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July 15, 2016

**RE: May 2016 Ambient Air Monitoring Monthly Reports**

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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

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

**JOB #:2833-2016-05-1- C**

**May 2016**

Prepared for:

**LAKELAND INDUSTRY & COMMUNITY ASSOCIATION  
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**Attention: MIKE BISAGA**

DATE: **June 30, 2016**

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## **SUMMARY**

In May 2016, the Air Services Group of Maxxam Analytics conducted an ambient air monitoring program on the Cold Lake South 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, with the exception of PM2.5, were within the objectives outlined in the AMD 1989, AMD 2006 and AMD 2015.

There were twenty three 1-HR and five 24-HR contraventions recorded this month for the parameter PM2.5, details are in the exceedence summary report.

All Parameters: One hour of maximum instantaneous data collected on May 20 hour 8 was invalidated as the analyzer was recovering from short power outage.

The operational uptime for all analyzers and meteorological system, with the exception of TRS were above the 90% requirement.

Total Reduced Sulphur: A total of 128 hours of data were discarded due to impaired function of the TRS converter SO2 scrubber material.

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	0.2	2.5	6	7	5.2	WNW	0.6	5	100.0
TRS (PPB)	-	-	-	-	0.1	1.0	9	4	11.9	NW	0.2	21	82.4
THC (PPM)	-	-	-	-	2.03	3.07	15	7	1.8	WNW	2.39	2	100.0
NO2 (PPB)	159	-	0	-	2.3	16.7	15	7	1.8	WNW	4.2	15	100.0
NO (PPB)	-	-	-	-	0.3	10.2	15	7	1.8	WNW	1.2	15	100.0
NOX (PPB)	-	-	-	-	2.6	26.8	15	7	1.8	WNW	5.4	15	100.0
O3 (PPB)	82	-	0	-	29.0	58.1	16	11	9.9	SSW	43.9	8	99.2
PM2.5 (UG/M3)	80	30	23	5	18.2	307.6	19	10	8	NE	87.6	19	94.1
RELATIVE HUMIDITY (%)	-	-	-	-	59.6	100	VAR	VAR	VAR	VAR	96.2	22	100.0
AMBIENT TEMPERATURE (DEG C)	-	-	-	-	13.0	30.0	3, 3	15, 16	7.3 7	SW SSW	20.3	3	100.0
VECTOR WS (KPH)	-	-	-	-	5.2	19.4	8	8	-	NW	10.7	8	100.0
VECTOR WD (DEG)	-	-	-	-	-	-	-	-	-	-	-	-	100.0

NA-NOT AVAILABLE VAR-VARIOUS

## Exceedence Summary Report

### SO<sub>2</sub> 1- Hour Exceedences

No Exceedences Recorded During the Month

### SO<sub>2</sub> 24- Hour Exceedences

No Exceedences Recorded During the Month

### NO<sub>2</sub> 1- Hour Exceedences

No Exceedences Recorded During the Month

### NO<sub>2</sub> 24- Hour Exceedences

No Exceedences Recorded During the Month

### PM<sub>2.5</sub> 1- Hour Exceedences

DATE	HOUR	READING (UG/M3)	WS (kph)	WD
May 5	8	170.7	13.1	NW
May 5	9	177.8	12.4	NNW
May 5	10	143.1	13.4	NNW
May 15	21	99	1.3	SE
May 16	21	81.5	4.8	SE
May 19	5	86	4.9	NE
May 19	6	88.5	6.9	ENE
May 19	7	142.5	8.3	NE
May 19	8	189.5	10.4	NE
May 19	9	306.1	9	NE
May 19	10	307.6	8	NE
May 19	11	232.6	9.4	NNE
May 19	12	134.5	11	NNE
May 19	17	108.5	12.4	NE
May 21	6	111.5	3.8	E
May 21	17	83	3.2	NE
May 21	18	96.5	3.2	NE
May 21	19	105	2.9	NE
May 22	1	88.5	6.1	NNE
May 22	2	81	11.7	NNE
May 22	3	116	12.1	NNE
May 22	4	99.5	9.9	NE
May 22	5	111.5	9.4	NE

### PM<sub>2.5</sub> 24- Hour Exceedences

DATE	READING (ug/m3)	WS (kph)	WD	AE REFERENCE #
May 5	35.1	7.0	N	311085
May 16	30.6	5.2	SW	311497
May 19	87.6	8.4	WSW	311684
May 21	31.3	3.7	N	311733
May 22	35.8	8.5	N	311756

### O<sub>3</sub> 1- Hour Exceedences

No Exceedences Recorded During the Month

## Passive Sampler Summary

	Sulphur Dioxide (in ppb)
Mean	0.3
Minimum	0.2
Maximum	0.9

**Note:** Access to station #11 was blocked by snow. Access papers for stations #12 and #25 were not provided . As a result, samples were not changed out in these stations.

	Hydrogen Sulphide (in ppb)
Mean	0.10
Minimum	0.05
Maximum	0.17

**Note:** Access to station #11 was blocked by snow. Access papers for stations #12 and #25 were not provided . As a result, samples were not changed out in these stations.

	Nitrogen Dioxide (in ppb)
Mean	0.9
Minimum	0.1
Maximum	2.4

**Note:** Access to station #11 was blocked by snow. Access papers for station #12 was not provided . As a result, samples were not changed out in these stations.

	Ozone (in ppb)
Mean	31.83
Minimum	26.80
Maximum	41.23

**Note:** Access to station #11 was blocked by snow. Access papers for station #12 was not provided . As a result, samples were not changed out in these stations.

### Volatile Organics (VOCs) Data Summary

Sample Collected Date	Maximum reading (PPB)	Volatile Organic Compound
May 6, 2016	4.30	Acetone
May 12, 2016	2.20	Acetone
May 18, 2016	7.10	Acetone
May 24, 2016	7.40	Acrolein
May 30, 2016	10.70	Acetone

**Note:** NA

### Polycyclic Aromatic Hydrocarbons (PAHs) Data Summary

Sample Collected Date	Maximum reading (ug)	Semi-Volatile Organic
May 6, 2016	0.14	Phenanthrene
May 12, 2016	0.11	1-Methylnaphthalene
May 18, 2016	0.35	Phenanthrene
May 24, 2016	0.15	Phenanthrene
May 30, 2016	0.19	Phenanthrene

**Note:** NA



### Partisol Sampler Summary

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Sample Collected Date	Concentration (mg)
May 6, 2016	0.102
May 12, 2016	0.031
May 18, 2016	0.155
May 24, 2016	0.067
May 30, 2016	0.091

**Note:** NA

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## 1.0 Discussion

This monthly report consists of data for parameters Sulphur Dioxide (SO<sub>2</sub>), Total Reduced Sulphur (TRS), Total Hydrocarbon (THC), Oxides of Nitrogen (NO<sub>x</sub>), Nitric Oxides (NO), Nitrogen Dioxide (NO<sub>2</sub>), Ozone (O<sub>3</sub>), Particulate Matter 2.5 (PM<sub>2.5</sub>), 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%).

### **SULPHUR DIOXIDE (SO<sub>2</sub>)**

The analyzer was working well throughout the month.

The routine monthly calibration was performed on May 2. One hour of maximum instantaneous data collected on May 20 hour 8 was invalidated as the analyzer was recovering from short power outage.

### **TOTAL REDUCED SULPHUR (TRS)**

The analyzer passed a shut down calibration before maintenance was started on April 29. During the scrubber challenge check, it was determined that impaired function of the TRS converter SO<sub>2</sub> scrubber material was the cause of the failure. The scrubber material was replaced and a successful post repair calibration was performed. The analyzer failed a shut down calibration on May 2. Troubleshooting was performed between May 2 and May 6, including performing a leak check on the analyzer and converter, renewing the SO<sub>2</sub> scrubber material, reducing the length between the analyzer and the SO<sub>2</sub> scrubber material, and cleaning the TRS converter as contamination was suspected. A successful post repair calibration and SO<sub>2</sub> scrubber challenge was performed on May 6. An as found points check and SO<sub>2</sub> scrubber challenge were performed on May 18 in order to ensure the analyzer's functionality. The analyzer passed both checks. Performance of this analyzer has been closely monitored since May 6 and observation indicates it has been operating according to AMD specifications to date. A total of 128 hours of data were discarded due to this event this month. One hour of maximum instantaneous data collected on May 20 hour 8 was invalidated as the analyzer was recovering from short power outage.

### **TOTAL HYDROCARBONS (THC)**

The analyzer was working well throughout the month.

The routine monthly calibration was performed on May 3. One hour of maximum instantaneous data collected on May 20 hour 8 was invalidated as the analyzer was recovering from short power outage.

### **NITROGEN DIOXIDE (NO<sub>2</sub>)**

The analyzer was working well throughout the month.

The routine monthly calibration was performed on May 2. One hour of maximum instantaneous data collected on May 20 hour 8 was invalidated as the analyzer was recovering from short power outage.

### **OZONE (O<sub>3</sub>)**

The routine monthly calibration was performed on May 3. The analyzer's screen was replaced on May 18 as per AEMERA requirements. A post-repair calibration was performed to ensure the analyzer's functionality and the result was within acceptance limits. One hour of maximum instantaneous data collected on May 20 hour 8 was invalidated as the analyzer was recovering from short power outage.

#### **PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM2.5)**

Two routine audits were performed this month: one was completed on May 3, and the other audit was performed on May 20. Both the inlet filter and the FDMS filter were replaced and the sample inlet head was cleaned during the audits. A Ko audit was performed during the audit on May 3.

The Teom started recording very negative data on May 23. An extra Teom audit check was performed on May 24. The Teom unit passed the audit requirements.

Data was corrected using Alberta air quality guideline. Data between 0 and  $-3 \text{ ug/m}^3$ , was corrected to 0  $\text{ug/m}^3$ . Data was below  $-3 \text{ug/m}^3$  was invalidated. Thirty two hours of data were invalidated as the data was below  $-3 \text{ug/m}^3$  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.

#### **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 6<sup>th</sup> day per the NAPS (North American Pollution Surveillance Schedule).

Samples were collected on May 6, 12, 18, 24 and 30. They were sent to the lab for analysis. Analytical results are included in this report. The values for the VOC's are reported in the unit of ppb.

### **PAH SAMPLES**

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

Samples were collected on May 6, 12, 18, 24 and 30. They were sent to the lab for analysis. Analytical results are included in this report. The values for the PAH's are reported in the unit of µg.

### **PARTISOL SAMPLES**

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

Samples were collected on May 6, 12, 18, 24 and 30. They were sent to the lab for analysis. Analytical results are included in this report. The values for the Partisol are reported in the unit of mg.

### **PASSIVE SAMPLES**

Samples were collected over the months of February and March. Samples were collected at all designated stations, except stations #11, #12 and #25. Access documents for stations #12 and #25 were not provided by client, and access to station #11 was blocked by snow. Analytical results are included in this report.

## **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, with the exception of PM2.5, were within the objectives outlined in the AMD 1989, AMD 2006 and AMD 2015.

There were twenty three 1-HR and five 24-HR contraventions recorded this month for the parameter PM2.5, details are in the exceedence summary report.

The operational uptime for all analyzers and meteorological system, with the exception of TRS, were above the 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 SO<sub>2</sub> Monitoring
- Maxxam AIR SOP-00212: Ambient O<sub>3</sub> Monitoring
- Maxxam AIR SOP-00213: Ambient NO/NO<sub>2</sub>/NO<sub>x</sub> 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 - Thermo 450i UV Fluorescent Analyzer
- Total Hydrocarbons - Thermo 450i FID Analyzer
- Oxides of Nitrogen - Thermo 42i Chemiluminescent Analyzer
- Ozone - R&P 2000H Photometric Analyzer
- Particulate Matter (PM<sub>2.5</sub>) - R&P 1405F Teom Unit
- Wind System - Met One Unit
- Relative Humidity - Met One Unit
- Ambient Temperature - Met One Unit
- Datalogger - ESC 8832
- Partisol - R&P 2000H 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

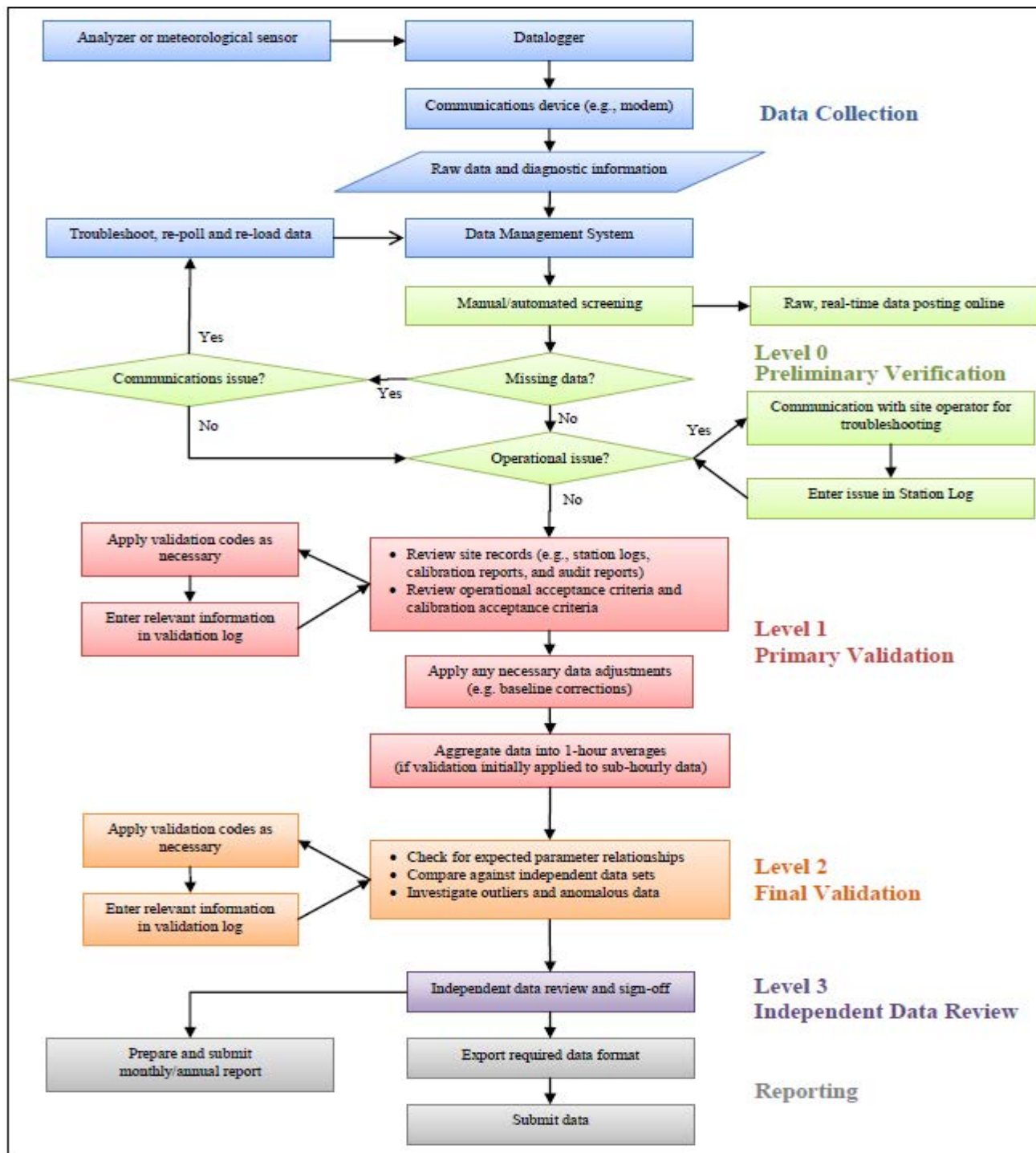
The purpose of Level 2 validation is to verify that there are no inconsistencies among related data, or among regional data measured at nearby sites.

