.0	34.8	33.2	32.1	31.8	R	35.1	35.4	36.3	36.5	37.0	37.3	36.8	35.7	S	33.9	33.8	36.2	31.8	38.1	35.6	23	
24		37.0	35.3	32.5	33.1	35.5	37.1	37.0	37.3	36.6	38.2	38.4	38.1	39.6	39.4	39.3	38.0	36.5	37.7	35.4	S	33.2	31.4	31.0	34.2	31.0	39.6	36.2	24	
25		35.8	36.0	36.3	36.8	36.6	34.3	34.0	34.8	36.5	Q	Q	Q	Q	Q	Q	Q	45.8	46.4	S	44.2	42.6	42.0	39.4	37.1	34.0	46.4	38.7	24	
26		36.0	35.7	36.2	35.3	36.1	34.4	34.2	34.8	36.1	36.2	35.2	36.1	35.2	36.2	37.3	37.6	38.1	S	38.8	38.8	37.1	35.4	35.2	34.5	34.2	38.8	36.1	24	
27		32.6	32.7	32.7	32.6	33.1	30.4	29.2	26.0	27.0	33.1	39.0	42.2	44.4	46.4	48.9	49.9	S	52.8	51.6	49.7	47.5	46.6	46.4	46.0	26.0	52.8	40.0	24	
28		45.9	46.4	49.7	51.7	48.5	40.9	39.2	38.0	42.2	44.2	44.8	48.3	51.2	53.8	53.3	S	54.8	54.5	52.6	50.2	48.0	46.5	45.6	44.7	38.0	54.8	47.6	24	
29		43.2	38.9	37.1	37.4	37.6	37.0	35.3	38.4	43.1	45.9	48.2	50.0	50.1	50.9	S	50.7	52.1	52.4	52.5	51.8	51.1	50.3	50.0	49.3	35.3	52.5	45.8	24	
30		46.8	45.2	42.5	38.8	37.6	36.7	33.2	31.3	33.9	39.3	44.2	47.0	48.0	S	48.3	49.1	46.5	46.5	45.8	44.3	42.7	41.3	39.2	39.0	31.3	49.1	42.1	24	
HOURLY MAX		54.9	55.7	56.1	54.7	52.0	50.0	48.0	42.0	43.4	51.6	55.4	56.6	60.2	65.5	59.8	61.1	61.3	60.4	60.3	61.0	64.0	61.0	59.7	57.8					
HOURLY AVG		38.8	37.8	37.2	36.8	36.7	35.5	34.6	34.5	35.9	37.9	39.3	40.9	42.1	43.2	42.9	44.1	44.4	44.9	43.8	43.5	42.8	41.8	40.7	40.1					

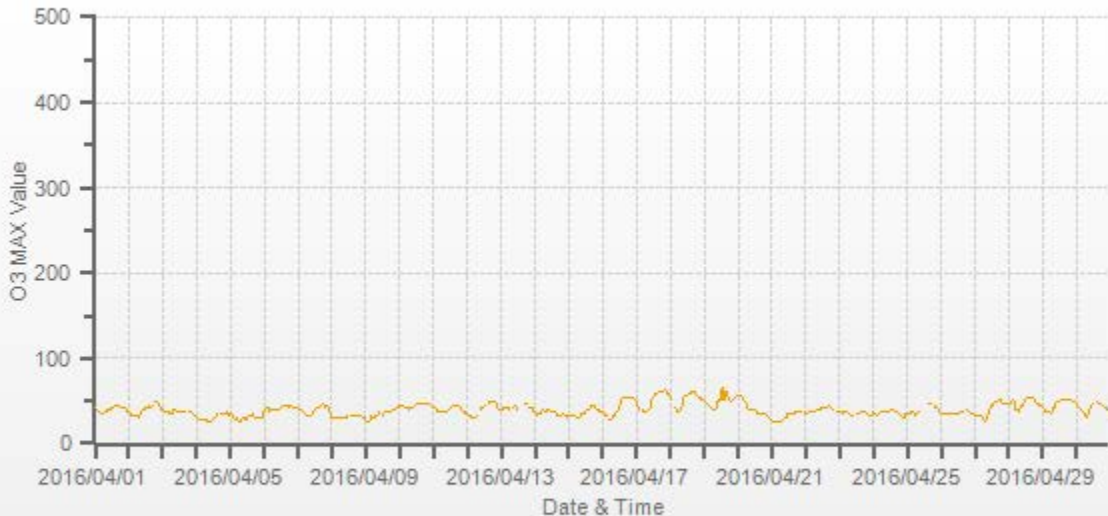
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	673
MAXIMUM INSTANTANEOUS VALUE:	65.5 PPB @ HOUR(S) 13 ON DAY(S) 19
	VAR-VARIOUS
IZS CALIBRATION TIME:	31 HRS
MONTHLY CALIBRATION TIME:	5 HRS
STANDARD DEVIATION:	7.64
OPERATIONAL TIME:	716 HRS

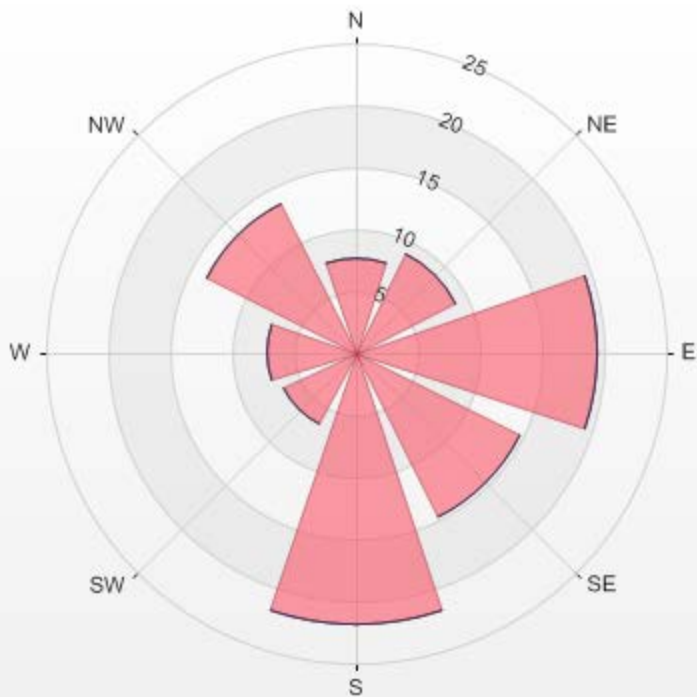
O3 MAX[ppb] Station: LICA ST. LINA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— O3 MAX[ppb]

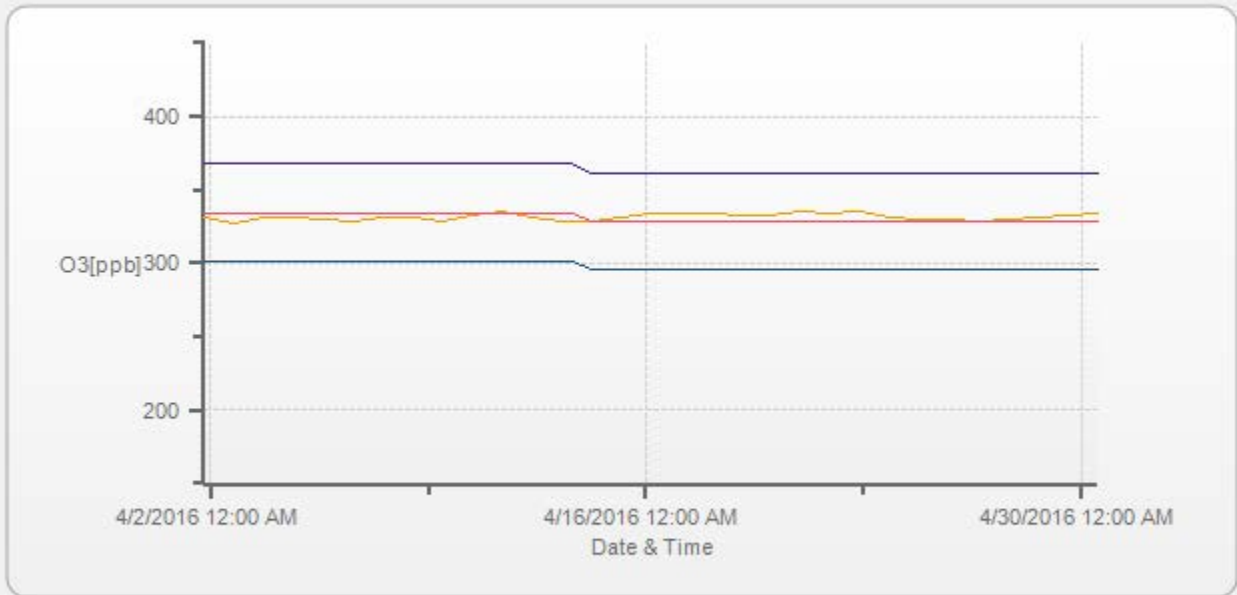
Wind: LICA ST. LINA Monitor: O3 [ppb] Monthly: 04/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 93.89% Calm Avg: 0.00 [ppb]

Direction	0.5-20.0	20.0-110.0	110.0-210.0	>210.0	Total
N	0	7.69	0	0	7.69
NE	0	9.02	0	0	9.02
E	0	19.53	0	0	19.53
SE	0	14.79	0	0	14.79
S	0	21.89	0	0	21.89
SW	0	6.51	0	0	6.51
W	0	7.1	0	0	7.1
NW	0	13.46	0	0	13.46
Summary	0	100	0	0	100



% Icon Classes (ppb) 0 0.5-20.0 100 20.0-110.0 0 110.0-210.0 0 >210.0

O3[ppb] Calibration: LICA ST. LINA Monthly: 04/2016 Type: Span



Span Meas

Span Ref

-10%

+10%

PARTICULATE MATTER 2.5

PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM2.5) hourly averages in ug/m3

MST

DAY	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.	
1	2.9	3.4	1.9	0.0	0.9	5.0	6.4	2.9	0.0	0.4	0.9	0.9	1.4	1.4	0.0	0.9	2.9	2.4	1.4	0.0	1.4	5.0	5.9	0.0	0.0	6.4	2.0	24	
2	0.0	1.9	0.9	1.9	1.9	3.9	3.4	1.4	1.9	1.4	0.4	6.4	1.4	0.4	2.4	0.9	1.4	0.0	3.4	0.0	34.9	1.9	0.0	6.4	0.0	34.9	3.3	24	
3	1.9	2.4	5.4	1.9	1.4	3.4	1.9	0.0	2.4	1.4	1.4	5.0	3.4	1.9	1.4	0.0	0.0	5.4	1.9	0.0	3.4	0.9	6.4	0.0	6.4	2.2	24		
4	7.9	3.9	2.4	5.4	3.4	5.4	3.4	5.9	1.9	4.4	0.0	5.0	1.4	0.0	0.0	3.4	3.4	1.9	4.4	5.4	5.0	2.9	0.0	3.9	0.0	7.9	3.4	24	
5	1.9	1.9	3.4	1.9	4.4	1.9	2.9	5.9	2.4	2.4	5.4	2.4	5.0	0.9	1.4	1.4	3.4	0.4	3.4	2.9	1.4	1.9	5.0	4.4	0.4	5.9	2.8	24	
6	0.9	0.0	1.4	0.0	0.0	2.4	0.0	3.4	0.0	0.0	1.9	0.4	0.0	0.0	4.4	0.0	3.9	1.9	X	0.9	0.9	X	4.4	X	0.0	4.4	1.3	21	
7	0.0	0.0	0.9	0.4	0.0	3.9	2.9	0.0	1.4	0.9	2.4	2.4	0.0	3.4	0.4	1.4	X	1.4	3.9	2.4	2.4	1.4	0.9	4.4	0.0	4.4	1.6	23	
8	0.0	0.0	0.4	0.4	0.0	4.0	5.0	2.9	0.9	1.9	5.4	3.4	4.0	1.4	0.9	2.9	0.0	1.9	0.4	0.0	4.4	6.9	4.4	X	0.0	6.9	2.2	23	
9	5.9	0.0	4.0	4.0	4.4	0.0	0.0	9.4	1.4	5.9	3.9	0.4	0.0	1.9	2.4	5.4	4.4	0.4	0.9	X	1.9	0.4	1.9	4.4	0.0	9.4	2.8	23	
10	3.4	0.0	5.4	0.9	0.0	0.0	3.9	4.9	2.9	6.4	1.9	4.4	2.9	3.9	0.0	2.4	0.4	0.0	3.4	6.4	0.9	1.9	0.9	0.4	0.0	6.4	2.4	24	
11	2.4	1.4	1.9	3.4	1.4	5.9	0.9	5.9	0.4	4.4	2.9	1.9	4.4	C	C	1.9	X	0.0	1.4	1.9	0.0	2.9	3.9	0.0	0.0	5.9	2.3	23	
12	3.4	0.0	7.9	3.4	1.9	2.9	1.4	1.9	2.4	6.4	1.4	4.0	1.4	4.5	0.0	4.0	3.4	3.4	4.4	1.9	1.4	1.4	4.4	5.0	0.0	7.9	3.0	24	
13	3.4	4.4	2.4	6.9	1.9	5.0	0.9	0.0	2.4	4.4	2.9	3.9	0.4	5.9	4.0	0.0	1.4	2.4	0.0	X	X	X	X	X	X	0.0	6.9	2.8	19
14	X	X	X	X	X	X	X	X	X	X	X	0.0	0.0	0.4	0.0	2.4	X	3.4	0.0	2.9	5.4	0.0	5.0	0.0	0.0	5.4	1.6	12	
15	0.0	0.0	0.4	1.9	1.4	0.4	1.9	0.0	0.0	2.9	0.4	0.0	0.9	0.4	5.0	2.9	0.0	1.4	0.9	0.0	1.4	0.0	2.9	0.4	0.0	5.0	1.1	24	
16	1.4	1.4	3.4	1.4	0.0	0.0	1.4	1.4	0.0	3.4	2.9	1.4	4.4	4.4	5.0	0.0	6.4	1.4	1.9	4.0	5.4	4.0	3.5	6.4	0.0	6.4	2.7	24	
17	4.4	1.9	3.4	0.9	0.0	2.4	1.4	0.0	4.4	0.0	3.9	6.9	0.4	0.0	0.0	1.9	7.5	8.4	5.9	0.0	3.9	5.4	2.4	5.0	0.0	8.4	2.9	24	
18	5.9	5.4	1.4	2.9	3.4	5.9	2.4	2.4	3.4	3.4	2.9	1.4	0.4	3.5	2.4	0.9	5.0	9.9	3.9	0.0	1.4	7.9	4.0	0.4	0.0	9.9	3.4	24	
19	3.9	2.4	0.9	1.4	0.0	0.4	1.4	3.9	3.4	0.9	9.0	10.9	22.9	21.4	4.4	23.9	17.4	9.4	5.4	2.4	1.9	4.4	1.9	0.9	0.0	23.9	6.5	24	
20	2.9	5.0	2.4	1.9	2.9	0.9	5.9	4.0	X	3.4	1.4	0.4	1.4	0.4	0.4	1.9	X	4.4	3.4	0.4	6.9	0.9	0.0	0.0	0.0	6.9	2.3	22	
21	0.4	1.9	0.4	1.9	1.4	2.4	1.9	2.9	0.0	5.0	2.9	5.4	0.0	0.0	0.0	7.5	2.4	0.4	0.4	3.4	0.9	3.4	1.9	0.0	0.0	7.5	2.0	24	
22	0.9	1.9	2.9	0.0	0.9	0.0	2.4	3.4	1.4	3.4	0.0	2.4	2.9	4.4	1.9	2.9	0.0	0.9	0.4	X	1.4	5.0	2.4	1.4	0.0	5.0	1.9	23	
23	3.4	3.4	5.4	6.9	0.4	1.4	1.4	0.9	2.9	4.4	2.4	0.0	0.0	4.0	1.4	5.9	5.0	0.0	0.0	2.9	2.4	4.4	0.9	0.0	0.0	6.9	2.5	24	
24	2.9	5.0	1.4	0.4	0.0	5.9	0.4	2.4	2.9	0.4	0.4	0.0	3.4	0.9	0.0	0.4	2.9	0.9	1.9	3.4	0.0	0.4	0.0	1.9	0.0	5.9	1.6	24	
25	1.9	4.9	1.9	0.4	0.9	3.4	3.4	1.9	4.0	4.9	0.0	0.9	X	X	1.9	3.4	4.0	0.0	1.9	0.0	2.4	0.0	0.0	1.9	0.0	4.9	2.0	22	
26	0.0	2.9	0.0	0.9	1.9	6.9	3.4	6.4	1.4	2.9	3.9	6.4	0.9	3.9	3.4	7.9	5.4	8.4	4.4	4.4	9.0	10.4	0.4	8.4	10.4	0.0	10.4	4.6	24
27	1.9	10.9	11.9	10.4	7.9	16.0	14.9	12.9	7.5	10.4	7.5	5.4	4.4	1.4	0.0	0.0	3.4	0.9	7.9	11.9	0.0	4.4	2.4	5.9	0.0	16.0	6.7	24	
28	5.9	2.4	0.4	2.9	0.0	0.9	5.9	6.4	4.0	6.4	2.9	9.0	6.4	Q	5.4	6.9	5.4	3.5	4.4	2.4	6.9	0.9	3.4	4.4	0.0	9.0	4.2	24	
29	4.4	4.0	6.4	3.9	4.4	1.4	3.9	0.9	1.4	0.0	0.0	5.0	5.4	4.4	X	2.9	4.4	4.4	4.4	C	C	7.9	5.9	11.4	0.0	11.4	4.1	23	
30	9.9	9.9	11.4	7.5	9.9	8.4	10.9	7.5	6.9	6.9	6.4	4.4	4.0	5.0	11.4	3.4	X	4.4	1.4	10.9	9.0	14.5	15.5	17.9	1.4	17.9	8.6	23	
HOURLY MAX	9.9	10.9	11.9	10.4	9.9	16.0	14.9	12.9	7.5	10.4	9.0	10.9	22.9	21.4	11.4	23.9	17.4	9.9	7.9	11.9	34.9	14.5	15.5	17.9					
HOURLY AVG	2.9	2.8	3.2	2.6	2.0	3.5	3.3	3.5	2.3	3.4	2.7	3.3	2.9	3.0	2.1	3.3	3.7	2.5	2.8	3.1	3.9	3.6	3.2	3.8					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

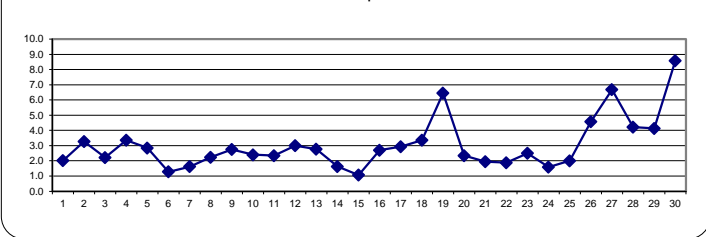
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: **24-HR 30 ug/m3**

MONTHLY SUMMARY

NUMBER OF 24-HR EXCEEDENCES:	0			
NUMBER OF NON-ZERO READINGS:	571			
MINIMUM 1-HR AVERAGE:	0.0 ug/m3 @ HOUR(S)	VAR	ON DAY(S)	VAR
MAXIMUM 1-HR AVERAGE:	34.9 ug/m3 @ HOUR(S)	20	ON DAY(S)	2
MAXIMUM 24-HR AVERAGE:	8.6 ug/m3		ON DAY(S)	30
			VAR-VARIOUS	
MONTHLY CALIBRATION TIME:	4 HRS	OPERATIONAL TIME:	689 HRS	
		AMD OPERATION UPTIME:	95.7 %	
STANDARD DEVIATION:	3.33	MONTHLY AVERAGE:	3.1 ug/m3	

24 HOUR AVERAGES FOR April 2016



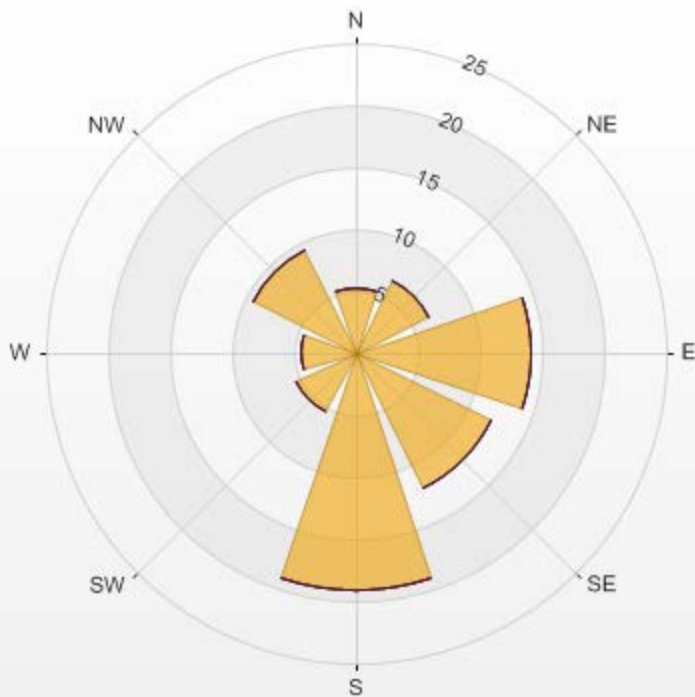
PM2[ug/m3(L)] Station: LICA ST. LINA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



PM2[ug/m3(L)]

Wind: LICA ST. LINA Monitor: PM2 [ug/m3(L)] Monthly: 04/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 23.50% Valid Data: 95.14% Calm Avg: 0.00 [ppb]

Direction	0.5-30.0	30.0-60.0	60.0-80.0	80.0-120.0	120.0-240.0	>240.0	Total
N	5.26	0	0	0	0	0	5.26
NE	6.57	0	0	0	0	0	6.57
E	14.16	0	0	0	0	0	14.16
SE	12.26	0	0	0	0	0	12.26
S	19.12	0	0	0	0	0	19.12
SW	5.4	0	0	0	0	0	5.4
W	4.38	0	0	0	0	0	4.38
NW	9.2	0.15	0	0	0	0	9.35
Summary	76.35	0.15	0	0	0	0	76.5



% Icon Classes (ug/m3(L)) 76 0.5-30.0 0 30.0-60.0 0 60.0-80.0 0 80.0-120.0 0 120.0-240.0 0 >240.0

WIND SPEED

WIND SPEED (WS) hourly averages in km/hr

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOURLY START	HOURLY END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																													
1		9.7	10.4	11.4	11.6	10.0	10.6	9.1	10.2	8.1	7.8	9.1	9.6	10.7	7.3	7.6	7.8	7.8	1.8	4.5	7.8	9.6	10.3	10.9	11.3	1.8	11.6	9.0	24
2		11.5	9.9	10.1	9.9	11.4	13.2	14.4	15.7	14.8	14.5	15.6	13.6	18.0	19.8	20.4	12.5	12.3	12.9	15.3	13.8	13.8	11.0	12.3	13.7	9.9	20.4	13.8	24
3		12.4	11.8	12.9	13.5	8.6	6.6	8.3	10.0	14.7	20.0	18.0	16.5	14.9	13.0	11.0	11.9	11.6	8.9	5.5	3.1	7.2	8.0	11.8	10.3	3.1	20.0	11.3	24
4		10.6	10.4	9.0	10.3	11.2	11.5	11.0	9.9	12.0	15.3	16.1	16.8	18.4	19.8	19.5	18.3	15.2	13.3	15.7	16.2	15.0	12.0	9.7	9.2	9.0	19.8	13.6	24
5		9.7	7.1	4.7	4.5	4.0	2.3	4.8	3.6	5.8	8.5	8.7	10.2	6.6	11.5	12.7	8.6	5.3	7.3	7.1	7.9	11.5	7.0	7.3	6.3	2.3	12.7	7.2	24
6		10.4	23.1	20.6	19.0	16.8	16.8	21.1	23.6	26.2	26.3	24.8	28.3	25.8	22.0	25.0	23.5	22.2	15.9	11.4	15.4	11.7	9.7	9.0	10.4	9.0	28.3	19.1	24
7		11.0	10.5	8.8	7.2	5.3	4.8	3.3	3.2	1.9	3.2	3.4	4.7	6.0	6.3	4.2	5.0	6.0	1.7	4.6	7.1	6.1	6.0	13.7	14.5	1.7	14.5	6.2	24
8		15.4	15.3	15.4	14.9	14.1	14.3	18.0	14.8	14.5	16.2	20.9	20.9	22.3	23.7	24.5	23.8	23.4	22.1	21.8	22.0	19.9	18.2	16.0	6.6	6.6	24.5	18.3	24
9		7.3	7.2	2.9	7.2	8.2	14.8	24.0	26.5	23.1	21.4	20.4	19.0	18.9	22.0	22.7	23.8	23.2	23.1	22.7	20.8	19.9	17.4	19.4	16.6	2.9	26.5	18.0	24
10		16.1	13.9	13.8	13.2	11.8	10.0	10.3	8.7	9.1	8.6	9.6	9.1	7.9	8.1	7.1	5.9	5.7	4.1	4.3	5.5	8.0	9.5	8.9	11.2	4.1	16.1	9.2	24
11		12.8	12.0	11.8	13.7	13.0	12.3	12.4	13.9	15.1	12.0	13.1	12.9	14.8	16.3	16.1	14.9	14.9	12.5	13.7	11.2	10.1	9.9	9.6	9.2	9.2	16.3	12.8	24
12		8.5	9.3	9.6	10.9	12.3	11.0	8.6	7.7	8.4	5.8	6.7	11.0	9.5	10.5	9.5	9.5	9.0	5.6	2.3	5.3	8.8	10.9	14.7	18.3	2.3	18.3	9.3	24
13		18.3	16.4	17.5	15.3	6.0	9.2	8.9	10.5	10.2	10.2	12.9	12.1	12.9	12.8	8.6	9.5	12.8	17.8	12.7	11.9	11.9	10.6	9.5	7.6	6.0	18.3	11.9	24
14		9.2	11.4	11.5	11.5	11.9	14.6	16.5	16.0	15.5	16.0	13.0	13.8	13.0	15.2	14.9	12.3	12.9	11.6	7.7	8.2	6.1	9.1	11.0	8.4	6.1	16.5	12.1	24
15		6.5	6.3	7.1	7.0	6.7	6.1	3.8	5.1	9.8	8.3	6.2	6.9	6.5	5.5	4.9	9.3	9.7	12.0	11.3	11.7	13.8	14.4	16.7	15.8	3.8	16.7	8.8	24
16		15.8	15.3	13.6	14.6	14.1	13.7	13.5	13.3	11.4	11.9	11.2	9.0	4.5	2.1	4.1	4.2	1.0	5.7	5.9	6.3	6.2	7.4	9.0	10.1	1.0	15.8	9.3	24
17		12.2	12.7	12.7	12.8	12.5	12.7	12.4	14.9	14.9	14.5	13.4	14.4	16.7	20.0	17.5	12.5	11.8	10.3	7.8	2.1	1.3	4.4	8.6	8.0	1.3	20.0	11.7	24
18		9.5	10.7	10.6	10.1	10.9	12.6	14.3	12.8	13.0	13.3	21.8	22.1	24.3	22.6	24.6	22.7	23.7	21.2	18.9	16.6	19.3	22.2	20.7	23.9	9.5	24.6	17.6	24
19		24.9	22.7	23.0	21.7	19.0	16.3	16.6	14.3	12.5	7.4	8.2	6.8	6.1	10.4	10.3	9.5	14.3	11.4	8.1	8.3	6.6	10.7	15.4	15.4	6.1	24.9	13.3	24
20		13.7	10.4	10.5	10.1	8.8	10.5	10.3	11.8	13.4	16.0	15.7	15.4	13.5	13.9	13.1	10.7	9.3	8.7	9.8	9.6	9.3	12.8	11.6	13.7	8.7	16.0	11.8	24
21		13.4	10.8	8.9	9.7	10.0	10.0	11.1	12.4	13.2	13.5	14.5	15.0	17.8	16.4	17.2	16.8	18.2	15.3	16.0	13.7	12.6	15.2	16.7	17.7	8.9	18.2	14.0	24
22		13.6	14.2	16.2	14.9	15.3	15.9	15.2	18.2	19.3	20.6	19.2	18.8	17.6	17.0	18.9	18.2	15.2	13.5	14.7	13.9	16.7	14.3	13.6	12.7	12.7	20.6	16.2	24
23		13.4	12.1	14.0	17.1	13.6	13.1	12.4	13.3	13.2	14.3	12.2	9.8	11.9	17.9	18.3	19.2	14.4	12.6	14.4	10.2	8.3	6.9	9.3	7.3	6.9	19.2	12.9	24
24		11.1	6.4	5.8	7.8	12.7	13.1	11.5	11.6	9.2	11.2	12.2	10.6	11.7	11.9	13.5	12.5	9.2	8.7	8.4	7.8	6.7	6.2	6.5	8.4	5.8	13.5	9.8	24
25		10.8	9.1	9.3	10.1	8.1	9.2	8.6	7.1	9.6	10.1	10.0	9.2	7.9	9.8	10.5	10.7	9.9	9.9	8.0	8.8	9.4	8.5	7.0	5.8	5.8	10.8	9.1	24
26		5.9	7.0	7.1	8.6	9.9	8.8	8.7	10.2	10.7	11.3	12.8	13.3	12.3	10.9	10.1	10.0	7.9	7.7	12.3	12.1	10.8	11.9	10.6	10.1	5.9	13.3	10.0	24
27		9.9	9.9	9.0	7.7	8.9	9.5	6.8	9.2	7.0	8.3	8.3	8.0	7.8	9.0	9.1	11.4	10.4	9.6	7.6	7.9	8.8	8.2	8.9	8.4	6.8	11.4	8.7	24
28		6.9	5.6	4.9	2.9	8.7	9.5	8.4	8.5	8.3	10.8	16.1	17.2	17.5	15.2	15.2	15.6	16.5	16.4	12.8	10.5	9.6	10.0	9.7	8.4	2.9	17.5	11.1	24
29		10.9	11.5	11.0	12.7	13.5	10.7	10.5	10.1	15.1	17.7	19.4	19.2	19.1	19.6	17.3	16.5	16.1	18.4	17.4	10.2	7.5	7.0	7.6	7.8	7.0	19.6	13.6	24
30		6.4	6.0	6.3	6.6	6.9	7.9	6.5	6.7	7.2	8.7	9.8	13.1	14.0	12.0	9.4	14.6	15.2	12.8	11.0	8.2	8.2	9.0	9.2	7.7	6.0	15.2	9.3	24
HOURLY MAX		24.9	23.1	23.0	21.7	19.0	16.8	24.0	26.5	26.2	26.3	24.8	28.3	25.8	23.7	25.0	23.8	23.7	23.1	22.7	22.0	19.9	22.2	20.7	23.9				
HOURLY AVG		11.6	11.3	11.0	11.2	10.8	11.1	11.4	11.8	12.2	12.8	13.4	13.6	13.6	14.1	13.9	13.4	12.8	11.8	11.1	10.5	10.5	10.6	11.5	11.2				

STATUS FLAG CODES

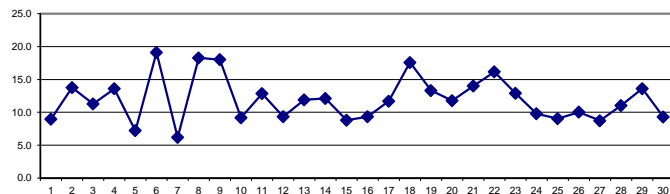
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

LAST CALIBRATION:	August 28, 2014
DECLINATION :	MAGNETIC DECLINATION 19 DEGREE EAST

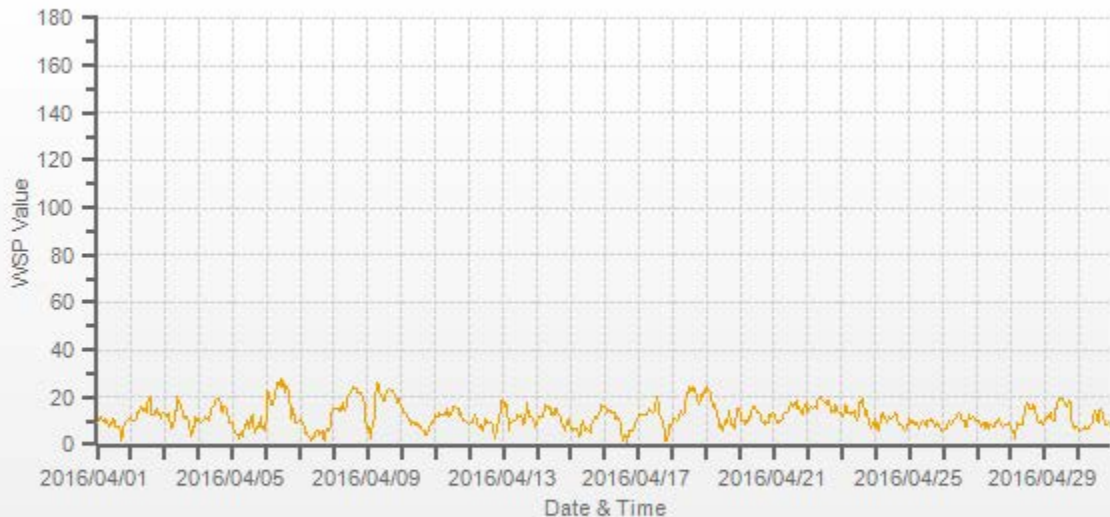
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	720
MINIMUM 1-HR AVERAGE	1.0 KPH @ HOUR(S) 16 ON DAY(S) 16
MAXIMUM 1-HR AVERAGE:	28.3 KPH @ HOUR(S) 11 ON DAY(S) 6
MAXIMUM 24-HR AVERAGE:	19.1 KPH ON DAY(S) 6
	VAR-VARIOUS
MONTHLY CALIBRATION TIME:	0 HRS
OPERATIONAL TIME:	720 HRS
AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	4.87
MONTHLY AVERAGE:	12.0 KPH

24 HOUR AVERAGES FOR April 2016



WSP[kph] Station: LICA ST. LINA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— WSP[kph]



VECTOR WIND SPEED MAX instantaneous maximum in km/hr

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY 1	17.6	15.3	16.5	15.1	20.2	20.6	20.0	21.7	17.8	16.3	19.9	24.9	24.0	19.0	22.1	22.2	17.6	11.8	10.4	12.6	15.6	17.8	19.4	18.5	10.4	24.9	18.2	24
2	21.3	17.2	16.7	16.8	16.9	16.6	19.3	22.0	24.2	26.4	23.6	24.3	34.1	52.7	53.1	34.9	25.3	31.5	41.5	33.6	33.3	24.8	30.9	37.5	16.6	53.1	28.3	24
3	29.4	28.9	33.7	32.2	23.8	11.2	13.2	25.0	52.5	52.6	42.9	41.2	40.3	32.4	28.7	34.8	29.6	28.7	15.8	12.5	17.7	20.0	27.2	19.5	11.2	52.6	28.9	24
4	18.0	21.7	17.5	19.1	21.9	24.2	24.9	22.6	23.9	37.6	37.2	42.7	44.0	49.9	51.5	51.2	36.4	37.0	39.9	42.7	44.4	25.0	22.2	20.4	17.5	51.5	32.3	24
5	20.4	17.6	14.9	13.1	15.7	11.5	13.0	9.2	11.8	14.7	15.1	18.2	14.3	34.4	34.0	29.8	18.8	15.4	13.4	14.9	19.8	18.6	13.8	12.8	9.2	34.4	17.3	24
6	42.1	50.4	61.6	41.7	45.1	56.2	48.6	58.5	69.0	62.1	57.6	67.3	63.3	51.1	63.9	52.6	52.6	44.7	31.5	42.3	29.1	18.8	21.2	18.8	18.8	69.0	47.9	24
7	21.7	22.8	17.9	14.5	14.9	12.9	11.6	7.4	8.0	9.7	11.0	11.7	15.0	21.1	15.8	22.1	16.9	7.3	13.1	12.6	9.7	14.7	26.5	27.4	7.3	27.4	15.3	24
8	39.9	40.3	37.7	32.6	30.0	30.4	40.9	31.5	38.4	41.6	48.3	46.9	45.5	47.7	50.1	56.7	44.6	44.9	42.5	45.6	43.3	40.8	44.7	23.4	23.4	56.7	41.2	24
9	32.2	19.3	11.8	21.4	19.0	57.9	57.9	62.4	50.3	47.2	49.4	49.9	46.6	57.3	67.4	71.7	62.5	52.2	51.6	55.3	55.3	43.9	56.2	43.1	11.8	71.7	47.6	24
10	41.1	34.3	36.1	34.3	35.4	27.0	26.9	25.8	26.2	26.0	26.2	29.3	28.2	29.1	23.6	23.2	18.2	16.2	12.7	8.7	13.3	19.5	16.4	25.6	8.7	41.1	25.1	24
11	26.0	27.6	26.6	31.9	29.5	27.5	28.0	32.8	31.6	30.0	26.3	31.2	34.0	40.6	39.6	36.1	29.2	24.3	32.2	22.1	21.4	20.9	16.9	20.0	16.9	40.6	28.6	24
12	16.6	16.6	13.2	13.6	16.4	17.5	14.9	16.1	16.9	13.2	24.9	26.5	24.6	27.5	23.8	30.3	18.3	13.4	9.3	9.3	13.9	18.5	29.5	37.8	9.3	37.8	19.3	24
13	33.6	29.7	31.4	29.5	25.5	23.3	26.5	38.9	27.4	23.4	39.7	27.9	28.7	31.0	27.7	22.1	28.3	44.3	33.3	R	29.4	24.8	19.3	15.6	15.6	44.3	28.8	23
14	18.8	18.8	21.5	23.2	23.4	42.4	41.1	35.7	34.2	33.1	31.6	31.0	30.1	42.1	33.0	31.5	30.7	33.3	26.0	17.4	14.0	19.5	23.3	18.9	14.0	42.4	28.1	24
15	13.6	16.4	16.9	16.9	16.7	14.8	12.7	15.6	23.7	20.2	18.5	21.8	21.8	21.1	25.1	25.3	26.8	29.1	24.9	24.4	26.2	27.5	35.8	41.2	12.7	41.2	22.4	24
16	35.6	33.8	37.8	30.1	27.5	26.6	31.2	31.5	27.2	27.0	23.1	21.2	18.1	14.6	20.3	20.1	17.3	19.4	14.4	9.5	10.0	11.1	17.5	19.4	9.5	37.8	22.7	24
17	19.8	20.5	21.6	20.3	19.8	20.2	27.7	35.6	33.4	26.7	35.0	35.0	34.8	42.0	39.2	32.2	28.9	22.3	19.7	5.9	6.8	9.2	11.4	13.8	5.9	42.0	24.2	24
18	20.5	17.9	19.0	17.2	18.1	28.7	30.9	29.7	33.7	37.4	54.9	53.6	51.7	53.6	60.2	50.7	52.5	56.2	47.2	38.9	44.5	57.5	48.9	56.4	17.2	60.2	40.8	24
19	68.2	52.2	49.3	49.4	38.8	31.2	27.7	23.7	22.3	20.1	21.9	19.3	20.5	39.0	28.7	28.7	28.8	23.6	25.8	26.5	14.3	23.3	32.3	34.7	14.3	68.2	31.3	24
20	37.4	23.5	22.0	20.7	17.2	22.0	20.4	35.1	32.8	38.4	41.0	41.9	37.5	36.4	35.3	31.9	25.7	28.3	22.2	21.3	19.6	27.0	20.6	33.7	17.2	41.9	28.8	24
21	38.4	24.4	18.0	18.0	20.2	18.2	24.5	31.4	30.1	38.0	35.8	40.4	48.1	48.1	45.9	46.5	44.4	48.3	41.2	34.1	27.9	44.1	46.5	42.4	18.0	48.3	35.6	24
22	31.4	30.8	46.3	29.4	35.1	36.2	37.5	44.7	58.9	49.6	51.3	55.0	38.6	45.2	47.1	45.4	42.7	38.6	36.4	33.8	41.6	44.3	35.6	27.7	27.7	58.9	41.0	24
23	29.2	28.2	38.1	43.4	36.0	31.1	27.6	29.8	28.9	33.1	26.9	R	37.3	46.9	49.9	46.0	41.0	28.5	35.9	21.7	15.8	13.2	20.8	22.0	13.2	49.9	31.8	23
24	29.0	20.2	11.3	19.7	27.2	27.9	25.9	23.2	21.2	23.4	25.4	21.6	25.8	28.3	27.8	25.8	19.9	18.6	16.9	15.2	13.8	14.1	13.8	18.5	11.3	29.0	21.4	24
25	22.8	18.2	21.5	21.7	15.8	17.6	22.6	16.4	20.2	26.6	22.4	17.5	21.4	31.3	28.4	22.2	26.7	28.2	17.8	23.5	26.3	23.9	18.2	11.8	11.8	31.3	21.8	24
26	12.7	15.4	19.5	20.2	22.4	18.7	18.2	25.2	28.4	22.8	33.5	28.5	27.4	30.7	22.9	28.4	19.0	17.2	28.1	28.3	23.5	26.8	18.0	16.2	12.7	33.5	23.0	24
27	16.7	16.7	15.8	13.6	13.2	15.1	13.8	18.9	16.5	23.7	18.3	24.9	27.9	61.4	26.8	29.3	27.3	22.5	75.6	16.1	15.4	12.6	13.0	11.7	11.7	75.6	22.8	24
28	10.4	9.5	10.4	7.4	13.3	13.7	20.6	17.9	22.3	31.7	40.9	37.6	40.2	36.9	38.7	36.6	38.0	39.5	33.4	26.9	18.5	18.8	19.0	17.2	7.4	40.9	25.0	24
29	22.9	22.4	22.6	29.6	26.8	29.6	24.8	25.8	31.7	45.2	47.2	53.6	50.3	45.5	41.6	46.3	42.6	42.6	39.6	28.4	13.4	11.5	11.1	11.3	11.1	53.6	31.9	24
30	12.0	8.9	12.4	10.4	11.5	13.7	15.0	15.8	15.6	24.2	29.7	33.9	35.6	26.5	27.5	32.8	32.3	32.4	30.8	18.8	16.3	16.3	18.3	16.8	8.9	35.6	21.1	24
HOURLY MAX	68.2	52.2	61.6	49.4	45.1	57.9	57.9	62.4	69.0	62.1	57.6	67.3	63.3	61.4	67.4	71.7	62.5	56.2	75.6	55.3	55.3	57.5	56.2	56.4				
HOURLY AVG	26.6	24.0	24.7	23.6	23.2	24.8	25.6	27.7	29.3	30.7	32.7	33.8	33.7	38.1	36.7	35.6	31.4	30.0	29.4	24.2	23.1	23.6	24.9	24.5				

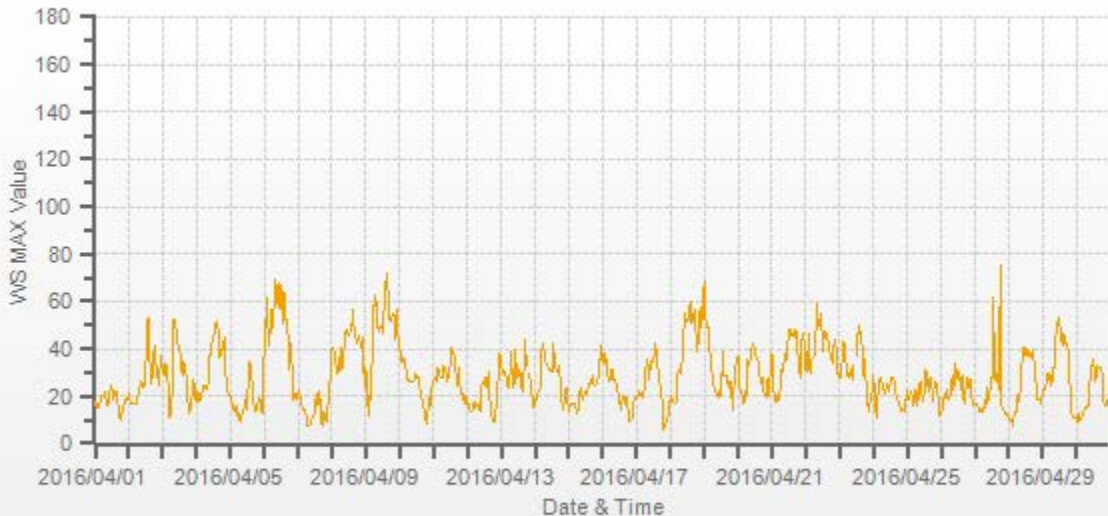
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

MAXIMUM INSTANTANEOUS VALUE:	75.6	KPH	@ HOUR(S)	18	ON DAY(S)	27
					VAR-VARIOUS	
OPERATIONAL TIME:				718	HRS	

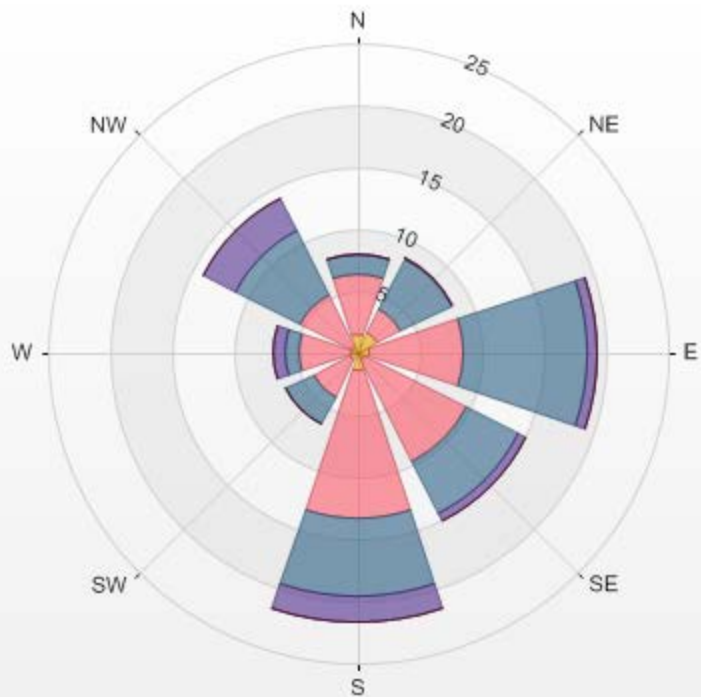
WS MAX[kph] Station: LICA ST. LINA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— WS MAX[kph]

Wind: LICA ST. LINA Monitor: WSP [kph] Monthly: 04/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 100.00% Calm Avg: 0.00 [ppb]

Direction	0.5-6.0	6.0-12.0	12.0-20.0	20.0-29.0	29.0-39.0	>39.0	Total
N	1.53	4.86	1.67	0	0	0	8.06
NE	1.81	2.08	4.58	0.14	0	0	8.61
E	0.97	7.64	9.86	0.83	0	0	19.3
SE	0.69	9.17	4.58	0.56	0	0	15
S	1.39	11.94	6.39	2.08	0	0	21.8
SW	0.69	3.33	2.5	0	0	0	6.52
W	0.56	4.17	1.11	0.97	0	0	6.81
NW	0.56	4.72	5.83	2.78	0	0	13.89
Summary	8.2	47.91	36.52	7.36	0	0	100



WIND DIRECTION



WIND DIRECTION (WD) hourly averages

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24-HOUR AVG	RDGS.
HOUR START	HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	QUADRANT	
DAY	1	SSW	SSW	SSW	SW	SW	W	WNW	NW	WNW	NW	NW	NW	WNW	NW	NNW	NNW	NW	WNW	SE	SSE	SSE	SSE	S	S	W	24
2	S	S	S	SSW	SSW	SW	SW	WSW	WSW	WSW	WSW	SW	SW	WSW	WSW	WNW	NW	NW	NW	WNW	WNW	WNW	WNW	NNW	NNW	WSW	24
3	NW	NW	NW	NW	NW	WSW	WSW	WSW	W	WNW	NNW	NNW	N	NNW	NW	NNW	NNW	N	N	NE	ENE	ENE	ENE	E	E	NNW	24
4	E	E	ESE	ESE	SE	ESE	ESE	ESE	ESE	E	E	E	E	E	E	E	E	E	ENE	ENE	ENE	ENE	ENE	NE	E	E	24
5	NE	NNE	N	N	NNW	NW	WSW	WSW	SSW	SSW	SSW	SW	SW	W	NW	NNW	NNE	ENE	E	ENE	E	ESE	SW	S	WNW	24	
6	SSW	WSW	W	WSW	W	W	WNW	WNW	WNW	WNW	NW	NW	WNW	WNW	WNW	WNW	WNW	NW	NW	NW	WNW	W	W	W	WNW	24	
7	W	W	W	W	N	NNE	NE	ENE	ENE	NE	NE	NNE	N	NNW	N	N	NNE	NE	SE	SE	E	ENE	ENE	NE	NE	24	
8	ENE	ENE	ENE	ENE	E	E	E	E	E	E	E	E	E	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	E	E	E	NNE	E	24
9	NW	NNE	W	W	NW	WNW	NW	NW	NW	NW	WNW	WNW	NW	NW	NW	NNW	NW	NW	NW	NNW	NW	NNW	NNW	NNW	NNW	NW	24
10	NNW	NNW	NNW	NNW	N	NNW	NNW	NNW	NNW	N	NNW	N	N	NNW	N	NNE	NE	ENE	ESE	ESE	SE	SE	SE	SE	N	N	24
11	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SE	SE	SE	SE	SSE	SE	ESE	ESE	ESE	E	ESE	SSE	SSE	SSE	SE	24
12	S	SSW	SW	WSW	WSW	WSW	W	SW	W	WSW	SW	SSW	SW	SSW	SW	SSW	SW	SW	SSW	NE	ENE	ENE	NE	ENE	SW	24	
13	ENE	ENE	NE	NE	NE	NNE	NNE	NNW	NNW	NNE	NNE	NE	NNE	N	NNW	WNW	WNW	NW	WNW	WNW	WNW	WNW	W	W	N	N	24
14	W	WSW	WSW	W	W	WNW	WNW	WNW	WNW	NW	NW	NW	NW	NW	NW	NW	NW	N	N	N	N	NNE	NNE	NNE	NW	24	
15	NNE	N	N	N	N	N	NNE	ENE	E	ESE	SE	SE	SSE	SSW	SE	ESE	SE	SSE	SE	SE	ESE	SE	SE	SSE	ESE	24	
16	SSE	SSE	S	SSE	SSE	SSE	S	S	SSE	SSW	S	SSW	SSW	S	SSW	SSW	S	SSW	SSW	S	SSW	SSW	SSW	SSW	S	24	
17	SSE	SSE	S	S	S	SSE	S	S	S	SSW	S	SSW	SW	SW	SW	SW	SW	WSW	WSW	W	NNE	ENE	E	SE	S	24	
18	SSE	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	SSE	S	S	S	S	24
19	S	S	S	S	S	SSW	SSW	SSW	SW	W	NW	NW	WSW	WSW	WSW	W	WSW	WSW	WSW	N	NNW	NW	NW	NNW	WSW	24	
20	NNW	NW	NW	NW	WNW	WNW	WNW	NW	NNW	NNW	NW	NW	NNW	NNE	N	N	N	NNE	NE	ENE	ENE	ENE	ENE	ENE	ENE	N	24
21	ENE	E	E	E	ENE	ENE	ENE	ENE	ENE	E	E	E	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	24
22	ENE	NE	ENE	NE	NE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	E	E	E	E	E	E	ENE	E	24	
23	E	ENE	ENE	ENE	E	ENE	ENE	ENE	ENE	ENE	ENE	ENE	E	E	E	E	E	E	E	E	E	E	ESE	SE	ESE	E	24
24	ESE	SE	E	ESE	E	E	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	E	E	E	E	E	E	E	ESE	ESE	ESE	ESE	24
25	ESE	ESE	ESE	ESE	E	E	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	SSE	SSE	SSE	SSE	S	S	S	S	SSE	S	SE	24
26	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	SSE	S	SSE	SSE	SSE	SSE	SSE	S	SSE	S	S	24
27	S	S	S	S	S	S	SE	SE	SE	S	SSW	SE	SE	SE	SE	ESE	SE	ESE	SE	SE	SE	SE	SSE	SSE	SSE	SSE	24
28	SSE	S	SSE	SE	ENE	ENE	ENE	ESE	ESE	SE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	S	SSE	SSE	SSE	SE	24	
29	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SSE	SSE	SE	SSE	SSE	SSE	SSE	SSE	SE	SSE	SSE	SSE	SE	24
30	S	SSE	S	SSE	SSE	SSE	SSE	S	S	SSW	S	S	SSW	SSW	S	SSW	SSW	SSW	SSW	SSW	SSW	S	S	S	SSW	S	24

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

LAST CALIBRATION:	August 28, 2014
DECLINATION :	MAGNETIC DECLINATION 19 DEGREE EAST

MONTHLY CALIBRATION TIME:	0	HRS	OPERATIONAL TIME:	720	HRS
STANDARD DEVIATION:	94.34		AMD OPERATION UPTIME:	100.0	%

WDR[Deg] Station: LICA ST. LINA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— WDR[Deg]

STANDARD DEVIATION WIND DIRECTION



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - April 2016

JOB # 2833-2016-04-31- C

STANDARD DEVIATION WIND DIRECTION (STDWD) hourly averages in degrees

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	RDGS.		
HOUR START	HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59			
DAY																												
1		9	7	5	3	5	11	14	13	17	18	15	20	15	23	20	19	17	31	24	14	7	8	10	7	24		
2		9	9	8	8	6	3	4	5	6	8	7	9	9	11	13	17	14	15	13	14	14	12	17	14	24		
3		14	14	14	14	14	8	7	11	16	17	16	17	17	18	20	22	19	18	15	19	10	8	10	10	24		
4		8	9	11	11	12	12	14	15	15	12	12	13	13	12	13	12	12	11	11	11	11	12	12	12	24		
5		12	12	15	16	17	17	11	9	10	9	10	11	21	20	15	21	21	11	11	10	10	15	18	14	24		
6		12	10	14	10	12	15	17	16	17	16	15	15	16	17	16	16	16	13	16	15	13	12	10	24			
7		13	12	12	11	21	12	15	20	45	33	38	30	31	32	39	41	21	47	22	8	9	19	8	9	24		
8		10	9	10	11	11	12	11	12	12	12	12	13	15	14	14	14	13	14	12	12	11	11	15	31	24		
9		36	17	41	13	16	16	14	14	14	15	15	17	16	16	15	17	15	14	16	15	15	16	16	21	24		
10		16	16	16	17	16	16	16	18	20	20	25	24	36	30	32	38	45	25	26	6	8	11	12	13	24		
11		10	11	10	11	10	11	11	13	13	18	17	19	19	19	18	16	15	14	12	9	11	10	9	10	24		
12		10	8	5	3	4	7	11	13	18	26	26	23	33	27	22	20	14	22	36	12	4	9	9	10	24		
13		9	9	9	9	61	33	36	28	16	13	12	11	13	14	21	16	16	15	16			15	15	15	12	23	
14		13	6	9	11	11	15	14	16	16	16	20	18	19	19	17	19	16	18	20	11	13	10	11	11	24		
15		8	10	8	9	15	6	12	16	17	25	38	38	36	39	50	28	24	19	15	12	12	12	13	13	24		
16		11	12	15	11	9	10	12	13	17	19	21	29	59	35	54	39	40	20	19	10	7	6	6	7	24		
17		8	8	9	8	8	8	10	12	14	14	16	20	17	16	20	23	25	17	11	10	28	13	4	6	24		
18		6	8	9	9	9	10	11	12	13	17	16	16	16	17	16	17	16	14	13	12	13	13	13	14	24		
19		13	12	12	12	11	10	8	9	13	24	26	29	39	25	32	28	23	19	24	16	13	12	13	14	24		
20		14	13	12	12	12	11	13	21	20	20	22	20	22	21	22	25	24	21	16	11	10	11	11	11	24		
21		11	9	10	10	9	9	11	13	14	17	17	19	16	18	17	17	14	13	12	11	12	12	12	12	24		
22		11	11	11	11	11	12	12	12	12	14	13	13	13	13	14	13	16	18	14	13	12	12	12	11	24		
23		11	11	12	11	12	12	11	11	12	11	12	13	12	11	12	12	12	13	12	11	10	11	13	14	24		
24		12	14	10	12	11	11	12	13	12	13	14	13	14	14	12	12	12	12	12	12	11	11	13	13	24		
25		13	13	13	12	11	10	12	13	13	14	14	16	17	20	20	17	21	15	13	13	13	13	11	11	24		
26		12	12	14	15	14	14	14	13	14	14	16	16	18	21	18	21	18	23	13	12	11	10	8	9	24		
27		10	9	10	9	8	8	15	13	20	22	25	27	33	36	26	25	21	20	21	11	9	7	6	4	24		
28		5	10	10	8	6	6	10	16	20	23	19	18	17	24	21	20	18	18	15	13	11	10	10	11	24		
29		12	13	14	13	14	16	16	17	16	16	19	23	20	20	22	23	20	16	14	13	8	5	5	5	24		
30		8	6	10	6	10	10	13	14	16	16	24	22	15	15	18	16	17	17	15	12	12	11	11	12	24		

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

LAST CALIBRATION: August 28, 2014

CALIBRATION TIME: 0 HRS OPERATIONAL TIME: 453 HRS

STDWD[Deg] Station: LICA ST. LINA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— STDWD[Deg]

RELATIVE HUMIDITY



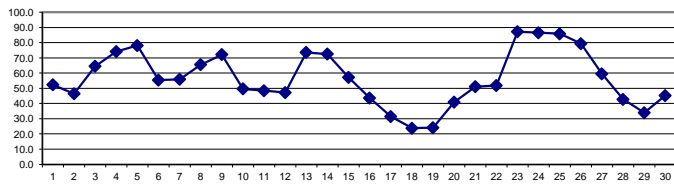
RELATIVE HUMIDITY (RH) hourly averages in %

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
DAY	MIN.	MAX.	AVG.	RDGS.																									
1	62	64	65	66	68	69	68	57	52	48	41	42	41	37	37	37	36	37	44	49	54	56	60	65	36	69	52.3	24	
2	67	66	70	70	69	69	69	59	49	40	34	34	35	30	28	28	29	30	29	31	37	41	48	53	28	70	46.5	24	
3	54	55	59	64	73	73	73	71	67	60	67	66	68	68	63	59	57	57	58	64	66	66	68	73	54	73	64.5	24	
4	76	79	82	82	83	81	79	76	76	79	78	77	74	72	67	64	63	67	67	69	69	69	71	79	63	83	74.1	24	
5	81	83	84	85	86	86	87	87	85	83	82	81	75	70	66	60	60	69	76	78	78	77	77	77	60	87	78.0	24	
6	74	58	60	63	65	64	61	56	51	50	48	45	44	41	41	39	41	46	57	56	61	65	69	73	39	74	55.3	24	
7	76	76	76	77	79	78	78	67	60	59	56	49	46	41	36	34	34	30	38	44	42	46	55	64	30	79	55.9	24	
8	71	74	76	76	75	75	72	70	70	67	63	58	54	55	56	57	58	55	58	60	63	65	68	77	54	77	65.5	24	
9	84	87	88	88	89	89	86	81	77	71	63	63	66	62	66	68	69	63	60	60	61	64	66	60	89	89	72.1	24	
10	65	66	66	67	67	68	67	65	63	58	50	44	40	38	34	32	32	31	33	35	36	42	45	46	31	68	49.6	24	
11	48	51	56	59	61	62	60	55	50	48	45	44	40	38	36	35	35	38	42	48	50	51	53	57	35	62	48.4	24	
12	59	61	62	63	66	70	65	60	52	43	36	34	31	29	30	31	32	30	32	38	42	48	60	60	29	70	47.3	24	
13	60	60	59	58	59	62	60	61	65	77	86	87	86	80	75	76	79	79	75	81	83	84	86	88	58	88	73.6	24	
14	89	89	89	89	88	87	87	83	74	68	62	61	58	58	56	57	58	61	63	67	70	73	76	77	56	89	72.5	24	
15	78	79	80	81	81	82	72	69	68	63	56	52	49	42	39	38	34	35	37	43	47	48	49	50	34	82	57.2	24	
16	51	53	55	58	63	65	63	61	54	49	43	40	34	30	28	29	30	30	30	34	36	36	37	38	28	65	43.6	24	
17	45	49	47	43	44	46	48	45	43	36	31	24	20	19	18	16	16	17	19	22	24	25	28	28	16	49	31.4	24	
18	32	38	44	47	50	52	48	43	37	28	20	11	7	8	5	4	6	9	12	13	14	17	18	4	52	23.8	24		
19	20	24	26	28	30	32	32	29	26	21	19	19	19	17	16	17	18	19	22	30	33	33	27	20	16	33	24.0	24	
20	20	21	22	25	30	33	34	39	42	46	44	43	41	43	43	40	38	39	43	50	57	59	64	65	20	65	40.9	24	
21	67	71	72	72	73	74	70	64	59	53	48	43	39	37	35	34	34	34	37	40	41	43	43	43	34	74	51.1	24	
22	49	52	50	49	48	49	48	44	41	37	37	35	33	31	30	30	37	56	75	83	81	80	84	84	30	84	51.8	24	
23	83	83	84	86	87	88	89	89	90	90	90	89	89	88	87	87	86	87	86	88	88	88	86	85	83	90	87.2	24	
24	74	84	88	89	89	88	86	88	88	86	85	84	85	84	85	86	86	88	89	89	89	88	90	90	74	90	86.6	24	
25	89	89	89	89	89	89	89	87	86	84	82	80	82	80	79	81	83	84	86	87	88	89	89	90	79	90	85.8	24	
26	90	90	90	90	90	90	90	90	88	85	82	77	72	70	66	64	63	64	67	69	75	78	81	83	63	90	79.3	24	
27	85	86	86	87	87	87	81	78	72	64	58	52	47	42	34	32	33	31	35	41	48	52	53	56	31	87	59.5	24	
28	58	58	56	54	65	67	66	55	42	37	33	32	28	27	27	27	28	28	32	37	38	42	43	46	27	67	42.8	24	
29	49	50	52	51	50	52	52	47	40	33	28	25	22	21	20	17	17	20	20	22	26	29	33	37	17	52	33.9	24	
30	41	46	51	56	58	59	59	57	55	45	38	36	38	40	39	35	33	32	35	39	43	46	51	55	32	59	45.3	24	
HOURLY MAX	90	90	90	90	90	90	90	90	90	90	90	90	89	89	88	87	87	86	87	88	89	89	89	90	90				
HOURLY AVG	63.2	64.7	66.1	67.1	68.7	69.5	68.0	64.4	60.7	57.0	53.5	50.9	48.7	46.6	44.7	43.8	44.2	45.5	48.4	52.2	54.6	56.5	59.2	61.4					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

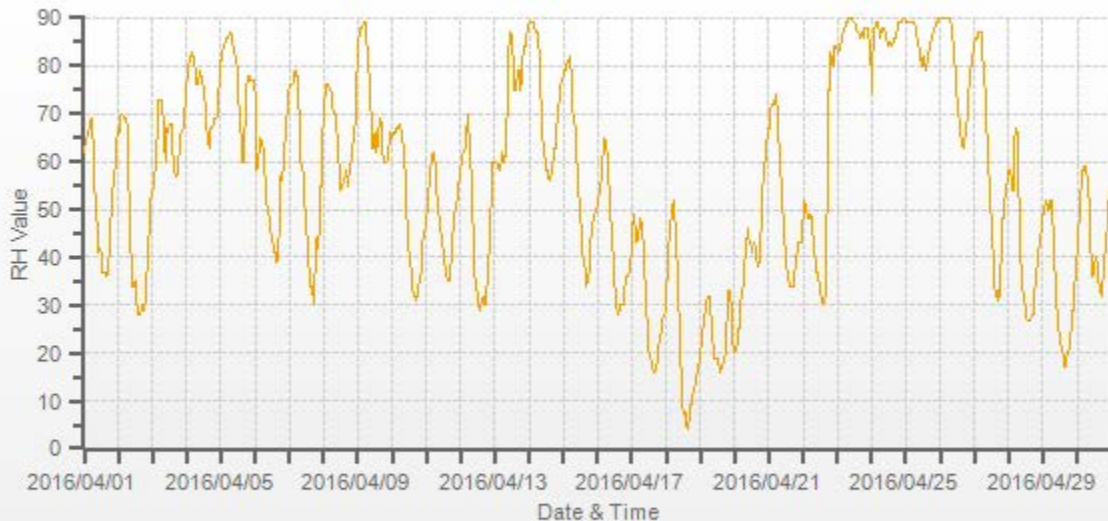
24 HOUR AVERAGES FOR April 2016



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	4	%	@ HOUR(S)	15	ON DAY(S)	18
MAXIMUM 1-HR AVERAGE:	90	%	@ HOUR(S)	VAR	ON DAY(S)	VAR
MAXIMUM 24-HR AVERAGE:	87.2	%			ON DAY(S)	23
					VAR-VARIOUS	
OPERATIONAL TIME:					720	HRS
AMD OPERATION UPTIME:					100.0	%
STANDARD DEVIATION:	21.36				MONTHLY AVERAGE:	57 %

RH[%RH] Station: LICA ST. LINA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



— RH[%RH]

BAROMETRIC PRESSURE



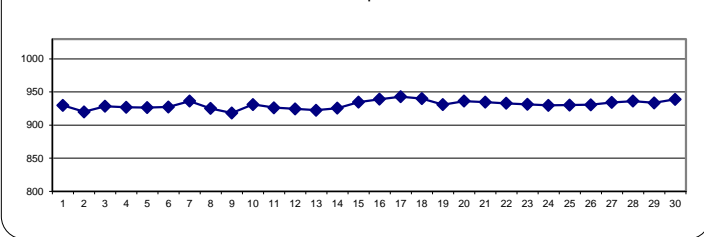
BAROMETRIC PRESSURE (BP) hourly averages in millibar

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
DAY	MIN.	MAX.	AVG.	RDGS.																									
1	929	929	928	928	928	928	928	929	930	931	932	932	932	933	933	933	932	932	931	929	928	927	927	926	926	926	933	930	24
2	925	924	923	921	921	920	919	919	920	920	920	920	919	919	919	919	919	919	919	919	919	919	919	920	921	919	925	920	24
3	922	923	924	925	925	925	925	926	927	927	929	930	930	931	931	932	933	933	932	931	932	931	932	931	931	922	933	929	24
4	931	931	931	930	930	929	929	929	929	928	928	927	927	926	925	925	925	924	924	924	924	924	924	924	924	924	931	927	24
5	924	925	925	925	926	927	927	927	927	928	928	928	928	929	929	929	929	929	928	927	926	924	924	924	923	923	929	927	24
6	922	922	922	922	922	923	924	924	924	925	926	927	928	929	930	930	931	931	932	932	933	933	933	933	933	922	933	927	24
7	933	934	934	935	935	935	935	936	936	936	937	938	938	938	938	938	938	938	938	938	936	936	936	936	935	933	938	936	24
8	935	935	934	934	933	932	931	931	931	930	930	929	927	927	926	925	925	924	923	923	923	923	923	922	912	911	935	925	24
9	912	911	910	910	910	911	913	914	916	917	918	918	919	919	920	921	923	924	925	926	926	927	928	910	928	918	928	24	
10	928	928	929	929	930	930	930	931	931	932	933	933	933	934	934	933	933	933	933	933	931	931	931	931	930	928	934	931	24
11	930	930	929	929	928	928	927	928	928	928	927	927	927	926	926	925	925	924	923	923	923	923	922	922	922	930	926	24	
12	922	922	922	922	923	923	924	925	925	926	926	926	926	926	926	926	926	926	926	926	925	924	924	924	924	922	926	924	24
13	923	923	923	923	923	922	922	923	923	923	922	922	922	922	923	923	923	923	923	922	922	922	922	922	922	922	923	923	24
14	921	922	922	922	922	923	923	924	924	925	926	926	926	927	927	927	928	928	929	928	929	928	929	929	929	921	929	926	24
15	930	930	930	930	931	932	933	934	935	935	936	937	937	937	937	937	937	937	937	937	936	936	936	936	936	930	937	935	24
16	936	936	936	935	936	936	937	938	938	939	940	940	941	941	942	942	941	941	941	941	941	941	941	941	941	935	942	939	24
17	941	941	941	941	941	941	941	942	942	943	944	944	945	945	945	945	945	945	945	945	944	943	943	943	943	941	945	943	24
18	943	943	942	942	942	942	942	942	943	943	944	943	943	943	942	941	940	939	937	936	935	934	934	932	932	944	940	24	
19	932	931	931	930	930	930	930	930	931	932	933	933	932	932	932	931	930	930	930	929	930	930	931	929	933	931	931	24	
20	931	931	931	932	933	933	934	935	936	937	938	938	939	939	940	940	940	940	939	938	938	937	937	936	931	940	936	24	
21	936	936	936	935	935	935	935	935	936	936	936	936	935	935	935	934	934	934	934	934	934	933	933	933	933	933	936	935	24
22	933	933	933	932	932	932	932	933	933	934	934	934	934	934	934	933	933	933	933	933	933	933	933	932	932	934	933	24	
23	933	932	932	931	931	931	931	931	931	931	932	932	932	932	932	932	931	931	931	931	931	931	931	931	931	931	933	931	24
24	931	931	931	931	930	930	930	930	930	930	930	930	930	929	929	929	929	929	929	929	929	929	929	929	929	929	931	930	24
25	929	929	929	929	929	929	929	930	930	930	931	931	931	931	931	931	931	931	931	931	931	931	931	931	929	931	930	24	
26	931	930	930	930	930	930	930	930	930	931	931	931	931	932	932	932	932	932	932	931	931	931	931	931	930	932	931	24	
27	930	930	930	930	931	931	932	933	934	935	935	936	936	936	937	937	937	937	937	936	936	936	936	936	930	937	934	24	
28	936	936	936	936	936	936	936	937	938	938	939	938	938	938	937	937	936	935	935	935	934	934	934	933	933	939	936	24	
29	933	932	932	932	932	931	932	932	933	933	934	934	934	934	934	935	935	935	935	935	935	935	935	935	931	935	934	24	
30	935	936	936	936	937	937	938	939	940	940	941	941	941	941	941	941	940	940	939	938	938	938	938	935	941	939	939	24	
HOURLY MAX	943	943	942	942	942	942	942	942	943	943	944	944	945	945	945	945	945	945	945	945	944	943	943	943					
HOURLY AVG	930	930	930	930	930	930	930	931	931	931	932	932	932	932	932	932	932	932	931	931	931	931	930	930					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

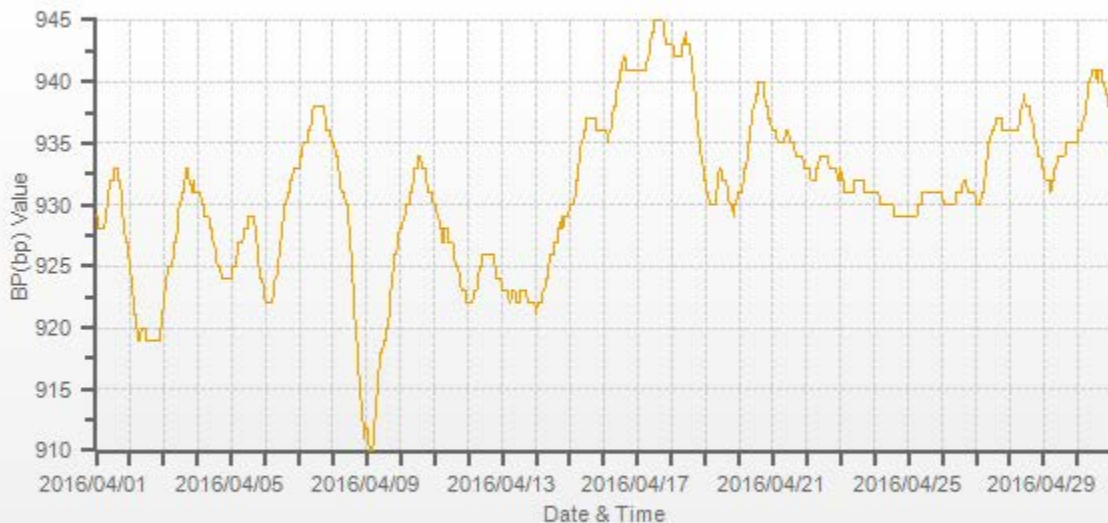
24 HOUR AVERAGES FOR April 2016



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	910	MB	@ HOUR(S)	VAR	ON DAY(S)	9
MAXIMUM 1-HR AVERAGE:	945	MB	@ HOUR(S)	VAR	ON DAY(S)	17
MAXIMUM 24-HR AVERAGE:	943	MB			ON DAY(S)	17
					VAR-VARIOUS	
OPERATIONAL TIME:						720 HRS
AMD OPERATION UPTIME:						100.0 %
STANDARD DEVIATION:	6.46				MONTHLY AVERAGE:	931 MB

BP(bp)[mb] Station: LICA ST. LINA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



BP(bp)[mb]

AMBIENT TEMPERATURE

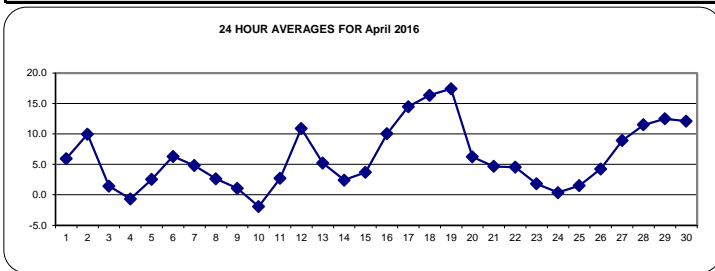
AMBIENT TEMPERATURE (AmbTPX) hourly averages in Degrees Celsius

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
DAY	HR	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
1		0.3	-0.1	-0.3	-0.4	-0.7	-0.4	0.0	2.9	4.9	6.9	9.7	10.1	10.6	12.4	12.6	12.1	12.6	12.3	9.7	7.6	6.1	5.4	4.5	3.7	-0.7	12.6	5.9	24
2		3.5	3.7	2.9	2.7	2.7	2.8	2.8	6.0	9.5	12.6	14.8	16.0	16.2	17.9	18.7	18.1	17.0	15.3	13.0	11.7	10.2	8.8	7.1	5.0	2.7	18.7	10.0	24
3		3.4	2.7	2.3	1.4	0.7	0.4	1.1	3.5	5.1	6.0	4.3	2.7	1.3	1.1	1.7	2.7	2.9	2.0	0.7	-0.9	-1.5	-2.1	-3.0	-4.0	-4.0	6.0	1.4	24
4		-4.7	-4.7	-4.5	-4.2	-4.1	-3.7	-2.9	-1.4	-0.5	-0.6	0.0	0.3	1.2	1.5	2.7	3.0	2.8	1.9	1.3	0.7	0.4	0.2	0.0	-0.4	-4.7	3.0	-0.7	24
5		-0.6	-0.7	-0.6	-0.6	-0.5	-0.5	-0.5	-0.1	0.5	0.8	1.2	1.7	4.0	5.8	6.4	8.7	8.4	6.0	4.0	3.4	3.3	3.5	3.5	3.5	-0.7	8.7	2.5	24
6		3.9	7.1	6.9	5.8	5.1	4.9	5.8	7.0	7.8	8.0	8.9	9.1	9.1	9.7	8.9	8.6	7.6	7.0	5.3	5.1	4.3	2.9	1.9	1.0	1.0	9.7	6.3	24
7		0.6	0.3	-0.1	-0.5	-0.7	-1.2	-1.4	2.2	4.1	4.7	6.0	7.3	8.4	10.0	11.0	11.5	10.2	10.7	9.0	7.1	6.3	5.2	3.4	1.5	-1.4	11.5	4.8	24
8		-0.1	-1.2	-2.2	-2.7	-2.8	-2.5	-1.7	-0.9	0.1	1.5	3.2	5.1	6.0	6.1	6.6	6.7	6.9	8.0	6.8	5.7	4.6	4.2	3.6	2.7	-2.8	8.0	2.7	24
9		1.8	0.7	0.5	0.6	1.5	2.4	2.6	1.7	1.6	3.2	5.9	5.7	5.3	5.1	2.4	0.8	-0.7	-1.1	-1.6	-2.2	-2.4	-2.8	-3.1	-3.1	5.9	1.1	24	
10		-3.6	-3.8	-4.3	-5.1	-6.1	-6.4	-6.2	-5.2	-4.6	-3.2	-1.2	0.0	1.1	1.9	2.4	2.8	2.6	2.1	0.5	-0.9	-1.3	-2.0	-2.7	-3.2	-6.4	2.8	-1.9	24
11		-3.7	-4.1	-4.6	-4.8	-5.0	-5.1	-4.1	-2.4	-0.5	1.1	3.0	4.8	6.9	8.1	9.2	9.6	10.4	9.8	8.6	6.9	6.4	5.8	4.9	4.2	-5.1	10.4	2.7	24
12		3.7	3.4	3.1	3.5	4.0	4.4	7.1	8.5	11.4	14.1	16.4	16.8	17.4	17.3	16.9	16.6	16.1	16.8	15.0	12.6	11.4	10.3	8.0	7.1	3.1	17.4	10.9	24
13		6.2	5.5	5.0	4.7	4.4	3.9	3.9	4.0	4.2	4.0	4.3	5.1	6.7	8.5	9.9	8.9	7.3	5.6	5.8	4.4	4.2	4.2	3.2	2.0	2.0	9.9	5.2	24
14		1.6	0.8	0.9	0.3	-0.1	0.3	0.5	1.1	3.3	4.3	5.6	5.7	5.9	6.2	6.0	6.0	5.4	4.7	3.6	1.7	0.3	-1.0	-2.1	-2.8	-2.8	6.2	2.4	24
15		-3.3	-3.4	-3.7	-3.9	-4.1	-4.0	-1.1	1.1	1.8	2.9	4.3	5.8	7.0	8.9	10.0	10.3	10.8	10.5	9.4	7.6	6.4	5.5	5.3	4.7	-4.1	10.8	3.7	24
16		4.3	4.0	4.0	3.4	2.4	2.0	3.0	4.2	7.1	9.2	11.6	13.0	15.1	16.9	17.3	16.3	15.9	15.4	15.4	13.5	12.6	11.9	11.5	10.8	2.0	17.3	10.0	24
17		9.4	7.8	7.1	6.7	5.9	5.9	6.2	8.4	10.3	13.7	16.1	19.0	20.6	21.2	21.6	22.3	22.2	21.6	20.4	18.0	16.9	16.2	15.1	15.3	5.9	22.3	14.5	24
18		14.1	11.8	10.1	8.9	8.1	7.7	9.2	11.6	14.4	18.2	20.0	21.2	21.9	22.4	22.6	23.2	22.6	21.5	20.8	18.6	17.2	16.3	15.3	15.0	7.7	23.2	16.4	24
19		14.4	13.3	12.3	11.4	10.4	9.6	10.1	12.5	15.7	20.1	22.9	23.3	23.3	25.1	25.6	25.2	24.2	23.4	21.6	17.8	15.3	14.4	13.6	12.3	9.6	25.6	17.4	24
20		10.6	9.4	8.6	7.3	5.7	5.1	6.3	7.7	8.1	7.8	8.2	8.4	8.7	8.2	7.4	7.3	7.8	7.3	5.5	3.3	1.7	0.8	-0.4	-1.0	-1.0	10.6	6.2	24
21		-1.6	-2.3	-2.8	-3.1	-3.4	-3.7	-1.9	0.6	2.9	5.2	7.1	8.7	9.7	10.6	11.0	11.2	10.8	9.9	9.1	8.1	7.5	7.0	6.1	5.5	-3.7	11.2	4.7	24
22		4.4	2.9	1.7	1.5	1.7	1.3	1.7	3.7	4.8	6.2	6.1	6.9	7.7	8.5	9.4	8.7	8.1	6.2	3.9	2.9	3.0	3.1	2.8	2.5	1.3	9.4	4.6	24
23		2.6	2.5	2.4	2.0	1.7	1.4	1.2	0.5	0.6	0.8	1.0	1.3	1.8	2.2	2.3	2.6	3.0	2.9	2.3	2.0	2.0	1.9	1.8	1.1	0.5	3.0	1.8	24
24		2.0	1.0	0.4	0.2	0.1	0.1	0.1	0.0	0.3	0.5	0.5	0.6	0.4	0.1	0.1	0.2	0.5	0.5	0.3	0.2	0.2	0.2	0.2	0.2	0.0	2.0	0.4	24
25		0.2	0.2	0.1	0.0	-0.1	-0.1	0.1	0.8	1.2	1.9	2.2	2.4	2.8	3.5	4.1	3.5	3.3	3.0	2.4	2.0	1.4	0.7	0.3	0.2	-0.1	4.1	1.5	24
26		0.2	0.1	0.2	0.2	0.2	0.2	0.4	0.8	1.7	2.7	4.0	5.9	7.3	7.9	8.7	9.2	9.6	9.3	8.4	7.6	6.0	4.8	3.9	3.1	0.1	9.6	4.3	24
27		2.4	2.0	1.5	1.1	0.6	1.1	3.0	4.5	6.9	10.1	12.2	13.4	14.3	14.9	15.5	15.8	15.4	14.9	14.0	12.5	10.8	9.8	9.1	8.6	0.6	15.8	8.9	24
28		8.0	7.7	7.8	7.7	5.3	5.5	6.6	9.3	12.5	13.9	14.6	14.5	14.7	15.8	16.1	16.4	15.8	15.1	14.3	12.9	11.8	10.6	10.0	9.3	5.3	16.4	11.5	24
29		8.5	7.7	7.1	7.1	6.8	6.2	6.6	9.2	12.2	14.4	15.6	16.6	17.2	17.6	18.0	18.2	18.1	17.1	16.3	14.8	12.9	11.6	10.6	9.7	6.2	18.2	12.5	24
30		9.3	8.9	8.7	8.3	8.3	8.1	8.0	8.8	10.6	13.4	16.0	16.5	15.5	14.8	15.2	16.0	16.4	16.6	15.3	13.7	12.6	11.2	9.9	9.0	8.0	16.6	12.1	24
HOURLY MAX		14.4	13.3	12.3	11.4	10.4	9.6	10.1	12.5	15.7	20.1	22.9	23.3	23.3	25.1	25.6	25.2	24.2	23.4	21.6	18.6	17.2	16.3	15.3	15.3				
HOURLY AVG		3.3	2.8	2.4	2.0	1.6	1.5	2.2	3.7	5.3	6.8	8.2	8.9	9.6	10.3	10.7	10.8	10.5	9.9	8.7	7.3	6.4	5.6	4.8	4.1				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

24 HOUR AVERAGES FOR April 2016



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	-6.4 °C	@ HOUR(S)	5	ON DAY(S)	10
MAXIMUM 1-HR AVERAGE:	25.6 °C	@ HOUR(S)	14	ON DAY(S)	19
MAXIMUM 24-HR AVERAGE:	17.4 °C			ON DAY(S)	19
				VAR-VARIOUS	
OPERATIONAL TIME:				720	HRS
AMD OPERATION UPTIME:				100.0	%
STANDARD DEVIATION:	6.43	MONTHLY AVERAGE:		6.1	°C

TPX[C°] Station: LICA ST. LINA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



TPX[C°]

PRECIPITATION

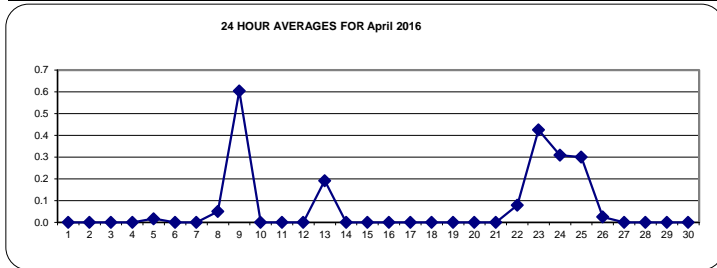
PRECIPITATION hourly averages (mm)

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	RDGS.	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
5	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	24	
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	1.2	0.1	24
9	0.4	0.9	1.8	2.3	3.9	2.8	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.9	0.6	24
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.8	2.8	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.2	24
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.5	0.1	0.1	0.3	0.1	0.0	0.8	0.1	24
23	0.0	0.0	0.0	0.5	0.7	0.9	1.4	0.7	0.0	0.1	0.5	0.3	1.3	1.0	0.4	0.6	0.5	0.2	0.2	0.1	0.1	0.1	0.0	0.5	0.2	0.0	1.4	0.4	24
24	0.0	0.4	0.8	0.7	0.0	0.1	0.0	0.7	0.4	0.3	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	1.0	1.2	0.6	0.8	0.1	0.1	0.0	1.2	0.3	24	
25	0.1	0.0	0.2	0.1	0.3	0.1	0.4	0.0	0.1	0.1	0.0	0.0	0.1	0.1	1.3	0.2	0.3	0.3	0.9	0.8	0.6	0.6	0.3	0.3	0.0	1.3	0.3	24	
26	0.4	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	24
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
HOURLY MAX	0.4	0.9	1.8	2.3	3.9	2.8	2.4	0.7	0.4	0.9	0.8	2.8	1.3	1.0	1.3	0.6	0.5	0.3	1.0	1.2	0.6	0.8	0.5	1.2					
HOURLY AVG	0.0	0.0	0.1	0.1	0.2	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.1					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	0.0	MM	@ HOUR(S)	VAR	ON DAY(S)	ALL
MAXIMUM 1-HR AVERAGE:	3.9	MM	@ HOUR(S)	4	ON DAY(S)	9
MAXIMUM 24-HR AVERAGE:	0.6	MM			ON DAY(S)	9
MONTHLY TOTAL	48.0	MM			VAR-VARIOUS	
OPERATIONAL TIME:					720	HRS
AMD OPERATION UPTIME:					100.0	%
STANDARD DEVIATION:	0.30				MONTHLY AVERAGE:	0.1
						MM

PRECIP[mm] Station: LICA ST. LINA Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



PRECIP[mm]

APPENDIX II
EQUIPMENT CALIBRATION RESULTS

SULPHUR DIOXIDE



API 100A Sulphur Dioxide Analyzer Calibration

Date: April 12, 2016	Barometric Pressure: 0.912 atm
Company/Airshed: LICA	Station Temperature °C: 21
Location/Station Name: St. Lina	Weather Conditions: Mix of sun and clouds
Parameter: Sulphur Dioxide	Calibration Purpose: shut down
Start Time 24 hr. (mst): 10:20	Performed By/Reviewer: Alex Yakupov Trina Whitsitt
End Time 24 hr. (mst): 13:26	Cal Gas Expiry Date: December 2, 2023
Calibration Method: Gas Dilution	Converter Model & s/n (if applicable): n/a

Analyzer:	
Serial Number: 838	Range ppb: 1000
Last Calibration Date: March 30, 2016	As Found C.F.: 0.975
Previous C.F.: 0.999	New C.F.: n/a

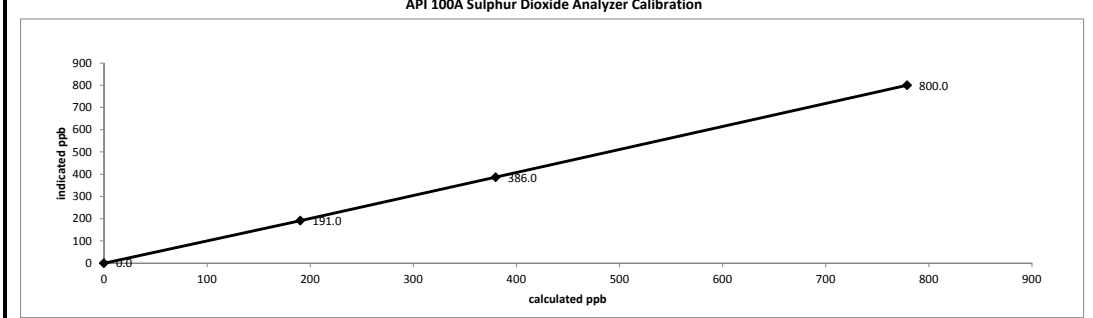
Calibrator:		Standard Calibration Points for Ranges	
Flow Meter ID's: n/a		Point	Sulphur Dioxide Standard Calibration Points
Make & Model: SABIO 2010 D		High	780
Serial #: 11900613		Mid	380
Cal Gas Cylinder I.D. #: LL119346		Low	190
Cal Gas Conc. (ppm): 50.0			

ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
as found zero	5000	0.00	5000	0.0	0.0	N/A
as found high	4922	78.00	5000	780.0	800.0	0.975
mid	4962	38.00	5000	380.0	386.0	0.984
low	4981	19.00	5000	190.0	191.0	0.995
Average C.F.=						0.985

Linear Regression/Calibration Results:

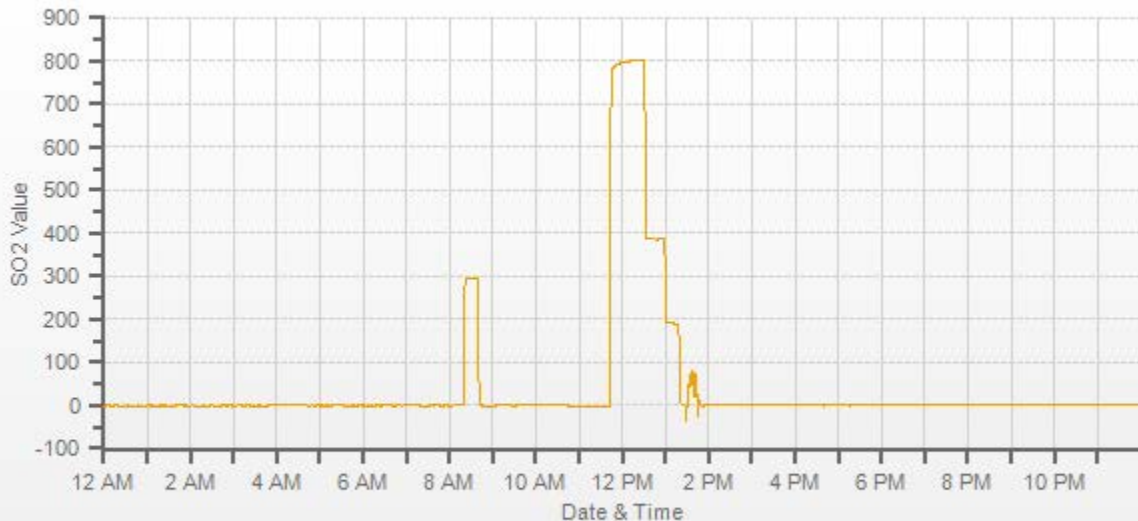
Correlation Coefficient =	1.000	LIMITS	> or = 0.995
Slope =	0.974		0.90-1.10
b (Intercept as % of full scale) =	0.23%		± 3% F.S.
% change in C.F. from last cal =	2.40%		± 10%



<p style="text-align: center;">As found:</p> SLOPE: 1.050 OFFSET: 20.0 HVPS: 657 DCPS: 2545 RCELL TEMP: 50.5 BOX TEMP: 23.9 PMT TEMP: 7.4 IZS TEMP: 60.0 Converter Temp: n/a PRES: 26.2 SAMP FL: 635 PMT: 55.5 UV LAMP: 2571.0 LAMP RATIO: 73.7 STR. LGT: 10.5 DRK PMT: 35.5 DRK LMP: -6.7 Internal Span: 288	<p style="text-align: center;">As left:</p> SLOPE: n/a OFFSET: n/a HVPS: n/a DCPS: n/a RCELL TEMP: n/a BOX TEMP: n/a PMT TEMP: n/a IZS TEMP: n/a Converter Temp: n/a PRES: n/a SAMP FL: n/a PMT: n/a UV LAMP: n/a LAMP RATIO: n/a STR. LGT: n/a DRK PMT: n/a DRK LMP: n/a Internal Span: n/a
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Comments:

Shutdown calibration performed to install the SO2 analyzer #468 after repair.