#### 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.



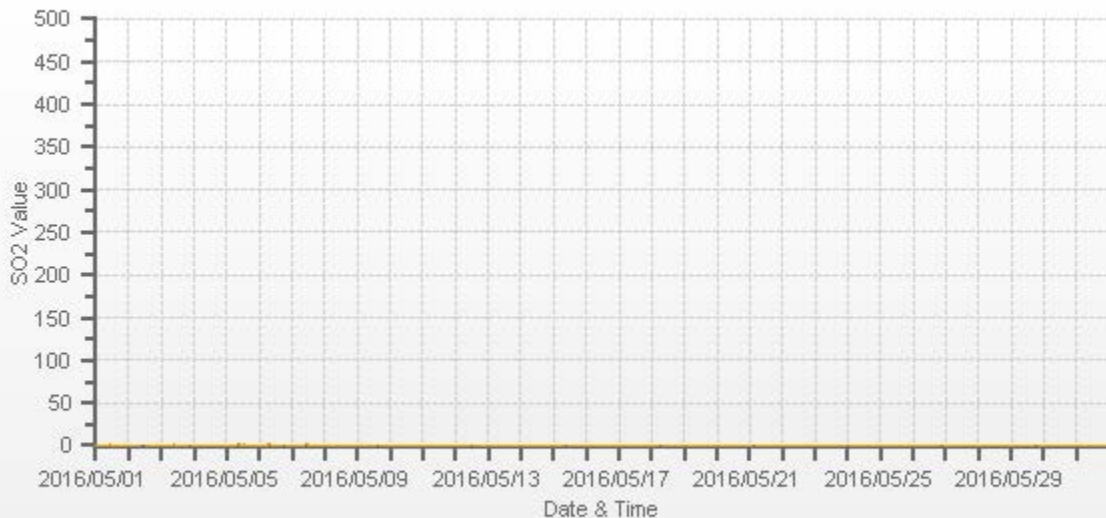
Source: AMD Chapter 6: Ambient Data Quality for Verification and Validation of Continuous Ambient Air Quality Data; Figure 1 Data Collection and Management Process Flow Chart

***APPENDIX I***  
***CONTINUOUS MONITORING DATA RESULTS***

***SULPHUR DIOXIDE***



SO2[ppb] Station: LICA COLD LAKE SOUTH Monthly: 05/2016 Type: AVG 1 Hr. [1 Hr.]



— SO2[ppb]



SULPHUR DIOXIDE MAX instantaneous maximum 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	0.9	0.6	0.6	0.6	0.6	0.4	0.7	1.5	1.4	1.8	2.3	1.0	1.7	1.2	0.6	S	0.6	0.6	0.6	0.6	0.6	0.6	0.4	0.6	0.4	0.4	2.3	0.9	24	
2	0.4	0.6	0.6	0.7	0.7	0.6	0.6	0.7	0.9	C	C	C	S	S	0.6	0.7	0.6	0.6	0.6	0.6	0.6	0.6	S	0.7	0.4	0.9	0.6	24		
3	0.6	0.4	0.6	0.6	0.6	0.6	0.7	0.6	0.9	2.0	3.5	2.3	0.7	0.9	0.7	0.7	1.0	0.7	0.7	0.7	0.7	0.6	S	0.7	0.6	0.4	3.5	0.9	24	
4	0.6	0.6	0.4	0.4	0.4	0.6	0.7	0.6	0.7	1.0	0.9	1.0	0.9	0.6	0.6	0.7	0.6	0.7	0.6	0.6	S	0.6	0.6	0.6	0.4	1.0	0.7	24		
5	0.6	0.6	0.7	0.8	0.7	0.9	0.9	1.5	2.0	2.5	1.2	1.7	1.8	1.2	1.1	1.2	1.2	0.9	0.9	S	0.6	0.6	0.6	0.6	0.6	0.6	2.5	1.1	24	
6	0.6	0.5	0.6	0.6	0.6	2.1	3.2	3.0	1.7	0.7	0.6	0.6	0.6	0.4	0.6	0.3	0.6	S	0.5	0.8	0.6	0.7	0.6	0.6	0.3	3.2	0.9	24		
7	0.6	0.6	0.5	0.6	0.6	0.6	0.6	0.6	0.7	1.5	2.2	2.3	1.5	1.2	0.9	0.9	0.7	S	0.9	0.7	0.9	1.1	0.9	0.6	0.5	2.3	0.9	24		
8	0.6	0.6	0.6	0.6	0.6	0.6	0.9	0.6	0.5	0.6	0.3	0.4	0.5	0.5	0.5	0.6	S	0.6	0.6	0.6	0.6	0.6	0.5	0.6	0.3	0.9	0.6	24		
9	0.5	0.5	0.6	0.7	0.6	0.9	0.8	1.1	0.7	1.0	0.6	0.7	0.6	0.9	0.7	S	0.9	0.6	0.6	0.6	0.6	0.6	1.2	0.7	0.6	0.5	1.2	0.7	24	
10	0.6	0.6	0.6	0.6	0.7	0.6	0.7	0.6	0.6	0.4	0.6	0.6	0.6	0.4	S	0.5	0.5	0.6	0.5	0.6	0.4	0.4	0.6	0.5	0.4	0.7	0.6	24		
11	0.4	0.4	0.6	0.6	0.6	0.4	0.4	0.6	0.4	0.4	0.6	0.4	0.4	S	0.9	0.7	0.9	0.6	0.6	0.6	0.6	0.6	0.5	0.4	0.4	0.6	0.4	1.1	0.6	24
12	0.6	0.4	0.4	0.4	0.4	0.6	0.6	0.4	0.6	0.4	0.6	0.6	S	0.6	0.4	0.6	0.4	0.4	0.3	0.4	0.3	0.4	0.4	0.6	0.4	0.3	0.6	0.5	24	
13	0.4	0.4	0.4	0.4	0.6	0.6	0.6	0.6	0.7	0.9	1.0	S	1.2	1.1	1.1	0.8	0.8	0.9	0.9	0.7	0.7	0.4	0.6	0.6	0.4	1.2	0.7	24		
14	0.4	0.4	0.4	0.6	0.6	0.4	0.4	0.7	1.1	S	0.9	0.7	0.9	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.4	0.4	0.6	0.4	1.1	0.6	24	
15	0.6	0.5	0.4	0.4	0.4	0.6	0.6	0.9	1.2	S	1.4	1.3	1.0	1.1	0.9	0.6	0.6	0.6	0.6	0.6	0.7	0.6	0.6	0.6	0.6	0.4	1.4	0.7	24	
16	0.4	0.6	0.5	0.5	0.4	0.3	0.6	0.6	S	1.1	1.1	0.7	0.7	1.2	0.7	0.6	0.6	0.9	0.6	0.4	0.6	0.4	0.4	0.6	0.6	0.3	1.2	0.6	24	
17	0.5	0.5	0.5	0.6	0.5	0.6	0.6	S	0.8	0.8	0.6	0.7	0.8	0.6	0.9	1.3	0.9	0.7	0.5	0.5	0.6	0.5	0.5	0.5	0.5	0.5	1.3	0.7	24	
18	0.6	0.5	0.5	0.5	0.5	0.5	S	0.6	1.1	1.3	1.1	0.6	0.6	0.7	0.9	0.6	0.9	0.7	0.9	0.9	0.6	0.7	0.7	0.7	0.5	0.5	1.3	0.7	24	
19	0.5	0.5	0.5	0.5	0.6	S	0.6	0.9	0.9	1.0	1.0	1.0	0.9	0.6	0.6	0.4	0.6	0.6	0.6	0.7	0.6	0.7	0.6	0.7	0.4	1.0	0.7	24		
20	0.5	0.5	0.5	0.6	S	0.6	0.4	0.4	R	0.6	0.7	0.7	0.9	0.9	0.7	0.6	0.7	0.6	0.7	0.6	0.6	0.7	0.6	0.6	0.4	0.9	0.6	23		
21	0.6	0.4	0.7	S	0.6	0.4	0.7	0.6	0.7	0.7	0.9	0.6	0.7	0.4	0.6	0.4	0.6	0.6	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.9	0.5	24	
22	0.4	0.6	S	0.6	0.4	0.4	0.4	0.4	0.4	0.4	0.6	0.4	0.4	0.4	0.4	0.6	0.6	0.4	0.4	0.6	0.4	0.4	0.4	0.4	0.4	0.4	0.6	0.5	24	
23	0.4	S	0.6	0.4	0.5	0.6	0.4	0.4	0.4	0.7	0.4	0.4	0.6	0.4	0.6	0.6	0.6	0.4	0.4	0.4	0.4	0.4	0.6	0.5	0.3	0.3	0.7	0.5	24	
24	S	0.6	0.5	0.5	0.6	0.7	0.6	0.6	0.6	0.6	0.4	0.4	0.4	0.6	0.6	0.6	0.4	0.4	0.6	0.6	0.6	0.4	0.4	S	0.4	0.7	0.5	24		
25	0.6	0.7	0.6	0.6	0.6	0.4	0.4	0.6	0.4	0.6	0.6	0.5	0.5	0.6	0.6	0.6	0.4	0.4	0.6	0.4	0.4	0.4	S	0.6	0.4	0.7	0.5	24		
26	0.4	0.4	0.6	0.6	0.4	0.6	0.4	0.7	0.9	0.9	0.6	0.6	0.5	0.6	0.4	0.6	0.6	0.6	0.6	0.6	0.6	S	0.6	0.4	0.4	0.9	0.6	24		
27	0.7	0.4	0.6	0.6	0.6	0.6	0.7	0.6	0.4	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	S	0.4	0.6	0.6	0.4	0.7	0.6	24		
28	0.7	0.4	0.4	0.4	0.6	0.4	0.6	0.3	0.6	0.7	0.4	0.6	0.4	0.4	0.4	0.6	0.4	0.4	S	0.6	0.6	0.4	0.3	0.3	0.7	0.5	24			
29	0.4	0.4	0.6	0.4	0.4	0.6	0.6	0.4	0.6	0.4	0.6	0.4	0.6	0.4	0.3	0.4	0.4	S	0.4	0.4	0.4	0.6	0.4	0.3	0.6	0.5	24			
30	0.4	0.4	0.6	0.6	0.4	0.4	0.4	0.4	0.6	0.4	0.6	0.4	0.6	0.4	0.9	0.7	0.6	S	0.6	0.7	0.9	0.9	0.9	0.6	0.4	0.9	0.6	24		
31	0.6	0.6	0.4	0.6	0.7	0.7	0.6	0.6	0.7	0.5	0.7	0.7	0.6	0.6	0.6	S	0.7	0.7	0.6	0.6	0.6	0.4	0.4	0.4	0.4	0.7	0.6	24		
HOURLY MAX	0.9	0.7	0.7	0.8	0.7	0.9	2.1	3.2	3.0	2.5	3.5	2.3	1.8	1.2	1.1	1.3	1.2	0.9	0.9	0.9	0.9	1.2	0.9	0.7						
HOURLY AVG	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.8	0.9	0.9	0.8	0.8	0.7	0.6	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5					

STATUS FLAG CODES

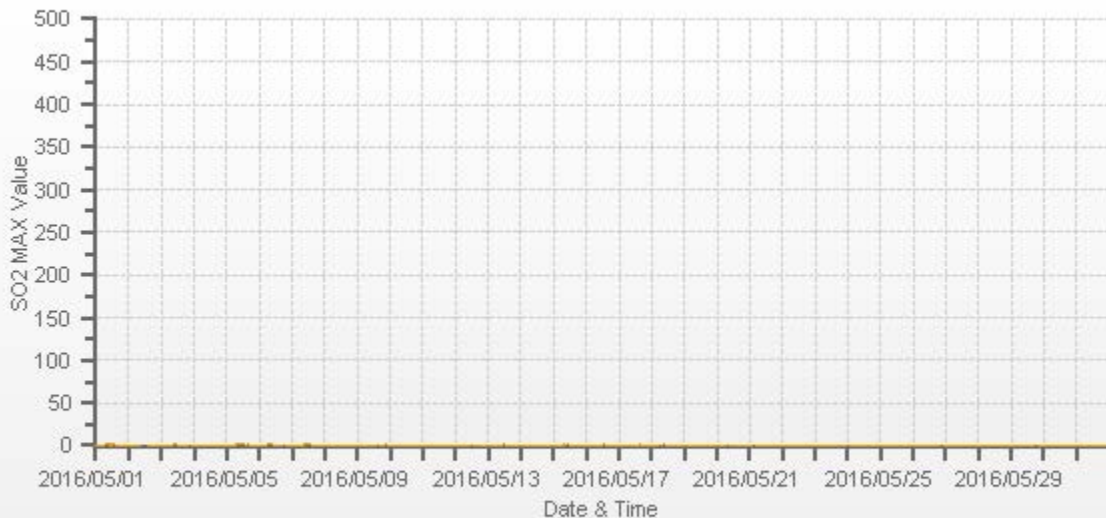
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	706					
MAXIMUM INSTANTANEOUS VALUE:	3.5	PPB	@ HOUR(S)	10	ON DAY(S)	3
				VAR-VARIOUS		
IZS CALIBRATION TIME:	34	HRS	OPERATIONAL TIME:	743 HRS		
MONTHLY CALIBRATION TIME:	3	HRS				
STANDARD DEVIATION:	0.32					



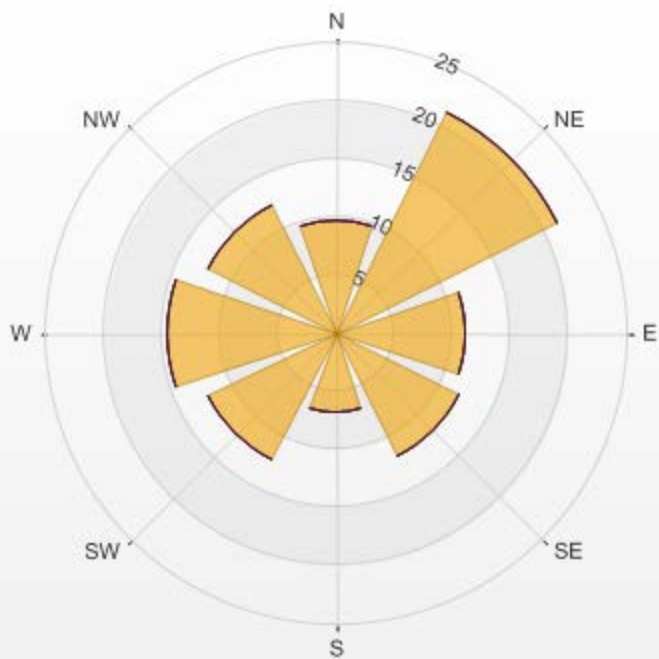
SO2 MAX[ppb] Station: LICA COLD LAKE SOUTH Monthly: 05/2016 Type: AVG 1 Hr. [1 Hr.]



— SO2 MAX[ppb]

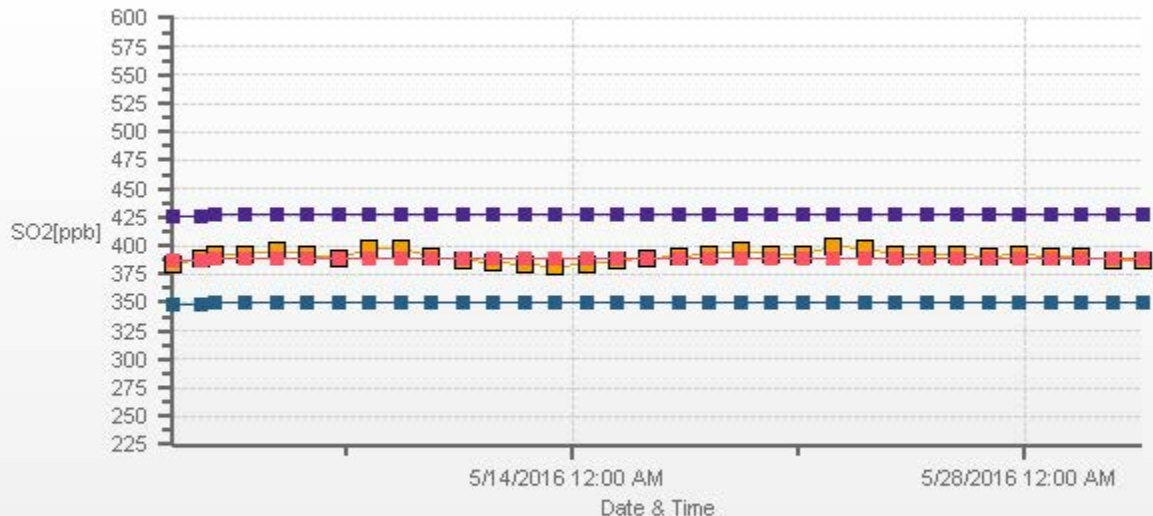
Wind: LICA COLD LAKE SOUTH Monitor: SO2 [ppb] Monthly: 05/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 95.30% Calm Avg: 0.00

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	9.73	0	0	0	0	0	9.73
NE	21.3	0	0	0	0	0	21.3
E	11.14	0	0	0	0	0	11.14
SE	11.85	0	0	0	0	0	11.85
S	6.91	0	0	0	0	0	6.91
SW	12.27	0	0	0	0	0	12.27
W	14.53	0	0	0	0	0	14.53
NW	12.27	0	0	0	0	0	12.27
Summary	100	0	0	0	0	0	100



% Icon Classes (ppb)	0	20.0-60.0	0	60.0-110.0	0	110.0-170.0	0	170.0-340.0	0	>340.0
100	0.0-20.0									

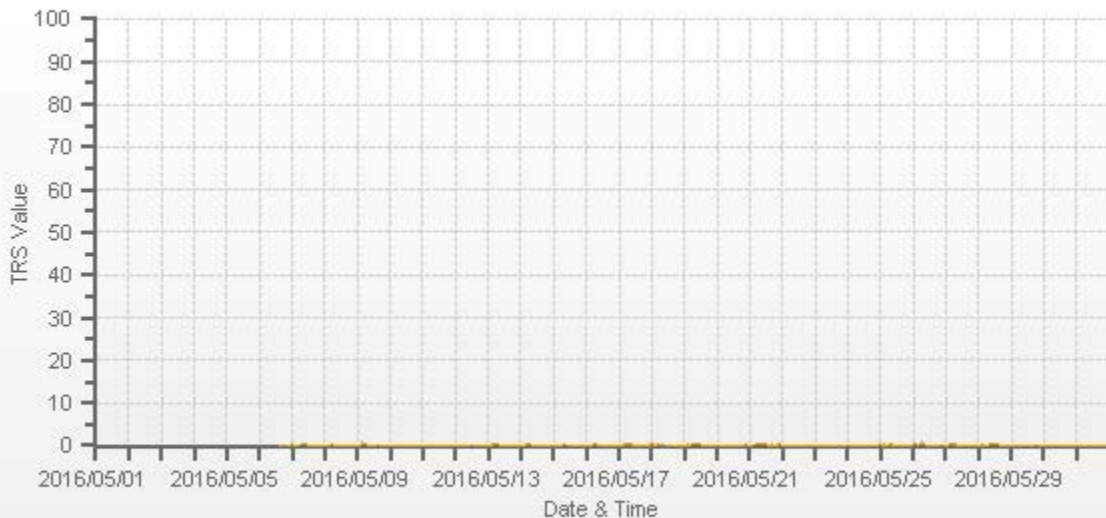
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***TOTAL REDUCED SULPHUR***



TRS[ppb] Station: LICA COLD LAKE SOUTH Monthly: 05/2016 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	DAILY	24-HOUR			
DAY	MIN.	MAX.	AVG.	RDGS.																											
1	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				0	
2	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				0
3	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				0
4	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				0
5	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				0
6	X	X	X	X	X	X	X	X	X	C	C	C	C	C	C	C	0.2	0.4	0.4	S	0.3	0.5	0.3	0.4	0.6	0.6	0.2	0.6	0.4	16	
7	0.6	0.4	0.5	0.5	0.6	0.5	S1	S1	0.6	0.7	0.8	0.3	0.5	0.5	0.3	0.4	0.3	S	0.4	0.4	0.4	0.4	0.4	0.6	0.4	0.3	0.8	0.5	0.5	22	
8	0.5	0.5	0.5	0.3	0.4	0.6	0.5	0.3	0.2	0.2	0.4	0.2	0.2	0.3	0.2	0.2	S	0.2	0.2	0.2	0.2	0.2	0.4	0.3	0.4	0.2	0.6	0.3	0.4	24	
9	0.3	0.4	0.5	1.1	1.2	1.0	0.6	0.5	0.5	0.4	0.5	0.3	0.3	0.2	0.3	S	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.4	0.2	1.2	0.5	24	
10	0.3	0.5	0.3	0.3	0.2	0.3	0.4	0.4	0.3	0.4	0.3	0.2	0.3	0.3	S	0.3	0.2	0.4	0.3	0.3	0.3	0.5	0.4	0.4	0.3	0.2	0.5	0.3	0.4	24	
11	0.4	0.3	0.4	0.4	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.2	0.3	S	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.4	0.3	0.4	24	
12	0.3	0.4	0.4	0.5	0.3	0.4	0.5	0.3	0.2	0.3	0.2	0.3	S	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.2	0.4	0.3	0.3	0.3	0.2	0.5	0.3	0.4	24	
13	0.3	0.4	0.5	0.6	1.0	1.0	0.8	0.5	0.5	0.3	0.3	S	0.4	0.3	0.3	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.3	0.3	1.0	0.5	0.4	24	
14	0.4	0.5	0.5	0.5	0.5	0.5	0.7	0.6	0.5	0.4	S	0.3	0.3	0.5	0.4	0.2	0.3	0.3	0.3	0.3	0.5	0.4	0.4	0.4	0.3	0.2	0.7	0.4	0.4	24	
15	0.3	0.5	0.4	0.4	0.3	0.4	0.4	0.7	0.6	S	0.4	0.4	0.5	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.2	0.4	0.4	0.6	0.2	0.7	0.4	0.4	24	
16	0.4	0.3	0.4	0.4	0.4	0.5	0.6	0.5	S	0.4	0.4	0.4	0.4	0.2	0.3	0.3	0.3	0.3	0.4	0.3	0.4	0.3	0.2	0.4	0.4	0.5	0.2	0.6	0.4	24	
17	0.5	0.5	0.5	0.5	0.8	0.7	0.6	S	0.5	0.5	0.6	0.4	0.6	0.5	0.4	0.6	0.4	0.3	0.4	0.4	0.4	0.4	0.5	0.6	0.3	0.8	0.5	0.4	24		
18	0.6	0.5	0.7	0.5	0.7	0.6	S	0.5	0.5	C1	C1	0.5	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.3	0.4	0.4	0.5	0.6	0.3	0.7	0.5	0.4	22		
19	0.4	0.4	0.6	0.5	0.4	S	0.5	0.6	0.7	0.9	0.8	0.5	0.5	0.5	0.5	0.3	0.4	0.3	0.4	0.5	0.2	0.4	0.3	0.4	0.2	0.9	0.5	0.4	24		
20	0.4	0.3	0.3	0.4	S	0.3	0.3	0.3	R	0.3	0.3	0.4	0.4	0.5	0.4	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.4	0.3	0.5	0.4	0.4	23	
21	0.4	0.4	0.4	S	0.6	0.4	0.5	0.5	0.5	0.6	0.5	0.5	0.5	0.5	0.4	0.6	0.7	0.5	0.4	0.4	0.4	0.5	0.5	0.6	0.5	0.4	0.7	0.5	0.4	24	
22	0.5	0.4	S	0.4	0.4	0.3	0.3	0.3	0.2	0.3	0.4	0.3	0.4	0.5	0.4	0.3	0.4	0.5	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.2	0.5	0.4	0.4	24	
23	0.3	S	0.4	0.4	0.4	0.3	0.3	0.3	0.5	0.5	0.2	0.3	0.2	0.3	0.3	0.3	0.2	0.4	0.4	0.2	0.3	0.4	0.4	0.5	0.2	0.5	0.3	0.4	24		
24	S	0.5	0.4	0.3	0.4	0.3	0.3	0.5	0.5	0.4	0.3	0.5	0.4	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.2	0.4	S	0.2	0.5	0.4	24		
25	0.5	0.5	0.7	0.3	0.3	0.4	0.4	0.5	0.7	0.4	0.3	0.4	0.3	0.4	0.4	0.3	0.3	0.4	0.3	0.5	0.5	0.3	S	0.4	0.3	0.7	0.4	0.4	24		
26	0.6	0.6	0.6	0.5	0.5	0.6	1.3	1.0	0.5	0.6	0.4	0.4	0.4	0.3	0.3	0.4	0.5	0.4	0.3	0.3	0.3	S	0.3	0.4	0.3	1.3	0.5	0.4	24		
27	0.3	0.5	0.5	0.5	0.7	0.5	0.6	0.6	0.5	0.4	0.4	0.6	0.5	0.3	0.4	0.4	0.4	0.3	0.4	0.5	S	0.5	0.4	0.4	0.3	0.7	0.5	0.4	24		
28	0.5	0.5	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.4	0.4	0.4	S	0.4	0.3	0.4	0.6	0.3	0.6	0.5	0.4	24		
HOURLY MAX	0.6	0.6	0.7	1.1	1.2	1.0	1.3	1.0	0.7	0.9	0.8	0.6	0.6	0.6	0.5	0.6	0.7	0.5	0.4	0.5	0.5	0.5	0.6	0.6							
HOURLY AVG	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4		