— SO2[ppb]



API 100E Sulphur Dioxide Analyzer Calibration

Date: April 13, 2016	Barometric Pressure: 0.913 atm
Company/Airshed: LICA	Station Temperature °C: 22
Location/Station Name: St. Lina	Weather Conditions: A few clouds and light rain showers
Parameter: Sulphur Dioxide	Calibration Purpose: installation
Start Time 24 hr. (mst): 9:25	Performed By/Reviewer: Alex Yakupov Trina Whitsitt
End Time 24 hr. (mst): 12:47	Cal Gas Expiry Date: December 2, 2023
Calibration Method: Gas Dilution	Converter Model & s/n (if applicable): n/a

Analyzer:	
Serial Number: 468	Range ppb: 1000
Last Calibration Date: n/a	As Found C.F.: n/a
Previous C.F.: n/a	New C.F.: 1.000

Calibrator:	Standard Calibration Points for Ranges								
Flow Meter ID's: n/a	<table border="1" style="margin: auto;"> <thead> <tr> <th>Point</th> <th>Sulphur Dioxide Standard Calibration Points</th> </tr> </thead> <tbody> <tr> <td>High</td> <td>780</td> </tr> <tr> <td>Mid</td> <td>380</td> </tr> <tr> <td>Low</td> <td>190</td> </tr> </tbody> </table>	Point	Sulphur Dioxide Standard Calibration Points	High	780	Mid	380	Low	190
Point		Sulphur Dioxide Standard Calibration Points							
High		780							
Mid		380							
Low		190							
Make & Model: SABIO D 2010									
Serial #: 11900613									
Cal Gas Cylinder I.D. # : LL119346									
Cal Gas Conc. (ppm): 50.0									

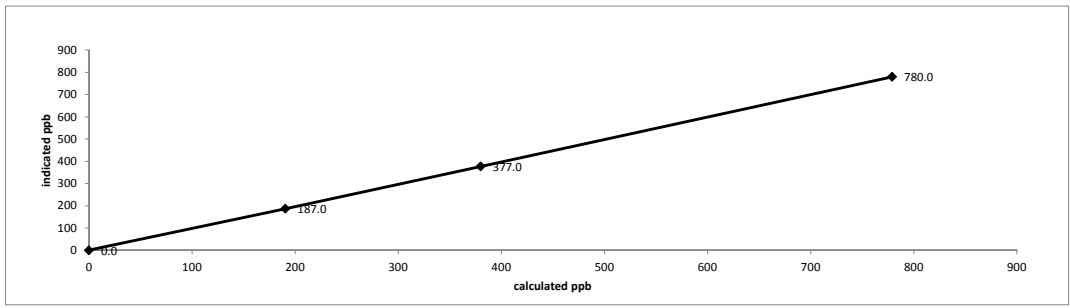
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
adjusted zero	5000	0.00	5000	0.0	0.0	N/A
adjusted high	4922	78.00	5000	780.0	780.0	1.000
mid	4962	38.00	5000	380.0	377.0	1.008
low	4981	19.00	5000	190.0	187.0	1.016
calibrator zero	5000	0.00	5000	0.0	0.0	n/a
Average C.F.=						1.008

Linear Regression/Calibration Results:

Correlation Coefficient = 1.000	LIMITS
Slope = 0.999	> or = 0.995
b (Intercept as % of full scale)= 0.18%	.95-1.05
% change in C.F. from last cal= n/a	± 3% F.S.
	± 10%

API 100E Sulphur Dioxide Analyzer Calibration



As found:

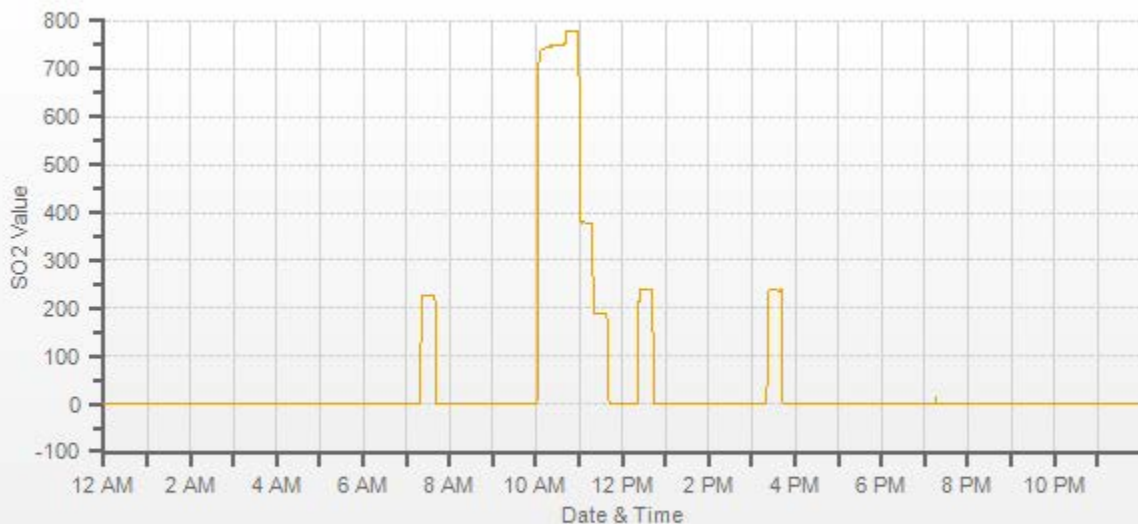
- SLOPE: n/a
- OFFSET: n/a
- HVPS: n/a
- RCELL TEMP: n/a
- BOX TEMP: n/a
- PMT TEMP: n/a
- IZS TEMP: n/a
- PRES: n/a
- SAMP FL: n/a
- NORM PMT: n/a
- UV LAMP: n/a
- LAMP RATIO: n/a
- STR. LGT: n/a
- DRK PMT: n/a
- DRK LMP: n/a
- Internal Span: n/a

As left:

- SLOPE: 1.011
- OFFSET: 101.1
- HVPS: 647
- RCELL TEMP: 50.0
- BOX TEMP: 30.6
- PMT TEMP: 7.8
- IZS TEMP: 40.0
- PRES: 23.8
- SAMP FL: 570
- NORM PMT: 102.2
- UV LAMP: 3253.7
- LAMP RATIO: 93
- STR. LGT: 51.1
- DRK PMT: 8.6
- DRK LMP: 6.8
- Internal Span: 237.6

Comments:
 Sample filter changed. Installation calibration performed to install back the SO2 analyzer # 468 Model 100E after repair: a new power module for 12V supply was installed: Power module 12V supply, part # KIT000254, PS, 60W PS28, 12V (KV).

SO2[ppb] Station: LICA ST. LINA Daily: 2016/04/13 Type: AVG 1 Min. [1 Min.]



— SO2[ppb]

HYDROGEN SULPHIDE



API 101E Hydrogen Sulphide Analyzer Calibration

Date: April 13, 2016	Barometric Pressure: 0.913 atm
Company/Airshed: LICA	Station Temperature °C: 22
Location/Station Name: St. Lina	Weather Conditions: A few clouds and light rain showers
Parameter: Hydrogen Sulphide	Calibration Purpose: routine monthly
Start Time 24 hr. (mst): 9:25	Performed By/Reviewer: Alex Yakupov Trina Whitsitt
End Time 24 hr. (mst): 12:47	Cal Gas Expiry Date: July 15, 2017
Calibration Method: Gas Dilution	Converter Model & s/n (if applicable): n/a

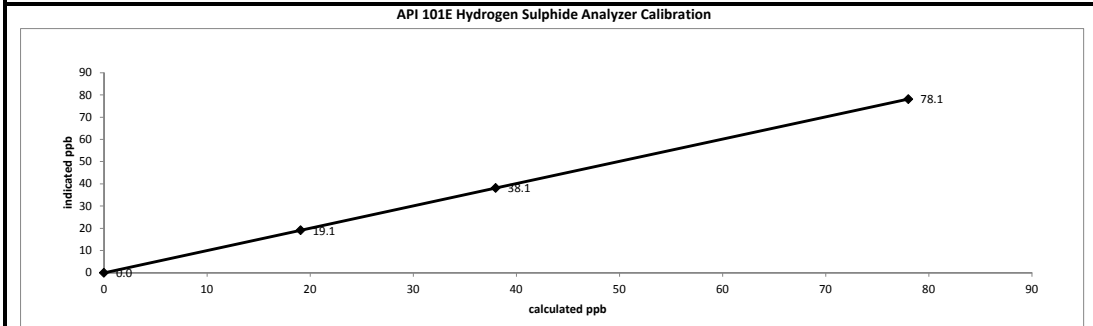
Analyzer:	Range ppb: 100
Serial Number: 509	As Found C.F.: 0.997
Last Calibration Date: March 17, 2016	New C.F.: 0.999
Previous C.F.: 1.000	

Calibrator:	Standard Calibration Points for Ranges								
Flow Meter ID's: n/a	<table border="1" style="margin: auto;"> <thead> <tr> <th>Point</th> <th>Hydrogen Sulphide Standard Calibration Points</th> </tr> </thead> <tbody> <tr> <td>High</td> <td>78</td> </tr> <tr> <td>Mid</td> <td>38</td> </tr> <tr> <td>Low</td> <td>19</td> </tr> </tbody> </table>	Point	Hydrogen Sulphide Standard Calibration Points	High	78	Mid	38	Low	19
Point		Hydrogen Sulphide Standard Calibration Points							
High		78							
Mid		38							
Low		19							
Make & Model: API 700									
Serial #: 830									
Cal Gas Cylinder I.D. #: LL36837									
Cal Gas Conc. (ppm): 10.0									

ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
as found zero	7498	0.00	7498	0.0	0.6	N/A
as found high	7439	58.50	7498	78.0	78.9	0.997
adjusted zero	7498	0.00	7498	0.0	0.0	n/a
adjusted high	7439	58.50	7498	78.0	78.1	0.999
mid	7471	28.50	7500	38.0	38.1	0.997
low	7481	14.30	7495	19.1	19.1	0.999
calibrator zero	7498	0.00	7498	0.0	0.0	n/a
Average C.F.=						0.998

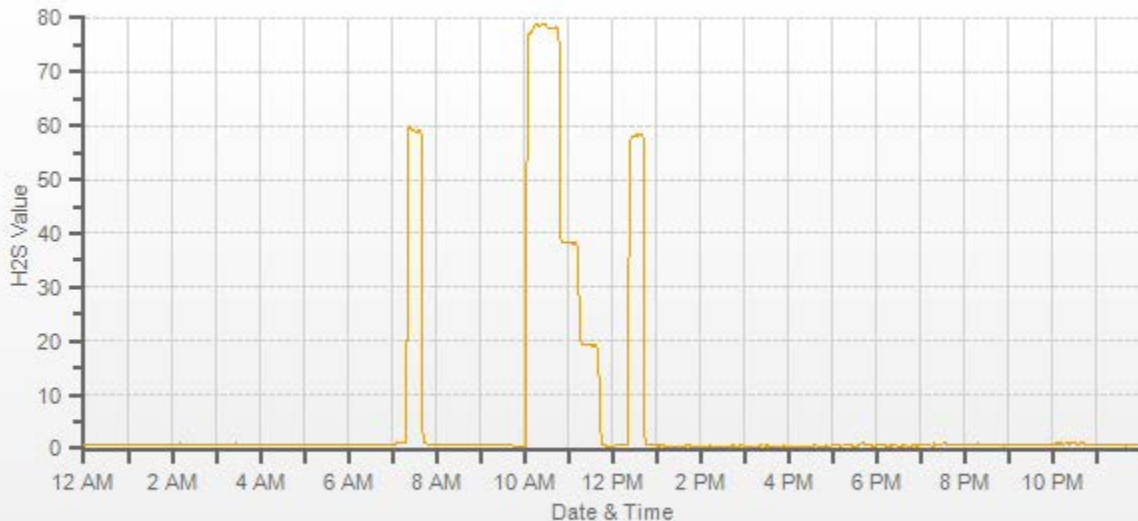
Linear Regression/Calibration Results:		LIMITS
Correlation Coefficient =	1.000	> or = 0.995
Slope =	0.999	.95-1.05
b (Intercept as % of full scale)=	-0.01%	± 3% F.S.
% change in C.F. from last cal=	0.35%	± 10%



<p style="text-align: center;">As found:</p> SLOPE: 1.122 OFFSET: 35.5 HVPS: 651 RCCELL TEMP: 50.0 BOX TEMP: 31.2 PMT TEMP: 7.9 IZS TEMP: 48.0 Converter Temp: 314.6 PRES: 20.3 SAMP FL: 514 UV LAMP: 3290.5 LAMP RATIO: 94 STR. LGT: 19.9 DRK PMT: 0.1 DRK LMP: 0.4 Internal Span: 56.6	<p style="text-align: center;">As left:</p> SLOPE: 1.118 OFFSET: 36.2 HVPS: 651 RCCELL TEMP: 50.0 BOX TEMP: 31.0 PMT TEMP: 7.9 IZS TEMP: 48.0 Converter Temp: 315.7 PRES: 20.2 SAMP FL: 513 UV LAMP: 3291.0 LAMP RATIO: 94 STR. LGT: 20.3 DRK PMT: 0.2 DRK LMP: 0.4 Internal Span: 58.4
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Comments:

Sample filter changed.



— H2S[ppb]

TOTAL HYDROCARBON



Thermo 51C Total Hydrocarbon Analyzer Calibration

Date: April 12, 2016
Company/Airshed: LICA
Location/Station Name: St. Lina
Parameter: Total Hydrocarbon
Start/End Time 24 hr. (mst): 10:20 / 13:46
Calibration Method: Gas Dilution
Barometric Pressure: 0.912 atm
Station Temperature °C: 21
Weather Conditions: Mix of sun and clouds
Calibration Purpose: routine monthly
Performed By/Reviewer: Alex Yakupov / Trina Whitsitt
Cal Gas Expiry Date: November 25, 2023

Analyzer:
Serial Number: 51CLT-77021-384
Last Calibration Date: March 16, 2016
Previous Cal High Point C.F.: 1.000
Range ppm: 50
As Found C.F.: 1.014
New C.F.: 1.001

Calibrator:
Flow Meter ID's: n/a
Make & Model: API 700
Serial #: 830
Cal Gas Cylinder I.D. #: LL165372
CH₄/C₂H₆ Cylinder Conc. (ppm): 606.0 / 212.0
CH₄ as propane/total CH₄ equivalents (ppm): 583.0 / 1189.0
Standard Calibration Points for a Range of 50 ppm

Point	Target ppm
High	38
Mid	18
Low	9

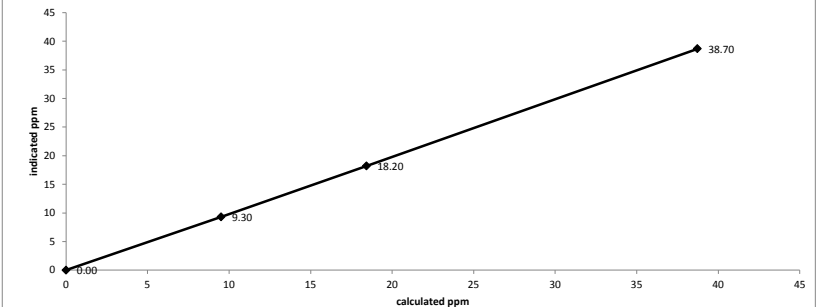
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Point	Calibrator Flow Rates (cc/min)			Calculated Concentration (ppm)	Indicated Concentration (ppm)	Correction Factors:
	Diluent	Cal Gas	Total			
as found zero	1998	0.00	1998	0.0	0.10	n/a
as found high	1931	65.00	1996	38.72	38.30	1.014
adjusted zero	1998	0.00	1998	0.00	0.00	n/a
adjusted high	1931	65.00	1996	38.72	38.70	1.001
mid	1969	31.00	2000	18.43	18.20	1.013
low	1984	16.00	2000	9.51	9.30	1.023
calibrator zero	1998	0.00	1998	0.0	0.00	n/a

Average C.F.= 1.012

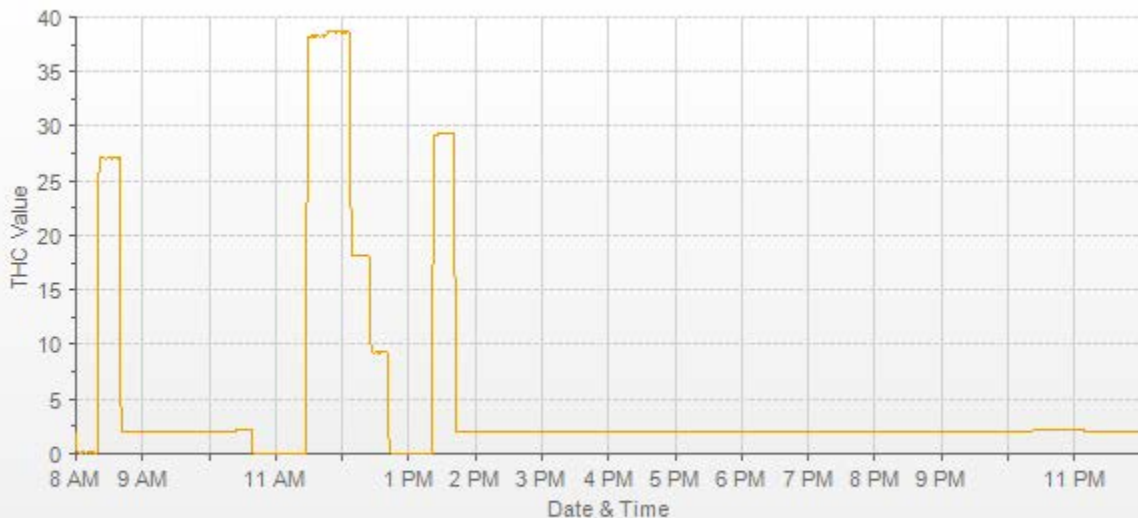
Linear Regression/Calibration Results:
 Correlation Coefficient = 1.000
 Slope = 0.999
 b (Intercept as % of full scale) = 0.26%
 % change in C.F. from last cal = -1.36%
LIMITS
 > or = 0.995
 .95-1.05
 ± 3% F.S.
 ± 10%

Thermo 51C Total Hydrocarbon Analyzer Calibration



As found: H2 cylinder (psi): 1600 H2 cylinder reg set (psi): 22 Span Cylinder (psi): 150 Span Cylinder Reg Set (psi): 22 Zero Air Gen Pressure: 42 measurement alarms: None service alarms: None cnt: 1587 rng: 1 try: 1 flm: 188.5 det: 125.4 Flame: 188 Filter: 125 Base: 125 Sample psi: 06.92 Internal Air Pressure: 19 Internal Fuel Pressure: 13 Intenal Pressure Gauge psi: 27 Internal Span: 27.1	As left: H2 cylinder (psi): 1600 H2 cylinder reg set (psi): 22 Span Cylinder (psi): 1950 Span Cylinder Reg Set (psi): 22 Zero Air Gen Pressure: 42 measurement alarms: None service alarms: None cnt: 1594 rng: 1 try: 1 flm: 188.3 det: 125.5 Flame: 188 Filter: 125 Base: 125 Sample psi: 06.92 Internal Air Pressure: 19 Internal Fuel Pressure: 13 Intenal Pressure Gauge psi: 27 Internal Span: 29.32
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Comments:
Sample filter changed. A new SPAN (CH4) gas cylinder connected.



— THC[ppm]

NITROGEN DIOXIDE



API 200E NO-NO2-NOx Analyzer Calibration

Date: April 12, 2016	Barometric Pressure: 0.912 atm
Company/Airshed: LICA	Station Temperature °C: 21
Location/Station Name: St. Lina	Weather Conditions: Mix of sun and clouds
Start/End Time 24 hr. (mst): 10:20 / 16:30	Calibration Purpose: routine monthly
G.P.T. to be used for Ozone? No	Performed By/Reviewer: Alex Yakupov Trina Whitsitt
Calibration Method: Gas Dilution & Varying UV Lamp Power	Cal Gas Expiry Date: December 2, 2023

Analyzer:	Correction Factors:																
Serial Number: 594	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td></td> <td style="text-align: center;">Previous C.F.:</td> <td style="text-align: center;">As Found C.F.:</td> <td style="text-align: center;">New C.F.:</td> </tr> <tr> <td>NO =</td> <td style="text-align: center;">1.000</td> <td style="text-align: center;">1.011</td> <td style="text-align: center;">0.976</td> </tr> <tr> <td>NO₂ =</td> <td style="text-align: center;">1.002</td> <td style="text-align: center;">1.010</td> <td style="text-align: center;">1.010</td> </tr> <tr> <td>NOx =</td> <td style="text-align: center;">1.000</td> <td style="text-align: center;">1.008</td> <td style="text-align: center;">0.976</td> </tr> </table>		Previous C.F.:	As Found C.F.:	New C.F.:	NO =	1.000	1.011	0.976	NO₂ =	1.002	1.010	1.010	NOx =	1.000	1.008	0.976
	Previous C.F.:	As Found C.F.:	New C.F.:														
NO =	1.000	1.011	0.976														
NO₂ =	1.002	1.010	1.010														
NOx =	1.000	1.008	0.976														
Last Calibration Date: March 16, 2016																	
Range ppb: 1000																	

Calibrator:	Standard Calibration Points for a Range of: 1000 ppb																								
Flow Meter ID's: n/a																									
Make & Model: SABIO 2010 D																									
Serial #: 11900613																									
Cal Gas Cylinder I.D. #: LL119346																									
NO/NOx Gas Conc. (ppm): 48.8 48.8																									
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Point</th> <th>Target NO (ppb)</th> <th>Target NO₂ (ppb)</th> <th>Cc Ozone ?</th> </tr> <tr> <td>High</td> <td style="text-align: center;">780</td> <td style="text-align: center;">500</td> <td style="text-align: center;">n/a</td> </tr> <tr> <td>Mid</td> <td style="text-align: center;">380</td> <td style="text-align: center;">275</td> <td style="text-align: center;">n/a</td> </tr> <tr> <td>Low</td> <td style="text-align: center;">190</td> <td style="text-align: center;">100</td> <td style="text-align: center;">n/a</td> </tr> <tr> <td>Extra Point #1</td> <td style="text-align: center;">n/a</td> <td style="text-align: center;">n/a</td> <td style="text-align: center;">n/a</td> </tr> <tr> <td>Extra Point #2</td> <td style="text-align: center;">n/a</td> <td style="text-align: center;">n/a</td> <td style="text-align: center;">n/a</td> </tr> </table>	Point	Target NO (ppb)	Target NO ₂ (ppb)	Cc Ozone ?	High	780	500	n/a	Mid	380	275	n/a	Low	190	100	n/a	Extra Point #1	n/a	n/a	n/a	Extra Point #2	n/a	n/a	n/a
Point	Target NO (ppb)	Target NO ₂ (ppb)	Cc Ozone ?																						
High	780	500	n/a																						
Mid	380	275	n/a																						
Low	190	100	n/a																						
Extra Point #1	n/a	n/a	n/a																						
Extra Point #2	n/a	n/a	n/a																						

ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated NO	Calculated NOx	Indicated NO	Indicated NOx	NO C.F.	NOx C.F.
Point	Diluent	Cal Gas	Total Flow	(ppb)	(ppb)	(ppb)	(ppb)		
as found zero	5000	0.0	5000	0	0	-1.0	1.0	n/a	n/a
as found high	4922	78.0	5000	761.3	761.3	752.0	756.0	1.011	1.008
adjusted zero	5000	0.00	5000	0.0	0.0	0.0	0.0	n/a	n/a
adjusted high	4922	78.00	5000	761.3	761.3	780.0	780.0	0.976	0.976
mid	4962	38.00	5000	370.9	370.9	377.0	376.0	0.984	0.986
low	4981	19.00	5000	185.4	185.4	187.0	187.0	0.992	0.992
calibrator zero	5000	0.00	5000	0	0	0.0	0.0	n/a	n/a
Average C.F.=								0.984	0.985

ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calibrator Setting	Indicated NO	Indicated NOx	Indicated NO ₂	NO drop	NO ₂ gain	NO ₂ C.F.
Point	Diluent	Cal Gas	Total Flow	volts or ppb	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)
NOx reference	4922	78.00	5000	0.0	783.0	779.0	-5.0	0.0	-5.0	1.010
as found high NO2	4922	78.00	5000	525.0	271.0	774.0	502.0	512.0	507.0	1.010
gpt mid	4922	78.00	5000	285.0	503.0	776.0	272.0	280.0	277.0	1.011
gpt low	4922	78.00	5000	102.0	676.0	776.0	100.0	107.0	105.0	1.019
Average NO₂ C.F.=									1.013	

Linear Regression/Calibration Results:

	NO	NOx	NO ₂	LIMITS
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995
Slope =	0.975	0.975	1.002	.95-1.05
b (Intercept as % of full scale) =	-0.18%	-0.20%	-0.34%	± 3% F.S.
% change in C.F. from last cal =	-1.10%	-0.83%	-0.78%	± 10%
NO2 converter efficiency	1.01	1.01	1.01	0.96 to 1.04

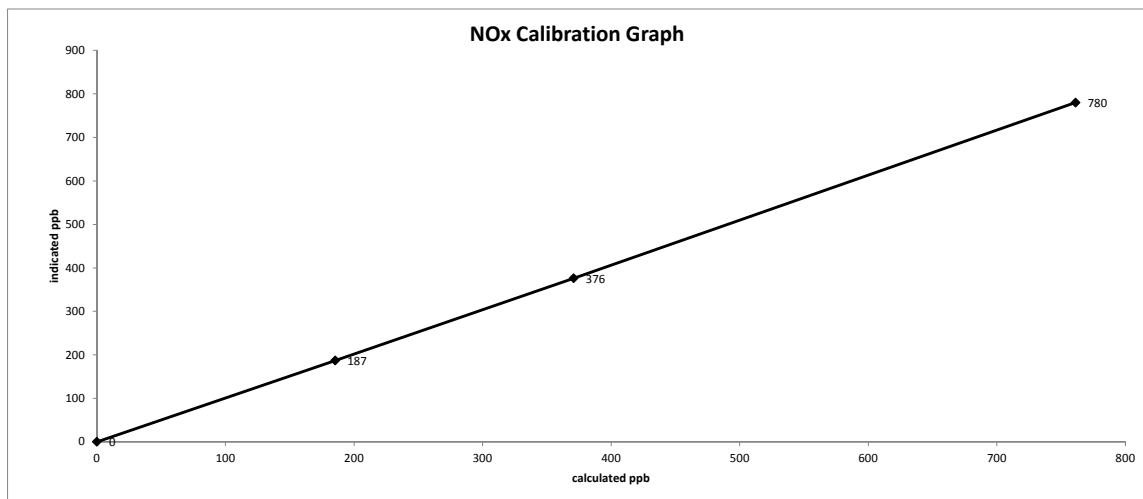
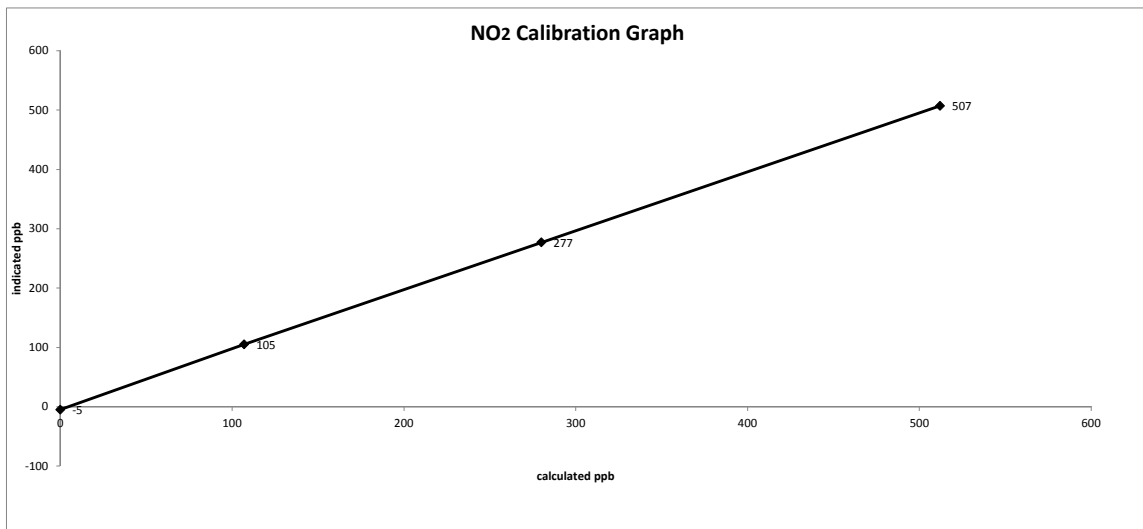
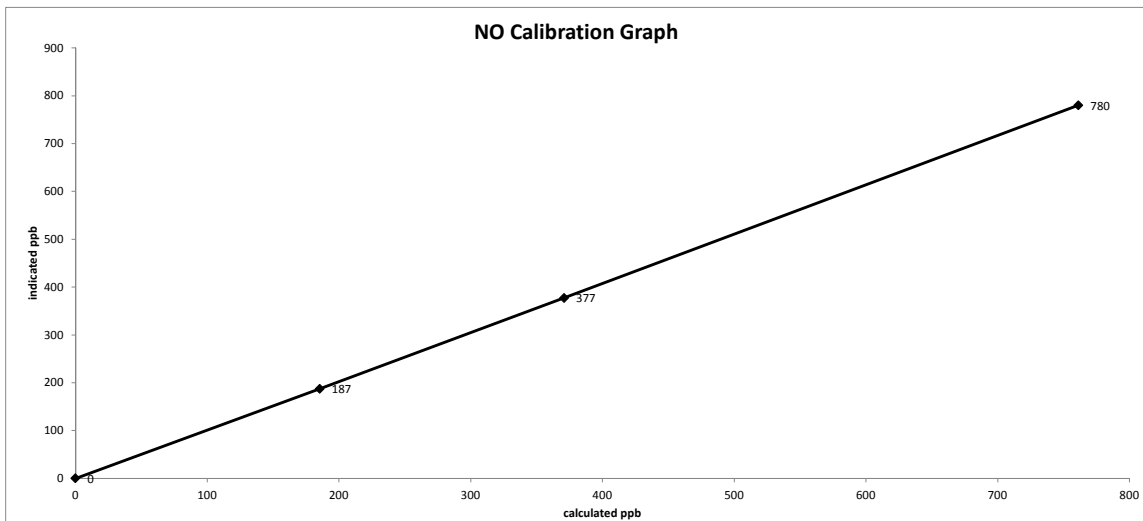
As found:	As left:
NOx SLOPE: 0.954	NOx SLOPE: 0.984
NOx OFFS: 0.8	NOx OFFS: 0.9
NO SLOPE: 0.956	NO SLOPE: 0.992
NO OFFS: 0.4	NO OFFS: 0.7
SAMP FLW: 451	SAMP FLW: 451
OZONE FL: 78	OZONE FL: 77
PMT: 12.8	PMT: 20.6
NORM PMT: 7.1	NORM PMT: 2.1
AZERO: 19.0	AZERO: 18.8
HVPS: 771	HVPS: 771
RCELL TEMP: 50.0	RCELL TEMP: 50.0
BOX TEMP: 34.3	BOX TEMP: 35.3
PMT TEMP: 6.7	PMT TEMP: 6.8
IZS TEMP: 45.3	IZS TEMP: 45.2
MOLY TEMP: 315.9	MOLY TEMP: 316.0
RCEL: 6.6	RCEL: 6.6
SAMP: 26.2	SAMP: 26.2
Internal Span NO: 7.4	Internal Span NO: 7.1
Internal Span NO2: 506.5	Internal Span NO2: 516.4
Internal Span NOx: 514	Internal Span NOx: 523.7

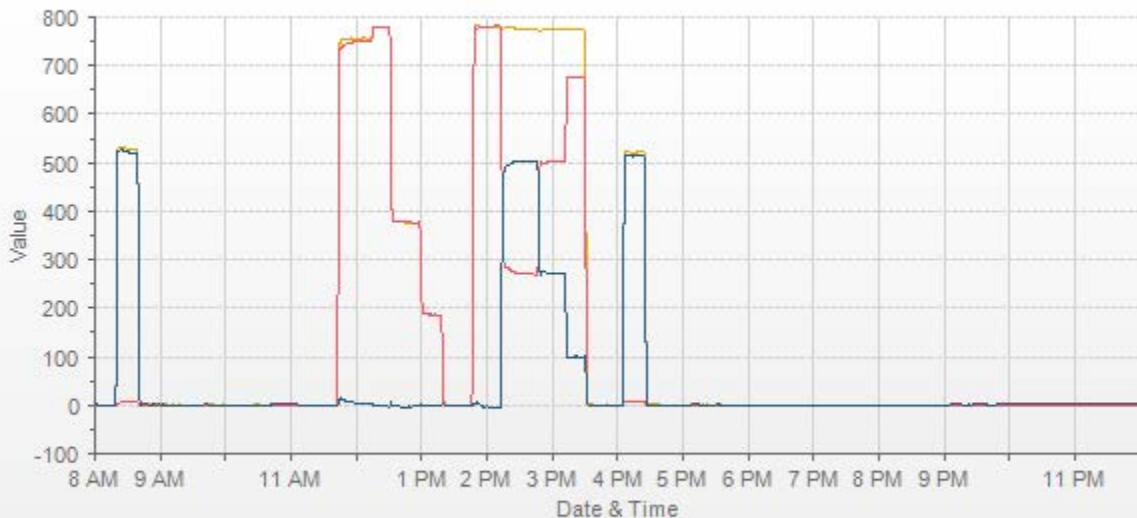
Comments:

Sample filter changed. No NO2 adjustment made.

Date: April 12, 2016
Company/Airshed: LICA
Location/Station Name: St. Lina

Start/End Time 24 hr. (mst): 10:20 / 16:30
Calibration Purpose: routine monthly
Calibration Method: Gas Dilution & Varying UV Lamp Power





— NOX[ppb] — NO[ppb] — NO2[ppb]

OZONE

Maxam Thermo 49i Ozone Analyzer Calibration

A Bureau Veritas Group Company

Date: April 13, 2016
 Company/Airshed: LICA
 Location/Station Name: St. Lina
 Start/End Time 24 hr. (mst): 12:50 / 15:46
 Ozone Calibration Method: Varying UV Lamp Power
 G.P.T. Date: n/a-done by Varying UV Lamp Power

Barometric Pressure: 0.913 atm
 Station Temperature °C: 22
 Weather Conditions: A few clouds and light rain showers
 Calibration Purpose: routine monthly
 Performed By/Reviewer: Alex Yakupov / Trina Whitsitt
 Cal Gas Expiry Date: n/a

Analyzer:
 Serial Number: 1002240371
 Last Calibration Date: March 17, 2016
 Previous Cal High Point C.F.: 1.000

Ozone Range ppb: 500
 As Found C.F.: 1.000
 New C.F.: 1.000

Calibrator:
 Flow Meter ID's: n/a
 Make & Model: SABIO 2010 D
 Serial #: 11900613
 Cal Gas Cylinder I.D. #: n/a

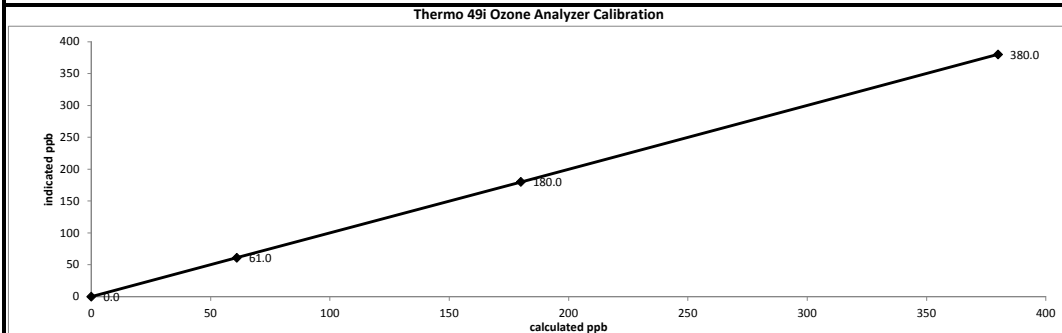
Point	AMD Required Range of Ozone Calibration Points
High	300-400 ppb
Mid	150-200 ppb
Low	50-75 ppb

ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Point	Calibrator Flow Rate (cc/min)		Calculated Concentration:	Corrected Calculated Concentration:	Indicated Concentration:	Correction Factors:
	Total Flow @ Point Start	Total Flow @ Point Finish	(ppb)	(ppb)	(ppb)	
as found zero	5000	5000	0.0	n/a	0.0	n/a
as found high	5000	5000	380.0	380.0	380.0	1.000
mid	5000	5000	180.0	180.0	180.0	1.000
low	5000	5000	61.0	61.0	61.0	1.000
calibrator zero	5000	5000	0.0	n/a	0.0	n/a
Average C.F. =						1.000

Linear Regression/Calibration Results:

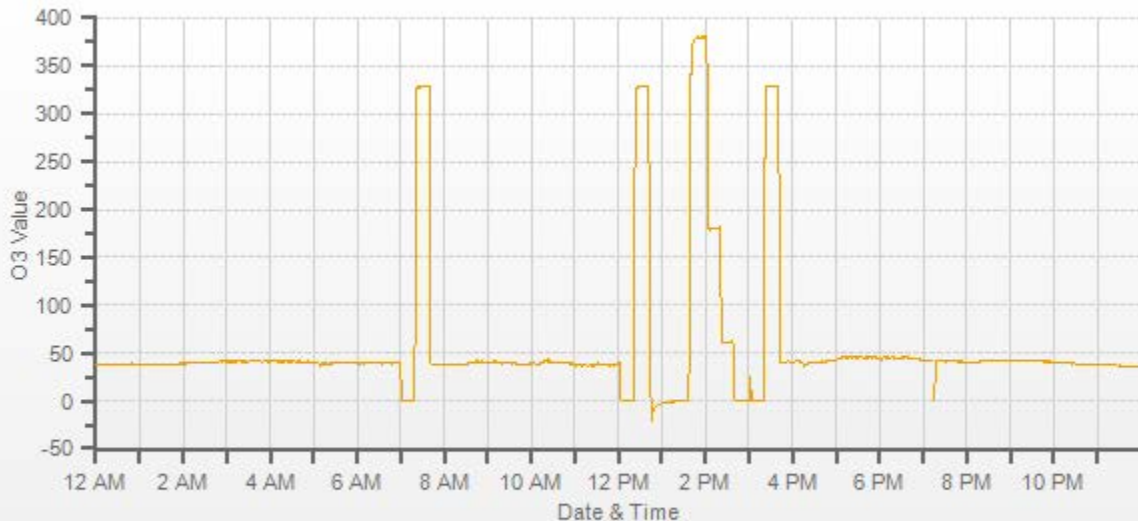
Correlation Coefficient =	1.000	LIMITS	> or = 0.995
Slope =	1.000		.95-1.05
b (Intercept as % of full scale) =	0.00%		± 3% F.S.
% change in C.F. from last cal =	0.00%		± 10%



As found:	As left:
O3 Bkg: -0.9	O3 Bkg: -0.9
O3 Coef: 0.976	O3 Coef: 0.976
Photo Lamp: 9.4	Photo Lamp: 9.4
O3 Lamp: 7.8	O3 Lamp: 7.8
Bench: 27.6	Bench: 27.3
Bench Lamp: 53.6	Bench Lamp: 53.6
O3 Lamp: 67.8	O3 Lamp: 67.8
Pressure: 671.4	Pressure: 671.7
Cell A lpm: 0.722	Cell A lpm: 0.722
Cell B lpm: 0.718	Cell B lpm: 0.718
O3 ppb: -2.2	O3 ppb: 0.0
Cell A ppb: -2.2	Cell A ppb: 4.0
Cell B ppb: -2.3	Cell B ppb: -3.9
Cell A int: 54775	Cell A int: 54768
Cell B int: 68225	Cell B int: 68220
Internal Span: 334.4	Internal Span: 328.5

Comments:

Sample filter changed. No ZERO adjustment made. No High Point adjustment made.



— O3[ppb]

PARTICULATE MATTER



R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date: April 11, 2016
 Company: LICA
 Station Name/Location: St. Lina
 Previous Audit Date: March 24, 2016
 Parameter: PM 2.5

Performed By/Reviewer: Alex Yakupov | Trina Whatsitt
 Start Time (mst): 13:50
 End Time (mst): 15:07
 Calibration Purpose: Bi-monthly #1
 Weather Conditions: Mainly clear

1400A Information and Status:

Serial Number: 1405A208301003 As Found Filter Loading %: 32.16
 Ko Factor: 13125.0 As Left Filter Loading %: 21.42
 Ambient Temperature °C: 9.11 As Found Noise: 0.007
 Ambient Pressure atm: 0.916 As Left Noise: 0.000
 Main Flow Reading lpm: 3.00 Pump Vacuum: 0.27
 Aux Flow Reading lpm: 13.67 Warnings: None

Reference Standards:

	Flow:	Pressure:	Temperature:
Make:	<u>Dwyer</u>	<u>Fisher</u>	<u>Fisher</u>
Model:	<u>475 Mark III</u>	<u>FB 1291</u>	<u>FB 1291</u>
Serial Number:	<u>#2</u>	<u>130168457</u>	<u>130168457</u>
Calibration Date:	<u>January 15, 2016</u>	<u>February 17, 2016</u>	<u>February 17, 2016</u>

As found leak check:

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	0.00	-0.18	0.00	-0.18
	limit	0.15	0.15	0.15	0.15
Bypass Flow	actual	0.00	-1.66	0.00	-1.66
	limit	0.60	0.60	0.60	0.60

As left leak check (same as above if as found passes):

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	0.00	-0.18	0.00	-0.18
	limit	0.15	0.15	0.15	0.15
Bypass Flow	actual	0.00	-1.66	0.00	-1.66
	limit	0.60	0.60	0.60	0.60

As found temperature and pressure:

tolerance +/- 2.0°C	tolerance +/- 0.01 atm
1405F temperature °C: <u>9.1</u>	1405F pressure atm: <u>0.916</u>
reference temperature °C: <u>9.6</u>	reference pressure: <u>0.917</u>
difference °C: <u>0.5</u>	difference : <u>-0.001</u>

As left temperature and pressure (same as above if as found adequate):

tolerance +/- 2.0°C	tolerance +/- 0.01 atm
1405F temperature °C: <u>9.6</u>	1405F pressure atm: <u>0.917</u>
reference temperature °C: <u>9.6</u>	reference pressure: <u>0.917</u>
difference °C: <u>0.0</u>	difference : <u>0.000</u>

As found flows:

main flow tolerance 3.00 lpm +/- 0.20 lpm	total/aux flow tolerance 16.67/13.67 lpm +/- 1.00 lpm +/- 7%
1405F main flow lpm: <u>3.00</u>	1400A total/aux flow lpm: <u>16.67</u>
reference main flow lpm: <u>3.12</u>	reference total/aux flow lpm: <u>17.60</u>
difference lpm: <u>0.12</u>	difference lpm: <u>0.93</u>

As left flows (same as above if as found adequate):

main flow tolerance 3.00 lpm +/- 0.20 lpm	total/aux flow tolerance 16.67/13.67 lpm +/- 1.00 lpm +/- 7%
1405F main flow lpm: <u>3.00</u>	1400A total/aux flow lpm: <u>13.67</u>
reference main flow lpm: <u>3.00</u>	reference total/aux flow lpm: <u>13.74</u>
difference lpm: <u>0.00</u>	difference lpm: <u>0.07</u>

K_o Audit:

Last K_o audit date: February 12, 2016
 1405F K_o factor: 13125.0
 Measured K_o factor: 13177.1000
 % difference: 0.40

Comments:

47 mm FDMS filter changed and TEOM sampling filter changed. Flows were calibrated.



R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date: April 29, 2016
 Company: LICA
 Station Name/Location: St. Lina
 Previous Audit Date: April 11, 2016
 Parameter: PM 2.5

Performed By/Reviewer: Alex Yakupov | Trina Whitsitt
 Start Time (mst): 19:35
 End Time (mst): 20:00
 Calibration Purpose: Bi-monthly #2
 Weather Conditions: Mix of sun and clouds

1400A Information and Status:

Serial Number: 1405A208301003 As Found Filter Loading %: 32.88
 Ko Factor: 13125.0 As Left Filter Loading %: 33.02
 Ambient Temperature °C: 14.40 As Found Noise: 0.004
 Ambient Pressure atm: 0.923 As Left Noise: 0.000
 Main Flow Reading lpm: 3.00 Pump Vacuum: 0.27
 Aux Flow Reading lpm: 13.67 Warnings: None

Reference Standards:

	Flow:	Pressure:	Temperature:
Make:	<u>Dwyer</u>	<u>Fisher</u>	<u>Fisher</u>
Model:	<u>475 Mark III</u>	<u>FB 1291</u>	<u>FB 1291</u>
Serial Number:	<u>#2</u>	<u>130168457</u>	<u>130168457</u>
Calibration Date:	<u>January 15, 2016</u>	<u>February 17, 2016</u>	<u>February 17, 2016</u>

As found leak check:

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	0.00	-0.18	0.00	-0.18
	limit	0.15	0.15	0.15	0.15
Bypass Flow	actual	0.00	-1.66	0.00	-1.66
	limit	0.60	0.60	0.60	0.60

As left leak check (same as above if as found passes):

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	0.00	-0.18	0.00	-0.18
	limit	0.15	0.15	0.15	0.15
Bypass Flow	actual	0.00	-1.66	0.00	-1.66
	limit	0.60	0.60	0.60	0.60

As found temperature and pressure:

tolerance +/- 2.0°C	tolerance +/- 0.01 atm
1405F temperature °C: <u>14.4</u>	1405F pressure atm: <u>0.923</u>
reference temperature °C: <u>14.0</u>	reference pressure: <u>0.922</u>
difference °C: <u>-0.4</u>	difference : <u>0.001</u>

As left temperature and pressure (same as above if as found adequate):

tolerance +/- 2.0°C	tolerance +/- 0.01 atm
1405F temperature °C: <u>14.0</u>	1405F pressure atm: <u>0.922</u>
reference temperature °C: <u>14.0</u>	reference pressure: <u>0.922</u>
difference °C: <u>0.0</u>	difference : <u>0.000</u>

As found flows:

main flow tolerance 3.00 lpm +/- 0.20 lpm	total/aux flow tolerance 16.67/13.67 lpm +/- 1.00 lpm +/- 7%
1405F main flow lpm: <u>3.00</u>	1400A total/aux flow lpm: <u>16.67</u>
reference main flow lpm: <u>3.03</u>	reference total/aux flow lpm: <u>16.74</u>
difference lpm: <u>0.03</u>	difference lpm: <u>0.07</u>

As left flows (same as above if as found adequate):

main flow tolerance 3.00 lpm +/- 0.20 lpm	total/aux flow tolerance 16.67/13.67 lpm +/- 1.00 lpm +/- 7%
1405F main flow lpm: <u>3.00</u>	1400A total/aux flow lpm: <u>16.67</u>
reference main flow lpm: <u>3.03</u>	reference total/aux flow lpm: <u>16.74</u>
difference lpm: <u>0.03</u>	difference lpm: <u>0.07</u>

K_o Audit:

Last K_o audit date: February 12, 2016
 1405F K_o factor: 13125.0
 Measured K_o factor: 13177.1000
 % difference: 0.40

Comments:

47 mm FDMS filter changed.

WIND SYSTEM

Met One Instruments

3206 Main St., Suite 106
Regional Service Center
Rowlett, TX. 75088

Wind Tunnel Calibration Data Sheet

50.5-6100

NIST Cup Model No. 170.41

Serial No. 3309

NIST Sensor Model No. 50.1B

Serial No. 1263

Average wind speed this test in mps 11.19

WD Setting Degrees	WD Output Volts	WD Reading Degrees	WD Error +/- 3 Deg	WS Standard mps	WS Output Volts	WS Reading mps	WS Error +/- 0.24 MPS
30.0	0.082	29.6	-0.4	11.21	0.224	11.19	-0.02
60.0	0.164	59.0	-1.0	11.17	0.227	11.33	0.16
120.0	0.331	119.1	-0.9	11.08	0.221	11.06	-0.02
150.0	0.420	151.3	1.3	11.29	0.222	11.11	-0.18
210.0	0.582	209.4	-0.6	11.25	0.223	11.16	-0.09
240.0	0.665	239.4	-0.6	11.18	0.226	11.32	0.14
300.0	0.835	300.5	0.5	11.16	0.224	11.18	0.02
330.0	0.917	330.0	0.0	11.18	0.223	11.15	-0.03

Average wind speed this test in mps 2.21

WD Setting Degrees	WD Output Volts	WD Reading Degrees	WD Error +/- 3 Deg	WS Standard mps	WS Output Volts	WS Reading mps	WS Error +/- 0.20 MPS
30.0	0.081	29.3	-0.7	2.18	0.042	2.08	-0.10
60.0	0.163	58.5	-1.5	2.20	0.043	2.14	-0.06
120.0	0.332	119.6	-0.4	2.21	0.042	2.08	-0.13
150.0	0.417	150.3	0.3	2.22	0.042	2.07	-0.15
210.0	0.584	210.1	0.1	2.20	0.042	2.12	-0.08
240.0	0.666	239.8	-0.2	2.23	0.042	2.10	-0.13
300.0	0.835	300.6	0.6	2.22	0.043	2.18	-0.04
330.0	0.917	330.0	0.0	2.21	0.043	2.17	-0.04

Instrument Test Condition As Found As Left

Sensor Model No.: 50.5H

Sensor Serial No.: H12635

Sensor Output Swing: 0V - 1.0V

Sensor Output Range 0 - 50 MPS

Customer: Maxxam Analytics

Sales Order No.: 104703

Tested per PO: 35-56587

Calibration Date: 08/28/2014

Calibrated by: David Frith *DF*

QC Inspection

Dylan Dawson

CALIBRATORS



Calibrator Performance Audit

OZONE

File No. 2015-163

Company: Maxxam

Operator: Chris Wesson

Calibrator:
 Make/Model Sabio 2010D
 Serial Number 11900613
 Oven Temperature 49.8
 Last Verification Date May 21, 2015

Flow Measurement Device:
 Make/Model NA
 Serial Number NA
 Temperature (°C) 24
 Barometric Pressure 700 mmHg

Flow Measurements
 Pt. No. 1 5000 Pt. No. 2 5000 Pt. No. 3 5000

Calibrator Flow (scm)	Calculated Concentration (ppm)	Indicated Concentration (ppm)	% Difference	
			vs Audit Gas	% Diff. Limit
4999	0.000	-0.001		
5000	0.381	0.385	1%	± 10%
5000	0.180	0.182	2%	± 10%
5000	0.090	0.091	2%	± 10%
Absolute Average Percent Difference			2%	± 10%

LINEAR REGRESSION ANALYSIS
 $y=mx+b$ (where x=calculated concentration, y=indicated concentration)

<u>O₃</u>		<u>LIMITS</u>
Correlation=	1.0000	≥ 0.995
m (Slope)=	1.0119	0.90-1.10
b (Intercept % of FS)=	-0.0724	± 3% F.S.

AENV Standards		Ozone Analyzer	
Audit Calibrator		Make/Model	<u>Thermo 49i</u>
Make/Model	<u>Thermo 49i PS</u>	Serial/AMU Number	<u>1843</u>
Serial/AMU Number	<u>1808</u>	Last Calibration Date	<u>March 30, 2016</u>
Ozone Standard	<u>Thermo 49i PS 1808</u>	Full Scale (ppm)	<u>0.5</u>

COMMENTS: _____

Auditor: Shea Beaton
 Operator Signature: _____

Date: March 30, 2016
 Location: McIntyre Center Edmonton



Calibrator Performance Audit

Sulphur Dioxide (by Cylinder Dilution)

File No. 2016-093A

Company: Maxxam

Operator: Christopher Wesson

Calibrator:	Flow Measurement Device:
Make/Model <u>API 700</u>	Make/Model <u>N/A</u>
Serial Number <u>830</u>	Serial Number <u>N/A</u>
Last Verification Date <u>December 2014</u>	Temperature (°C) <u>N/A</u>
SO ₂ Cylinder Conc. <u>50.3</u>	Barometric Pressure <u>N/A</u>
SO ₂ Cylinder S/N <u>LL42475</u>	

Flow Measurements

Pt. No. 1 77.5 **Pt. No. 2** 37.8 **Pt. No. 3** 18.9

Calibrator Flow (scm)	Calculated Concentration (ppm)	Indicated Concentration (ppm)	% Difference	
			vs Audit Gas	% Diff. Limit
Zero Air	0.000	0.000		
4998	0.780	0.746	-4%	± 10%
5002	0.380	0.365	-4%	± 10%
4997	0.190	0.182	-4%	± 10%
Absolute Average Percent Difference			4%	± 10%

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

<u>SO₂</u>		<u>LIMITS</u>
Correlation=	1.0000	≥ 0.995
m (Slope)=	0.9565	0.90-1.10
b (Intercept % of FS)=	0.0436	± 3% F.S.

AENV Standards	SO ₂ Analyzer
Audit Calibrator	Make/Model <u>Teco 43C</u>
Make/Model <u>R&R MFC 201</u>	Serial/AMU Number <u>AMU 1623</u>
Serial/AMU Number <u>AMU 1690</u>	Last Calibration Date <u>January 19, 2016</u>
	Full Scale (ppm) <u>1.0</u>

COMMENTS: Gas was check for accuracy - 1% low from stated cylinder gas concentration.
Flows are not measured at each pt - AMD not being followed as per section 5.0.
Checked SO2 high pt using a Sabio 2010 - found a significantly higher response.
Both MFC's need to be re-calibrated.

Auditor: Al Clark Date: January 19, 2016
 Operator Signature: *Christopher Wesson* Location: McIntyre Center Edmonton

CALIBRATION GASES



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2015-116CGA

Company: Maxxam **Operator's Name:** Chris Wesson
Cylinder #: LL119346 **Concentration PPM:** 50.0 **Tolerance(%):** 2 **Certified By:** Air Liquide

Reference Calibrator and Gas: Make/Model: <u>Thermo146i</u> Serial Number: <u>1809</u> Last Verification Date: <u>February 2, 2016</u> Gas Type: <u>SO2</u> Conc. <u>98.07</u> Cylinder Number: <u>CAL016625</u>	Flow Measurement Device: Make/Model: <u>Bios DC-2</u> Serial Number: <u>Bios D</u> Temp. °C: <u>24.5</u> B.P. <u>702mmHg</u>
--	---

Reference Analyzer:
 Make/Model: Thermo 43C Serial/AMU Number: 1623
 Instrument Settings: Zero: 8.7 Span: 1.027 Range: 1.0
 Last Calibration: Date: 1-Feb-16 C.F. 1.000 Done By: SB

Calibrator Flows (sccm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
4952	0.0	0.000	0.01608	62.183	49.3
4946	79.54	0.793	0.01608	62.183	49.3
4941	39.35	0.396	0.00796	125.565	49.7
4940	19.57	0.195	0.00396	252.427	49.2
Average Cylinder Concentration:					49.4

Previous Stated Concentration PPM: 50.0
 Percent variance from Stated: 1.2

Meets Manufacturer Tolerance. Use manufacturers stated concentration **COMMENTS:** SO2/NO blend 50.0ppm NO
 <=5% Outside Manufacturer Tolerance. Use manufacturers concentration
 > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Shea Beaton
 Operator Signature: *[Signature]*

Date: February 2, 2016
 Location: McIntyre Center Edmonton



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2014-251CGA

Company: Maxxam Operator's Name: Limin Li
 Cylinder #: LL36837 Concentration PPM: 10.0 Tolerance(%): 2 Certified By: Air Liquide

Reference Calibrator and Gas:	Flow Measurement Device:
Make/Model: <u>R&R MFC 201</u>	Make/Model: <u>Bios DC2</u>
Serial Number: <u>AMU 1690</u>	Serial Number: <u>AMU 1659</u>
Last Verification Date: <u>December 15, 2014</u>	Temp. °C: <u>23.0 C</u>
Gas Type: <u>H2S</u> Conc. <u>20.43</u>	B.P. <u>702 mmhg</u>
Cylinder Number: <u>CAL015106</u>	

Reference Analyzer:
 Make/Model: Teco 45C Serial/AMU Number: 1624
 Instrument Settings: Zero: 6.4 Span: 1.160 Range: 0.1
 Last Calibration: Date: Dec15/14 C.F. 1.000 Done By: Al Clark

Calibrator Flows (scem)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.0000	0.0000	0.0000	0.0000
5099	38.5	0.0754	0.00755	132.442	10.0
5092	18.0	0.0349	0.00353	282.889	9.9
5066	9.2	0.0178	0.00182	550.652	9.8
Average Cylinder Concentration:					9.9

Previous Stated Concentration PPM: 10.0

Percent variance from Stated: 1.1

Meets Manufacturer Tolerance. Use manufacturers stated concentration COMMENTS: _____
 < =5% Outside Manufacturer Tolerance. Use manufacturers concentration _____
 > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder _____

Auditor: Al Clark
 Operator Signature: *Al Clark*

Date: December 16, 2014
 Location: McIntyre Center Edmonton



Calibration Gas Audit

CH4 / C3H8 Cylinder Gas

File No. 2015-092CGA

Company: Maxxam Operators name: Chris Wesson
Cylinder #: LL165372 Conc CH4 (PPM) 606/212 Tolerance (%) 0.5 Certified By: Praxair

Reference Calibrator and Gas:

Make/Model R&R MFC 201
Serial Number AMU 1698
Last Verification Date January 18, 2016
Gas Type CH4 Conc. 999.2
Cylinder Number D751932
Gas Type C3H8 Conc. 246.5
Cylinder Number XF0037998

Flow Measurement Device:

Make/Model Bios DC-2
Serial Number Blos D
Temp. °C 24.5
B.P. 688mmHg

Reference Analyzer:

Make/Model Thermo 55C Serial/AMU Number: 1643
Instrument Settings Zero: NA Span: NA Range: 20.0
Last Calibration: Date: 18-Jan-16 C.F. 1.000 Done By: SB

Calibrator Flows (scem)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	CH4	C3H8			CH4	C3H8
2568	0.00	0.00	0.00	0.02140	46.722	607	214
2630	56.29	12.99	12.62	0.02140	46.722	607	214
2588	19.73	4.62	4.50	0.00762	131.171	606	215
2580	9.69	2.29	2.24	0.00376	266.254	610	217
Average Cylinder Concentration:						608	215

CH4	C3H8
Previous Stated Concentration PPM: <u>606</u>	<u>212</u>
Percent variance from Stated: <u>0.3</u>	<u>1.6</u>

Cylinder gas tolerances based on CH4 only

Meets Manufacturer Tolerance. Use manufacturers stated concentration COMMENTS: _____
 <=5% Outside Manufacturer Tolerance. Use manufacturers concentration C3H8 manufacturers tolerance 1.1%
 > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Shea Beaton
Operator Signature: _____

Date: January 19, 2016
Location: McIntyre Center Edmonton



Calibration Gas Audit

NO Cylinder Gas

File No. 2015-115CGA

Company: Maxxam **Operators name:** Chris Wesson
Cylinder #: LL119346 **Conc (PPM)** 50.0/50.0 **Tolerance (%)** 2 **Certified By:** Air Liquide

Reference Calibrator and Gas:				Flow Measurement Device:	
Make/Model	<u>Thermo 146i</u>			Make/Model	<u>Bios DC-2</u>
Serial Number	<u>AMU 1809</u>			Serial Number	<u>Bios D</u>
Last Verification Date	<u>February 2, 2016</u>			Temp. °C	<u>24.5</u>
Gas Type	<u>NO</u>	Conc.	<u>48.79</u>	B.P.	<u>702mmHg</u>
Cylinder Number	<u>CAL018024</u>				

Reference Analyzer:
Make/Model Thermo 42i **Serial/AMU Number:** 1868
Instrument Settings **Zero:** 4.2 **Span:** 1.014 **Range:** 1.0
Last Calibration: **Date:** 02-Feb-16 **C.F.** 1.000 **Done By:** SB

Calibrator Flows (sccm)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	NO	NOX			NO	NOX
4952	0.0	0.000	0.000	0.01608	62.183	50.3	50.3
4946	79.54	0.809	0.809	0.01608	62.183	50.3	50.3
4941	39.35	0.403	0.402	0.00796	125.565	50.6	50.5
4940	19.57	0.200	0.200	0.00396	252.427	50.5	50.5
Average Cylinder Concentration:						50.5	50.4

	<u>NO</u>	<u>NOx</u>
Previous Stated Concentration PPM:	<u>50.0</u>	<u>50.0</u>
Percent variance from Stated:	<u>0.9</u>	<u>0.8</u>

Cylinder gas tolerances based on NO only

- Meets Manufacturer Tolerance. Use manufacturers stated concentration **COMMENTS: SO2/NO Blend 50.0PPM SO2**
- < =5% Outside Manufacturer Tolerance. Use manufacturers concentration
- > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Shea Beaton **Date:** February 2, 2016
Operator Signature: [Signature] **Location:** McIntyre Center Edmonton

APPENDIX III
EXTERNAL AUDIT RESULTS

STATION AUDIT

File No. 2016 022A/026A & 043A

Date: 25-Apr-16

Performed by: Shea Beaton

Station

Name: St. Lina

Location: St. Lina

Facility/Zone: Lica

Operator: Maxxam

Temp: 20.5

Barometric Press: 701mmHg

Location

Latitude N 54° 12' 59"

Longitude W 111° 30' 10"

Elevation 690m

Status of Site Documentation Need Update

Status of Network Documentation Satisfies AMD SS 4-C

Status of QAP Reviewd within last 3 yrs

Manifold Material Glass

Manifold Condition Good

Meteorological

	Observed	Audit Value
Wind Speed Direction	<u>192° 6kph</u>	<u>South 5-10 KPH</u>
Station Temperature	<u>23.2 C</u>	<u>21.6 C</u>
Relative Humidity	<u>78%</u>	<u>83%</u>
Ambient Temperature	<u>4.0C</u>	<u>3.7C</u>
Pressure	<u>930.0mBar = 698.2mmHg</u>	<u>701mmHg</u>
Precipitation	<u>1.0mm</u>	<u>10 tips = 1.0 mm</u>

Remarks:

- The station temperature sensor was found to be 1.8 C higher than the audit standard
- HVAC system pre-filter was quite dirty, recommend service to HVAC system



Station Performance Audit Summary

Company: Lica Facility Name: NA
 Approval No.: NA Site Name: St. Lina
 Region: North Saskatchewan District: Lica
 Parameters audited:

H ₂ S	X	SO ₂	X	NO _x	X	NH ₃		O ₃	X
CO		CH ₄		NonCH ₄		THC	X	TRS	
PM _{2.5}	X	PM ₁₀		TSP		BTEX		Wind Speed	X
Wind Dir	X	Amb. Temp	X	Stn. Temp	X	RH	X	Solar Radiation	
Rainfall		Precip	X	VWS		BP	X		
All parameters monitored as per approval: Yes <u> </u> No <u> </u> N/A <u> X </u>									

GENERAL

	YES	NO	N/A
Has the location remained unchanged from previous audit?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is site secure?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are station operating conditions adequate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

DATA ACQUISITION

Are strip charts in use?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is a telemetry system for data acquisition in use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SYSTEM COMPONENTS

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

WIND EQUIPMENT

Is wind sensor properly oriented?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does wind equipment appear to be functioning properly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Date of last calibration.	Date:	<u> August 28, 2016 </u>	<input type="checkbox"/>

COMMENTS:

AUDITOR: Shea Beaton DATE: April 25, 2016



Station Site Documents Audit Checklist

Station	
Name: <u> St. Lina </u>	Location: <u> St. Lina </u>
Facility/Zone: <u> Lica </u>	Operator: <u> Maxxam </u>

<p>Required Elements of AMD Chapter 3 SS 4-B Do the Site Documents Contain the Following:</p> <p>(a) Name of Owner/ Approval Holder</p> <p>(b) Name of Operating Agency</p> <p>(c) Contact Information</p> <p>(d) Date the Site or Station was Established</p> <p>(e) Date the information was last updated</p> <p>(f) Location including Latitude and Longitude</p> <p>(g) Four Colour Photos Looking N, E, S, W From Manifold Inlet</p> <p>(h) Additional Photos/Sketches of AMD Standard Site Non-Conformance</p> <p>(i) List of Instruments Located at the Site</p> <p>(j) Site Description Including the following:</p> <p style="padding-left: 20px;">(i) Land Use By Sector</p> <p style="padding-left: 20px;">(ii) Site Elevation</p> <p style="padding-left: 20px;">(iii) Greatest Angle of Elevation & Direction to Nearby Buildings</p> <p style="padding-left: 20px;">(iv) Average Building height in the area</p> <p style="padding-left: 20px;">(v) Distance to Nearest Trees</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Meets AMD</th> <th rowspan="2">NA</th> <th colspan="2">Current</th> </tr> <tr> <th>YES</th> <th>NO</th> <th>YES</th> <th>NO</th> </tr> </thead> <tbody> <tr><td>X</td><td></td><td></td><td>X</td><td></td></tr> <tr><td>X</td><td></td><td></td><td>X</td><td></td></tr> <tr><td></td><td>X</td><td></td><td></td><td></td></tr> <tr><td>X</td><td></td><td></td><td>X</td><td></td></tr> <tr><td>X</td><td></td><td></td><td>X</td><td></td></tr> <tr><td>X</td><td></td><td></td><td>X</td><td></td></tr> <tr><td></td><td></td><td>X</td><td></td><td></td></tr> <tr><td>X</td><td></td><td></td><td>X</td><td></td></tr> <tr style="background-color: #cccccc;"><td colspan="5"></td></tr> <tr><td>X</td><td></td><td></td><td>X</td><td></td></tr> <tr><td></td><td>X</td><td></td><td></td><td></td></tr> <tr><td>X</td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td>X</td><td></td><td></td></tr> <tr><td>X</td><td></td><td></td><td>X</td><td></td></tr> </tbody> </table>	Meets AMD		NA	Current		YES	NO	YES	NO	X			X		X			X			X				X			X		X			X		X			X				X			X			X							X			X			X				X							X			X			X	
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<p>Required Elements of AMD Chapter 3 SS 4-D Do the Station Site Documents Contain the Following:</p> <p>(a) Recent Area Map Covering Approximately 1Km²</p> <p>(b) Plan View Sketch</p> <p>(c) Cross-Sectional Sketch of Area Within 500 m Radius</p> <p>(d) Colour Photos Showing Sample Manifold/Inlet</p> <p>(e) Colour Photo of the Station</p> <p>(f) Additional Photos/Sketches of AMD Standard Station Non-Conformance</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Meets AMD</th> <th rowspan="2">NA</th> <th colspan="2">Current</th> </tr> <tr> <th>YES</th> <th>NO</th> <th>YES</th> <th>NO</th> </tr> </thead> <tbody> <tr><td></td><td>X</td><td></td><td></td><td></td></tr> <tr><td>X</td><td></td><td></td><td>X</td><td></td></tr> <tr><td></td><td>X</td><td></td><td></td><td></td></tr> <tr><td>X</td><td></td><td></td><td>X</td><td></td></tr> <tr><td>X</td><td></td><td></td><td>X</td><td></td></tr> <tr><td></td><td></td><td>X</td><td></td><td></td></tr> </tbody> </table>	Meets AMD		NA	Current		YES	NO	YES	NO		X				X			X			X				X			X		X			X				X		
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COMMENTS: Site Documents require updating to AMD Chapter 3 Standards (SS 4-B, SS4-D)
- Missing contact info, site elevation 1Km2 area map and cross-sectional sketch

AUDITOR: Shea Beaton DATE: April 25, 2016



SO₂ ANALYZER AUDIT

File No. 2016-024A

Date: April 25, 2016

Performed by: Shea Beaton

Station

Name: St. Lina

Location: St. Lina

Facility/Zone: Lica

Operator: Maxxam

Temp. 20.5

Barometric Press. 701 mmHg

Monitor

Make/Model: TAPI 100E Serial No: 468

Inlet flow (sccm): 574 Full Scale Range ppm: 1

Last cal. Date: 13-Apr-16 Old Correction Factor: 1.000

Zero/Bkg 101.1

Span Coef 1.011

Calibrator

Calibration Method: GAS DILUTION

Make/Model: R&R MFC 201

AMU #: 1698

Cylinder #: CAL9745

SO₂ Concentration PPM: 51.0

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
3517	0.00	3517	0.0000	-0.0010		
3550	56.60	3607	0.8003	0.8067	1%	± 10%
3545	27.79	3573	0.3967	0.4003	1%	± 10%
3539	12.33	3551	0.1771	0.1778	1%	± 10%
Absolute Average Percent Difference					1%	

Linear Regression Analysis:

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

Correlation Coeff.= 1.0000

m (Slope)= 1.0094

b (Intercept as % of full scale)= -0.0781

LIMITS

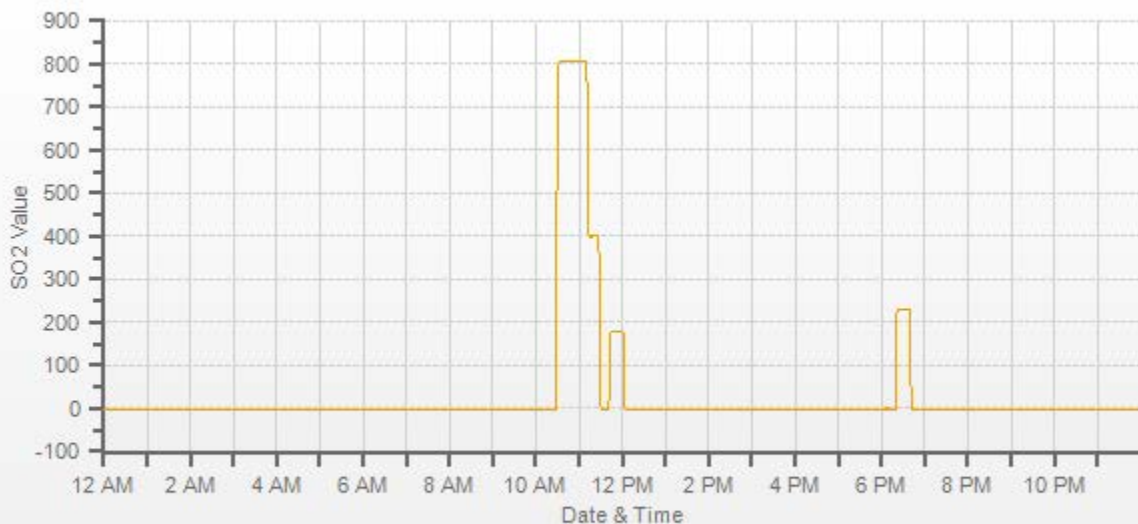
≥ **0.995**

0.90-1.10

± **3% F.S.**

Remarks:





— SO2[ppb]

H₂S ANALYZER AUDIT

File No. 2016 - 023A

Date: April 25, 2016

Performed by: Shea Beaton

Station

Name: St. Lina

Location: St. Lina

Facility/Zone: Lica

Operator: Maxxam

Temp. 20.5

Barometric Press. 701 mmHg

Monitor

Make/Model: TAPI 101E Serial No: 509

Inlet flow (sccm): 518 Full Scale Range ppm: 0.1

Last cal. Date: 13-Apr-16 Old Correction Factor: 0.999

Zero/Bkg 36.2

Span Coef 1.118

Calibrator

Calibration Method: GAS DILUTION

Make/Model: R&R MFC 201

AMU #: 1698

Cylinder #: CAL013624

H₂S Concentration PPM: 10.7

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
3517	0.0	3517	0.0000	-0.0001		
3581	25.9	3607	0.0769	0.0817	6%	± 10%
3559	13.7	3573	0.0410	0.0436	7%	± 10%
3544	6.9	3551	0.0206	0.0219	7%	± 10%
Absolute Average Percent Difference					7%	

Linear Regression Analysis:

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

Correlation Coeff.= 1.0000

m (Slope)= 1.0639

b (Intercept as % of full scale)= -0.0622

LIMITS

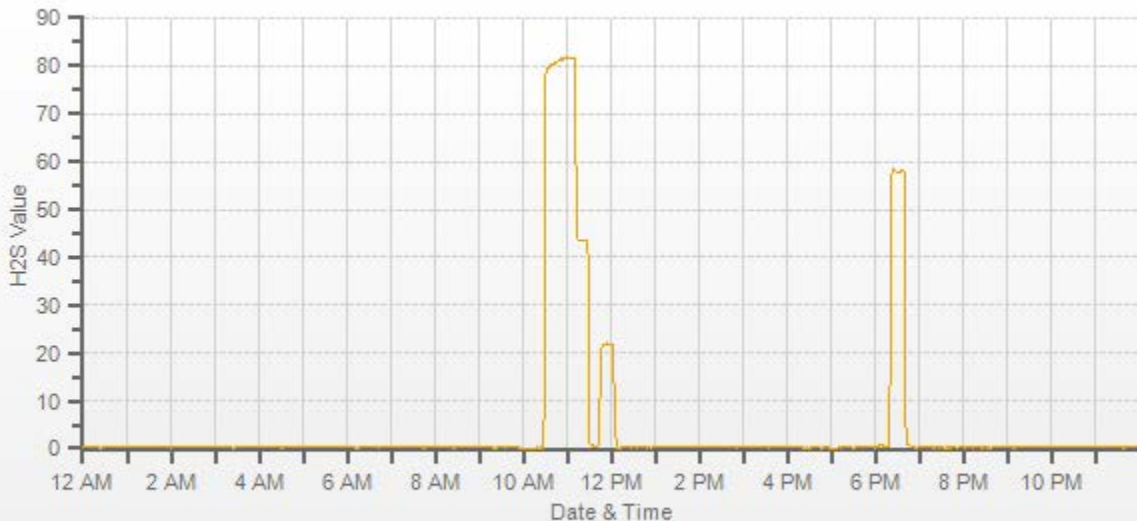
≥ **0.995**

0.90-1.10

± **3% F.S.**

Remarks:





— H2S[ppb]

HC ANALYZER AUDIT

File No. 2016 - 025A

Date: April 25, 2016

Performed by: Shea Beaton

Station

Name: St. Lina

Location: St. Lina

Facility/Zone: Lica

Operator: Maxxam

Temp. 20.5

Barometric Press. 701mmHg

Monitor

Make/Model: Thermo 51CLT Serial No: 51CLT-77021-384

Inlet flow (sccm): 6.90psi Full Scale Range ppm: 50

Last cal. Date: 12-Apr-16 Old Correction Factor: 1.001

Calibrator

Calibration Method: Gas Dilution

Make/Model: Sabio 2010

HC cylinder #: FF27932

AMU #: 1749

HC concentration ppm: 1050.0

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
2592	0.00	2592	0.00	0.00		
2969	89.06	3058	30.58	31.61	3%	± 10%
2966	49.19	3015	17.13	17.67	3%	± 10%
2981	24.21	3005	8.46	8.82	4%	± 10%
Absolute Average Percent Difference					4%	

Linear Regression Analysis:

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

Correlation Coeff.= 1.0000

m (Slope)= 1.0326

b (Intercept as % of full scale)= 0.0484

LIMITS

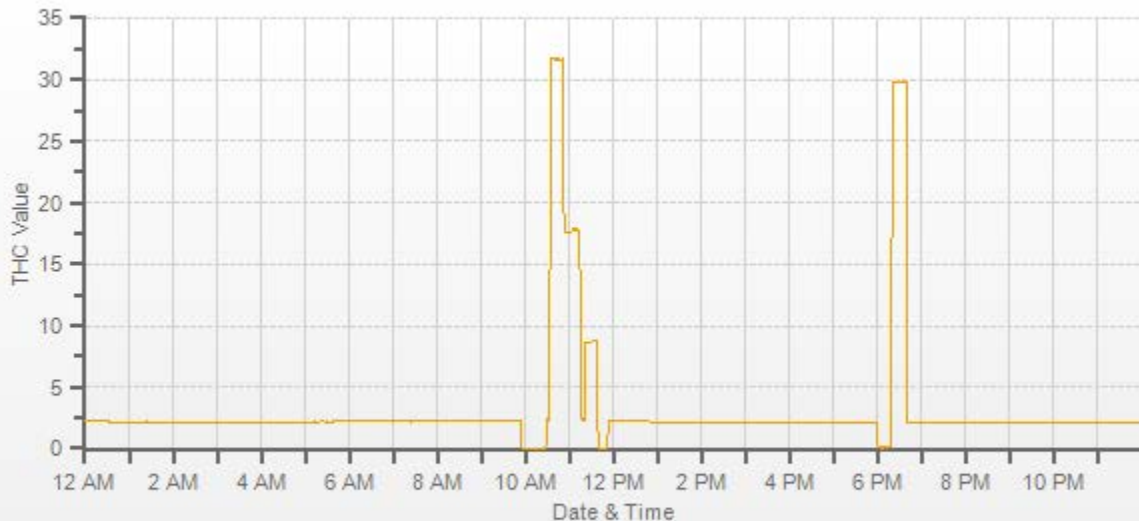
≥ **0.995**

0.90-1.10

± **3% F.S.**

Remarks:





— THC[ppm]

NO-NOx-NO2 Analyzer Audit

File No. 2016 - 022A

Date: April 25, 2016 Performed by: Shea Beaton

Station:

Name: St Lina Location: St Lina Operator: Maxxam
Facility/Zone: Lica Temp: 20.5 BP: 701mmHg

Monitor:

Make/Model: TAPI 200E Serial No. 594
Inlet flow (sccm): 455 Range ppm: 1.0
Last cal. Date: 12-Apr-16 Old CF: NO: 1.000
NOx: 1.010
NO2: 1.000

NO Bkg 0.700
NOx Bkg 0.900
NO Coef 0.992
NOx Coef 0.984
NO2 Coef 0.993

Calibration Method:

Gas Dilution / GPT

Calibrator: Make/Model: Sabio 2010 AMU# 1778
NO cylinder # FF2371 NO conc. ppm 51.0 NOx conc. ppm 51.3

Calibrator Flows			Calc. Conc.		Indicated Concentration		% Difference vs Audit Gas	
Air	Gas	Total	NO (ppm)	NOx (ppm)	NO (ppm)	NOx (ppm)	NO	NOx
4992	0.00	4992	0.0000	0.0000	0.0005	-0.0009	Limit ± 10%	
5007	81.46	5088	0.8165	0.8213	0.8226	0.8202	1%	0%
4990	40.45	5030	0.4101	0.4125	0.4149	0.4142	1%	1%
5013	20.48	5033	0.2075	0.2087	0.2097	0.2114	1%	2%
Absolute Average Percent Difference							1%	1%

Linear Regression Analysis:

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

	NO	NOx	NO ₂	LIMITS
Correlation Coeff.=	<u>1.0000</u>	<u>1.0000</u>	<u>1.0000</u>	≥ 0.995
m (Slope)=	<u>1.0069</u>	<u>0.9986</u>	<u>1.0007</u>	0.90-1.10
b (Intercept as % of full scale)=	<u>0.0895</u>	<u>0.1072</u>	<u>0.0156</u>	± 3% F.S.