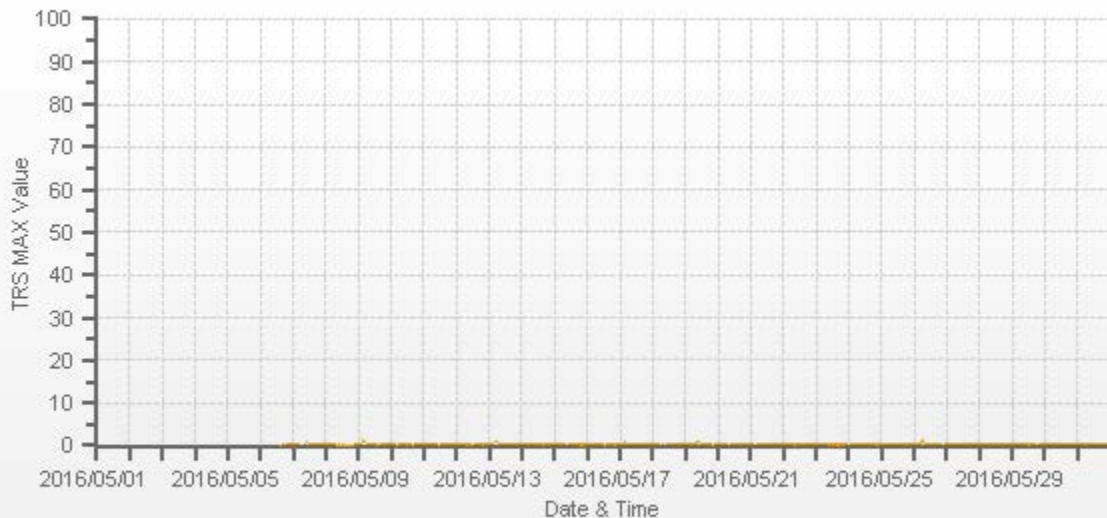
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	577
MAXIMUM INSTANTANEOUS VALUE:	1.3 PPB @ HOUR(S) 6 ON DAY(S) 26
	VAR-VARIOUS
IZS CALIBRATION TIME:	27 HRS
MONTHLY CALIBRATION TIME:	7 HRS
OPERATIONAL TIME:	611 HRS
STANDARD DEVIATION:	0.14



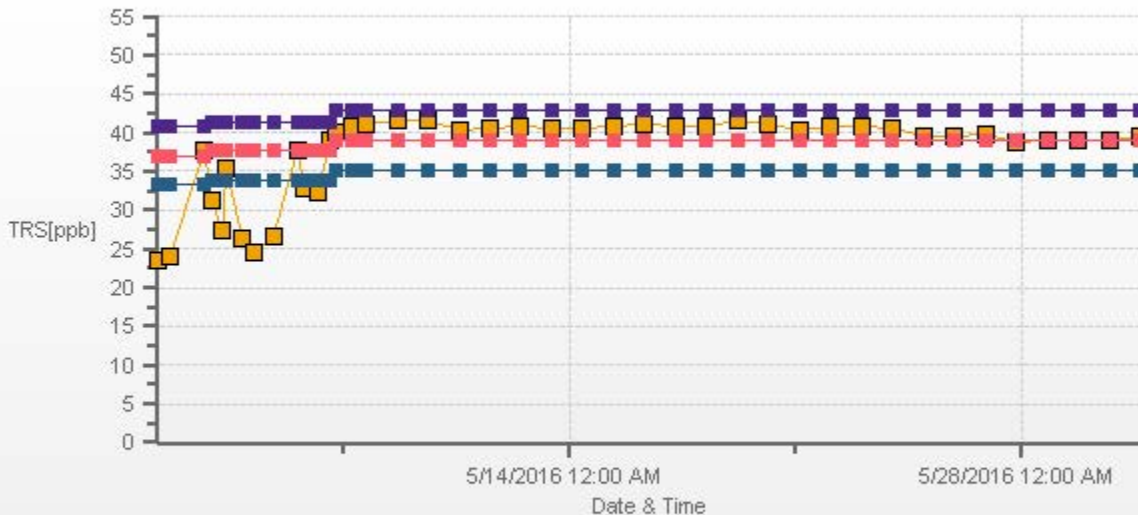


— TRS MAX[ppb]

Wind: LICA COLD LAKE SOUTH Monitor: TRS [ppb] Monthly: 05/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 77.82% Calm Avg: 0.00

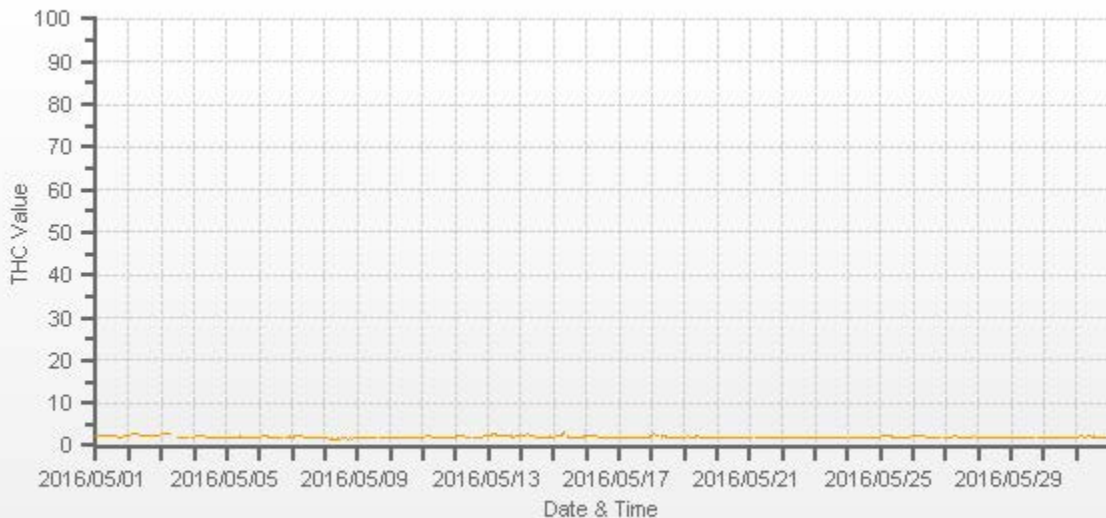
Direction	0.0-3.0	3.0-10.0	10.0-50.0	>50.0	Total
N	10.36	0	0	0	10.36
NE	25.56	0	0	0	25.56
E	11.74	0	0	0	11.74
SE	13.3	0	0	0	13.3
S	6.91	0	0	0	6.91
SW	9.33	0	0	0	9.33
W	11.74	0	0	0	11.74
NW	11.05	0	0	0	11.05
Summary	100	0	0	0	100





***TOTAL HYDROCARBON***



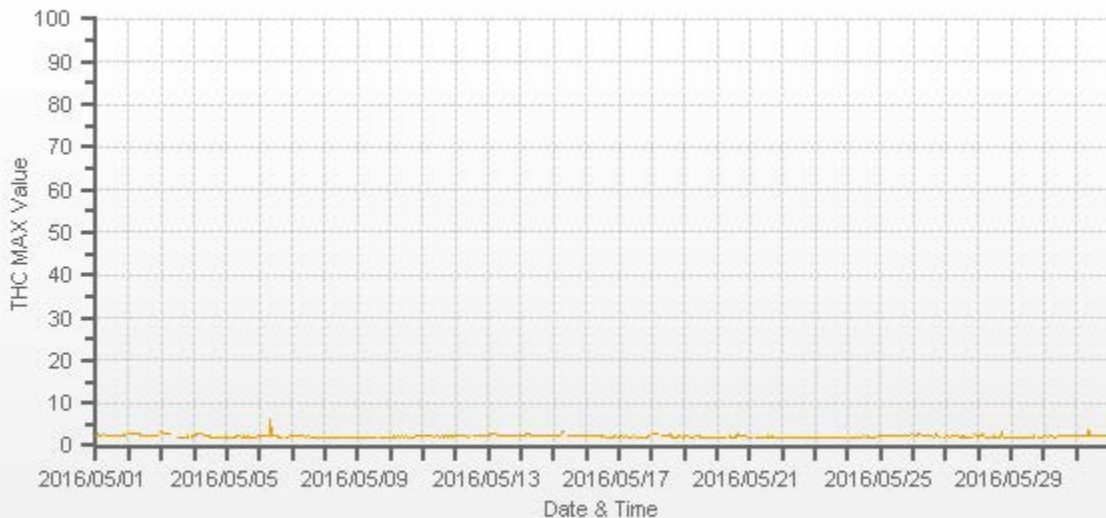


— THC[ppm]





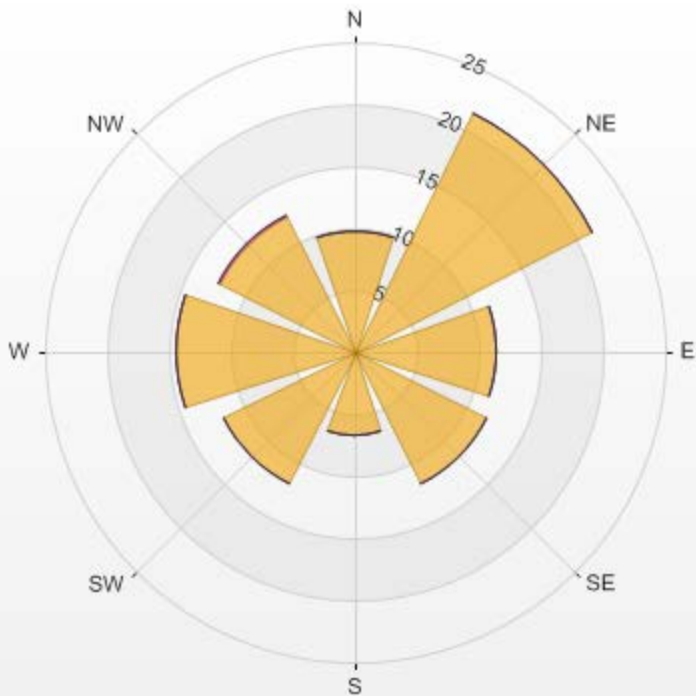
THC MAX[ppm] Station: LICA COLD LAKE SOUTH Monthly: 05/2016 Type: AVG 1 Hr. [1 Hr.]

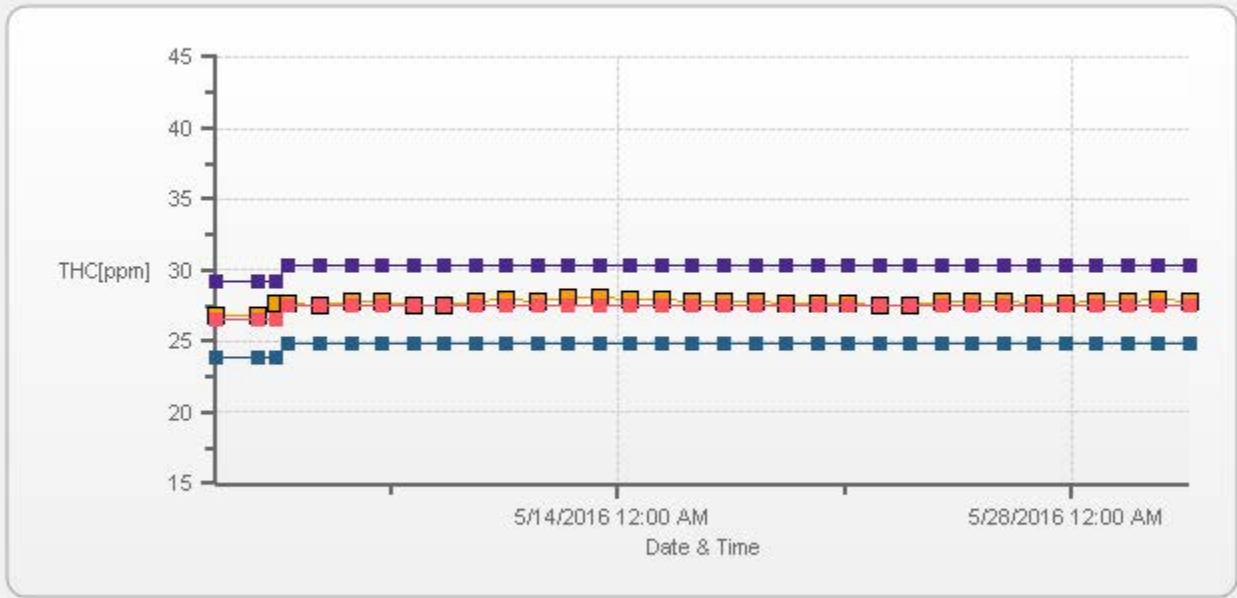


— THC MAX[ppm]

Wind: LICA COLD LAKE SOUTH Monitor: THC [ppm] Monthly: 05/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 95.03% Calm Avg: 0.00

Direction	0.0-3.0	3.0-10.0	10.0-50.0	>50.0	Total
N	9.76	0	0	0	9.76
NE	21.5	0	0	0	21.5
E	11.46	0	0	0	11.46
SE	11.88	0	0	0	11.88
S	6.79	0	0	0	6.79
SW	11.88	0	0	0	11.88
W	14.43	0	0	0	14.43
NW	12.16	0.14	0	0	12.3
Summary	100	0.14	0	0	100





***OXIDES OF NITROGEN***

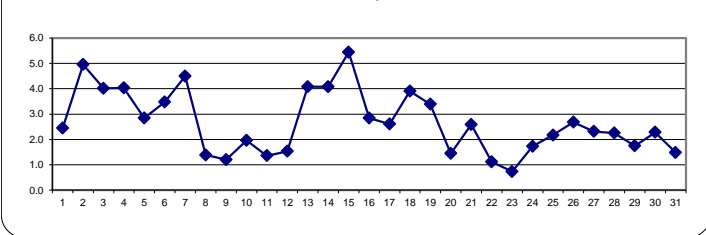
**OXIDES OF NITROGEN (NOx) hourly averages in ppb**

<b>MST</b>		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	2.9	2.8	2.8	3.3	3.5	4.2	3.6	3.8	3.5	2.9	1.2	1.9	1.4	1.1	S	1.0	0.7	0.8	1.3	2.7	3.2	2.3	2.4	0.7	4.2	2.4	24	
2	3.0	3.8	3.6	3.6	5.2	5.9	8.8	15.5	11.2	4.7	C	C	C	C	C	2.4	1.1	0.9	0.9	2.5	5.4	3.4	S	7.3	0.9	15.5	5.0	24	
3	9.9	8.0	6.7	4.8	5.4	7.6	13.7	5.6	3.4	3.0	2.7	1.5	1.1	1.5	1.2	1.0	1.3	1.0	1.3	1.8	3.3	S	3.2	3.3	1.0	13.7	4.0	24	
4	3.7	5.2	4.5	6.0	6.5	10.2	14.4	3.7	3.2	3.5	3.1	2.8	1.7	1.1	1.0	1.1	1.1	0.9	0.9	2.7	S	5.1	5.8	4.5	0.9	14.4	4.0	24	
5	3.0	1.0	0.8	1.0	2.1	1.3	1.4	3.5	6.6	5.9	3.4	3.7	4.9	3.8	3.0	3.4	2.0	1.7	1.5	S	2.8	2.9	2.6	3.1	0.8	6.6	2.8	24	
6	3.0	4.0	5.7	4.9	6.4	6.3	8.4	8.9	7.0	2.4	1.4	0.7	0.7	0.4	0.5	0.6	0.7	1.0	S	3.1	3.3	2.2	4.2	4.1	0.4	8.9	3.5	24	
7	3.1	4.4	5.9	7.4	7.6	10.0	13.9	4.1	3.6	4.1	4.6	4.3	3.7	2.0	1.3	1.2	1.3	S	2.6	9.0	3.4	2.3	1.5	2.0	1.2	13.9	4.5	24	
8	2.3	2.2	1.8	1.9	2.1	2.4	3.1	1.1	0.7	0.7	0.6	0.6	0.8	1.0	1.2	0.9	S	0.9	1.1	0.7	0.9	1.2	1.3	2.4	0.6	3.1	1.4	24	
9	1.3	1.1	1.2	1.8	1.4	1.7	1.5	1.5	1.3	1.3	0.8	0.8	0.7	0.6	0.7	S	1.5	0.8	1.3	1.4	0.9	1.8	1.3	1.0	0.6	1.8	1.2	24	
10	1.1	1.3	1.9	1.8	2.9	2.3	2.0	1.7	0.8	0.9	0.8	0.7	1.0	1.0	S	1.5	1.1	1.2	2.0	1.6	5.7	4.9	5.0	1.9	0.7	5.7	2.0	24	
11	3.1	2.7	1.8	1.5	1.3	1.5	1.6	1.4	0.8	0.6	0.7	0.6	0.6	S	1.1	0.8	0.8	1.1	1.0	1.1	1.1	1.8	2.8	1.4	0.6	3.1	1.4	24	
12	1.6	1.8	1.6	1.9	1.2	3.2	3.0	1.4	1.3	0.5	0.7	0.4	S	1.1	0.7	0.7	0.6	0.9	1.0	1.3	3.0	3.0	2.4	2.0	0.4	3.2	1.5	24	
13	2.8	4.1	4.8	5.8	5.3	8.1	8.9	9.8	6.5	1.8	2.0	S	2.0	1.4	1.4	1.4	1.4	1.9	1.9	3.8	4.2	4.2	5.6	4.7	1.4	9.8	4.1	24	
14	4.0	3.4	3.2	3.9	5.9	7.7	7.9	10.4	8.2	5.4	S	1.5	1.2	1.1	0.7	0.9	0.7	0.8	0.9	3.3	5.7	6.2	5.2	5.6	0.7	10.4	4.1	24	
15	3.7	3.8	3.9	4.2	4.8	6.6	18.6	26.8	19.4	S	6.7	3.1	2.5	2.2	1.8	1.2	1.2	1.1	1.1	1.4	3.1	2.7	2.5	2.7	1.1	26.8	5.4	24	
16	2.9	3.1	3.9	4.4	6.4	10.5	8.7	4.1	S	2.4	1.8	2.0	1.6	1.6	1.3	1.5	1.1	0.9	0.8	0.9	1.0	1.3	1.5	1.6	0.8	10.5	2.8	24	
17	1.7	1.9	1.9	1.9	2.2	2.7	2.9	S	2.8	2.8	2.9	2.7	2.7	4.5	2.4	2.8	1.8	1.4	1.2	2.2	2.9	3.3	3.7	4.5	1.2	4.5	2.6	24	
18	5.8	5.5	5.2	4.9	3.9	5.4	S	8.1	4.4	5.0	3.3	1.2	1.9	2.7	2.2	1.4	1.7	2.6	2.0	3.7	5.1	6.0	4.5	3.3	1.2	8.1	3.9	24	
19	2.8	3.9	4.9	5.6	3.1	S	4.4	4.3	6.1	8.2	7.8	5.4	3.6	2.4	2.5	2.2	2.2	2.3	1.5	1.4	1.2	0.8	0.6	0.7	0.6	8.2	3.4	24	
20	0.6	0.5	0.5	0.5	S	1.1	0.9	1.3	1.3	1.4	1.4	1.1	1.1	1.0	1.2	1.2	1.6	1.8	2.7	2.4	2.8	3.0	2.7	1.2	0.5	3.0	1.4	24	
21	1.0	1.5	1.2	S	2.0	3.2	2.6	2.6	2.1	2.0	2.0	2.0	2.4	3.2	2.9	3.1	3.6	3.3	2.9	3.4	3.0	3.3	3.4	2.8	1.0	3.6	2.6	24	
22	1.9	1.1	S	1.3	1.2	1.1	0.8	0.9	1.0	1.1	1.1	1.3	1.1	1.1	1.0	1.2	1.4	1.1	1.1	1.4	1.0	0.8	0.6	0.9	0.6	1.9	1.1	24	
23	0.6	S	0.9	0.9	0.7	0.7	0.6	0.6	0.7	0.7	0.8	0.6	0.6	0.7	0.5	0.5	0.5	0.7	0.9	0.9	0.7	0.9	1.0	1.1	0.5	1.1	0.7	24	
24	S	1.7	1.8	1.5	2.2	2.1	1.9	2.2	1.5	1.2	0.9	0.9	3.9	1.7	2.2	1.4	0.9	1.2	1.2	1.9	2.2	1.8	1.7	S	0.9	3.9	1.7	24	
25	3.1	2.9	2.7	2.4	2.7	2.8	2.8	2.4	1.7	1.5	1.0	1.0	0.8	1.2	3.2	1.5	1.4	1.0	1.0	1.9	4.5	3.0	S	3.4	0.8	4.5	2.2	24	
26	2.4	2.9	3.1	2.6	2.6	4.5	6.0	4.3	4.0	2.3	1.7	1.5	1.8	1.2	1.6	2.0	1.9	2.5	2.5	2.8	3.3	S	2.0	2.2	1.2	6.0	2.7	24	
27	2.9	2.1	3.0	1.6	1.8	2.5	3.4	2.7	2.1	2.0	1.5	1.7	2.3	1.8	1.9	2.5	2.1	2.0	1.9	3.2	S	3.0	3.7	1.6	1.5	3.7	2.3	24	
28	1.9	2.1	2.2	2.1	2.6	2.0	2.9	1.8	2.3	2.8	2.4	2.9	3.1	2.1	1.6	1.0	1.3	2.1	2.2	S	2.3	2.6	2.9	2.6	1.0	3.1	2.3	24	
29	2.5	2.4	2.0	2.3	2.1	1.7	1.4	1.2	1.2	1.4	1.3	1.9	1.1	1.1	1.1	1.0	1.1	1.1	S	1.8	2.8	2.6	2.8	2.3	1.0	2.8	1.7	24	
30	2.7	2.0	1.9	3.5	2.3	2.5	2.2	2.1	2.5	1.4	1.0	0.8	1.2	1.4	3.2	1.3	1.2	S	1.7	2.6	5.0	4.9	2.5	2.5	0.8	5.0	2.3	24	
31	1.9	2.0	1.7	1.8	2.0	2.7	2.4	1.1	0.9	0.7	0.8	0.6	0.6	0.7	0.9	1.1	S	1.5	1.2	1.7	2.2	1.9	1.5	2.2	0.6	2.7	1.5	24	
HOURLY MAX	9.9	8.0	6.7	7.4	7.6	10.5	18.6	26.8	19.4	8.2	7.8	5.4	4.9	4.5	3.2	3.4	3.6	3.3	2.9	9.0	5.7	6.2	5.8	7.3					
HOURLY AVG	2.8	2.8	2.9	3.0	3.3	4.1	5.2	4.6	3.7	2.5	2.1	1.7	1.8	1.6	1.6	1.5	1.4	1.4	1.5	2.3	2.9	2.9	2.8	2.7					

**STATUS FLAG CODES**

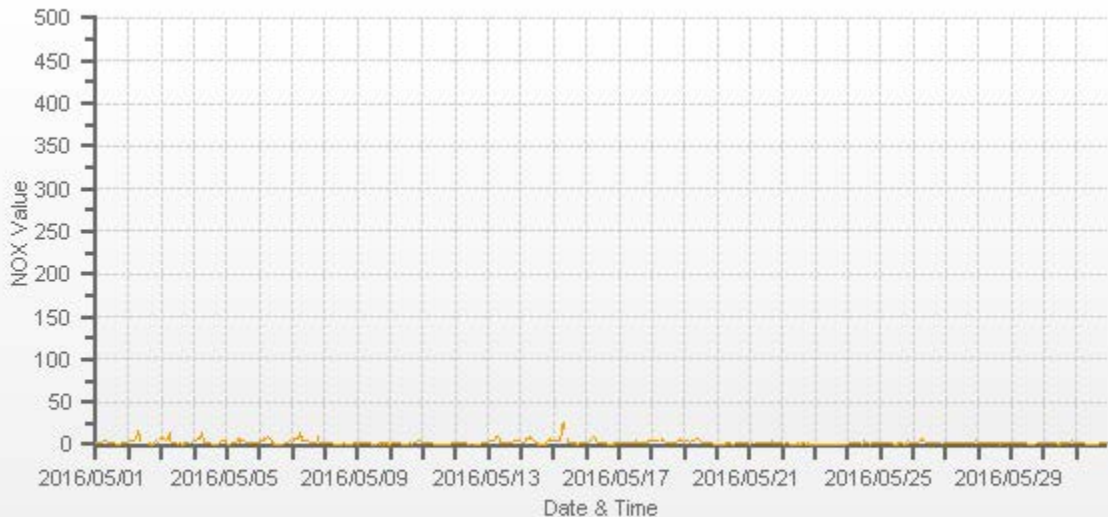
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

**24 HOUR AVERAGES FOR May 2016**



**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS:	707		
MINIMUM 1-HR AVERAGE:	0.4 PPB	@ HOUR(S)	13 , 11 ON DAY(S) 6 , 12
MAXIMUM 1-HR AVERAGE:	26.8 PPB	@ HOUR(S)	7 ON DAY(S) 15
MAXIMUM 24-HR AVERAGE:	5.4 PPB		ON DAY(S) 15
			VAR-VARIOUS
IZS CALIBRATION TIME:	32 HRS	OPERATIONAL TIME:	744 HRS
MONTHLY CALIBRATION TIME:	5 HRS	AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	2.40	MONTHLY AVERAGE:	2.6 PPB