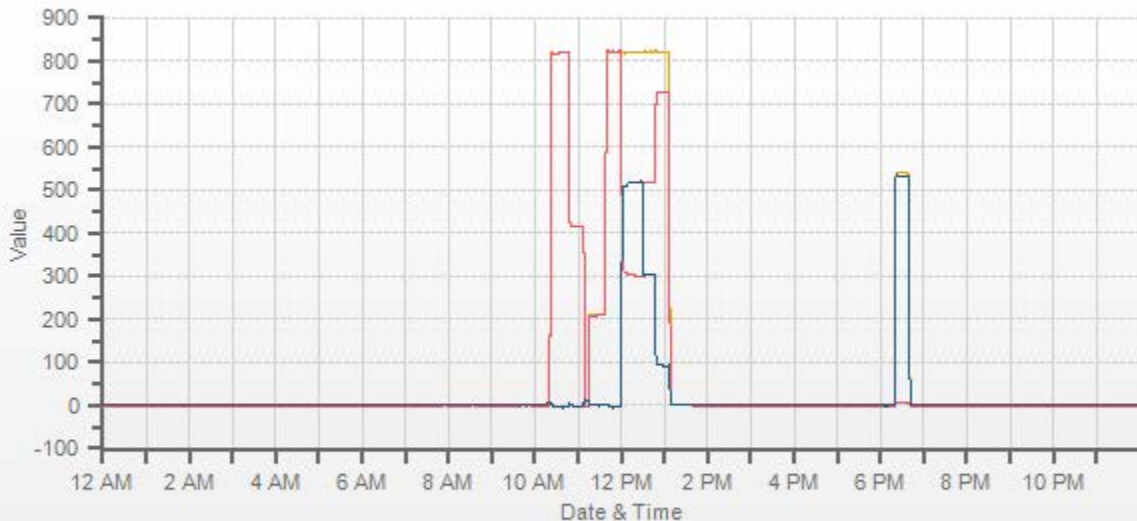
O ₃ Setting	Flow Rate	Indicated Conc. (ppm)			NO Decrease	NO ₂ Increase	% Difference vs Audit Gas	
		NO	NOx	NO ₂				
0.000	5088	0.8226	0.8218	-0.0021	0.8226	0.8218	0.8226	%Dif Limit
0.950	5088	0.3007	0.8221	0.5201	0.5219	0.5222	0%	± 10%
0.590	5088	0.5180	0.8226	0.3033	0.3046	0.3054	0%	± 10%
0.245	5088	0.7278	0.8216	0.0927	0.0948	0.0948	0%	± 10%
Absolute Average Percent Difference							0%	

Converter Efficiency

Average Converter Efficiency 100.1%

Remarks:





— NOX[ppb] — NO[ppb] — NO2[ppb]

O₃ ANALYZER AUDIT

File No. 2016 - 26A

Date: 25-Apr-16

Performed by: Shea Beaton

Station

Name: St. Lina

Location: St. Lina

Facility/Zone: Lica

Operator: Maxxam

Temp. 20.5

Barometric Press. 701mmHg

Monitor

Make/Model: Thermo 49i Serial No: 1002240371

Inlet flow (sccm): 728/724 Full Scale Range ppm: 0.5

Last cal. Date: 13-Apr-16 Old Correction Factor: 1.000

Zero/Bkg -0.9

Span Coeff. 0.976

Calibrator

Calibration Method: Generator / Photometer

Make/Model: Thermo 49iPS AMU #: 1808

NO cylinder #: NA NO concentration ppm: NA

Ozone Setting PPB/Current	Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Conc. (ppm)	% Difference	
	Air	Gas	Total			vs Audit Gas	Limits
0.000	NA		NA	0.000	0.001		
0.400	NA		NA	0.400	0.403	1%	± 10%
0.200	NA		NA	0.200	0.202	1%	± 10%
0.100	NA		NA	0.100	0.102	1%	± 10%
Absolute Average Percent Difference						1%	

Linear Regression Analysis:

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

Correlation Coeff.= 1.0000
m (Slope)= 0.9949
b (Intercept as % of full scale)= 0.2040

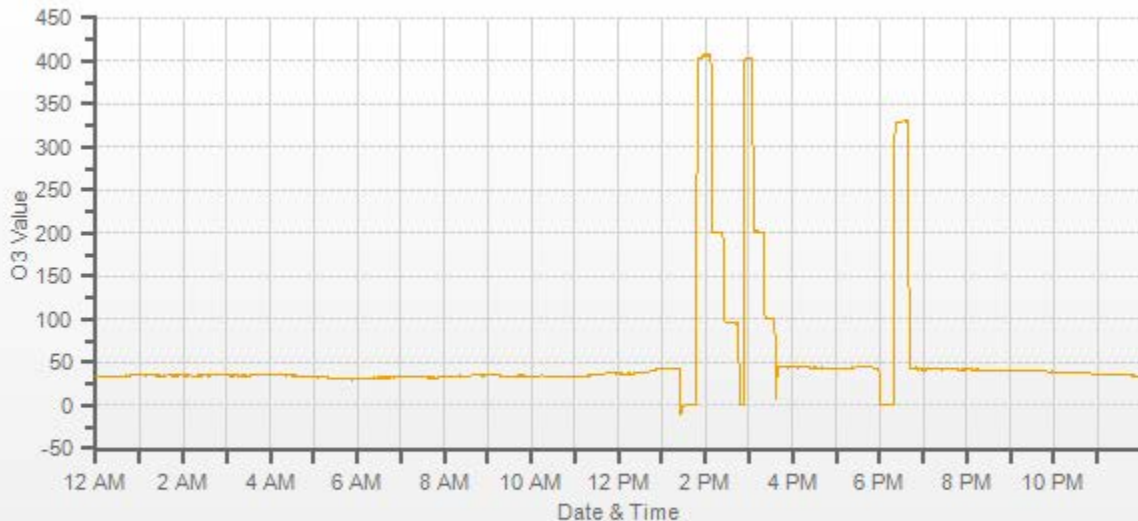
LIMITS

≥ **0.995**
0.90-1.10
± **3% F.S.**

Remarks:

- Initially when the audit of this analyzer was conducted there was a problem found with the audit standard; the Audit was repeated with AEMERA's Thermo 49iPS standard.





— O3[ppb]

TEOM AUDIT

Date: April 28, 2016 File #: 2016 - 043A
 Performed by: Shea Beaton

Station

Name: St. Lina Location: St. Lina
 Facility/Zone: Lica Operator: Maxxam
 Temperature: 24.2 Barometric Press. 704

Audit Transfer Standard

Make/Model: Delta Cal Cell s/n: 1002
 Serial Number: 1858

Sampler Set-up and Current Readings

Make/Model	<u>Thermo 1405F</u>	F-Main Set Pt (l/min)	<u>3.00</u>
Unit #	<u>NA</u>	F-Aux Set Pt (l/min)	<u>13.67</u>
Control unit s/n	<u>1405A208301003</u>	Filter Load (%)	<u>32.88</u>
Transducer s/n	<u>NA</u>	K _O Factor	<u>13125</u>
		Temp (°C)	<u>16.4</u>
		Press (ATM)	<u>0.926</u>

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

ATM = (mm Hg) X (1.316 X 10⁻³) or ATM = ("Hg) X (3.34207 X 10⁻²)

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

Zero Flow

Pump Off

F-Main (l/min) NA
 F-Aux (l/min) NA

Pump On (Time to reach set points)

(45-60 Sec) NA
 (45-60 Sec) NA

Temperature/Pressure

Measured Temp (± 2 °C) 15.6 Δ°C 0.80
 Measured Press (± 1.5% ATM) 0.926 Δ% ATM 0.00%

Flow Audit

Indicated Main/Aux Flow (l/min)	<u>3.00</u>	<u>13.68</u>	Δ% of Measured Flow from Set-point
			(± 2%) <u>0.0%</u> <u>0.1%</u>
Total Flow = Main + Aux (l/min)	<u>16.68</u>		(± 2%) <u>0.1%</u>

Δ of Measured Flow from Indicated

Measured Total Flow (l/min) 17.00 (± 1.00 l/min) 0.32
 Measured Main Flow (l/min) 3.00 (± 0.20 l/min.) 0.00

Leak Check

Main (< 0.15 l/min)	<u>Base</u>	Actual leakage = Pump On – Pump Off
Aux (< 0.65 l/min)	<u>Ref</u>	Main = 0.00 / Bypass = 0.00
		Main = 0.00 / Bypass = 0.00

K_O Factor

Measured 12835.9 Heads: PM 2.5 Dirty
 K_O % Difference (± 2.5%) 2.20%

Remarks:

- Unable to separate the PM 10 impactor to inspect, PM2.5 cyclone was dirty; inlets last cleaned **June 19, 2015**.
 - Flow control set to **Passive** Should be set to **ACTIVE**
 - Electrical tape observed on Teom inlet fittings - tape should be removed, if leaks are present leaking components should be replaced



***APPENDIX IV
REPORT CERTIFICATION FORM***

Report Certification Form

Alberta Airshed (if applicable)	EPA Approval or Code of Practice Registration # (if applicable)
YES	NA
Company Name (if applicable)	Industrial Operation Name (if applicable)
Lakeland Industry & Community Association	St. Lina Site
Name of the Representative of the Person Responsible (Last, First, Middle)	Position / Title of the Representative of the Person Responsible
Wunmi Adekanmbi	Project Manager Assistant, Customer Service, Air Services
Is an External Party Certifying the Report? (If 'Yes', fill in the fields below for the external person.)	
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Name of External Person Certifying the Report (Last, First, Middle)	Position / Title of External Person Certifying the Report
NA	NA
Company Name for the External Person Certifying the Report	Identification of Qualifications / Professional Designations of the External Person Certifying the Report
NA	NA

I certify that I have reviewed and verified the submitted report. I also certify that the report presented with this certification form is complete, accurate and representative of the monitoring results and timeframe.

Wunmi Adekanmbi

Signature of the Representative of the Person
Responsible / External Person Certifying the Report

26-May-2016




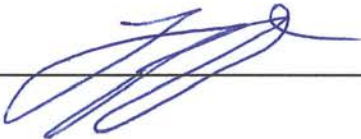
Report Issued Date (dd-mm-yyyy)

APPENDIX V
DATA VALIDATION CERTIFICATION FORM



Validation Certificate Form

Client: <u>Lakeland Industry & Community Association</u>	Project #: <u>2833-2016-04-31- C</u>
Site: <u>St. Lina Site</u>	Contact: <u>Mike Bisaga</u>

Level 0 Preliminary Verification	<u></u>	Date <u>17-May-16</u>
Level 1 Primary Validation	<u></u>	Date <u>17-May-16</u>
Level 2 Final Validation	<u></u>	Date <u>26-May-16</u>
Level 3 Independent Data Review	<u></u>	Date <u>27-May-16</u>
Post-Final Validation	<u>NA</u>	Date <u>NA</u>

Notes
The Post-Final Validation step serves to re-evaluate the data that errors or omissions are discovered and/or suspected after the initial submittal of data. This validation is performed on an annual basis.

AMBIENT AIR MONITORING MONTHLY DATA REPORT
LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
ELK POINT AIRPORT SITE

JOB #:2833-2016-04-35- C

April 2016

Prepared for:

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
BOX 8237, 5107W - 50 STREET
BONNYVILLE, ALBERTA
T9N 2J5

Attention: MIKE BISAGA

DATE: **June 1, 2016**

Prepared by:



Wunmi Adekanmbi, M.Sc.
Project Manager Assistant, Customer Service, Air Services

Reviewed by:



Tom Bourque, C. Tech.
Interim Supervisor, Customer Service, Air Services

SUMMARY

In April 2016, the Air Services Group of Maxxam Analytics conducted an ambient air monitoring program at the Elk Point Airport Site of Lakeland Industry & Community Association, near Elk Point, Alberta. Sampling was carried out to determine the concentrations of non-compliance parameters as requested by the Project Coordinator.

All data collected this month were within the objectives outlined in the AMD 1989, AMD 2006 and AMD 2015.

The operational uptime for all analyzers and meteorological system were above the AMD's 90% requirement.

An external station audit was conducted by AEMERA on April 27. The audit results are included in this report.

PM 2.5: Six hours of data were invalidated as the data was below -3 ug/m^3 this month.

THC/CH₄/NMHC: The LICA-owned Thermo 55i analyzer (S/N: 1236656107) was installed back onsite after it had been removed for maintenance in March. The analyzer was allowed time to stabilize overnight and the installation calibration was completed on April 5. Seventeen hours of data collected while the analyzer was stabilizing, are invalid.

The summary of results is presented on the following pages.

Any deviations or modifications made to the sampling or analytical methods are outlined in Section 1.0 Discussion. On this basis, Maxxam is issuing this completed report to Lakeland Industry & Community Association, Elk Point Airport Site.

Should you have any questions concerning the results or if we can be of further assistance, please contact us at 403-219-3677 or toll-free at 1-800-386-7247.

Monthly Continuous Data Summary

Lakeland Industry & Community Association						MAXIMUM VALUES							OPERATIONAL TIME (%)
Elk Point Airport Site						1-HOUR				24-HOUR			
PARAMETER	OBJECTIVES		EXCEEDENCES		MONTHLY AVERAGE	READING	DAY	HOUR	WIND SPEED (KPH)	WIND DIRECTION (DEGREES)	READING	DAY	
	1-HR	24-HR	1-HR	24-HR									
SO2 (PPB)	172	48	0	0	0.0	0.3	17	9	14.3	SE	0.0	ALL	100.0
H2S (PPB)	10	3	0	0	0.0	0.7	2, 30	VAR	VAR	VAR	0.3	30	100.0
THC (PPM)	-	-	-	-	2.29	4.53	1	23	1.7	E	2.74	28	97.6
CH4 (PPM)	-	-	-	-	2.28	4.45	18	4	6.9	ESE	2.74	28	97.6
NMHC (PPM)	-	-	-	-	0.01	0.17	1	23	1.7	E	0.07	1	97.6
NO2 (PPB)	159	-	0	-	4.1	28.4	1	5	10.3	WNW	11.4	27	99.7
NO (PPB)	-	-	-	-	0.6	19.2	2	7	6.3	W	3.2	2	99.7
NOX (PPB)	-	-	-	-	4.7	39.1	1	5	10.3	WNW	12.9	27	99.7
O3 (PPB)	82	-	0	-	32.1	54.7	17	15	15.8	SW	40.5	18	100.0
PM2.5 (UG/M3)	-	30	-	0	3.3	28.7	6	9	40.3	WNW	5.6	27	99.2
VECTOR WS (KPH)	-	-	-	-	13.2	42.2	6	13	-	WNW	25.5	6	100.0
VECTOR WD (DEG)	-	-	-	-	-	-	-	-	-	-	-	-	100.0

NA-NOT AVAILABLE VAR-VARIOUS

Exceedence Summary Report

SO₂ 1- Hour Exceedences

No Exceedences Recorded During the Month

SO₂ 24- Hour Exceedences

No Exceedences Recorded During the Month

H2S 1- Hour Exceedences

No Exceedences Recorded During the Month

H2S 24- Hour Exceedences

No Exceedences Recorded During the Month

NO₂ 1- Hour Exceedences

No Exceedences Recorded During the Month

PM_{2.5} 24- Hour Exceedences

No Exceedences Recorded During the Month

O₃ 1- Hour Exceedences

No Exceedences Recorded During the Month

Volatile Organics (VOCs) Data Summary

Sample Collected Date	Maximum reading (PPB)	Volatile Organic Compound
March 31, 2016	2.1	Acetone
April 6, 2016	3.2	Acetone
April 12, 2016	5.3	Acetone
April 18, 2016	3.5	Acetone
April 24, 2016	2.8	Acetone
April 30, 2016	3.7	Acetone

Note: March 31 result is included as it was sent from the lab with April results.

Polycyclic Aromatic Hydrocarbons (PAHs) Data Summary

Sample Collected Date	Maximum reading (ug)	Semi-Volatile Organic
March 31, 2016	0.14	2-Methylnaphthalene
April 6, 2016	0.07	Phenanthrene
April 12, 2016	0.06	Phenanthrene
April 18, 2016	0.11	2-Methylnaphthalene and Phenanthrene
April 24, 2016	0.06	Benzo(c)phenanthrene and Phenanthrene

Note: March 31 result is included as it was sent from the lab with April results.

Volatile Organics (VOCs) Data Summary - NMHC Canister System

Sample Collected Date	Maximum reading (PPB)	Volatile Organic Compound
April 1, 2016	3.5	Acetone
April 17, 2016	5.2	Acetone
April 24, 2016	3.1	Acetone

Note: NA

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1.0 Discussion

This monthly report consists of data for parameters Sulphur Dioxide (SO₂), Hydrogen Sulphide (H₂S), Total Hydrocarbon (THC), Methane (CH₄), Non-Methane Hydrocarbon (NMHC), Oxides of Nitrogen (NO_x), Nitric Oxides (NO), Nitrogen Dioxide (NO₂), Ozone (O₃), Particulate Matter 2.5 (PM_{2.5}), Wind Speed (WS), Wind Direction (WD) and Standard Deviation Wind Direction (STDWD). The results for non-continuous Partisol, VOCs, PAHs and NMHC canister monitoring programs are also included in this report.

Sample filters for all continuous air monitors are changed before the calibration begins. The sample manifold is cleaned during the site visit each month.

Control checks, consisting of a zero and span, are conducted daily on all continuous air monitors. In place of the air sample, zero air (from scrubbed air or gas cylinders) is used for zero checks, and a known concentration of the pollutant being analyzed is used for span checks. These checks are controlled by automatic timers and valves. The total zero span cycle is completed within an hour, the commencement of the zero span cycle is at the beginning of the hour.

Multipoint calibrations are done a minimum of once a month for each continuous air monitor. An additional calibration is required under the following conditions: 1) within three days after the initial start-up and stabilization of a newly installed instrument, 2) prior to shut-down or moving of an instrument which has been working to specification, and 3) when major repair has been done on the instrument.

Time during the first multi-point calibration is not considered downtime (Data is flagged as C). If more than one calibration is performed during the month, the time during the additional calibration is considered as downtime (Data is flagged as C1).

Only one zero/span check is run per day. Time during the zero/span check is not considered as downtime (Data is flagged as S). If an extra zero/span check is performed, the time during the additional check is considered as downtime (Data is flagged as S1).

The AMD requires each instrument and accompanying data recording system to be operational 90% of the time (minimum), on a monthly basis.

All sampling, analysis, and QA/QC for this project was performed by Maxxam Analytics and complies with the Alberta Air Monitoring Directive.

Data contained in this monthly report has undergone the verification and validation based on the requirements of the AMD Chapter 6: Ambient Data Quality for Verification and Validation of Continuous Ambient Air Quality Data. The descriptions of the data verification and validation process can be found in Section 5 of this report. Instantaneous data, where applicable, is provided for reference purposes and has not undergone zero correction.

Hourly and minute data have been reviewed based on daily zero/span results and multi-point calibration results. Data may be considered invalid if a zero-corrected span check in excess of +/- 10% of the span concentration (established by the previous multi-point calibration) is encountered and/or significant differences in the calibration factor occurs (greater than 10%).

Trailer inspection was conducted on April 4. No issues were identified.

SULPHUR DIOXIDE (SO₂)

The analyzer was working well throughout the month. The routine monthly calibration was performed on April 5. An external audit was conducted by AEMERA on April 27. The audit results are included in this report.

HYDROGEN SULPHIDE (H₂S)

The analyzer was working well throughout the month. The routine monthly calibration was performed on April 4. An external audit was conducted by AEMERA on April 27. The audit results are included in this report.

TOTAL HYDROCARBONS (THC), METHANE (CH₄), and NON-METHANE HYDROCARBONS (NMHC)

Following a shut-down calibration on April 4, the Maxxam-supplied replacement analyzer, Thermo 55i S/N: 1433563261, was removed. The LICA-owned Thermo 55i, S/N: 1236656107, was then installed back onsite after it had been removed for maintenance in March. The analyzer was allowed time to stabilize overnight and the installation calibration was completed on April 5. Seventeen hours of data collected while the analyzer was stabilizing, are invalid. The span gas cylinder was replaced after the calibration.

An external audit was conducted by AEMERA on April 27. The audit results are included in this report.

NITROGEN DIOXIDE (NO₂)

The routine monthly calibration was performed on April 5. An external audit was conducted by AEMERA on April 27. The audit results are included in this report.

OZONE (O₃)

The analyzer was working well throughout the month. The routine monthly calibration was performed on April 4. An external audit was conducted by AEMERA on April 27. The audit results are included in this report.

PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM_{2.5})

Two routine audits were performed this month: one was completed on April 5, and the other audit was performed on April 20. Flows were not adjusted during the April 20 audit as there was strong wind which could affect the accuracy of measurements.

An external audit was conducted by AEMERA on April 27. The audit results are included in this report.

Data was corrected using Alberta air quality guideline. Data between 0 and -3 ug/m³, was corrected to 0 ug/m³. Data was below -3ug/m³ was invalidated. Six hours of data were invalidated as the data was below -3 ug/m³ this month.

WIND SPEED (WS), WIND DIRECTION (WD) and STANDARD DEVIATION WIND DIRECTION (STDWD)

The wind system is reported as vector wind speed and vector wind direction. The wind direction data included in this report represents where the wind was coming from.

The wind system was working well throughout the month.

VOC SAMPLES

The sampler was programmed to run for 24 hours every 6th day per the North American Pollution Surveillance Schedule (NAPS).

Samples were collected on April 6, 12, 18, 24 and 30. Analytical results are included in this report. The results for March 31 sample collection are included in this report. VOC values are reported in ppb.

The routine quarterly audit for the VOC sampler was completed on April 5.

PAH SAMPLES

The sampler was programmed to run for 24 hours every 6th day per the North American Pollution Surveillance Schedule (NAPS).

Samples were collected on April 6, 12, 18, 24 and 30. Analytical results are included in this report. The results for March 31 sample collection are included in this report. PAH values are reported in µg.

The routine quarterly audit for the PUF sampler was completed on April 5.

NMHC CANISTER SAMPLES

The NMHC canister sampler is programmed to trigger a sample-collection event when the 5-minute average concentration of NMHC is above 0.30ppm. A one-hour of sample is collected when the canister is triggered.

Three canister events were recorded this month: concentrations of 0.31ppm on April 1 at 19:57, 0.32ppm on April 17 at 19:50 and 0.30ppm on April 24 at 00:20. Analytical results are included in this report. NMHC canister values are reported in ppb.

2.0 Project Personnel

Mike Bisaga was the contact for Lakeland Industry & Community Association, and the Maxxam field sampling technician was Alexander Yakupov.

3.0 Plant Monthly Required AMD Summary

All data collected this month were within the objectives outlined in the AMD 1989, AMD 2006 and AMD 2015.

The operational uptime for all analyzers and meteorological system were above the AMD's 90% requirement.

4.0 Calculations and Results

All calculations and reporting of results follow the method described in the Air Monitoring Directive, 1989, 2006 Amendments to the Air Monitoring Directive (AMD 2006) as well as AMD 2015.

5.0 Methods and Procedures

The following methods and procedures were used to complete the test program:

- Maxxam AIR SOP-00001 - Methane, Non-Methane Hydrocarbon Analyzer Monitoring
- Maxxam AIR SOP-00208: RM Young Monitor Calibration
- Maxxam AIR SOP-00209: Ambient H₂S Monitoring
- Maxxam AIR SOP-00211: Ambient SO₂ Monitoring
- Maxxam AIR SOP-00212: Ambient O₃ Monitoring
- Maxxam AIR SOP-00213: Ambient NO/NO₂/NO_x Monitoring
- Maxxam AIR SOP-00215: Team Operation
- Maxxam AIR SOP-00225: The Collection of VOCs in Ambient Air Using Canister and Xontech

There were no deviations from the prescribed methods.

The following instruments were used to perform the test program:

- Sulphur Dioxide - API 100E UV Fluorescent Analyzer
- Hydrogen Sulphide - API 101E UV Fluorescent Analyzer
- Methane, Non-Methane Hydrocarbon - Thermo 55i FID Analyzer
- Oxides of Nitrogen - API 200E Chemiluminescent Analyzer
- Ozone - Thermo 49i Photometric Analyzer
- Particulate Matter (PM_{2.5}) - R&P 1405F Team Unit
- Wind System - RM Young Unit
- Datalogger - ESC 8832

The following steps were used to complete the data verification and validation process:

Level 0 Preliminary Verification

Level 0 data are raw data obtained directly from the data acquisition system (DAS). Under the step of Level 0, these data undergo a certain amount of manual or automated screening and flagging. It included a) identification of periods of missing data; b) verification of time stamps against reference time; c) verification that instrument diagnostics/datalogger flags indicate normal operation; d) comparison of data to upper and lower limits; e) rate of change flagging indicating that data changed too rapidly or not at all; and f) verification that zero, span and multipoint performance checks are within specifications. This level of verification is performed on a daily basis.

Level 1 Primary Validation

Validation actions under the step of Level 1 include a) review of all screening flags assigned during preliminary verification; b) review of all supporting site information and documentation; c) review of operational acceptance limits for each parameter/analyzer; d) review of daily zero/span and monthly calibration results for all gaseous parameters; and e) application of any necessary adjustments to data (e.g. baseline adjustments, below zero adjustments). This level of validation is performed on a monthly basis.

Level 2 Final Validation

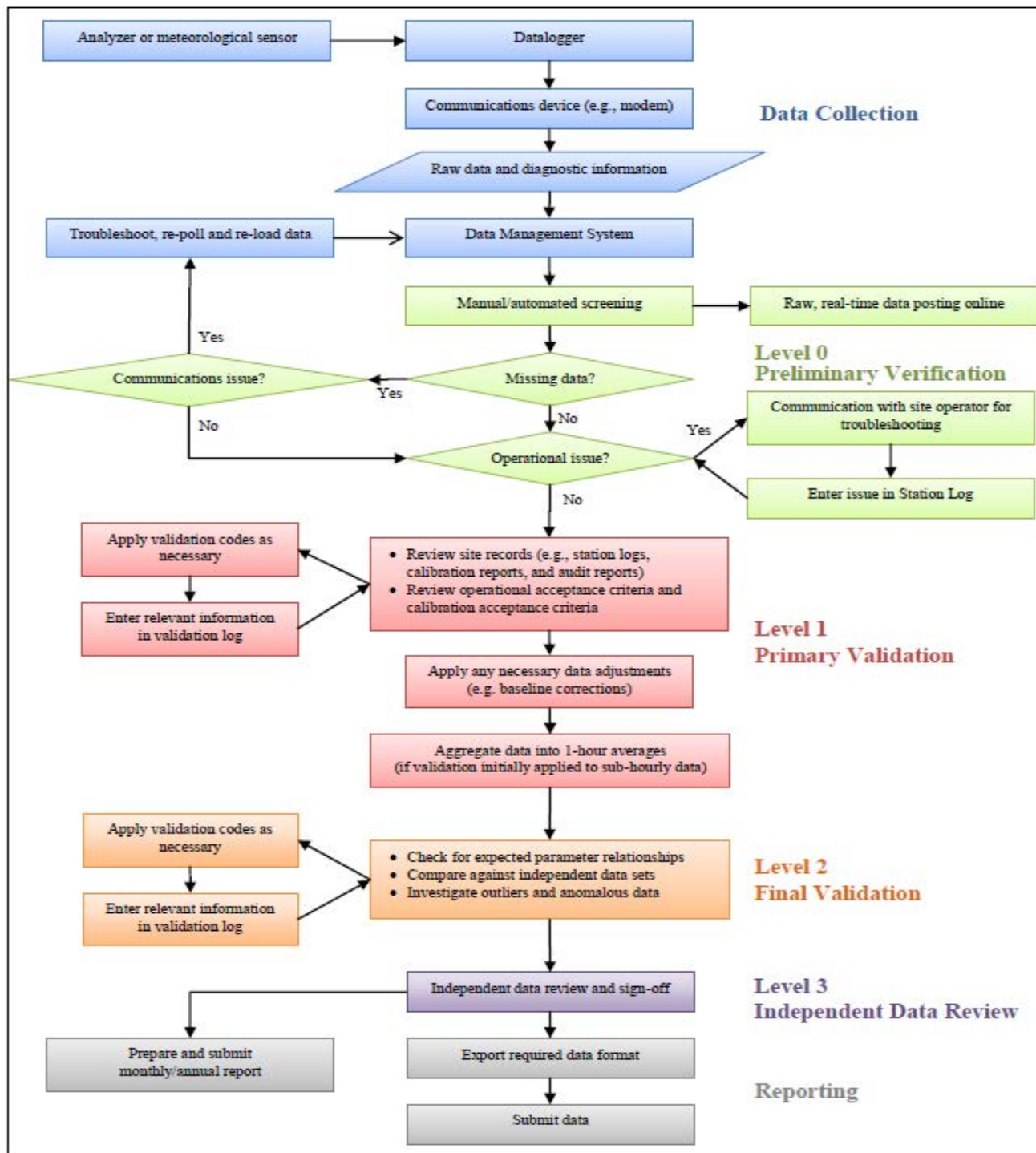
The purpose of Level 2 validation is to verify that there are no inconsistencies among related data, or among regional data measured at nearby sites.

Level 3 Independent Data Review

Level 3 validation is the last step of data review, and it is completed by an individual that is independent of both field operations and primary data validation. A final independent QA review and endorsement is performed during this step before data is submitted to Alberta Environment.

Post-Final Validation

The Post-Final Validation step serves to re-evaluate the data that errors or omissions are discovered and/or suspected after the initial submittal of data. Any data issues or patterns which were not clear on a monthly basis are highlighted during this step. This validation is performed on an annual basis.



Source: AMD Chapter 6: Ambient Data Quality for Verification and Validation of Continuous Ambient Air Quality Data; Figure 1 Data Collection and Management Process Flow Chart

APPENDIX I
CONTINUOUS MONITORING DATA RESULTS

SULPHUR DIOXIDE

SULPHUR DIOXIDE (SO2) hourly averages in ppb

MST

DAY	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.
1	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
2	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	24
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	24
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	24	
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	C	C	C	C	C	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	24
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	24
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
9	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	24
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	24
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
19	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
20	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
21	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
22	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
23	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
24	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
25	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	24
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	24
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Q	Q	Q	Q	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.1	24
28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	24
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	24
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	24
HOURLY MAX	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
HOURLY AVG	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

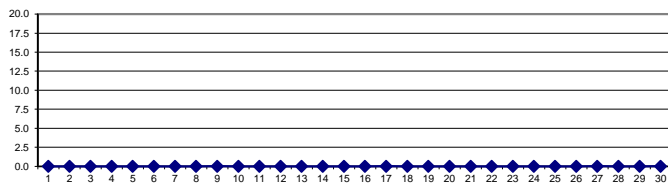
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT:	1-HR	172	PPB	24-HR	48	PPB
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MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0				
NUMBER OF 24-HR EXCEEDENCES:	0				
NUMBER OF NON-ZERO READINGS:	4				
MINIMUM 1-HR AVERAGE:	0.0	PPB	@ HOUR(S)	VAR	ON DAY(S) ALL
MAXIMUM 1-HR AVERAGE:	0.3	PPB	@ HOUR(S)	9	ON DAY(S) 17
MAXIMUM 24-HR AVERAGE:	0.0	PPB			ON DAY(S) ALL
					VAR-VARIOUS
IZS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	720	HRS
MONTHLY CALIBRATION TIME:	5	HRS	AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	0.01		MONTHLY AVERAGE:	0.0	PPB

24 HOUR AVERAGES FOR April 2016



SO2[ppb] Station: LICA ELK POINT AIRPORT Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]





SULPHUR DIOXIDE MAX instantaneous maximum in ppb

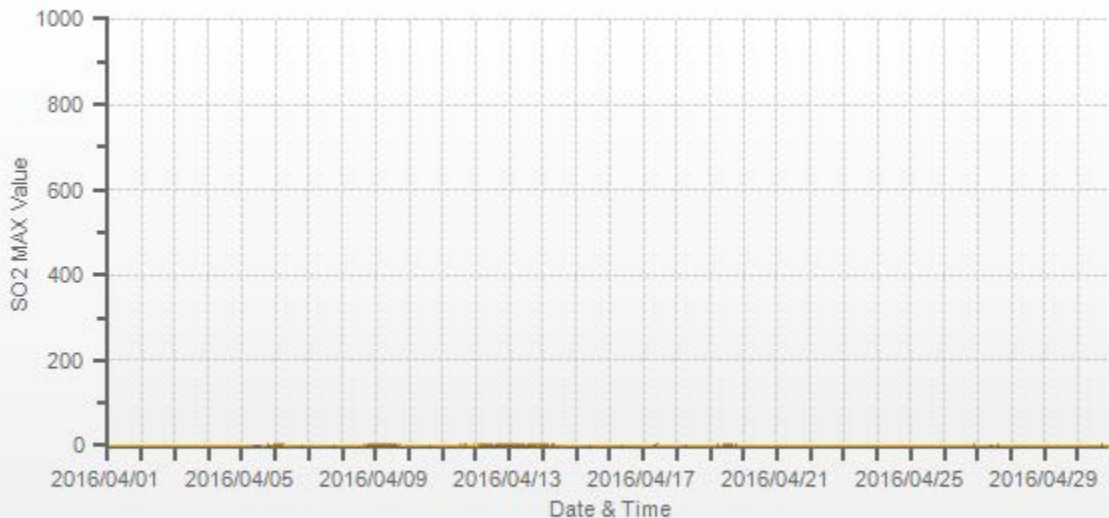
MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
DAY	MIN.	MAX.	AVG.	RDGS.																									
1	0.5	S	0.0	0.3	0.8	0.8	1.0	0.8	0.9	0.7	0.3	0.2	0.3	0.3	0.5	0.3	0.4	0.4	0.7	0.8	0.7	0.5	0.7	0.9	0.9	0.0	1.0	0.6	24
2	S	0.8	0.8	0.9	1.2	0.9	1.6	2.0	2.1	1.9	1.7	1.9	1.8	2.0	1.9	1.8	1.9	1.7	1.7	1.7	1.7	1.6	1.3	S	0.8	2.1	1.6	24	
3	1.3	1.4	1.2	1.4	1.2	0.7	0.7	0.6	0.6	0.4	0.4	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	1.4	0.4	24
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.5	0.2	0.1	0.3	0.6	0.6	0.6	0.6	0.5	0.7	0.8	S	0.8	0.9	0.0	0.9	0.3	24	
5	0.8	0.8	0.8	0.8	0.7	0.6	0.7	0.8	0.8	C	C	C	C	C	1.9	1.8	1.8	2.1	2.2	2.5	S	2.3	2.2	2.4	0.6	2.5	1.4	24	
6	2.5	2.5	2.6	2.6	2.5	2.4	2.5	2.3	2.3	2.2	2.0	1.8	1.9	1.7	1.7	1.6	1.5	1.3	1.3	S	1.2	1.4	1.4	1.3	1.2	2.6	1.9	24	
7	1.3	1.3	1.4	1.0	1.3	1.3	1.3	1.0	1.0	1.1	1.1	1.2	0.9	1.0	1.2	1.2	1.1	S	1.1	1.2	1.2	1.1	1.0	0.9	1.4	1.2	24		
8	1.1	1.1	1.3	1.1	0.9	1.3	1.5	1.5	1.8	1.7	1.7	2.0	2.0	2.1	2.2	2.2	2.7	S	2.5	3.0	3.3	3.3	3.1	3.5	0.9	3.5	2.0	24	
9	3.2	3.3	3.5	3.5	3.3	3.3	3.4	3.3	2.9	3.2	3.1	2.9	2.9	2.8	2.6	2.5	S	2.5	2.1	2.2	2.1	2.2	1.9	2.0	1.9	3.5	2.8	24	
10	1.7	1.7	2.1	1.8	1.7	1.6	1.6	1.6	1.6	1.5	1.4	1.3	1.3	1.5	S	1.7	1.6	1.5	1.6	1.5	1.5	1.5	1.6	1.3	2.1	1.6	24		
11	1.5	1.3	1.5	1.5	1.7	1.4	1.5	1.7	1.6	1.7	1.5	1.9	2.1	2.4	S	2.2	2.5	2.5	2.3	2.2	2.0	2.2	2.5	2.3	1.3	2.5	1.9	24	
12	2.2	2.3	2.5	2.6	2.6	2.9	2.9	2.7	2.9	2.6	2.6	2.5	2.6	S	2.7	2.6	2.6	2.9	2.7	2.6	2.5	2.5	2.7	2.4	2.2	2.9	2.6	24	
13	2.5	2.5	2.7	2.7	2.7	2.7	2.5	2.8	2.8	2.5	3.0	2.8	S	2.8	2.8	2.8	2.5	2.6	2.5	2.6	2.4	2.3	2.4	2.6	2.3	3.0	2.6	24	
14	2.4	2.5	2.5	2.5	2.5	2.3	2.5	2.5	2.5	2.2	2.1	S	2.2	2.3	2.3	2.1	2.1	2.1	2.0	1.7	1.7	1.5	1.7	1.9	1.5	2.5	2.2	24	
15	1.8	1.5	1.7	1.7	1.7	1.6	2.0	1.6	1.6	1.5	S	1.1	1.2	1.3	1.3	1.2	1.2	1.4	1.2	1.4	1.2	1.3	1.4	1.5	1.1	2.0	1.4	24	
16	1.3	1.2	1.0	1.4	1.2	1.2	1.1	1.2	1.5	S	1.2	1.2	1.1	1.6	1.3	1.3	1.2	1.1	1.5	1.0	0.8	0.8	0.9	0.8	1.6	1.2	24		
17	0.8	0.7	0.7	0.6	0.7	0.6	0.7	0.7	S	4.6	2.8	0.9	1.2	1.3	1.2	1.3	1.0	1.1	1.2	1.1	1.1	0.9	0.9	1.2	0.6	4.6	1.2	24	
18	1.2	0.9	1.0	1.1	1.2	0.9	0.9	S	0.8	1.0	1.4	1.1	1.0	1.5	1.4	1.0	1.2	1.4	1.4	1.4	1.5	1.7	1.7	1.7	0.8	1.7	1.2	24	
19	1.9	1.9	1.8	1.7	2.0	2.5	S	2.2	2.1	2.3	2.4	2.6	2.7	2.6	2.4	2.5	2.5	2.2	2.6	2.5	2.3	2.3	2.1	2.0	1.7	2.7	2.3	24	
20	2.1	2.0	2.0	1.7	1.9	S	1.4	1.5	1.5	1.5	1.3	1.4	1.5	1.4	1.4	1.3	1.4	1.2	1.4	1.2	1.3	1.3	1.2	1.2	2.1	1.5	24		
21	1.2	1.4	1.3	1.3	S	1.3	1.6	1.8	1.7	1.7	1.3	1.3	1.5	1.3	1.5	1.5	1.5	1.5	1.4	1.8	1.7	1.6	1.5	1.6	1.2	1.8	1.5	24	
22	1.7	1.6	1.5	S	1.4	1.7	1.7	1.7	1.7	1.7	1.9	1.6	1.6	1.7	1.7	1.9	1.8	1.6	1.6	1.4	1.7	1.9	1.7	1.7	1.4	1.9	1.7	24	
23	1.6	1.5	S	1.4	1.5	1.7	1.9	1.7	1.7	1.8	1.9	1.8	1.7	1.8	1.7	1.9	1.9	2.0	1.9	1.8	1.9	1.9	1.9	1.9	1.4	2.0	1.8	24	
24	1.9	S	1.9	1.9	1.8	1.8	1.9	2.0	1.9	1.9	2.1	2.1	2.1	2.0	1.9	1.9	2.0	2.1	1.9	1.9	2.0	2.1	1.9	1.9	1.8	2.1	2.0	24	
25	S	1.8	1.9	2.0	1.9	1.9	2.0	2.1	2.0	2.0	2.1	1.6	1.6	1.6	1.7	1.7	1.6	1.7	1.5	1.5	1.7	1.6	1.8	S	1.5	2.1	1.8	24	
26	1.7	1.7	1.7	1.9	1.9	1.8	1.9	2.0	1.9	1.9	1.9	2.1	1.9	1.8	1.7	1.8	2.3	2.0	1.9	1.9	1.9	2.4	S	1.7	1.7	2.4	1.9	24	
27	1.9	1.9	1.9	1.8	1.9	1.9	1.7	1.7	Q	Q	Q	Q	Q	2.0	2.0	3.0	2.7	1.5	1.4	1.4	1.3	1.3	S	1.1	1.3	1.1	3.0	1.8	24
28	1.2	1.2	1.2	1.2	1.1	1.2	1.3	1.3	1.2	2.3	2.1	1.2	1.3	1.2	1.3	1.3	1.5	1.3	1.3	1.3	S	1.3	1.4	1.4	1.1	2.3	1.4	24	
29	1.3	1.4	1.3	1.4	1.3	1.3	1.5	1.6	1.4	1.5	1.7	1.5	2.0	1.8	1.5	1.6	1.6	1.5	1.5	S	1.3	1.4	1.4	1.3	1.3	2.0	1.5	24	
30	1.3	1.3	1.5	1.4	1.5	1.0	1.2	1.5	1.3	1.3	1.0	1.0	1.2	1.1	1.1	1.0	2.3	2.5	S	1.1	1.8	1.5	1.1	1.3	1.0	2.5	1.4	24	
HOURLY MAX	3.2	3.3	3.5	3.5	3.3	3.3	3.4	3.3	2.9	4.6	3.1	2.9	2.9	2.8	3.0	2.8	2.7	2.9	2.7	3.0	3.3	3.3	3.1	3.5					
HOURLY AVG	1.6	1.6	1.6	1.6	1.6	1.5	1.6	1.7	1.7	1.8	1.7	1.5	1.6	1.6	1.6	1.6	1.7	1.6	1.6	1.6	1.6	1.6	1.7	1.6	1.6				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

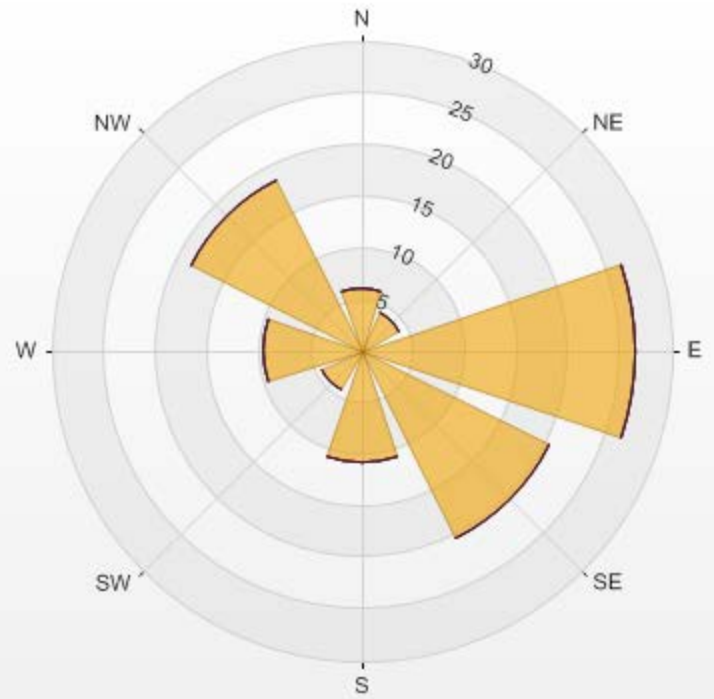
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	661
MAXIMUM INSTANTANEOUS VALUE:	4.6 PPB @ HOUR(S) 9 ON DAY(S) 17
	VAR-VARIOUS
IZS CALIBRATION TIME:	32 HRS
MONTHLY CALIBRATION TIME:	5 HRS
STANDARD DEVIATION:	0.69
OPERATIONAL TIME:	720 HRS



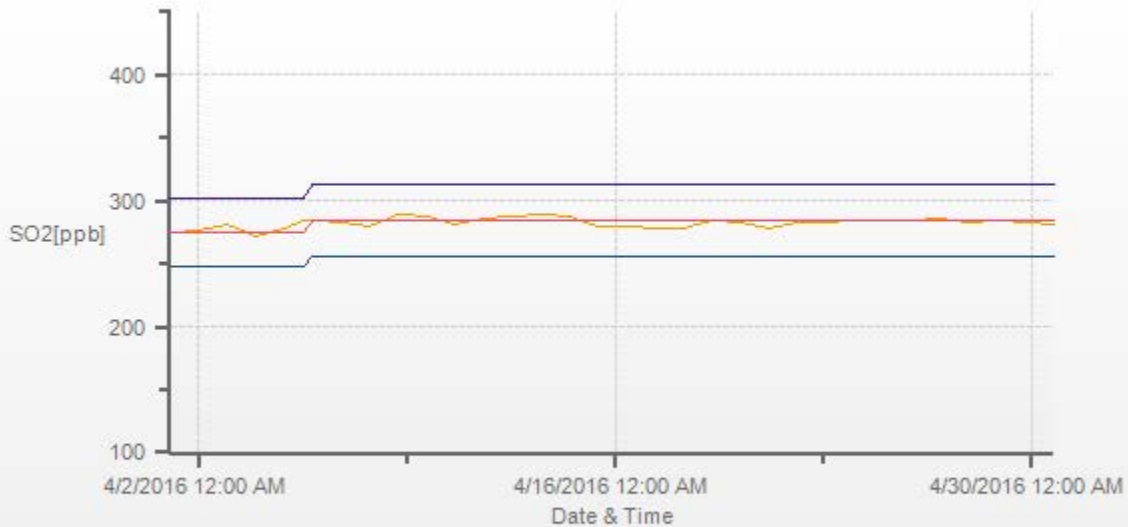
Wind: LICA ELK POINT AIRPORT Monitor: SO2 [ppb] Monthly: 04/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.31% Calm Avg: 0.00

Direction	0.0-20.0	20.0-60.0	60.0-110.0	110.0-170.0	170.0-340.0	>340.0	Total
N	6.04	0	0	0	0	0	6.04
NE	4.12	0	0	0	0	0	4.12
E	26.51	0	0	0	0	0	26.51
SE	20.32	0	0	0	0	0	20.32
S	10.75	0	0	0	0	0	10.75
SW	4.27	0	0	0	0	0	4.27
W	9.57	0	0	0	0	0	9.57
NW	18.41	0	0	0	0	0	18.41
Summary	100	0	0	0	0	0	100



% Icon Classes (ppb)	100	0.0-20.0	0	20.0-60.0	0	60.0-110.0	0	110.0-170.0	0	170.0-340.0	0	>340.0
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SO2[ppb] Calibration: LICA ELK POINT AIRPORT Monthly: 04/2016 Type: Span



HYDROGEN SULPHIDE

HYDROGEN SULPHIDE (H2S) hourly averages in ppb

MST

DAY	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.		
1	0.1	S	0.0	0.1	0.4	0.4	0.3	0.2	0.2	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.1	0.0	0.0	0.0	0.4	0.1	24	
2	S	0.1	0.1	0.3	0.3	0.3	0.5	0.7	0.7	0.4	0.2	0.2	0.0	0.1	0.2	0.1	0.0	0.1	0.1	0.0	0.2	0.0	0.0	S	0.0	0.0	0.7	0.2	24	
3	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.4	0.0	24	
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	C	C	C	C	0.0	0.3	S	0.0	0.1	0.0	0.3	0.0	24		
5	0.0	0.0	0.0	0.3	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.3	0.0	24	
6	0.2	0.1	0.2	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.1	0.0	0.0	0.2	0.0	24		
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24		
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.1	0.1	0.3	0.0	0.3	0.0	24	
9	0.2	0.3	0.2	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.3	0.1	24	
10	0.5	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	24	
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	24		
12	0.0	0.0	0.0	0.0	0.1	0.3	0.4	0.6	0.3	0.2	0.2	0.1	0.1	S	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.6	0.1	24	
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.1	0.0	0.0	0.3	0.0	24	
14	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	24	
15	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	24
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
17	0.0	0.0	0.0	0.0	0.0	0.0	0.1	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	24	
18	0.0	0.0	0.0	0.0	0.1	0.1	0.2	S	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	24	
19	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.2	0.3	0.2	0.1	0.0	0.0	0.0	0.3	0.0	24		
20	0.0	0.0	0.0	0.1	0.1	S	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	24	
21	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	24
22	0.0	0.0	0.0	S	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	24	
23	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
24	0.0	S	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	24	
25	S	0.0	0.1	0.0	0.0	0.2	0.2	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.0	0.0	0.1	S	0.0	0.2	0.1	24		
26	0.1	0.0	0.0	0.0	0.1	0.2	0.2	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.2	S	0.0	0.0	0.2	0.1	24		
27	0.2	0.0	0.1	0.0	0.1	0.0	0.0	0.5	Q	Q	Q	Q	0.0	0.1	0.0	0.0	0.0	0.3	0.1	0.2	0.0	S	0.2	0.2	0.0	0.5	0.1	24		
28	0.0	0.0	0.1	0.1	0.0	0.0	0.2	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.1	0.0	0.1	0.0	0.2	0.1	24		
29	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	S	0.3	0.0	0.0	0.1	0.0	0.3	0.1	24		
30	0.1	0.1	0.4	0.2	0.2	0.2	0.7	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.5	0.0	0.1	S	0.7	0.7	0.5	0.0	0.2	0.0	0.7	0.3	24		
HOURLY MAX	0.5	0.6	0.4	0.4	0.4	0.4	0.7	0.7	0.7	0.4	0.2	0.2	0.1	0.1	0.7	0.5	0.1	0.3	0.2	0.7	0.7	0.5	0.2	0.3						
HOURLY AVG	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0						

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

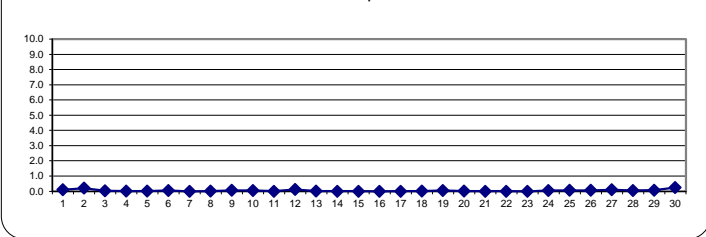
OBJECTIVE LIMIT:

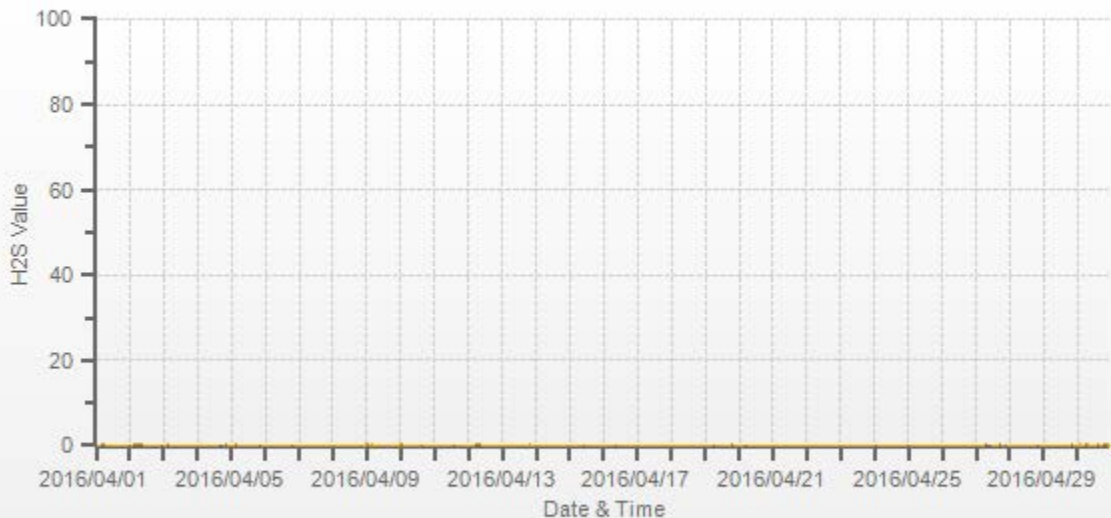
ALBERTA ENVIRONMENT:	1-HR	10	PPB	24-HR	3	PPB
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MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0					
NUMBER OF 24-HR EXCEEDENCES:	0					
NUMBER OF NON-ZERO READINGS:	172					
MINIMUM 1-HR AVERAGE:	0.0	PPB	@ HOUR(S)	VAR	ON DAY(S)	ALL
MAXIMUM 1-HR AVERAGE:	0.7	PPB	@ HOUR(S)	VAR	ON DAY(S)	2, 30
MAXIMUM 24-HR AVERAGE:	0.3	PPB			ON DAY(S)	30
					VAR-VARIOUS	
I2S CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	720	HRS	
MONTHLY CALIBRATION TIME:	4	HRS	AMD OPERATION UPTIME:	100.0	%	
STANDARD DEVIATION:	0.11		MONTHLY AVERAGE:	0.0	PPB	

24 HOUR AVERAGES FOR April 2016







HYDROGEN SULPHIDE MAX instantaneous maximum in ppb

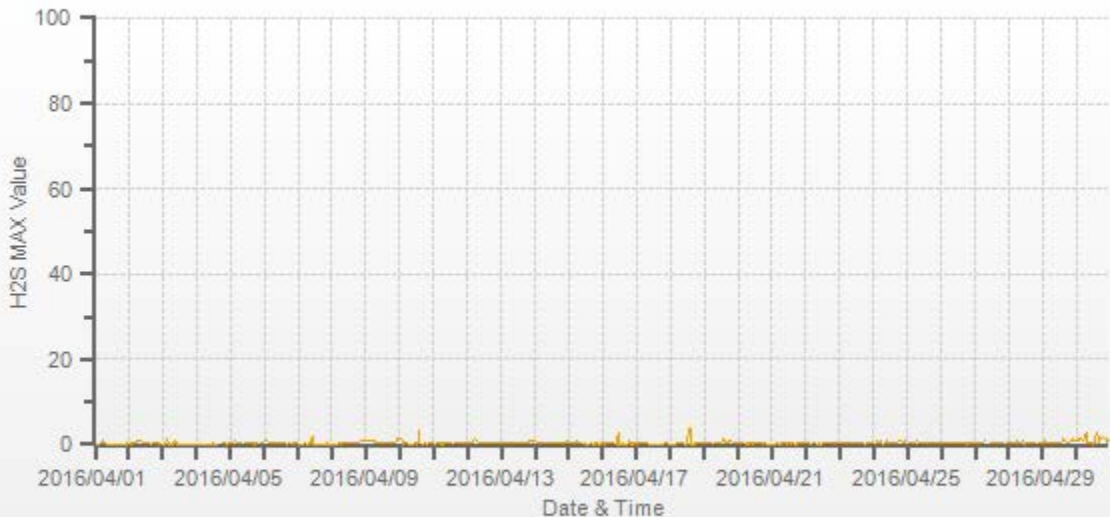
MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.	
DAY	HOURLY MAX	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
1	0.0	S	0.0	0.0	0.5	0.8	0.6	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.3	0.0	0.8	0.1	24		
2	S	0.2	0.7	0.3	0.3	0.3	1.0	0.9	0.8	0.8	0.3	0.3	0.3	0.3	0.4	0.3	0.1	0.4	0.3	0.4	0.5	0.3	0.2	S	0.1	1.0	0.4	24		
3	0.2	0.0	0.6	1.5	0.5	0.0	0.1	0.2	0.4	0.8	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	S	0.0	0.0	1.5	0.2	24	
4	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.1	0.0	0.1	0.2	0.1	0.3	0.2	0.0	C	C	C	C	0.4	0.6	S	0.2	0.5	0.0	0.6	0.2	24		
5	0.6	0.3	0.5	0.8	0.5	0.4	0.5	0.4	0.3	R	0.6	0.5	0.5	0.6	0.6	0.3	0.4	0.3	0.2	0.3	S	0.5	0.5	0.7	0.2	0.8	0.5	23		
6	1.0	0.8	0.8	0.7	0.6	0.6	0.4	0.4	0.4	0.3	0.5	0.5	0.5	0.5	0.4	0.4	0.2	0.3	0.3	S	0.1	0.3	0.4	0.4	0.1	1.0	0.5	24		
7	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.1	0.3	0.3	2.1	0.2	0.1	0.2	0.2	0.2	0.0	0.0	0.1	S	0.2	0.2	0.3	0.2	0.1	0.0	2.1	0.2	24	
8	0.0	0.0	0.0	0.0	0.2	0.3	0.1	0.3	0.3	0.5	0.5	0.4	0.3	0.3	0.5	0.4	0.6	S	0.7	0.7	0.9	0.8	0.9	1.1	0.0	1.1	0.4	24		
9	1.0	1.1	1.0	1.1	0.8	0.9	0.8	0.7	0.7	0.5	0.7	0.7	0.7	0.7	0.7	0.6	S	0.4	0.3	0.3	0.5	0.6	1.6	1.2	0.3	1.6	0.8	24		
10	1.6	1.6	0.8	0.1	0.3	0.3	0.2	0.1	0.0	0.2	0.1	0.3	0.2	0.3	3.3	S	0.2	0.1	0.3	0.1	0.1	0.7	0.3	0.4	0.0	3.3	0.5	24		
11	0.3	0.2	0.3	0.3	0.5	0.3	0.2	0.3	0.3	0.4	0.5	0.5	0.4	0.3	S	0.3	0.4	0.3	0.4	0.3	0.5	0.5	0.4	0.5	0.2	0.5	0.4	24		
12	0.5	0.5	0.4	0.4	0.5	1.2	1.2	1.1	0.7	0.6	0.6	0.4	0.4	S	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.5	0.5	0.6	0.4	1.2	0.6	24	
13	0.4	0.5	0.5	0.4	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.7	S	0.6	0.5	0.6	0.6	0.6	0.5	0.7	1.1	0.9	0.8	0.6	0.4	1.1	0.6	24		
14	0.9	0.7	0.6	0.5	0.7	0.4	0.5	0.5	0.4	0.5	0.5	S	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.8	0.3	0.3	0.9	0.5	24	
15	0.4	0.4	0.4	0.3	0.4	0.5	1.0	0.4	0.4	0.4	S	0.6	0.2	0.1	0.2	0.3	0.4	0.1	0.2	0.3	0.4	0.2	0.2	0.2	0.6	0.1	1.0	0.4	24	
16	0.6	0.2	0.3	0.4	0.3	0.4	0.6	0.6	0.4	S	0.2	2.7	0.2	0.2	0.1	0.3	0.2	0.2	0.4	0.8	0.2	0.3	0.2	0.3	0.2	0.3	0.1	2.7	0.4	24
17	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.5	S	0.1	0.1	0.0	0.2	0.0	0.2	0.1	0.2	0.0	0.2	0.1	0.4	0.4	0.3	0.2	0.2	0.0	0.5	0.2	24	
18	0.2	0.1	0.2	0.1	0.3	0.5	0.5	S	0.4	0.4	0.0	0.1	0.3	3.6	3.8	0.2	0.0	0.1	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.0	3.8	0.6	24	
19	0.5	0.3	0.6	0.6	0.6	0.6	S	0.5	0.5	0.4	0.4	0.5	0.4	1.0	1.2	0.4	0.6	0.5	0.8	0.8	0.7	0.5	0.4	0.4	0.3	1.2	0.6	24		
20	0.4	0.5	0.5	0.4	0.4	S	0.6	0.2	0.3	0.3	0.3	0.2	0.3	0.5	0.4	0.4	0.3	0.3	0.2	0.3	0.2	0.2	0.1	0.2	0.1	0.2	0.6	0.3	24	
21	0.1	0.1	0.2	0.3	S	0.2	0.2	0.4	0.6	0.5	0.3	0.2	0.3	0.2	0.3	0.3	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.1	0.6	0.3	24	
22	0.3	0.5	0.3	S	0.1	0.3	0.7	0.3	0.2	0.2	0.3	0.2	0.5	0.4	0.4	0.3	0.4	0.4	0.5	0.3	0.5	0.6	0.4	0.6	0.1	0.7	0.4	24		
23	0.5	0.3	S	0.5	0.4	0.3	0.3	0.5	0.3	0.4	0.5	0.7	0.4	0.6	0.5	0.5	0.4	0.3	0.2	0.3	0.5	0.5	0.5	0.5	0.5	0.2	0.7	0.4	24	
24	0.5	S	1.0	0.5	0.4	0.9	0.7	0.2	0.6	0.8	0.6	0.6	0.5	0.5	0.4	0.7	0.6	0.6	0.8	1.0	0.8	0.7	0.7	0.8	0.2	1.0	0.6	24		
25	S	0.4	0.5	0.4	0.4	0.7	0.6	0.8	0.6	0.6	0.3	0.4	0.4	0.5	0.4	0.6	0.6	0.7	0.7	0.6	0.4	0.5	0.5	S	0.3	0.8	0.5	24		
26	0.5	0.4	0.4	0.5	0.5	0.6	0.7	0.5	0.6	0.3	0.5	0.5	0.5	0.6	0.5	0.5	0.6	0.5	0.2	0.4	0.4	0.7	S	0.4	0.2	0.7	0.5	24		
27	0.6	0.5	0.7	0.6	0.7	0.4	0.6	1.0	Q	Q	Q	Q	0.5	0.6	0.4	0.6	0.6	0.7	0.6	0.7	0.4	S	0.6	0.5	0.4	1.0	0.6	24		
28	0.4	0.4	0.5	0.5	0.4	0.4	0.8	0.6	0.5	0.6	0.8	0.4	0.2	0.3	0.3	0.7	0.4	0.4	0.3	0.5	S	0.7	0.5	0.7	0.2	0.8	0.5	24		
29	0.6	0.7	0.8	0.7	0.7	0.7	0.7	0.6	0.5	0.5	0.5	0.4	0.5	0.5	0.9	1.2	0.8	0.6	0.6	S	1.1	1.6	0.9	1.0	0.4	1.6	0.7	24		
30	1.0	0.9	1.2	1.2	1.1	0.9	2.4	2.6	0.4	0.5	0.4	0.2	0.4	0.3	2.7	2.3	0.7	1.3	S	1.7	1.4	1.4	0.5	0.8	0.2	2.7	1.1	24		
HOURLY MAX	1.6	1.6	1.2	1.5	1.1	1.2	2.4	2.6	0.8	0.8	2.1	2.7	0.7	3.6	3.8	2.3	0.8	1.3	0.8	1.7	1.4	1.6	1.6	1.2						
HOURLY AVG	0.5	0.4	0.5	0.5	0.5	0.5	0.6	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.7	0.5	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

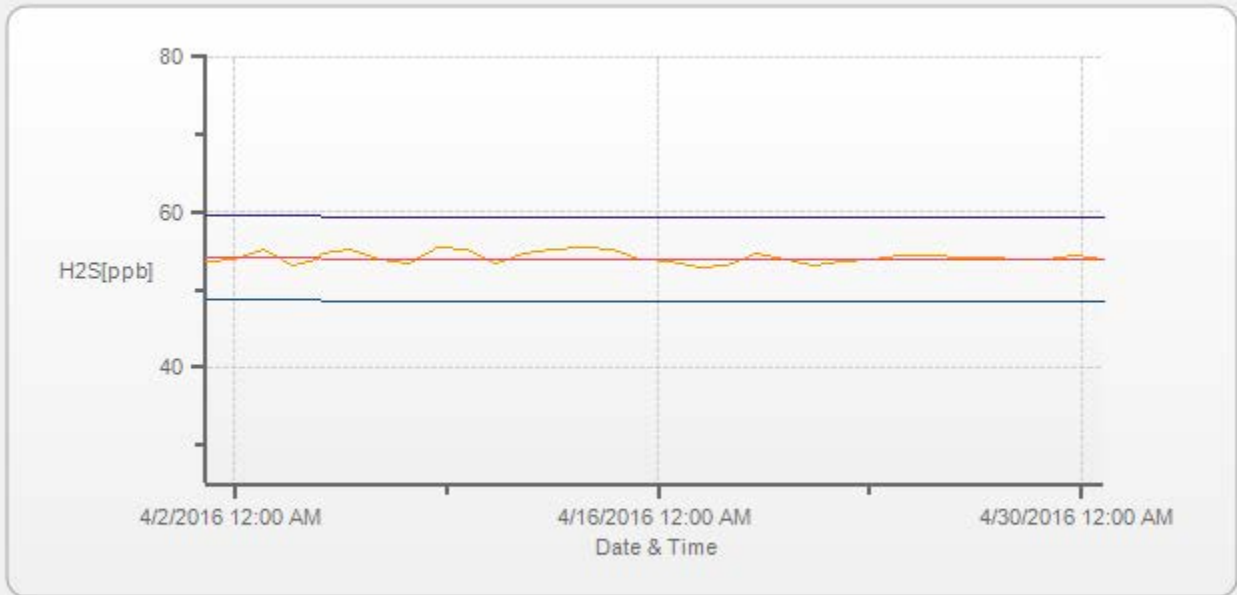
NUMBER OF NON-ZERO READINGS:	635
MAXIMUM INSTANTANEOUS VALUE:	3.8 PPB @ HOUR(S) 14 ON DAY(S) 18
	VAR-VARIOUS
IZS CALIBRATION TIME:	32 HRS
MONTHLY CALIBRATION TIME:	4 HRS
STANDARD DEVIATION:	0.39
OPERATIONAL TIME:	719 HRS



Wind: LICA ELK POINT AIRPORT Monitor: H2S [ppb] Monthly: 04/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.44% Calm Avg: 0.00

Direction	0.0-3.0	3.0-10.0	10.0-50.0	>50.0	Total
N	6.03	0	0	0	6.03
NE	4.12	0	0	0	4.12
E	26.03	0	0	0	26.03
SE	20.29	0	0	0	20.29
S	10.74	0	0	0	10.74
SW	4.85	0	0	0	4.85
W	9.56	0	0	0	9.56
NW	18.38	0	0	0	18.38
Summary	100	0	0	0	100

H2S[ppb] Calibration: LICA ELK POINT AIRPORT Monthly: 04/2016 Type: Span



TOTAL HYDROCARBON

TOTAL HYDROCARBONS (THC) hourly averages in ppm

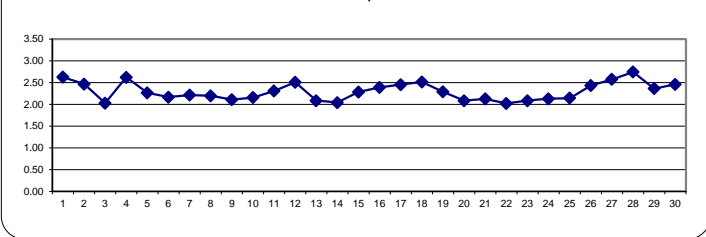
MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY 1	3.06	S	3.01	2.85	3.96	4.00	2.82	2.33	2.02	1.97	1.95	1.97	1.99	1.96	1.94	1.97	2.01	2.00	2.54	3.21	2.31	3.03	2.99	4.53	1.94	4.53	2.63	24
2	S	3.43	3.18	3.35	3.20	2.97	2.90	3.41	2.54	2.39	2.02	2.15	2.20	2.09	2.35	2.05	1.95	1.90	1.89	2.20	2.05	1.98	2.06	S	1.89	3.43	2.47	24
3	1.98	2.11	2.01	1.95	1.95	1.97	2.18	2.10	1.99	1.95	1.94	1.94	1.95	1.94	1.92	1.93	1.93	1.95	1.99	1.99	2.07	2.31	S	2.57	1.92	2.57	2.03	24
4	2.59	2.45	3.62	2.96	2.92	2.89	2.69	2.51	2.39	2.23	2.12	2.09	C	C	C	C	Y	Y	Y	Y	Y	Y	Y	Y	2.09	3.62	2.62	16
5	Y	Y	Y	Y	Y	Y	Y	Y	Y	C	C	C	C	2.10	2.12	2.09	2.06	2.08	2.11	2.57	S	2.44	2.47	2.63	2.06	2.63	2.27	15
6	3.11	3.14	2.62	2.21	2.09	2.02	2.11	2.00	2.01	2.00	2.00	1.99	2.00	2.00	2.00	2.00	2.00	2.00	2.02	S	2.08	2.14	2.08	2.19	1.99	3.14	2.17	24
7	2.17	2.08	2.17	2.29	2.40	3.03	2.29	2.11	2.08	2.06	2.05	2.03	2.02	2.02	2.03	2.02	2.02	2.01	S	2.04	2.24	2.99	2.46	2.29	2.01	3.03	2.21	24
8	2.57	2.22	2.18	2.20	2.58	2.30	2.22	2.18	2.24	2.21	2.18	2.14	2.12	2.09	2.08	2.07	2.07	S	2.09	2.18	2.17	2.15	2.12	2.12	2.07	2.58	2.19	24
9	2.10	2.15	2.22	3.25	2.27	2.19	2.14	2.08	2.03	2.01	2.00	2.00	2.01	2.01	2.00	2.00	S	2.01	2.01	2.01	1.99	2.00	1.99	2.00	1.99	3.25	2.11	24
10	2.00	2.00	2.00	2.01	2.02	2.02	2.02	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	S	2.02	2.02	2.03	2.28	2.69	2.86	2.71	2.84	2.00	2.86	2.16	24
11	2.59	2.48	2.60	2.54	2.81	2.64	2.61	2.29	2.13	2.11	2.10	2.10	2.10	S	2.07	2.07	2.08	2.11	2.23	2.39	2.36	2.33	2.23	2.07	2.07	2.81	2.31	24
12	2.49	2.72	2.63	2.65	2.88	3.33	4.46	3.37	2.39	2.19	2.06	2.02	1.98	S	1.99	1.97	1.98	1.98	2.00	2.54	2.91	2.57	2.45	2.17	1.97	4.46	2.51	24
13	2.12	2.12	2.08	2.06	2.08	2.09	2.10	2.23	2.21	2.04	2.04	2.01	S	2.01	2.02	2.00	2.01	2.03	2.00	2.00	2.34	2.14	2.05	2.17	2.00	2.34	2.08	24
14	2.22	2.08	2.09	2.13	2.16	2.06	2.07	2.02	2.02	1.99	1.99	S	1.98	1.98	1.98	1.99	1.99	1.99	2.00	2.00	2.02	2.02	2.08	2.09	1.98	2.22	2.04	24
15	2.07	2.05	2.06	2.07	2.14	2.39	3.49	2.44	2.13	2.07	S	2.10	2.08	2.08	2.09	2.12	2.14	2.07	2.10	2.52	2.48	2.64	2.52	2.65	2.05	3.49	2.28	24
16	2.65	2.65	2.97	2.63	2.73	2.47	2.66	2.39	2.22	S	2.09	2.08	2.05	2.03	2.04	2.04	2.02	2.03	2.15	2.43	2.60	2.76	2.77	2.44	2.02	2.97	2.39	24
17	2.39	2.35	2.49	2.68	2.89	2.84	2.67	2.51	S	2.23	2.16	2.07	2.02	2.01	2.00	2.00	2.00	2.01	2.20	2.83	3.59	3.24	2.66	2.57	2.00	3.59	2.45	24
18	2.48	2.41	2.41	2.87	4.45	4.16	3.60	S	2.62	2.29	2.10	2.05	2.03	2.03	2.05	2.04	2.05	2.06	2.10	2.07	2.19	2.18	2.75	2.82	2.03	4.45	2.51	24
19	2.74	2.67	2.99	2.59	2.74	2.79	S	2.14	2.06	2.05	2.05	2.03	2.00	1.97	1.95	1.95	1.98	2.09	2.23	2.90	2.75	2.01	1.99	1.98	1.95	2.99	2.29	24
20	2.00	2.04	2.68	2.20	2.25	S	2.28	2.03	1.99	2.01	2.01	2.00	2.00	2.01	2.01	2.00	2.01	2.01	2.02	2.02	2.06	2.09	2.16	2.08	1.99	2.68	2.09	24
21	2.11	2.30	2.32	2.29	S	2.41	2.27	2.28	2.13	2.11	2.10	2.08	2.07	2.09	2.08	2.07	2.06	2.05	2.01	2.01	2.01	2.02	2.02	2.02	2.01	2.41	2.13	24
22	2.00	2.04	2.02	S	2.04	2.04	2.03	2.01	2.02	2.00	2.00	2.00	2.00	1.99	1.99	1.99	2.00	2.01	1.99	2.00	2.03	2.05	2.13	2.11	1.99	2.13	2.02	24
23	2.03	2.05	S	2.07	2.10	2.12	2.08	2.08	2.06	2.04	2.03	2.05	2.03	2.03	2.01	2.01	2.02	2.04	2.09	2.09	2.24	2.33	2.16	2.20	2.01	2.33	2.09	24
24	2.53	S	2.14	2.07	2.09	2.21	2.16	2.14	2.06	2.08	2.10	2.08	2.06	2.08	2.07	2.04	2.03	2.05	2.10	2.15	2.08	2.21	2.16	2.28	2.03	2.53	2.13	24
25	S	2.23	2.10	2.12	2.32	2.41	2.43	2.29	2.09	2.08	2.07	2.02	2.04	2.04	2.04	2.03	2.04	2.11	2.14	2.08	2.12	2.15	2.18	S	2.02	2.43	2.14	24
26	2.38	2.75	2.61	2.71	2.76	3.62	3.55	2.54	2.33	2.19	2.07	2.04	2.06	2.03	2.04	2.05	2.05	2.04	2.04	2.07	2.59	3.17	S	2.22	2.03	3.62	2.43	24
27	2.56	2.81	3.53	3.37	3.77	3.21	2.65	2.72	Q	Q	Q	2.05	2.03	2.02	2.00	2.00	2.01	2.07	2.20	2.41	2.50	S	2.96	2.64	2.00	3.77	24	
28	2.78	3.55	3.99	4.22	3.63	4.20	3.89	3.01	2.69	2.36	2.21	2.09	2.03	2.00	2.02	1.99	2.01	2.01	2.02	2.12	S	2.83	2.73	2.74	1.99	4.22	2.74	24
29	2.98	3.11	2.74	2.89	2.65	2.58	2.46	2.32	2.26	2.17	2.04	1.97	1.97	1.98	1.99	1.99	1.99	1.98	2.02	S	2.35	2.41	2.83	2.65	1.97	3.11	2.36	24
30	2.81	2.68	2.96	3.10	3.31	3.25	3.15	2.92	2.98	2.71	2.22	2.05	2.00	1.99	1.98	2.01	2.00	1.98	S	2.09	2.05	2.08	2.07	2.17	1.98	3.31	2.46	24
HOURLY MAX	3.11	3.55	3.99	4.22	4.45	4.20	4.46	3.41	2.98	2.71	2.22	2.15	2.20	2.10	2.35	2.12	2.14	2.11	2.54	3.21	3.59	3.24	2.99	4.53				
HOURLY AVG	2.43	2.47	2.59	2.58	2.69	2.72	2.64	2.37	2.21	2.13	2.06	2.04	2.03	2.02	2.03	2.02	2.02	2.02	2.08	2.26	2.33	2.40	2.37	2.42				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