— 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	DAILY	24-HOUR	
DAY	MIN.	MAX.	AVG.	RDGS.																									
1	5.8	13.6	4.3	6.2	5.4	4.8	5.9	4.1	4.1	4.6	3.9	1.6	5.8	1.8	1.2	S	1.5	0.8	0.9	2.3	4.7	5.9	3.2	5.5	0.8	13.6	4.3	24	
2	4.7	5.5	6.2	5.9	7.0	27.3	12.5	17.0	16.2	C	C	C	C	C	C	C	2.0	1.1	1.2	7.0	14.8	6.7	S	14.7	1.1	27.3	9.4	24	
3	14.7	9.3	7.3	6.0	8.5	9.9	31.6	10.1	4.7	3.8	4.2	2.4	1.3	7.7	4.7	2.6	6.4	1.5	7.6	2.9	7.2	S	4.2	3.8	1.3	31.6	7.1	24	
4	6.3	7.4	14.3	8.5	8.9	25.6	19.7	6.4	3.7	3.9	4.5	3.6	3.0	1.5	1.5	1.6	1.9	1.2	1.2	5.9	S	8.5	6.9	9.4	1.2	25.6	6.8	24	
5	4.8	1.6	1.1	1.5	3.1	1.9	2.3	5.9	8.0	7.8	4.6	4.6	6.9	5.5	3.6	4.2	6.1	2.6	1.7	S	4.6	4.0	3.2	4.4	1.1	8.0	4.1	24	
6	4.0	5.0	12.5	6.7	12.5	19.7	11.2	10.3	9.9	3.8	3.2	1.8	2.0	0.6	0.9	0.8	7.6	1.6	S	5.2	6.2	4.5	6.8	5.2	0.6	19.7	6.2	24	
7	4.5	12.3	8.3	10.4	11.0	31.8	21.1	8.8	4.0	4.4	5.1	6.5	5.0	3.4	3.0	1.9	2.4	S	4.3	19.2	13.5	2.7	1.7	2.7	1.7	31.8	8.2	24	
8	2.7	2.6	2.1	2.8	2.6	3.2	3.8	1.7	1.0	1.3	0.8	0.8	1.0	1.7	1.9	1.4	S	2.5	6.5	1.0	1.3	1.4	1.8	3.0	0.8	6.5	2.1	24	
9	2.4	1.8	1.8	3.0	1.8	2.3	2.0	1.9	1.7	1.8	1.3	1.5	0.9	1.2	1.2	S	2.0	2.3	3.6	3.6	1.6	2.4	1.9	1.3	0.9	3.6	2.0	24	
10	1.8	2.0	3.0	2.4	3.8	3.6	2.4	2.4	1.2	2.3	1.8	1.3	5.6	6.9	S	7.5	2.6	4.8	17.3	3.7	13.9	6.3	8.6	3.7	1.2	17.3	4.7	24	
11	16.6	12.5	3.9	3.3	4.1	2.4	2.9	3.5	1.6	1.6	6.0	6.2	6.3	S	2.8	2.2	2.5	3.2	2.4	3.0	2.7	4.3	6.8	2.4	1.6	16.6	4.5	24	
12	3.3	6.4	5.6	2.9	3.4	8.1	9.4	2.4	5.8	2.3	6.2	1.8	S	4.2	2.4	1.9	1.0	1.8	6.9	3.8	7.4	3.8	3.3	3.4	1.0	9.4	4.2	24	
13	4.2	5.9	7.7	7.9	6.3	9.6	11.6	12.2	9.1	4.0	3.3	S	3.1	1.8	2.8	4.7	1.8	3.1	2.7	6.9	6.0	8.6	7.4	6.3	1.8	12.2	6.0	24	
14	6.8	5.6	5.6	4.7	8.5	8.7	10.1	12.2	9.6	9.1	S	5.8	5.9	5.0	1.0	4.0	0.9	4.2	1.2	6.6	13.8	10.4	6.9	8.5	0.9	13.8	6.7	24	
15	4.6	5.8	4.5	5.1	9.7	18.9	32.0	31.0	25.7	S	9.0	4.7	3.6	2.7	2.5	1.3	2.2	1.2	1.6	2.9	5.1	4.4	4.2	4.1	1.2	32.0	8.1	24	
16	4.1	4.0	5.5	6.3	9.6	17.4	14.7	5.4	S	3.7	3.7	4.1	3.0	2.4	1.8	6.6	4.7	1.1	1.2	1.0	1.3	1.8	1.8	2.1	1.0	17.4	4.7	24	
17	1.9	2.8	2.5	2.7	5.4	5.5	5.5	S	3.6	3.7	9.9	3.2	3.8	50.9	4.0	6.4	2.6	1.8	1.5	2.9	4.9	4.2	4.7	6.2	1.5	50.9	6.1	24	
18	7.9	6.7	8.3	6.4	4.6	15.3	S	10.0	5.8	9.5	8.6	1.6	4.8	17.3	22.7	5.8	21.3	21.3	4.5	9.1	8.0	10.5	5.4	5.6	1.6	22.7	9.6	24	
19	4.1	5.7	6.2	8.7	4.8	S	5.4	5.4	8.9	9.2	13.9	7.3	5.2	4.8	6.0	7.4	3.3	13.0	2.1	2.5	1.6	1.3	1.1	1.8	1.1	13.9	5.6	24	
20	1.0	0.7	1.2	1.5	S	4.0	1.8	3.2	R	2.6	6.0	4.5	2.5	2.6	2.9	6.5	9.9	10.7	6.3	3.6	9.2	4.5	4.7	2.8	0.7	10.7	4.2	23	
21	1.5	2.4	1.5	S	2.6	8.4	3.6	5.1	2.9	2.9	3.0	2.4	4.1	6.0	3.5	4.1	5.6	3.9	5.5	6.9	5.2	4.5	4.1	3.8	1.5	8.4	4.1	24	
22	2.9	1.6	S	1.6	1.5	2.0	1.5	1.8	1.6	1.8	2.1	7.7	2.3	1.6	1.3	3.2	3.4	3.5	2.0	2.3	3.4	1.2	0.8	2.5	0.8	7.7	2.3	24	
23	2.5	S	1.3	1.2	1.3	1.1	1.1	0.9	1.1	0.9	1.2	1.8	1.1	2.3	2.2	1.2	1.2	1.6	2.2	2.4	1.8	2.5	2.3	2.1	0.9	2.5	1.6	24	
24	S	5.0	4.0	2.3	5.9	4.9	5.1	5.6	4.3	2.8	2.3	1.6	42.7	12.3	19.5	4.1	2.6	2.9	3.4	5.8	14.7	2.7	6.8	S	1.6	42.7	7.3	24	
25	3.6	3.6	3.6	4.7	4.7	5.5	3.4	3.1	2.2	4.3	4.3	2.0	1.3	8.3	26.2	3.0	5.1	1.5	1.6	4.6	7.4	5.0	S	4.4	1.3	26.2	4.9	24	
26	2.9	4.6	4.6	8.4	5.0	10.2	8.4	5.2	5.6	3.2	5.4	5.5	14.6	1.6	2.0	4.8	3.6	3.7	5.0	3.2	5.0	S	2.4	5.0	1.6	14.6	5.2	24	
27	5.8	2.8	4.8	2.0	2.3	5.4	6.0	4.1	2.8	6.0	3.6	3.7	4.1	3.6	3.2	8.2	4.1	3.3	2.5	6.3	S	4.8	17.5	2.0	2.0	17.5	4.7	24	
28	2.6	4.5	2.9	3.0	3.4	2.5	19.7	2.2	4.8	7.2	4.1	4.2	5.9	6.2	3.4	1.1	2.5	2.9	2.9	S	4.5	3.4	3.3	3.6	1.1	19.7	4.4	24	
29	3.2	2.9	2.6	6.6	3.4	2.5	1.6	1.3	3.6	2.6	1.9	10.8	2.9	2.1	2.4	2.0	2.0	2.4	S	2.4	11.8	4.8	4.3	3.6	1.3	11.8	3.6	24	
30	5.6	3.4	3.1	14.0	3.7	3.7	4.1	3.4	3.8	3.3	1.2	1.1	2.2	3.7	4.2	3.4	9.9	S	2.3	3.9	6.2	5.8	3.8	3.6	1.1	14.0	4.3	24	
31	2.2	2.6	2.5	2.9	2.6	4.0	4.7	2.3	4.7	2.1	2.8	1.1	0.9	3.2	3.7	4.6	S	7.3	2.1	4.6	4.8	3.2	2.9	4.8	0.9	7.3	3.3	24	
HOURLY MAX	16.6	13.6	14.3	14.0	12.5	31.8	32.0	31.0	25.7	9.5	13.9	10.8	42.7	50.9	26.2	8.2	21.3	21.3	17.3	19.2	14.8	10.5	17.5	14.7					
HOURLY AVG	4.6	5.0	4.8	5.0	5.2	9.0	8.8	6.3	5.6	4.0	4.4	3.6	5.2	6.0	4.8	3.8	4.2	3.9	3.6	4.7	6.6	4.6	4.6	4.4					

STATUS FLAG CODES

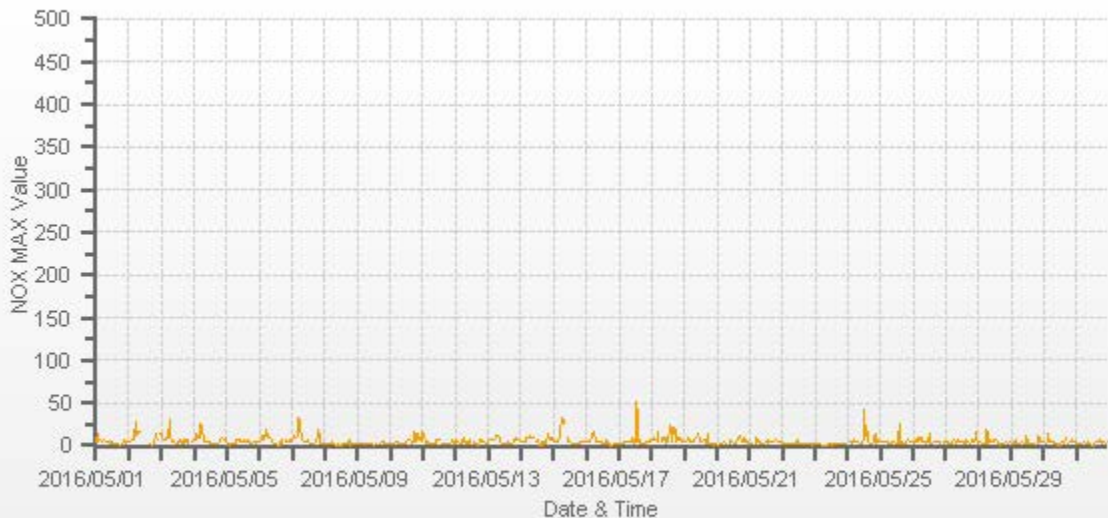
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	704
MAXIMUM INSTANTANEOUS VALUE:	50.9 PPB @ HOUR(S) 13 ON DAY(S) 17
	VAR-VARIOUS
IZS CALIBRATION TIME:	32 HRS
MONTHLY CALIBRATION TIME:	7 HRS
STANDARD DEVIATION:	4.98
OPERATIONAL TIME:	743 HRS



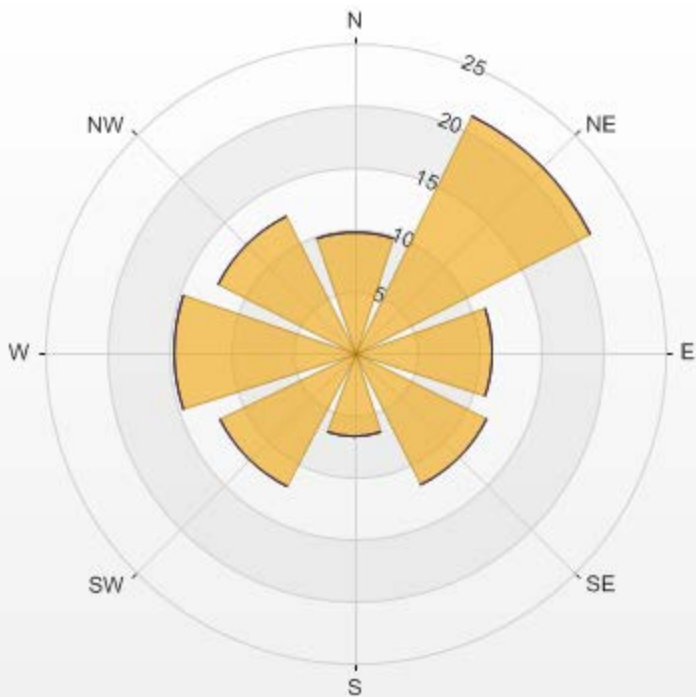
NOX MAX[ppb] Station: LICA COLD LAKE SOUTH Monthly: 05/2016 Type: AVG 1 Hr. [1 Hr.]

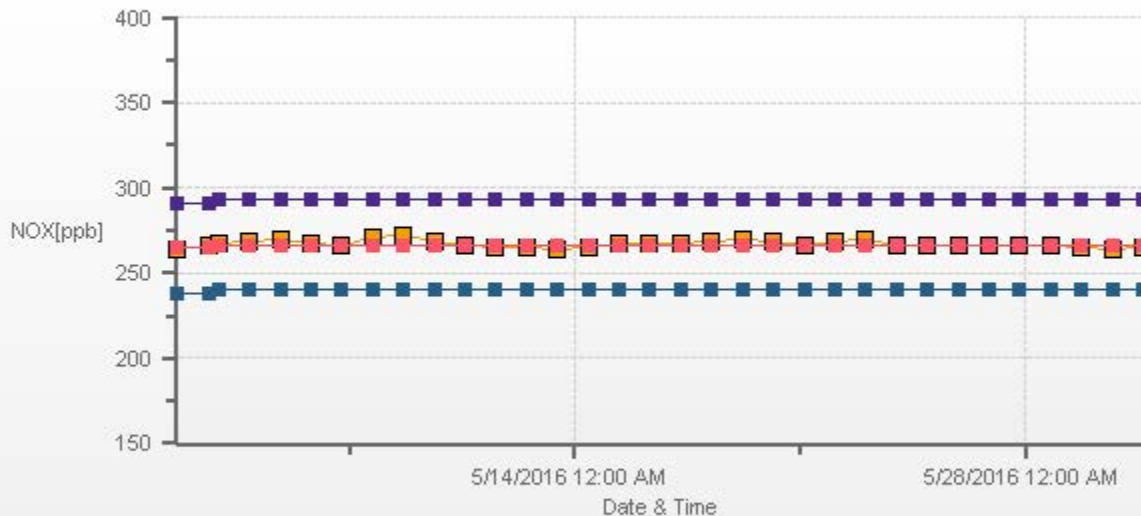


— NOX MAX[ppb]

Wind: LICA COLD LAKE SOUTH Monitor: NOX [ppb] Monthly: 05/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 95.03% Calm Avg: 0.00

Direction	0.0-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	9.76	0	0	0	9.76
NE	21.36	0	0	0	21.36
E	11.17	0	0	0	11.17
SE	11.88	0	0	0	11.88
S	6.79	0	0	0	6.79
SW	12.16	0	0	0	12.16
W	14.57	0	0	0	14.57
NW	12.31	0	0	0	12.31
Summary	100	0	0	0	100