24 HOUR AVERAGES FOR April 2016



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	661			
MINIMUM 1-HR AVERAGE:	1.89	PPM @ HOUR(S)	18	ON DAY(S) 2
MAXIMUM 1-HR AVERAGE:	4.53	PPM @ HOUR(S)	23	ON DAY(S) 1
MAXIMUM 24-HR AVERAGE:	2.74	PPM		ON DAY(S) 28
				VAR-VARIOUS
IZS CALIBRATION TIME:	31	HRS	OPERATIONAL TIME:	703 HRS
MONTHLY CALIBRATION TIME:	8	HRS	AMD OPERATION UPTIME:	97.6 %
STANDARD DEVIATION:	0.43		MONTHLY AVERAGE:	2.29 PPM





TOTAL HYDROCARBONS MAX instantaneous maximum in ppm

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
DAY	MIN.	MAX.	AVG.	RDGS.																									
1	3.47	S	3.43	3.06	6.68	6.34	5.26	2.94	2.25	2.13	2.08	2.21	2.34	2.18	2.04	2.40	2.75	2.20	4.08	10.85	7.16	6.25	4.21	11.51	2.04	11.51	4.25	24	
2	S	4.10	3.90	4.52	3.94	3.15	3.01	4.19	3.54	3.09	2.28	2.82	3.08	2.48	2.78	2.44	2.61	2.36	2.38	3.03	2.31	2.18	2.96	S	2.18	4.52	3.05	24	
3	2.18	2.33	2.34	2.11	2.07	2.42	2.81	2.29	2.16	2.22	2.13	2.08	2.13	2.13	2.02	2.03	2.08	2.13	2.13	2.13	2.26	2.86	S	3.29	2.02	3.29	2.28	24	
4	3.82	3.48	5.59	4.39	3.46	3.46	3.07	2.69	2.55	2.42	2.30	2.19	C	C	C	C	C	Y	Y	Y	Y	Y	Y	Y	Y	2.19	5.59	3.29	16
5	Y	Y	Y	Y	Y	Y	Y	Y	Y	C	C	C	C	C	C	2.19	2.13	2.20	2.16	2.47	3.01	S	2.68	2.55	2.86	2.13	3.01	2.47	15
6	4.10	3.62	3.53	2.45	2.12	2.10	2.39	2.03	2.12	2.05	2.07	2.02	2.04	2.04	2.03	2.04	2.02	2.03	2.07	S	2.24	2.31	2.27	2.49	2.02	4.10	2.36	24	
7	2.54	2.26	3.04	2.55	2.87	3.80	2.98	2.15	2.10	2.07	2.07	2.05	2.03	2.06	2.05	2.04	2.03	2.03	S	2.16	4.30	4.52	2.65	2.51	2.03	4.52	2.56	24	
8	3.63	2.45	2.42	2.45	3.98	2.51	2.44	2.23	2.28	2.29	2.20	2.18	2.13	2.13	2.12	2.10	2.10	S	2.16	2.36	2.28	2.29	2.20	2.27	2.10	3.98	2.40	24	
9	2.14	2.40	2.54	3.99	3.10	2.48	2.42	2.12	2.06	2.03	2.02	2.02	2.04	2.03	2.01	2.02	S	2.03	2.03	2.02	2.02	2.02	2.02	2.02	2.02	2.01	3.99	2.24	24
10	2.02	2.02	2.03	2.04	2.04	2.03	2.04	2.04	2.03	2.04	2.03	2.03	2.03	2.03	2.03	S	2.04	2.04	2.08	2.95	3.68	3.47	2.94	3.47	2.02	3.68	2.31	24	
11	2.76	2.76	2.97	2.69	3.26	3.20	2.89	2.44	2.25	2.15	2.16	2.13	2.15	2.13	S	2.10	2.11	2.13	2.15	2.63	2.74	2.50	2.55	2.61	2.10	3.26	2.50	24	
12	3.32	3.12	2.96	2.97	3.56	3.85	6.58	3.99	2.61	2.32	2.13	2.12	2.01	S	2.12	2.09	2.27	2.03	2.27	5.21	6.43	2.90	2.97	2.26	2.01	6.58	3.13	24	
13	2.23	2.23	2.11	2.09	2.11	2.16	2.14	2.42	2.78	2.07	2.07	2.05	S	2.03	2.05	2.04	2.20	2.28	2.07	2.15	3.36	2.90	2.15	2.70	2.03	3.36	2.28	24	
14	2.54	2.34	2.32	2.20	2.25	2.16	2.26	2.29	2.08	2.03	2.01	S	2.01	2.01	2.01	2.01	2.01	2.01	2.07	2.03	2.04	2.04	2.11	2.20	2.01	2.54	2.13	24	
15	2.09	2.08	2.08	2.12	2.58	3.40	5.04	4.25	2.18	2.10	S	2.12	2.10	2.11	2.11	2.18	2.19	2.15	2.45	3.09	2.82	2.95	2.66	2.86	2.08	5.04	2.60	24	
16	2.85	3.00	4.49	3.25	3.32	3.43	3.32	2.51	2.33	S	2.18	2.28	2.14	2.06	2.16	2.12	2.08	2.12	3.73	3.73	3.47	2.99	3.02	2.60	2.06	4.49	2.83	24	
17	2.56	2.55	3.09	3.08	3.42	3.41	3.47	2.67	S	2.36	2.25	2.15	2.15	2.08	2.06	2.02	2.04	2.19	3.96	6.42	5.40	5.59	3.27	3.70	2.02	6.42	3.13	24	
18	2.58	2.55	2.61	3.43	8.89	9.21	5.95	S	2.81	2.50	2.16	2.12	2.16	2.13	2.13	2.12	2.13	2.13	2.22	2.11	2.31	2.59	3.41	3.71	2.11	9.21	3.22	24	
19	3.79	4.18	5.77	3.69	4.39	3.55	S	2.22	2.13	2.11	2.08	2.06	2.05	2.08	1.98	2.02	2.26	2.50	3.37	5.31	5.17	2.05	2.02	2.00	1.98	5.77	2.99	24	
20	2.03	2.27	4.72	2.58	3.06	S	2.56	2.08	2.01	2.05	2.03	2.03	2.03	2.03	2.04	2.03	2.04	2.05	2.18	2.05	2.15	2.16	2.23	2.13	2.01	4.72	2.28	24	
21	2.25	2.64	2.57	2.56	S	2.72	2.33	2.40	2.24	2.17	2.13	2.13	2.09	2.11	2.13	2.11	2.14	2.16	2.14	2.06	2.05	2.05	2.05	2.05	2.05	2.05	2.72	2.23	24
22	2.04	2.08	2.04	S	2.07	2.07	2.07	2.04	2.06	2.04	2.04	2.04	2.03	2.02	2.02	2.02	2.04	2.17	2.04	2.03	2.12	2.26	2.27	2.24	2.02	2.27	2.08	24	
23	2.13	2.11	S	2.13	2.17	2.23	2.32	2.13	2.14	2.08	2.07	2.10	2.07	2.09	2.07	2.06	2.07	2.09	2.21	2.33	2.87	2.69	2.34	2.30	2.06	2.87	2.21	24	
24	3.44	S	2.47	2.19	2.44	2.41	2.34	2.28	2.27	2.17	2.20	2.20	2.11	2.19	2.18	2.08	2.07	2.08	2.34	2.29	2.20	2.38	2.48	2.65	2.07	3.44	2.32	24	
25	S	2.48	2.26	2.15	2.45	2.68	2.82	2.83	2.17	2.13	2.12	2.07	2.10	2.08	2.11	2.09	2.10	2.28	2.26	2.22	2.25	2.38	2.40	S	2.07	2.83	2.29	24	
26	2.60	3.07	2.78	2.96	2.97	5.44	5.20	3.01	2.50	2.36	2.18	2.11	2.14	2.13	2.16	2.17	2.16	2.19	2.17	2.27	3.16	3.87	S	2.40	2.11	5.44	2.78	24	
27	3.06	3.47	4.15	4.14	4.45	4.35	2.83	2.83	Q	Q	Q	2.14	2.15	2.08	2.04	2.10	2.09	2.35	2.58	3.51	3.09	S	3.36	2.79	2.04	4.45	2.98	24	
28	4.51	5.96	4.92	4.88	3.90	5.39	4.93	3.23	3.03	2.48	2.36	2.16	2.12	2.12	2.03	2.04	2.09	2.10	2.10	2.20	S	3.56	3.30	3.05	2.04	5.96	3.25	24	
29	4.26	4.32	3.16	3.45	2.82	2.71	2.61	2.44	2.34	2.25	2.19	2.03	2.01	2.07	2.08	2.05	2.11	2.04	2.12	S	2.74	3.80	3.80	3.44	2.01	4.32	2.73	24	
30	3.13	2.85	3.31	3.32	3.76	3.75	3.44	3.08	3.38	2.95	2.38	2.12	2.08	2.07	2.01	2.17	2.15	2.00	S	2.28	2.18	2.10	2.10	2.32	2.00	3.76	2.65	24	
HOURLY MAX	4.51	5.96	5.77	4.88	8.89	9.21	6.58	4.25	3.54	3.09	2.38	2.82	3.08	2.48	2.78	2.44	2.75	2.50	4.08	10.85	7.16	6.25	4.21	11.51					
HOURLY AVG	2.89	2.92	3.20	2.98	3.36	3.44	3.27	2.64	2.39	2.25	2.15	2.13	2.13	2.10	2.11	2.10	2.15	2.14	2.44	3.13	3.14	2.94	2.68	2.98					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

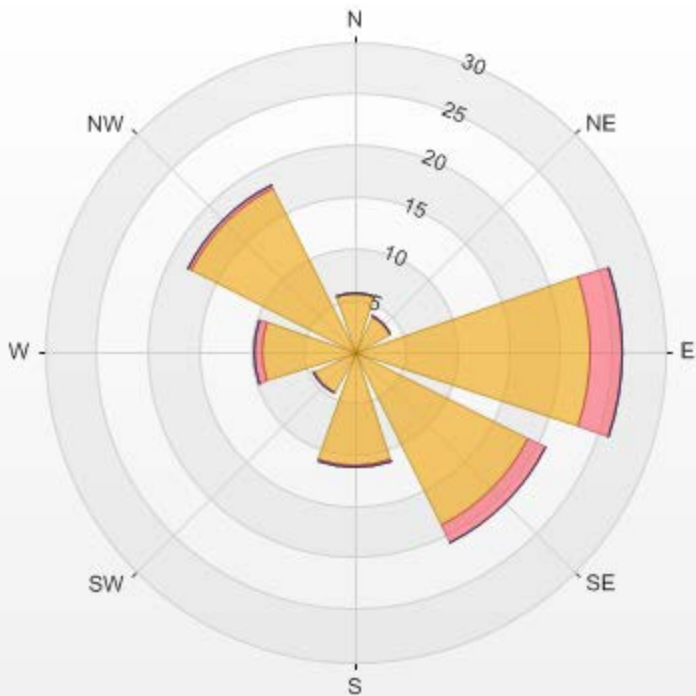
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	660
MAXIMUM INSTANTANEOUS VALUE:	11.51 PPM @ HOUR(S) 23 ON DAY(S) 1
	VAR-VARIOUS
IZS CALIBRATION TIME:	31 HRS
MONTHLY CALIBRATION TIME:	9 HRS
STANDARD DEVIATION:	1.03
OPERATIONAL TIME:	703 HRS



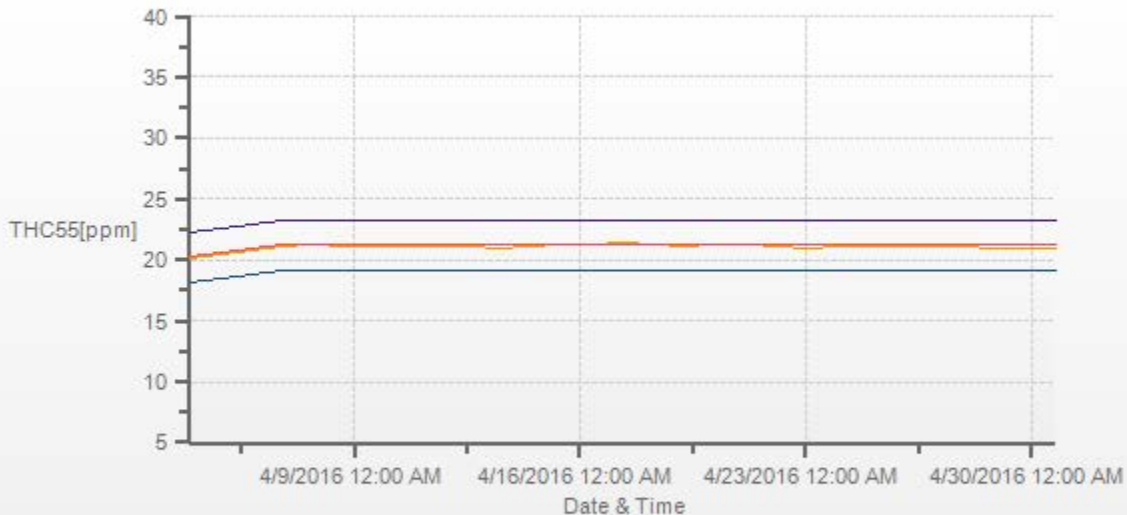
Wind: LICA ELK POINT AIRPORT Monitor: THC55 [ppm] Monthly: 04/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr
 Calm: 0.00% Valid Data: 91.81% Calm Avg: 0.00

Direction	0.0-3.0	3.0-10.0	10.0-50.0	>50.0	Total
N	5.75	0	0	0	5.75
NE	3.78	0.15	0	0	3.93
E	22.84	3.03	0	0	25.87
SE	18.76	1.97	0	0	20.73
S	11.04	0.15	0	0	11.19
SW	4.39	0.15	0	0	4.54
W	8.93	0.91	0	0	9.84
NW	17.7	0.45	0	0	18.15
Summary	93.19	6.81	0	0	100



% Icon	Classes (ppm)	93	7	0	0
	0.0-3.0				
	3.0-10.0				
	10.0-50.0				
	>50.0				

THC55[ppm] Calibration: LICA ELK POINT AIRPORT Monthly: 04/2016 Type: Span



METHANE

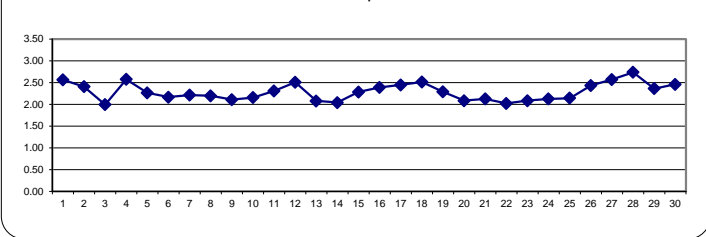
METHANE (CH4) hourly averages in ppm

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
DAY	MIN.	MAX.	AVG.	RDGS.																									
1	2.97	S	2.92	2.79	3.81	3.85	2.75	2.30	1.99	1.94	1.93	1.94	1.96	1.93	1.91	1.94	1.98	1.97	2.47	3.13	2.27	2.94	2.91	4.37	1.91	4.37	2.56	24	
2	S	3.32	3.09	3.27	3.11	2.89	2.83	3.29	2.45	2.29	1.97	2.09	2.15	2.05	2.31	2.02	1.92	1.87	1.86	2.17	2.02	1.95	2.03	S	1.86	3.32	2.41	24	
3	1.96	2.07	1.98	1.92	1.91	1.95	2.15	2.06	1.95	1.92	1.91	1.91	1.91	1.91	1.90	1.89	1.90	1.92	1.96	1.95	2.02	2.27	S	2.52	1.89	2.52	1.99	24	
4	2.55	2.42	3.57	2.92	2.87	2.84	2.63	2.45	2.34	2.19	2.08	2.05	C	C	C	C	Y	Y	Y	Y	Y	Y	Y	Y	Y	2.05	3.57	2.58	16
5	Y	Y	Y	Y	Y	Y	Y	Y	Y	C	C	C	C	2.10	2.12	2.09	2.06	2.08	2.11	2.57	S	2.44	2.47	2.63	2.06	2.63	2.27	15	
6	3.11	3.13	2.62	2.21	2.09	2.02	2.11	2.00	2.01	2.00	2.00	1.99	2.00	2.00	2.00	2.00	2.00	2.00	2.02	S	2.08	2.14	2.08	2.19	1.99	3.13	2.17	24	
7	2.17	2.08	2.17	2.29	2.40	3.03	2.29	2.11	2.08	2.06	2.05	2.03	2.02	2.02	2.03	2.02	2.02	2.01	S	2.04	2.24	2.96	2.46	2.29	2.01	3.03	2.21	24	
8	2.57	2.22	2.18	2.20	2.58	2.30	2.22	2.18	2.24	2.21	2.18	2.14	2.12	2.09	2.08	2.07	2.07	S	2.09	2.18	2.17	2.16	2.12	2.12	2.07	2.58	2.20	24	
9	2.10	2.15	2.22	3.25	2.27	2.19	2.15	2.08	2.03	2.01	2.00	2.00	2.01	2.00	2.00	2.00	S	2.01	2.01	2.01	1.99	2.00	1.99	2.00	1.99	3.25	2.11	24	
10	2.00	2.00	2.00	2.01	2.02	2.02	2.02	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.01	S	2.02	2.02	2.03	2.28	2.69	2.86	2.71	2.84	2.00	2.86	2.16	24	
11	2.59	2.48	2.60	2.54	2.81	2.64	2.61	2.29	2.13	2.12	2.10	2.10	2.10	S	2.07	2.07	2.08	2.11	2.23	2.39	2.36	2.33	2.23	2.07	2.81	2.31	24		
12	2.49	2.73	2.63	2.65	2.88	3.33	4.44	3.37	2.39	2.19	2.06	2.02	1.98	S	1.99	1.98	1.98	2.00	2.54	2.91	2.57	2.45	2.17	1.98	4.44	2.51	24		
13	2.12	2.12	2.08	2.06	2.08	2.09	2.10	2.10	2.16	2.04	2.04	2.01	S	2.01	2.02	2.00	2.01	2.03	2.00	2.00	2.34	2.14	2.05	2.17	2.00	2.34	2.08	24	
14	2.22	2.08	2.09	2.13	2.16	2.06	2.07	2.02	2.01	1.99	1.99	S	1.98	1.98	1.98	1.99	1.99	1.99	2.00	2.00	2.02	2.02	2.08	2.09	1.98	2.22	2.04	24	
15	2.07	2.05	2.06	2.07	2.14	2.39	3.49	2.44	2.13	2.07	S	2.10	2.08	2.08	2.09	2.12	2.14	2.07	2.10	2.52	2.48	2.64	2.52	2.65	2.05	3.49	2.28	24	
16	2.65	2.65	2.97	2.63	2.73	2.47	2.66	2.39	2.22	S	2.10	2.08	2.05	2.03	2.04	2.04	2.03	2.03	2.15	2.42	2.59	2.76	2.77	2.44	2.03	2.97	2.39	24	
17	2.39	2.35	2.49	2.68	2.89	2.84	2.67	2.51	S	2.23	2.16	2.07	2.02	2.01	2.00	2.00	2.00	2.01	2.18	2.75	3.57	3.23	2.66	2.57	2.00	3.57	2.45	24	
18	2.48	2.41	2.41	2.87	4.45	4.16	3.60	S	2.62	2.29	2.10	2.05	2.03	2.03	2.05	2.04	2.05	2.06	2.10	2.07	2.19	2.18	2.75	2.82	2.03	4.45	2.51	24	
19	2.73	2.67	2.99	2.59	2.74	2.79	S	2.14	2.06	2.05	2.05	2.03	2.00	1.97	1.95	1.95	1.98	2.09	2.23	2.90	2.74	2.01	1.99	1.98	1.95	2.99	2.29	24	
20	2.00	2.04	2.68	2.20	2.25	S	2.28	2.03	1.99	2.01	2.00	2.00	2.00	2.01	2.01	2.00	2.00	2.01	2.02	2.02	2.06	2.09	2.16	2.08	1.99	2.68	2.08	24	
21	2.11	2.30	2.32	2.29	S	2.41	2.27	2.28	2.13	2.12	2.10	2.08	2.07	2.09	2.08	2.07	2.06	2.05	2.01	2.01	2.01	2.02	2.02	2.02	2.01	2.41	2.13	24	
22	2.00	2.04	2.02	S	2.04	2.04	2.03	2.01	2.02	2.00	2.00	2.00	2.00	1.99	1.99	1.99	2.00	2.01	1.99	2.00	2.03	2.05	2.13	2.11	1.99	2.13	2.02	24	
23	2.03	2.05	S	2.07	2.10	2.12	2.08	2.08	2.06	2.04	2.03	2.05	2.03	2.03	2.01	2.01	2.02	2.04	2.09	2.09	2.24	2.32	2.16	2.20	2.01	2.32	2.08	24	
24	2.47	S	2.14	2.07	2.09	2.21	2.16	2.14	2.06	2.08	2.09	2.08	2.06	2.08	2.07	2.03	2.03	2.05	2.10	2.15	2.08	2.21	2.16	2.28	2.03	2.47	2.13	24	
25	S	2.23	2.10	2.12	2.32	2.41	2.43	2.29	2.09	2.08	2.07	2.02	2.04	2.04	2.04	2.03	2.04	2.11	2.14	2.08	2.12	2.15	2.18	S	2.02	2.43	2.14	24	
26	2.38	2.75	2.61	2.71	2.76	3.62	3.55	2.54	2.33	2.19	2.08	2.04	2.06	2.03	2.04	2.05	2.05	2.04	2.04	2.07	2.58	3.15	S	2.22	2.03	3.62	2.43	24	
27	2.55	2.81	3.52	3.37	3.77	3.21	2.65	2.72	Q	Q	Q	2.05	2.03	2.02	2.00	2.00	2.01	2.07	2.19	2.40	2.49	S	2.96	2.64	2.00	3.77	2.57	24	
28	2.77	3.50	3.94	4.20	3.63	4.18	3.89	3.01	2.69	2.36	2.21	2.09	2.03	2.00	2.01	1.99	2.01	2.01	2.02	2.12	S	2.83	2.73	2.74	1.99	4.20	2.74	24	
29	2.98	3.11	2.74	2.89	2.65	2.58	2.46	2.32	2.26	2.17	2.04	1.97	1.97	1.98	1.99	1.99	1.99	1.98	2.02	S	2.35	2.41	2.83	2.65	1.97	3.11	2.36	24	
30	2.81	2.68	2.96	3.10	3.31	3.25	3.15	2.92	2.98	2.71	2.22	2.05	2.00	1.99	1.98	2.01	2.00	1.98	S	2.09	2.05	2.08	2.07	2.17	1.98	3.31	2.46	24	
HOURLY MAX	3.11	3.50	3.94	4.20	4.45	4.18	4.44	3.37	2.98	2.71	2.22	2.14	2.15	2.10	2.31	2.12	2.14	2.11	2.47	3.13	3.57	3.23	2.96	4.37					
HOURLY AVG	2.42	2.46	2.58	2.58	2.67	2.71	2.63	2.36	2.20	2.12	2.06	2.04	2.03	2.02	2.03	2.01	2.02	2.02	2.08	2.25	2.32	2.39	2.36	2.41					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

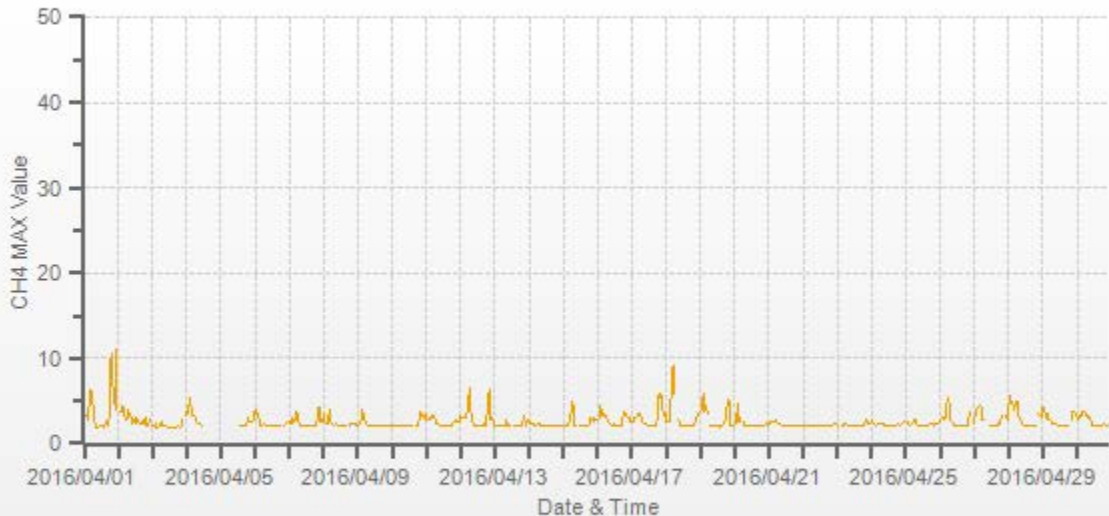
24 HOUR AVERAGES FOR April 2016



MONTHLY SUMMARY

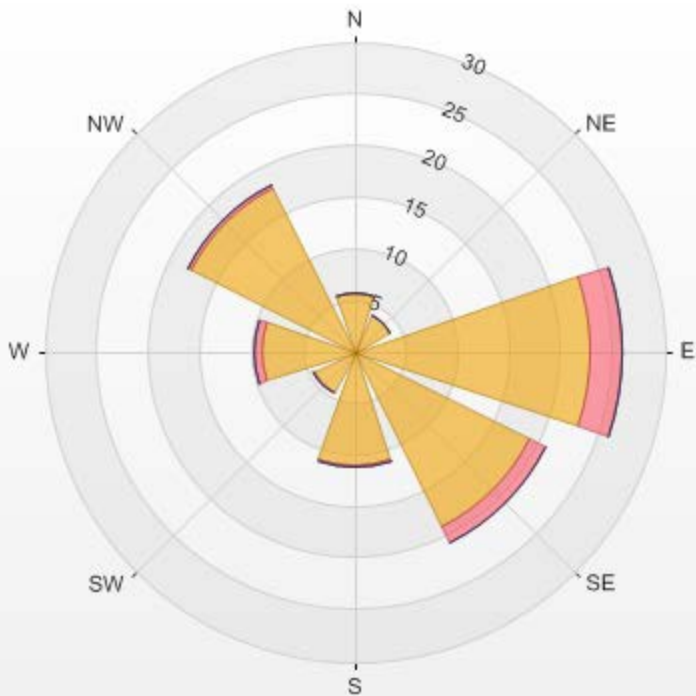
NUMBER OF NON-ZERO READINGS:	661		
MINIMUM 1-HR AVERAGE:	1.86 PPM	@ HOUR(S)	18 ON DAY(S)
MAXIMUM 1-HR AVERAGE:	4.45 PPM	@ HOUR(S)	4 ON DAY(S)
MAXIMUM 24-HR AVERAGE:	2.74 PPM		28 ON DAY(S)
			VAR-VARIOUS
IZS CALIBRATION TIME:	31 HRS	OPERATIONAL TIME:	703 HRS
MONTHLY CALIBRATION TIME:	8 HRS	AMD OPERATION UPTIME:	97.6 %
STANDARD DEVIATION:	0.42	MONTHLY AVERAGE:	2.28 PPM





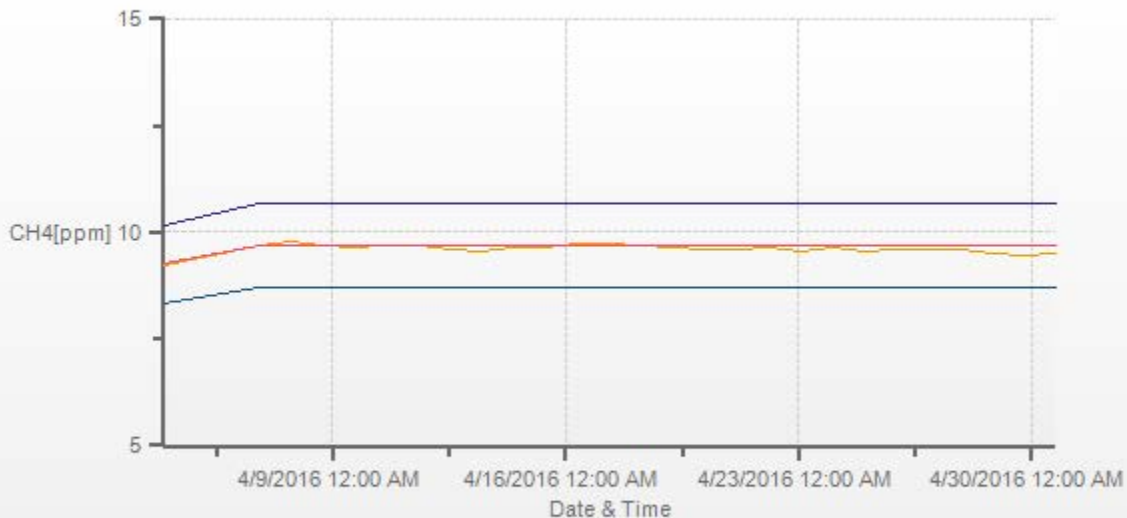
Wind: LICA ELK POINT AIRPORT Monitor: CH4 [ppm] Monthly: 04/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 91.81% Calm Avg: 0.00

Direction	0.0-3.0	3.0-10.0	10.0-50.0	>50.0	Total
N	5.75	0	0	0	5.75
NE	3.93	0	0	0	3.93
E	22.84	3.03	0	0	25.87
SE	19.06	1.66	0	0	20.72
S	11.04	0.15	0	0	11.19
SW	4.39	0.15	0	0	4.54
W	8.93	0.91	0	0	9.84
NW	17.7	0.45	0	0	18.15
Summary	93.64	6.35	0	0	100



% Icon	Classes (ppm)	94		0.0-3.0	6		3.0-10.0	0		10.0-50.0	0		>50.0
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CH4[ppm] Calibration: LICA ELK POINT AIRPORT Monthly: 04/2016 Type: Span



NON-METHANE HYDROCARBON

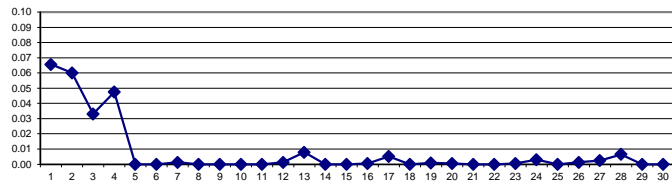
NON-METHANE HYDROCARBONS (NMHC) hourly averages in ppm

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR		
DAY	MIN.	MAX.	AVG.	RDGS.																										
1	0.10	S	0.09	0.06	0.16	0.16	0.07	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.06	0.09	0.04	0.09	0.08	0.17	0.03	0.17	0.07	24	
2	S	0.10	0.09	0.08	0.09	0.08	0.08	0.12	0.09	0.09	0.05	0.06	0.05	0.04	0.05	0.03	0.03	0.03	0.03	0.03	0.04	0.03	0.03	0.03	0.03	S	0.03	0.12	0.06	24
3	0.02	0.04	0.02	0.03	0.04	0.02	0.03	0.04	0.03	0.03	0.04	0.03	0.04	0.03	0.04	0.03	0.02	0.03	0.03	0.03	0.04	0.05	0.04	S	0.05	0.02	0.05	0.03	24	
4	0.04	0.03	0.05	0.04	0.06	0.05	0.06	0.07	0.06	0.04	0.04	0.04	0.03	C	C	C	C	Y	Y	Y	Y	Y	Y	Y	Y	Y	0.03	0.07	0.05	16
5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	C	C	C	C	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	15
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	24
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	24
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
12	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	24
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.05	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.01	24
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	24
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.08	0.02	0.00	0.00	0.00	0.00	0.00	0.08	0.01	24
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
19	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	24
20	0.00	0.00	0.01	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	24
21	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
22	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
23	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	24
24	0.07	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	24
25	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	24
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	S	0.00	0.00	0.02	0.00	24	
27	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	Q	Q	Q	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	S	0.00	0.00	0.00	0.02	0.00	24	
28	0.01	0.04	0.05	0.01	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.05	0.01	24
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
HOURLY MAX	0.10	0.10	0.09	0.08	0.16	0.16	0.08	0.13	0.09	0.09	0.05	0.06	0.05	0.04	0.05	0.03	0.03	0.04	0.06	0.09	0.05	0.09	0.08	0.17						
HOURLY AVG	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.01						

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

24 HOUR AVERAGES FOR April 2016



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	106				
MINIMUM 1-HR AVERAGE:	0.00	PPM @ HOUR(S)	VAR	ON DAY(S)	VAR
MAXIMUM 1-HR AVERAGE:	0.17	PPM @ HOUR(S)	23	ON DAY(S)	1
MAXIMUM 24-HR AVERAGE:	0.07	PPM		ON DAY(S)	1
				VAR-VARIOUS	
I2S CALIBRATION TIME:	31	HRS	OPERATIONAL TIME:	703	HRS
MONTHLY CALIBRATION TIME:	8	HRS	AMD OPERATION UPTIME:	97.6	%
STANDARD DEVIATION:	0.02		MONTHLY AVERAGE:	0.01	PPM





NON-METHANE HYDROCARBONS MAX instantaneous maximum in ppm

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR		
DAY	MIN.	MAX.	AVG.	RDGS.																										
1	0.22	S	0.21	0.20	0.31	0.27	0.20	0.16	0.14	0.15	0.14	0.15	0.23	0.19	0.14	0.15	0.20	0.16	0.21	0.32	0.32	0.22	0.20	0.40	0.14	0.40	0.21	24		
2	S	0.24	0.21	0.20	0.23	0.19	0.18	0.24	0.19	0.21	0.20	0.18	0.18	0.16	0.22	0.16	0.15	0.17	0.17	0.18	0.15	0.18	0.19	S	0.15	0.24	0.19	24		
3	0.15	0.20	0.12	0.20	0.15	0.14	0.19	0.18	0.16	0.18	0.18	0.14	0.20	0.20	0.12	0.13	0.17	0.19	0.14	0.18	0.22	0.20	S	0.18	0.12	0.22	0.17	24		
4	0.15	0.16	0.19	0.17	0.18	0.20	0.18	0.23	0.16	0.21	0.16	0.15	C	C	C	C	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	0.15	0.23	0.18	16
5	Y	Y	Y	Y	Y	Y	Y	Y	Y	C	C	C	C	C	0.00	0.00	0.00	0.00	0.00	0.00	0.13	S	0.00	0.07	0.00	0.00	0.13	0.02	15	
6	0.11	0.13	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.13	0.02	24	
7	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.21	0.00	0.00	0.00	0.21	0.01	24	
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	24	
9	0.00	0.00	0.00	0.05	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	24	
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
12	0.00	0.00	0.00	0.04	0.00	0.05	0.14	0.19	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.05	0.00	0.00	0.19	0.02	24	
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.24	0.00	0.00	S	0.00	0.00	0.00	0.00	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.04	24	
14	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	24	
15	0.00	0.00	0.00	0.00	0.00	0.11	0.07	0.05	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.01	24		
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.26	0.06	0.00	0.00	0.26	0.02	24		
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.64	0.15	0.15	0.00	0.00	0.64	0.06	24		
18	0.00	0.00	0.16	0.00	0.04	0.06	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.01	24		
19	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.02	0.08	0.13	0.00	0.00	0.00	0.00	0.13	0.01	24		
20	0.00	0.00	0.06	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.01	24		
21	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24	
22	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24	
23	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.11	0.00	0.28	0.02	24		
24	0.73	S	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.73	0.04	24		
25	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24	
26	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.16	0.24	S	0.00	0.00	0.24	0.02	24		
27	0.15	0.11	0.07	0.00	0.03	0.08	0.00	0.00	Q	Q	Q	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.24	0.14	S	0.00	0.00	0.00	0.24	0.05	24		
28	0.15	0.31	0.34	0.13	0.04	0.37	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.37	0.08	24		
29	0.00	0.00	0.10	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.10	0.01	24		
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24	
HOURLY MAX	0.73	0.31	0.34	0.20	0.31	0.37	0.20	0.35	0.24	0.21	0.20	0.18	0.23	0.20	0.32	0.16	0.20	0.27	0.33	0.64	0.32	0.28	0.20	0.40						
HOURLY AVG	0.06	0.04	0.06	0.04	0.04	0.06	0.04	0.05	0.04	0.03	0.03	0.02	0.02	0.02	0.03	0.02	0.02	0.03	0.05	0.07	0.06	0.06	0.02	0.02						

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

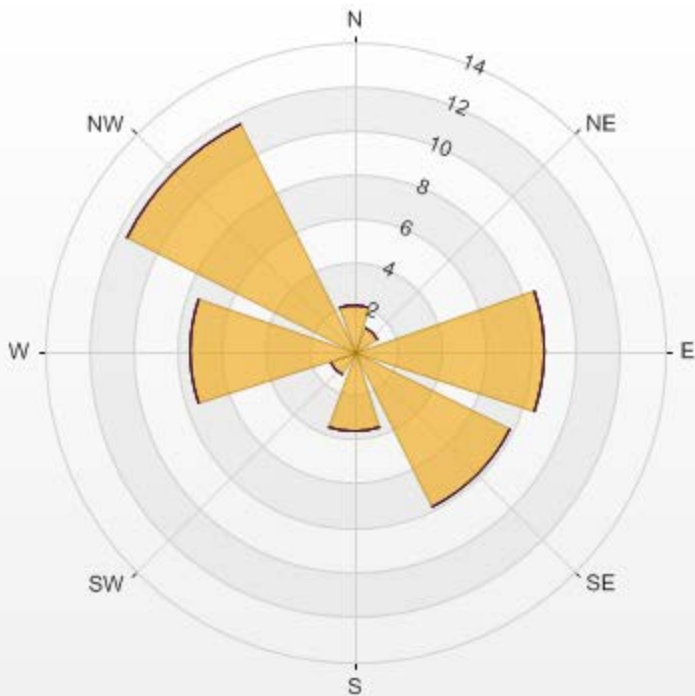
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	145
MAXIMUM INSTANTANEOUS VALUE:	0.73 PPM @ HOUR(S) 0 ON DAY(S) 24
	VAR-VARIOUS
IZS CALIBRATION TIME:	31 HRS
MONTHLY CALIBRATION TIME:	9 HRS
STANDARD DEVIATION:	0.08
OPERATIONAL TIME:	703 HRS



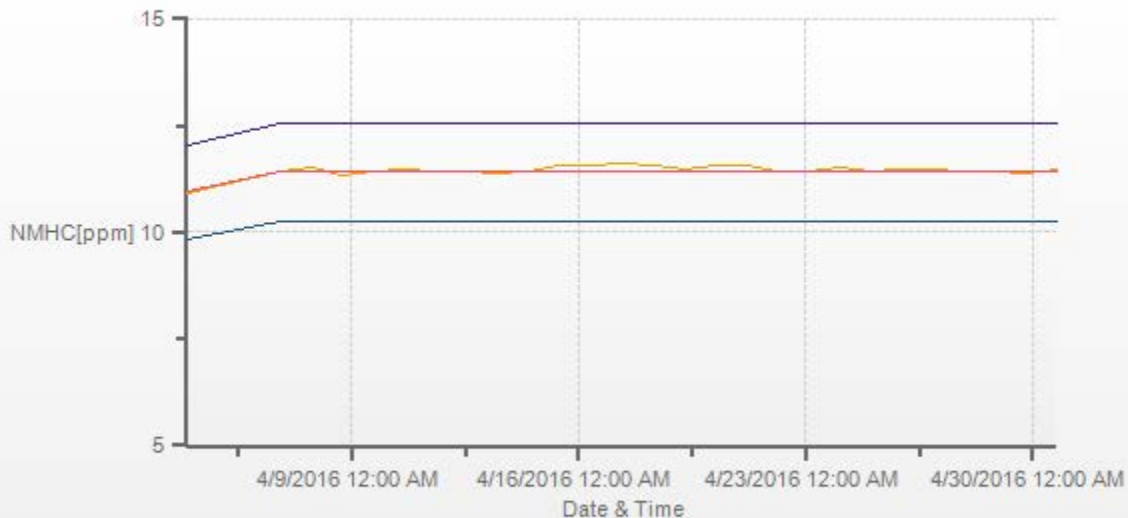
Wind: LICA ELK POINT AIRPORT Monitor: NMHC [ppm] Monthly: 04/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 56.43% Valid Data: 91.81% Calm Avg: 0.00

Direction	0.0-0.3	0.3-0.5	0.5-1.0	1.0-2.0	2.0-4.0	>4.0	Total
N	2.12	0	0	0	0	0	2.12
NE	1.21	0	0	0	0	0	1.21
E	8.62	0	0	0	0	0	8.62
SE	7.87	0	0	0	0	0	7.87
S	3.63	0	0	0	0	0	3.63
SW	1.21	0	0	0	0	0	1.21
W	7.41	0	0	0	0	0	7.41
NW	11.5	0	0	0	0	0	11.5
Summary	43.57	0	0	0	0	0	43.57



% Icon	Classes (ppm)	0	0.0-0.3	0	0.3-0.5	0	0.5-1.0	0	1.0-2.0	0	2.0-4.0	0	>4.0
44	0.0-0.3	0	0.3-0.5	0	0.5-1.0	0	1.0-2.0	0	2.0-4.0	0	>4.0	0	>4.0

NMHC[ppm] Calibration: LICA ELK POINT AIRPORT Monthly: 04/2016 Type: Span



OXIDES OF NITROGEN

OXIDES OF NITROGEN (NOx) hourly averages in ppb

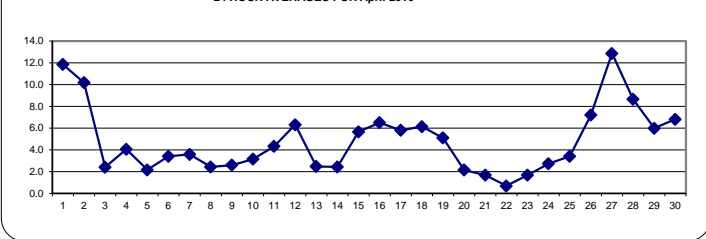
MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR		
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.	
DAY 1	11.9	S	13.3	12.9	30.7	39.1	18.7	14.2	3.5	1.7	1.1	2.1	3.0	1.1	0.6	2.7	4.6	3.0	12.5	23.2	12.7	18.1	18.5	23.7	0.6	39.1	11.9	24	
2	S	14.3	17.3	14.7	10.9	9.3	23.9	35.4	13.3	13.5	4.3	8.2	8.9	5.8	14.3	4.7	2.4	1.0	0.6	10.0	4.7	2.7	3.8	S	0.6	35.4	10.2	24	
3	2.9	4.2	2.8	1.2	0.8	1.3	8.7	7.2	2.9	1.2	1.2	0.8	0.5	0.4	0.2	0.0	0.4	0.6	2.2	0.7	1.9	4.7	S	8.5	0.0	8.7	2.4	24	
4	5.5	5.7	11.5	6.3	9.8	11.1	7.5	4.3	3.3	3.3	2.6	2.0	2.3	1.4	1.6	1.4	1.7	2.2	3.3	2.5	1.0	S	2.0	1.1	1.0	11.5	4.1	24	
5	0.7	0.7	0.1	0.0	0.0	0.0	0.9	0.3	0.5	C	C	C	C	C	C	2.1	0.9	1.0	2.6	9.4	S	6.4	4.9	6.1	0.0	9.4	2.2	24	
6	9.1	13.7	14.6	7.2	4.0	1.7	4.2	0.5	1.0	0.7	0.6	0.3	0.3	0.4	0.4	0.3	0.1	0.3	0.6	S	4.3	5.9	1.5	6.4	0.1	14.6	3.4	24	
7	7.3	1.9	5.8	8.2	9.3	14.4	3.8	2.0	1.4	0.9	0.8	0.4	0.4	0.5	0.3	0.3	0.1	0.0	S	1.2	1.7	11.5	7.2	2.9	0.0	14.4	3.6	24	
8	4.3	1.7	1.5	1.8	3.1	3.5	3.7	2.8	2.4	2.5	1.9	1.8	1.7	1.9	1.8	2.1	2.1	S	2.3	3.0	3.3	2.4	1.9	2.1	1.5	4.3	2.4	24	
9	2.1	3.8	4.1	21.3	8.0	3.4	3.6	1.7	1.4	1.2	0.7	0.7	0.9	0.8	0.4	0.4	S	1.4	1.0	0.7	0.5	0.5	0.4	0.5	0.4	21.3	2.6	24	
10	0.6	0.7	0.9	0.9	0.9	0.8	0.8	0.9	0.9	1.0	0.8	0.7	0.6	0.3	0.3	S	1.2	0.8	0.9	3.6	8.4	24.0	13.4	8.9	0.3	24.0	3.1	24	
11	10.3	6.1	7.4	5.7	13.2	6.8	6.5	4.7	2.4	2.0	2.3	2.2	2.2	1.9	S	2.7	2.2	2.1	2.2	3.0	3.8	3.0	3.0	3.6	1.9	13.2	4.3	24	
12	3.3	4.8	4.9	6.2	15.8	25.4	S1	S1	10.7	6.7	3.3	2.2	1.1	S	2.7	1.7	1.6	1.6	2.4	11.0	9.7	7.1	7.8	2.4	1.1	25.4	6.3	22	
13	1.4	1.9	2.1	1.5	2.3	1.5	1.8	1.9	3.9	1.7	2.2	1.6	S	2.2	1.9	1.6	2.0	2.2	1.3	1.2	8.3	5.0	3.0	4.4	1.2	8.3	2.5	24	
14	7.3	3.8	5.3	4.8	6.6	4.2	4.1	1.8	1.8	1.2	0.9	S	1.4	0.9	0.8	0.5	0.6	0.5	0.5	1.0	1.3	2.2	3.8	0.5	7.3	2.4	24		
15	2.7	1.9	2.1	2.1	4.5	11.6	28.2	7.6	2.5	1.2	S	2.2	1.6	1.2	1.8	2.0	2.9	2.1	2.3	13.9	10.4	9.0	7.9	8.5	1.2	28.2	5.7	24	
16	9.9	9.4	8.9	6.7	9.5	5.8	7.5	6.9	4.4	S	2.6	2.3	2.2	1.6	1.8	2.1	1.6	1.8	4.8	16.3	13.4	14.6	9.1	6.5	1.6	16.3	6.5	24	
17	6.2	4.9	6.1	7.4	13.4	13.6	7.1	6.6	S	4.8	3.2	1.8	1.5	1.1	0.9	0.8	1.1	0.9	3.7	7.8	15.0	11.4	8.2	5.8	0.8	15.0	5.8	24	
18	6.4	5.7	8.5	8.4	13.1	12.7	18.3	S	10.6	5.5	2.4	1.8	1.3	1.7	2.2	2.0	2.1	2.9	5.4	2.1	9.7	3.1	8.0	7.2	1.3	18.3	6.1	24	
19	6.5	6.6	7.8	5.5	7.6	11.5	S	4.8	3.4	3.5	3.0	2.9	1.9	1.5	0.9	1.0	1.5	3.4	5.9	19.9	14.4	1.8	1.1	0.7	0.7	19.9	5.1	24	
20	0.8	0.9	8.7	4.5	7.1	S	11.6	1.5	0.6	0.9	0.8	0.6	0.5	0.8	0.9	0.8	1.1	1.1	1.0	0.9	0.5	0.6	2.3	0.8	0.5	11.6	2.1	24	
21	0.7	3.0	3.6	3.1	S	7.1	2.5	3.7	1.9	1.4	1.4	1.1	0.7	0.8	0.8	1.1	1.3	1.5	0.4	0.4	0.5	0.4	0.5	0.6	0.4	7.1	1.7	24	
22	0.3	0.9	0.6	S	1.5	1.0	0.7	0.5	0.5	0.5	0.3	0.4	0.3	0.4	0.4	0.5	0.8	0.8	0.5	0.7	0.7	0.7	1.6	1.1	0.3	1.6	0.7	24	
23	0.7	0.8	S	1.7	1.3	1.5	1.3	1.2	0.9	0.8	0.6	0.8	0.8	0.6	0.6	0.5	0.4	0.5	0.9	1.2	2.6	8.9	5.2	4.7	0.4	8.9	1.7	24	
24	12.2	S	4.5	3.4	1.8	2.4	2.2	1.9	2.4	2.6	2.1	1.4	1.0	1.9	1.0	0.7	1.0	0.9	2.2	3.2	2.7	4.8	2.4	3.8	0.7	12.2	2.7	24	
25	S	4.8	2.3	1.7	4.5	8.3	5.3	4.5	1.8	2.4	2.6	1.3	1.6	1.7	1.9	1.7	2.2	4.2	3.6	1.9	3.5	4.4	8.7	S	1.3	8.7	3.4	24	
26	6.8	11.0	8.0	12.6	14.8	17.2	16.7	7.1	5.3	5.2	2.4	2.6	3.1	2.3	2.6	2.4	2.7	3.0	2.6	4.6	7.9	20.6	S	4.4	2.3	20.6	7.2	24	
27	12.5	14.2	20.7	18.3	24.0	14.0	8.8	10.9	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	2.2	6.2	10.4	9.1	S	16.9	12.0	2.2	24.0	12.9	24
28	10.4	12.5	14.3	18.2	17.2	22.9	20.2	11.4	7.5	4.4	2.9	1.7	1.8	1.7	1.8	1.8	1.9	2.5	2.0	3.5	S	16.0	11.9	10.3	1.7	22.9	8.6	24	
29	8.1	12.4	15.4	9.2	7.1	7.5	6.7	5.1	3.9	2.8	1.7	1.1	1.2	1.5	1.6	1.1	1.2	1.3	4.0	S	9.1	8.0	16.5	11.1	1.1	16.5	6.0	24	
30	11.7	8.5	9.4	11.1	15.9	16.1	16.8	12.3	12.5	11.7	3.1	1.6	1.2	1.4	0.9	1.7	2.0	1.1	S	4.5	2.6	2.2	3.0	5.4	0.9	16.8	6.8	24	
HOURLY MAX	12.5	14.3	20.7	21.3	30.7	39.1	28.2	35.4	13.3	13.5	4.3	8.2	8.9	5.8	14.3	4.7	4.6	4.2	12.5	23.2	15.0	24.0	18.5	23.7					
HOURLY AVG	5.8	5.7	7.3	7.1	8.9	9.5	8.6	5.8	3.8	3.2	1.9	1.7	1.6	1.4	1.7	1.5	1.6	1.6	2.8	5.8	5.8	7.1	6.2	5.6					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

24 HOUR AVERAGES FOR April 2016



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	666				
MINIMUM 1-HR AVERAGE:	0.0	PPB @ HOUR(S)	VAR	ON DAY(S)	VAR
MAXIMUM 1-HR AVERAGE:	39.1	PPB @ HOUR(S)	5	ON DAY(S)	1
MAXIMUM 24-HR AVERAGE:	12.9	PPB		ON DAY(S)	27
				VAR-VARIOUS	
IZS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	718	HRS
MONTHLY CALIBRATION TIME:	6	HRS	AMD OPERATION UPTIME:	99.7	%
STANDARD DEVIATION:	5.38		MONTHLY AVERAGE:	4.7	PPB





OXIDES OF NITROGEN MAX instantaneous maximum in ppb

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.	
DAY																														
1		12.2	S	16.6	30.4	65.8	96.1	45.7	59.2	6.9	1.9	1.3	6.7	6.9	2.4	0.2	8.6	14.1	13.1	56.1	45.8	23.7	21.0	22.4	35.2	0.2	96.1	25.8	24	
2		S	17.9	68.2	29.7	13.4	9.9	63.0	51.7	23.4	24.3	10.9	17.6	23.7	12.4	21.5	13.1	11.5	2.9	8.2	23.4	6.8	8.8	18.7	S	2.9	68.2	21.9	24	
3		4.9	5.0	9.1	1.0	1.1	6.4	20.9	13.0	4.2	3.2	2.1	0.9	0.2	0.0	0.0	0.0	0.5	0.8	5.3	0.5	2.9	6.4	S	24.9	0.0	24.9	4.9	24	
4		12.7	7.8	23.7	8.5	12.8	17.6	9.5	6.3	3.6	4.7	2.6	2.3	3.4	1.8	2.4	1.5	2.1	3.3	6.7	4.3	1.3	S	2.2	2.0	1.3	23.7	6.2	24	
5		1.8	1.5	0.5	0.3	0.6	0.7	4.9	1.2	1.9	C	C	C	C	C	C	C	2.5	3.2	5.0	14.4	S	10.7	6.8	8.6	0.3	14.4	4.0	24	
6		40.3	25.0	31.0	12.3	5.7	2.8	10.8	1.3	1.8	1.5	9.4	1.0	1.0	1.0	1.1	1.1	0.6	1.0	2.4	S	11.4	19.0	10.7	17.3	0.6	40.3	9.1	24	
7		16.3	7.8	14.4	14.4	29.8	28.8	12.6	2.8	2.0	1.6	1.4	1.0	1.0	1.1	0.9	0.9	0.5	S	2.3	5.0	23.7	9.7	7.2	0.5	29.8	8.1	24		
8		9.6	3.5	2.8	2.6	5.5	7.2	6.4	6.4	3.3	3.8	2.4	2.6	2.9	2.7	2.7	3.1	3.0	S	2.9	5.6	7.8	2.9	2.3	3.1	2.3	9.6	4.1	24	
9		2.9	7.5	6.1	32.5	11.6	4.7	9.6	2.2	1.9	1.7	1.0	1.0	1.3	1.3	0.7	0.7	S	2.3	1.3	1.0	0.8	0.9	0.8	1.2	0.7	32.5	4.1	24	
10		1.0	1.2	1.5	1.7	1.4	1.3	1.4	1.4	1.4	1.4	1.3	1.4	1.3	1.4	1.1	0.8	S	2.2	1.3	1.4	13.3	43.4	83.7	18.4	17.4	0.8	83.7	8.7	24
11		18.8	12.0	17.3	6.8	91.1	12.8	10.0	6.0	3.9	2.7	3.3	3.5	3.7	2.6	S	5.0	3.5	3.9	4.0	6.1	5.2	4.0	3.7	4.8	2.6	91.1	10.2	24	
12		4.0	6.3	5.8	9.8	38.7	75.6	S1	S1	16.3	8.7	4.5	4.6	1.8	S	5.2	2.6	3.2	2.9	5.9	75.2	19.8	10.0	14.2	3.3	1.8	75.6	15.2	22	
13		1.9	3.4	2.5	2.0	2.9	2.5	2.5	9.0	2.4	3.0	2.3	S	3.1	2.3	2.0	7.5	5.3	2.3	4.0	22.4	14.7	4.0	9.2	1.9	1.9	22.4	4.9	24	
14		12.7	7.2	9.6	7.3	8.6	5.9	6.4	5.1	2.5	1.7	1.3	S	2.3	1.2	1.1	0.8	0.8	0.8	1.6	1.0	2.0	2.3	3.3	7.6	0.8	12.7	4.0	24	
15		3.4	4.2	4.0	2.9	10.9	19.3	55.5	24.3	4.7	1.8	S	3.6	2.3	1.9	2.7	3.1	3.9	3.2	7.1	27.3	20.8	12.3	16.7	25.3	1.8	55.5	11.4	24	
16		25.5	19.8	13.9	9.4	16.9	12.2	12.7	9.0	5.7	S	4.7	4.4	4.3	2.9	4.0	4.3	5.5	3.4	17.8	77.8	24.0	27.2	12.0	10.5	2.9	77.8	14.3	24	
17		8.9	6.0	8.6	14.5	19.2	26.7	15.5	7.8	S	6.8	5.2	2.7	2.5	2.2	2.1	2.1	2.1	2.1	38.3	13.3	21.4	46.8	10.3	8.4	2.1	46.8	11.9	24	
18		7.3	7.6	19.8	10.4	24.5	19.3	35.5	S	13.1	8.2	3.4	2.9	2.3	3.1	3.6	3.4	3.6	4.3	12.7	4.6	25.1	5.6	9.8	9.0	2.3	35.5	10.4	24	
19		8.0	10.5	18.0	7.3	11.8	16.5	S	6.7	4.9	5.2	3.9	3.9	2.9	2.3	1.5	1.6	3.3	9.2	22.4	46.8	39.1	3.1	1.6	1.1	1.1	46.8	10.1	24	
20		1.1	2.5	24.5	10.5	24.5	S	26.9	2.4	1.1	1.6	1.2	1.2	1.1	1.3	1.7	1.4	1.7	1.7	1.6	1.8	1.3	1.6	4.0	1.9	1.1	26.9	5.2	24	
21		1.9	4.5	5.7	5.4	S	13.8	3.3	5.2	3.3	2.1	2.1	2.1	1.8	1.5	1.5	2.0	2.4	2.8	2.0	1.2	0.9	0.9	1.0	1.3	0.9	13.8	3.0	24	
22		1.0	1.6	1.0	S	2.3	1.7	1.2	1.0	0.9	0.8	0.8	0.8	0.8	0.9	0.9	1.1	1.8	2.3	1.4	1.4	1.6	1.5	3.1	2.1	0.8	3.1	1.4	24	
23		1.2	1.2	S	2.5	1.9	2.6	1.9	2.2	1.6	1.5	1.3	1.4	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.6	2.2	5.1	17.1	12.5	36.8	1.2	36.8	4.4	24
24		27.1	S	13.0	5.6	6.3	5.9	5.4	2.9	3.9	5.6	4.5	2.2	1.6	4.5	2.1	1.3	1.7	1.3	6.9	5.3	5.2	8.0	5.8	10.4	1.3	27.1	5.9	24	
25		S	9.9	4.0	3.4	7.7	12.3	9.0	8.5	3.1	3.6	3.6	2.9	3.8	2.9	3.1	2.8	4.5	7.6	7.8	5.5	7.5	10.8	17.3	S	2.8	17.3	6.4	24	
26		9.3	17.6	12.8	16.8	18.2	28.1	25.3	15.6	7.1	9.5	4.3	4.1	4.7	4.0	4.1	4.5	5.6	6.1	5.2	10.2	11.5	33.4	S	8.6	4.0	33.4	11.6	24	
27		19.4	19.4	31.9	25.9	30.4	20.5	10.0	12.6	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	8.4	11.0	28.3	19.3	S	32.5	15.2	8.4	32.5	20.3	24
28		14.3	19.8	20.0	32.2	24.9	32.4	29.3	13.8	11.5	6.0	4.7	2.5	3.4	2.7	2.7	2.9	4.5	6.1	3.5	4.6	S	30.4	17.8	15.2	2.5	32.4	13.3	24	
29		11.3	23.7	23.1	18.0	8.9	9.6	7.6	6.5	4.7	3.6	3.2	2.4	2.4	3.5	3.7	2.2	2.3	2.1	9.1	S	17.3	29.5	31.5	14.1	2.1	31.5	10.4	24	
30		18.6	12.3	11.9	14.9	103.7	21.8	29.2	15.7	15.2	15.4	6.5	2.9	3.0	3.1	1.6	4.5	4.6	2.1	S	9.9	4.2	3.2	4.4	10.6	1.6	103.7	13.9	24	
HOURLY MAX		40.3	25.0	68.2	32.5	103.7	96.1	63.0	59.2	23.4	24.3	10.9	17.6	23.7	12.4	21.5	13.1	14.1	13.1	56.1	77.8	43.4	83.7	32.5	36.8					
HOURLY AVG		10.6	9.5	14.5	11.7	20.7	17.8	16.9	10.5	5.8	4.9	3.5	3.1	3.2	2.5	2.8	2.9	3.6	3.6	9.0	15.6	12.7	15.7	10.6	11.2					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

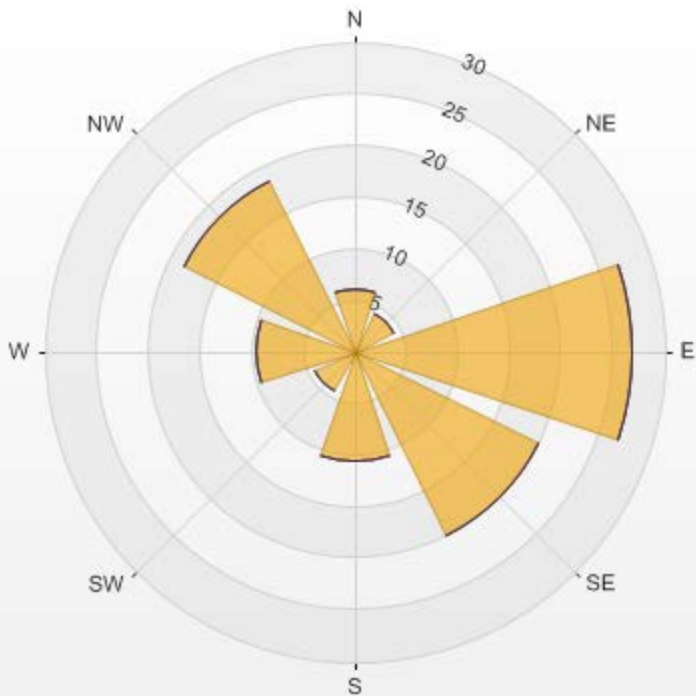
NUMBER OF NON-ZERO READINGS:	667
MAXIMUM INSTANTANEOUS VALUE:	103.7 PPB @ HOUR(S) 4 ON DAY(S) 30
	VAR-VARIOUS
IZS CALIBRATION TIME:	32 HRS
MONTHLY CALIBRATION TIME:	7 HRS
STANDARD DEVIATION:	12.92
OPERATIONAL TIME:	718 HRS

NOX MAX[ppb] Station: LICA ELK POINT AIRPORT Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



Wind: LICA ELK POINT AIRPORT Monitor: NOX [ppb] Monthly: 04/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 93.19% Calm Avg: 0.00

Direction	0.0-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	6.11	0	0	0	6.11
NE	4.17	0	0	0	4.17
E	26.83	0	0	0	26.83
SE	19.97	0	0	0	19.97
S	10.58	0	0	0	10.58
SW	4.32	0	0	0	4.32
W	9.54	0	0	0	9.54
NW	18.48	0	0	0	18.48
Summary	100	0	0	0	100



% Icon Classes (ppb)	100	0-50.0	0	50.0-110.0	0	110.0-210.0	0	>210.0

NOX[ppb] Calibration: LICA ELK POINT AIRPORT Monthly: 04/2016 Type: Span



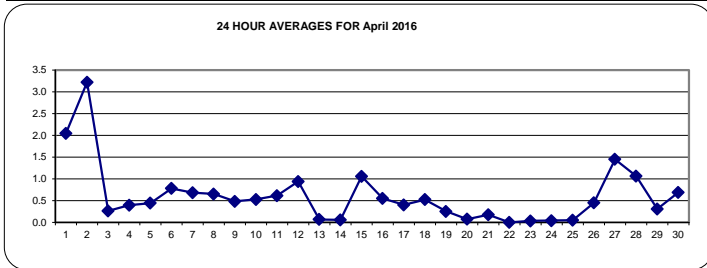
NITRIC OXIDES

NITRIC OXIDE (NO) hourly averages in ppb

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
DAY	MIN.	MAX.	AVG.	RDGS.																									
1	0.3	S	0.5	1.2	5.5	10.7	5.5	5.5	1.4	0.6	0.3	0.9	1.2	0.4	0.1	1.1	1.6	1.0	2.6	2.7	0.8	0.4	0.8	1.9	0.1	10.7	2.0	24	
2	S	0.6	4.1	1.4	0.2	0.3	11.2	19.2	6.6	6.8	1.6	3.8	4.2	2.2	5.4	1.4	0.5	0.1	0.0	1.2	0.0	0.0	0.1	S	0.0	19.2	3.2	24	
3	0.2	0.0	0.0	0.0	0.0	0.0	1.8	1.6	0.6	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	S	1.2	0.0	1.8	0.3	24	
4	0.4	0.2	1.1	0.0	0.4	1.1	1.2	1.0	0.8	0.9	0.6	0.4	0.7	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	S	0.0	0.0	0.0	1.2	0.4	24	
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	C	C	C	C	C	C	2.0	0.9	0.8	0.7	1.0	S	0.8	0.7	0.6	0.0	2.0	0.4	24	
6	1.3	1.8	2.5	0.9	0.6	0.5	1.1	0.5	0.9	0.7	0.6	0.3	0.3	0.4	0.4	0.3	0.1	0.3	0.4	S	1.0	1.1	0.6	1.3	0.1	2.5	0.8	24	
7	1.3	0.5	0.8	0.8	1.4	1.8	0.8	0.9	0.9	0.8	0.7	0.4	0.4	0.5	0.3	0.3	0.1	0.0	S	0.6	0.6	0.9	0.5	0.4	0.0	1.8	0.7	24	
8	0.4	0.4	0.4	0.6	0.5	0.6	0.9	1.1	1.1	1.2	0.9	0.9	0.8	0.9	0.7	0.7	0.7	S	0.7	0.5	0.6	0.3	0.0	0.1	0.0	1.2	0.7	24	
9	0.1	0.3	0.5	4.5	0.9	0.4	0.5	0.3	0.4	0.4	0.2	0.2	0.2	0.3	0.0	0.1	S	0.4	0.4	0.3	0.2	0.2	0.2	0.1	0.0	4.5	0.5	24	
10	0.2	0.3	0.2	0.1	0.3	0.1	0.2	0.2	0.4	0.4	0.4	0.3	0.4	0.0	0.1	S	0.4	0.2	0.1	0.2	0.5	5.4	1.1	0.6	0.0	5.4	0.5	24	
11	0.9	0.5	0.4	0.2	3.4	0.6	1.2	1.5	0.9	0.8	0.7	0.5	0.6	0.4	S	0.7	0.5	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	3.4	0.6	24	
12	0.0	0.0	0.0	0.1	1.7	8.8	S1	S1	3.9	2.2	0.7	0.4	0.0	S	0.5	0.1	0.1	0.1	0.0	0.9	0.1	0.0	0.1	0.0	0.0	8.8	0.9	22	
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.2	0.0	S	0.3	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.4	0.0	0.1	0.1	0.0	0.4	0.1	24
14	0.2	0.0	0.1	0.0	0.1	0.1	0.5	0.0	0.1	0.0	0.0	S	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.5	0.1	24
15	0.0	0.1	0.1	0.0	0.5	1.8	13.3	2.7	0.6	0.2	S	0.5	0.3	0.2	0.4	0.4	0.6	0.2	0.0	0.9	0.8	0.2	0.1	0.4	0.0	13.3	1.1	24	
16	0.6	0.6	0.4	0.0	0.6	0.1	1.5	2.2	1.4	S	0.6	0.4	0.5	0.1	0.2	0.2	0.0	0.0	0.3	2.3	0.5	0.2	0.0	0.0	0.0	2.3	0.6	24	
17	0.0	0.0	0.0	0.1	0.7	1.9	1.3	2.0	S	1.4	0.8	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.2	0.0	0.0	0.0	2.0	0.4	24	
18	0.0	0.0	0.1	0.0	0.5	0.6	4.7	S	3.0	1.3	0.3	0.3	0.0	0.1	0.2	0.1	0.2	0.2	0.3	0.0	0.1	0.0	0.0	0.0	0.0	4.7	0.5	24	
19	0.0	0.0	0.0	0.0	0.0	0.3	S	0.7	0.6	0.7	0.5	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.9	0.3	0.0	0.0	0.0	0.0	1.9	0.3	24	
20	0.0	0.0	0.0	0.0	0.0	S	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.1	24	
21	0.0	0.0	0.0	0.0	S	1.1	0.4	1.1	0.6	0.4	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.2	24	
22	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
23	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.2	0.0	0.5	0.0	24	
24	0.6	S	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	24	
25	S	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.0	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.3	1.1	24
26	0.1	0.0	0.0	0.0	0.2	2.2	3.0	0.4	0.4	0.6	0.0	0.1	0.2	0.2	0.2	0.0	0.2	0.2	0.2	0.0	0.0	0.0	2.3	S	0.0	3.0	0.4	24	
27	0.2	0.1	3.1	1.1	5.6	2.1	2.2	4.0	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	0.2	0.5	0.3	0.1	S	0.7	0.1	5.6	1.5	24
28	0.0	0.1	0.5	2.3	1.8	5.8	6.2	3.5	2.2	1.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.4	0.0	0.1	6.2	1.1	24	
29	0.0	0.7	1.5	0.3	0.0	0.4	1.2	1.1	0.7	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	S	0.0	0.0	0.7	0.0	0.0	1.5	0.3	24	
30	0.0	0.0	0.0	0.0	1.9	1.5	3.1	2.1	3.2	3.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	3.5	0.7	24	
HOURLY MAX	1.3	1.8	4.1	4.5	5.6	10.7	13.3	19.2	6.6	6.8	1.6	3.8	4.2	2.2	5.4	2.0	1.6	1.0	2.6	2.7	1.0	5.4	1.1	1.9					
HOURLY AVG	0.2	0.2	0.6	0.5	0.9	1.5	2.3	1.9	1.1	0.9	0.4	0.4	0.4	0.2	0.3	0.3	0.2	0.1	0.3	0.5	0.2	0.5	0.2	0.3					

STATUS FLAG CODES

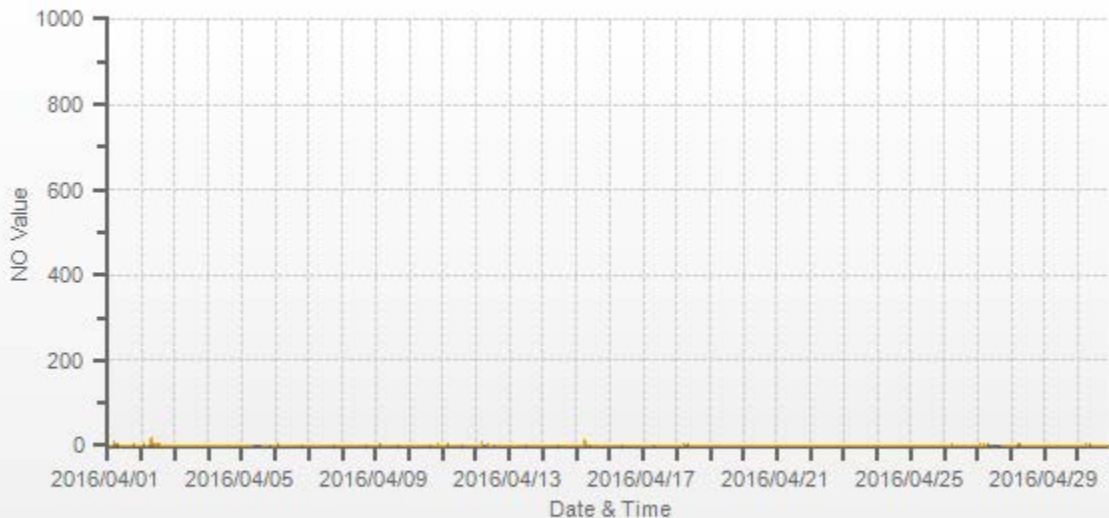
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	380				
MINIMUM 1-HR AVERAGE:	0.0	PPB @ HOUR(S)	VAR	ON DAY(S)	VAR
MAXIMUM 1-HR AVERAGE:	19.2	PPB @ HOUR(S)	7	ON DAY(S)	2
MAXIMUM 24-HR AVERAGE:	3.2	PPB		ON DAY(S)	2
				VAR-VARIOUS	
I2S CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	718	HRS
MONTHLY CALIBRATION TIME:	6	HRS	AMD OPERATION UPTIME:	99.7	%
STANDARD DEVIATION:	1.46		MONTHLY AVERAGE:	0.6	PPB

NO[ppb] Station: LICA ELK POINT AIRPORT Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]





NITRIC OXIDE MAX instantaneous maximum in ppb

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
DAY	MIN.	MAX.	AVG.	RDGS.																									
1	0.1	S	0.3	10.3	25.9	63.7	20.5	35.0	2.8	0.6	0.4	2.8	3.0	0.9	0.0	3.7	4.9	4.5	23.9	13.7	2.8	0.6	2.2	5.5	0.0	63.7	9.9	24	
2	S	0.7	48.0	7.3	0.1	0.0	41.7	30.4	12.5	13.5	4.5	8.4	12.0	4.8	8.2	4.3	2.7	0.3	0.8	4.3	0.0	0.1	0.6	S	0.0	48.0	9.3	24	
3	0.2	0.0	0.1	0.0	0.0	0.0	4.6	3.1	0.6	0.5	0.4	0.0	0.0	0.0	0.0	0.1	0.0	0.6	0.0	0.0	0.0	S	5.1	0.0	5.1	0.7	24		
4	1.5	0.1	7.2	0.0	1.3	3.5	1.9	1.6	1.1	1.9	0.6	0.5	1.5	0.2	0.9	0.0	0.1	0.2	0.3	0.0	0.0	S	0.1	0.0	0.0	7.2	1.1	24	
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	C	C	C	C	C	C	C	1.5	1.2	1.2	2.0	S	1.1	0.7	0.7	0.0	2.0	0.5	24	
6	24.6	6.1	8.5	1.5	0.7	1.0	2.0	0.7	1.3	1.0	0.9	0.8	0.8	0.8	0.7	0.7	0.6	0.6	0.8	S	2.1	3.1	1.9	3.1	0.6	24.6	2.8	24	
7	3.2	1.2	2.8	2.7	6.4	5.5	1.8	1.2	1.2	1.1	0.8	0.9	0.6	0.7	0.7	0.7	0.7	0.4	S	1.3	0.9	2.0	1.0	0.9	0.4	6.4	1.7	24	
8	0.7	0.7	0.9	0.8	1.1	2.6	2.3	2.2	1.6	2.1	1.2	1.6	1.4	1.4	1.2	1.2	1.3	S	1.2	1.4	2.2	0.6	0.5	0.6	0.5	2.6	1.3	24	
9	0.6	1.1	1.3	10.6	2.7	1.1	1.7	0.7	0.9	0.9	0.6	0.8	0.7	0.9	0.4	0.6	S	1.2	0.9	0.8	0.8	0.7	0.8	0.7	0.4	10.6	1.4	24	
10	0.7	0.8	0.8	0.7	1.0	0.7	0.8	0.8	1.1	1.0	1.1	1.0	1.1	0.7	0.7	S	1.0	0.8	0.6	1.0	8.2	39.9	2.5	2.3	0.6	39.9	3.0	24	
11	3.2	1.8	2.9	0.9	66.5	1.7	2.6	2.5	1.6	1.5	1.5	1.4	1.5	1.2	S	1.8	1.3	1.2	0.8	0.8	0.6	0.6	0.8	0.8	0.6	66.5	4.3	24	
12	0.6	0.6	0.8	1.3	21.4	48.4	S1	S1	6.9	3.5	1.7	1.6	0.8	S	1.9	1.0	0.9	0.9	0.8	37.9	1.3	0.8	1.1	0.6	0.6	48.4	6.4	22	
13	0.6	0.6	0.5	0.5	0.6	0.6	0.7	0.8	1.6	1.0	1.0	0.9	S	1.1	0.8	0.8	1.2	0.9	0.6	0.6	3.0	0.9	0.7	1.3	0.5	3.0	0.9	24	
14	1.4	1.1	1.1	1.0	0.8	1.1	1.7	1.2	1.0	0.8	0.7	S	1.0	0.6	0.7	0.7	0.6	0.5	0.3	0.5	0.4	0.4	0.6	1.6	0.3	1.7	0.9	24	
15	0.6	2.1	2.0	0.8	2.7	6.8	35.1	11.3	1.7	1.0	S	1.5	1.1	1.0	1.2	1.4	1.3	1.1	1.8	4.1	3.2	1.5	2.4	6.6	0.6	35.1	4.0	24	
16	6.7	2.9	2.8	1.2	4.1	3.3	3.5	3.4	2.4	S	1.7	1.6	1.9	1.2	1.5	1.7	1.2	0.8	1.7	28.2	2.1	1.6	0.6	0.8	0.6	28.2	3.3	24	
17	1.0	0.7	0.7	2.3	3.7	8.7	3.8	3.1	S	2.9	1.8	1.4	1.3	0.9	0.8	0.6	0.9	0.7	10.7	1.3	0.9	12.9	0.6	0.7	0.6	12.9	2.7	24	
18	0.7	0.9	2.9	0.9	3.2	3.5	14.0	S	4.6	2.8	1.2	1.3	1.2	1.2	1.2	1.1	1.2	1.3	1.7	0.7	1.6	0.8	0.7	0.9	0.7	14.0	2.2	24	
19	0.7	0.9	1.0	0.8	0.9	1.9	S	1.8	1.7	1.9	1.3	1.5	1.0	0.8	0.6	0.7	1.0	1.2	3.1	9.0	3.4	0.7	0.7	0.7	0.6	9.0	1.6	24	
20	0.7	0.6	0.9	0.8	2.5	S	5.4	0.9	0.7	1.0	0.8	0.8	0.7	0.9	0.9	0.8	1.0	0.9	0.6	0.7	0.7	0.8	0.8	0.8	0.6	5.4	1.1	24	
21	0.6	0.7	0.9	0.9	S	4.7	1.5	2.3	1.6	1.2	1.3	1.3	0.9	0.8	0.9	1.0	1.3	0.9	0.6	0.7	0.8	0.6	0.7	0.6	0.6	4.7	1.2	24	
22	0.6	0.7	0.5	S	1.0	0.7	0.6	0.7	0.7	0.7	0.5	0.6	0.6	0.7	0.8	0.7	0.9	0.9	0.7	0.5	0.4	0.7	0.6	0.6	0.4	1.0	0.7	24	
23	0.7	1.0	S	1.2	0.9	0.6	0.7	0.8	0.8	0.6	0.7	0.7	0.8	0.7	0.8	0.6	0.5	0.4	0.6	0.7	0.6	2.8	0.9	18.4	0.4	18.4	1.6	24	
24	4.4	S	2.3	1.1	1.3	1.4	1.0	0.9	1.0	2.4	1.3	1.0	0.8	1.1	0.6	0.6	0.8	0.7	1.0	1.4	0.9	0.6	0.7	0.7	0.6	4.4	1.2	24	
25	S	0.9	0.8	0.6	1.5	1.8	1.3	1.5	1.0	1.2	1.3	1.2	1.2	0.9	1.0	1.0	1.0	1.2	2.0	1.0	0.6	1.4	1.7	S	0.6	2.0	1.2	24	
26	1.4	0.9	0.8	1.3	1.5	8.9	7.2	3.2	1.5	2.3	1.2	1.3	1.4	1.6	1.3	1.2	1.8	1.5	1.1	0.9	0.9	7.3	S	1.4	0.8	8.9	2.3	24	
27	1.7	1.4	9.3	5.9	10.9	5.5	3.9	5.8	Q	Q	Q	Q	Q	Q	Q	Q	Q	1.8	2.1	3.3	1.2	S	7.6	1.7	1.2	10.9	4.4	24	
28	0.9	2.0	3.7	11.0	7.0	15.8	11.3	5.5	5.0	2.7	1.9	1.0	1.2	1.2	1.2	1.3	1.2	1.3	0.8	1.0	S	4.4	1.3	1.9	0.8	15.8	3.7	24	
29	0.7	4.2	3.9	3.5	2.0	2.3	2.3	2.3	2.0	1.7	1.5	1.0	1.0	1.2	1.2	1.2	0.9	0.8	2.0	S	0.9	10.1	3.5	1.0	0.7	10.1	2.2	24	
30	1.2	0.7	0.6	2.4	69.1	4.9	9.8	4.1	5.4	5.7	2.3	1.0	1.1	1.0	0.6	0.9	1.4	1.0	S	1.7	1.3	0.9	1.0	1.2	0.6	69.1	5.2	24	
HOURLY MAX	24.6	6.1	48.0	11.0	69.1	63.7	41.7	35.0	12.5	13.5	4.5	8.4	12.0	4.8	8.2	4.3	4.9	4.5	23.9	37.9	8.2	39.9	7.6	18.4					
HOURLY AVG	2.1	1.3	3.7	2.5	8.3	6.9	6.6	4.6	2.3	2.1	1.3	1.4	1.5	1.1	1.1	1.1	1.2	1.0	2.3	4.3	1.5	3.5	1.3	2.2					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

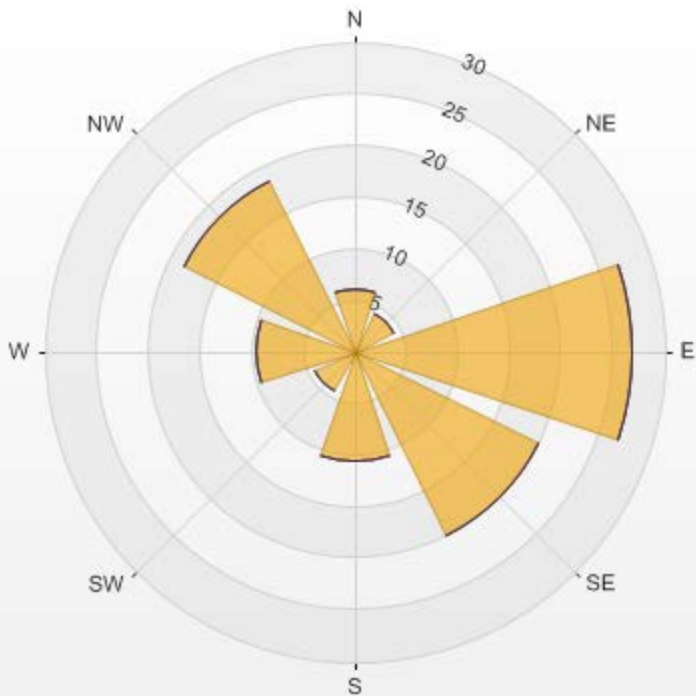
NUMBER OF NON-ZERO READINGS:	641				
MAXIMUM INSTANTANEOUS VALUE:	69.1	PPB	@ HOUR(S)	4	ON DAY(S) 30
				VAR-VARIOUS	
IZS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	718	HRS
MONTHLY CALIBRATION TIME:	7	HRS			
STANDARD DEVIATION:	6.71				

NO MAX[ppb] Station: LICA ELK POINT AIRPORT Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



Wind: LICA ELK POINT AIRPORT Monitor: NO [ppb] Monthly: 04/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 93.19% Calm Avg: 0.00

Direction	0.0-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	6.11	0	0	0	6.11
NE	4.17	0	0	0	4.17
E	26.83	0	0	0	26.83
SE	19.97	0	0	0	19.97
S	10.58	0	0	0	10.58
SW	4.32	0	0	0	4.32
W	9.54	0	0	0	9.54
NW	18.48	0	0	0	18.48
Summary	100	0	0	0	100



% Icon Classes (ppb)	100	0	0	0	0
0.0-50.0	0	50.0-110.0	0	110.0-210.0	>210.0

NITROGEN DIOXIDE

NITROGEN DIOXIDE (NO2) hourly averages in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR		
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.	
DAY 1	11.5	S	12.8	11.7	25.2	28.4	13.1	8.7	2.1	1.2	0.8	1.2	1.8	0.7	0.6	1.7	3.0	2.0	9.8	20.5	11.9	17.7	17.7	21.9	0.6	28.4	9.8	24	
2	S	13.7	13.2	13.3	10.8	9.0	12.7	16.2	6.7	6.7	2.7	4.5	4.7	3.6	8.9	3.3	1.9	1.0	0.6	8.9	4.7	2.6	3.7	S	0.6	16.2	7.0	24	
3	2.7	4.2	2.8	1.2	0.8	1.3	6.9	5.6	2.3	1.0	1.0	0.7	0.5	0.4	0.2	0.0	0.4	0.6	2.1	0.7	1.9	4.7	S	7.3	0.0	7.3	2.1	24	
4	5.1	5.5	10.5	6.2	9.4	10.0	6.3	3.2	2.4	2.4	2.0	1.6	1.5	1.3	1.6	1.4	1.7	2.2	3.3	2.5	1.0	S	2.0	1.1	1.0	10.5	3.7	24	
5	0.7	0.7	0.1	0.0	0.0	0.0	0.9	0.3	0.4	C	C	C	C	C	C	0.1	0.0	0.2	1.8	8.4	S	5.6	4.3	5.5	0.0	8.4	1.7	24	
6	7.8	11.9	12.1	6.3	3.4	1.2	3.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	S	3.3	4.8	0.9	5.1	0.0	12.1	2.6	24	
7	6.0	1.4	5.1	7.4	7.9	12.6	3.1	1.1	0.5	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.6	1.2	10.5	6.7	2.6	0.0	12.6	2.9	24	
8	3.9	1.3	1.0	1.2	2.6	2.9	2.8	1.7	1.3	1.3	1.0	0.9	0.9	1.0	1.1	1.4	1.4	S	1.6	2.5	2.7	2.1	1.9	2.0	0.9	3.9	1.8	24	
9	2.0	3.5	3.6	16.8	7.1	3.1	3.1	1.3	1.0	0.7	0.5	0.5	0.8	0.5	0.4	0.3	S	1.0	0.7	0.4	0.3	0.3	0.2	0.3	0.2	16.8	2.1	24	
10	0.4	0.5	0.7	0.8	0.6	0.7	0.7	0.6	0.5	0.6	0.4	0.4	0.2	0.3	0.2	S	0.8	0.6	0.7	3.4	7.9	18.6	12.2	8.3	0.2	18.6	2.6	24	
11	9.4	5.5	7.0	5.4	9.8	6.2	5.3	3.2	1.5	1.2	1.6	1.6	1.6	1.5	S	2.0	1.7	2.0	2.0	3.0	3.8	3.0	3.0	3.6	1.2	9.8	3.7	24	
12	3.3	4.8	4.9	6.1	14.1	16.6	S1	S1	6.7	4.5	2.6	1.8	1.1	S	2.2	1.6	1.6	1.6	2.4	10.1	9.6	7.1	7.7	2.4	1.1	16.6	5.4	22	
13	1.4	1.9	2.1	1.5	2.3	1.5	1.8	1.9	3.6	1.6	2.0	1.5	S	1.9	1.9	1.5	2.0	2.2	1.3	1.2	7.9	5.0	2.9	4.3	1.2	7.9	2.4	24	
14	7.1	3.7	5.3	4.8	6.6	4.1	3.6	1.7	1.7	1.1	0.9	S	1.4	0.9	0.8	0.5	0.6	0.5	0.5	0.5	1.0	1.3	2.2	3.8	0.5	7.1	2.4	24	
15	2.7	1.8	2.0	2.1	3.9	9.9	14.9	4.8	1.9	1.0	S	1.7	1.3	1.1	1.5	1.6	2.3	1.9	2.3	13.0	9.6	8.8	7.8	8.1	1.0	14.9	4.6	24	
16	9.3	8.8	8.5	6.6	8.9	5.7	6.0	4.7	3.0	S	2.0	1.9	1.7	1.5	1.5	1.8	1.6	1.8	4.5	14.0	13.0	14.4	9.1	6.5	1.5	14.4	5.9	24	
17	6.2	4.9	6.1	7.3	12.7	11.7	5.8	4.6	S	3.4	2.5	1.5	1.3	1.1	0.9	0.8	1.1	0.9	3.5	7.6	15.0	11.3	8.2	5.8	0.8	15.0	5.4	24	
18	6.4	5.7	8.4	8.4	12.6	12.1	13.6	S	7.6	4.2	2.2	1.5	1.2	1.5	2.0	1.9	1.9	2.6	5.2	2.1	9.6	3.1	8.0	7.2	1.2	13.6	5.6	24	
19	6.5	6.6	7.8	5.5	7.6	11.2	S	4.1	2.8	2.9	2.5	2.5	1.9	1.5	0.9	1.0	1.5	3.4	5.6	18.0	14.1	1.8	1.1	0.7	0.7	18.0	4.8	24	
20	0.8	0.9	8.7	4.5	7.1	S	9.9	1.4	0.6	0.9	0.8	0.6	0.5	0.8	0.9	0.8	1.1	1.1	1.0	0.9	0.5	0.6	2.3	0.8	0.5	9.9	2.1	24	
21	0.7	3.0	3.6	3.1	S	6.0	2.1	2.6	1.3	1.0	1.1	0.9	0.7	0.8	0.8	1.1	1.2	1.5	0.4	0.4	0.5	0.4	0.5	0.6	0.4	6.0	1.5	24	
22	0.3	0.9	0.6	S	1.5	1.0	0.7	0.5	0.5	0.5	0.3	0.4	0.3	0.4	0.4	0.5	0.8	0.8	0.5	0.7	0.7	0.7	1.6	1.1	0.3	1.6	0.7	24	
23	0.7	0.8	S	1.7	1.3	1.5	1.3	1.2	0.9	0.8	0.6	0.8	0.8	0.6	0.6	0.5	0.4	0.5	0.9	1.2	2.6	8.4	5.2	4.6	0.4	8.4	1.6	24	
24	11.6	S	4.4	3.4	1.8	2.4	2.2	1.9	2.4	2.3	2.1	1.4	1.0	1.9	1.0	0.7	1.0	0.9	2.2	3.2	2.7	4.8	2.4	3.8	0.7	11.6	2.7	24	
25	S	4.8	2.3	1.7	4.5	8.1	5.1	4.4	1.8	2.2	2.3	1.3	1.6	1.7	1.9	1.7	2.2	4.0	3.6	1.9	3.5	4.4	8.7	S	1.3	8.7	3.4	24	
26	6.7	11.0	8.0	12.6	14.6	15.0	13.7	6.8	4.9	4.6	2.4	2.5	2.9	2.2	2.4	2.4	2.5	2.9	2.6	4.6	7.9	18.3	S	4.4	2.2	18.3	6.8	24	
27	12.3	14.1	17.6	17.2	18.4	11.9	6.6	6.8	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	2.0	5.7	10.1	9.0	S	16.2	11.9	2.0	18.4	11.4	24
28	10.4	12.4	13.8	16.0	15.5	17.0	14.1	7.9	5.3	3.3	2.5	1.7	1.8	1.7	1.8	1.8	1.9	2.5	2.0	3.5	S	15.7	11.9	10.1	1.7	17.0	7.6	24	
29	8.1	11.7	13.9	8.9	7.1	7.1	5.5	4.0	3.1	2.5	1.7	1.1	1.2	1.5	1.6	1.1	1.2	1.3	3.9	S	9.1	8.0	15.7	11.1	1.1	15.7	5.7	24	
30	11.7	8.5	9.4	11.1	14.0	14.6	13.7	10.2	9.4	8.2	2.7	1.6	1.2	1.4	0.9	1.7	1.9	1.1	S	4.5	2.6	2.2	3.0	5.4	0.9	14.6	6.1	24	
HOURLY MAX	12.3	14.1	17.6	17.2	25.2	28.4	14.9	16.2	9.4	8.2	2.7	4.5	4.7	3.6	8.9	3.3	3.0	4.0	9.8	20.5	15.0	18.6	17.7	21.9					
HOURLY AVG	5.6	5.5	6.8	6.6	8.0	8.0	6.4	4.0	2.7	2.2	1.5	1.3	1.3	1.2	1.4	1.2	1.3	1.5	2.5	5.3	5.6	6.7	6.0	5.4					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

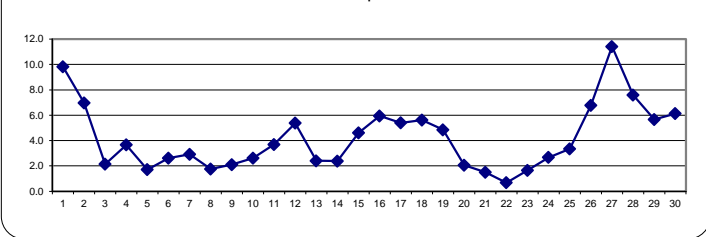
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR 159 PPB

MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0					
NUMBER OF NON-ZERO READINGS:	649					
MINIMUM 1-HR AVERAGE:	0.0	PPB	@ HOUR(S)	VAR	ON DAY(S)	VAR
MAXIMUM 1-HR AVERAGE:	28.4	PPB	@ HOUR(S)	5	ON DAY(S)	1
MAXIMUM 24-HR AVERAGE:	11.4	PPB			ON DAY(S)	27
					VAR-VARIOUS	
IZS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	718	HRS	
MONTHLY CALIBRATION TIME:	6	HRS	AMD OPERATION UPTIME:	99.7	%	
STANDARD DEVIATION:	4.49		MONTHLY AVERAGE:	4.1	PPB	

24 HOUR AVERAGES FOR April 2016







NITROGEN DIOXIDE MAX instantaneous maximum in ppb

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.
HOUR START	HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
DAY																													
1		12.9	S	17.0	24.1	41.2	39.1	25.6	26.3	4.7	1.9	1.6	4.3	4.4	2.0	1.2	5.5	9.6	9.0	33.9	32.2	22.8	21.7	20.7	30.0	1.2	41.2	17.0	24
2		S	17.8	27.4	22.7	14.3	10.7	25.2	22.0	11.3	11.2	6.6	9.7	12.3	8.3	13.6	9.1	9.2	3.2	7.8	20.0	7.5	9.1	18.7	S	3.2	27.4	13.5	24
3		5.6	5.8	9.5	1.9	1.9	6.9	16.7	10.9	4.1	3.1	2.3	1.5	1.2	1.0	0.9	0.8	1.0	1.7	4.9	1.4	3.9	7.4	S	20.2	0.8	20.2	5.0	24
4		11.7	8.5	17.2	9.1	12.3	15.1	8.8	5.4	3.2	3.4	2.7	2.4	2.5	1.9	2.1	2.1	2.4	3.5	6.9	5.3	2.1	S	2.8	2.7	1.9	17.2	5.8	24
5		2.7	2.5	1.4	1.2	1.3	1.6	5.6	2.1	2.3	C	C	C	C	C	C	C	1.9	2.5	4.3	13.1	S	9.9	6.6	8.5	1.2	13.1	4.2	24
6		18.6	19.2	22.4	11.4	5.5	3.1	9.3	1.2	1.3	1.2	9.5	0.8	0.9	1.1	0.9	1.0	0.7	1.1	2.6	S	10.1	16.5	9.3	14.8	0.7	22.4	7.1	24
7		13.7	6.9	12.3	12.3	23.8	23.5	11.9	2.3	1.7	1.3	1.2	0.9	0.8	0.9	1.0	0.9	1.0	0.9	S	1.6	5.1	22.4	9.4	6.9	0.8	23.8	7.1	24
8		9.4	3.5	2.7	2.6	5.3	5.4	4.9	4.6	2.6	2.6	1.9	1.9	1.9	1.9	2.1	2.4	2.2	S	2.3	4.8	5.9	3.1	2.5	3.1	1.9	9.4	3.5	24
9		3.1	7.6	5.6	22.3	10.5	4.7	8.4	2.1	1.9	1.5	1.0	0.9	1.3	1.2	0.9	0.8	S	1.8	1.2	1.1	0.9	0.9	1.0	1.0	0.8	22.3	3.6	24
10		1.1	1.3	1.5	1.6	1.3	1.5	1.5	1.4	1.3	1.4	1.2	1.3	1.0	1.0	1.0	S	1.6	1.2	1.5	13.0	36.1	44.3	16.4	15.7	1.0	44.3	6.5	24
11		16.1	10.5	15.0	6.6	28.4	11.6	8.1	4.6	2.9	2.1	2.4	2.7	2.7	1.9	S	3.4	2.5	3.9	3.6	5.9	5.2	4.0	3.5	4.7	1.9	28.4	6.6	24
12		4.1	6.4	5.8	9.0	22.4	27.4	S1	S1	9.5	5.6	3.6	3.7	1.9	S	3.8	2.2	2.9	2.5	5.1	42.1	19.2	9.6	13.7	3.2	1.9	42.1	9.7	22
13		2.0	3.5	2.5	2.2	3.0	2.7	2.3	7.8	2.5	2.5	2.2	S	2.3	2.4	1.7	6.9	4.9	2.3	4.3	19.8	14.5	3.9	8.1	1.7	1.9	19.8	4.6	24
14		12.2	7.0	9.2	6.9	8.4	5.8	5.6	4.4	2.1	1.8	1.1	S	1.9	1.2	1.2	1.0	0.8	1.1	1.8	1.2	2.1	2.8	3.4	6.3	0.8	12.2	3.9	24
15		3.5	2.5	2.7	3.1	9.2	14.3	20.6	13.5	3.7	1.6	S	2.7	1.7	1.5	2.2	2.5	3.0	2.7	5.8	25.8	19.2	11.9	14.7	18.7	1.5	25.8	8.1	24
16		19.1	17.3	12.4	8.8	13.8	9.3	9.8	6.2	4.2	S	3.5	3.3	2.9	2.4	2.9	3.4	4.6	3.1	16.6	S0.1	22.2	26.3	11.8	10.3	2.4	S0.1	11.5	24
17		8.6	5.8	8.4	13.1	15.7	18.1	12.0	5.4	S	4.5	3.7	2.2	2.0	2.0	2.2	1.7	1.7	1.9	27.7	12.9	20.8	34.9	10.3	8.4	1.7	34.9	9.7	24
18		7.3	7.6	17.4	10.5	21.2	16.5	21.8	S	9.0	5.7	2.9	2.5	2.0	2.8	3.0	3.1	2.9	3.9	11.6	4.6	23.9	5.2	9.6	8.6	2.0	23.9	8.9	24
19		7.9	10.4	17.2	7.2	11.8	15.4	S	5.7	3.7	3.9	3.2	3.3	2.7	2.2	1.4	1.7	3.2	8.5	19.6	38.2	36.4	3.1	1.8	1.2	1.2	38.2	9.1	24
20		1.5	2.6	24.1	9.9	22.3	S	21.7	2.1	1.0	1.4	1.2	1.0	1.1	1.2	1.4	1.3	1.7	1.5	1.6	2.0	1.5	1.7	4.2	2.0	1.0	24.1	4.8	24
21		2.0	4.8	5.8	5.3	S	10.0	2.9	3.7	2.1	1.7	1.6	1.5	1.4	1.3	1.3	1.7	1.9	2.4	2.1	0.9	1.0	1.2	1.3	1.4	0.9	10.0	2.6	24
22		1.1	1.7	1.2	S	2.0	1.7	1.3	1.0	0.9	1.0	0.8	0.8	0.8	1.0	1.0	0.9	1.7	1.8	1.3	1.4	1.8	1.6	2.9	2.2	0.8	2.9	1.4	24
23		1.2	1.4	S	2.1	1.7	2.4	2.0	2.3	1.5	1.7	1.2	1.2	1.2	1.2	1.3	1.1	1.2	1.3	2.0	2.2	4.9	14.5	12.0	19.9	1.1	19.9	3.5	24
24		23.2	S	11.1	5.2	5.9	5.2	4.9	2.8	3.3	3.8	3.9	2.2	1.7	4.0	2.2	1.2	1.5	1.4	6.4	4.7	5.2	8.4	5.5	10.3	1.2	23.2	5.4	24
25		S	9.6	4.1	3.3	7.2	11.0	8.4	7.9	2.9	2.9	3.0	2.4	3.0	2.5	2.6	2.4	4.1	7.1	6.5	4.9	7.3	10.5	16.1	S	2.4	16.1	5.9	24
26		8.9	17.3	12.5	16.5	17.4	19.6	18.3	12.7	6.3	7.8	3.5	3.5	3.8	3.0	3.4	4.2	4.7	5.2	4.5	9.9	11.5	26.6	S	7.6	3.0	26.6	9.9	24
27		18.9	18.4	23.6	20.4	20.2	17.6	7.7	7.4	Q	Q	Q	Q	Q	Q	Q	Q	Q	6.9	9.4	25.4	18.5	S	25.6	14.8	6.9	25.6	16.8	24
28		13.9	19.3	18.9	21.6	18.0	22.2	18.4	10.0	7.2	4.1	3.6	2.1	2.7	2.1	2.3	2.5	3.8	5.4	3.5	4.5	S	26.4	17.2	14.3	2.1	26.4	10.6	24
29		11.1	20.2	19.6	15.1	8.0	7.8	6.3	5.0	3.5	2.7	2.3	1.9	2.0	2.8	3.1	1.7	1.8	2.0	8.3	S	16.9	19.5	28.7	13.7	1.7	28.7	8.9	24
30		17.9	11.9	11.9	13.9	38.2	18.0	19.8	12.3	11.1	10.3	4.5	2.7	2.5	2.7	1.7	4.1	3.7	2.1	S	9.0	4.2	3.2	3.9	10.1	1.7	38.2	9.6	24
HOURLY MAX		23.2	20.2	27.4	24.1	41.2	39.1	25.6	26.3	11.3	11.2	9.5	9.7	12.3	8.3	13.6	9.1	9.6	9.0	33.9	50.1	36.4	44.3	28.7	30.0				
HOURLY AVG		9.3	9.0	11.7	10.0	13.5	12.0	11.1	6.7	4.2	3.4	2.8	2.4	2.4	2.1	2.3	2.4	3.0	3.3	7.3	12.2	12.0	12.9	9.9	9.6				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

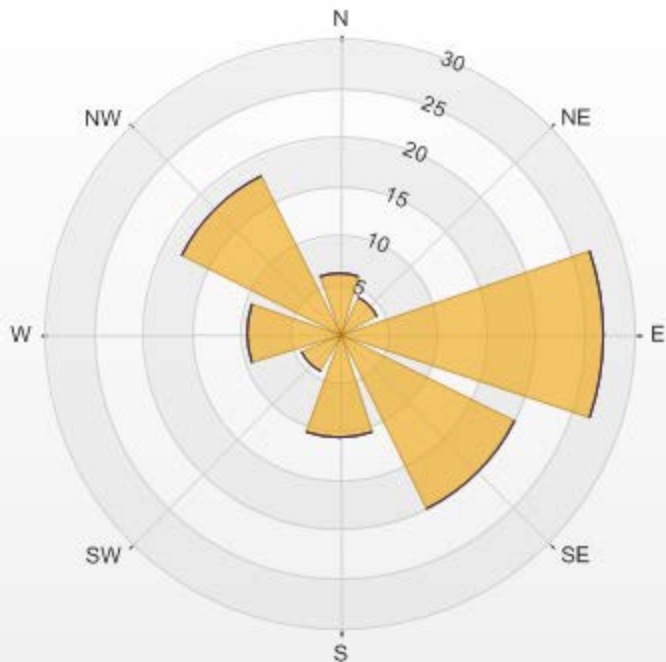
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	670
MAXIMUM INSTANTANEOUS VALUE:	50.1 PPB @ HOUR(S) 19 ON DAY(S) 16
	VAR-VARIOUS
IZS CALIBRATION TIME:	32 HRS
MONTHLY CALIBRATION TIME:	7 HRS
STANDARD DEVIATION:	7.91
OPERATIONAL TIME:	718 HRS



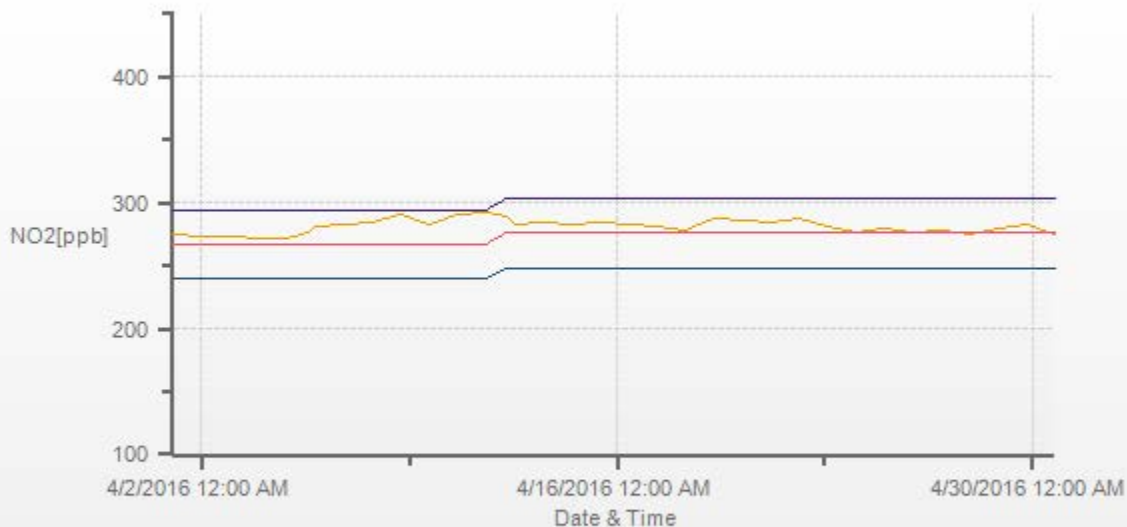
Wind: LICA ELK POINT AIRPORT Monitor: NO2 [ppb] Monthly: 04/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.60% Valid Data: 93.19% Calm Avg: 0.00

Direction	0.0-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	6.11	0	0	0	6.11
NE	4.17	0	0	0	4.17
E	26.83	0	0	0	26.83
SE	19.97	0	0	0	19.97
S	10.58	0	0	0	10.58
SW	4.32	0	0	0	4.32
W	9.39	0	0	0	9.39
NW	18.03	0	0	0	18.03
Summary	99.4	0	0	0	99.4



% Icon	Classes (ppb)	99	0	0	0
	0.0-50.0	99	0	0	0
	50.0-110.0	0	0	0	0
	110.0-210.0	0	0	0	0
	>210.0	0	0	0	0

NO2[ppb] Calibration: LICA ELK POINT AIRPORT Monthly: 04/2016 Type: Span



OZONE

OZONE (O3) hourly averages in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
DAY 1	24.4	S	20.2	19.4	6.6	4.0	19.2	25.0	32.9	35.8	37.0	37.5	38.1	39.2	39.5	38.2	36.2	37.0	28.3	16.8	23.6	15.2	11.8	6.7	4.0	39.5	25.8	24
2	S	13.0	12.2	12.7	13.0	13.4	10.9	11.3	20.8	25.4	32.7	33.5	33.7	34.7	30.6	35.0	35.9	38.8	38.3	31.6	36.8	39.3	35.9	S	10.9	39.3	26.8	24
3	33.2	29.9	31.3	34.0	34.5	32.6	25.3	26.1	29.5	33.5	34.6	33.4	33.7	34.2	35.5	36.2	35.3	34.3	31.7	33.9	31.7	25.9	S	20.5	20.5	36.2	31.8	24
4	21.7	18.9	14.1	17.1	13.3	13.0	17.0	20.6	21.4	22.4	24.4	24.6	C	C	C	C	33.7	33.4	32.1	31.1	34.2	S	33.0	32.8	13.0	34.2	24.1	24
5	32.6	32.5	31.6	29.2	28.3	28.7	26.3	26.6	26.2	26.3	23.2	25.9	25.8	26.8	27.7	29.8	31.4	32.1	26.5	17.6	S	17.3	17.5	13.8	13.8	32.6	26.2	24
6	9.1	6.1	17.1	27.7	28.1	31.3	29.3	33.2	35.7	37.3	37.6	37.2	37.2	38.5	40.1	41.1	41.4	40.4	38.3	S	34.1	32.0	32.8	30.2	6.1	41.4	32.0	24
7	29.5	32.9	26.3	23.3	19.7	14.7	26.2	29.2	30.4	31.9	33.3	36.3	37.8	39.1	40.1	41.6	41.5	41.1	S	40.5	35.5	23.7	26.1	28.2	14.7	41.6	31.7	24
8	23.4	26.1	27.0	25.6	25.3	25.8	26.5	27.1	26.0	27.0	28.4	28.7	29.4	29.8	30.7	30.8	31.4	S	30.5	28.5	28.1	28.5	28.1	26.3	23.4	31.4	27.8	24
9	24.2	18.8	16.6	4.8	13.2	21.9	25.2	26.9	30.1	31.7	32.9	34.9	33.8	32.4	33.1	34.1	S	34.0	34.7	35.0	37.2	37.2	39.1	39.6	4.8	39.6	29.2	24
10	39.9	40.0	39.2	39.4	39.3	39.6	39.0	39.6	39.8	39.8	41.3	42.7	43.7	44.8	45.8	S	46.2	46.7	45.5	39.3	31.4	20.6	23.7	26.5	20.6	46.7	38.9	24
11	25.2	26.4	25.2	23.7	16.3	20.3	23.2	28.9	33.4	35.2	36.6	38.4	38.3	40.3	S	42.4	42.2	41.4	39.7	36.2	34.3	33.6	32.0	29.7	16.3	42.4	32.3	24
12	27.0	25.0	23.6	18.5	12.3	8.1	5.5	11.7	22.6	27.5	34.8	38.7	42.1	S	43.0	43.1	42.7	44.9	44.6	34.6	31.4	30.4	31.7	37.4	5.5	44.9	29.6	24
13	37.8	37.6	37.7	38.2	37.4	37.3	35.7	36.7	34.9	37.2	40.2	43.0	S	42.3	41.3	45.0	41.5	38.8	39.8	41.6	29.6	34.9	35.9	33.3	29.6	45.0	38.2	24
14	27.7	28.7	24.8	24.0	22.2	28.0	29.6	33.0	34.0	35.8	37.6	S	39.0	38.7	37.0	34.0	34.4	33.2	31.8	30.7	29.3	29.0	27.3	24.3	22.2	39.0	31.0	24
15	26.0	23.8	24.2	23.7	20.0	12.2	9.0	23.5	28.4	31.8	S	33.6	35.0	37.3	38.8	38.7	37.7	39.4	38.2	24.1	24.8	24.5	25.2	23.0	9.0	39.4	28.0	24
16	20.4	16.5	16.3	16.8	13.3	16.3	16.3	20.1	27.9	S	37.7	41.2	44.1	47.2	48.1	49.3	51.2	51.7	45.9	36.4	31.0	29.0	29.8	32.6	13.3	51.7	32.1	24
17	31.3	27.3	24.5	20.4	15.5	13.9	20.4	22.5	S	32.7	38.9	46.4	50.5	53.2	53.6	54.7	53.8	52.9	49.0	38.6	29.6	29.8	31.9	39.0	13.9	54.7	36.1	24
18	34.3	33.5	29.6	25.7	18.6	18.9	17.3	S	29.5	39.0	49.2	53.0	53.1	54.2	53.9	53.8	54.4	53.8	49.4	51.0	42.8	46.9	35.7	32.9	17.3	54.4	40.5	24
19	32.0	29.6	31.1	33.1	30.9	29.2	S	38.4	38.9	39.0	41.5	44.9	49.5	49.2	49.6	49.8	48.0	44.2	39.6	27.6	28.1	42.5	45.0	49.9	27.6	49.9	39.6	24
20	51.7	52.0	41.7	45.7	39.1	S	36.4	42.7	40.8	41.4	40.4	39.6	39.2	36.9	34.8	34.0	34.0	33.9	33.8	32.4	31.5	30.3	27.1	26.5	26.5	52.0	37.6	24
21	24.8	20.8	20.0	20.8	S	16.1	22.1	22.7	25.6	27.4	29.4	31.5	33.7	35.6	36.3	35.6	35.3	33.8	32.1	31.5	33.8	36.7	37.1	36.5	16.1	37.1	29.5	24
22	36.1	36.7	38.1	S	37.3	37.1	36.4	37.0	38.7	39.3	40.4	41.2	42.0	39.8	40.1	40.7	41.0	40.8	40.1	38.3	36.4	36.0	35.4	35.4	35.4	42.0	38.4	24
23	35.5	35.0	S	33.7	31.9	30.9	30.0	30.5	31.0	29.9	31.4	30.3	30.7	32.6	33.3	34.0	33.9	32.8	30.5	27.9	23.4	23.1	24.2	19.9	19.9	35.5	30.3	24
24	13.9	S	34.0	35.3	34.9	33.1	33.0	34.5	37.7	36.9	36.0	36.0	35.7	34.8	36.4	37.1	35.8	35.0	31.8	33.2	33.2	30.0	34.7	31.2	13.9	37.7	33.7	24
25	S	30.6	31.8	29.3	27.5	22.5	23.6	29.3	35.2	35.7	39.8	44.4	42.7	41.7	42.9	46.4	44.6	40.5	38.5	38.3	39.5	36.2	30.9	S	22.5	46.4	36.0	24
26	28.8	21.3	22.0	17.7	13.8	9.6	13.7	26.2	29.5	34.0	37.1	37.1	36.4	37.5	37.0	36.6	36.8	36.0	36.4	31.8	22.3	13.4	S	32.0	9.6	37.5	28.1	24
27	19.2	15.1	6.7	2.6	0.9	7.7	15.2	18.0	Q	Q	Q	41.0	44.2	45.6	46.5	47.2	47.2	45.4	39.6	33.3	34.8	S	22.0	19.3	0.9	47.2	27.6	24
28	13.7	16.4	8.8	5.8	8.0	6.2	13.4	21.6	25.2	32.5	40.2	46.5	48.7	50.7	51.2	50.9	50.4	49.0	48.4	44.0	S	24.1	26.3	25.0	5.8	51.2	30.7	24
29	25.2	18.4	16.7	21.2	23.4	23.6	25.7	29.4	32.3	35.8	41.9	44.4	46.4	47.3	48.5	49.2	49.5	50.0	48.3	S	41.0	37.0	24.7	29.0	16.7	50.0	35.2	24
30	25.7	25.4	22.3	19.6	15.3	10.3	15.8	23.5	24.4	28.1	42.1	46.3	48.2	48.5	45.5	44.0	45.2	45.6	S	37.5	37.2	36.1	35.0	30.5	10.3	48.5	32.7	24
HOURLY MAX	51.7	52.0	41.7	45.7	39.3	39.6	39.0	42.7	40.8	41.4	49.2	53.0	53.1	54.2	53.9	54.7	54.4	53.8	49.4	51.0	42.8	46.9	45.0	49.9				
HOURLY AVG	27.7	26.4	24.6	23.8	22.1	20.9	23.0	27.4	30.8	33.2	36.5	38.4	39.7	40.5	40.7	41.2	41.1	40.7	38.0	33.7	32.4	30.1	30.0	29.0				

STATUS FLAG CODES

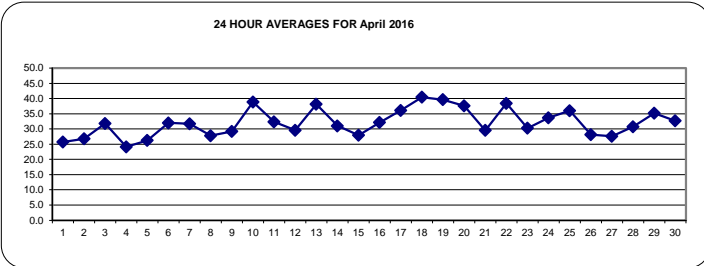
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

OBJECTIVE LIMIT:

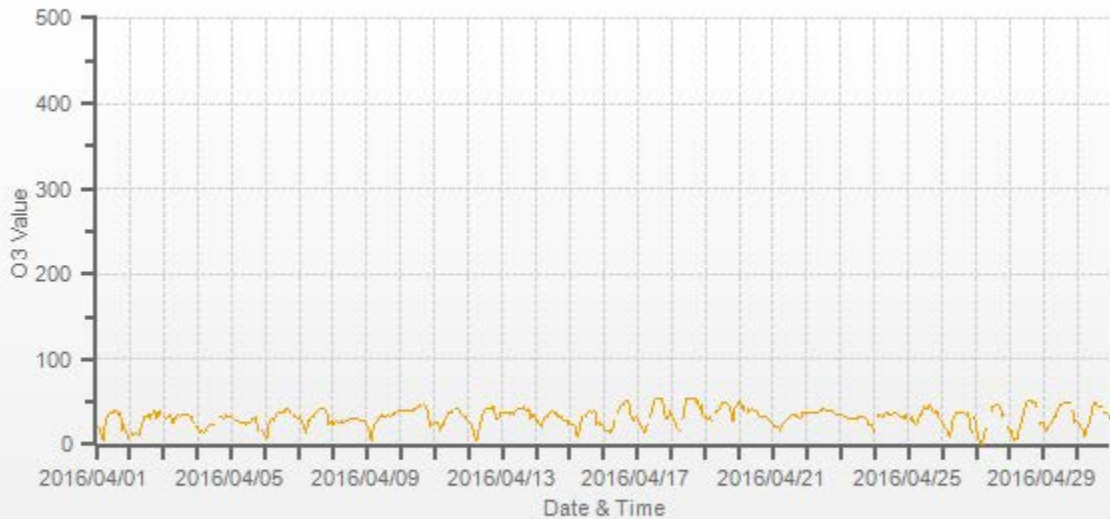
ALBERTA ENVIRONMENT: 1-HR 82 PPB

MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0					
NUMBER OF NON-ZERO READINGS:	681					
MINIMUM 1-HR AVERAGE:	0.9	PPB	@ HOUR(S)	4	ON DAY(S)	27
MAXIMUM 1-HR AVERAGE:	54.7	PPB	@ HOUR(S)	15	ON DAY(S)	17
MAXIMUM 24-HR AVERAGE:	40.5	PPB			ON DAY(S)	18
					VAR-VARIOUS	
IZS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	720	HRS	
MONTHLY CALIBRATION TIME:	4	HRS	AMD OPERATION UPTIME:	100.0	%	
STANDARD DEVIATION:	10.13		MONTHLY AVERAGE:	32.1	PPB	



O3[ppb] Station: LICA ELK POINT AIRPORT Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]





OZONE MAX instantaneous maximum in ppb

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.	
HOUR START	HOUR END	0:00	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
DAY 1		27.2	S	23.4	22.8	17.3	15.1	30.0	32.0	34.7	37.4	38.3	39.6	40.4	40.2	40.5	40.4	39.2	38.9	30.6	28.4	25.4	19.5	14.8	14.8	40.5	31.2	24		
2		S	17.5	17.4	15.4	14.6	16.7	17.7	22.5	24.7	32.6	35.5	38.3	38.6	38.4	36.6	38.4	38.4	41.3	41.2	40.5	41.7	42.3	40.5	S	14.6	42.3	31.4	24	
3		37.1	33.1	35.0	35.0	35.9	35.9	31.7	29.2	32.9	35.3	36.2	36.6	35.7	35.9	36.9	37.4	36.5	35.8	35.0	35.1	34.9	30.2	S	27.3	27.3	37.4	34.5	24	
4		25.0	21.6	19.7	20.7	15.7	18.8	20.1	21.9	22.2	24.9	26.1	25.4	C	C	C	C	34.4	34.4	32.5	35.2	S	34.7	34.4	15.7	35.2	26.0	24		
5		34.1	33.5	32.6	31.6	29.4	30.3	28.4	27.3	26.9	R	25.0	28.5	27.2	28.1	29.0	32.2	32.6	32.9	32.6	22.3	S	18.8	19.4	16.7	16.7	34.1	28.2	23	
6		13.5	10.6	32.0	32.3	30.6	32.2	34.1	34.6	37.1	38.7	39.8	38.1	38.1	39.8	41.2	42.3	42.0	42.6	40.2	S	37.2	36.9	34.9	34.6	10.6	42.6	34.9	24	
7		35.3	35.0	33.1	31.3	30.0	21.3	29.3	30.4	32.1	32.6	34.1	37.6	38.3	39.9	41.4	42.4	42.4	42.2	S	41.3	41.0	32.0	30.6	30.9	21.3	42.4	35.0	24	
8		27.2	28.1	28.0	28.0	27.7	27.7	28.1	28.1	27.2	28.4	28.8	29.9	30.0	30.6	31.5	31.5	32.2	S	31.0	30.4	29.2	29.0	29.6	27.0	27.0	32.2	29.1	24	
9		26.7	24.1	24.4	16.2	18.6	24.8	30.6	28.4	31.5	32.5	34.9	36.2	35.9	33.2	34.4	35.0	S	34.4	35.6	35.7	38.4	38.0	40.2	40.3	16.2	40.3	31.7	24	
10		40.7	40.8	41.1	40.5	40.1	40.5	40.0	41.3	40.8	41.6	42.5	43.8	44.7	45.6	46.5	S	47.0	47.1	46.7	45.5	36.3	30.0	29.6	31.6	29.6	47.1	41.1	24	
11		31.2	31.3	27.7	26.0	24.6	22.2	25.8	32.4	34.5	36.3	37.8	39.5	39.6	41.4	S	43.2	43.4	42.8	41.2	38.9	36.2	35.0	33.2	31.5	22.2	43.4	34.6	24	
12		30.4	27.7	26.8	23.4	23.1	20.4	8.9	20.4	24.8	32.0	37.1	41.5	43.5	S	44.3	44.3	43.9	47.3	48.0	42.8	39.0	34.6	36.6	39.2	8.9	48.0	33.9	24	
13		38.6	38.6	38.3	39.0	38.6	39.0	37.8	37.8	37.6	38.4	43.1	44.4	S	43.4	42.6	46.2	46.1	47.6	44.3	45.1	38.0	40.0	39.3	38.4	37.6	47.6	41.0	24	
14		35.7	31.7	28.7	26.7	24.6	29.7	32.6	35.1	35.7	37.5	39.3	S	40.0	40.3	38.4	34.7	34.9	34.4	32.8	31.5	30.0	30.0	29.0	27.2	24.6	40.3	33.1	24	
15		27.8	26.9	26.0	25.7	23.8	18.9	16.8	28.5	31.9	32.6	S	34.4	36.5	38.4	40.3	40.2	39.0	40.8	39.9	33.4	29.5	28.4	29.7	26.1	16.8	40.8	31.1	24	
16		24.4	20.8	18.9	18.8	15.2	18.1	18.6	24.8	31.5	S	39.8	42.4	45.9	48.2	50.3	51.3	53.0	52.7	51.9	48.1	40.8	35.9	33.8	35.9	15.2	53.0	35.7	24	
17		34.3	30.9	26.4	24.5	19.5	19.5	22.3	25.5	S	34.3	42.7	49.8	52.5	54.6	54.4	56.1	55.2	54.0	53.5	46.7	40.8	35.4	38.6	44.1	19.5	56.1	39.8	24	
18		39.0	38.1	34.5	29.5	23.8	23.1	25.3	S	32.8	46.2	52.8	54.0	54.3	55.6	56.4	55.5	56.1	55.6	54.4	52.2	50.6	48.3	42.9	38.3	23.1	56.4	44.3	24	
19		34.0	33.7	38.1	37.4	35.4	36.2	S	39.6	39.9	40.3	43.3	48.2	50.7	50.0	50.4	50.9	50.6	47.6	46.2	38.6	41.6	44.7	49.4	50.7	33.7	50.9	43.4	24	
20		53.4	54.6	48.8	49.5	47.9	S	45.3	45.3	41.7	42.5	41.4	40.2	40.2	37.6	36.1	34.7	35.2	34.6	34.3	33.7	32.2	30.9	29.3	27.2	27.2	54.6	39.9	24	
21		26.1	23.1	22.8	22.2	S	21.3	22.8	24.4	27.3	29.0	30.7	33.5	35.2	37.1	37.4	36.8	36.5	35.7	33.2	32.2	35.9	37.4	38.0	37.2	21.3	38.0	31.1	24	
22		36.6	38.6	38.6	S	38.0	37.5	36.9	38.1	39.6	40.2	41.3	41.7	42.6	41.1	40.7	42.8	42.5	42.0	41.3	39.6	38.4	38.0	37.4	36.6	36.6	42.8	39.6	24	
23		36.9	36.6	S	35.4	33.5	32.0	31.5	31.7	31.8	31.9	32.3	31.3	31.5	34.3	34.5	34.9	35.3	34.1	33.1	30.2	25.5	31.0	27.7	25.5	25.5	36.9	32.3	24	
24		19.9	S	38.9	38.1	37.1	35.0	34.1	37.1	40.0	38.8	37.5	38.0	36.5	36.3	38.0	38.1	37.5	36.3	34.2	36.7	36.3	32.3	37.4	36.6	19.9	40.0	36.1	24	
25		S	34.9	33.2	30.4	30.6	27.7	26.0	34.1	37.5	37.2	44.1	45.6	44.1	43.6	45.5	48.6	47.0	44.3	41.4	41.0	42.6	40.3	39.0	S	26.0	48.6	39.0	24	
26		32.5	28.1	24.9	19.9	17.7	14.2	19.4	28.7	32.6	37.4	38.7	39.1	38.3	38.7	38.3	38.4	38.4	38.4	37.8	37.2	34.0	22.8	S	34.3	14.2	39.1	31.7	24	
27		31.6	20.5	13.5	4.3	1.8	12.9	16.7	19.2	Q	Q	Q	43.8	45.8	46.5	47.6	49.1	48.3	48.5	43.8	43.6	40.5	S	28.7	22.3	1.8	49.1	31.5	24	
28		22.2	21.5	13.5	9.4	14.5	11.5	22.2	24.4	28.8	36.2	43.8	47.8	50.6	53.4	52.4	52.1	51.8	51.2	50.6	46.8	S	29.9	31.4	29.5	9.4	53.4	34.6	24	
29		28.1	23.5	22.3	25.3	25.1	24.6	27.7	32.0	33.8	38.0	44.7	45.6	48.3	48.6	49.5	50.0	50.9	51.7	51.8	S	46.4	45.2	33.2	32.9	22.3	51.8	38.2	24	
30		30.2	28.5	26.6	23.5	22.5	14.2	27.2	25.3	26.4	38.3	45.9	48.9	50.6	50.0	46.8	45.4	47.4	46.7	S	42.9	38.4	37.1	35.6	34.9	14.2	50.6	36.2	24	
HOURLY MAX		53.4	54.6	48.8	49.5	47.9	40.5	45.3	45.3	41.7	46.2	52.8	54.0	54.3	55.6	56.4	56.1	56.1	55.6	54.4	52.2	50.6	48.3	49.4	50.7					
HOURLY AVG		31.4	29.8	28.8	27.0	26.1	24.9	27.2	30.3	32.8	36.0	38.5	40.1	41.3	41.8	42.2	42.6	43.0	42.6	41.0	38.4	37.1	34.3	33.9	32.4					

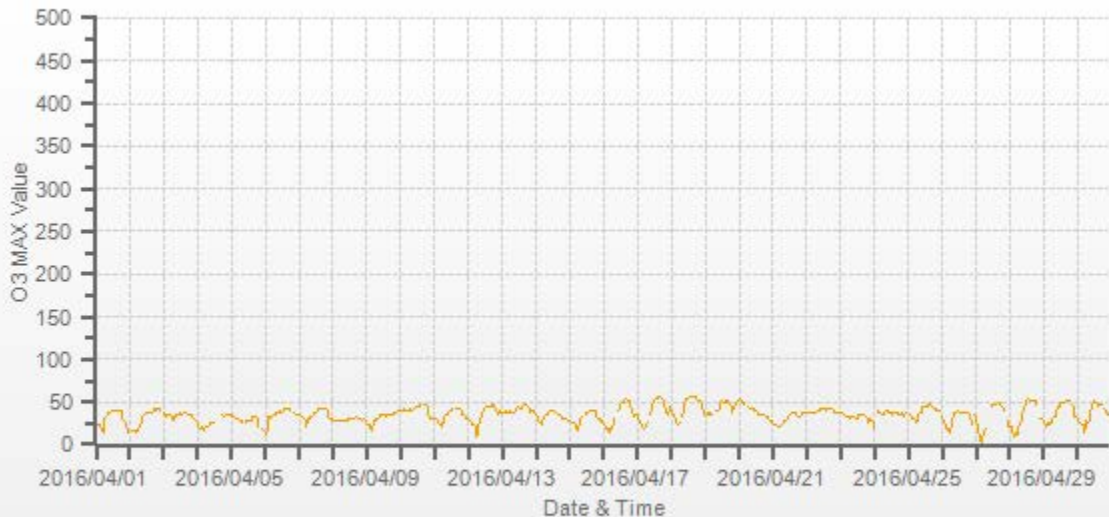
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

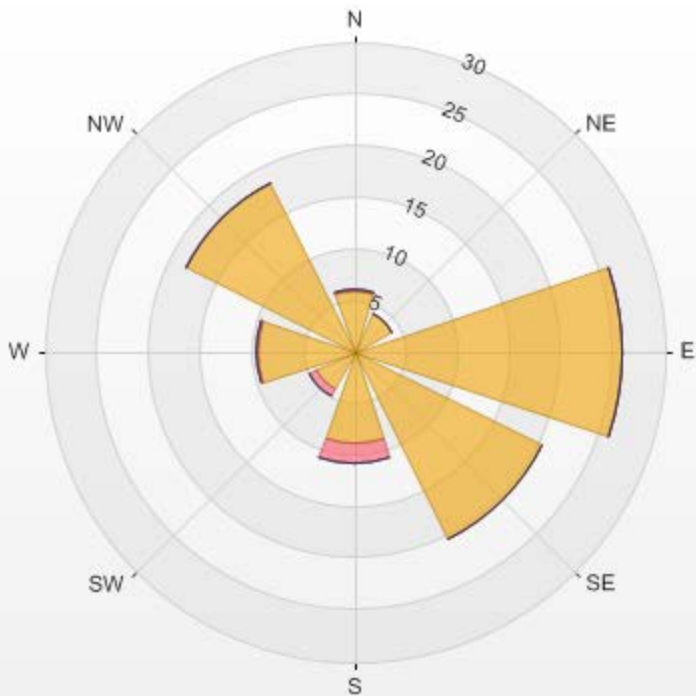
NUMBER OF NON-ZERO READINGS:	679
MAXIMUM INSTANTANEOUS VALUE:	56.4 PPB @ HOUR(S) 14 ON DAY(S) 18
	VAR-VARIOUS
IZS CALIBRATION TIME:	32 HRS
MONTHLY CALIBRATION TIME:	5 HRS
STANDARD DEVIATION:	9.30
OPERATIONAL TIME:	719 HRS

O3 MAX[ppb] Station: LICA ELK POINT AIRPORT Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



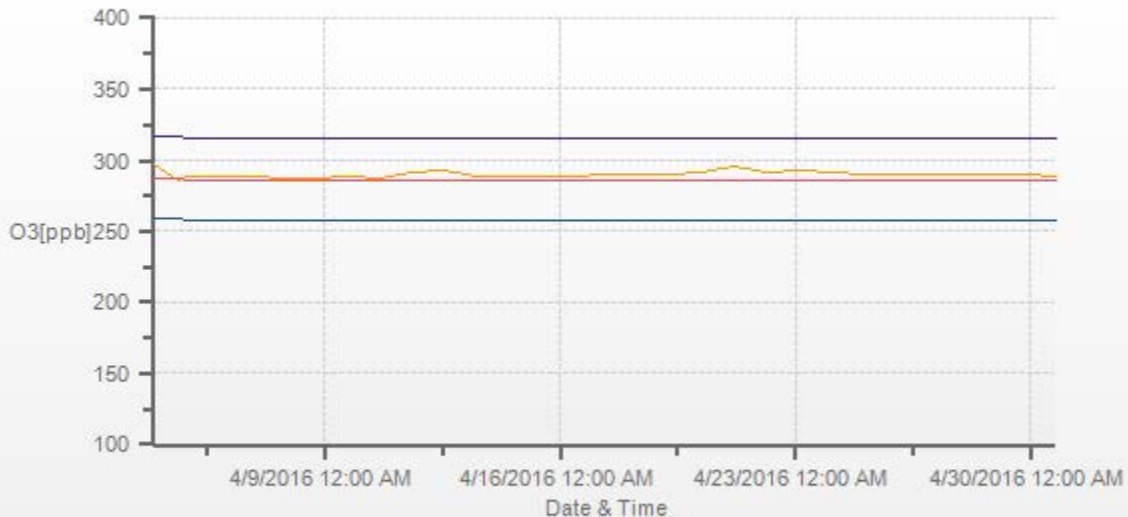
Wind: LICA ELK POINT AIRPORT Monitor: O3 [ppb] Monthly: 04/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 94.58% Calm Avg: 0.00

Direction	0.0-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	5.87	0.15	0	0	6.02
NE	4.11	0	0	0	4.11
E	25.84	0	0	0	25.84
SE	20.41	0	0	0	20.41
S	8.81	2.06	0	0	10.87
SW	4.11	0.73	0	0	4.84
W	9.4	0.15	0	0	9.55
NW	18.21	0.15	0	0	18.36
Summary	96.76	3.24	0	0	100



% Icon Classes (ppb)	97	3	0	0
0.0-50.0				
50.0-110.0				
110.0-210.0				
>210.0				

O3[ppb] Calibration: LICA ELK POINT AIRPORT Monthly: 04/2016 Type: Span



PARTICULATE MATTER 2.5

PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM2.5) hourly averages in ug/m3

MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR		
DAY	HR	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.	
1		6.2	5.8	4.3	3.9	2.6	5.9	2.0	7.5	0.0	0.0	0.7	2.2	3.7	3.2	3.3	1.0	0.4	2.0	0.0	0.0	3.2	2.2	2.0	0.4	0.0	7.5	2.6	24	
2		0.1	1.2	3.1	5.1	2.6	2.5	6.2	3.3	3.2	4.3	7.2	6.7	4.8	5.5	2.9	6.3	7.0	3.3	0.0	0.0	2.6	1.3	2.2	2.2	0.0	7.2	3.5	24	
3		3.3	3.2	0.0	2.2	5.1	1.7	3.7	3.5	0.2	0.2	1.1	0.0	5.2	1.2	3.7	3.6	0.2	0.0	X	0.7	0.2	4.0	1.7	3.6	0.0	5.2	2.1	23	
4		2.9	3.7	5.0	4.3	1.5	3.3	3.4	0.7	6.6	4.1	0.4	5.1	2.7	2.7	2.8	1.7	3.0	X	4.2	2.2	6.1	0.6	3.1	X	0.4	6.6	3.2	22	
5		2.2	4.2	4.0	3.1	3.7	4.2	4.0	1.2	1.2	6.7	0.6	4.8	2.2	4.2	1.7	4.7	C	C	7.2	15.7	4.7	8.0	4.6	4.1	0.6	15.7	4.4	24	
6		6.7	7.6	0.0	1.7	1.1	X	0.7	0.0	1.6	28.7	0.0	1.1	0.0	0.0	0.7	2.2	0.2	0.0	0.2	0.1	4.7	0.1	0.7	0.0	0.0	28.7	2.5	23	
7		1.2	1.6	0.1	0.0	0.0	0.1	0.7	X	0.1	0.0	4.7	0.2	0.0	3.2	0.0	0.0	1.6	1.6	0.0	0.0	0.0	1.6	2.6	1.6	0.0	4.7	0.9	23	
8		2.2	0.1	0.0	1.6	0.0	0.1	3.1	1.6	0.7	2.6	1.1	3.7	1.2	1.7	2.2	5.6	0.0	2.2	0.0	0.7	1.7	5.6	0.0	10.1	0.0	10.1	2.0	24	
9		7.2	2.7	0.7	6.2	6.7	3.2	0.0	0.0	2.2	1.6	2.6	3.2	2.7	2.7	3.2	3.2	1.6	0.1	0.0	0.7	0.0	4.7	0.0	1.1	0.0	7.2	2.3	24	
10		1.1	2.6	7.2	8.2	0.0	5.1	0.1	2.6	1.6	5.1	4.7	1.1	0.0	5.1	4.1	1.2	2.7	1.1	1.7	2.2	2.2	0.7	1.1	1.1	0.0	8.2	2.6	24	
11		0.1	3.7	1.6	0.0	3.2	3.2	0.7	2.6	2.2	2.6	4.1	4.7	2.7	2.7	6.2	2.2	3.2	6.2	3.2	2.2	1.6	4.1	4.7	0.0	0.0	6.2	2.8	24	
12		4.7	2.2	5.1	0.7	2.2	1.7	3.7	3.7	1.2	4.2	5.2	3.7	0.0	1.6	5.7	5.1	5.1	1.7	3.7	0.0	6.2	6.7	1.7	0.0	6.7	3.4	24		
13		3.7	0.0	3.7	4.7	5.1	6.7	5.7	5.6	7.7	5.2	5.1	3.7	2.7	2.7	2.7	1.2	0.7	6.2	3.7	0.7	0.0	0.2	2.2	0.7	0.0	7.7	3.4	24	
14		3.7	3.7	2.2	1.1	0.7	2.2	1.6	0.0	0.0	0.2	3.2	0.0	3.7	4.7	7.7	0.0	3.2	3.2	0.0	0.7	3.7	4.7	1.7	4.2	0.0	7.7	2.3	24	
15		1.6	0.0	2.6	5.1	1.1	10.6	0.0	1.1	0.7	2.7	0.0	2.2	1.2	2.7	0.0	0.0	5.2	3.7	1.7	4.1	5.2	3.7	1.7	4.7	0.0	10.6	2.6	24	
16		5.1	7.2	4.7	4.2	5.6	2.2	2.2	1.7	2.2	2.7	2.2	4.2	X	7.7	2.7	1.7	1.7	3.2	7.7	5.6	6.2	8.2	4.7	3.2	1.7	8.2	4.2	23	
17		1.2	1.7	6.7	0.0	1.6	2.2	2.2	0.2	1.7	2.2	2.2	3.2	1.2	2.7	4.2	3.2	5.6	8.7	1.6	2.7	6.7	5.7	4.2	3.7	0.0	8.7	3.1	24	
18		2.2	3.2	4.2	4.2	5.2	3.2	5.7	1.2	4.2	7.7	5.2	3.2	0.0	0.7	0.7	1.2	1.2	4.2	1.2	0.7	2.2	1.7	6.2	5.7	0.0	7.7	3.1	24	
19		8.2	6.7	4.2	2.7	0.0	0.0	5.7	0.2	0.0	3.7	3.2	2.2	6.2	3.7	9.2	8.7	10.6	5.6	4.7	6.7	10.6	1.2	5.1	2.7	0.0	10.6	4.7	24	
20		0.0	0.0	4.2	2.7	5.6	3.2	0.0	0.7	4.7	3.7	C	C	6.7	3.2	3.7	3.2	6.2	2.7	3.2	0.0	1.2	4.7	6.2	1.1	0.0	6.7	3.0	24	
21		4.1	1.6	3.7	0.0	0.0	2.2	3.2	5.1	0.0	0.2	4.7	1.7	4.7	3.2	3.7	3.2	2.2	1.2	7.2	5.7	2.2	4.7	0.2	6.7	0.0	7.2	3.0	24	
22		5.2	0.2	2.2	3.7	0.7	2.7	0.0	3.2	1.7	2.2	4.2	3.7	1.7	3.7	2.7	2.2	2.7	3.7	3.2	0.0	0.0	6.2	1.2	4.2	0.0	6.2	2.6	24	
23		3.2	1.7	5.1	2.2	0.2	4.7	2.7	1.2	1.7	3.7	0.7	4.7	3.2	0.2	3.2	4.7	5.7	2.7	3.2	0.2	2.2	2.7	4.7	3.7	0.2	5.7	2.8	24	
24		1.2	3.2	1.7	2.2	0.2	1.2	4.2	4.2	2.2	3.2	3.7	1.2	5.7	3.7	5.2	2.7	7.7	4.2	4.2	1.7	2.2	1.7	4.7	2.2	0.2	7.7	3.1	24	
25		5.2	5.7	4.2	1.7	3.2	7.7	5.6	6.2	6.2	0.7	4.2	2.7	1.7	1.7	6.7	6.7	8.2	3.7	5.2	1.2	5.7	4.7	2.2	4.2	0.7	8.2	4.4	24	
26		1.2	5.2	6.7	4.7	5.1	3.7	8.2	3.7	4.2	2.7	3.7	5.2	5.7	6.7	6.7	6.7	4.2	2.2	3.2	8.7	3.2	3.2	12.2	3.7	1.2	12.2	5.0	24	
27		3.7	3.7	8.2	7.7	2.6	6.7	4.7	8.2	5.1	5.1	8.2	8.2	Q	Q	Q	Q	Q	0.0	6.2	3.7	2.2	6.7	8.7	6.7	0.0	8.7	5.6	24	
28		1.2	3.7	7.7	6.7	3.2	5.1	4.7	5.7	5.1	7.2	4.7	6.7	3.2	0.0	14.2	1.1	0.2	3.7	1.7	3.7	6.7	5.6	5.1	4.7	0.0	14.2	4.7	24	
29		9.2	6.7	8.7	4.7	6.2	4.2	6.7	6.7	3.2	3.7	4.7	5.1	3.2	4.1	6.2	0.7	4.2	4.2	8.7	0.0	6.2	5.2	5.7	7.2	0.0	9.2	5.2	24	
30		3.2	5.7	3.7	5.7	7.2	6.7	6.2	9.2	6.2	7.2	8.2	3.2	6.7	3.7	9.2	2.7	2.2	0.7	6.2	3.2	0.0	3.2	0.2	0.0	0.0	0.0	9.2	4.6	24
HOURLY MAX		9.2	7.6	8.7	8.2	7.2	10.6	8.2	9.2	7.7	28.7	8.2	8.2	6.7	7.7	14.2	8.7	10.6	8.7	8.7	15.7	10.6	8.2	12.2	10.1					
HOURLY AVG		3.4	3.3	3.9	3.4	2.7	3.7	3.3	3.1	2.6	4.1	3.5	3.4	3.0	3.1	4.3	3.0	3.5	3.1	3.1	2.6	3.1	3.8	3.5	3.3					

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

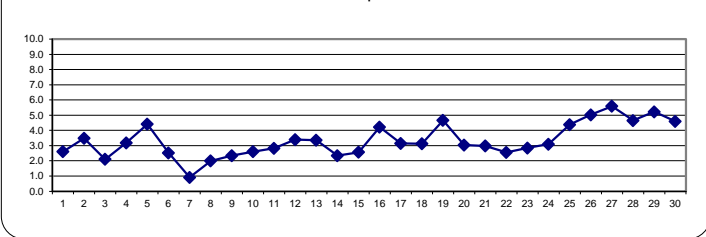
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 24-HR 30 ug/m3

MONTHLY SUMMARY

NUMBER OF 24-HR EXCEEDENCES:	0			
NUMBER OF NON-ZERO READINGS:	632			
MINIMUM 1-HR AVERAGE:	0.0 ug/m3 @ HOUR(S)	VAR	ON DAY(S)	VAR
MAXIMUM 1-HR AVERAGE:	28.7 ug/m3 @ HOUR(S)	9	ON DAY(S)	6
MAXIMUM 24-HR AVERAGE:	5.6 ug/m3		ON DAY(S)	27
			VAR-VARIOUS	
MONTHLY CALIBRATION TIME:	4 HRS	OPERATIONAL TIME:	714 HRS	
STANDARD DEVIATION:	2.63	AMD OPERATION UPTIME:	99.2 %	
		MONTHLY AVERAGE:	3.3 ug/m3	

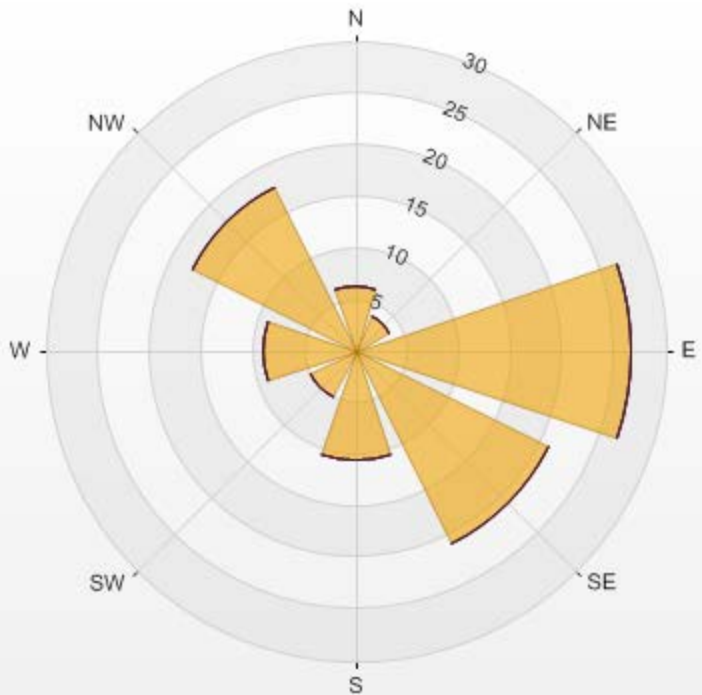
24 HOUR AVERAGES FOR April 2016





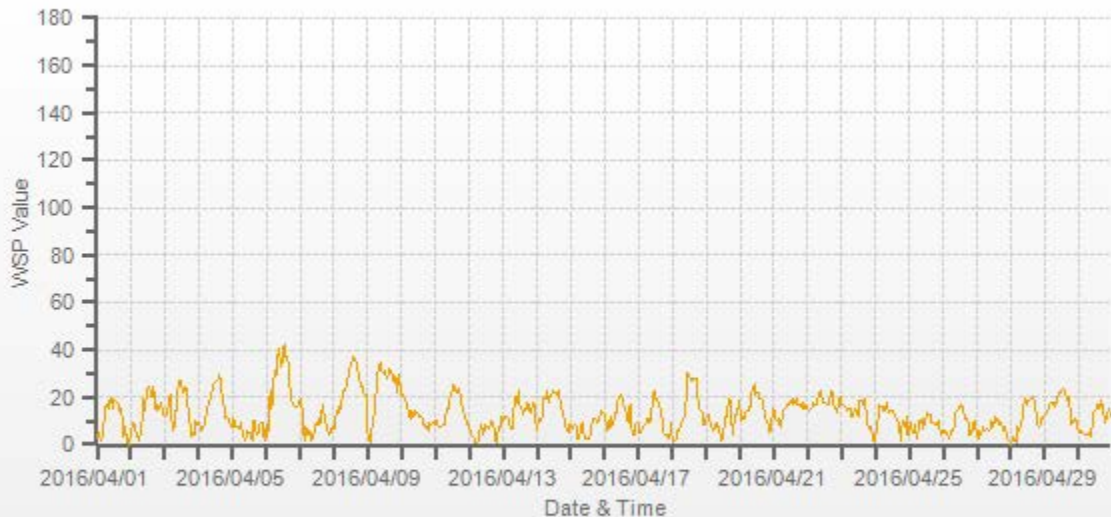
Wind: LICA ELK POINT AIRPORT Monitor: PM2 [ug/m3(L)] Monthly: 04/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 97.92% Calm Avg: 0.00

Direction	0.0-30.0	30.0-60.0	60.0-80.0	80.0-120.0	120.0-240.0	>240.0	Total
N	6.24	0	0	0	0	0	6.24
NE	3.69	0	0	0	0	0	3.69
E	26.67	0	0	0	0	0	26.67
SE	20.99	0	0	0	0	0	20.99
S	10.64	0	0	0	0	0	10.64
SW	4.96	0	0	0	0	0	4.96
W	9.08	0	0	0	0	0	9.08
NW	17.73	0	0	0	0	0	17.73
Summary	100	0	0	0	0	0	100



% Icon Classes (ug/m3(L))	100	0	0	0	0	0	0
	 0.0-30.0	 30.0-60.0	 60.0-80.0	 80.0-120.0	 120.0-240.0	 >240.0	

WIND SPEED





VECTOR WIND SPEED MAX instantaneous maximum in km/hr

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY 1	6.3	8.2	9.7	7.3	9.3	15.7	20.7	24.3	26.3	28.3	26.4	25.2	26.0	24.7	22.4	24.4	20.2	18.8	15.6	11.1	11.9	13.3	4.1	6.7	4.1	28.3	17.0	24
2	9.3	10.5	13.1	13.8	8.0	6.3	7.3	14.8	18.2	29.7	24.7	36.5	39.8	35.0	33.8	33.5	42.1	30.0	26.8	25.6	28.1	29.2	21.9	21.6	6.3	42.1	23.3	24
3	23.3	21.3	29.5	33.1	43.7	23.0	10.4	18.5	32.4	36.3	45.7	48.8	51.1	36.8	42.0	45.2	34.0	22.8	16.5	8.6	12.7	10.8	17.3	15.6	8.6	51.1	28.3	24
4	13.2	12.3	8.0	10.4	11.4	18.1	19.8	24.2	27.8	30.1	36.5	39.3	39.9	39.0	42.2	42.6	33.8	33.6	27.4	17.0	19.6	18.3	16.0	17.4	8.0	42.6	24.9	24
5	14.6	18.7	15.9	14.6	11.3	13.0	14.9	11.1	8.3	R	9.2	11.2	12.6	13.0	9.9	27.4	18.7	11.1	11.7	12.5	12.7	13.5	10.3	6.8	6.8	27.4	13.2	23
6	11.8	26.2	44.3	40.3	37.9	41.3	47.5	48.6	61.1	66.4	60.6	67.2	71.2	66.9	61.8	70.5	51.5	55.2	34.0	30.9	27.5	25.5	23.4	24.5	11.8	71.2	45.7	24
7	30.8	29.7	19.7	8.5	10.0	8.5	8.0	11.8	10.0	14.1	15.3	20.6	26.3	24.5	23.9	29.2	28.5	21.1	15.9	11.7	9.7	9.2	14.9	15.7	8.0	30.8	17.4	24
8	13.2	16.2	19.8	17.9	20.5	25.8	33.3	34.7	32.3	35.5	40.5	46.2	50.3	53.0	55.8	54.8	54.2	61.0	44.2	39.5	37.7	38.8	40.8	44.7	13.2	61.0	37.9	24
9	13.5	10.0	8.1	15.6	20.8	27.3	52.0	52.4	61.6	62.6	57.7	58.8	56.3	49.9	54.3	56.2	55.3	51.6	51.8	52.9	58.7	38.0	50.9	47.6	8.1	62.6	44.3	24
10	45.0	39.6	34.6	35.1	27.3	22.9	18.9	29.2	24.0	24.8	28.6	31.8	30.4	27.0	30.3	26.5	24.3	20.9	13.6	8.5	13.5	12.0	13.6	12.5	8.5	45.0	24.8	24
11	17.9	18.1	13.2	12.3	10.4	10.8	14.2	22.8	25.3	30.1	32.9	35.9	33.7	41.1	42.2	39.3	39.8	33.5	32.5	23.0	23.2	20.6	13.7	12.4	10.4	42.2	25.0	24
12	9.7	8.0	5.9	7.2	4.2	4.0	3.7	14.0	15.2	16.7	14.3	22.4	21.9	22.6	18.6	19.8	20.0	19.3	10.7	2.5	9.3	15.6	12.3	19.6	2.5	22.6	13.2	24
13	20.3	18.6	18.0	20.3	21.8	13.6	11.7	17.8	38.1	39.8	43.4	42.3	30.1	30.9	28.3	28.7	23.6	29.0	30.6	26.8	22.0	31.2	25.7	19.9	11.7	43.4	26.4	24
14	15.5	19.9	19.6	22.9	23.2	33.9	33.2	39.6	32.5	35.8	38.9	36.8	38.6	37.7	37.0	40.1	34.6	28.8	22.7	20.1	13.6	12.3	14.3	14.8	12.3	40.1	27.8	24
15	14.5	9.2	11.4	11.0	11.0	6.6	6.1	14.9	16.7	15.6	13.2	13.7	15.8	15.5	19.5	25.8	23.0	23.3	19.0	15.7	16.3	18.2	20.4	18.6	6.1	25.8	15.6	24
16	21.7	14.5	9.6	14.1	16.1	14.9	14.7	17.7	25.2	38.0	38.3	38.8	37.8	38.2	37.9	27.9	24.9	17.0	31.8	24.4	11.0	9.8	25.9	24.4	9.6	38.8	23.9	24
17	19.8	15.7	9.2	10.9	10.8	11.3	15.9	19.7	19.1	27.9	35.9	41.7	38.9	50.4	35.7	35.3	29.2	21.4	17.9	8.5	7.6	10.3	19.3	32.9	7.6	50.4	22.7	24
18	20.1	9.7	9.4	7.1	9.4	9.1	15.9	13.8	19.2	28.0	42.1	49.9	46.2	45.1	47.2	48.2	45.8	43.6	37.3	32.8	29.6	27.0	20.2	19.4	7.1	49.9	28.2	24
19	16.2	15.9	25.2	18.6	15.2	16.6	14.9	17.3	17.5	18.0	15.6	12.8	18.9	20.3	25.3	30.6	33.2	31.0	16.7	7.9	27.4	18.9	29.1	29.4	7.9	33.2	20.5	24
20	28.7	23.6	15.6	17.5	16.7	17.7	20.8	27.4	40.8	42.2	41.5	39.0	43.9	39.5	36.0	31.4	32.2	27.1	20.8	18.4	16.7	10.6	16.0	22.9	10.6	43.9	27.0	24
21	24.3	16.0	13.8	15.8	13.8	9.8	18.9	23.0	26.2	26.5	29.3	31.3	31.0	34.7	33.0	30.7	32.2	26.2	29.9	27.6	27.5	31.8	27.6	27.3	9.8	34.7	25.3	24
22	26.4	28.8	28.2	30.3	29.7	28.6	32.6	34.4	38.0	38.8	39.0	33.6	33.2	29.9	33.1	46.0	45.4	46.6	34.8	31.4	28.5	25.5	29.7	33.3	25.5	46.6	33.6	24
23	28.2	27.6	24.3	26.5	22.8	26.4	24.9	19.0	20.0	24.7	24.1	19.7	24.0	30.9	30.2	28.5	30.8	29.6	19.9	12.7	12.3	18.9	8.8	5.5	5.5	30.9	22.5	24
24	14.3	21.9	24.9	29.0	25.0	26.2	26.4	22.6	30.1	28.9	22.7	22.9	24.3	20.4	19.9	17.2	16.8	14.6	12.5	20.6	17.8	16.1	21.2	13.3	12.5	30.1	21.2	24
25	16.6	18.9	12.5	9.2	17.3	7.5	10.3	18.3	15.5	18.5	17.9	21.6	21.0	19.9	28.9	23.9	18.4	17.1	15.1	16.4	18.3	15.8	12.2	8.9	7.5	28.9	16.7	24
26	8.5	8.8	8.5	7.4	5.1	7.0	11.3	12.0	15.4	25.2	27.5	28.6	27.0	27.5	24.8	23.5	21.5	21.7	16.9	11.9	8.4	15.5	20.2	19.4	5.1	28.6	16.8	24
27	7.7	6.5	8.8	7.7	10.3	9.8	8.6	11.8	11.7	16.6	20.9	19.6	23.0	26.2	26.3	24.7	18.9	20.1	12.4	8.4	12.3	12.3	7.0	3.7	3.7	26.3	14.0	24
28	2.8	4.3	5.8	4.3	6.7	9.7	13.3	17.8	21.2	30.5	39.1	31.7	40.2	35.8	43.6	43.2	40.4	34.0	30.8	17.3	12.1	14.5	16.9	17.0	2.8	43.6	22.2	24
29	16.1	15.7	16.5	22.9	23.6	24.4	27.5	26.2	29.3	36.1	48.3	59.3	44.2	48.2	44.1	43.3	43.4	37.2	37.4	21.8	16.7	14.7	16.2	15.0	14.7	59.3	30.3	24
30	12.3	9.0	8.5	7.7	6.7	7.8	9.5	10.1	9.1	14.4	28.5	34.0	34.2	34.0	31.0	26.6	32.1	30.3	22.0	20.3	18.5	24.9	26.1	20.6	6.7	34.2	19.9	24
HOURLY MAX	45.0	39.6	44.3	40.3	43.7	41.3	52.0	52.4	61.6	66.4	60.6	67.2	71.2	66.9	61.8	70.5	55.3	61.0	51.8	52.9	58.7	38.8	50.9	47.6				
HOURLY AVG	17.4	16.8	16.4	16.6	16.7	16.6	18.9	22.3	25.6	30.3	32.0	34.0	34.4	34.0	34.0	34.8	32.3	29.3	24.3	19.6	19.4	19.1	19.9	19.7				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

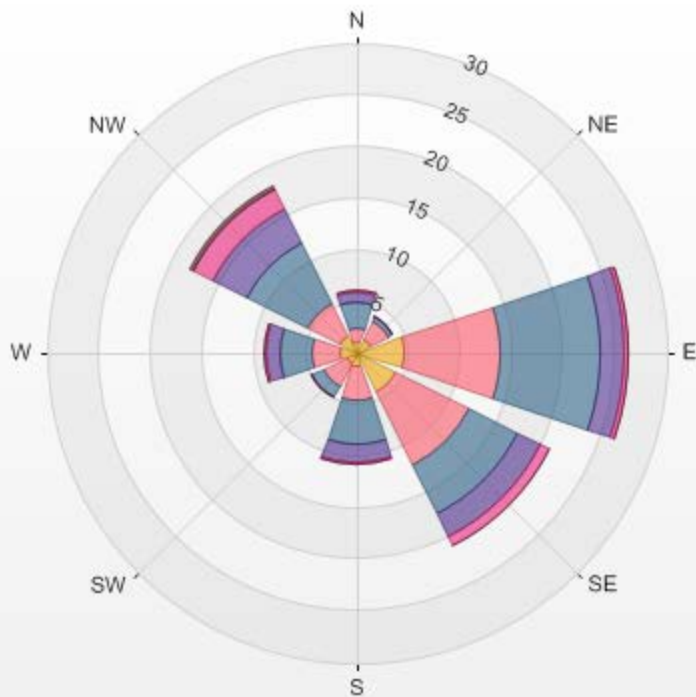
MAXIMUM INSTANTANEOUS VALUE:	71.2	KPH	@ HOUR(S)	12	ON DAY(S)	6
					VAR-VARIOUS	
OPERATIONAL TIME:				719	HRS	

WS MAX[kph] Station: LICA ELK POINT AIRPORT Monthly: 04/2016 Type: AVG 1 Hr. [1 Hr.]