***NITRIC OXIDES***

**NITRIC OXIDE (NO) hourly averages in ppb**

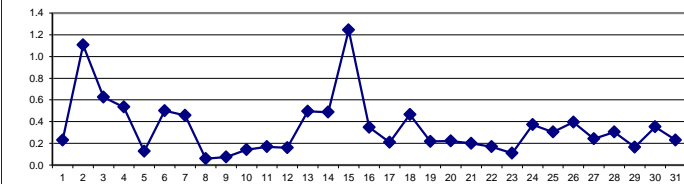
**MST**

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	0.0	0.2	0.1	0.1	0.2	0.4	0.6	0.6	0.7	0.7	0.5	0.1	0.3	0.1	0.1	S	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.7	0.2	24
2	0.1	0.2	0.2	0.2	0.5	1.9	3.8	6.9	3.9	1.2	C	C	C	C	C	0.1	0.1	0.1	0.1	0.1	0.2	0.1	S	0.2	0.1	6.9	1.1	24
3	0.3	0.3	0.3	0.2	0.4	2.2	6.5	1.4	0.6	0.4	0.3	0.1	0.1	0.2	0.2	0.3	0.1	0.1	0.2	0.0	0.0	S	0.1	0.1	0.0	6.5	0.6	24
4	0.1	0.1	0.2	0.2	0.3	2.6	5.7	0.5	0.4	0.5	0.4	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.1	S	0.1	0.1	0.2	0.0	5.7	0.5	24
5	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.4	0.2	0.1	S	0.1	0.1	0.1	0.1	0.1	0.0	0.4	0.1	24
6	0.1	0.2	0.5	0.2	0.5	1.6	2.2	2.5	1.9	0.5	0.3	0.1	0.1	0.0	0.1	0.0	0.2	0.1	S	0.1	0.1	0.0	0.1	0.1	0.0	2.5	0.5	24
7	0.0	0.1	0.1	0.2	0.3	1.9	3.5	0.7	0.6	0.6	0.8	0.6	0.3	0.1	0.1	0.1	0.1	S	0.1	0.2	0.1	0.0	0.0	0.0	0.0	3.5	0.5	24
8	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	S	0.0	0.2	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	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	S	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.1	24
10	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.1	0.1	0.1	0.1	0.2	0.2	S	0.3	0.2	0.2	0.5	0.1	0.2	0.1	0.1	0.1	0.0	0.5	0.1	24
11	0.5	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.2	0.1	0.4	0.1	0.1	S	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.3	0.0	0.0	0.5	0.2	24
12	0.0	0.1	0.0	0.0	0.1	0.5	0.5	0.3	0.4	0.1	0.1	0.1	S	0.2	0.1	0.1	0.1	0.2	0.3	0.2	0.1	0.0	0.1	0.1	0.0	0.5	0.2	24
13	0.0	0.1	0.1	0.1	0.2	1.6	2.4	3.1	1.9	0.4	0.4	S	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.0	3.1	0.5	24
14	0.1	0.1	0.1	0.1	0.3	1.4	2.0	2.7	2.0	1.3	S	0.2	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.1	0.2	0.1	0.0	0.1	0.0	2.7	0.5	24
15	0.1	0.1	0.1	0.2	0.4	1.4	8.5	10.2	5.6	S	1.2	0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	10.2	1.2	24
16	0.0	0.1	0.1	0.1	0.5	3.1	2.7	0.5	S	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1	0.3	24
17	0.0	0.0	0.0	0.0	0.1	0.2	0.2	S	0.3	0.4	0.5	0.4	0.3	1.0	0.3	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.0	0.2	24
18	0.2	0.1	0.2	0.2	0.2	1.8	S	2.2	0.9	1.0	0.8	0.0	0.4	0.9	0.5	0.2	0.2	0.3	0.1	0.2	0.1	0.1	0.0	0.1	0.0	2.2	0.5	24
19	0.1	0.1	0.1	0.2	0.2	S	0.3	0.3	0.3	0.3	0.6	0.2	0.2	0.3	0.3	0.2	0.3	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.1	0.6	0.2	24
20	0.1	0.1	0.1	0.1	S	0.2	0.2	0.3	0.2	0.2	0.3	0.3	0.2	0.2	0.4	0.3	0.3	0.1	0.3	0.1	0.3	0.2	0.2	0.2	0.1	0.4	0.2	24
21	0.1	0.1	0.1	S	0.1	0.3	0.3	0.4	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.4	0.2	24
22	0.1	0.1	S	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.1	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.3	0.2	24
23	0.1	S	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.3	0.1	0.1	0.1	0.1	0.2	0.1	0.0	0.1	0.1	0.1	0.0	0.3	0.1	24
24	S	0.1	0.1	0.1	0.3	0.3	0.3	0.4	0.3	0.3	0.2	0.2	2.6	0.5	0.9	0.4	0.2	0.2	0.2	0.2	0.2	0.1	0.1	S	0.1	2.6	0.4	24
25	0.1	0.1	0.2	0.3	0.6	0.7	0.8	0.7	0.4	0.4	0.2	0.2	0.1	0.2	1.0	0.2	0.2	0.1	0.0	0.1	0.2	0.1	S	0.1	0.0	1.0	0.3	24
26	0.1	0.1	0.2	0.5	0.6	1.9	1.8	1.0	0.8	0.3	0.2	0.1	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	S	0.0	0.1	0.0	1.9	0.4	24
27	0.1	0.1	0.1	0.1	0.1	0.3	0.5	0.5	0.3	0.4	0.2	0.2	0.3	0.3	0.3	0.4	0.2	0.1	0.1	0.2	S	0.1	0.6	0.1	0.1	0.6	0.2	24
28	0.1	0.2	0.1	0.1	0.2	0.3	1.0	0.3	0.4	0.8	0.7	0.7	0.8	0.3	0.2	0.1	0.1	0.1	S	0.1	0.1	0.1	0.1	0.1	0.1	1.0	0.3	24
29	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.7	0.2	0.2	0.2	0.2	S	0.1	0.4	0.1	0.1	0.1	0.1	0.1	0.0	0.7	0.2	24
30	0.2	0.2	0.2	0.8	0.7	0.6	0.5	0.5	0.9	0.4	0.2	0.1	0.1	0.3	0.8	0.3	0.7	S	0.1	0.2	0.1	0.1	0.0	0.1	0.0	0.9	0.4	24
31	0.1	0.3	0.4	0.4	0.5	0.5	0.6	0.2	0.3	0.1	0.2	0.1	0.1	0.1	0.2	0.2	S	0.2	0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.6	0.2	24
HOURLY MAX	0.5	0.3	0.5	0.8	0.7	3.1	8.5	10.2	5.6	1.3	1.2	0.7	2.6	1.0	1.0	0.4	0.7	0.3	0.5	0.2	0.4	0.2	0.6	0.2				
HOURLY AVG	0.1	0.1	0.1	0.2	0.3	0.9	1.5	1.3	0.8	0.4	0.3	0.2	0.3	0.2	0.2	0.2	0.2	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

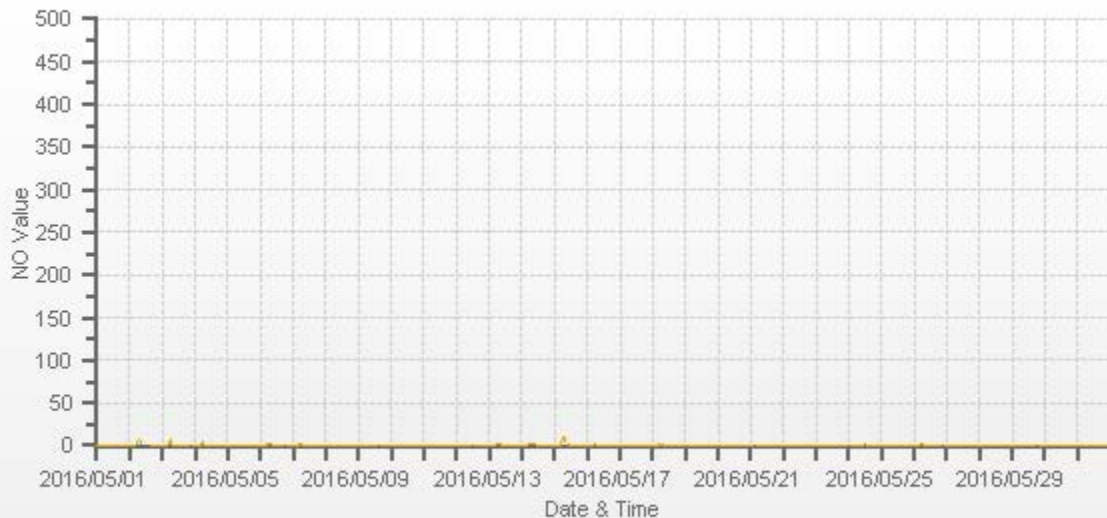
24 HOUR AVERAGES FOR May 2016



**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS:	621				
MINIMUM 1-HR AVERAGE:	0.0	PPB @ HOUR(S)	VAR	ON DAY(S)	VAR
MAXIMUM 1-HR AVERAGE:	10.2	PPB @ HOUR(S)	7	ON DAY(S)	15
MAXIMUM 24-HR AVERAGE:	1.2	PPB		ON DAY(S)	15
				VAR-VARIOUS	
IZS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	744	HRS
MONTHLY CALIBRATION TIME:	5	HRS	AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	0.81		MONTHLY AVERAGE:	0.3	PPB

NO[ppb] Station: LICA COLD LAKE SOUTH Monthly: 05/2016 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	
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		0.4	3.1	0.2	2.1	1.5	1.5	1.3	1.0	0.9	1.4	0.8	0.3	1.5	0.5	0.3	S	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.8	0.1	3.1	0.8	24
2		0.5	0.5	1.9	1.7	1.3	18.5	5.4	7.7	6.8	C	C	C	C	C	C	C	0.3	0.2	0.2	0.4	2.3	0.2	S	2.1	0.2	18.5	3.1	24
3		2.1	0.9	0.5	0.5	1.3	3.5	18.2	3.6	1.1	0.5	0.4	0.4	0.3	0.9	1.8	7.3	0.8	0.3	3.8	0.4	0.2	S	0.2	0.2	0.2	18.2	2.1	24
4		0.1	0.2	4.0	1.4	1.1	10.3	8.6	1.0	1.3	0.9	3.2	0.5	0.8	0.3	0.2	0.3	0.3	0.2	0.2	0.2	S	0.4	0.2	0.8	0.1	10.3	1.6	24
5		0.3	0.2	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.3	0.7	0.4	0.4	0.7	1.1	0.4	0.2	S	0.2	0.3	0.1	0.5	0.1	1.1	0.3	24
6		0.3	0.4	4.5	1.2	3.5	17.1	3.1	3.0	2.9	0.8	1.7	0.4	1.0	0.1	0.2	0.1	4.3	0.1	S	0.3	0.2	0.2	0.4	0.3	0.1	17.1	2.0	24
7		0.1	1.4	0.7	0.8	0.9	15.7	6.4	2.0	0.8	0.8	1.0	1.3	0.5	0.4	0.4	0.4	0.4	S	0.1	0.9	0.3	0.2	0.2	0.1	0.1	15.7	1.6	24
8		0.1	0.1	0.2	0.2	0.1	0.4	0.5	0.3	0.2	0.1	0.1	0.1	0.1	0.3	0.3	0.3	S	0.3	4.3	0.3	0.3	0.2	0.1	0.1	0.1	4.3	0.4	24
9		0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.4	0.4	0.4	0.2	0.2	0.4	0.2	0.2	S	0.4	0.6	1.9	0.6	0.1	0.1	0.1	0.1	0.1	1.9	0.3	24
10		0.2	0.1	0.3	0.1	0.2	0.2	0.4	0.5	0.2	1.0	0.5	0.4	1.9	1.1	S	1.3	1.3	2.5	9.6	0.4	1.7	0.1	0.7	0.7	0.1	9.6	1.1	24
11		5.3	2.3	0.6	0.5	0.4	0.3	1.3	0.9	0.6	0.9	9.7	1.5	1.8	S	2.4	0.5	1.0	1.7	0.9	1.4	0.5	0.8	2.3	0.1	0.1	9.7	1.6	24
12		0.1	1.0	0.3	0.2	0.6	2.5	2.8	0.6	3.0	1.0	1.4	1.3	S	1.8	0.5	0.6	0.5	1.0	5.6	0.6	0.6	0.1	0.4	1.3	0.1	5.6	1.2	24
13		0.2	0.5	0.9	0.9	0.6	2.6	3.6	4.1	3.4	1.1	0.9	S	0.9	0.5	0.4	1.2	0.3	0.4	0.2	0.3	0.2	0.4	0.2	0.2	0.2	4.1	1.0	24
14		0.8	1.0	0.4	0.3	0.9	2.4	2.8	3.5	2.6	2.7	S	2.9	1.7	2.1	0.2	2.4	0.1	1.5	0.1	0.3	0.9	0.4	0.2	1.5	0.1	3.5	1.4	24
15		0.2	1.0	0.2	0.4	2.6	11.0	19.1	13.0	8.7	S	1.7	0.8	0.4	0.2	0.4	0.1	0.1	0.2	0.1	0.1	0.2	0.5	0.2	0.1	0.1	19.1	2.7	24
16		0.1	0.1	0.3	0.5	1.5	7.0	6.0	0.8	S	0.4	0.9	0.8	0.4	0.3	0.4	1.9	1.8	0.2	0.4	0.1	0.1	0.1	0.1	0.2	0.1	7.0	1.1	24
17		0.2	0.2	0.2	0.2	0.4	0.7	0.5	S	0.4	0.6	3.1	0.5	0.7	17.7	0.7	1.0	0.7	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	17.7	1.3	24
18		0.7	0.7	1.7	0.5	0.5	9.6	S	3.0	1.4	3.6	3.4	0.6	2.6	12.5	9.7	2.2	5.3	5.4	0.6	0.9	0.2	0.1	0.1	0.2	0.1	12.5	2.8	24
19		0.3	0.3	0.3	1.4	0.9	S	1.3	0.6	0.9	0.5	4.3	0.8	0.8	1.0	1.9	2.2	0.9	3.8	0.5	1.0	0.4	2.2	0.4	0.7	0.3	4.3	1.2	24
20		0.5	0.3	0.3	0.4	S	3.2	0.8	1.0	R	0.8	1.1	2.1	0.9	1.0	5.3	2.2	6.9	4.9	1.1	0.3	2.2	0.9	1.5	1.4	0.3	6.9	1.8	23
21		0.2	0.5	0.2	S	0.2	3.6	0.6	1.7	0.8	0.8	0.5	0.3	0.4	1.0	0.5	0.5	1.0	0.5	1.4	1.5	1.1	0.2	0.2	0.2	0.2	3.6	0.8	24
22		0.2	0.2	S	0.1	0.2	0.8	0.4	1.7	0.9	0.6	0.5	5.0	0.6	0.8	0.4	1.7	1.2	2.0	0.9	0.6	1.9	0.6	0.2	1.1	0.1	5.0	1.0	24
23		1.0	S	0.2	0.5	0.3	0.3	0.4	0.2	0.4	0.2	0.4	0.6	0.6	4.0	0.9	0.6	0.5	0.4	1.1	0.8	0.5	0.9	0.7	0.4	0.2	4.0	0.7	24
24		S	1.1	0.7	0.3	2.9	1.8	2.1	3.4	1.7	1.7	0.9	0.5	34.5	7.6	15.0	3.1	0.9	0.6	2.6	2.9	4.3	0.2	1.8	S	0.2	34.5	4.1	24
25		0.1	0.2	0.6	1.9	2.1	3.9	1.4	1.5	0.6	1.7	2.7	1.8	0.3	4.0	9.9	1.1	2.2	0.2	0.2	0.3	0.3	0.4	S	0.4	0.1	9.9	1.6	24
26		0.2	0.9	0.6	5.2	1.7	6.1	3.5	1.4	1.6	0.6	1.6	1.7	0.8	0.4	0.3	1.1	1.4	0.5	0.9	0.3	0.9	S	0.2	0.6	0.2	6.1	1.4	24
27		1.7	0.2	0.4	0.5	0.2	1.8	1.3	0.9	0.4	2.7	2.1	1.4	0.8	1.4	0.9	4.3	0.8	0.4	0.1	1.1	S	0.2	13.2	0.2	0.1	13.2	1.6	24
28		0.4	1.7	0.2	0.2	0.5	3.5	14.0	0.5	1.8	3.4	2.4	1.4	3.5	1.7	0.6	0.3	0.3	0.3	0.1	S	1.0	0.1	0.1	0.5	0.1	14.0	1.7	24
29		0.5	0.1	0.1	1.7	0.6	0.2	0.2	0.6	0.9	0.5	7.4	0.9	0.5	1.3	0.6	0.5	1.1	S	0.3	4.9	0.2	0.5	0.4	0.1	0.1	7.4	1.1	24
30		1.8	0.5	0.6	4.4	1.7	1.4	1.1	1.9	7.8	1.5	0.3	0.3	0.3	0.9	1.2	0.9	16.6	S	0.3	0.4	0.3	0.1	0.2	0.2	0.1	16.6	1.9	24
31		0.1	0.9	0.9	1.5	0.9	1.7	2.0	0.6	2.8	0.5	1.1	0.3	0.3	1.1	1.3	1.8	S	2.6	0.4	2.3	0.6	0.3	0.4	0.5	0.1	2.8	1.1	24
HOURLY MAX		5.3	3.1	4.5	5.2	3.5	18.5	19.1	13.0	8.7	3.6	9.7	7.4	34.5	17.7	15.0	7.3	16.6	5.4	9.6	2.9	4.9	2.2	13.2	2.1				
HOURLY AVG		0.6	0.7	0.7	1.0	1.0	4.4	3.7	2.0	1.9	1.1	1.6	1.2	2.1	2.2	2.0	1.5	1.8	1.1	1.3	0.7	0.9	0.4	0.9	0.5				