Wind: LICA ELK POINT AIRPORT Monitor: WSP [kph] Monthly: 04/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
 Calm: 0.00% Valid Data: 100.00% Calm Avg: 0.00

Direction	0.0-6.0	6.0-12.0	12.0-20.0	20.0-29.0	29.0-39.0	>39.0	Total
N	0.97	1.53	2.36	0.97	0.28	0	6.11
NE	1.53	1.94	0.42	0	0	0	3.89
E	4.72	9.17	9.72	2.36	0.28	0	26.25
SE	4.17	8.06	5.14	2.64	0.97	0	20.98
S	1.39	3.19	4.31	1.81	0.14	0	10.84
SW	1.11	2.5	1.25	0	0	0	4.86
W	1.67	2.78	3.06	1.25	0.28	0	9.04
NW	1.81	3.47	6.53	3.75	2.08	0.42	18.06
Summary	17.37	32.64	32.79	12.78	4.03	0.42	100



WIND DIRECTION



WIND DIRECTION (WD) hourly averages

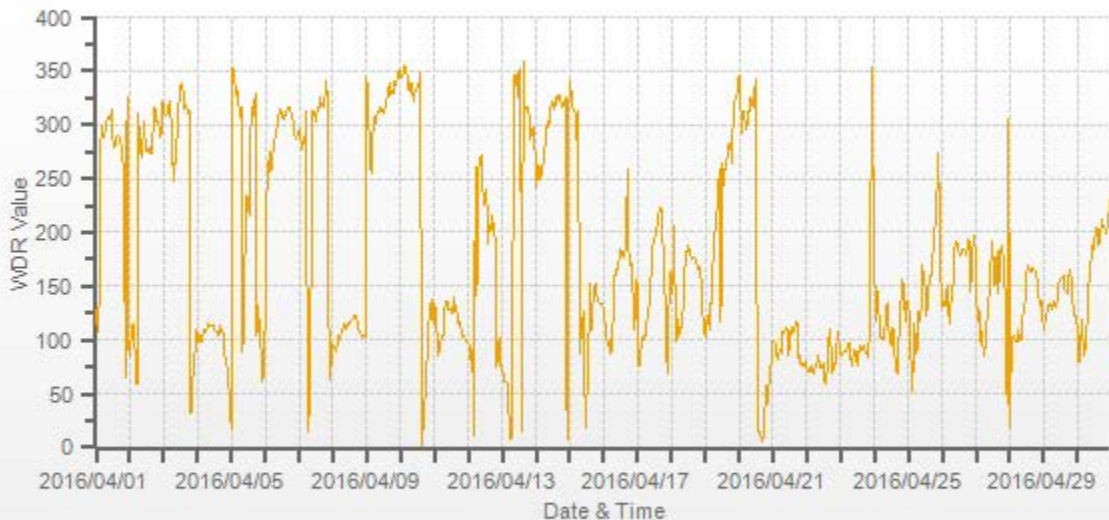
MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24-HOUR AVG	RDGS.	
HOUR START	HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	QUADRANT		
DAY																												
1		SE	ESE	ESE	W	WNW	WNW	WNW	WNW	NW	NW	WNW	NW	WNW	W	W	WNW	WNW	WNW	W	W	SW	ENE	NW	E	WNW	24	
2		E	ESE	ESE	ESE	E	ENE	NW	W	W	W	WNW	W	W	W	W	W	W	NW	NW	WNW	WNW	WNW	WNW	NW	WNW	24	
3		NW	NW	NW	NW	NW	NW	W	WSW	W	WNW	WNW	NW	NNW	NNW	NNW	NW	NW	NW	NW	NNE	NE	ENE	E	ESE	NW	24	
4		ESE	E	ESE	E	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	E	ENE	ENE	ENE	NE	E	24	
5		NNE	N	N	NNW	NNW	NW	NW	NW	E	ESE	SSW	SW	SW	SW	NW	NW	NW	NNW	ESE	SE	ESE	E	ENE	ENE	NNW	24	
6		ESE	SW	WSW	W	WSW	W	W	WNW	WNW	WNW	NW	NW	NW	WNW	NW	NW	NW	NW	NW	WNW	WNW	WNW	WNW	WNW	WNW	24	
7		WNW	WNW	W	WNW	W	NW	NNE	NE	NNE	NW	NW	NW	WNW	NW	NW	NW	NW	NW	NW	NNW	NNW	ESE	ENE	E	NW	24	
8		E	E	E	E	ESE	E	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	24	
9		NNW	WNW	WNW	WSW	WNW	NW	WNW	NW	NW	NW	NW	NW	NW	NW	NW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	N	NW	24	
10		NNW	NNW	NNW	N	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	N	NNE	NE	ENE	E	ESE	SE	ESE	N	24	
11		SE	SE	E	E	E	E	ESE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	ESE	ESE	ESE	ESE	E	E	ESE	24	
12		E	E	ENE	E	NNE	W	SE	WSW	W	W	WSW	SW	WSW	SW	S	SSW	SSW	SSW	SSW	SSW	SSW	SSW	ENE	E	ESE	24	
13		ENE	ENE	ENE	ENE	ENE	NNE	N	NNE	WNW	NNW	NNW	NW	N	NNE	N	NW	NW	NW	NNW	WNW	WNW	WNW	WNW	WNW	NNW	24	
14		WSW	WSW	W	WSW	WSW	W	W	WNW	WNW	WNW	NW	NW	NW	NW	NNW	NW	NW	NW	NW	NW	NW	NW	NW	N	NW	24	
15		NNW	NNW	NW	NW	NW	WNW	NW	E	ESE	ESE	SE	NNE	NE	NE	SSE	ESE	SE	SSE	SSE	SE	SE	SE	SE	SE	E	24	
16		SE	ESE	E	E	E	E	ESE	SSE	SSE	SSE	S	S	S	S	S	SSW	WSW	S	SSE	S	SE	ESE	SSE	SSE	SSE	24	
17		SSE	ENE	E	E	ESE	E	ESE	ESE	SE	SE	S	S	SSW	SSW	SSW	SW	SW	SW	S	SSE	ESE	ENE	ESE	SSE	SSE	24	
18		SE	SSE	SSW	E	ESE	E	ESE	ESE	SSE	S	S	S	S	S	S	S	S	S	SSE	SSE	SSE	SE	ESE	SSE	SSE	24	
19		ESE	ESE	ESE	ESE	SE	SSE	S	SSW	SW	SW	WSW	ESE	W	WSW	WSW	W	W	W	W	W	NW	NW	NNW	NNW	WSW	24	
20		NNW	NW	WNW	NW	WNW	WNW	WNW	NW	NW	NW	NW	NNW	NNW	NNE	NNE	NNE	N	N	NNE	ENE	NE	NE	ENE	E	N	24	
21		E	E	E	E	E	E	E	ESE	ESE	ESE	ESE	E	E	ESE	ESE	ESE	ESE	ESE	ESE	E	E	ENE	ENE	ENE	E	24	
22		ENE	ENE	ENE	ENE	ENE	ENE	ENE	ENE	E	ENE	ENE	ENE	ENE	ENE	ENE	E	ESE	E	ENE	ENE	ENE	E	ESE	E	ENE	24	
23		E	E	E	E	E	E	E	E	ENE	E	E	E	ENE	E	E	E	E	E	E	E	E	E	SE	N	WSW	E	24
24		SSE	ESE	SE	SE	E	ESE	E	ESE	SE	SE	ESE	E	ESE	E	ENE	ENE	E	SE	SE	SSE	SE	ESE	SE	ESE	SE	24	
25		SE	ESE	ENE	NE	ESE	ESE	E	SE	ESE	SE	SSE	SSE	SSE	SSE	SSE	SSE	S	S	SSW	SW	W	SW	SSE	SE	SE	24	
26		SE	SE	SE	SE	SSE	ESE	SE	SE	SSE	S	S	S	S	S	S	S	S	S	S	S	S	SE	SSE	S	SSW	SSE	24
27		SSE	ESE	SE	E	ESE	E	E	ESE	ESE	SE	SSE	S	SSE	SSE	SSE	S	SE	S	S	S	SSE	SE	NE	WNW	SE	24	
28		NNE	E	ESE	ESE	E	E	ESE	E	E	ESE	SE	SE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SE	SE	SE	ESE	SE	24	
29		ESE	ESE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SE	SSE	SSE	SSE	SE	SE	SE	SSE	SSE	SE	SE	ESE	ESE	SE	24	
30		ESE	E	E	ESE	E	E	ESE	ESE	SSE	SSE	S	S	SSW	SSW	SSW	S	S	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSE	24

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

LAST CALIBRATION:	January 26, 2016
DECLINATION:	MAGNETIC DECLINATION 19 DEGREE EAST

MONTHLY CALIBRATION TIME:	0	HRS	OPERATIONAL TIME:	720	HRS
STANDARD DEVIATION:	95.20		AMD OPERATION UPTIME:	100.0	%



STANDARD DEVIATION WIND DIRECTION



STANDARD DEVIATION WIND DIRECTION (STDWD) hourly averages in degrees

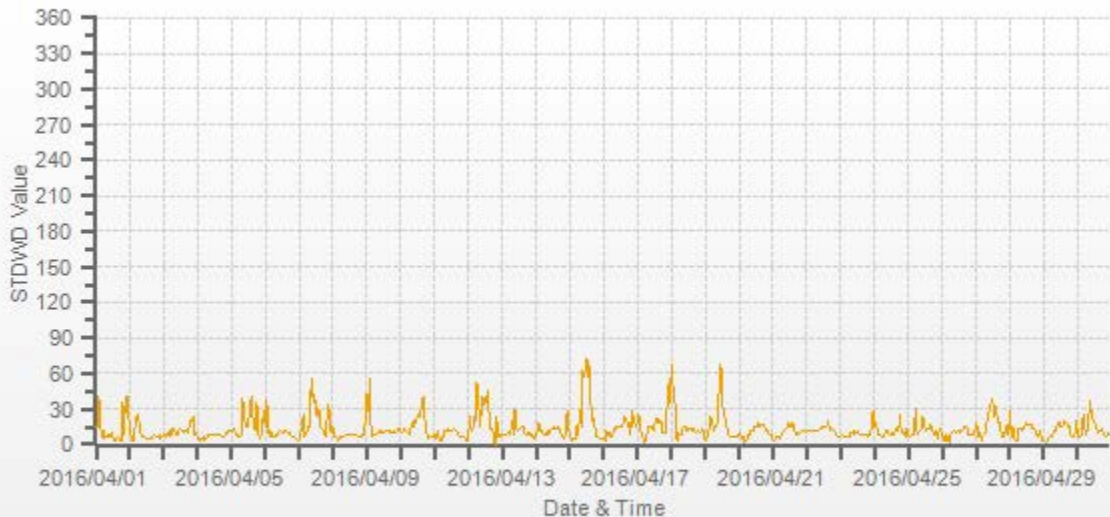
MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	RDGS.	
HOUR START	HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59		
DAY																											
1		15	15	40	20	7	11	5	7	8	7	6	10	6	4	4	6	6	4	4	36	8	40	41	29	24	
2		9	6	3	4	21	23	26	11	8	7	7	5	5	5	5	6	8	7	6	6	5	8	6	6	24	
3		8	7	8	9	11	7	13	13	12	8	8	13	13	11	11	10	11	10	16	20	20	23	8	10	24	
4		5	6	4	5	4	6	5	7	8	8	8	8	9	9	9	8	8	7	7	7	10	10	11	11	24	
5		11	11	13	8	7	8	7	9	39	24	17	15	20	25	41	27	13	11	35	10	5	9	20	29	24	
6		16	38	12	7	12	7	6	6	8	9	11	11	10	10	11	12	10	10	8	6	6	6	5	4	24	
7		5	6	18	25	6	9	12	16	39	56	35	42	26	23	30	15	13	11	8	6	25	34	11	10	24	
8		16	7	6	5	4	6	6	7	7	8	8	8	9	8	8	8	9	9	7	7	7	9	9	21	24	
9		42	28	55	12	7	8	9	9	10	11	10	11	10	12	11	11	11	10	10	10	12	10	13	14	24	
10		11	10	12	13	11	10	9	11	19	15	20	19	25	24	25	33	40	23	12	9	5	7	6	7	24	
11		9	5	11	7	4	3	7	11	12	14	11	11	12	12	14	11	10	8	7	6	6	7	5	3	24	
12		4	23	12	12	23	21	53	45	15	26	40	34	40	35	46	17	13	13	9	0	23	7	6	9	24	
13		9	8	9	9	10	9	10	21	8	30	14	11	14	13	16	16	10	9	10	9	10	7	6	5	24	
14		8	12	18	12	12	8	9	9	11	9	12	14	14	15	14	16	13	13	9	7	5	9	28	14	24	
15		6	5	4	5	5	15	9	28	15	62	57	62	72	58	66	30	20	22	13	7	6	5	5	5	24	
16		5	4	11	8	7	10	7	11	14	15	15	15	15	16	21	23	22	16	18	8	28	23	18	16	24	
17		18	26	16	7	5	2	6	12	15	15	16	11	17	22	19	22	19	19	10	10	10	35	50	35	24	
18		67	50	49	20	4	10	9	9	13	16	15	12	13	14	11	13	13	10	10	11	10	12	14	12	24	
19		4	5	7	16	24	18	12	15	17	21	50	67	39	23	24	19	9	6	6	6	7	7	7	7	24	
20		10	9	5	6	2	3	5	9	12	12	12	16	16	16	19	16	17	16	17	11	11	10	9	8	24	
21		5	4	6	7	6	5	8	10	12	14	16	18	16	15	19	15	9	9	10	10	11	11	11	10	24	
22		10	11	11	11	11	11	12	12	11	13	14	15	15	15	15	20	15	12	13	11	11	9	7	7	24	
23		7	8	7	6	7	7	6	10	10	11	9	10	12	10	9	8	8	9	8	8	6	10	17	29	24	
24		16	19	12	8	8	6	7	7	12	11	10	8	9	10	9	13	14	11	26	10	12	9	7	14	24	
25		8	7	8	9	8	30	11	9	12	14	24	20	14	12	14	14	17	13	9	8	12	5	14	11	24	
26		6	7	4	8	7	1	8	10	12	11	10	11	10	12	12	13	15	15	14	8	8	9	8	11	24	
27		18	15	6	10	4	8	9	13	22	27	29	39	36	23	32	23	19	19	7	6	6	15	9	12	24	
28		28	6	16	6	4	3	13	14	14	12	14	18	19	17	17	14	13	12	9	6	12	8	4	24		
29		4	2	2	4	6	6	6	10	11	13	18	18	15	15	17	21	18	15	15	8	7	9	6	20	24	
30		10	7	7	8	26	13	8	12	26	37	22	21	19	17	12	10	11	14	11	8	6	8	10	8	24	

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

LAST CALIBRATION: January 26, 2016

CALIBRATION TIME: 0 HRS OPERATIONAL TIME: 402 HRS



APPENDIX II
NON-CONTINUOUS MONITORING DATA RESULTS

VOC RESULTS

Sample ID: 16040046-004

Customer ID: LICA
Cust Samp ID: LICA/VOC/ELK/Mar 31, 2016

AIR FCD-01320/2



Maxxam

VOC Sample Collection Data Sheet

Client: LICA
Location: ELK POINT AIRPORT
Station ID: LICA 35
Field Sample ID: LICA/VOC/ELK/Mar 31, 2016

Sampler S/N: 6200
Canister ID: S 5625
Canister Installation Date/Time: Mar 30, 2016 / 17:42
Canister Removal Date/Time: April 04, 2016 / 15:22

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
<u>Mar 31, 2016</u>	<u>00:00</u>	<u>00:00 Apr 01, 2016</u>	<u>24.0</u>

Flow Settings		
Meter Reading (sccm)	Pot Set Pt.	Pump Pressure Setting (psig)
<u>10.0</u>	<u>4.94</u>	<u>26</u>

Canister Information	
Initial Canister Vacuum (inHg)	Final Canister Pressure (psig)
<u>-28.0</u>	<u>+19.2</u>

Canister valve open prior to sampling?: YES / NO
Timer set to 0.00 minutes prior to sampling? YES / NO
Canister valve closed prior to disconnection?: YES / NO

Comments: n/a

Technician Signature: Sample in - by Alex Yakupov
Sample out - by Alex Yakupov
Date: April 04, 2016

Volatile Organics Data Results

Date: March 31, 2016
Canister ID: S5625

PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.02
1,1,2,2-Tetrachloroethane	< 0.02
1,1,2-Trichloroethane	< 0.02
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	< 0.04
1,2,3-Trimethylbenzene	< 0.05
1,2,4-Trichlorobenzene	< 0.8
1,2,4-Trimethylbenzene	< 0.03
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.02
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	< 0.02
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	< 0.02
1-Hexene	< 0.02
1-Pentene	< 0.01
2,2,4-Trimethylpentane	< 0.01
2,2-Dimethylbutane	0.01
2,3,4-Trimethylpentane	< 0.01
2,3-Dimethylbutane	< 0.02
2,3-Dimethylpentane	0.02
2,4-Dimethylpentane	< 0.01
2-Methylheptane	< 0.01
2-Methylhexane	< 0.01
2-Methylpentane	0.04
3-Methylheptane	< 0.02
3-Methylhexane	< 0.02
3-Methylpentane	0.01
Acetone	2.1
Acrolein	< 0.3
Benzene	0.05
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	0.02
Carbon disulfide	< 0.01
Carbon tetrachloride	0.12
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.02
Chloromethane	1.01
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	< 0.02
cis-2-Pentene	< 0.02
Cyclohexane	< 0.02
Cyclopentane	< 0.01
Dibromochloromethane	< 0.01
Ethanol	0.4
Ethyl acetate	< 0.4
Ethylbenzene	< 0.01
Freon-11	0.38

Volatile Organics Data Results

Date: March 31, 2016
Canister ID: S5625

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.11
Freon-114	0.03
Freon-12	0.89
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.29
Isopentane	0.19
Isoprene	< 0.01
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	< 0.03
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	< 0.3
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.03
Methylcyclopentane	0.02
Methylene chloride	< 0.3
n-Butane	0.33
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	0.01
n-Hexane	0.02
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane	0.1
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	< 0.01
o-Xylene	< 0.01
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	0.01
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	< 0.01
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02

Sample ID: 16040128-001

Customer ID: LICA
Cust Samp ID: LICA/VOC/ELK/Apr 06, 2016



Maxxam

VOC Sample Collection Data Sheet

Client: LICA Sampler S/N: 6200
Location: ELK Point Airport Canister ID: 35680
Station ID: LICA 35 Canister Installation Date/Time: April 04, 2016 / 15:23
Field Sample ID: LICA/VOC/ELK/Apr 06, 2016 Canister Removal Date/Time: April 11, 2016 / 11:07

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
<u>Apr 06, 2016</u>	<u>00:00</u>	<u>00:00 Apr 07, 2016</u>	<u>24.0</u>

Flow Settings		
Meter Reading (sccm)	Pot Set Pt.	Pump Pressure Setting (psig)
<u>10.0</u>	<u>4.94</u>	<u>26</u>

Canister Information	
Initial Canister Vacuum (inHg)	Final Canister Pressure (psig)
<u>-28.0</u>	<u>+19.5</u>

Canister valve open prior to sampling?: YES / NO
Timer set to 0.00 minutes prior to sampling? YES / NO
Canister valve closed prior to disconnection?: YES / NO

Comments: April 04, 2016: 24 hour leak check performed
Initial leak check deployment vacuum: -28.0 inHg at 15:24 (April 04, 2016)
Final leak check deployment vacuum: -28.0 inHg at 15:46 (April 05, 2016)
Total leak rate: 0.0 psi over 24 hours 22 min

Technician Signature: Sample in - by Alex Yakupov
Sample out - by Alex Yakupov Date: April 11, 2016

Volatile Organics Data Results

Date: April 6, 2016
Canister ID: S5680

PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.02
1,1,2-Tetrachloroethane	< 0.02
1,1,2-Trichloroethane	< 0.02
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	< 0.04
1,2,3-Trimethylbenzene	< 0.05
1,2,4-Trichlorobenzene	< 0.8
1,2,4-Trimethylbenzene	< 0.03
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.02
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	< 0.02
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	0.11
1-Hexene	< 0.02
1-Pentene	0.02
2,2,4-Trimethylpentane	< 0.01
2,2-Dimethylbutane	< 0.01
2,3,4-Trimethylpentane	< 0.01
2,3-Dimethylbutane	< 0.02
2,3-Dimethylpentane	< 0.02
2,4-Dimethylpentane	< 0.01
2-Methylheptane	< 0.01
2-Methylhexane	< 0.01
2-Methylpentane	< 0.01
3-Methylheptane	< 0.02
3-Methylhexane	< 0.02
3-Methylpentane	0.02
Acetone	3.2
Acrolein	< 0.3
Benzene	0.07
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	0.02
Carbon disulfide	0.55
Carbon tetrachloride	0.13
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.02
Chloromethane	0.99
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	0.05
cis-2-Pentene	< 0.02
Cyclohexane	< 0.02
Cyclopentane	< 0.01
Dibromochloromethane	< 0.01
Ethanol	0.4
Ethyl acetate	< 0.4
Ethylbenzene	0.02
Freon-11	0.39

Volatile Organics Data Results

Date: April 6, 2016
Canister ID: S5680

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.12
Freon-114	0.03
Freon-12	0.87
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.42
Isopentane	0.28
Isoprene	< 0.01
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	< 0.03
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	0.5
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.03
Methylcyclopentane	< 0.02
Methylene chloride	< 0.3
n-Butane	0.40
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	< 0.01
n-Hexane	0.03
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane	< 0.1
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	< 0.01
o-Xylene	0.01
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	0.15
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	0.09
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02

Sample ID: 16040172-003

Customer ID: LICA

Cust Samp ID: LICA/VOC/ELK/Apr 12, 2016



Maxxam

VOC Sample Collection Data Sheet

Client: LICA
Location: ELK Point Airport
Station ID: LICA 35
Field Sample ID: LICA/VOC/ELK/Apr 12, 2016

Sampler S/N: 6200
Canister ID: 1835
Canister Installation Date/Time: Apr 11, 2016 / 11:08
Canister Removal Date/Time: April 13, 2016 / 17:08

Table with 4 columns: Sample Date, Start Time (MST), End Time (MST), Elapsed Time (Hours). Handwritten data: Apr 12, 2016, 00:00, Apr 13, 2016, 24.0

Table with 3 columns: Meter Reading (sccm), Pot Set Pt., Pump Pressure Setting (psig). Handwritten data: 10.0, 4.94, 26

Table with 2 columns: Initial Canister Vacuum (inHg), Final Canister Pressure (psig). Handwritten data: -28.0, 20.0

Canister valve open prior to sampling?: YES / NO
Timer set to 0.00 minutes prior to sampling? YES / NO
Canister valve closed prior to disconnection?: YES / NO

Comments: Date of last audit: April 5, 2016

Technician Signature: Sample in - by Alex Yakupov
Sample out - by Alex Yakupov
Date: April 13, 2016

Volatile Organics Data Results

Date: April 12, 2016
Canister ID: 1835

PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.02
1,1,2-Tetrachloroethane	< 0.02
1,1,2-Trichloroethane	< 0.02
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	< 0.04
1,2,3-Trimethylbenzene	< 0.05
1,2,4-Trichlorobenzene	< 0.8
1,2,4-Trimethylbenzene	< 0.03
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.03
1,2-Dichloropropane	0.02
1,3,5-Trimethylbenzene	< 0.02
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	0.11
1-Hexene	< 0.02
1-Pentene	0.02
2,2,4-Trimethylpentane	< 0.01
2,2-Dimethylbutane	0.02
2,3,4-Trimethylpentane	< 0.01
2,3-Dimethylbutane	0.04
2,3-Dimethylpentane	0.06
2,4-Dimethylpentane	0.02
2-Methylheptane	< 0.01
2-Methylhexane	< 0.01
2-Methylpentane	0.07
3-Methylheptane	< 0.02
3-Methylhexane	< 0.02
3-Methylpentane	0.03
Acetone	5.3
Acrolein	< 0.3
Benzene	0.06
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	0.02
Carbon disulfide	0.88
Carbon tetrachloride	0.13
Chlorobenzene	< 0.02
Chloroethane	0.04
Chloroform	0.04
Chloromethane	1.12
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	0.04
cis-2-Pentene	< 0.02
Cyclohexane	0.04
Cyclopentane	0.02
Dibromochloromethane	< 0.01
Ethanol	2.5
Ethyl acetate	< 0.4
Ethylbenzene	< 0.01
Freon-11	0.37

Volatile Organics Data Results

Date: April 12, 2016
Canister ID: 1835

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.09
Freon-114	0.04
Freon-12	0.83
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.68
Isopentane	0.52
Isoprene	< 0.01
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	< 0.03
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	0.4
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.08
Methylcyclopentane	0.04
Methylene chloride	< 0.3
n-Butane	0.73
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	0.02
n-Hexane	0.05
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane	0.2
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	< 0.01
o-Xylene	< 0.01
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	0.04
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	0.04
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02

Maxxam Analytics

VOC Sample Collection Data Sheet Alberta Air FCD AIR FCD-01320 / 2

Client: LICA Sampler S/N: 6200
 Location: ELK POINT AIRPORT Canister ID: 1710
 Station ID: LICA 35 Installation Date/Time (mst): April 13, 2016 @ 17:09
 Sample ID: LICA/VOC/ELK/Apr 18, 2016 Removal Date/Time (mst): April 20, 2016 @ 09:28

Date and Time Information

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
<u>April 18, 2016</u>	<u>00:00</u>	<u>00:00</u> <u>April 19, 2016</u>	<u>24.0</u>

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
<u>-28.0</u>	<u>+20.6</u>

Flow Settings		
Flow Reading (sccm)	Pot Set Point	Pump Set (psi)
<u>10.0</u>	<u>4.94</u>	<u>26</u>

Deployment/Collection and Maintenance Checklist

Initial leak check deployment vacuum (in. Hg) = @ mst
 Final leak check deployment vacuum (in. Hg) = @ mst
 Total leak rate = psi over minutes
 Timer reset to zero prior to sampling? yes (yes/no)
 Date of last flow calibration: n/a (due every 3 months)
 Last date of sample line & fitting replacement: April 5, 2016 (due every 6 months)

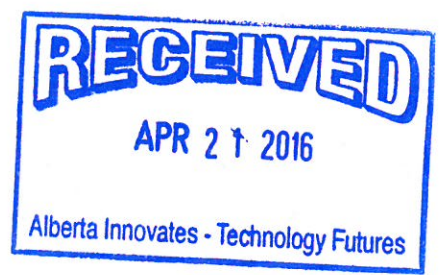
Leak rate must be 0.0 psi over a minimum of 5 minutes or repair is required

Comments: Date of last audit: April 5, 2016

Deployment Technician Signature: Alex Yakupov

Collection Technician Signature: Alex Yakupov Date: April 20, 2016

Sample ID: 16040201-003
 Customer ID: LICA
 Cust Samp ID: LICA/VOC/ELK/Apr 18, 2016



Volatile Organics Data Results

Date: April 18, 2016
Canister ID: 1710

PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.02
1,1,2,2-Tetrachloroethane	< 0.02
1,1,2-Trichloroethane	< 0.02
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	< 0.04
1,2,3-Trimethylbenzene	< 0.05
1,2,4-Trichlorobenzene	< 0.8
1,2,4-Trimethylbenzene	< 0.03
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.02
1,2-Dichloropropane	0.01
1,3,5-Trimethylbenzene	< 0.02
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	0.10
1-Hexene	0.03
1-Pentene	0.01
2,2,4-Trimethylpentane	< 0.01
2,2-Dimethylbutane	0.02
2,3,4-Trimethylpentane	< 0.01
2,3-Dimethylbutane	0.04
2,3-Dimethylpentane	0.04
2,4-Dimethylpentane	0.01
2-Methylheptane	< 0.01
2-Methylhexane	< 0.01
2-Methylpentane	0.06
3-Methylheptane	< 0.02
3-Methylhexane	0.03
3-Methylpentane	0.05
Acetone	3.5
Acrolein	< 0.3
Benzene	0.06
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	0.01
Carbon disulfide	0.11
Carbon tetrachloride	0.10
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.03
Chloromethane	0.86
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	< 0.02
cis-2-Pentene	< 0.02
Cyclohexane	0.03
Cyclopentane	0.01
Dibromochloromethane	< 0.01
Ethanol	1.0
Ethyl acetate	< 0.4
Ethylbenzene	< 0.01
Freon-11	0.33

Volatile Organics Data Results

Date: April 18, 2016
Canister ID: 1710

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.10
Freon-114	0.03
Freon-12	0.76
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.58
Isopentane	0.43
Isoprene	< 0.01
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	< 0.03
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	< 0.3
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.06
Methylcyclopentane	0.06
Methylene chloride	1.4
n-Butane	0.65
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	0.02
n-Hexane	0.11
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane	0.2
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	< 0.01
o-Xylene	< 0.01
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	0.04
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	0.02
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02

Sample ID: 16050011-003

Customer ID: LICA

Cust Samp ID: LICA/VOC/ELK/Apr 24, 2016

Maxxam Analytics

Collection Data Sheet Alberta Air FCD AIR FCD-01320 / 2

Client: LICA Sampler S/N: 6200
 Location: ELK POINT AIRPORT Canister ID: 14705
 Station ID: LICA 35 Installation Date/Time (mst): April 20, 2016 @ 09:29
 Sample ID: LICA/VOC/ELK/Apr 24, 2016 Removal Date/Time (mst): April 29, 2016 @ 18:05

Date and Time Information

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
<u>Apr 24, 2016</u>	<u>00:00</u>	<u>00:00</u> <u>April 25, 2016</u>	<u>24.0</u>

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
<u>-28.0</u>	<u>+18.5</u>

Flow Settings		
Flow Reading (sccm)	Pot Set Point	Pump Set (psi)
<u>10.0</u>	<u>4.94</u>	<u>26</u>

Deployment/Collection and Maintenance Checklist

Initial leak check deployment vacuum (in. Hg) = - @ - mst
 Final leak check deployment vacuum (in. Hg) = - @ - mst
 Total leak rate = - psi over - minutes
 Timer reset to zero prior to sampling? YES (yes/no)
 Date of last flow calibration: n/a (due every 3 months)
 Last date of sample line & fitting replacement: April 5, 2016 (due every 6 months)

Leak rate must be 0.0 psi over a minimum of 5 minutes or repair is required

Comments: Date of last audit : April 5, 2016

Deployment Technician Signature: Alex Yakupov

Collection Technician Signature: Alex Yakupov Date: Apr 29, 2016



Volatile Organics Data Results

Date: April 24, 2016
Canister ID: 14705

PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.02
1,1,2-Tetrachloroethane	< 0.02
1,1,2-Trichloroethane	< 0.02
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	< 0.04
1,2,3-Trimethylbenzene	< 0.05
1,2,4-Trichlorobenzene	< 0.8
1,2,4-Trimethylbenzene	< 0.03
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.02
1,2-Dichloropropane	0.01
1,3,5-Trimethylbenzene	< 0.02
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	< 0.02
1-Hexene	< 0.02
1-Pentene	< 0.01
2,2,4-Trimethylpentane	< 0.01
2,2-Dimethylbutane	< 0.01
2,3,4-Trimethylpentane	< 0.01
2,3-Dimethylbutane	< 0.02
2,3-Dimethylpentane	< 0.02
2,4-Dimethylpentane	< 0.01
2-Methylheptane	< 0.01
2-Methylhexane	< 0.01
2-Methylpentane	0.02
3-Methylheptane	< 0.02
3-Methylhexane	< 0.02
3-Methylpentane	< 0.01
Acetone	2.8
Acrolein	< 0.3
Benzene	0.03
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	0.02
Carbon disulfide	0.01
Carbon tetrachloride	0.13
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.03
Chloromethane	0.89
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	< 0.02
cis-2-Pentene	< 0.02
Cyclohexane	< 0.02
Cyclopentane	< 0.01
Dibromochloromethane	< 0.01
Ethanol	0.4
Ethyl acetate	< 0.4
Ethylbenzene	< 0.01
Freon-11	0.39

Volatile Organics Data Results

Date: April 24, 2016
Canister ID: 14705

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.10
Freon-114	0.03
Freon-12	0.95
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.35
Isopentane	0.19
Isoprene	< 0.01
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	< 0.03
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	< 0.3
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.02
Methylcyclopentane	< 0.02
Methylene chloride	< 0.3
n-Butane	0.25
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	< 0.01
n-Hexane	0.01
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane	< 0.1
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	< 0.01
o-Xylene	< 0.01
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	< 0.01
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	< 0.01
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02

Sample ID: 16050026-001

Customer ID: LICA

Cust Samp ID: LICAVOC/ELK/Apr 30, 2016

Maxxam Analytics

Collection Data Sheet Alberta Air FCD AIR FCD-01320 / 2

Client: LICA Sampler S/N: 6200
 Location: ELK POINT AIRPORT Canister ID: 1153
 Station ID: LICA 35 Installation Date/Time (mst): Apr 29, 2016 @ 18:06
 Sample ID: LICA/VOC/ELK/Apr 30, 2016 Removal Date/Time (mst): May 4, 2016 @ 17:45

Date and Time Information

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
<u>Apr 30, 2016</u>	<u>00:00</u>	<u>00:00</u> <u>May 1, 2016</u>	<u>24.0</u>

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
<u>-28.0</u>	<u>+21.7</u>

Flow Settings		
Flow Reading (sccm)	Pot Set Point	Pump Set (psi)
<u>10.0</u>	<u>4.94</u>	<u>26</u>

Deployment/Collection and Maintenance Checklist

Initial leak check deployment vacuum (in. Hg) = @ mst
 Final leak check deployment vacuum (in. Hg) = @ mst
 Total leak rate = psi over minutes
 Timer reset to zero prior to sampling? YES (yes/no)
 Date of last flow calibration: n/a (due every 3 months)
 Last date of sample line & fitting replacement: April 5, 2016 (due every 6 months)

Leak rate must be 0.0 psi over a minimum of 5 minutes or repair is required

Comments: Date of last audit: April 5, 2016

Deployment Technician Signature: Alex Yakupov

Collection Technician Signature: Alex Yakupov Date: May 4, 2016



Volatile Organics Data Results

Date: April 30 , 2016
Canister ID: 1153

PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.02
1,1,2-Tetrachloroethane	< 0.02
1,1,2-Trichloroethane	< 0.02
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	< 0.04
1,2,3-Trimethylbenzene	< 0.05
1,2,4-Trichlorobenzene	< 0.8
1,2,4-Trimethylbenzene	< 0.03
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.02
1,2-Dichloropropane	0.01
1,3,5-Trimethylbenzene	< 0.02
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	0.11
1-Hexene	< 0.02
1-Pentene	0.01
2,2,4-Trimethylpentane	< 0.01
2,2-Dimethylbutane	0.03
2,3,4-Trimethylpentane	< 0.01
2,3-Dimethylbutane	0.05
2,3-Dimethylpentane	0.06
2,4-Dimethylpentane	0.02
2-Methylheptane	0.01
2-Methylhexane	< 0.01
2-Methylpentane	0.07
3-Methylheptane	< 0.02
3-Methylhexane	0.03
3-Methylpentane	0.05
Acetone	3.7
Acrolein	< 0.3
Benzene	0.04
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	0.01
Carbon disulfide	0.58
Carbon tetrachloride	0.11
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.02
Chloromethane	0.74
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	< 0.02
cis-2-Pentene	< 0.02
Cyclohexane	0.05
Cyclopentane	0.02
Dibromochloromethane	< 0.01
Ethanol	0.8
Ethyl acetate	< 0.4
Ethylbenzene	< 0.01
Freon-11	0.32

Volatile Organics Data Results

Date: April 30 , 2016
Canister ID: 1153

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.08
Freon-114	0.03
Freon-12	0.72
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.76
Isopentane	0.55
Isoprene	< 0.01
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	< 0.03
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	< 0.3
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.10
Methylcyclopentane	0.06
Methylene chloride	< 0.3
n-Butane	0.98
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	0.03
n-Hexane	0.08
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane	0.2
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	< 0.01
o-Xylene	< 0.01
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	0.04
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	0.02
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02

PAH RESULTS

Sample ID: 16040046-005

Customer ID: LICA

Cust Samp ID: LICA/PUF/ELK/Mar 31, 2016



TISCH PUF PLUS Sample Collection Data Sheet

Client:	LICA	Puf+ S/N:	9702
Location:	ELK POINT AIRPORT	Motor S/N:	1139/100-1015
Station ID:	LICA 35	Installation Date/Time:	Mar 30, 2016/17:34
Field Sample ID:	LICA/PUF/ELK/Mar 31, 2016	Removal Date/Time:	Apr 5, 2016/15:36

Sample Data Collection Information

Sample Date:	Mar 31, 2016	Average Pressure (mmHg)	703
Start Time (mst):	00:00	Average Flow (Q _{std})	229
End Time (mst):	00:00 Apr 01, 2016	Average Temperature (°C)	+0.5
Elapsed Time (Hours):	24.0	Volume (V _{std} m ³)	330.18

Sample Recovery Checklist

(circle one)

Flow Rate 230 slpm +/- 0.2 slpm ?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Average temperature appears correct?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Average pressure appears correct?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Any error messages? (if yes list below)	YES	<input checked="" type="radio"/> NO
Sample duration 24 hours?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Date of last calibration/audit:	Feb 25, 2016	
Other observations?	n/a	

Deployed By:	Alex YAKUPOV
Collected By:	Alex YAKUPOV
Date:	Apr 5, 2016

Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: March 31, 2016
PUF S/N: 9702

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.08
2-Methylnaphthalene	0.14
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	0.01
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	< 0.01
Benzo(a)anthracene	0.02
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	< 0.01
Benzo(c)phenanthrene	< 0.01
Benzo(e)pyrene	< 0.01
Benzo(ghi)perylene	< 0.01
Chrysene	< 0.01
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.03
Fluorene	0.02
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.03
Perylene	< 0.01
Phenanthrene	0.06
Pyrene	< 0.01
Retene	0.01

Sample ID: 16040128-002

Customer ID: LICA
Cust Samp ID: LICA/PUF/ELK/Apr 06,
2016



TISCH PUF PLUS Sample Collection Data Sheet

Client: LICA Puf+ S/N: 7E-09
Location: ELK POINT AIRPORT Motor S/N: 1139/100-1015
Station ID: LICA 35 Installation Date/Time: Apr 5, 2016 / 17:32
Field Sample ID: LICA/PUF/ELK/Apr 6, 2016 Removal Date/Time: Apr 11, 2016 / 10:52

Sample Data Collection Information

Sample Date: Apr 6, 2016 Average Pressure (mmHg) 698
Start Time (mst): 00:00 Average Flow (Q_{std}) 229
End Time (mst): 00:00 Apr 7, 2016 Average Temperature (°C) +5.7°
Elapsed Time (Hours): 24.0 Volume (V_{std} m³) 330.20

Sample Recovery Checklist

(circle one)

Flow Rate 230 slpm +/- 0.2 slpm? YES NO
Average temperature appears correct? YES NO
Average pressure appears correct? YES NO
Any error messages? (if yes list below) YES NO
Sample duration 24 hours? YES NO
Date of last calibration/audit: April 5, 2016
Other observations? n/a

Deployed By: Alex Yakupov
Collected By: Alex Yakupov Date: Apr 11, 2016

Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: April 6, 2016
PUF S/N: TE09

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.03
2-Methylnaphthalene	0.06
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	< 0.01
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	< 0.01
Benzo(a)anthracene	0.02
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	< 0.01
Benzo(c)phenanthrene	< 0.01
Benzo(e)pyrene	< 0.01
Benzo(ghi)perylene	< 0.01
Chrysene	< 0.01
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.03
Fluorene	0.03
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.02
Perylene	< 0.01
Phenanthrene	0.07
Pyrene	0.02
Retene	0.03

Sample ID: 16040172-004

Customer ID: LICA

Cust Samp ID: LICA/PUF/ELK/Apr 12, 2016

TISCH PUF PLUS Sample Collection Data Sheet

Client:	<u>LICA</u>	Puf+ S/N:	<u>TE-04</u>
Location:	<u>ELK POINT AIRPORT</u>	Motor S/N:	<u>1139/100-1015</u>
Station ID:	<u>LICA 35</u>	Installation Date/Time:	<u>Apr 11, 2016 / 10:53</u>
Field Sample ID:	<u>LICA/PUF/ELK/APR 12, 2016</u>	Removal Date/Time:	<u>Apr 13, 2016 / 17:17</u>

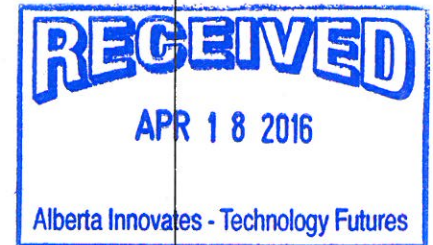
Sample Data Collection Information

Sample Date:	<u>Apr 12, 2016</u>	Average Pressure (mmHg)	<u>695</u>
Start Time (mst):	<u>00:00</u>	Average Flow (Q _{std})	<u>229</u>
End Time (mst):	<u>00:00 Apr 13, 2016</u>	Average Temperature (°C)	<u>9.5</u>
Elapsed Time (Hours):	<u>24.0</u>	Volume (V _{std} m ³)	<u>330.16</u>

Sample Recovery Checklist

(circle one)

Flow Rate 230 slpm +/- 0.2 slpm ?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Average temperature appears correct?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Average pressure appears correct?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Any error messages? (if yes list below)	<input type="radio"/> YES	<input checked="" type="radio"/> NO
Sample duration 24 hours?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Date of last calibration/audit:	<u>April 5, 2016</u>	
Other observations?	<u>n/a</u>	



Deployed By: Alex Yakupov

Collected By: Alex Yakupov Date: Apr 13, 2016

Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: April 12, 2016
PUF S/N: TE04

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.02
2-Methylnaphthalene	0.04
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	< 0.01
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	< 0.01
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	< 0.01
Benzo(c)phenanthrene	< 0.01
Benzo(e)pyrene	< 0.01
Benzo(ghi)perylene	< 0.01
Chrysene	< 0.01
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.02
Fluorene	0.03
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.01
Perylene	< 0.01
Phenanthrene	0.06
Pyrene	0.02
Retene	0.03

Sample ID: 16040201-004

Customer ID: LICA

Cust Samp ID: LICA/PUF/ELK/Apr 18, 2016

TISCH PUF PLUS Sample Collection Data Sheet

Client:	<u>LICA</u>	Puf+ S/N:	<u>TE-03</u>
Location:	<u>ELK POINT AIRPORT</u>	Motor S/N:	<u>1139 / 100 - 1015</u>
Station ID:	<u>LICA 35</u>	Installation Date/Time:	<u>Apr 13, 2016 / 17:18</u>
Field Sample ID:	<u>LICA / PUF / ELK / Apr 18, 2016</u>	Removal Date/Time:	<u>Apr 20, 2016 / 09:45</u>

Sample Data Collection Information

Sample Date:	<u>Apr 18, 2016</u>	Average Pressure (mmHg)	<u>706</u>
Start Time (mst):	<u>00:00</u>	Average Flow (Q _{std})	<u>229</u>
End Time (mst):	<u>00:00 Apr 19, 2016</u>	Average Temperature (°C)	<u>14.1°</u>
Elapsed Time (Hours):	<u>24.0</u>	Volume (Vstd m ³)	<u>330.18</u>

Sample Recovery Checklist

(circle one)

Flow Rate 230 slpm +/- 0.2 slpm ?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Average temperature appears correct?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Average pressure appears correct?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Any error messages? (if yes list below)	<input type="radio"/> YES	<input checked="" type="radio"/> NO
Sample duration 24 hours?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Date of last calibration/audit:	<u>April 5, 2016</u>	
Other observations?	<u>n/a</u>	



Deployed By:	<u>Alex Yakupov</u>	
Collected By:	<u>Alex Yakupov</u>	<u>Date: Apr 20, 2016</u>

Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: April 18, 2016
PUF S/N: TE03

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.06
2-Methylnaphthalene	0.11
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	0.01
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	< 0.01
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	0.02
Benzo(c)phenanthrene	< 0.01
Benzo(e)pyrene	< 0.01
Benzo(ghi)perylene	< 0.01
Chrysene	< 0.01
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.05
Fluorene	0.03
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.05
Perylene	< 0.01
Phenanthrene	0.11
Pyrene	0.02
Retene	0.03

Sample ID: 16050011-004

Customer ID: LICA

Cust Samp ID: LICA/PUF/ELK/Apr 24, 2016

TISCH PUF PLUS Sample Collection Data Sheet

Client:	<u>LICA</u>	Puf+ S/N:	<u>A13-02</u>
Location:	<u>ELK POINT AIRPORT</u>	Motor S/N:	<u>1133/100-1015</u>
Station ID:	<u>LICA 35</u>	Installation Date/Time:	<u>Apr 20, 2016 / 09:46</u>
Field Sample ID:	<u>LICA/PUF/ELK/Apr 24, 2016</u>	Removal Date/Time:	<u>Apr 29, 2016 / 17:55</u>

Sample Data Collection Information

Sample Date:	<u>Apr 24, 2016</u>	Average Pressure (mmHg)	<u>700</u>
Start Time (mst):	<u>00:00</u>	Average Flow (Q _{std})	<u>229</u>
End Time (mst):	<u>00:00 Apr 25, 2016</u>	Average Temperature (°C)	<u>1.5°</u>
Elapsed Time (Hours):	<u>24.0</u>	Volume (Vstd m ³)	<u>330.17</u>

Sample Recovery Checklist

(circle one)

Flow Rate 230 slpm +/- 0.2 slpm ?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Average temperature appears correct?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Average pressure appears correct?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Any error messages? (if yes list below)	<input type="radio"/> YES	<input checked="" type="radio"/> NO
Sample duration 24 hours?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Date of last calibration/audit:	<u>April 5, 2016</u>	
Other observations?	<u>n/a</u>	



Deployed By: Alex Yakupov

Collected By: Alex Yakupov Date: April 29, 2016

Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: April 24, 2016
PUF S/N: A1302

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.03
2-Methylnaphthalene	0.07
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	< 0.01
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	< 0.01
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	< 0.01
Benzo(c)phenanthrene	0.01
Benzo(e)pyrene	< 0.01
Benzo(ghi)perylene	< 0.01
Chrysene	< 0.01
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.03
Fluorene	0.02
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.02
Perylene	< 0.01
Phenanthrene	0.03
Pyrene	0.02
Retene	0.02

Sample ID: 16050026-002

Customer ID: LICA

Cust Samp ID: LICA/PUF/ELK/Apr 30, 2016

TISCH PUF PLUS Sample Collection Data Sheet

Client:	<u>LICA</u>	Puff S/N:	<u>9809</u>
Location:	<u>ELK POINT AIRPORT</u>	Motor S/N:	<u>1139/100-1015</u>
Station ID:	<u>LICA 35</u>	Installation Date/Time:	<u>Apr 29, 2016/17:56</u>
Field Sample ID:	<u>LICA/PUF/ELK/Apr 30, 2016</u>	Removal Date/Time:	<u>May 4, 2016/18:05</u>

Sample Data Collection Information

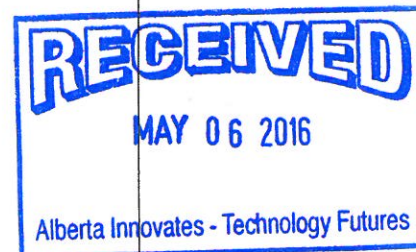
Sample Date:	<u>Apr 30, 2016</u>	Average Pressure (mmHg)	<u>705</u>
Start Time (mst):	<u>00:00</u>	Average Flow (Q _{std})	<u>229</u>
End Time (mst):	<u>00:00 May 1, 2016</u>	Average Temperature (°C)	<u>10.9°</u>
Elapsed Time (Hours):	<u>24.0</u>	Volume (V _{std} m ³)	<u>330.17</u>

Sample Recovery Checklist

(circle one)

Flow Rate 230 slpm +/- 0.2 slpm ?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Average temperature appears correct?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Average pressure appears correct?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Any error messages? (if yes list below)	<input type="radio"/> YES	<input checked="" type="radio"/> NO
Sample duration 24 hours?	<input checked="" type="radio"/> YES	<input type="radio"/> NO
Date of last calibration/audit:	<u>April 5, 2016</u>	
Other observations?	<u>n/a</u>	

Deployed By:	<u>A. V. April Alex Yakupov</u>
Collected By:	<u>Alex Yakupov</u> Date: <u>May 4, 2016</u>



Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: April 30, 2016
PUF S/N: 9801

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.02
2-Methylnaphthalene	0.03
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	< 0.01
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	< 0.01
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	< 0.01
Benzo(c)phenanthrene	0.06
Benzo(e)pyrene	< 0.01
Benzo(ghi)perylene	< 0.01
Chrysene	< 0.01
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.03
Fluorene	0.02
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.02
Perylene	< 0.01
Phenanthrene	0.06
Pyrene	0.02
Retene	0.03

NMHC CANISTER RESULTS

Sample ID: 16040046-001

Customer ID: LICA
Cust Samp ID: LICA/VOC/ELK/April 1, 2016

AIR FCD-01320/2



Maxxam

VOC Sample Collection Data Sheet

Client: LICA Sampler S/N: n/a
Location: ELK POINT AIRPORT Canister ID: H3301
Station ID: LICA 35 Canister Installation Date/Time: March 27, 2016 / 11:35
Field Sample ID: LICA/VOC/ELK/April 1, 2016 Canister Removal Date/Time: April 05, 2016 / 14:40

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
<u>April 01, 2016</u>	<u>19:57</u>	<u>n/a</u>	<u>n/a</u>

Flow Settings		
Meter Reading (sccm)	Pot Set Pt.	Pump Pressure Setting (psig)
<u>n/a</u>	<u>n/a</u>	<u>n/a</u>

Canister Information	
Initial Canister Vacuum (in Hg)	Final Canister Vacuum (in Hg)
<u>- 2.0</u>	<u>- 2.0</u>

Canister valve open prior to sampling?: YES / NO

Canister valve closed prior to disconnection?: YES / NO

Comments:

NMHC sampling canister

Technician Signature: Sample in - by Alex Yakupov Date: April 05, 2016
Sample out - by Alex Yakupov

Volatile Organics Data Results (NMHC Canister System)

Date: April 1, 2016
Canister ID: H3301

PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.03
1,1,2-Tetrachloroethane	< 0.03
1,1,2-Trichloroethane	< 0.03
1,1-Dichloroethane	< 0.03
1,1-Dichloroethylene	< 0.05
1,2,3-Trimethylbenzene	< 0.07
1,2,4-Trichlorobenzene	< 1.0
1,2,4-Trimethylbenzene	< 0.04
1,2-Dibromoethane	< 0.03
1,2-Dichlorobenzene	< 0.04
1,2-Dichloroethane	0.03
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	< 0.03
1,3-Butadiene	< 0.03
1,3-Dichlorobenzene	< 0.4
1,4-Dichlorobenzene	< 0.5
1,4-Dioxane	< 0.5
1-Butene	0.16
1-Hexene	< 0.03
1-Pentene	0.02
2,2,4-Trimethylpentane	< 0.01
2,2-Dimethylbutane	0.07
2,3,4-Trimethylpentane	0.04
2,3-Dimethylbutane	0.12
2,3-Dimethylpentane	0.12
2,4-Dimethylpentane	0.04
2-Methylheptane	0.02
2-Methylhexane	< 0.01
2-Methylpentane	< 0.01
3-Methylheptane	< 0.03
3-Methylhexane	0.06
3-Methylpentane	0.06
Acetone	3.5
Acrolein	< 0.4
Benzene	0.07
Benzyl chloride	< 0.5
Bromodichloromethane	< 0.03
Bromoform	< 0.03
Bromomethane	0.03
Carbon disulfide	0.02
Carbon tetrachloride	0.12
Chlorobenzene	< 0.03
Chloroethane	< 0.03
Chloroform	0.03
Chloromethane	0.90
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.05
cis-2-Butene	< 0.03
cis-2-Pentene	< 0.03
Cyclohexane	0.11
Cyclopentane	0.04
Dibromochloromethane	< 0.01
Ethanol	0.7
Ethyl acetate	< 0.5
Ethylbenzene	0.02
Freon-11	0.35

Volatile Organics Data Results (NMHC Canister System)

Date: April 1, 2016
Canister ID: H3301

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.11
Freon-114	0.04
Freon-12	0.75
Hexachloro-1,3-butadiene	< 0.66
Isobutane	1.07
Isopentane	0.71
Isoprene	< 0.01
Isopropyl alcohol	< 0.5
Isopropylbenzene	< 0.01
m,p-Xylene	< 0.04
m-Diethylbenzene	< 0.05
m-Ethyltoluene	< 0.10
Methyl butyl ketone	< 0.66
Methyl ethyl ketone	< 0.4
Methyl isobutyl ketone	< 0.5
Methyl methacrylate	< 0.09
Methyl tert butyl ether	< 0.04
Methylcyclohexane	0.30
Methylcyclopentane	0.11
Methylene chloride	< 0.4
n-Butane	1.14
n-Decane	< 0.08
n-Dodecane	< 0.5
n-Heptane	0.07
n-Hexane	0.12
n-Nonane	< 0.01
n-Octane	< 0.03
n-Pentane	0.3
n-Propylbenzene	< 0.07
n-Undecane	< 0.7
Naphthalene	< 0.7
o-Ethyltoluene	< 0.01
o-Xylene	0.01
p-Diethylbenzene	< 0.05
p-Ethyltoluene	< 0.09
Styrene	< 0.05
Tetrachloroethylene	< 0.05
Tetrahydrofuran	< 0.5
Toluene	0.11
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.05
trans-2-Butene	0.02
trans-2-Pentene	< 0.03
Trichloroethylene	< 0.05
Vinyl acetate	< 0.5
Vinyl chloride	< 0.03

Sample ID: 16040201-005

Customer ID: LICA

Cust Samp ID: LICA/VOC/ELK/Apr 18, 2016

Maxxam

VOC Sample Collection Data Sheet



Client: LICA

Sampler S/N: n/a

Location: ELK POINT AIRPORT

Canister ID: H3302

Station ID: LICA 35

Canister Installation Date/Time: April 05, 2016 / 14:41

Field Sample ID: LICA/VOC/ELK/April 17, 2016

Canister Removal Date/Time: April 20, 2016 / 09:08

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
<u>April 17, 2016</u>	<u>19:50</u>	<u>n/a</u>	<u>n/a</u>

Flow Settings		
Meter Reading (sccm)	Pot Set Pt.	Pump Pressure Setting (psig)
<u>n/a</u>	<u>n/a</u>	<u>n/a</u>

Canister Information	
Initial Canister Vacuum (in Hg)	Final Canister Vacuum (in Hg)
<u>-28.0</u>	<u>-2.0</u>

Canister valve open prior to sampling?: YES / NO

Canister valve closed prior to disconnection?: YES / NO

Comments:

NMHC sampling canister

Technician Signature:

Sample in - by Alex Yakupov
Sample out - by Alex Yakupov

Date: April 20, 2016

Volatile Organics Data Results (NMHC Canister System)

Date: April 17, 2016
Canister ID: H3302

PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.02
1,1,2-Tetrachloroethane	< 0.02
1,1,2-Trichloroethane	< 0.02
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	< 0.05
1,2,3-Trimethylbenzene	< 0.06
1,2,4-Trichlorobenzene	< 1.0
1,2,4-Trimethylbenzene	< 0.04
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.04
1,2-Dichloroethane	0.02
1,2-Dichloropropane	0.01
1,3,5-Trimethylbenzene	< 0.02
1,3-Butadiene	0.03
1,3-Dichlorobenzene	< 0.4
1,4-Dichlorobenzene	< 0.5
1,4-Dioxane	< 0.5
1-Butene	0.19
1-Hexene	< 0.02
1-Pentene	0.03
2,2,4-Trimethylpentane	< 0.01
2,2-Dimethylbutane	0.04
2,3,4-Trimethylpentane	0.05
2,3-Dimethylbutane	0.08
2,3-Dimethylpentane	0.10
2,4-Dimethylpentane	0.04
2-Methylheptane	0.02
2-Methylhexane	< 0.01
2-Methylpentane	0.16
3-Methylheptane	< 0.02
3-Methylhexane	0.08
3-Methylpentane	0.08
Acetone	5.2
Acrolein	< 0.4
Benzene	0.18
Benzyl chloride	< 0.5
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	0.02
Carbon tetrachloride	0.10
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	< 0.02
Chloromethane	0.77
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.05
cis-2-Butene	< 0.02
cis-2-Pentene	< 0.02
Cyclohexane	0.05
Cyclopentane	0.03
Dibromochloromethane	< 0.01
Ethanol	2.7
Ethyl acetate	< 0.5
Ethylbenzene	0.02
Freon-11	0.31

Volatile Organics Data Results (NMHC Canister System)

Date: April 17, 2016
Canister ID: H3302

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.08
Freon-114	< 0.02
Freon-12	0.65
Hexachloro-1,3-butadiene	< 0.62
Isobutane	1.35
Isopentane	0.94
Isoprene	< 0.01
Isopropyl alcohol	< 0.5
Isopropylbenzene	< 0.01
m,p-Xylene	0.06
m-Diethylbenzene	< 0.05
m-Ethyltoluene	< 0.10
Methyl butyl ketone	< 0.62
Methyl ethyl ketone	0.4
Methyl isobutyl ketone	< 0.5
Methyl methacrylate	< 0.09
Methyl tert butyl ether	< 0.04
Methylcyclohexane	0.11
Methylcyclopentane	0.09
Methylene chloride	< 0.4
n-Butane	1.11
n-Decane	< 0.07
n-Dodecane	< 0.5
n-Heptane	0.05
n-Hexane	0.12
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane	0.2
n-Propylbenzene	< 0.06
n-Undecane	< 0.6
Naphthalene	< 0.6
o-Ethyltoluene	< 0.01
o-Xylene	0.03
p-Diethylbenzene	< 0.05
p-Ethyltoluene	< 0.09
Styrene	< 0.05
Tetrachloroethylene	< 0.05
Tetrahydrofuran	< 0.5
Toluene	0.13
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.05
trans-2-Butene	0.02
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.05
Vinyl acetate	< 0.5
Vinyl chloride	< 0.02

Sample ID: 16050011-005

AIR FCD-01320/2

Customer ID: LICA

Cust Samp ID: LICA/VOC/ELK/Apr 24, 2016

Maxxam

VOC Sample Collection Data Sheet

Client: LICA
Location: ELK POINT AIRPORT
Station ID: LICA 35
Field Sample ID: LICA/VOC/ELK/APR 24, 2016

Sampler S/N: n/a
Canister ID: S5651
Canister Installation Date/Time: April 20, 2016 / 09:09
Canister Removal Date/Time: April 29, 2016 / 17:48

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
<u>April 24, 2016</u>	<u>00:15</u>	<u>n/a</u>	<u>n/a</u>

Flow Settings		
Meter Reading (sccm)	Pot Set Pt.	Pump Pressure Setting (psig)
<u>n/a</u>	<u>n/a</u>	<u>n/a</u>

Canister Information	
Initial Canister Vacuum (in Hg)	Final Canister Vacuum (in Hg)
<u>-2.80</u>	<u>-3.0</u>



Canister valve open prior to sampling?: YES / NO

Canister valve closed prior to disconnection?: YES / NO

Comments:

NMHC sampling canister

Technician Signature: Sample in - by Alex Yakupov
Sample out - by Alex Yakupov

Date: April 29, 2016

Volatile Organics Data Results (NMHC Canister System)

Date: April 24, 2016
Canister ID: S5657

PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.02
1,1,2-Tetrachloroethane	< 0.02
1,1,2-Trichloroethane	< 0.02
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	< 0.05
1,2,3-Trimethylbenzene	< 0.06
1,2,4-Trichlorobenzene	< 0.9
1,2,4-Trimethylbenzene	< 0.03
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.02
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	< 0.02
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.5
1,4-Dioxane	< 0.5
1-Butene	0.09
1-Hexene	< 0.02
1-Pentene	< 0.01
2,2,4-Trimethylpentane	0.03
2,2-Dimethylbutane	0.02
2,3,4-Trimethylpentane	0.02
2,3-Dimethylbutane	0.05
2,3-Dimethylpentane	0.06
2,4-Dimethylpentane	0.02
2-Methylheptane	< 0.01
2-Methylhexane	< 0.01
2-Methylpentane	0.03
3-Methylheptane	< 0.02
3-Methylhexane	< 0.02
3-Methylpentane	0.02
Acetone	3.1
Acrolein	< 0.3
Benzene	0.06
Benzyl chloride	< 0.5
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	0.01
Carbon disulfide	0.02
Carbon tetrachloride	0.12
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.03
Chloromethane	1.00
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.05
cis-2-Butene	< 0.02
cis-2-Pentene	< 0.02
Cyclohexane	0.04
Cyclopentane	0.01
Dibromochloromethane	< 0.01
Ethanol	0.6
Ethyl acetate	< 0.5
Ethylbenzene	< 0.01
Freon-11	0.37

Volatile Organics Data Results (NMHC Canister System)

Date: April 24, 2016
Canister ID: S5657

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.09
Freon-114	0.03
Freon-12	0.85
Hexachloro-1,3-butadiene	< 0.58
Isobutane	1.20
Isopentane	0.42
Isoprene	0.04
Isopropyl alcohol	< 0.5
Isopropylbenzene	< 0.01
m,p-Xylene	< 0.03
m-Diethylbenzene	< 0.05
m-Ethyltoluene	< 0.09
Methyl butyl ketone	< 0.58
Methyl ethyl ketone	< 0.3
Methyl isobutyl ketone	< 0.5
Methyl methacrylate	< 0.08
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.08
Methylcyclopentane	0.04
Methylene chloride	< 0.3
n-Butane	0.55
n-Decane	< 0.07
n-Dodecane	< 0.5
n-Heptane	0.02
n-Hexane	0.05
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane	< 0.1
n-Propylbenzene	< 0.06
n-Undecane	< 0.6
Naphthalene	< 0.6
o-Ethyltoluene	< 0.01
o-Xylene	< 0.01
p-Diethylbenzene	< 0.05
p-Ethyltoluene	< 0.08
Styrene	< 0.05
Tetrachloroethylene	< 0.05
Tetrahydrofuran	< 0.5
Toluene	0.04
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.05
trans-2-Butene	< 0.01
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.05
Vinyl acetate	< 0.5
Vinyl chloride	< 0.02

APPENDIX III
EQUIPMENT CALIBRATION RESULTS

SULPHUR DIOXIDE



API 100E Sulphur Dioxide Analyzer Calibration

Date: April 5, 2016	Barometric Pressure: 0.934 atm
Company/Airshed: LICA	Station Temperature °C: 21
Location/Station Name: Elk Point	Weather Conditions: Mainly cloudy with drizzle
Parameter: Sulphur Dioxide	Calibration Purpose: routine monthly
Start Time 24 hr. (mst): 9:45	Performed By/Reviewer: Alex Yakupov Trina Whitsitt
End Time 24 hr. (mst): 13:24	Cal Gas Expiry Date: December 2, 2023
Calibration Method: Gas Dilution	Converter Model & s/n (if applicable): n/a

Analyzer: Serial Number: 467	Range ppb: 1000
Last Calibration Date: March 2, 2016	As Found C.F.: 1.025
Previous C.F.: 1.000	New C.F.: 0.997

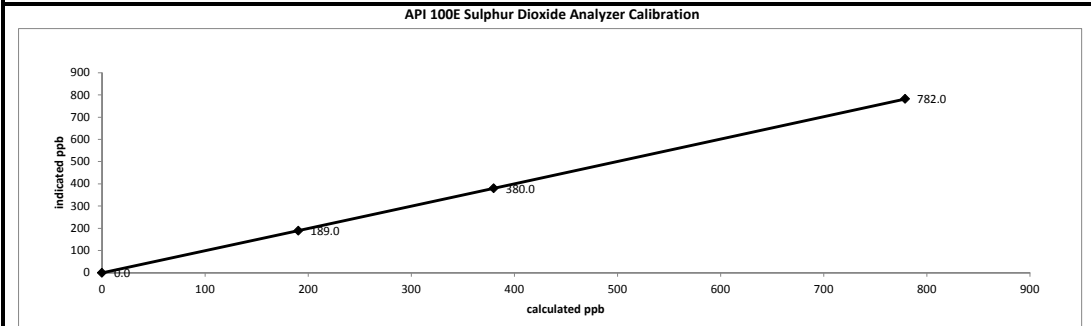
Calibrator: Flow Meter ID's: n/a Make & Model: SABIO 2010 D Serial #: 11900613 Cal Gas Cylinder I.D. #: LL119346 Cal Gas Conc. (ppm): 50.0	Standard Calibration Points for Ranges <table border="1" style="margin: auto;"> <thead> <tr> <th>Point</th> <th>Sulphur Dioxide Standard Calibration Points</th> </tr> </thead> <tbody> <tr> <td>High</td> <td>780</td> </tr> <tr> <td>Mid</td> <td>380</td> </tr> <tr> <td>Low</td> <td>190</td> </tr> </tbody> </table>	Point	Sulphur Dioxide Standard Calibration Points	High	780	Mid	380	Low	190
Point	Sulphur Dioxide Standard Calibration Points								
High	780								
Mid	380								
Low	190								

ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Point	Calibrator Flow Rates (cc/min)			Calculated Concentration: (ppb)	Indicated Concentration: (ppb)	Correction Factors (C.F.):
	Diluent	Cal Gas	Total			
as found zero	5000	0.00	5000	0.0	-1.0	N/A
as found high	4922	78.00	5000	780.0	760.0	1.025
adjusted zero	5000	0.00	5000	0.0	0.0	n/a
adjusted high	4922	78.00	5000	780.0	782.0	0.997
mid	4962	38.00	5000	380.0	380.0	1.000
low	4981	19.00	5000	190.0	189.0	1.005
calibrator zero	5000	0.00	5000	0.0	0.0	n/a
Average C.F.=						1.001

Linear Regression/Calibration Results:

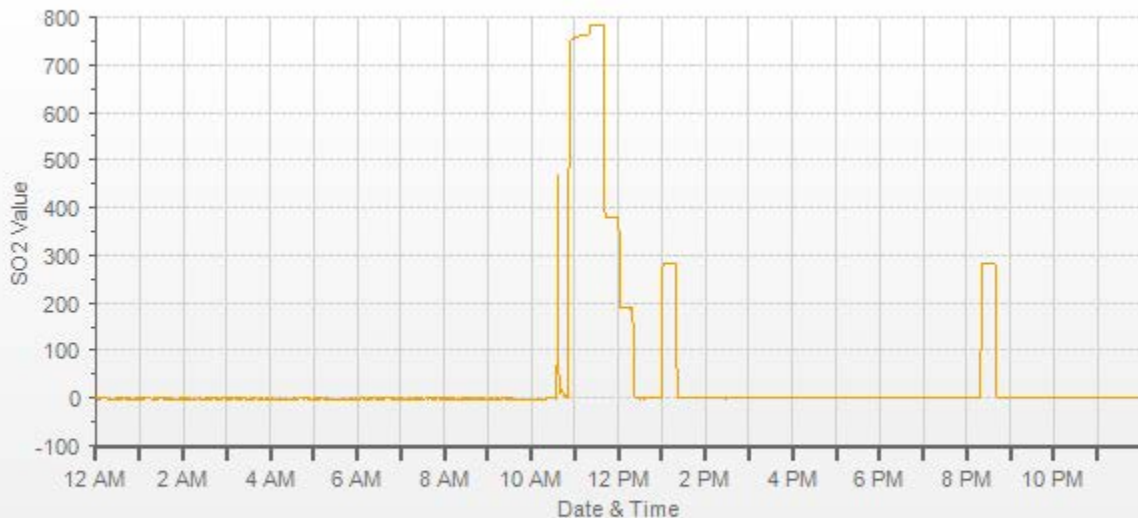
Correlation Coefficient = <u>1.000</u>	LIMITS
Slope = <u>0.997</u>	> or = 0.995
b (Intercept as % of full scale) = <u>0.08%</u>	.95-1.05
% change in C.F. from last cal = <u>-2.50%</u>	± 3% F.S.
	± 10%



As found: SLOPE: <u>1.082</u> OFFSET: <u>118.7</u> HVPS: <u>512</u> RCELL TEMP: <u>50.0</u> BOX TEMP: <u>33.0</u> PMT TEMP: <u>8.1</u> IZS TEMP: <u>45.0</u> PRES: <u>24.6</u> SAMP FL: <u>617</u> NORM PMT: <u>117.2</u> UV LAMP: <u>2877.3</u> LAMP RATIO: <u>95.7</u> STR. LGT: <u>64.2</u> DRK PMT: <u>15.3</u> DRK LMP: <u>2.8</u> Internal Span: <u>275</u>	As left: SLOPE: <u>1.108</u> OFFSET: <u>116.5</u> HVPS: <u>512</u> RCELL TEMP: <u>50.0</u> BOX TEMP: <u>33.1</u> PMT TEMP: <u>8.1</u> IZS TEMP: <u>45.0</u> PRES: <u>24.6</u> SAMP FL: <u>617</u> NORM PMT: <u>117.5</u> UV LAMP: <u>2876.7</u> LAMP RATIO: <u>95.6</u> STR. LGT: <u>64.6</u> DRK PMT: <u>16.2</u> DRK LMP: <u>2.7</u> Internal Span: <u>284.1</u>
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Comments:

Sample filter changed. 10:36 - 10:54 -calibration stopped to verify/correct concentration in the calibrator's program.



HYDROGEN SULPHIDE



API 101E Hydrogen Sulphide Analyzer Calibration

Date: April 4, 2016	Barometric Pressure: 0.939 atm
Company/Airshed: LICA	Station Temperature °C: 20
Location/Station Name: Elk Point	Weather Conditions: A few clouds
Parameter: Hydrogen Sulphide	Calibration Purpose: routine monthly
Start Time 24 hr. (mst): 15:30	Performed By/Reviewer: Alex Yakupov Trina Whitsitt
End Time 24 hr. (mst): 18:45	Cal Gas Expiry Date: July 15, 2017
Calibration Method: Gas Dilution	Converter Model & s/n (if applicable): n/a

Analyzer:	Range ppb: 100
Serial Number: 510	As Found C.F.: 0.997
Last Calibration Date: March 27, 2016	New C.F.: 1.000
Previous C.F.: 1.000	

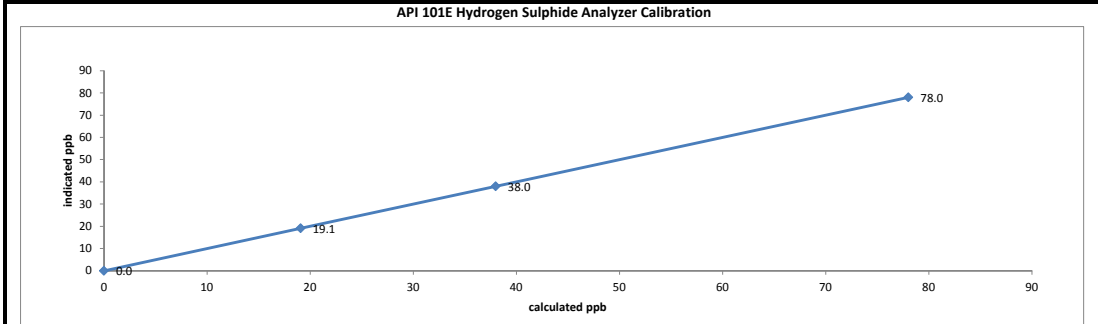
Calibrator:	Standard Calibration Points for Ranges								
Flow Meter ID's: n/a	<table border="1" style="margin: auto;"> <thead> <tr> <th>Point</th> <th>Hydrogen Sulphide Standard Calibration Points</th> </tr> </thead> <tbody> <tr> <td>High</td> <td>78</td> </tr> <tr> <td>Mid</td> <td>38</td> </tr> <tr> <td>Low</td> <td>19</td> </tr> </tbody> </table>	Point	Hydrogen Sulphide Standard Calibration Points	High	78	Mid	38	Low	19
Point		Hydrogen Sulphide Standard Calibration Points							
High		78							
Mid		38							
Low		19							
Make & Model: API 700									
Serial #: 830									
Cal Gas Cylinder I.D. #: LL36837									
Cal Gas Conc. (ppm): 10.0									

ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
as found zero	7498	0.00	7498	0.0	-0.8	N/A
as found high	7439	58.50	7498	78.0	77.5	0.997
adjusted zero	7498	0.00	7498	0.0	0.0	n/a
adjusted high	7439	58.50	7498	78.0	78.0	1.000
mid	7471	28.50	7500	38.0	38.0	1.000
low	7482	14.30	7496	19.1	19.1	0.999
calibrator zero	7498	0.00	7498	0.0	0.0	n/a
Average C.F.=						1.000

Linear Regression/Calibration Results:

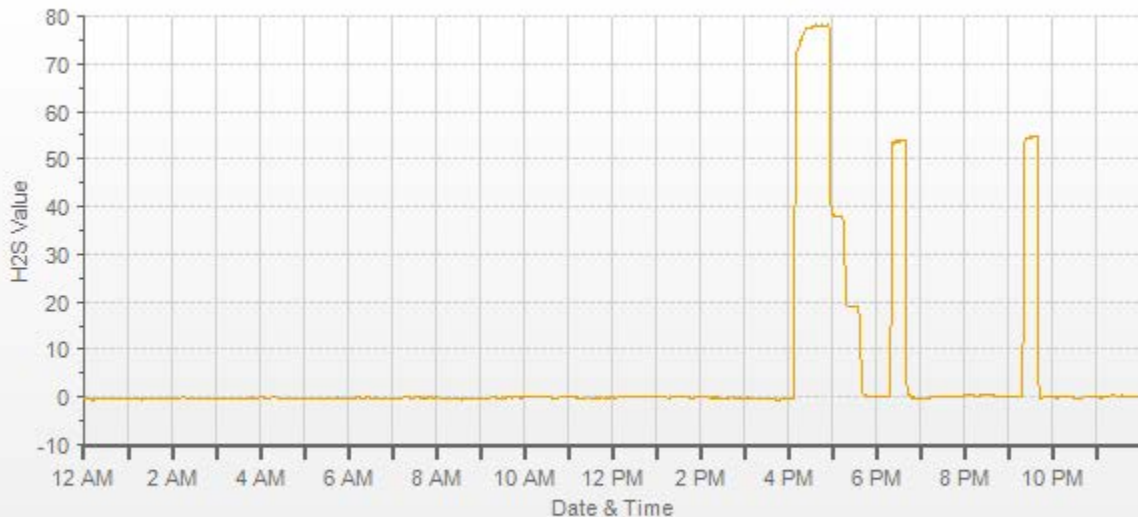
Correlation Coefficient = 1.000	LIMITS
Slope = 1.000	> or = 0.995
b (Intercept as % of full scale) = -0.01%	.95-1.05
% change in C.F. from last cal = 0.35%	± 3% F.S.
	± 10%



As found:	As left:
SLOPE: 1.172	SLOPE: 1.170
OFFSET: 30.7	OFFSET: 30.1
HVPS: 526	HVPS: 526
RCCELL TEMP: 50.0	RCCELL TEMP: 50.0
BOX TEMP: 36.1	BOX TEMP: 35.9
PMT TEMP: 8.4	PMT TEMP: 8.4
IZS TEMP: 45.0	IZS TEMP: 45.0
Converter Temp: 314.5	Converter Temp: 315.1
PRES: 21.4	PRES: 21.4
SAMP FL: 556	SAMP FL: 556
UV LAMP: 2636.7	UV LAMP: 2635.5
LAMP RATIO: 83.1	LAMP RATIO: 83.2
STR. LGT: 18.0	STR. LGT: 17.6
DRK PMT: 35.5	DRK PMT: 35.5
DRK LMP: -2.1	DRK LMP: -2.1
Internal Span: 54.2	Internal Span: 54

Comments:

Sample filter changed.



TOTAL HYDROCARBON



Thermo 55i Methane/Non-Methane Analyzer Calibration

Date: <u>April 4, 2016</u>	Barometric Pressure: <u>0.939 atm</u>
Company/Airshed: <u>LICA</u>	Station Temperature °C: <u>20</u>
Location/Station Name: <u>Elk Point</u>	Weather Conditions: <u>A few clouds</u>
Parameter: <u>CH₄ / NMHC / THC</u>	Calibration Purpose: <u>shut down</u>
Start/End Time 24 hr. (mst): <u>12:30 / 15:55</u>	Performed By/Reviewer: <u>Alex Yakupov Trina Whitsitt</u>
Calibration Method: <u>Gas Dilution</u>	Cal Gas Expiry Date: <u>November 25, 2023</u>

Analyzer: Serial Number: <u>1433563261</u> Last Calibration Date: <u>March 2, 2016</u> Range ppm: <u>20 CH₄/20 NMHC/40 THC</u>	Correction Factors: <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>Previous C.F.:</th> <th>As Found C.F.:</th> <th>New C.F.:</th> </tr> </thead> <tbody> <tr> <td>CH₄ =</td> <td>0.998</td> <td>1.062</td> <td>n/a</td> </tr> <tr> <td>NMHC =</td> <td>0.989</td> <td>1.045</td> <td>n/a</td> </tr> <tr> <td>THC =</td> <td>0.994</td> <td>1.053</td> <td>n/a</td> </tr> </tbody> </table>		Previous C.F.:	As Found C.F.:	New C.F.:	CH ₄ =	0.998	1.062	n/a	NMHC =	0.989	1.045	n/a	THC =	0.994	1.053	n/a
	Previous C.F.:	As Found C.F.:	New C.F.:														
CH ₄ =	0.998	1.062	n/a														
NMHC =	0.989	1.045	n/a														
THC =	0.994	1.053	n/a														

Calibrator: Flow Meter ID's: <u>n/a</u> Make & Model: <u>API 700</u> Serial #: <u>830</u> Cal Gas Cylinder I.D. #: <u>LL165372</u> CH ₄ Cylinder Conc.: <u>606.0</u> <u>212.0</u> =C ₃ H ₈ Cylinder Conc. CH ₄ as C ₃ H ₈ : <u>583.0</u> <u>1189.0</u> =total CH ₄ equivalent	Standard Calibration Points for Analyzer Range of 20/20/40 ppm <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Point</th> <th>CH₄</th> <th>NMHC</th> <th>THC</th> </tr> </thead> <tbody> <tr> <td>High</td> <td>13.00</td> <td>13.00</td> <td>26.00</td> </tr> <tr> <td>Mid</td> <td>7.00</td> <td>7.00</td> <td>14.00</td> </tr> <tr> <td>Low</td> <td>3.00</td> <td>3.00</td> <td>6.00</td> </tr> </tbody> </table>	Point	CH ₄	NMHC	THC	High	13.00	13.00	26.00	Mid	7.00	7.00	14.00	Low	3.00	3.00	6.00
Point	CH ₄	NMHC	THC														
High	13.00	13.00	26.00														
Mid	7.00	7.00	14.00														
Low	3.00	3.00	6.00														

ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Point	Calibrator Flow Rates (cc/min)			Calculated CH ₄ (ppm)	Calculated NMHC (ppm)	Calculated THC (ppm)	Indicated CH ₄ (ppm)	Indicated NMHC (ppm)	Indicated THC (ppm)	Correction Factors:		
	Diluent	Cal Gas	Total Flow							CH ₄	NMHC	THC
as found zero	2000	0.00	2000	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
as found high	2000	46.00	2046	13.62	13.11	26.73	12.83	12.54	25.39	1.062	1.045	1.053
mid	2000	24.00	2024	7.19	6.91	14.10	6.83	6.77	13.61	1.052	1.021	1.036
low	2000	11.00	2011	3.31	3.19	6.50	3.12	3.15	6.27	1.062	1.012	1.037
Average C.F.=										1.059	1.026	1.042

Linear Regression/Calibration Results:

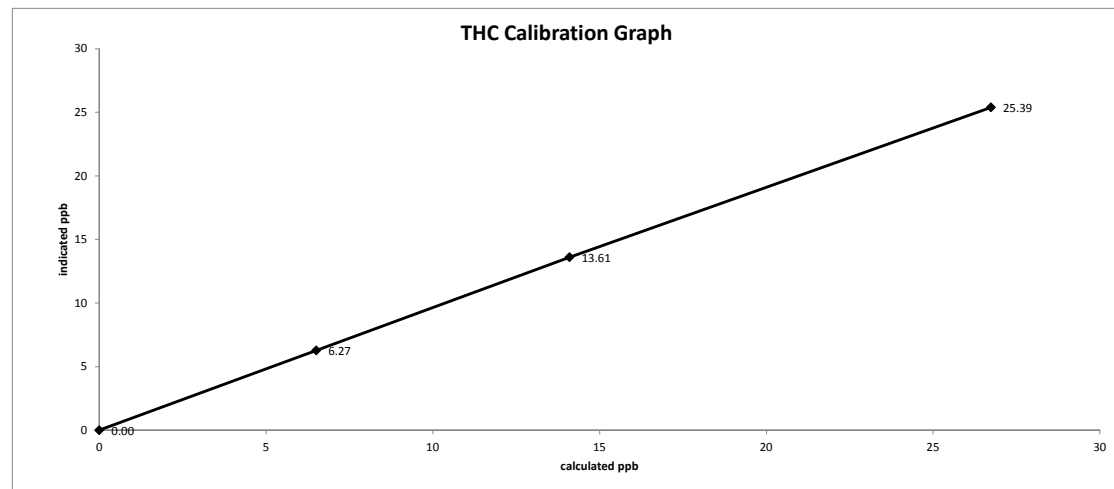
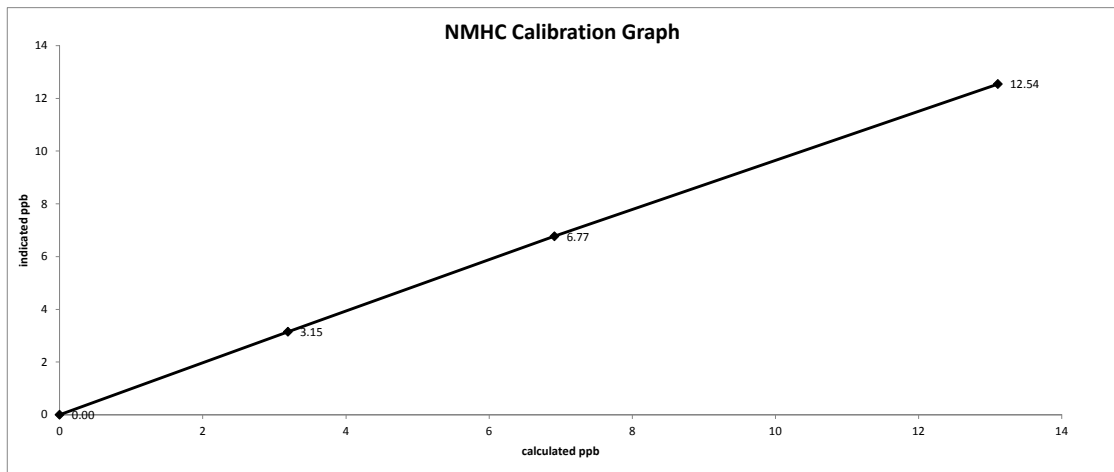
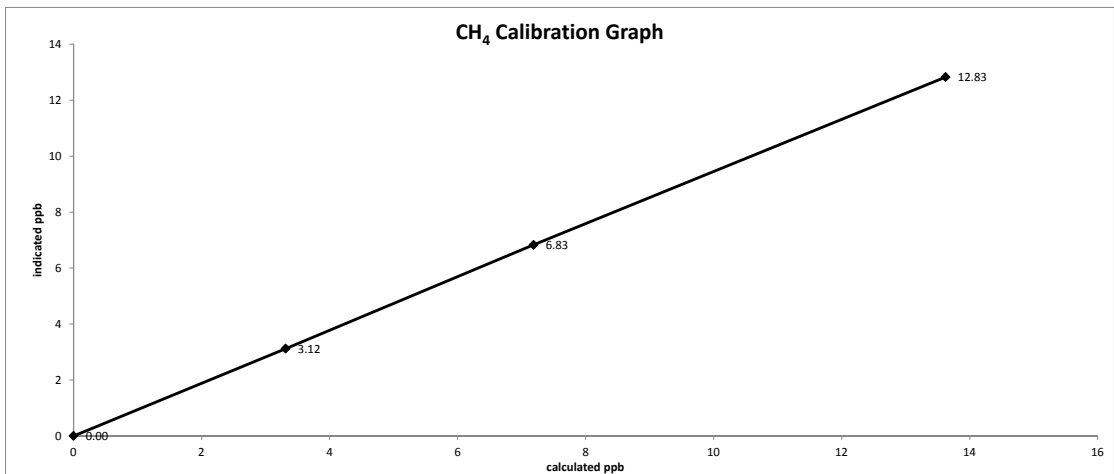
	CH ₄	NMHC	THC	LIMITS
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995
Slope =	0.942	0.956	0.950	0.90-1.10
b (Intercept as % of full scale) =	0.05%	0.35%	0.19%	± 3% F.S.
% change in C.F. from last cal =	-6.41%	-5.69%	-5.92%	± 10%

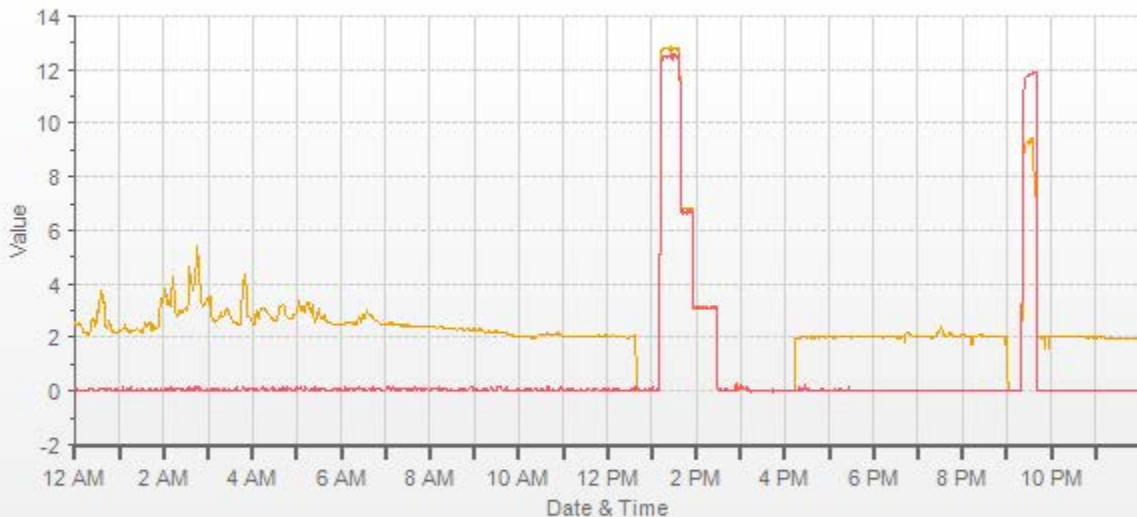
As found: Interface Board Voltages: Bias Supply: <u>-300.9</u> Temperatures: Detector Oven: <u>175.0</u> Filter: <u>175.0</u> Column Oven: <u>75.1</u> Internal: <u>29.7</u> Cylinder Pressures/reg.: Carrier: <u>1000</u> <u>50</u> Fuel: <u>800</u> <u>50</u> Span Gas: <u>200</u> <u>22</u> Zero Air Generator: <u>45</u> Internal Pressures: Carrier: <u>28.6</u> Fuel: <u>37.6</u> Air: <u>34.3</u> FID Status: Status: <u>LIT</u> Counts: <u>20627</u> Flame: <u>351.9</u> Det Base: <u>175.1</u> Flame and Power Stats: Last Power On: <u>March 1, 2016</u> Flameouts: <u>1</u> Det Oven at Start: <u>43.0</u> Col Oven at Start: <u>34.6</u> Calibration History: Time: <u>March 2, 2016 / 12:11</u> Type: <u>SPAN</u> Status: <u>GOOD</u> Check/Adjust: <u>ADJUST</u> CH ₄ Span Conc: <u>13.62</u> CH ₄ SP Ratio: <u>0.00068</u> CH ₄ RT: <u>12.2</u> CH ₄ PK IDX: <u>21</u> CH ₄ PK HT: <u>20034</u> NM Span Conc: <u>13.11</u> NM SP Ratio: <u>0.000146</u>	As left: Calibration History cnt'd: NM Peak Area: <u>89813</u> Crucial Settings: Methane Start: <u>n/a</u> Methane End: <u>n/a</u> Backflush: <u>n/a</u> NMHV Start: <u>n/a</u> NMHC End: <u>n/a</u> Run History>1: Date: <u>April 4, 2016</u> Time: <u>12:51</u> CH ₄ PK HT: <u>0</u> CH ₄ RT: <u>8.0</u> CH ₄ Baseline: <u>1698</u> CH ₄ LOD: <u>43</u> CH ₄ SD: <u>14</u> CH ₄ CONC: <u>0.00</u> NM PK HT: <u>21</u> NM Peak Area: <u>0</u> NM CONC: <u>0.0</u> NM Base Start: <u>1689</u> NM Base End: <u>1728</u> NM LOD: <u>11</u> NM Start IDX: <u>2</u> NM End IDX: <u>98</u> NM Max Slope: <u>2.2e+00</u> NM Min Slope: <u>-7.4e-01</u> NM PT Count: <u>49</u> Daily Zero/Span Values: Previous CH ₄ : <u>9.25</u> Previous NMHC: <u>10.94</u> Previous THC: <u>20.21</u> New CH ₄ : <u>n/a</u> New NMHC: <u>n/a</u> New THC: <u>n/a</u>
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Comments:
 Shutdown calibration performed to replace the analyzer #1236656107, which returned from Calgary after repair.

Date: April 4, 2016
Company/Airshed: LICA
Location/Station Name: EIk Point

Start/End Time 24 hr. (mst): 12:30 / 15:55
Calibration Purpose: shut down
Calibration Method: Gas Dilution







Thermo 55i Methane/Non-Methane Analyzer Calibration

Date: April 5, 2016
 Company/Airshed: LICA
 Location/Station Name: Elk Point
 Parameter: CH₄ / NMHC / THC
 Start/End Time 24 hr. (mst): 9:45/ 13:09
 Calibration Method: Gas Dilution

Barometric Pressure: 0.934 atm
 Station Temperature °C: 21
 Weather Conditions: Mainly cloudy with drizzle
 Calibration Purpose: installation
 Performed By/Reviewer: Alex Yakupov / Trina Whitsitt
 Cal Gas Expiry Date: November 25, 2023

Analyzer:		Correction Factors:			
		Previous C.F.:	As Found C.F.:	New C.F.:	
Serial Number:	1236656107	CH ₄ =	n/a	n/a	0.998
Last Calibration Date:	n/a	NMHC =	n/a	n/a	0.999
Range ppm:	20 CH ₄ /20 NMHC/40 THC	THC =	n/a	n/a	0.998

Calibrator:		Standard Calibration Points for Analyzer Range of 20/20/40 ppm			
Flow Meter ID's:	n/a	Point	CH ₄	NMHC	THC
Make & Model:	API 700	High	13.00	13.00	26.00
Serial #:	830	Mid	7.00	7.00	14.00
Cal Gas Cylinder I.D. #:	LL165372	Low	3.00	3.00	6.00
CH ₄ Cylinder Conc.:	606.0 212.0 =C ₃ H ₈ Cylinder Conc.				
CH ₄ as C ₃ H ₈ =	583.0 1189.0 =total CH ₄ equivalent				

ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Correction Factors:								
Point	Diluent	Cal Gas	Total Flow	Calculated CH ₄ (ppm)	Calculated NMHC (ppm)	Calculated THC (ppm)	Indicated CH ₄ (ppm)	Indicated NMHC (ppm)	Indicated THC (ppm)	CH ₄	NMHC	THC
adjusted zero	2000	0.00	2000	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
adjusted high	2000	46.00	2046	13.62	13.11	26.73	13.65	13.12	26.78	0.998	0.999	0.998
mid	2000	24.00	2024	7.19	6.91	14.10	7.18	6.93	14.12	1.001	0.998	0.998
low	2000	11.00	2011	3.31	3.19	6.50	3.31	3.21	6.50	1.001	0.993	1.001
calibrator zero	2000	0.00	2000	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
Average C.F.=										1.000	0.997	0.999

Linear Regression/Calibration Results:

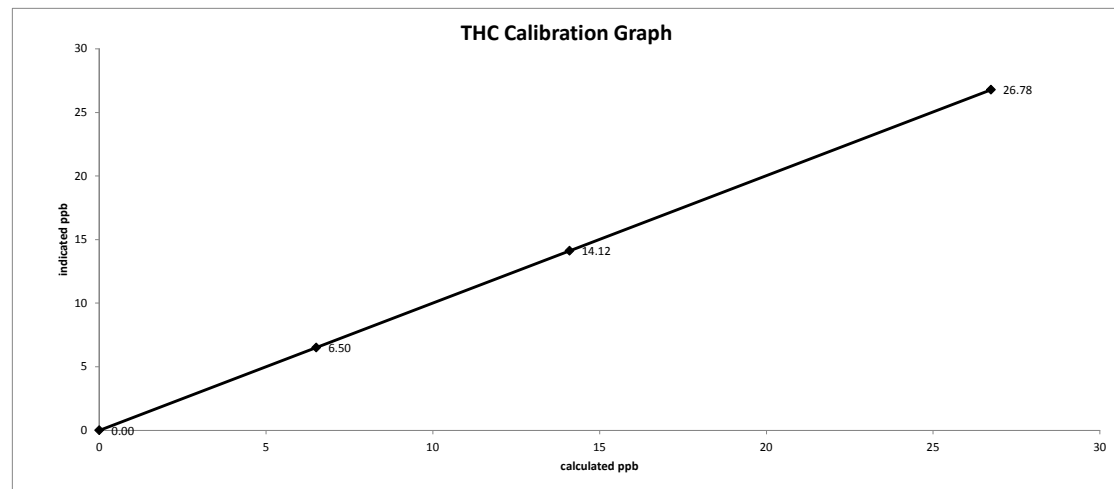
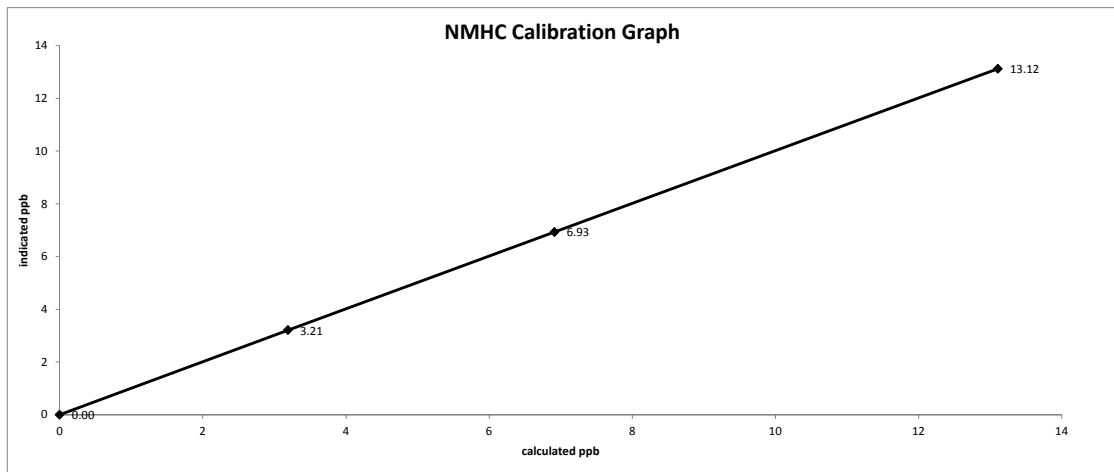
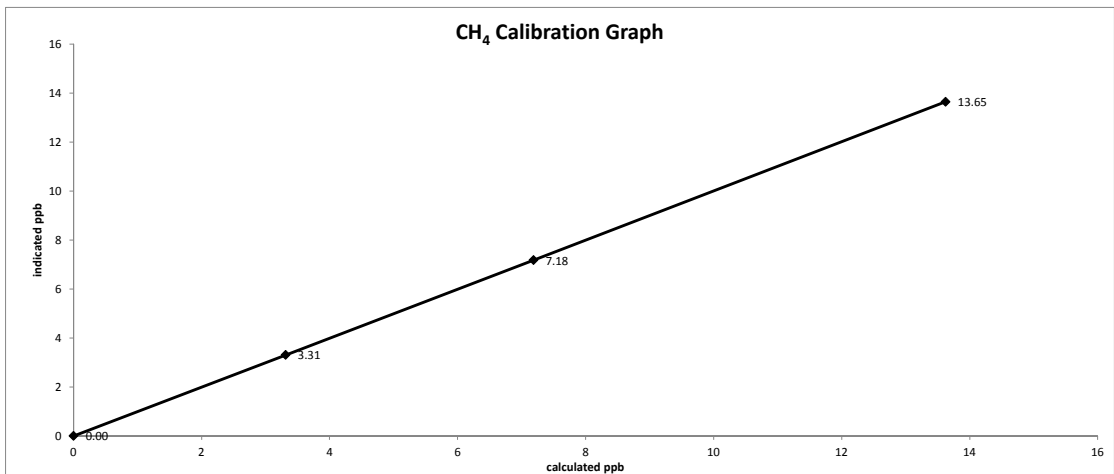
	CH ₄	NMHC	THC	LIMITS
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995
Slope =	1.002	1.001	1.002	.95-1.05
b (Intercept as % of full scale)=	-0.04%	0.05%	-0.02%	± 3% F.S.
% change in C.F. from last cal=	n/a	n/a	n/a	± 10%

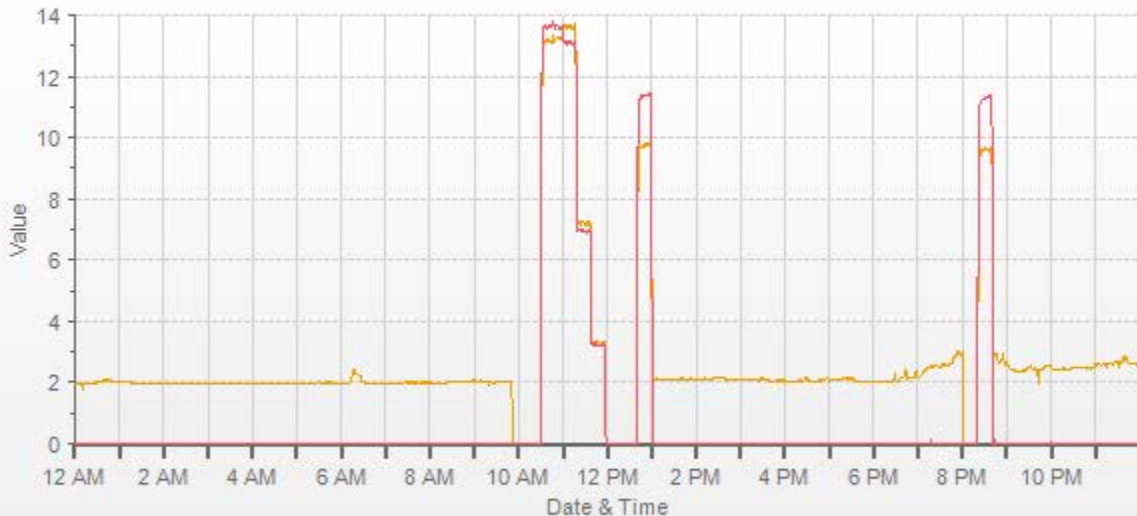
As found:		As left:	
Interface Board Voltages:	Bias Supply: n/a	Calibration History cnt'd:	NM Peak Area: n/a
Temperatures:	Detector Oven: n/a	Crucial Settings:	Methane Start: n/a
	Filter: n/a		Methane End: n/a
	Column Oven: n/a		Backflush: n/a
Cylinder Pressures/reg.:	Internal: n/a		NMHV Start: n/a
	Carrier: 1000 50		NMHC End: n/a
	Fuel: 800 50	Run History>1:	Date: April 5, 2016
Internal Pressures:	Span Gas: 2000 22		Time: 10:10
	Zero Air Generator: 45		CH ₄ PK HT: 0
	Carrier: n/a		CH ₄ RT: 8.0
FID Status:	Fuel: n/a		CH ₄ Baseline: 2229
	Air: n/a		CH ₄ LOD: 77
	Status: n/a		CH ₄ SD: 25
Flame and Power Stats:	Counts: n/a		CH ₄ CONC: 0.00
	Flame: n/a		NM PK HT: 0
	Det Base: n/a		NM Peak Area: 0
Calibration History:	Last Power On: n/a		NM CONC: 0.00
	Flameouts: n/a		NM Base Start: 2144
	Det Oven at Start: n/a		NM Base End: 2155
	Col Oven at Start: n/a		NM LOD: 8
	Time: n/a		NM Start IDX: 33
	Type: n/a		NM End IDX: 95
	Status: n/a		NM Max Slope: 7.8e-01
	Check/Adjust: n/a		NM Min Slope: -6.3e-01
	CH ₄ Span Conc: n/a		NM PT Count: 0
	CH ₄ SP Ratio: n/a	Daily Zero/Span Values:	Previous CH ₄ : n/a
	CH ₄ RT: n/a		Previous NMHC: n/a
	CH ₄ PK IDX: n/a		Previous THC: n/a
	CH ₄ PK HT: n/a		New CH ₄ : 9.7
NM Span Conc: n/a		New NMHC: 11.41	
NM SP Ratio: n/a		New THC: 21.19	

Comments:
 Sample filter changed. Installation calibration performed to replace the analyzer #1236656107, which returned from Calgary after repair. The analyzer was installed on April 04, 2016 and left overnight to gain stability. A new SPAN (CH₄/C3H8) cylinder connected.

Date: April 5, 2016
Company/Airshed: LICA
Location/Station Name: EIk Point

Start/End Time 24 hr. (mst): 9:45/ 13:09
Calibration Purpose: installation
Calibration Method: Gas Dilution





NITROGEN DIOXIDE



API 200E NO-NO2-NOx Analyzer Calibration

Date: April 5, 2016	Barometric Pressure: 0.934 atm
Company/Airshed: LICA	Station Temperature °C: 21
Location/Station Name: Elk Point	Weather Conditions: Mainly cloudy with drizzle
Start/End Time 24 hr. (mst): 9:45 / 15:11	Calibration Purpose: routine monthly
G.P.T. to be used for Ozone? No	Performed By/Reviewer: Alex Yakupov Trina Whitsitt
Calibration Method: Gas Dilution & Varying UV Lamp Power	Cal Gas Expiry Date: December 2, 2023

Analyzer: Serial Number: 593 Last Calibration Date: March 11, 2016 Range ppb: 1000	Correction Factors: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Previous C.F.:</th> <th>As Found C.F.:</th> <th>New C.F.:</th> </tr> </thead> <tbody> <tr> <td>NO =</td> <td>1.001</td> <td>1.073</td> <td>0.997</td> </tr> <tr> <td>NO₂ =</td> <td>1.008</td> <td>1.002</td> <td>1.002</td> </tr> <tr> <td>NOx =</td> <td>1.001</td> <td>1.067</td> <td>0.997</td> </tr> </tbody> </table>		Previous C.F.:	As Found C.F.:	New C.F.:	NO =	1.001	1.073	0.997	NO ₂ =	1.008	1.002	1.002	NOx =	1.001	1.067	0.997
	Previous C.F.:	As Found C.F.:	New C.F.:														
NO =	1.001	1.073	0.997														
NO ₂ =	1.008	1.002	1.002														
NOx =	1.001	1.067	0.997														

Calibrator: Flow Meter ID's: n/a Make & Model: SABIO 2010 D Serial #: 11900613 Cal Gas Cylinder I.D. #: LL119346 NO/NOx Gas Conc. (ppm): 50.0 50.0	Standard Calibration Points for a Range of: 1000 ppb <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Point</th> <th>Target NO (ppb)</th> <th>Target NO₂ (ppb)</th> <th>Cc Ozone ?</th> </tr> </thead> <tbody> <tr> <td>High</td> <td>780</td> <td>500</td> <td>n/a</td> </tr> <tr> <td>Mid</td> <td>380</td> <td>275</td> <td>n/a</td> </tr> <tr> <td>Low</td> <td>190</td> <td>100</td> <td>n/a</td> </tr> <tr> <td>Extra Point #1</td> <td>n/a</td> <td>n/a</td> <td>n/a</td> </tr> <tr> <td>Extra Point #2</td> <td>n/a</td> <td>n/a</td> <td>n/a</td> </tr> </tbody> </table>	Point	Target NO (ppb)	Target NO ₂ (ppb)	Cc Ozone ?	High	780	500	n/a	Mid	380	275	n/a	Low	190	100	n/a	Extra Point #1	n/a	n/a	n/a	Extra Point #2	n/a	n/a	n/a
Point	Target NO (ppb)	Target NO ₂ (ppb)	Cc Ozone ?																						
High	780	500	n/a																						
Mid	380	275	n/a																						
Low	190	100	n/a																						
Extra Point #1	n/a	n/a	n/a																						
Extra Point #2	n/a	n/a	n/a																						

ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated NO	Calculated NOx	Indicated NO	Indicated NOx	NO C.F.	NOx C.F.
Point	Diluent	Cal Gas	Total Flow	(ppb)	(ppb)	(ppb)	(ppb)		
as found zero	5000	0.0	5000	0	0	-1.0	0.0	n/a	n/a
as found high	4922	78.0	5000	780.0	780.0	726.0	731.0	1.073	1.067
adjusted zero	5000	0.00	5000	0.0	0.0	0.0	0.0	n/a	n/a
adjusted high	4922	78.00	5000	780.0	780.0	782.0	782.0	0.997	0.997
mid	4962	38.00	5000	380.0	380.0	381.0	381.0	0.997	0.997
low	4981	19.00	5000	190.0	190.0	191.0	191.0	0.995	0.995
calibrator zero	5000	0.00	5000	0	0	0.0	0.0	n/a	n/a
Average C.F.=								0.997	0.997

ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calibrator Setting	Indicated NO	Indicated NOx	Indicated NO ₂	NO drop	NO ₂ gain	NO ₂ C.F.
Point	Diluent	Cal Gas	Total Flow	volts or ppb	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)
NOx reference	4922	78.00	5000	0.0	780.0	780.0	0.0	0.0	0.0	
as found high NO2	4922	78.00	5000	520.0	279.0	779.0	500.0	501.0	500.0	1.002
gpt mid	4922	78.00	5000	277.0	505.0	780.0	275.0	275.0	275.0	1.000
gpt low	4922	78.00	5000	97.0	681.0	780.0	99.0	99.0	99.0	1.000
Average NO₂ C.F.=										1.001

Linear Regression/Calibration Results:

	NO	NOx	NO ₂	LIMITS
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995
Slope =	0.998	0.998	1.002	.95-1.05
b (Intercept as % of full scale)=	0.02%	0.02%	0.02%	± 3% F.S.
% change in C.F. from last cal=	-7.18%	-6.60%	0.60%	± 10%
NO2 converter efficiency			1.00	0.96 to 1.04

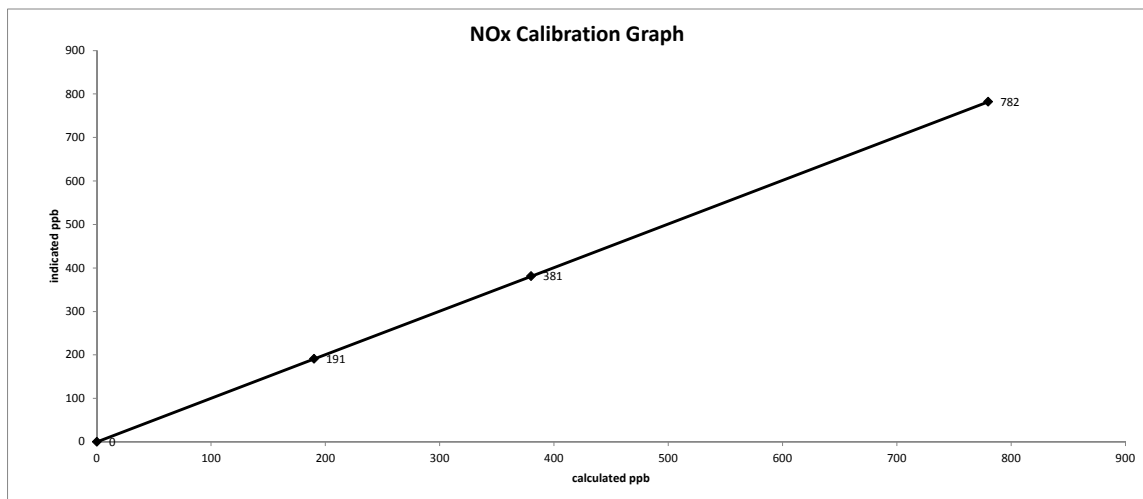
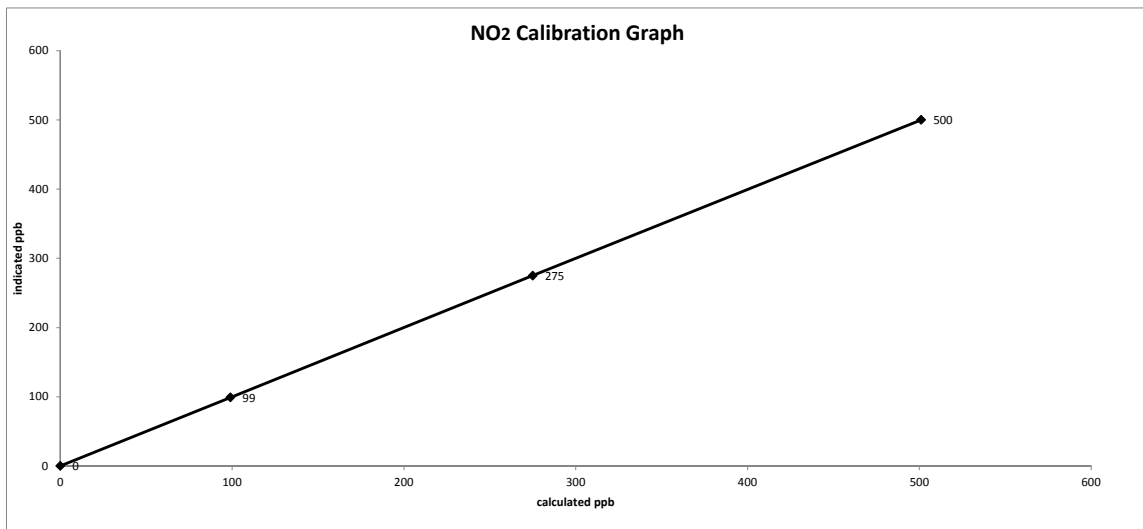
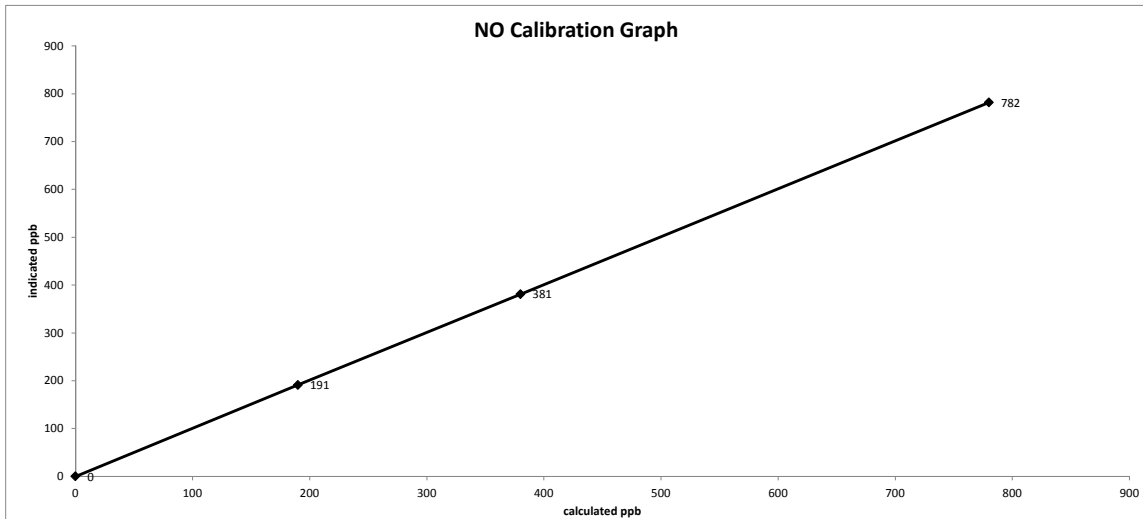
As found: NOx SLOPE: 0.897 NOx OFFS: 3.6 NO SLOPE: 0.895 NO OFFS: 1.7 SAMP FLW: 480 OZONE FL: 77 PMT: 12.2 NORM PMT: -1.1 AZERO: 7.1 HVPS: 662 RCELL TEMP: 50.0 BOX TEMP: 32.1 PMT TEMP: 6.7 IZS TEMP: 45.0 MOLY TEMP: 315.0 RCEL: 7.1 SAMP: 27.1 Internal Span NO: 4.7 Internal Span NO2: 266.9 Internal Span NOx: 271.2	As left: NOx SLOPE: 0.957 NOx OFFS: 1.5 NO SLOPE: 0.957 NO OFFS: -0.2 SAMP FLW: 480 OZONE FL: 77 PMT: 6.4 NORM PMT: 3.2 AZERO: 7.6 HVPS: 662 RCELL TEMP: 50.0 BOX TEMP: 32.9 PMT TEMP: 6.7 IZS TEMP: 45.0 MOLY TEMP: 315.5 RCEL: 7.1 SAMP: 27.3 Internal Span NO: 6.7 Internal Span NO2: 276 Internal Span NOx: 283
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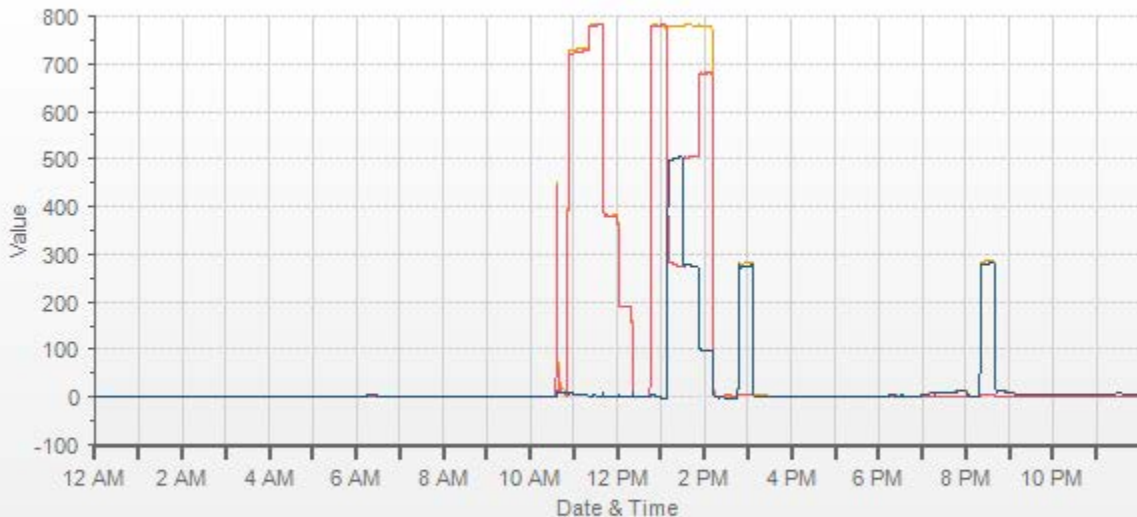
Comments:

Sample filter changed. 10:36 - 10:54 -calibration stopped to verify/correct concentration in the calibrator's program. No NO2 adjustment made.

Date: April 5, 2016
Company/Airshed: LICA
Location/Station Name: Elk Point

Start/End Time 24 hr. (mst): 9:45 / 15:11
Calibration Purpose: routine monthly
Calibration Method: Gas Dilution & Varying UV Lamp Power





OZONE



Thermo 49i Ozone Analyzer Calibration

Date:	April 4, 2016	Barometric Pressure:	0.939 atm
Company/Airshed:	LICA	Station Temperature °C:	20
Location/Station Name:	Elk Point	Weather Conditions:	A few clouds
Start/End Time 24 hr. (mst):	12:30 / 16:00	Calibration Purpose:	routine monthly
Ozone Calibration Method:	Varying UV Lamp Power	Performed By/Reviewer:	Alex Yakupov Trina Whitsitt
G.P.T. Date:	n/a-done by Varying UV Lamp Power	Cal Gas Expiry Date:	n/a

Analyzer:	Serial Number:	1002240372	Ozone Range ppb:	500
	Last Calibration Date:	March 11, 2016	As Found C.F.:	1.011
	Previous Cal High Point C.F.:	1.010	New C.F.:	1.000

Calibrator:	Flow Meter ID's:	n/a	Point	AMD Required Range of Ozone Calibration Points
	Make & Model:	SABIO 2010 D	High	300-400 ppb
	Serial #:	11900613	Mid	150-200 ppb
	Cal Gas Cylinder I.D. #:	n/a	Low	50-75 ppb

ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

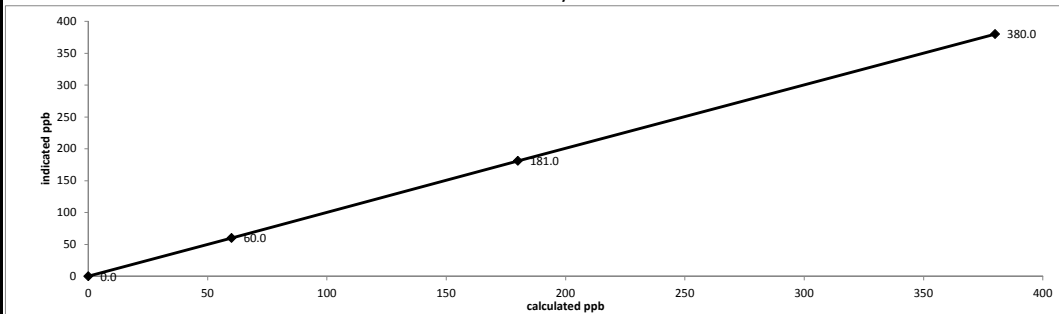
Point	Calibrator Flow Rate (cc/min)		Calculated Concentration:	Corrected Calculated Concentration:	Indicated Concentration:	Correction Factors:
	Total Flow @ Point Start	Total Flow @ Point Finish	(ppb)	(ppb)	(ppb)	
as found zero	5000	5000	0.0	n/a	0.3	n/a
as found high	5000	5000	380.0	380.0	376.0	1.011
adjusted zero	5000	5000	0.0	0.0	0.0	n/a
adjusted high	5000	5000	380.0	380.0	380.0	1.000
mid	5000	5000	180.0	180.0	181.0	0.994
low	5000	5000	60.0	60.0	60.0	1.000
calibrator zero	5000	5000	0.0	n/a	0.0	n/a

Average C.F. = 0.998

Linear Regression/Calibration Results:

Correlation Coefficient =	1.000	LIMITS	> or = 0.995
Slope =	1.000		.95-1.05
b (Intercept as % of full scale) =	-0.04%		± 3% F.S.
% change in C.F. from last cal =	-0.14%		± 10%

Thermo 49i Ozone Analyzer Calibration



As found:

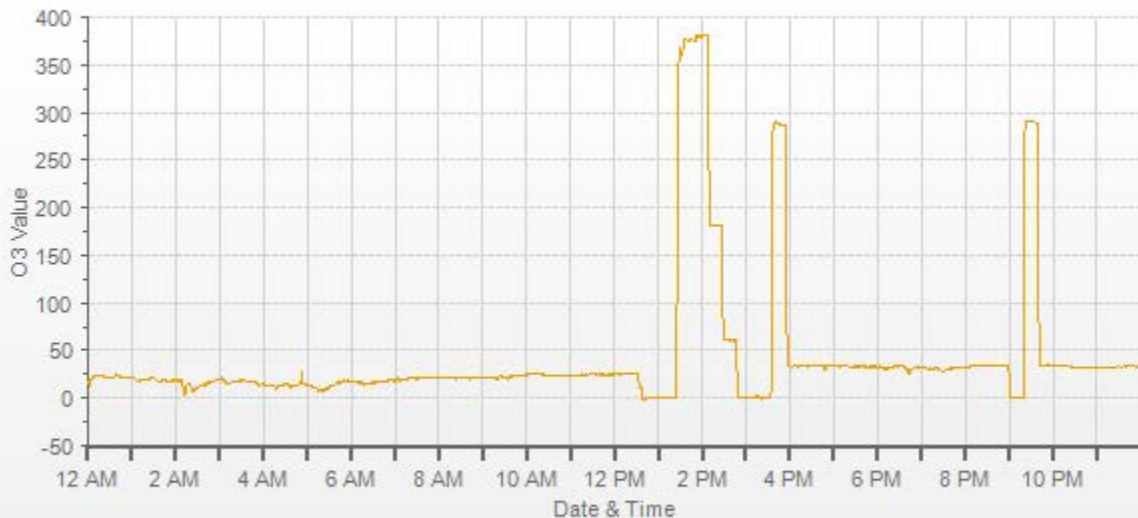
O3 Bkg:	-0.3
O3 Coef:	0.979
Photo Lamp:	14.2
O3 Lamp:	5.8
Bench:	30.8
Bench Lamp:	54.1
O3 Lamp:	68.2
Pressure:	696.8
Cell A lpm:	0.737
Cell B lpm:	0.747
O3 ppb:	0.7
Cell A ppb:	0.0
Cell B ppb:	1.4
Cell A int:	95423
Cell B int:	93494
Internal Span:	287.6

As left:

O3 Bkg:	0.1
O3 Coef:	0.994
Photo Lamp:	14.2
O3 Lamp:	5.8
Bench:	32.5
Bench Lamp:	54.1
O3 Lamp:	68.2
Pressure:	695.3
Cell A lpm:	0.735
Cell B lpm:	0.747
O3 ppb:	-0.1
Cell A ppb:	0.3
Cell B ppb:	-0.4
Cell A int:	95299
Cell B int:	93314
Internal Span:	286.3

Comments:

Sample filter changed.



PARTICULATE MATTER



R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date: April 5, 2016
 Company: LICA
 Station Name/Location: Elk Point
 Previous Audit Date: March 18, 2016
 Parameter: PM 2.5

Performed By/Reviewer: Alex Yakupov | Trina Whitsitt
 Start Time (mst): 16:38
 End Time (mst): 17:26
 Calibration Purpose: Bi-monthly #1
 Weather Conditions: Mainly cloudy with clear breaks

1400A Information and Status:

Serial Number: 1405A207691003 As Found Filter Loading %: 27.12
 Ko Factor: 15635 As Left Filter Loading %: 29.61
 Ambient Temperature °C: 7.42 As Found Noise: 0.004
 Ambient Pressure atm: 0.933 As Left Noise: 0.000
 Main Flow Reading lpm: 3.00 Pump Vacuum: 0.33
 Aux Flow Reading lpm: 13.67 Warnings: None

Reference Standards:

	Flow:	Pressure:	Temperature:
Make:	<u>Dwyer</u>	<u>Fisher</u>	<u>Fisher</u>
Model:	<u>475 Mark III</u>	<u>FB1291</u>	<u>FB1291</u>
Serial Number:	<u>#2</u>	<u>130168457</u>	<u>130168457</u>
Calibration Date:	<u>January 15, 2016</u>	<u>February 7, 2016</u>	<u>February 7, 2016</u>

As found leak check:

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	0.05	0.05	0.10	0.05
	limit	0.15	0.15	0.15	0.15
Bypass Flow	actual	0.30	-0.22	0.28	-0.22
	limit	0.60	0.60	0.60	0.60

As left leak check (same as above if as found passes):

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	0.05	0.05	0.10	0.05
	limit	0.15	0.15	0.15	0.15
Bypass Flow	actual	0.30	-0.22	0.28	-0.22
	limit	0.60	0.60	0.60	0.60

As found temperature and pressure:

tolerance +/- 2.0°C	tolerance +/- 0.01 atm
1405F temperature °C: <u>7.4</u>	1405F pressure atm: <u>0.933</u>
reference temperature °C: <u>7.1</u>	reference pressure: <u>0.928</u>
difference °C: <u>-0.3</u>	difference: <u>0.005</u>

As left temperature and pressure (same as above if as found adequate):

tolerance +/- 2.0°C	tolerance +/- 0.01 atm
1405F temperature °C: <u>7.1</u>	1405F pressure atm: <u>0.928</u>
reference temperature °C: <u>7.1</u>	reference pressure: <u>0.928</u>
difference °C: <u>0.0</u>	difference: <u>0.000</u>

As found flows:

main flow tolerance 3.00 lpm +/- 0.20 lpm	total/aux flow tolerance 16.67/13.67 lpm +/- 1.00 lpm +/- 7%
1405F main flow lpm: <u>3.00</u>	1400A total/aux flow lpm: <u>16.67</u>
reference main flow lpm: <u>3.08</u>	reference total/aux flow lpm: <u>17.11</u>
difference lpm: <u>0.08</u>	difference lpm: <u>0.44</u>

As left flows (same as above if as found adequate):

main flow tolerance 3.00 lpm +/- 0.20 lpm	total/aux flow tolerance 16.67/13.67 lpm +/- 1.00 lpm +/- 7%
1405F main flow lpm: <u>3.00</u>	1400A total/aux flow lpm: <u>16.67</u>
reference main flow lpm: <u>3.08</u>	reference total/aux flow lpm: <u>17.11</u>
difference lpm: <u>0.08</u>	difference lpm: <u>0.44</u>

K_o Audit:

Last K_o audit date: February 4, 2016
 1405F K_o factor: 15635
 Measured K_o factor: 15719.6000
 % difference: 0.55

Comments:

47 mm FDMS filter changed.



R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date: April 20, 2016
 Company: LICA
 Station Name/Location: Elk Point
 Previous Audit Date: April 5, 2016
 Parameter: PM 2.5

Performed By/Reviewer: Alex Yakupov | Trina Whitsitt
 Start Time (mst): 10:11
 End Time (mst): 11:13
 Calibration Purpose: Bi-monthly #2
 Weather Conditions: Clear

1400A Information and Status:

Serial Number: 1405A207691003 As Found Filter Loading %: 32.31
 Ko Factor: 15635 As Left Filter Loading %: 32.47
 Ambient Temperature °C: 14.21 As Found Noise: 0.003
 Ambient Pressure atm: 0.937 As Left Noise: 0.000
 Main Flow Reading lpm: 3.00 Pump Vacuum: 0.33
 Aux Flow Reading lpm: 13.67 Warnings: None

Reference Standards:

	Flow:	Pressure:	Temperature:
Make:	<u>Dwyer</u>	<u>Fisher</u>	<u>Fisher</u>
Model:	<u>475 Mark III</u>	<u>FB1291</u>	<u>FB1291</u>
Serial Number:	<u>#2</u>	<u>130168457</u>	<u>130168457</u>
Calibration Date:	<u>January 15, 2016</u>	<u>February 7, 2016</u>	<u>February 7, 2016</u>

As found leak check:

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	0.06	0.05	0.11	0.06
	limit	0.15	0.15	0.15	0.15
Bypass Flow	actual	0.36	-0.22	0.38	-0.22
	limit	0.60	0.60	0.60	0.60

As left leak check (same as above if as found passes):

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	0.06	0.05	0.11	0.06
	limit	0.15	0.15	0.15	0.15
Bypass Flow	actual	0.36	-0.22	0.38	-0.22
	limit	0.60	0.60	0.60	0.60

As found temperature and pressure:

tolerance +/- 2.0°C	tolerance +/- 0.01 atm
1405F temperature °C: <u>14.2</u>	1405F pressure atm: <u>0.937</u>
reference temperature °C: <u>14.0</u>	reference pressure: <u>0.937</u>
difference °C: <u>-0.2</u>	difference: <u>0.000</u>

As left temperature and pressure (same as above if as found adequate):

tolerance +/- 2.0°C	tolerance +/- 0.01 atm
1405F temperature °C: <u>14.0</u>	1405F pressure atm: <u>0.937</u>
reference temperature °C: <u>14.0</u>	reference pressure: <u>0.937</u>
difference °C: <u>0.0</u>	difference: <u>0.000</u>

As found flows:

main flow tolerance 3.00 lpm +/- 0.20 lpm	total/aux flow tolerance 16.67/13.67 lpm +/- 1.00 lpm +/- 7%
1405F main flow lpm: <u>3.00</u>	1400A total/aux flow lpm: <u>16.67</u>
reference main flow lpm: <u>3.11</u>	reference total/aux flow lpm: <u>17.28</u>
difference lpm: <u>0.11</u>	difference lpm: <u>0.61</u>

As left flows (same as above if as found adequate):

main flow tolerance 3.00 lpm +/- 0.20 lpm	total/aux flow tolerance 16.67/13.67 lpm +/- 1.00 lpm +/- 7%
1405F main flow lpm: <u>3.00</u>	1400A total/aux flow lpm: <u>16.67</u>
reference main flow lpm: <u>3.11</u>	reference total/aux flow lpm: <u>17.28</u>
difference lpm: <u>0.11</u>	difference lpm: <u>0.61</u>

K_o Audit:

Last K_o audit date: February 4, 2016
 1405F K_o factor: 15635
 Measured K_o factor: 15719.6000
 % difference: 0.55

Comments:

47 mm FDMS filter changed. Flows were not adjusted because of very strong wind, which can affect accuracy of both flows and reference measurements.

PUF SAMPLER



TISCH PUF PLUS SAMPLER AUDIT

Date: April 5, 2016	PUF PLUS Serial #: 100-1015
Company/Airshed: LICA	Performed By/Reviewer: Alex Yakupov Trina Whitsitt
Location/Station Name: Elk Point	Weather Conditions: Mainly cloudy with clear breaks

Reference Standards:	Flow: Dwyer	Pressure: Fisher Scientific	Temperature: Fisher Scientific
Make:	Series 475 Mark III	FB61291	FB61291
Model:	#2	130168457	130168457
Serial Number:	January 15, 2016	February 7, 2016	February 7, 2016
Calibration Date:			

TISCH PUF PLUS PRESSURE AND TEMPERATURE AUDIT

AS FOUND Reference Barometric Pressure (mmHg):	704.31	AS FOUND Reference Temperature (°C):	6.3
AS FOUND PUF PLUS Barometric Pressure (mmHg):	700	AS FOUND PUF PLUS Temperature (°C):	6.4
% Difference (+/- 2% max.): 0.61%		% Difference (+/- 2 °C max.): -0.1	
IF THE PRESSURE DEVIATES BY MORE THAN +/- 2% A FLOW CALIBRATION IS REQUIRED		**IF THE TEMPERATURE DEVIATES BY MORE THAN +/- 2 °C A FLOW CALIBRATION IS REQUIRED**	

TISCH PUF PLUS FLOW AUDIT

Flow Audit Calculations:

Calibrated Orifice Certification Date: October 12, 2015

Enter Barometric Pressure from reference (inHg): 27.73

Barometric Pressure (mmHg): 704.3

Enter Ambient Temperature from reference °C: 6.3

Enter "m" variable from calibrated orifice: 6.07570

Enter "b" variable from calibrated orifice: -0.03578

Enter Δp in. H₂O: 1.88

Standardized Flow lpm=: 230.23

Flow Set Point lpm=: 230.00

% Difference (+/- 2% max.): -0.10%

****IF THE FLOW DEVIATES BY MORE THAN +/- 2% A FLOW CALIBRATION IS REQUIRED****

TISCH PUF PLUS PRESSURE CALIBRATION

Reference Barometric Pressure AFTER CALIBRATION (mmHg): n/a

PUF Barometric Pressure AFTER CALIBRATION (mmHg): n/a

% Difference: Max 2.0%

Calibration Point (mmHg):	Δp (in. H ₂ O) required for target barometric pressure:	As Found barometric pressure (mmHg):	As Left barometric pressure (mmHg):	% Difference vs. Calibration Target:
744.31	1.57	n/a	n/a	#VALUE!
724.31	0.79	n/a	n/a	#VALUE!
704.31	0.00	n/a	n/a	#VALUE!
684.31	-0.79	n/a	n/a	#VALUE!
664.31	-1.57	n/a	n/a	#VALUE!
% Difference (+/- 2% max.):				#VALUE!

TISCH PUF PLUS TEMPERATURE CALIBRATION

Temperature Calibrator Certification Date: n/a

Reference Temperature AFTER CALIBRATION (°C): n/a

TISCH PUF PLUS Temperature AFTER CALIBRATION (°C): n/a

Difference (°C): Max 2.0 °C

Calibration Point (°C):	As Found (°C)	As Left (°C)	+/- Difference (°C)
20	n/a	n/a	#VALUE!
-20	n/a	n/a	#VALUE!
40	n/a	n/a	#VALUE!
0	n/a	n/a	#VALUE!
-30	n/a	n/a	#VALUE!
% Difference (+/- 2 °C max.):			#VALUE!

TISCH PUF PLUS FLOW CALIBRATION

Flow Calibration Calculations:

Calibrated Orifice Certification Date: n/a

Enter Barometric Pressure from reference (inHg): n/a

Barometric Pressure (mmHg): n/a

Enter Ambient Temperature from reference °C: n/a

Enter "m" variable from calibrated orifice: n/a

Enter "b" variable from calibrated orifice: n/a

Enter Δp in. H₂O: n/a

Standardized Flow lpm=:

Flow Set Point lpm=: 230.00

% Difference (+/- 2% max.):

****IF THE FLOW DEVIATES BY MORE THAN +/- 2% A FLOW CALIBRATION IS REQUIRED****

R, A1 and A0 Factors:

	As Found/As Left Pressure:	As Found/As Left Temperature:	As Found/As Left Flow:
A0	15312.7500	-11845.5546	-0.2483
A1	22.5779	0.2990	17.6252
R	0.0000	0.0000	0.0000

Notes:

WIND SYSTEM



Meteorological Sensor Audit

Station Information

Company:	<u>LICA</u>	Performed By:	<u>Limin Li</u>
Location:	<u>ELK point (in Calgary shop)</u>	Reason:	<u>Annual maintenance</u>
Audit Date:	<u>26-Jan-16</u>	Start Time (mst):	<u>11:00</u>
Previous Audit Date:	<u>NA</u>	End Time (mst):	<u>15:00</u>

Wind Speed

Sensor make:	<u>R. M. Young</u>	Sensor height:	<u>n/a</u>
Sensor model:	<u>5103VK</u>	Serial Number:	<u>56589</u>
Calibrator:	<u>Young 18802</u>	Variable speed motor:	<u>CA 03309</u>
Voltage range:	<u>0-1</u>	Output signal range:	<u>200KPH</u>

Wind Speed Audit Data

RPM	Wind Speed Actual	Indicated WS - CW	Indicated WS-CCW	Correction Factor
0	0.0	0.032	0.032	-
1000	17.6	17.66	17.64	1.00
2000	35.28	35.3	35.29	1.00
3000	52.92	52.99	52.99	1.00
4000	70.56	70.66	70.65	1.00
5000	88.2	88.35	88.33	1.00
6000	105.84	106	106	1.00
7000	123.48	123.7	123.7	1.00
8000	141.12	141.4	141.3	1.00
9000	158.76	159.1	159.1	1.00
10000	176.4	176.7	176.7	1.00
Average Correction Factor:				1.00

Wind Direction

Sensor make:	<u>R. M. Young</u>	Sensor height:	<u>n/a</u>
Sensor model:	<u>5103VK</u>	Serial Number:	<u>56589</u>
Calibrator:	<u>Young 18802</u>	Variable speed motor:	<u>CA 03309</u>
Voltage range:	<u>0-1</u>	Output signal range:	<u>0-360DEG</u>

Wind Direction Audit Data

Wind Direction	Indicated	Correction Factor
0	0.5	NA
45	44.9	1.00
90	92.0	0.98
135	136.5	0.99
180	180.6	1.00
225	224.4	1.00
270	270.3	1.00
315	312.2	1.01
359	355.0	1.01
Average Correction Factor:		1.00

Remarks: Annual maintenance. Changed 05163PG, 05124VG bearings. 05131D, 05133B & 05135D

Audit Performed by: Limin Li

CALIBRATORS



Calibrator Performance Audit

Sulphur Dioxide (by Cylinder Dilution)

File No. 2016-093A

Company: Maxxam

Operator: Christopher Wesson

Calibrator:
 Make/Model API 700
 Serial Number 830
 Last Verification Date December 2014
 SO₂ Cylinder Conc. 50.3
 SO₂ Cylinder S/N LL42475

Flow Measurement Device:
 Make/Model N/A
 Serial Number N/A
 Temperature (°C) N/A
 Barometric Pressure N/A

Flow Measurements

Pt. No. 1 77.5 **Pt. No. 2** 37.8 **Pt. No. 3** 18.9

Calibrator Flow (sccm)	Calculated Concentration (ppm)	Indicated Concentration (ppm)	% Difference	
			vs Audit Gas	% Diff. Limit
Zero Air	0.000	0.000		
4998	0.780	0.746	-4%	± 10%
5002	0.380	0.365	-4%	± 10%
4997	0.190	0.182	-4%	± 10%
Absolute Average Percent Difference			4%	± 10%

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

<u>SO₂</u>		<u>LIMITS</u>
Correlation=	1.0000	≥ 0.995
m (Slope)=	0.9565	0.90-1.10
b (Intercept % of FS)=	0.0436	± 3% F.S.

AENV Standards	SO ₂ Analyzer
Audit Calibrator	Make/Model <u>Teco 43C</u>
Make/Model <u>R&R MFC 201</u>	Serial/AMU Number <u>AMU 1623</u>
Serial/AMU Number <u>AMU 1690</u>	Last Calibration Date <u>January 19, 2016</u>
	Full Scale (ppm) <u>1.0</u>

COMMENTS: Gas was check for accuracy - 1% low from stated cylinder gas concentration.
Flows are not measured at each pt - AMD not being followed as per section 5.0.
Checked SO2 high pt using a Sabio 2010 - found a significantly higher response.
Both MFC's need to be re-calibrated.

Auditor: Al Clark Date: January 19, 2016
 Operator Signature: *Christopher Wesson* Location: McIntyre Center Edmonton



Calibrator Performance Audit

OZONE

File No. 2015-163

Company: Maxxam

Operator: Chris Wesson

Calibrator:
 Make/Model Sabio 2010D
 Serial Number 11900613
 Oven Temperature 49.8
 Last Verification Date May 21, 2015

Flow Measurement Device:
 Make/Model NA
 Serial Number NA
 Temperature (°C) 24
 Barometric Pressure 700 mmHg

Flow Measurements
 Pt. No. 1 5000 Pt. No. 2 5000 Pt. No. 3 5000

Calibrator Flow (sccm)	Calculated Concentration (ppm)	Indicated Concentration (ppm)	% Difference	
			vs Audit Gas	% Diff. Limit
4999	0.000	-0.001		
5000	0.381	0.385	1%	± 10%
5000	0.180	0.182	2%	± 10%
5000	0.090	0.091	2%	± 10%
Absolute Average Percent Difference			2%	± 10%

LINEAR REGRESSION ANALYSIS
 $y=mx+b$ (where x=calculated concentration, y=indicated concentration)

O₃		LIMITS
Correlation=	1.0000	≥ 0.995
m (Slope)=	1.0119	0.90-1.10
b (Intercept % of FS)=	-0.0724	± 3% F.S.

AENV Standards	Ozone Analyzer
Audit Calibrator	Make/Model <u>Thermo 49i</u>
Make/Model <u>Thermo 49i PS</u>	Serial/AMU Number <u>1843</u>
Serial/AMU Number <u>1808</u>	Last Calibration Date <u>March 30, 2016</u>
Ozone Standard <u>Thermo 49i PS 1808</u>	Full Scale (ppm) <u>0.5</u>

COMMENTS: _____

Auditor: Shea Beaton
 Operator Signature: [Signature]

Date: March 30, 2016
 Location: McIntyre Center Edmonton

CALIBRATION GASES



Calibration Gas Audit

CH4 / C3H8 Cylinder Gas

File No. 2015-092CGA

Company: Maxxam Operators name: Chris Wesson
 Cylinder #: LL165372 Conc CH4 (PPM) 606/212 Tolerance (%) 0.5 Certified By: Praxair

Reference Calibrator and Gas:

Make/Model R&R MFC 201
 Serial Number AMU 1698
 Last Verification Date January 18, 2016
 Gas Type CH4 Conc. 999.2
 Cylinder Number D751932
 Gas Type C3H8 Conc. 246.5
 Cylinder Number XF0037998

Flow Measurement Device:

Make/Model Bios DC-2
 Serial Number Blos D
 Temp. °C 24.5
 B.P. 688mmHg

Reference Analyzer:

Make/Model Thermo 55C Serial/AMU Number: 1643
 Instrument Settings Zero: NA Span: NA Range: 20.0
 Last Calibration: Date: 18-Jan-16 C.F. 1.000 Done By: SB

Calibrator Flows (scem)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	CH4	C3H8			CH4	C3H8
2568	0.00	0.00	0.00	0.02140	46.722	607	214
2630	56.29	12.99	12.62	0.02140	46.722	607	214
2588	19.73	4.62	4.50	0.00762	131.171	606	215
2580	9.69	2.29	2.24	0.00376	266.254	610	217
Average Cylinder Concentration:						608	215

CH4	C3H8
Previous Stated Concentration PPM: <u>606</u>	<u>212</u>
Percent variance from Stated: <u>0.3</u>	<u>1.6</u>

Cylinder gas tolerances based on CH4 only

Meets Manufacturer Tolerance. Use manufacturers stated concentration COMMENTS: _____
 <=5% Outside Manufacturer Tolerance. Use manufacturers concentration C3H8 manufacturers tolerance 1.1%
 > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Shea Beaton
 Operator Signature: _____

Date: January 19, 2016
 Location: McIntyre Center Edmonton



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2014-251CGA

Company: Maxxam Operator's Name: Limin Li
 Cylinder #: LL36837 Concentration PPM: 10.0 Tolerance(%): 2 Certified By: Air Liquide

Reference Calibrator and Gas:
 Make/Model: R&R MFC 201
 Serial Number: AMU 1690
 Last Verification Date: December 15, 2014
 Gas Type: H2S Conc. 20.43
 Cylinder Number: CAL015106

Flow Measurement Device:
 Make/Model: Bios DC2
 Serial Number: AMU 1659
 Temp. °C: 23.0 C
 B.P.: 702 mmhg

Reference Analyzer:
 Make/Model: Teco 45C Serial/AMU Number: 1624
 Instrument Settings: Zero: 6.4 Span: 1.160 Range: 0.1
 Last Calibration: Date: Dec15/14 C.F.: 1.000 Done By: Al Clark

Calibrator Flows (scem)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.0000	0.00755	132.442	10.0
5099	38.5	0.0754	0.00755	132.442	10.0
5092	18.0	0.0349	0.00353	282.889	9.9
5066	9.2	0.0178	0.00182	550.652	9.8
Average Cylinder Concentration:					9.9

Previous Stated Concentration PPM: 10.0

Percent variance from Stated: 1.1

Meets Manufacturer Tolerance. Use manufacturers stated concentration COMMENTS: _____
 < =5% Outside Manufacturer Tolerance. Use manufacturers concentration _____
 > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder _____

Auditor: Al Clark
 Operator Signature: *Al Clark*

Date: December 16, 2014
 Location: McIntyre Center Edmonton



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2015-116CGA

Company: Maxxam **Operator's Name:** Chris Wesson
Cylinder #: LL119346 **Concentration PPM:** 50.0 **Tolerance(%)** 2 **Certified By:** Air Liquide

Reference Calibrator and Gas:	Flow Measurement Device:
Make/Model: <u>Thermo146i</u>	Make/Model: <u>Bios DC-2</u>
Serial Number: <u>1809</u>	Serial Number: <u>Bios D</u>
Last Verification Date: <u>February 2, 2016</u>	Temp. °C: <u>24.5</u>
Gas Type: <u>SO2</u> Conc. <u>98.07</u>	B.P. <u>702mmHg</u>
Cylinder Number: <u>CAL016625</u>	

Reference Analyzer:
 Make/Model: Thermo 43C Serial/AMU Number: 1623
 Instrument Settings: Zero: 8.7 Span: 1.027 Range: 1.0
 Last Calibration: Date: 1-Feb-16 C.F. 1.000 Done By: SB

Calibrator Flows (sccm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
4952	0.0	0.000	0.01608	62.183	49.3
4946	79.54	0.793	0.01608	62.183	49.3
4941	39.35	0.396	0.00796	125.565	49.7
4940	19.57	0.195	0.00396	252.427	49.2
Average Cylinder Concentration:					49.4

Previous Stated Concentration PPM: 50.0
 Percent variance from Stated: 1.2

Meets Manufacturer Tolerance. Use manufacturers stated concentration **COMMENTS:** SO2/NO blend 50.0ppm NO
 <=5% Outside Manufacturer Tolerance. Use manufacturers concentration
 > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Shea Beaton
 Operator Signature: *[Signature]*

Date: February 2, 2016
 Location: McIntyre Center Edmonton



Calibration Gas Audit

NO Cylinder Gas

File No. 2015-115CGA

Company: Maxxam **Operators name:** Chris Wesson
Cylinder #: LL119346 **Conc (PPM)** 50.0/50.0 **Tolerance (%)** 2 **Certified By:** Air Liquide

Reference Calibrator and Gas:				Flow Measurement Device:	
Make/Model	<u>Thermo 146i</u>			Make/Model	<u>Bios DC-2</u>
Serial Number	<u>AMU 1809</u>			Serial Number	<u>Bios D</u>
Last Verification Date	<u>February 2, 2016</u>			Temp. °C	<u>24.5</u>
Gas Type	<u>NO</u>	Conc.	<u>48.79</u>	B.P.	<u>702mmHg</u>
Cylinder Number	<u>CAL018024</u>				

Reference Analyzer:

Make/Model	<u>Thermo 42i</u>	Serial/AMU Number:	<u>1868</u>
Instrument Settings	Zero: <u>4.2</u>	Span:	<u>1.014</u> Range: <u>1.0</u>
Last Calibration:	Date: <u>02-Feb-16</u>	C.F.	<u>1.000</u> Done By: <u>SB</u>

Calibrator Flows (sccm)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	NO	NOX			NO	NOX
4952	0.0	0.000	0.000				
4946	79.54	0.809	0.809	0.01608	62.183	50.3	50.3
4941	39.35	0.403	0.402	0.00796	125.565	50.6	50.5
4940	19.57	0.200	0.200	0.00396	252.427	50.5	50.5
Average Cylinder Concentration:						50.5	50.4

NO	NOx
Previous Stated Concentration PPM: <u>50.0</u>	<u>50.0</u>
Percent variance from Stated: <u>0.9</u>	<u>0.8</u>

Cylinder gas tolerances based on NO only

Meets Manufacturer Tolerance. Use manufacturers stated concentration **COMMENTS: SO2/NO Blend 50.0PPM SO2**

< =5% Outside Manufacturer Tolerance. Use manufacturers concentration

> 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Shea Beaton Date: February 2, 2016
 Operator Signature: [Signature] Location: McIntyre Center Edmonton

APPENDIX IV
ANALYTICAL RESULTS

VOCS SAMPLES

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/Mar 31, 2016	S5625	Ambient Air	31-Mar-16	0:00
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16040046	REPORT CREATED:	22-Apr-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040046-004	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-004	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-004	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-004	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-004	1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Apr-16
16040046-004	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	14-Apr-16
16040046-004	1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	14-Apr-16
16040046-004	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Apr-16
16040046-004	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-004	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Apr-16
16040046-004	1,2-Dichloroethane	I	0.02	ppbv	0.01	AC-058	14-Apr-16
16040046-004	1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-004	1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-004	1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-004	1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Apr-16
16040046-004	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Apr-16
16040046-004	1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Apr-16
16040046-004	1-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-004	1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-004	1-Pentene	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-004	2,2,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-004	2,2-Dimethylbutane	I	0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-004	2,3,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-004	2,3-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-004	2,3-Dimethylpentane	I	0.02	ppbv	0.02	AC-058	14-Apr-16

Report certified by:

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: April 22, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca
JOB #: 2833-2016-04-35-C

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/Mar 31, 2016	S5625	Ambient Air	31-Mar-16	0:00
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16040046	REPORT CREATED:	22-Apr-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040046-004	2,4-Dimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-004	2-Methylheptane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-004	2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-004	2-Methylpentane	I	0.04	ppbv	0.01	AC-058	14-Apr-16
16040046-004	3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-004	3-Methylhexane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-004	3-Methylpentane	I	0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-004	Acetone		2.1	ppbv	0.4	AC-058	14-Apr-16
16040046-004	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Apr-16
16040046-004	Benzene	I	0.05	ppbv	0.01	AC-058	14-Apr-16
16040046-004	Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Apr-16
16040046-004	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-004	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-004	Bromomethane	I	0.02	ppbv	0.01	AC-058	14-Apr-16
16040046-004	Carbon disulfide	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-004	Carbon tetrachloride	I	0.12	ppbv	0.01	AC-058	14-Apr-16
16040046-004	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-004	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-004	Chloroform	I	0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-004	Chloromethane		1.01	ppbv	0.02	AC-058	14-Apr-16
16040046-004	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-004	cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Apr-16
16040046-004	cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-004	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-004	Cyclohexane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16

Report certified by:

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: April 22, 2016

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E-mail: EAS.Results@albertainnovates.ca
JOB #: 2833-2016-04-35-C

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/Mar 31, 2016	S5625	Ambient Air	31-Mar-16	0:00
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16040046	REPORT CREATED:	22-Apr-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040046-004	Cyclopentane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-004	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-004	Ethanol		0.4	ppbv	0.3	AC-058	14-Apr-16
16040046-004	Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Apr-16
16040046-004	Ethylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-004	Freon-11		0.38	ppbv	0.02	AC-058	14-Apr-16
16040046-004	Freon-113	I	0.11	ppbv	0.01	AC-058	14-Apr-16
16040046-004	Freon-114	I	0.03	ppbv	0.02	AC-058	14-Apr-16
16040046-004	Freon-12		0.89	ppbv	0.02	AC-058	14-Apr-16
16040046-004	Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.50	AC-058	14-Apr-16
16040046-004	Isobutane	I	0.29	ppbv	0.02	AC-058	14-Apr-16
16040046-004	Isopentane	I	0.19	ppbv	0.03	AC-058	14-Apr-16
16040046-004	Isoprene	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-004	Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Apr-16
16040046-004	Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-004	m,p-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Apr-16
16040046-004	m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Apr-16
16040046-004	m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	14-Apr-16
16040046-004	Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.50	AC-058	14-Apr-16
16040046-004	Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Apr-16
16040046-004	Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Apr-16
16040046-004	Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	14-Apr-16
16040046-004	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Apr-16
16040046-004	Methylcyclohexane	I	0.03	ppbv	0.01	AC-058	14-Apr-16
16040046-004	Methylcyclopentane	I	0.02	ppbv	0.02	AC-058	14-Apr-16

Report certified by:

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: April 22, 2016

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E-mail: EAS.Results@albertainnovates.ca
JOB #: 2833-2016-04-35-C

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/Mar 31, 2016	S5625	Ambient Air	31-Mar-16	0:00
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16040046	REPORT CREATED:	22-Apr-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040046-004	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Apr-16
16040046-004	n-Butane		0.33	ppbv	0.03	AC-058	14-Apr-16
16040046-004	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	14-Apr-16
16040046-004	n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Apr-16
16040046-004	n-Heptane	I	0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-004	n-Hexane	I	0.02	ppbv	0.01	AC-058	14-Apr-16
16040046-004	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-004	n-Pentane	I	0.1	ppbv	0.1	AC-058	14-Apr-16
16040046-004	n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	14-Apr-16
16040046-004	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	14-Apr-16
16040046-004	Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	14-Apr-16
16040046-004	n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-004	o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-004	o-Xylene	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-004	p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Apr-16
16040046-004	p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	14-Apr-16
16040046-004	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Apr-16
16040046-004	Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Apr-16
16040046-004	Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Apr-16
16040046-004	Toluene	I	0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-004	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-004	trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Apr-16
16040046-004	trans-2-Butene	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040046-004	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040046-004	Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Apr-16

Report certified by:

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: April 22, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca
JOB #: 2833-2016-04-35-C

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/Mar 31, 2016	S5625	Ambient Air	31-Mar-16	0:00
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16040046	REPORT CREATED:	22-Apr-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040046-004	Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Apr-16
16040046-004	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/ELK/Apr 06, 2016	S5680	Ambient Air	06-Apr-16 0:00
DESCRIPTION:	Elk Point Airport		
REPORT NUMBER:	16040128	REPORT CREATED:	18-May-16
			VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040128-001	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-001	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-001	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-001	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-001	1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Apr-16
16040128-001	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	14-Apr-16
16040128-001	1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	14-Apr-16
16040128-001	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Apr-16
16040128-001	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-001	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Apr-16
16040128-001	1,2-Dichloroethane	I	0.02	ppbv	0.01	AC-058	14-Apr-16
16040128-001	1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-001	1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-001	1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-001	1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Apr-16
16040128-001	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Apr-16
16040128-001	1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Apr-16
16040128-001	1-Butene	I	0.11	ppbv	0.02	AC-058	14-Apr-16
16040128-001	1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-001	1-Pentene	I	0.02	ppbv	0.01	AC-058	14-Apr-16
16040128-001	2,2,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-001	2,2-Dimethylbutane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-001	2,3,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-001	2,3-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-001	2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/Apr 06, 2016	S5680	Ambient Air	06-Apr-16	0:00
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16040128	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040128-001	2,4-Dimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-001	2-Methylheptane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-001	2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-001	2-Methylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-001	3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-001	3-Methylhexane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-001	3-Methylpentane	I	0.02	ppbv	0.01	AC-058	14-Apr-16
16040128-001	Acetone		3.2	ppbv	0.4	AC-058	14-Apr-16
16040128-001	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Apr-16
16040128-001	Benzene	I	0.07	ppbv	0.01	AC-058	14-Apr-16
16040128-001	Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Apr-16
16040128-001	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-001	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-001	Bromomethane	I	0.02	ppbv	0.01	AC-058	14-Apr-16
16040128-001	Carbon disulfide		0.55	ppbv	0.01	AC-058	14-Apr-16
16040128-001	Carbon tetrachloride	I	0.13	ppbv	0.01	AC-058	14-Apr-16
16040128-001	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-001	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-001	Chloroform	I	0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-001	Chloromethane		0.99	ppbv	0.02	AC-058	14-Apr-16
16040128-001	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-001	cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Apr-16
16040128-001	cis-2-Butene	I	0.05	ppbv	0.02	AC-058	14-Apr-16
16040128-001	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-001	Cyclohexane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/Apr 06, 2016	S5680	Ambient Air	06-Apr-16	0:00
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16040128	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040128-001	Cyclopentane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-001	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-001	Ethanol		0.4	ppbv	0.3	AC-058	14-Apr-16
16040128-001	Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Apr-16
16040128-001	Ethylbenzene	I	0.02	ppbv	0.01	AC-058	14-Apr-16
16040128-001	Freon-11		0.39	ppbv	0.02	AC-058	14-Apr-16
16040128-001	Freon-113	I	0.12	ppbv	0.01	AC-058	14-Apr-16
16040128-001	Freon-114	I	0.03	ppbv	0.02	AC-058	14-Apr-16
16040128-001	Freon-12		0.87	ppbv	0.02	AC-058	14-Apr-16
16040128-001	Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.50	AC-058	14-Apr-16
16040128-001	Isobutane		0.42	ppbv	0.02	AC-058	14-Apr-16
16040128-001	Isopentane	I	0.28	ppbv	0.03	AC-058	14-Apr-16
16040128-001	Isoprene	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-001	Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Apr-16
16040128-001	Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-001	m,p-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Apr-16
16040128-001	m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Apr-16
16040128-001	m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	14-Apr-16
16040128-001	Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.50	AC-058	14-Apr-16
16040128-001	Methyl ethyl ketone		0.5	ppbv	0.3	AC-058	14-Apr-16
16040128-001	Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Apr-16
16040128-001	Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	14-Apr-16
16040128-001	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	14-Apr-16
16040128-001	Methylcyclohexane	I	0.03	ppbv	0.01	AC-058	14-Apr-16
16040128-001	Methylcyclopentane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/Apr 06, 2016	S5680	Ambient Air	06-Apr-16	0:00
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16040128	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040128-001	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	14-Apr-16
16040128-001	n-Butane		0.40	ppbv	0.03	AC-058	14-Apr-16
16040128-001	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	14-Apr-16
16040128-001	n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Apr-16
16040128-001	n-Heptane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-001	n-Hexane	I	0.03	ppbv	0.01	AC-058	14-Apr-16
16040128-001	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-001	n-Pentane	K, T, U	< 0.1	ppbv	0.1	AC-058	14-Apr-16
16040128-001	n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	14-Apr-16
16040128-001	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	14-Apr-16
16040128-001	Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	14-Apr-16
16040128-001	n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-001	o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-001	o-Xylene	I	0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-001	p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Apr-16
16040128-001	p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	14-Apr-16
16040128-001	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Apr-16
16040128-001	Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Apr-16
16040128-001	Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Apr-16
16040128-001	Toluene	I	0.15	ppbv	0.01	AC-058	14-Apr-16
16040128-001	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	14-Apr-16
16040128-001	trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Apr-16
16040128-001	trans-2-Butene	I	0.09	ppbv	0.01	AC-058	14-Apr-16
16040128-001	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16
16040128-001	Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	14-Apr-16

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/Apr 06, 2016	S5680	Ambient Air	06-Apr-16	0:00
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16040128	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040128-001	Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	14-Apr-16
16040128-001	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	14-Apr-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca
JOB #: 2833-2016-04-35-C

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/Apr 12, 2016	1835	Ambient Air	12-Apr-16	0:00
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16040172	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040172-003	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Apr-16
16040172-003	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Apr-16
16040172-003	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Apr-16
16040172-003	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Apr-16
16040172-003	1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	20-Apr-16
16040172-003	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	20-Apr-16
16040172-003	1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	20-Apr-16
16040172-003	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Apr-16
16040172-003	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Apr-16
16040172-003	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Apr-16
16040172-003	1,2-Dichloroethane	I	0.03	ppbv	0.01	AC-058	20-Apr-16
16040172-003	1,2-Dichloropropane	I	0.02	ppbv	0.01	AC-058	20-Apr-16
16040172-003	1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Apr-16
16040172-003	1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Apr-16
16040172-003	1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	20-Apr-16
16040172-003	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	20-Apr-16
16040172-003	1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	20-Apr-16
16040172-003	1-Butene	I	0.11	ppbv	0.02	AC-058	20-Apr-16
16040172-003	1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Apr-16
16040172-003	1-Pentene	I	0.02	ppbv	0.01	AC-058	20-Apr-16
16040172-003	2,2,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Apr-16
16040172-003	2,2-Dimethylbutane	I	0.02	ppbv	0.01	AC-058	20-Apr-16
16040172-003	2,3,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Apr-16
16040172-003	2,3-Dimethylbutane	I	0.04	ppbv	0.02	AC-058	20-Apr-16
16040172-003	2,3-Dimethylpentane	I	0.06	ppbv	0.02	AC-058	20-Apr-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca
JOB #: 2833-2016-04-35-C

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/Apr 12, 2016	1835	Ambient Air	12-Apr-16	0:00
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16040172	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040172-003	2,4-Dimethylpentane	I	0.02	ppbv	0.01	AC-058	20-Apr-16
16040172-003	2-Methylheptane	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Apr-16
16040172-003	2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Apr-16
16040172-003	2-Methylpentane	I	0.07	ppbv	0.01	AC-058	20-Apr-16
16040172-003	3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Apr-16
16040172-003	3-Methylhexane	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Apr-16
16040172-003	3-Methylpentane	I	0.03	ppbv	0.01	AC-058	20-Apr-16
16040172-003	Acetone		5.3	ppbv	0.4	AC-058	20-Apr-16
16040172-003	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	20-Apr-16
16040172-003	Benzene	I	0.06	ppbv	0.01	AC-058	20-Apr-16
16040172-003	Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	20-Apr-16
16040172-003	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Apr-16
16040172-003	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Apr-16
16040172-003	Bromomethane	I	0.02	ppbv	0.01	AC-058	20-Apr-16
16040172-003	Carbon disulfide		0.88	ppbv	0.01	AC-058	20-Apr-16
16040172-003	Carbon tetrachloride	I	0.13	ppbv	0.01	AC-058	20-Apr-16
16040172-003	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Apr-16
16040172-003	Chloroethane	I	0.04	ppbv	0.02	AC-058	20-Apr-16
16040172-003	Chloroform	I	0.04	ppbv	0.02	AC-058	20-Apr-16
16040172-003	Chloromethane		1.12	ppbv	0.02	AC-058	20-Apr-16
16040172-003	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Apr-16
16040172-003	cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	20-Apr-16
16040172-003	cis-2-Butene	I	0.04	ppbv	0.02	AC-058	20-Apr-16
16040172-003	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Apr-16
16040172-003	Cyclohexane	I	0.04	ppbv	0.02	AC-058	20-Apr-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca
JOB #: 2833-2016-04-35-C

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/ELK/Apr 12, 2016	1835	Ambient Air	12-Apr-16 0:00
DESCRIPTION:	Elk Point Airport		
REPORT NUMBER:	16040172	REPORT CREATED:	18-May-16
			VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040172-003	Cyclopentane	I	0.02	ppbv	0.01	AC-058	20-Apr-16
16040172-003	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Apr-16
16040172-003	Ethanol		2.5	ppbv	0.3	AC-058	20-Apr-16
16040172-003	Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	20-Apr-16
16040172-003	Ethylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Apr-16
16040172-003	Freon-11		0.37	ppbv	0.02	AC-058	20-Apr-16
16040172-003	Freon-113	I	0.09	ppbv	0.01	AC-058	20-Apr-16
16040172-003	Freon-114	I	0.04	ppbv	0.02	AC-058	20-Apr-16
16040172-003	Freon-12		0.83	ppbv	0.02	AC-058	20-Apr-16
16040172-003	Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.50	AC-058	20-Apr-16
16040172-003	Isobutane		0.68	ppbv	0.02	AC-058	20-Apr-16
16040172-003	Isopentane		0.52	ppbv	0.03	AC-058	20-Apr-16
16040172-003	Isoprene	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Apr-16
16040172-003	Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	20-Apr-16
16040172-003	Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Apr-16
16040172-003	m,p-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Apr-16
16040172-003	m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	20-Apr-16
16040172-003	m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	20-Apr-16
16040172-003	Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.50	AC-058	20-Apr-16
16040172-003	Methyl ethyl ketone		0.4	ppbv	0.3	AC-058	20-Apr-16
16040172-003	Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	20-Apr-16
16040172-003	Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	20-Apr-16
16040172-003	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	20-Apr-16
16040172-003	Methylcyclohexane	I	0.08	ppbv	0.01	AC-058	20-Apr-16
16040172-003	Methylcyclopentane	I	0.04	ppbv	0.02	AC-058	20-Apr-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca
JOB #: 2833-2016-04-35-C

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/Apr 12, 2016	1835	Ambient Air	12-Apr-16	0:00
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16040172	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040172-003	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	20-Apr-16
16040172-003	n-Butane		0.73	ppbv	0.03	AC-058	20-Apr-16
16040172-003	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	20-Apr-16
16040172-003	n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	20-Apr-16
16040172-003	n-Heptane	I	0.02	ppbv	0.01	AC-058	20-Apr-16
16040172-003	n-Hexane	I	0.05	ppbv	0.01	AC-058	20-Apr-16
16040172-003	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Apr-16
16040172-003	n-Pentane	I	0.2	ppbv	0.1	AC-058	20-Apr-16
16040172-003	n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	20-Apr-16
16040172-003	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	20-Apr-16
16040172-003	Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	20-Apr-16
16040172-003	n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Apr-16
16040172-003	o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Apr-16
16040172-003	o-Xylene	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Apr-16
16040172-003	p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	20-Apr-16
16040172-003	p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	20-Apr-16
16040172-003	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	20-Apr-16
16040172-003	Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	20-Apr-16
16040172-003	Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	20-Apr-16
16040172-003	Toluene	I	0.04	ppbv	0.01	AC-058	20-Apr-16
16040172-003	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	20-Apr-16
16040172-003	trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	20-Apr-16
16040172-003	trans-2-Butene	I	0.04	ppbv	0.01	AC-058	20-Apr-16
16040172-003	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	20-Apr-16
16040172-003	Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	20-Apr-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/ELK/Apr 12, 2016	1835	Ambient Air	12-Apr-16 0:00
DESCRIPTION:	Elk Point Airport		
REPORT NUMBER:	16040172	REPORT CREATED:	18-May-16
			VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
16040172-003	Vinyl acetate	K, T, U	< 0.4 ppbv	0.4	AC-058	20-Apr-16
16040172-003	Vinyl chloride	K, T, U	< 0.02 ppbv	0.02	AC-058	20-Apr-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

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JOB #: 2833-2016-04-35-C

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/Apr 18, 2016	1710	Ambient Air	18-Apr-16	0:00
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16040201	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040201-003	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-003	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-003	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-003	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-003	1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Apr-16
16040201-003	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	28-Apr-16
16040201-003	1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	28-Apr-16
16040201-003	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Apr-16
16040201-003	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-003	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Apr-16
16040201-003	1,2-Dichloroethane	I	0.02	ppbv	0.01	AC-058	28-Apr-16
16040201-003	1,2-Dichloropropane	I	0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-003	1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-003	1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-003	1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	28-Apr-16
16040201-003	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	28-Apr-16
16040201-003	1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	28-Apr-16
16040201-003	1-Butene	I	0.10	ppbv	0.02	AC-058	28-Apr-16
16040201-003	1-Hexene	I	0.03	ppbv	0.02	AC-058	28-Apr-16
16040201-003	1-Pentene	I	0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-003	2,2,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-003	2,2-Dimethylbutane	I	0.02	ppbv	0.01	AC-058	28-Apr-16
16040201-003	2,3,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-003	2,3-Dimethylbutane	I	0.04	ppbv	0.02	AC-058	28-Apr-16
16040201-003	2,3-Dimethylpentane	I	0.04	ppbv	0.02	AC-058	28-Apr-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/Apr 18, 2016	1710	Ambient Air	18-Apr-16	0:00
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16040201	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040201-003	2,4-Dimethylpentane	I	0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-003	2-Methylheptane	K, T, U	< 0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-003	2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-003	2-Methylpentane	I	0.06	ppbv	0.01	AC-058	28-Apr-16
16040201-003	3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-003	3-Methylhexane	I	0.03	ppbv	0.02	AC-058	28-Apr-16
16040201-003	3-Methylpentane	I	0.05	ppbv	0.01	AC-058	28-Apr-16
16040201-003	Acetone		3.5	ppbv	0.4	AC-058	28-Apr-16
16040201-003	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	28-Apr-16
16040201-003	Benzene	I	0.06	ppbv	0.01	AC-058	28-Apr-16
16040201-003	Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	28-Apr-16
16040201-003	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-003	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-003	Bromomethane	I	0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-003	Carbon disulfide	I	0.11	ppbv	0.01	AC-058	28-Apr-16
16040201-003	Carbon tetrachloride	I	0.10	ppbv	0.01	AC-058	28-Apr-16
16040201-003	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-003	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-003	Chloroform	I	0.03	ppbv	0.02	AC-058	28-Apr-16
16040201-003	Chloromethane		0.86	ppbv	0.02	AC-058	28-Apr-16
16040201-003	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-003	cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Apr-16
16040201-003	cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-003	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-003	Cyclohexane	I	0.03	ppbv	0.02	AC-058	28-Apr-16

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/ELK/Apr 18, 2016	1710	Ambient Air	18-Apr-16 0:00
DESCRIPTION:	Elk Point Airport		
REPORT NUMBER:	16040201	REPORT CREATED:	18-May-16
			VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040201-003	Cyclopentane	I	0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-003	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-003	Ethanol		1.0	ppbv	0.3	AC-058	28-Apr-16
16040201-003	Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	28-Apr-16
16040201-003	Ethylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-003	Freon-11		0.33	ppbv	0.02	AC-058	28-Apr-16
16040201-003	Freon-113	I	0.10	ppbv	0.01	AC-058	28-Apr-16
16040201-003	Freon-114	I	0.03	ppbv	0.02	AC-058	28-Apr-16
16040201-003	Freon-12		0.76	ppbv	0.02	AC-058	28-Apr-16
16040201-003	Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.50	AC-058	28-Apr-16
16040201-003	Isobutane		0.58	ppbv	0.02	AC-058	28-Apr-16
16040201-003	Isopentane		0.43	ppbv	0.03	AC-058	28-Apr-16
16040201-003	Isoprene	K, T, U	< 0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-003	Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	28-Apr-16
16040201-003	Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-003	m,p-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Apr-16
16040201-003	m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Apr-16
16040201-003	m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	28-Apr-16
16040201-003	Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.50	AC-058	28-Apr-16
16040201-003	Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	28-Apr-16
16040201-003	Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	28-Apr-16
16040201-003	Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	28-Apr-16
16040201-003	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	28-Apr-16
16040201-003	Methylcyclohexane	I	0.06	ppbv	0.01	AC-058	28-Apr-16
16040201-003	Methylcyclopentane	I	0.06	ppbv	0.02	AC-058	28-Apr-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca
JOB #: 2833-2016-04-35-C

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/Apr 18, 2016	1710	Ambient Air	18-Apr-16	0:00
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16040201	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040201-003	Methylene chloride		1.4	ppbv	0.3	AC-058	28-Apr-16
16040201-003	n-Butane		0.65	ppbv	0.03	AC-058	28-Apr-16
16040201-003	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	28-Apr-16
16040201-003	n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	28-Apr-16
16040201-003	n-Heptane	I	0.02	ppbv	0.01	AC-058	28-Apr-16
16040201-003	n-Hexane	I	0.11	ppbv	0.01	AC-058	28-Apr-16
16040201-003	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-003	n-Pentane	I	0.2	ppbv	0.1	AC-058	28-Apr-16
16040201-003	n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	28-Apr-16
16040201-003	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	28-Apr-16
16040201-003	Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	28-Apr-16
16040201-003	n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-003	o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-003	o-Xylene	K, T, U	< 0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-003	p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Apr-16
16040201-003	p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	28-Apr-16
16040201-003	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Apr-16
16040201-003	Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Apr-16
16040201-003	Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	28-Apr-16
16040201-003	Toluene	I	0.04	ppbv	0.01	AC-058	28-Apr-16
16040201-003	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-003	trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Apr-16
16040201-003	trans-2-Butene	I	0.02	ppbv	0.01	AC-058	28-Apr-16
16040201-003	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-003	Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Apr-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca
JOB #: 2833-2016-04-35-C

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/Apr 18, 2016	1710	Ambient Air	18-Apr-16	0:00
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16040201	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040201-003	Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	28-Apr-16
16040201-003	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/Apr 24, 2016	14705	Ambient Air	24-Apr-16	0:00
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16050011	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050011-003	2,4-Dimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-005	2,4-Dimethylpentane	I	0.02	ppbv	0.01	AC-058	05-May-16
16050011-003	2-Methylheptane	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-005	2-Methylheptane	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-005	2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-003	2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-005	2-Methylpentane	I	0.03	ppbv	0.01	AC-058	05-May-16
16050011-003	2-Methylpentane	I	0.02	ppbv	0.01	AC-058	05-May-16
16050011-005	3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-003	3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-005	3-Methylhexane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-003	3-Methylhexane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-005	3-Methylpentane	I	0.02	ppbv	0.01	AC-058	05-May-16
16050011-003	3-Methylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-003	Acetone		2.8	ppbv	0.4	AC-058	05-May-16
16050011-005	Acetone		3.1	ppbv	0.5	AC-058	05-May-16
16050011-005	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	05-May-16
16050011-003	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	05-May-16
16050011-005	Benzene	I	0.06	ppbv	0.01	AC-058	05-May-16
16050011-003	Benzene	I	0.03	ppbv	0.01	AC-058	05-May-16
16050011-005	Benzyl chloride	K, T, U	< 0.5	ppbv	0.5	AC-058	05-May-16
16050011-003	Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	05-May-16
16050011-005	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-003	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-005	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/Apr 24, 2016	14705	Ambient Air	24-Apr-16	0:00
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16050011	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050011-003	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-005	Bromomethane	I	0.01	ppbv	0.01	AC-058	05-May-16
16050011-003	Bromomethane	I	0.02	ppbv	0.01	AC-058	05-May-16
16050011-003	Carbon disulfide	I	0.01	ppbv	0.01	AC-058	05-May-16
16050011-005	Carbon disulfide	I	0.02	ppbv	0.01	AC-058	05-May-16
16050011-005	Carbon tetrachloride	I	0.12	ppbv	0.01	AC-058	05-May-16
16050011-003	Carbon tetrachloride	I	0.13	ppbv	0.01	AC-058	05-May-16
16050011-003	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-005	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-005	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-003	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-005	Chloroform	I	0.03	ppbv	0.02	AC-058	05-May-16
16050011-003	Chloroform	I	0.03	ppbv	0.02	AC-058	05-May-16
16050011-003	Chloromethane		0.89	ppbv	0.02	AC-058	05-May-16
16050011-005	Chloromethane		1.00	ppbv	0.02	AC-058	05-May-16
16050011-003	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-005	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-003	cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	05-May-16
16050011-005	cis-1,3-Dichloropropene	K, T, U	< 0.05	ppbv	0.05	AC-058	05-May-16
16050011-003	cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-005	cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-003	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-005	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-003	Cyclohexane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-005	Cyclohexane	I	0.04	ppbv	0.02	AC-058	05-May-16

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/Apr 24, 2016	14705	Ambient Air	24-Apr-16	0:00
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16050011	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050011-003	Isoprene	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-005	Isopropyl alcohol	K, T, U	< 0.5	ppbv	0.5	AC-058	05-May-16
16050011-003	Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	05-May-16
16050011-005	Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-003	Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-005	m,p-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	05-May-16
16050011-003	m,p-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	05-May-16
16050011-005	m-Diethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	05-May-16
16050011-003	m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	05-May-16
16050011-005	m-Ethyltoluene	K, T, U	< 0.09	ppbv	0.09	AC-058	05-May-16
16050011-003	m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	05-May-16
16050011-005	Methyl butyl ketone	K, T, U	< 0.58	ppbv	0.58	AC-058	05-May-16
16050011-003	Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.50	AC-058	05-May-16
16050011-005	Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	05-May-16
16050011-003	Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	05-May-16
16050011-005	Methyl isobutyl ketone	K, T, U	< 0.5	ppbv	0.5	AC-058	05-May-16
16050011-003	Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	05-May-16
16050011-005	Methyl methacrylate	K, T, U	< 0.08	ppbv	0.08	AC-058	05-May-16
16050011-003	Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	05-May-16
16050011-005	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	05-May-16
16050011-003	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	05-May-16
16050011-005	Methylcyclohexane	I	0.08	ppbv	0.01	AC-058	05-May-16
16050011-003	Methylcyclohexane	I	0.02	ppbv	0.01	AC-058	05-May-16
16050011-005	Methylcyclopentane	I	0.04	ppbv	0.02	AC-058	05-May-16
16050011-003	Methylcyclopentane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca
JOB #: 2833-2016-04-35-C

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/Apr 24, 2016	14705	Ambient Air	24-Apr-16	0:00
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16050011	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050011-003	o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-003	o-Xylene	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-005	o-Xylene	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-005	p-Diethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	05-May-16
16050011-003	p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	05-May-16
16050011-005	p-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	05-May-16
16050011-003	p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	05-May-16
16050011-005	Styrene	K, T, U	< 0.05	ppbv	0.05	AC-058	05-May-16
16050011-003	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	05-May-16
16050011-005	Tetrachloroethylene	K, T, U	< 0.05	ppbv	0.05	AC-058	05-May-16
16050011-003	Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	05-May-16
16050011-005	Tetrahydrofuran	K, T, U	< 0.5	ppbv	0.5	AC-058	05-May-16
16050011-003	Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	05-May-16
16050011-005	Toluene	I	0.04	ppbv	0.01	AC-058	05-May-16
16050011-003	Toluene	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-005	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-003	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-003	trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	05-May-16
16050011-005	trans-1,3-Dichloropropylene	K, T, U	< 0.05	ppbv	0.05	AC-058	05-May-16
16050011-003	trans-2-Butene	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-005	trans-2-Butene	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-003	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-005	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-003	Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	05-May-16
16050011-005	Trichloroethylene	K, T, U	< 0.05	ppbv	0.05	AC-058	05-May-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca
JOB #: 2833-2016-04-35-C

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/Apr 24, 2016	14705	Ambient Air	24-Apr-16	0:00
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16050011	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050011-003	Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	05-May-16
16050011-005	Vinyl acetate	K, T, U	< 0.5	ppbv	0.5	AC-058	05-May-16
16050011-005	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-003	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/Apr 30, 2016	1153	Ambient Air	30-Apr-16	0:00
DESCRIPTION:	ELK POINT AIRPORT			
REPORT NUMBER:	16050026	REPORT CREATED:	20-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050026-001	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-001	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-001	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-001	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-001	1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	12-May-16
16050026-001	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	12-May-16
16050026-001	1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	12-May-16
16050026-001	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	12-May-16
16050026-001	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-001	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	12-May-16
16050026-001	1,2-Dichloroethane	I	0.02	ppbv	0.01	AC-058	12-May-16
16050026-001	1,2-Dichloropropane	I	0.01	ppbv	0.01	AC-058	12-May-16
16050026-001	1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-001	1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-001	1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	12-May-16
16050026-001	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	12-May-16
16050026-001	1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	12-May-16
16050026-001	1-Butene	I	0.11	ppbv	0.02	AC-058	12-May-16
16050026-001	1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-001	1-Pentene	I	0.01	ppbv	0.01	AC-058	12-May-16
16050026-001	2,2,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	12-May-16
16050026-001	2,2-Dimethylbutane	I	0.03	ppbv	0.01	AC-058	12-May-16
16050026-001	2,3,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	12-May-16
16050026-001	2,3-Dimethylbutane	I	0.05	ppbv	0.02	AC-058	12-May-16
16050026-001	2,3-Dimethylpentane	I	0.06	ppbv	0.02	AC-058	12-May-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May-20-16

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca
JOB #: 2833-2016-04-35-C

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/Apr 30, 2016	1153	Ambient Air	30-Apr-16	0:00
DESCRIPTION:	ELK POINT AIRPORT			
REPORT NUMBER:	16050026	REPORT CREATED:	20-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050026-001	2,4-Dimethylpentane	I	0.02	ppbv	0.01	AC-058	12-May-16
16050026-001	2-Methylheptane	I	0.01	ppbv	0.01	AC-058	12-May-16
16050026-001	2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	12-May-16
16050026-001	2-Methylpentane	I	0.07	ppbv	0.01	AC-058	12-May-16
16050026-001	3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-001	3-Methylhexane	I	0.03	ppbv	0.02	AC-058	12-May-16
16050026-001	3-Methylpentane	I	0.05	ppbv	0.01	AC-058	12-May-16
16050026-001	Acetone		3.7	ppbv	0.4	AC-058	12-May-16
16050026-001	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	12-May-16
16050026-001	Benzene	I	0.04	ppbv	0.01	AC-058	12-May-16
16050026-001	Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	12-May-16
16050026-001	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-001	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-001	Bromomethane	I	0.01	ppbv	0.01	AC-058	12-May-16
16050026-001	Carbon disulfide		0.58	ppbv	0.01	AC-058	12-May-16
16050026-001	Carbon tetrachloride	I	0.11	ppbv	0.01	AC-058	12-May-16
16050026-001	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-001	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-001	Chloroform	I	0.02	ppbv	0.02	AC-058	12-May-16
16050026-001	Chloromethane		0.74	ppbv	0.02	AC-058	12-May-16
16050026-001	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	12-May-16
16050026-001	cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	12-May-16
16050026-001	cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-001	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-001	Cyclohexane	I	0.05	ppbv	0.02	AC-058	12-May-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May-20-16

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/Apr 30, 2016	1153	Ambient Air	30-Apr-16	0:00
DESCRIPTION:	ELK POINT AIRPORT			
REPORT NUMBER:	16050026	REPORT CREATED:	20-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050026-001	Cyclopentane	I	0.02	ppbv	0.01	AC-058	12-May-16
16050026-001	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	12-May-16
16050026-001	Ethanol		0.8	ppbv	0.3	AC-058	12-May-16
16050026-001	Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	12-May-16
16050026-001	Ethylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	12-May-16
16050026-001	Freon-11		0.32	ppbv	0.02	AC-058	12-May-16
16050026-001	Freon-113	I	0.08	ppbv	0.01	AC-058	12-May-16
16050026-001	Freon-114	I	0.03	ppbv	0.02	AC-058	12-May-16
16050026-001	Freon-12		0.72	ppbv	0.02	AC-058	12-May-16
16050026-001	Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.50	AC-058	12-May-16
16050026-001	Isobutane		0.76	ppbv	0.02	AC-058	12-May-16
16050026-001	Isopentane		0.55	ppbv	0.03	AC-058	12-May-16
16050026-001	Isoprene	K, T, U	< 0.01	ppbv	0.01	AC-058	12-May-16
16050026-001	Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	12-May-16
16050026-001	Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	12-May-16
16050026-001	m,p-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	12-May-16
16050026-001	m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	12-May-16
16050026-001	m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	12-May-16
16050026-001	Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.50	AC-058	12-May-16
16050026-001	Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	12-May-16
16050026-001	Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	12-May-16
16050026-001	Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	12-May-16
16050026-001	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	12-May-16
16050026-001	Methylcyclohexane	I	0.10	ppbv	0.01	AC-058	12-May-16
16050026-001	Methylcyclopentane	I	0.06	ppbv	0.02	AC-058	12-May-16

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/Apr 30, 2016	1153	Ambient Air	30-Apr-16	0:00
DESCRIPTION:	ELK POINT AIRPORT			
REPORT NUMBER:	16050026	REPORT CREATED:	20-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050026-001	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	12-May-16
16050026-001	n-Butane		0.98	ppbv	0.03	AC-058	12-May-16
16050026-001	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	12-May-16
16050026-001	n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	12-May-16
16050026-001	n-Heptane	I	0.03	ppbv	0.01	AC-058	12-May-16
16050026-001	n-Hexane	I	0.08	ppbv	0.01	AC-058	12-May-16
16050026-001	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-001	n-Pentane	I	0.2	ppbv	0.1	AC-058	12-May-16
16050026-001	n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	12-May-16
16050026-001	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	12-May-16
16050026-001	Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	12-May-16
16050026-001	n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	12-May-16
16050026-001	o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	12-May-16
16050026-001	o-Xylene	K, T, U	< 0.01	ppbv	0.01	AC-058	12-May-16
16050026-001	p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	12-May-16
16050026-001	p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	12-May-16
16050026-001	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	12-May-16
16050026-001	Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	12-May-16
16050026-001	Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	12-May-16
16050026-001	Toluene	I	0.04	ppbv	0.01	AC-058	12-May-16
16050026-001	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	12-May-16
16050026-001	trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	12-May-16
16050026-001	trans-2-Butene	I	0.02	ppbv	0.01	AC-058	12-May-16
16050026-001	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-001	Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	12-May-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May-20-16

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/Apr 30, 2016	1153	Ambient Air	30-Apr-16	0:00
DESCRIPTION:	ELK POINT AIRPORT			
REPORT NUMBER:	16050026	REPORT CREATED:	20-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
16050026-001	Vinyl acetate	K, T, U	< 0.4 ppbv	0.4	AC-058	12-May-16
16050026-001	Vinyl chloride	K, T, U	< 0.02 ppbv	0.02	AC-058	12-May-16

PAHS SAMPLES

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/PUF/ELK/Mar 31, 2016	9702	Air Filter	31-Mar-16	0:00
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16040046	REPORT CREATED:	22-Apr-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040046-005	1-Methylnaphthalene		0.08	ug/puf	0.01	NA-017	16-Apr-16
16040046-005	2-Methylnaphthalene		0.14	ug/puf	0.01	NA-017	16-Apr-16
16040046-005	3-Methylcholanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-005	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-005	Acenaphthene		0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-005	Acenaphthylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-005	Acridine	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-005	Anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-005	Benzo(a)anthracene		0.02	ug/puf	0.01	NA-017	16-Apr-16
16040046-005	Benzo(a)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-005	Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-005	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-005	Benzo(e)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-005	Benzo(ghi)perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-005	Chrysene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-005	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-005	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-005	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-005	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-005	Fluoranthene		0.03	ug/puf	0.01	NA-017	16-Apr-16
16040046-005	Fluorene		0.02	ug/puf	0.01	NA-017	16-Apr-16
16040046-005	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-005	Naphthalene		0.03	ug/puf	0.01	NA-017	16-Apr-16
16040046-005	Perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-005	Phenanthrene		0.06	ug/puf	0.01	NA-017	16-Apr-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: April 22, 2016

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JOB #: 2833-2016-04-35-C

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/PUF/ELK/Mar 31, 2016	9702	Air Filter	31-Mar-16	0:00
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16040046	REPORT CREATED:	22-Apr-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040046-005	Pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Apr-16
16040046-005	Retene		0.01	ug/puf	0.01	NA-017	16-Apr-16

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/PUF/ELK/Apr 06, 2016	TE-09	Air Filter	06-Apr-16	0:00
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16040128	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040128-002	1-Methylnaphthalene		0.03	ug/puf	0.01	NA-017	12-May-16
16040128-002	2-Methylnaphthalene		0.06	ug/puf	0.01	NA-017	12-May-16
16040128-002	3-Methylcholanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040128-002	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040128-002	Acenaphthene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040128-002	Acenaphthylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040128-002	Acridine	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040128-002	Anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040128-002	Benzo(a)anthracene		0.02	ug/puf	0.01	NA-017	12-May-16
16040128-002	Benzo(a)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040128-002	Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040128-002	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040128-002	Benzo(e)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040128-002	Benzo(ghi)perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040128-002	Chrysene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040128-002	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040128-002	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040128-002	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040128-002	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040128-002	Fluoranthene		0.03	ug/puf	0.01	NA-017	12-May-16
16040128-002	Fluorene		0.03	ug/puf	0.01	NA-017	12-May-16
16040128-002	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040128-002	Naphthalene		0.02	ug/puf	0.01	NA-017	12-May-16
16040128-002	Perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040128-002	Phenanthrene		0.07	ug/puf	0.01	NA-017	12-May-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca
JOB #: 2833-2016-04-35-C

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/PUF/ELK/Apr 06, 2016	TE-09	Air Filter	06-Apr-16	0:00
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16040128	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040128-002	Pyrene		0.02	ug/puf	0.01	NA-017	12-May-16
16040128-002	Retene		0.03	ug/puf	0.01	NA-017	12-May-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/PUF/ELK/Apr 12, 2016	TE-04	Air Filter	12-Apr-16	0:00
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16040172	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040172-004	1-Methylnaphthalene		0.02	ug/puf	0.01	NA-017	12-May-16
16040172-004	2-Methylnaphthalene		0.04	ug/puf	0.01	NA-017	12-May-16
16040172-004	3-Methylcholanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040172-004	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040172-004	Acenaphthene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040172-004	Acenaphthylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040172-004	Acridine	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040172-004	Anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040172-004	Benzo(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040172-004	Benzo(a)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040172-004	Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040172-004	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040172-004	Benzo(e)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040172-004	Benzo(ghi)perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040172-004	Chrysene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040172-004	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040172-004	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040172-004	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040172-004	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040172-004	Fluoranthene		0.02	ug/puf	0.01	NA-017	12-May-16
16040172-004	Fluorene		0.03	ug/puf	0.01	NA-017	12-May-16
16040172-004	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040172-004	Naphthalene		0.01	ug/puf	0.01	NA-017	12-May-16
16040172-004	Perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040172-004	Phenanthrene		0.06	ug/puf	0.01	NA-017	12-May-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca
JOB #: 2833-2016-04-35-C

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/PUF/ELK/Apr 12, 2016	TE-04	Air Filter	12-Apr-16	0:00
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16040172	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040172-004	Pyrene		0.02	ug/puf	0.01	NA-017	12-May-16
16040172-004	Retene		0.03	ug/puf	0.01	NA-017	12-May-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca
JOB #: 2833-2016-04-35-C

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/PUF/ELK/Apr 18, 2016	TE-03	Air Filter	18-Apr-16	0:00
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16040201	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040201-004	1-Methylnaphthalene		0.06	ug/puf	0.01	NA-017	12-May-16
16040201-004	2-Methylnaphthalene		0.11	ug/puf	0.01	NA-017	12-May-16
16040201-004	3-Methylcholanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040201-004	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040201-004	Acenaphthene		0.01	ug/puf	0.01	NA-017	12-May-16
16040201-004	Acenaphthylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040201-004	Acridine	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040201-004	Anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040201-004	Benzo(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040201-004	Benzo(a)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040201-004	Benzo(b,j,k)fluoranthene		0.02	ug/puf	0.01	NA-017	12-May-16
16040201-004	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040201-004	Benzo(e)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040201-004	Benzo(ghi)perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040201-004	Chrysene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040201-004	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040201-004	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040201-004	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040201-004	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040201-004	Fluoranthene		0.05	ug/puf	0.01	NA-017	12-May-16
16040201-004	Fluorene		0.03	ug/puf	0.01	NA-017	12-May-16
16040201-004	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040201-004	Naphthalene		0.05	ug/puf	0.01	NA-017	12-May-16
16040201-004	Perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16040201-004	Phenanthrene		0.11	ug/puf	0.01	NA-017	12-May-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca
JOB #: 2833-2016-04-35-C

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/PUF/ELK/Apr 18, 2016	TE-03	Air Filter	18-Apr-16	0:00
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16040201	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040201-004	Pyrene		0.02	ug/puf	0.01	NA-017	12-May-16
16040201-004	Retene		0.03	ug/puf	0.01	NA-017	12-May-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/PUF/ELK/Apr 24, 2016	A13-02	Air Filter	24-Apr-16	0:00
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16050011	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050011-004	1-Methylnaphthalene		0.03	ug/puf	0.01	NA-017	12-May-16
16050011-004	2-Methylnaphthalene		0.07	ug/puf	0.01	NA-017	12-May-16
16050011-004	3-Methylcholanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050011-004	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050011-004	Acenaphthene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050011-004	Acenaphthylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050011-004	Acridine	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050011-004	Anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050011-004	Benzo(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050011-004	Benzo(a)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050011-004	Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050011-004	Benzo(c)phenanthrene		0.01	ug/puf	0.01	NA-017	12-May-16
16050011-004	Benzo(e)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050011-004	Benzo(ghi)perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050011-004	Chrysene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050011-004	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050011-004	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050011-004	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050011-004	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050011-004	Fluoranthene		0.03	ug/puf	0.01	NA-017	12-May-16
16050011-004	Fluorene		0.02	ug/puf	0.01	NA-017	12-May-16
16050011-004	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050011-004	Naphthalene		0.02	ug/puf	0.01	NA-017	12-May-16
16050011-004	Perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050011-004	Phenanthrene		0.03	ug/puf	0.01	NA-017	12-May-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/PUF/ELK/Apr 24, 2016	A13-02	Air Filter	24-Apr-16	0:00
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16050011	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050011-004	Pyrene		0.02	ug/puf	0.01	NA-017	12-May-16
16050011-004	Retene		0.02	ug/puf	0.01	NA-017	12-May-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca
 JOB #: 2833-2016-04-35-C

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/PUF/ELK/Apr 30, 2016	9801	Air Filter	30-Apr-16	0:00
DESCRIPTION:	ELK POINT AIRPORT			
REPORT NUMBER:	16050026	REPORT CREATED:	20-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050026-002	1-Methylnaphthalene		0.02	ug/puf	0.01	NA-017	12-May-16
16050026-002	2-Methylnaphthalene		0.03	ug/puf	0.01	NA-017	12-May-16
16050026-002	3-Methylcholanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050026-002	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050026-002	Acenaphthene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050026-002	Acenaphthylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050026-002	Acridine	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050026-002	Anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050026-002	Benzo(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050026-002	Benzo(a)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050026-002	Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050026-002	Benzo(c)phenanthrene		0.06	ug/puf	0.01	NA-017	12-May-16
16050026-002	Benzo(e)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050026-002	Benzo(ghi)perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050026-002	Chrysene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050026-002	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050026-002	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050026-002	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050026-002	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050026-002	Fluoranthene		0.03	ug/puf	0.01	NA-017	12-May-16
16050026-002	Fluorene		0.02	ug/puf	0.01	NA-017	12-May-16
16050026-002	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050026-002	Naphthalene		0.02	ug/puf	0.01	NA-017	12-May-16
16050026-002	Perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	12-May-16
16050026-002	Phenanthrene		0.06	ug/puf	0.01	NA-017	12-May-16

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/PUF/ELK/Apr 30, 2016	9801	Air Filter	30-Apr-16	0:00
DESCRIPTION:	ELK POINT AIRPORT			
REPORT NUMBER:	16050026	REPORT CREATED:	20-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
16050026-002	Pyrene		0.02 ug/puf	0.01	NA-017	12-May-16
16050026-002	Retene		0.03 ug/puf	0.01	NA-017	12-May-16

NMHC CANISTER SAMPLES

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/April 1, 2016	H3301	Ambient Air	01-Apr-16	19:57
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16040046	REPORT CREATED:	22-Apr-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040046-001	1,1,1-Trichloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-16
16040046-001	1,1,2,2-Tetrachloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-16
16040046-001	1,1,2-Trichloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-16
16040046-001	1,1-Dichloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-16
16040046-001	1,1-Dichloroethylene	K, T, U	< 0.05	ppbv	0.05	AC-058	13-Apr-16
16040046-001	1,2,3-Trimethylbenzene	K, T, U	< 0.07	ppbv	0.07	AC-058	13-Apr-16
16040046-001	1,2,4-Trichlorobenzene	K, T, U	< 1.0	ppbv	1.0	AC-058	13-Apr-16
16040046-001	1,2,4-Trimethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Apr-16
16040046-001	1,2-Dibromoethane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-16
16040046-001	1,2-Dichlorobenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Apr-16
16040046-001	1,2-Dichloroethane	I	0.03	ppbv	0.01	AC-058	13-Apr-16
16040046-001	1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Apr-16
16040046-001	1,3,5-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-16
16040046-001	1,3-Butadiene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-16
16040046-001	1,3-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Apr-16
16040046-001	1,4-Dichlorobenzene	K, T, U	< 0.5	ppbv	0.5	AC-058	13-Apr-16
16040046-001	1,4-Dioxane	K, T, U	< 0.5	ppbv	0.5	AC-058	13-Apr-16
16040046-001	1-Butene	I	0.16	ppbv	0.03	AC-058	13-Apr-16
16040046-001	1-Hexene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-16
16040046-001	1-Pentene	I	0.02	ppbv	0.01	AC-058	13-Apr-16
16040046-001	2,2,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Apr-16
16040046-001	2,2-Dimethylbutane	I	0.07	ppbv	0.01	AC-058	13-Apr-16
16040046-001	2,3,4-Trimethylpentane	I	0.04	ppbv	0.01	AC-058	13-Apr-16
16040046-001	2,3-Dimethylbutane	I	0.12	ppbv	0.03	AC-058	13-Apr-16
16040046-001	2,3-Dimethylpentane	I	0.12	ppbv	0.03	AC-058	13-Apr-16

Report certified by:

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: April 22, 2016

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/April 1, 2016	H3301	Ambient Air	01-Apr-16	19:57
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16040046	REPORT CREATED:	22-Apr-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040046-001	2,4-Dimethylpentane	I	0.04	ppbv	0.01	AC-058	13-Apr-16
16040046-001	2-Methylheptane	I	0.02	ppbv	0.01	AC-058	13-Apr-16
16040046-001	2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Apr-16
16040046-001	2-Methylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Apr-16
16040046-001	3-Methylheptane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-16
16040046-001	3-Methylhexane	I	0.06	ppbv	0.03	AC-058	13-Apr-16
16040046-001	3-Methylpentane	I	0.06	ppbv	0.01	AC-058	13-Apr-16
16040046-001	Acetone		3.5	ppbv	0.5	AC-058	13-Apr-16
16040046-001	Acrolein	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Apr-16
16040046-001	Benzene	I	0.07	ppbv	0.01	AC-058	13-Apr-16
16040046-001	Benzyl chloride	K, T, U	< 0.5	ppbv	0.5	AC-058	13-Apr-16
16040046-001	Bromodichloromethane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-16
16040046-001	Bromoform	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-16
16040046-001	Bromomethane	I	0.03	ppbv	0.01	AC-058	13-Apr-16
16040046-001	Carbon disulfide	I	0.02	ppbv	0.01	AC-058	13-Apr-16
16040046-001	Carbon tetrachloride	I	0.12	ppbv	0.01	AC-058	13-Apr-16
16040046-001	Chlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-16
16040046-001	Chloroethane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-16
16040046-001	Chloroform	I	0.03	ppbv	0.03	AC-058	13-Apr-16
16040046-001	Chloromethane		0.90	ppbv	0.03	AC-058	13-Apr-16
16040046-001	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Apr-16
16040046-001	cis-1,3-Dichloropropene	K, T, U	< 0.05	ppbv	0.05	AC-058	13-Apr-16
16040046-001	cis-2-Butene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-16
16040046-001	cis-2-Pentene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-16
16040046-001	Cyclohexane	I	0.11	ppbv	0.03	AC-058	13-Apr-16

Report certified by:

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: April 22, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca
JOB #: 2833-2016-04-35-C

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/April 1, 2016	H3301	Ambient Air	01-Apr-16	19:57
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16040046	REPORT CREATED:	22-Apr-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040046-001	Cyclopentane	I	0.04	ppbv	0.01	AC-058	13-Apr-16
16040046-001	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Apr-16
16040046-001	Ethanol		0.7	ppbv	0.4	AC-058	13-Apr-16
16040046-001	Ethyl acetate	K, T, U	< 0.5	ppbv	0.5	AC-058	13-Apr-16
16040046-001	Ethylbenzene	I	0.02	ppbv	0.01	AC-058	13-Apr-16
16040046-001	Freon-11	I	0.35	ppbv	0.03	AC-058	13-Apr-16
16040046-001	Freon-113	I	0.11	ppbv	0.01	AC-058	13-Apr-16
16040046-001	Freon-114	I	0.04	ppbv	0.03	AC-058	13-Apr-16
16040046-001	Freon-12		0.75	ppbv	0.03	AC-058	13-Apr-16
16040046-001	Hexachloro-1,3-butadiene	K, T, U	< 0.66	ppbv	0.66	AC-058	13-Apr-16
16040046-001	Isobutane		1.07	ppbv	0.03	AC-058	13-Apr-16
16040046-001	Isopentane		0.71	ppbv	0.04	AC-058	13-Apr-16
16040046-001	Isoprene	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Apr-16
16040046-001	Isopropyl alcohol	K, T, U	< 0.5	ppbv	0.5	AC-058	13-Apr-16
16040046-001	Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Apr-16
16040046-001	m,p-Xylene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Apr-16
16040046-001	m-Diethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	13-Apr-16
16040046-001	m-Ethyltoluene	K, T, U	< 0.10	ppbv	0.10	AC-058	13-Apr-16
16040046-001	Methyl butyl ketone	K, T, U	< 0.66	ppbv	0.66	AC-058	13-Apr-16
16040046-001	Methyl ethyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Apr-16
16040046-001	Methyl isobutyl ketone	K, T, U	< 0.5	ppbv	0.5	AC-058	13-Apr-16
16040046-001	Methyl methacrylate	K, T, U	< 0.09	ppbv	0.09	AC-058	13-Apr-16
16040046-001	Methyl tert butyl ether	K, T, U	< 0.04	ppbv	0.04	AC-058	13-Apr-16
16040046-001	Methylcyclohexane	I	0.30	ppbv	0.01	AC-058	13-Apr-16
16040046-001	Methylcyclopentane	I	0.11	ppbv	0.03	AC-058	13-Apr-16

Report certified by:

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

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JOB #: 2833-2016-04-35-C

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/April 1, 2016	H3301	Ambient Air	01-Apr-16	19:57
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16040046	REPORT CREATED:	22-Apr-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040046-001	Methylene chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	13-Apr-16
16040046-001	n-Butane		1.14	ppbv	0.04	AC-058	13-Apr-16
16040046-001	n-Decane	K, T, U	< 0.08	ppbv	0.08	AC-058	13-Apr-16
16040046-001	n-Dodecane	K, T, U	< 0.5	ppbv	0.5	AC-058	13-Apr-16
16040046-001	n-Heptane	I	0.07	ppbv	0.01	AC-058	13-Apr-16
16040046-001	n-Hexane	I	0.12	ppbv	0.01	AC-058	13-Apr-16
16040046-001	n-Octane	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-16
16040046-001	n-Pentane	I	0.3	ppbv	0.1	AC-058	13-Apr-16
16040046-001	n-Propylbenzene	K, T, U	< 0.07	ppbv	0.07	AC-058	13-Apr-16
16040046-001	n-Undecane	K, T, U	< 0.7	ppbv	0.7	AC-058	13-Apr-16
16040046-001	Naphthalene	K, T, U	< 0.7	ppbv	0.7	AC-058	13-Apr-16
16040046-001	n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Apr-16
16040046-001	o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Apr-16
16040046-001	o-Xylene	I	0.01	ppbv	0.01	AC-058	13-Apr-16
16040046-001	p-Diethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	13-Apr-16
16040046-001	p-Ethyltoluene	K, T, U	< 0.09	ppbv	0.09	AC-058	13-Apr-16
16040046-001	Styrene	K, T, U	< 0.05	ppbv	0.05	AC-058	13-Apr-16
16040046-001	Tetrachloroethylene	K, T, U	< 0.05	ppbv	0.05	AC-058	13-Apr-16
16040046-001	Tetrahydrofuran	K, T, U	< 0.5	ppbv	0.5	AC-058	13-Apr-16
16040046-001	Toluene	I	0.11	ppbv	0.01	AC-058	13-Apr-16
16040046-001	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	13-Apr-16
16040046-001	trans-1,3-Dichloropropylene	K, T, U	< 0.05	ppbv	0.05	AC-058	13-Apr-16
16040046-001	trans-2-Butene	I	0.02	ppbv	0.01	AC-058	13-Apr-16
16040046-001	trans-2-Pentene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-16
16040046-001	Trichloroethylene	K, T, U	< 0.05	ppbv	0.05	AC-058	13-Apr-16

Report certified by:

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: April 22, 2016

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E-mail: EAS.Results@albertainnovates.ca
JOB #: 2833-2016-04-35-C

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/April 1, 2016	H3301	Ambient Air	01-Apr-16	19:57
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16040046	REPORT CREATED:	22-Apr-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040046-001	Vinyl acetate	K, T, U	< 0.5	ppbv	0.5	AC-058	13-Apr-16
16040046-001	Vinyl chloride	K, T, U	< 0.03	ppbv	0.03	AC-058	13-Apr-16

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/Apr 17, 2016	H3302	Ambient Air	17-Apr-16	19:50
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16040201	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040201-005	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-005	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-005	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-005	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-005	1,1-Dichloroethylene	K, T, U	< 0.05	ppbv	0.05	AC-058	28-Apr-16
16040201-005	1,2,3-Trimethylbenzene	K, T, U	< 0.06	ppbv	0.06	AC-058	28-Apr-16
16040201-005	1,2,4-Trichlorobenzene	K, T, U	< 1.0	ppbv	1.0	AC-058	28-Apr-16
16040201-005	1,2,4-Trimethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Apr-16
16040201-005	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-005	1,2-Dichlorobenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Apr-16
16040201-005	1,2-Dichloroethane	I	0.02	ppbv	0.01	AC-058	28-Apr-16
16040201-005	1,2-Dichloropropane	I	0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-005	1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-005	1,3-Butadiene	I	0.03	ppbv	0.02	AC-058	28-Apr-16
16040201-005	1,3-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	28-Apr-16
16040201-005	1,4-Dichlorobenzene	K, T, U	< 0.5	ppbv	0.5	AC-058	28-Apr-16
16040201-005	1,4-Dioxane	K, T, U	< 0.5	ppbv	0.5	AC-058	28-Apr-16
16040201-005	1-Butene	I	0.19	ppbv	0.02	AC-058	28-Apr-16
16040201-005	1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-005	1-Pentene	I	0.03	ppbv	0.01	AC-058	28-Apr-16
16040201-005	2,2,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-005	2,2-Dimethylbutane	I	0.04	ppbv	0.01	AC-058	28-Apr-16
16040201-005	2,3,4-Trimethylpentane	I	0.05	ppbv	0.01	AC-058	28-Apr-16
16040201-005	2,3-Dimethylbutane	I	0.08	ppbv	0.02	AC-058	28-Apr-16
16040201-005	2,3-Dimethylpentane	I	0.10	ppbv	0.02	AC-058	28-Apr-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/Apr 17, 2016	H3302	Ambient Air	17-Apr-16	19:50
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16040201	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040201-005	2,4-Dimethylpentane	I	0.04	ppbv	0.01	AC-058	28-Apr-16
16040201-005	2-Methylheptane	I	0.02	ppbv	0.01	AC-058	28-Apr-16
16040201-005	2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-005	2-Methylpentane	I	0.16	ppbv	0.01	AC-058	28-Apr-16
16040201-005	3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-005	3-Methylhexane	I	0.08	ppbv	0.02	AC-058	28-Apr-16
16040201-005	3-Methylpentane	I	0.08	ppbv	0.01	AC-058	28-Apr-16
16040201-005	Acetone		5.2	ppbv	0.5	AC-058	28-Apr-16
16040201-005	Acrolein	K, T, U	< 0.4	ppbv	0.4	AC-058	28-Apr-16
16040201-005	Benzene	I	0.18	ppbv	0.01	AC-058	28-Apr-16
16040201-005	Benzyl chloride	K, T, U	< 0.5	ppbv	0.5	AC-058	28-Apr-16
16040201-005	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-005	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-005	Bromomethane	K, T, U	< 0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-005	Carbon disulfide	I	0.02	ppbv	0.01	AC-058	28-Apr-16
16040201-005	Carbon tetrachloride	I	0.10	ppbv	0.01	AC-058	28-Apr-16
16040201-005	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-005	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-005	Chloroform	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-005	Chloromethane		0.77	ppbv	0.02	AC-058	28-Apr-16
16040201-005	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-005	cis-1,3-Dichloropropene	K, T, U	< 0.05	ppbv	0.05	AC-058	28-Apr-16
16040201-005	cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-005	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-005	Cyclohexane	I	0.05	ppbv	0.02	AC-058	28-Apr-16

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/Apr 17, 2016	H3302	Ambient Air	17-Apr-16	19:50
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16040201	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040201-005	Cyclopentane	I	0.03	ppbv	0.01	AC-058	28-Apr-16
16040201-005	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-005	Ethanol		2.7	ppbv	0.4	AC-058	28-Apr-16
16040201-005	Ethyl acetate	K, T, U	< 0.5	ppbv	0.5	AC-058	28-Apr-16
16040201-005	Ethylbenzene	I	0.02	ppbv	0.01	AC-058	28-Apr-16
16040201-005	Freon-11	I	0.31	ppbv	0.02	AC-058	28-Apr-16
16040201-005	Freon-113	I	0.08	ppbv	0.01	AC-058	28-Apr-16
16040201-005	Freon-114	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-005	Freon-12		0.65	ppbv	0.02	AC-058	28-Apr-16
16040201-005	Hexachloro-1,3-butadiene	K, T, U	< 0.62	ppbv	0.62	AC-058	28-Apr-16
16040201-005	Isobutane		1.35	ppbv	0.02	AC-058	28-Apr-16
16040201-005	Isopentane		0.94	ppbv	0.04	AC-058	28-Apr-16
16040201-005	Isoprene	K, T, U	< 0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-005	Isopropyl alcohol	K, T, U	< 0.5	ppbv	0.5	AC-058	28-Apr-16
16040201-005	Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-005	m,p-Xylene	I	0.06	ppbv	0.04	AC-058	28-Apr-16
16040201-005	m-Diethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	28-Apr-16
16040201-005	m-Ethyltoluene	K, T, U	< 0.10	ppbv	0.10	AC-058	28-Apr-16
16040201-005	Methyl butyl ketone	K, T, U	< 0.62	ppbv	0.62	AC-058	28-Apr-16
16040201-005	Methyl ethyl ketone		0.4	ppbv	0.4	AC-058	28-Apr-16
16040201-005	Methyl isobutyl ketone	K, T, U	< 0.5	ppbv	0.5	AC-058	28-Apr-16
16040201-005	Methyl methacrylate	K, T, U	< 0.09	ppbv	0.09	AC-058	28-Apr-16
16040201-005	Methyl tert butyl ether	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Apr-16
16040201-005	Methylcyclohexane	I	0.11	ppbv	0.01	AC-058	28-Apr-16
16040201-005	Methylcyclopentane	I	0.09	ppbv	0.02	AC-058	28-Apr-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca
JOB #: 2833-2016-04-35-C

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/Apr 17, 2016	H3302	Ambient Air	17-Apr-16	19:50
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16040201	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16040201-005	Methylene chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	28-Apr-16
16040201-005	n-Butane		1.11	ppbv	0.04	AC-058	28-Apr-16
16040201-005	n-Decane	K, T, U	< 0.07	ppbv	0.07	AC-058	28-Apr-16
16040201-005	n-Dodecane	K, T, U	< 0.5	ppbv	0.5	AC-058	28-Apr-16
16040201-005	n-Heptane	I	0.05	ppbv	0.01	AC-058	28-Apr-16
16040201-005	n-Hexane	I	0.12	ppbv	0.01	AC-058	28-Apr-16
16040201-005	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-005	n-Pentane	I	0.2	ppbv	0.1	AC-058	28-Apr-16
16040201-005	n-Propylbenzene	K, T, U	< 0.06	ppbv	0.06	AC-058	28-Apr-16
16040201-005	n-Undecane	K, T, U	< 0.6	ppbv	0.6	AC-058	28-Apr-16
16040201-005	Naphthalene	K, T, U	< 0.6	ppbv	0.6	AC-058	28-Apr-16
16040201-005	n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-005	o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-005	o-Xylene	I	0.03	ppbv	0.01	AC-058	28-Apr-16
16040201-005	p-Diethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	28-Apr-16
16040201-005	p-Ethyltoluene	K, T, U	< 0.09	ppbv	0.09	AC-058	28-Apr-16
16040201-005	Styrene	K, T, U	< 0.05	ppbv	0.05	AC-058	28-Apr-16
16040201-005	Tetrachloroethylene	K, T, U	< 0.05	ppbv	0.05	AC-058	28-Apr-16
16040201-005	Tetrahydrofuran	K, T, U	< 0.5	ppbv	0.5	AC-058	28-Apr-16
16040201-005	Toluene	I	0.13	ppbv	0.01	AC-058	28-Apr-16
16040201-005	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	28-Apr-16
16040201-005	trans-1,3-Dichloropropylene	K, T, U	< 0.05	ppbv	0.05	AC-058	28-Apr-16
16040201-005	trans-2-Butene	I	0.02	ppbv	0.01	AC-058	28-Apr-16
16040201-005	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Apr-16
16040201-005	Trichloroethylene	K, T, U	< 0.05	ppbv	0.05	AC-058	28-Apr-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/Apr 17, 2016	H3302	Ambient Air	17-Apr-16	19:50
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16040201	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
16040201-005	Vinyl acetate	K, T, U	< 0.5 ppbv	0.5	AC-058	28-Apr-16
16040201-005	Vinyl chloride	K, T, U	< 0.02 ppbv	0.02	AC-058	28-Apr-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/Apr 24, 2016	S5651	Ambient Air	24-Apr-16	0:15
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16050011	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050011-005	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-003	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-003	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-005	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-003	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-005	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-003	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-005	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-003	1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	05-May-16
16050011-005	1,1-Dichloroethylene	K, T, U	< 0.05	ppbv	0.05	AC-058	05-May-16
16050011-005	1,2,3-Trimethylbenzene	K, T, U	< 0.06	ppbv	0.06	AC-058	05-May-16
16050011-003	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	05-May-16
16050011-005	1,2,4-Trichlorobenzene	K, T, U	< 0.9	ppbv	0.9	AC-058	05-May-16
16050011-003	1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	05-May-16
16050011-003	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	05-May-16
16050011-005	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	05-May-16
16050011-003	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-005	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-003	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	05-May-16
16050011-005	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	05-May-16
16050011-003	1,2-Dichloroethane	I	0.02	ppbv	0.01	AC-058	05-May-16
16050011-005	1,2-Dichloroethane	I	0.02	ppbv	0.01	AC-058	05-May-16
16050011-003	1,2-Dichloropropane	I	0.01	ppbv	0.01	AC-058	05-May-16
16050011-005	1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-003	1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/Apr 24, 2016	S5651	Ambient Air	24-Apr-16	0:15
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16050011	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050011-005	1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-003	1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-005	1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-003	1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	05-May-16
16050011-005	1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	05-May-16
16050011-003	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	05-May-16
16050011-005	1,4-Dichlorobenzene	K, T, U	< 0.5	ppbv	0.5	AC-058	05-May-16
16050011-003	1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	05-May-16
16050011-005	1,4-Dioxane	K, T, U	< 0.5	ppbv	0.5	AC-058	05-May-16
16050011-005	1-Butene	I	0.09	ppbv	0.02	AC-058	05-May-16
16050011-003	1-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-005	1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-003	1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-005	1-Pentene	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-003	1-Pentene	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-005	2,2,4-Trimethylpentane	I	0.03	ppbv	0.01	AC-058	05-May-16
16050011-003	2,2,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-005	2,2-Dimethylbutane	I	0.02	ppbv	0.01	AC-058	05-May-16
16050011-003	2,2-Dimethylbutane	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-005	2,3,4-Trimethylpentane	I	0.02	ppbv	0.01	AC-058	05-May-16
16050011-003	2,3,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-005	2,3-Dimethylbutane	I	0.05	ppbv	0.02	AC-058	05-May-16
16050011-003	2,3-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-003	2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-005	2,3-Dimethylpentane	I	0.06	ppbv	0.02	AC-058	05-May-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/Apr 24, 2016	S5651	Ambient Air	24-Apr-16	0:15
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16050011	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050011-005	Cyclopentane	I	0.01	ppbv	0.01	AC-058	05-May-16
16050011-003	Cyclopentane	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-003	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-005	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-005	Ethanol		0.6	ppbv	0.3	AC-058	05-May-16
16050011-003	Ethanol		0.4	ppbv	0.3	AC-058	05-May-16
16050011-005	Ethyl acetate	K, T, U	< 0.5	ppbv	0.5	AC-058	05-May-16
16050011-003	Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	05-May-16
16050011-005	Ethylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-003	Ethylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-005	Freon-11		0.37	ppbv	0.02	AC-058	05-May-16
16050011-003	Freon-11		0.39	ppbv	0.02	AC-058	05-May-16
16050011-005	Freon-113	I	0.09	ppbv	0.01	AC-058	05-May-16
16050011-003	Freon-113	I	0.10	ppbv	0.01	AC-058	05-May-16
16050011-005	Freon-114	I	0.03	ppbv	0.02	AC-058	05-May-16
16050011-003	Freon-114	I	0.03	ppbv	0.02	AC-058	05-May-16
16050011-005	Freon-12		0.85	ppbv	0.02	AC-058	05-May-16
16050011-003	Freon-12		0.95	ppbv	0.02	AC-058	05-May-16
16050011-005	Hexachloro-1,3-butadiene	K, T, U	< 0.58	ppbv	0.58	AC-058	05-May-16
16050011-003	Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.50	AC-058	05-May-16
16050011-005	Isobutane		1.20	ppbv	0.02	AC-058	05-May-16
16050011-003	Isobutane		0.35	ppbv	0.02	AC-058	05-May-16
16050011-005	Isopentane		0.42	ppbv	0.03	AC-058	05-May-16
16050011-003	Isopentane	I	0.19	ppbv	0.03	AC-058	05-May-16
16050011-005	Isoprene	I	0.04	ppbv	0.01	AC-058	05-May-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
LICA/VOC/ELK/Apr 24, 2016	S5651	Ambient Air	24-Apr-16	0:15
DESCRIPTION:	Elk Point Airport			
REPORT NUMBER:	16050011	REPORT CREATED:	18-May-16	VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050011-005	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	05-May-16
16050011-003	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	05-May-16
16050011-005	n-Butane		0.55	ppbv	0.03	AC-058	05-May-16
16050011-003	n-Butane	I	0.25	ppbv	0.03	AC-058	05-May-16
16050011-005	n-Decane	K, T, U	< 0.07	ppbv	0.07	AC-058	05-May-16
16050011-003	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	05-May-16
16050011-005	n-Dodecane	K, T, U	< 0.5	ppbv	0.5	AC-058	05-May-16
16050011-003	n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	05-May-16
16050011-005	n-Heptane	I	0.02	ppbv	0.01	AC-058	05-May-16
16050011-003	n-Heptane	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-005	n-Hexane	I	0.05	ppbv	0.01	AC-058	05-May-16
16050011-003	n-Hexane	I	0.01	ppbv	0.01	AC-058	05-May-16
16050011-005	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-003	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	05-May-16
16050011-005	n-Pentane	K, T, U	< 0.1	ppbv	0.1	AC-058	05-May-16
16050011-003	n-Pentane	K, T, U	< 0.1	ppbv	0.1	AC-058	05-May-16
16050011-005	n-Propylbenzene	K, T, U	< 0.06	ppbv	0.06	AC-058	05-May-16
16050011-003	n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	05-May-16
16050011-005	n-Undecane	K, T, U	< 0.6	ppbv	0.6	AC-058	05-May-16
16050011-003	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	05-May-16
16050011-005	Naphthalene	K, T, U	< 0.6	ppbv	0.6	AC-058	05-May-16
16050011-003	Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	05-May-16
16050011-005	n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-003	n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16
16050011-005	o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	05-May-16

Report certified by: Graham Knox, Team Lead

On behalf of: PJ Pretorius, Manager, Analysis and Testing Services

Date: May 18, 2016

APPENDIX V
EXTERNAL AUDIT RESULTS

STATION AUDIT

File No. 2016 - 034A/039A

Date: 27-Apr-16

Performed by: Shea Beaton

Station

Name: Lica Portable

Location: Elk Point Airport

Facility/Zone: Lica

Operator: Maxxam

Temp: 23

Barometric Press: 710mmHg

Location

Latitude N 53 53' 28.71"

Longitude W 110 45' 50.37"

Elevation 598m

Status of Site Documentation Needs Update

Status of Network Documentation Satisfies AMD SS 4-C

Status of QAP Reviewed within last 3 yrs

Manifold Material Glass

Manifold Condition Good

Meteorological

	Observed	Audit Value
Wind Speed Direction	<u>182deg 5.8kph</u>	<u>S 5-10kph</u>
Station Temperature	<u>22.3 C</u>	<u>22.2 C</u>
Relative Humidity	<u>NA</u>	<u>NA</u>
Ambient Temperature	<u>NA</u>	<u>NA</u>
Solar Radiation	<u>NA</u>	<u>NA</u>
Precipitation	<u>NA</u>	<u>NA</u>

Remarks:



Station Performance Audit Summary

Company: Lica Facility Name: NA

Approval No.: NA Site Name: Lica Portable - Elk Point

Region: North Saskatchewan District: Lica

Parameters audited:

H ₂ S	x	SO ₂	X	NO _x	X	NH ₃		O ₃	X
CO		CH ₄	X	NonCH ₄	X	THC	X	TRS	
PM _{2.5}	X	PM ₁₀		TSP		BTEX		Wind Speed	X
Wind Dir	X	Amb. Temp		Stn. Temp	X	RH		Solar Radiation	
Rainfall		Precip		VWS		Other			
All parameters monitored as per approval: Yes No N/A NA									

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: <u> January 26, 2016 </u>		

COMMENTS: - Sample Lines not 3/4" into sample manifold, fixed on site by Alex

AUDITOR: Shea Beaton DATE: April 27, 2016



SO₂ ANALYZER AUDIT

File No. 2016 - 036A

Date: April 27, 2016

Performed by: Shea Beaton

Station

Name: Lica Portable

Location: Elk Point Airport

Facility/Zone: Lica

Operator: Maxxam

Temp. 23

Barometric Press. 712mmHg

Monitor

Make/Model: TAPI 100E Serial No: 467

Inlet flow (sccm): 620 Full Scale Range ppm: 1

Last cal. Date: April 5, 2016 Old Correction Factor: 0.997

Zero/Bkg 116.5

Span Coef 1.108

Calibrator

Calibration Method: GAS DILUTION

Make/Model: R&R MFC 201

AMU #: 1698

Cylinder #: CAL9745

SO₂ Concentration PPM: 51.0

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
3526	0.00	3526	0.0000	-0.0004		
3555	57.53	3613	0.8121	0.8120	0%	± 10%
3554	27.74	3582	0.3950	0.4037	2%	± 10%
3549	17.29	3566	0.2473	0.2516	2%	± 10%
Absolute Average Percent Difference					1%	

Linear Regression Analysis:

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

Correlation Coeff.= 0.9999

m (Slope)= 0.9997

b (Intercept as % of full scale)= 0.3270

LIMITS

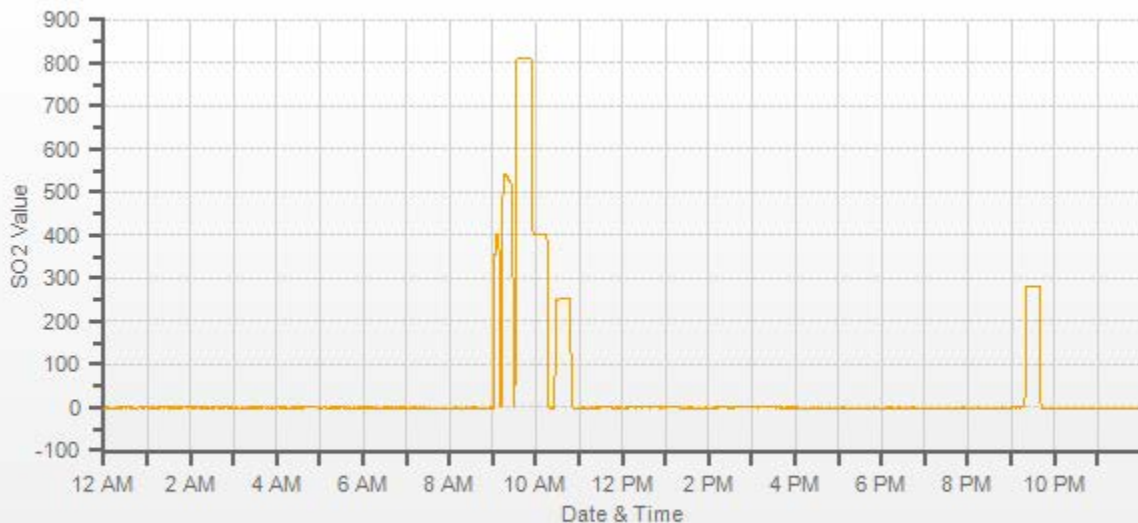
≥ **0.995**

0.90-1.10

± **3% F.S.**

Remarks:





H₂S ANALYZER AUDIT

File No. 2016 - 035A

Date: April 27, 2016

Performed by: Shea Beaton

Station

Name: Lica Portable

Location: Elk Point Airport

Facility/Zone: Lica

Operator: Maxxam

Temp. 23

Barometric Press. 712mmHg

Monitor

Make/Model: TAPI 101E Serial No: 510

Inlet flow (sccm): 561 Full Scale Range ppm: 0.1

Last cal. Date: 4-Apr-16 Old Correction Factor: 1.000

Zero/Bkg 30.1

Span Coef 1.17

Calibrator

Calibration Method: GAS DILUTION

Make/Model: R&R MFC 201

AMU #: 1698

Cylinder #: CAL013624

H₂S Concentration PPM: 10.7

Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Concentration (ppm)	% Difference	
Air	Gas	Total			vs Audit Gas	Limits
3526	0.00	3526	0.0000	0.0000		
3587	25.91	3613	0.0767	0.0840	9%	± 10%
3568	13.61	3582	0.0407	0.0447	10%	± 10%
3559	6.81	3566	0.0204	0.0221	8%	± 10%
Absolute Average Percent Difference					9%	

Linear Regression Analysis:

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

Correlation Coeff.= 1.0000

m (Slope)= 1.0963

b (Intercept as % of full scale)= -0.0720

LIMITS

≥ **0.995**

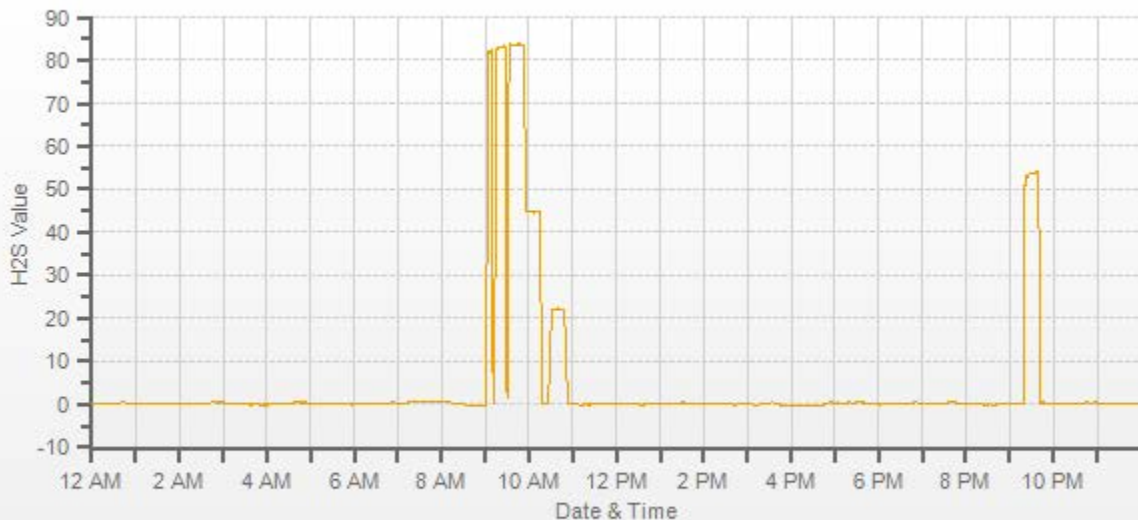
0.90-1.10

± **3% F.S.**

Remarks:

- Mid point and slope right at audit tolerance





Non Methane Analyzer Audit

File No. 2016 - 037A

Date: April 27, 2016

Performed by: Shea Beaton

Station:

Name: Lica Portable Location: Elk Point Airport Operator: Maxxam
 Facility/Zone: Lica Temp. 23 BP: 712mmHg

Monitor:

Make/Model: Thermo 55i Serial No. 1236656107
 Inlet flow (scfm): _____ CH₄ Range ppm: 20
 Last cal. Date: 5-Apr-16 Non CH₄ Range ppm: 20
 THC Range ppm: 40
 Old Correction Factor: CH₄: 0.998
 Non CH₄: 0.999
 THC: 0.998

Calibration Method:

Gas Dilution

Calibrator:

Make/Model Sabio 2010 AMU# 1749

HC cylinder # FF27932 CH₄ conc. (ppm) 500.0 CH₄ Equiv (Propane only) (ppm) 550.0
 Propane conc. (ppm) 200.0 Total CH₄ Equiv. (ppm) 1050.0

Calibrator Flows			Calc. Conc.			Indicated Concentration			% Difference vs Audit Gas		
			CH ₄ (ppm)	Non CH ₄ (ppm)	THC (ppm)	CH ₄ (ppm)	Non CH ₄ (ppm)	THC (ppm)	Limit ± 10%		
Air	Gas	Total							CH ₄	Non CH ₄	THC
2959	0.00	2959	0.00	0.00	0.00	0.00	0.00	0.00	1%	3%	2%
2955	88.71	3044	14.57	16.03	30.60	14.78	16.47	31.28	1%	3%	2%
2990	43.97	3034	7.25	7.97	15.22	7.49	8.24	15.73	3%	3%	3%
2988	24.00	3012	3.98	4.38	8.37	4.29	4.60	8.82	8%	5%	5%
Absolute Average Percent Difference									4%	4%	4%

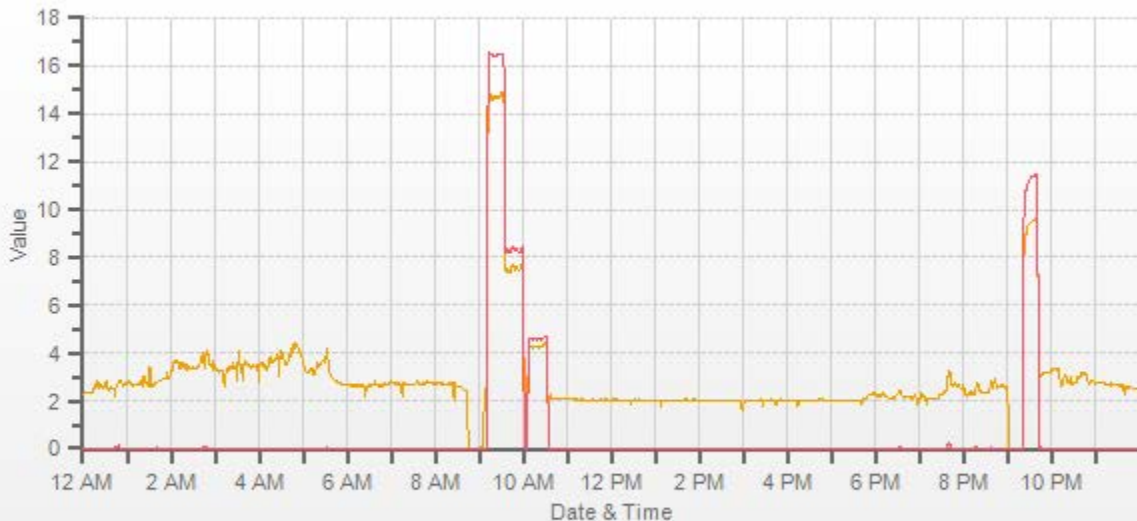
Linear Regression Analysis:

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

	<u>CH₄</u>	<u>Non CH₄</u>	<u>THC</u>	LIMITS
Correlation Coeff.=	<u>0.9998</u>	<u>1.0000</u>	<u>1.0000</u>	≥ 0.995
m (Slope)=	<u>1.0099</u>	<u>1.0260</u>	<u>1.0201</u>	0.90-1.10
b (Intercept as % of FS)=	<u>0.6279</u>	<u>0.2392</u>	<u>0.3498</u>	± 3% F.S.

Remarks:





NO-NOx-NO2 Analyzer Audit

File No. 2016 - 034A

Date: April 27, 2016 Performed by: Shea Beaton

Station:

Name: Lica Portable Location: Elk Point Airport Operator: Maxxam
Facility/Zone: Lica Temp. 23 BP: 712mmHg

Monitor:

Make/Model: TAPI 200E Serial No. 593
Inlet flow (sccm): 480 Range ppm: 1.0
Last cal. Date: 5-Apr-16 Old CF: NO: 0.997
NOx: 0.997
NO2: 1.002

NO Bkg -0.200
NOx Bkg 1.500
NO Coef 0.957
NOx Coef 0.957
NO2 Coef 1.000

Calibration Method:

Gas Dilution / GPT

Calibrator: Make/Model: Sabio 2010 AMU# 1778
NO cylinder # FF23271 NO conc. ppm 51.0 NOx conc. ppm 51.3

Calibrator Flows			Calc. Conc.		Indicated Concentration		% Difference vs Audit Gas	
			NO (ppm)	NOx (ppm)	NO (ppm)	NOx (ppm)	NO	NOx
Air	Gas	Total						
5078	0.00	5078	0.0000	0.0000	0.0001	0.0005	Limit ± 10%	
5063	82.38	5145	0.8166	0.8214	0.7777	0.7848	-5%	-5%
5048	41.45	5089	0.4154	0.4178	0.3887	0.3946	-6%	-6%
5045	20.71	5066	0.2085	0.2097	0.1950	0.2008	-7%	-4%
Absolute Average Percent Difference							6%	5%

Linear Regression Analysis:

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

	NO	NOx	NO ₂	LIMITS
Correlation Coeff.=	<u>0.9999</u>	<u>1.0000</u>	<u>1.0000</u>	≥ 0.995
m (Slope)=	<u>0.9527</u>	<u>0.9541</u>	<u>0.9838</u>	0.90-1.10
b (Intercept as % of full scale)=	<u>-0.2713</u>	<u>-0.0429</u>	<u>0.2815</u>	± 3% F.S.

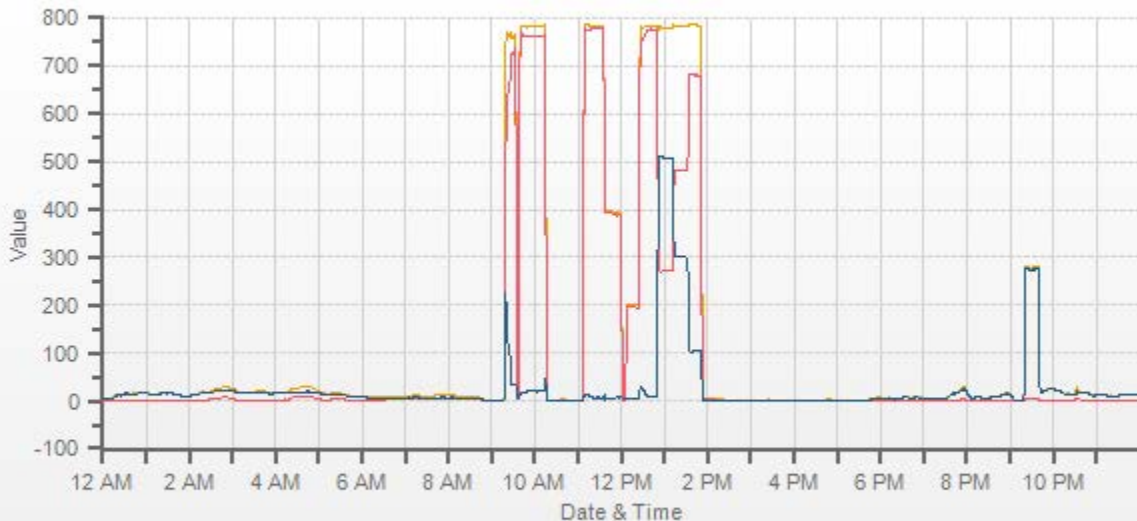
O ₃ Setting	Flow Rate	Indicated Conc. (ppm)			NO Decrease	NO ₂ Increase	% Difference vs Audit Gas	
		NO	NOx	NO ₂				
0.000	5145	0.7758	0.7841	0.0085	0.5028	0.4976	-1%	± 10%
0.950	5145	0.2730	0.7796	0.5061	0.5028	0.4976	-1%	± 10%
0.590	5145	0.4813	0.7831	0.3008	0.2945	0.2923	-1%	± 10%
0.245	5145	0.6805	0.7855	0.1052	0.0953	0.0967	1%	± 10%
Absolute Average Percent Difference							0%	

Converter Efficiency

Average Converter Efficiency 99.9%

Remarks:





O₃ ANALYZER AUDIT

File No. 2016 - 038A

Date: April 27, 2016

Performed by: Shea Beaton

Station

Name: Lica Portable

Location: Elk Point Airport

Facility/Zone: Lica

Operator: Maxxam

Temp. 23

Barometric Press. 712mmHg

Monitor

Make/Model: Thermo 49i Serial No: 1002240372

Inlet flow (sccm): 736 / 746 Full Scale Range ppm: 0.5

Last cal. Date: 4-Apr-16 Old Correction Factor: 1.000

Zero/Bkg 0.1

Span Coeff. 0.994

Calibrator

Calibration Method: Photometer

Make/Model: Thermo 49iPS AMU #: 1808

NO cylinder #: NA NO concentration ppm: NA

Ozone Setting PPB	Calibrator Flow (sccm)			Calculated Conc. (ppm)	Indicated Conc. (ppm)	% Difference	
	Air	Gas	Total			vs Audit Gas	Limits
0	NA	NA	NA	0.000	0.000		
400	NA	NA	NA	0.400	0.400	0%	± 10%
200	NA	NA	NA	0.200	0.200	0%	± 10%
100	NA	NA	NA	0.100	0.099	-1%	± 10%
Absolute Average Percent Difference						0%	

Linear Regression Analysis:

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

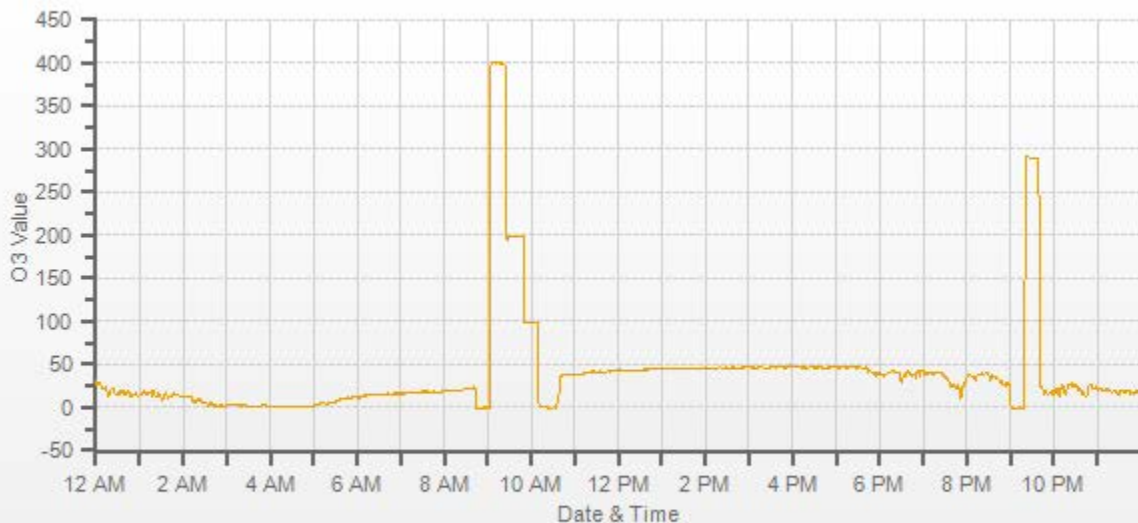
Correlation Coeff.= 1.0000
m (Slope)= 0.9991
b (Intercept as % of full scale)= -0.0800

LIMITS

≥ **0.995**
0.90-1.10
± **3% F.S.**

Remarks:





APPENDIX VI
REPORT CERTIFICATION FORM

Report Certification Form

Alberta Airshed (if applicable)	EPA Approval or Code of Practice Registration # (if applicable)
YES	NA
Company Name (if applicable)	Industrial Operation Name (if applicable)
Lakeland Industry & Community Association	Elk Point Airport Site
Name of the Representative of the Person Responsible (Last, First, Middle)	Position / Title of the Representative of the Person Responsible
Wunmi Adekanmbi	Project Manager Assistant, Customer Service, Air Services
Is an External Party Certifying the Report? (If 'Yes', fill in the fields below for the external person.)	
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Name of External Person Certifying the Report (Last, First, Middle)	Position / Title of External Person Certifying the Report
NA	NA
Company Name for the External Person Certifying the Report	Identification of Qualifications / Professional Designations of the External Person Certifying the Report
NA	NA

I certify that I have reviewed and verified the submitted report. I also certify that the report presented with this certification form is complete, accurate and representative of the monitoring results and timeframe.

Wunmi Adekanmbi

Signature of the Representative of the Person
Responsible / External Person Certifying the Report

01-June-2016





Report Issued Date (dd-mm-yyyy)

APPENDIX VII
DATA VALIDATION CERTIFICATION FORM



Validation Certificate Form

Client: <u>Lakeland Industry & Community Association</u>	Project #: <u>2833-2016-04-35- C</u>
Site: <u>Elk Point Airport Site</u>	Contact: <u>Mike Bisaga</u>

Level 0 Preliminary Verification	<u></u>	Date <u>19-May-16</u>
Level 1 Primary Validation	<u></u>	Date <u>19-May-16</u>
Level 2 Final Validation	<u></u>	Date <u>01-June-16</u>
Level 3 Independent Data Review	<u></u>	Date <u>03-June-16</u>
Post-Final Validation	<u>NA</u>	Date <u>NA</u>

Notes
The Post-Final Validation step serves to re-evaluate the data that errors or omissions are discovered and/or suspected after the initial submittal of data. This validation is performed on an annual basis.