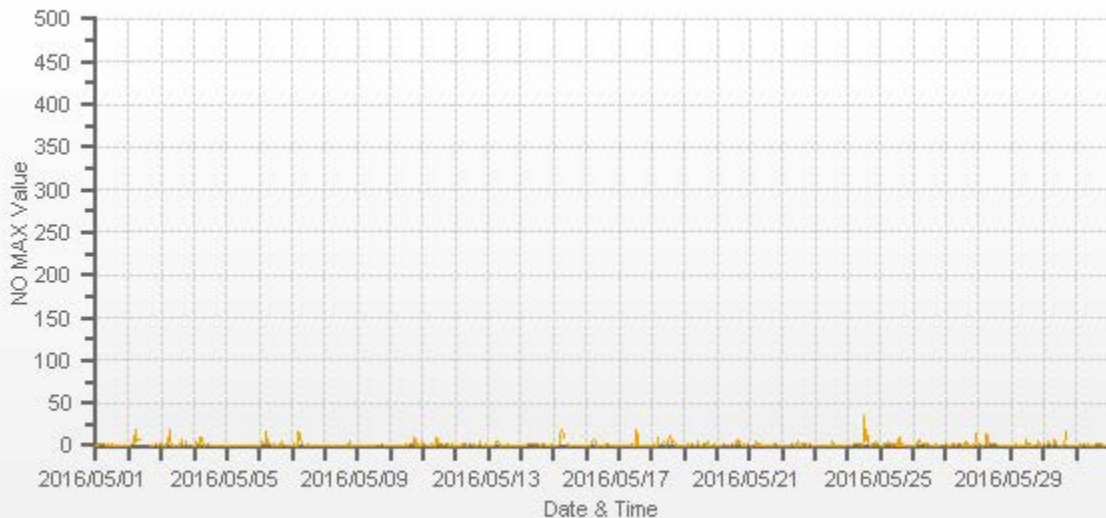
STATUS FLAG CODES

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:	704
MAXIMUM INSTANTANEOUS VALUE:	34.5 PPB @ HOUR(S) 12 ON DAY(S) 24
	VAR-VARIOUS
IZS CALIBRATION TIME:	32 HRS
MONTHLY CALIBRATION TIME:	7 HRS
STANDARD DEVIATION:	2.80
OPERATIONAL TIME:	743 HRS

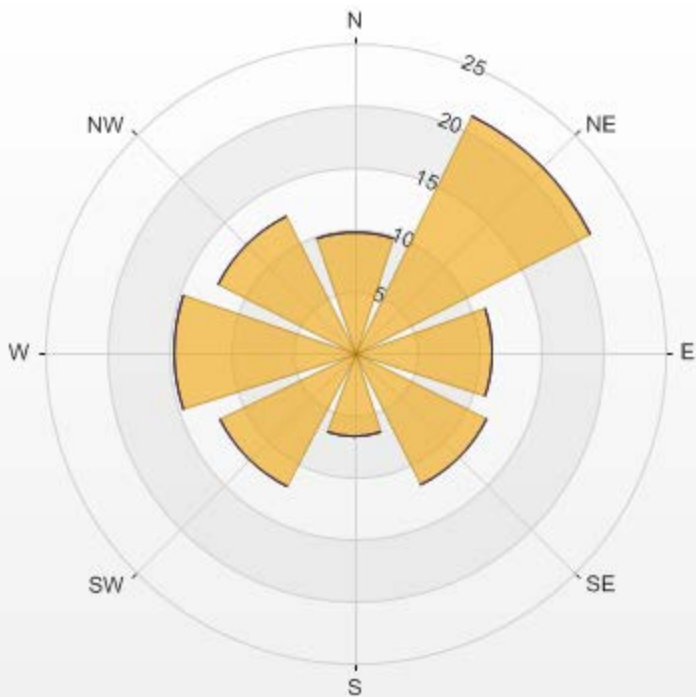




— NO MAX[ppb]

Wind: LICA COLD LAKE SOUTH Monitor: NO [ppb] Monthly: 05/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 95.03% Calm Avg: 0.00

Direction	0.0-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	9.76	0	0	0	9.76
NE	21.36	0	0	0	21.36
E	11.17	0	0	0	11.17
SE	11.88	0	0	0	11.88
S	6.79	0	0	0	6.79
SW	12.16	0	0	0	12.16
W	14.57	0	0	0	14.57
NW	12.31	0	0	0	12.31
Summary	100	0	0	0	100



***NITROGEN DIOXIDE***

NITROGEN DIOXIDE (NO2) hourly averages in ppb

<b>MST</b>		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	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				
1	1	2.8	2.8	2.7	2.7	3.1	3.1	3.5	3.0	3.1	2.8	2.4	1.1	1.7	1.2	0.9	S	0.9	0.7	0.8	1.3	2.6	3.1	2.3	2.3	0.7	3.5	2.2	24
2	2	2.9	3.6	3.4	3.4	4.7	4.0	5.1	8.6	7.3	3.5	C	C	C	C	C	2.3	1.0	0.8	0.9	2.5	5.2	3.3	S	7.1	0.8	8.6	3.9	24
3	3	9.6	7.7	6.4	4.7	5.0	5.4	7.2	4.2	2.8	2.7	2.5	1.4	1.0	1.4	1.1	0.7	1.1	1.0	1.1	1.8	3.3	S	3.1	3.2	0.7	9.6	3.4	24
4	4	3.7	5.1	4.3	5.8	6.1	7.6	8.7	3.2	2.8	3.1	2.7	2.6	1.5	1.1	0.9	1.0	1.0	0.9	0.9	2.7	S	5.1	5.7	4.3	0.9	8.7	3.5	24
5	5	2.8	1.0	0.8	1.0	2.1	1.3	1.4	3.4	6.5	5.7	3.3	3.6	4.7	3.6	2.8	3.0	1.8	1.6	1.4	S	2.7	2.8	2.6	3.0	0.8	6.5	2.7	24
6	6	2.9	3.8	5.2	4.7	5.8	4.7	6.2	6.4	5.1	2.0	1.1	0.6	0.6	0.4	0.5	0.5	0.6	1.0	S	3.0	3.2	2.2	4.2	4.1	0.4	6.4	3.0	24
7	7	3.1	4.2	5.7	7.2	7.3	8.1	10.4	3.4	3.0	3.4	3.9	3.7	3.4	1.9	1.2	1.1	1.2	S	2.5	8.8	3.3	2.2	1.4	2.0	1.1	10.4	4.0	24
8	8	2.3	2.2	1.8	1.9	2.0	2.3	2.8	1.0	0.6	0.7	0.6	0.6	0.7	0.9	1.1	0.8	S	0.9	0.9	0.7	0.9	1.2	1.3	2.4	0.6	2.8	1.3	24
9	9	1.3	1.0	1.2	1.8	1.4	1.5	1.4	1.3	1.1	1.1	0.7	0.7	0.6	0.5	0.7	S	1.4	0.8	1.2	1.4	0.9	1.8	1.3	1.0	0.5	1.8	1.1	24
10	10	1.1	1.3	1.9	1.8	2.9	2.2	1.9	1.4	0.7	0.8	0.7	0.6	0.8	0.9	S	1.2	0.9	1.0	1.6	1.5	5.5	4.9	4.9	1.8	0.6	5.5	1.8	24
11	11	2.6	2.6	1.7	1.4	1.3	1.4	1.3	1.1	0.6	0.5	0.3	0.5	0.5	S	0.8	0.7	0.6	0.8	0.8	0.9	1.0	1.7	2.5	1.4	0.3	2.6	1.2	24
12	12	1.6	1.7	1.6	1.9	1.2	2.7	2.5	1.1	0.9	0.4	0.6	0.3	S	0.9	0.6	0.5	0.5	0.6	0.7	1.2	2.9	3.0	2.3	1.9	0.3	3.0	1.4	24
13	13	2.8	4.1	4.7	5.7	5.1	6.5	6.5	6.7	4.5	1.4	1.6	S	1.7	1.2	1.3	1.3	1.4	1.8	1.8	3.7	4.1	4.1	5.5	4.6	1.2	6.7	3.6	24
14	14	3.9	3.2	3.1	3.8	5.6	6.4	5.9	7.7	6.2	4.1	S	1.3	1.1	1.0	0.7	0.8	0.7	0.7	0.9	3.2	5.5	6.2	5.2	5.5	0.7	7.7	3.6	24
15	15	3.7	3.7	3.8	4.1	4.5	5.2	10.1	16.7	13.8	S	5.4	2.8	2.4	2.2	1.7	1.2	1.1	1.0	1.0	1.4	3.0	2.7	2.4	2.6	1.0	16.7	4.2	24
16	16	2.8	3.0	3.8	4.3	5.9	7.4	6.0	3.6	S	2.3	1.7	1.9	1.5	1.5	1.2	1.3	0.9	0.9	0.7	0.8	1.0	1.3	1.5	1.6	0.7	7.4	2.5	24
17	17	1.6	1.9	1.9	1.9	2.1	2.6	2.6	S	2.6	2.4	2.4	2.4	2.3	3.5	2.2	2.5	1.7	1.3	1.1	2.1	2.9	3.2	3.6	4.4	1.1	4.4	2.4	24
18	18	5.7	5.4	4.9	4.7	3.7	3.6	S	5.9	3.5	4.0	2.4	1.1	1.6	1.8	1.7	1.3	1.6	2.2	1.9	3.5	5.0	5.9	4.5	3.2	1.1	5.9	3.4	24
19	19	2.7	3.9	4.8	5.4	3.0	S	4.0	3.9	5.8	7.9	7.2	5.1	3.3	2.2	2.2	2.0	2.0	2.0	1.4	1.2	1.1	0.7	0.6	0.6	0.6	7.9	3.2	24
20	20	0.5	0.4	0.4	0.4	S	0.9	0.7	1.0	1.0	1.2	1.1	0.8	0.9	0.8	0.8	1.0	1.2	1.5	2.4	2.3	2.4	2.8	2.5	1.1	0.4	2.8	1.2	24
21	21	0.9	1.3	1.1	S	1.8	2.8	2.3	2.2	1.8	1.7	1.8	1.8	2.2	2.9	2.7	2.9	3.3	3.0	2.7	3.2	2.8	3.2	3.3	2.7	0.9	3.3	2.4	24
22	22	1.8	1.0	S	1.2	1.1	0.9	0.7	0.7	0.8	0.9	1.0	1.0	1.0	0.9	0.9	0.9	1.1	0.9	0.9	1.2	0.8	0.7	0.5	0.8	0.5	1.8	0.9	24
23	23	0.5	S	0.8	0.8	0.6	0.6	0.6	0.5	0.5	0.5	0.6	0.5	0.5	0.4	0.4	0.3	0.4	0.6	0.8	0.7	0.7	0.8	0.9	1.1	0.3	1.1	0.6	24
24	24	S	1.6	1.6	1.4	1.9	1.8	1.6	1.8	1.2	0.9	0.7	0.7	1.3	1.2	1.3	1.0	0.8	1.0	1.0	1.6	1.9	1.7	1.6	S	0.7	1.9	1.3	24
25	25	3.0	2.8	2.6	2.1	2.1	2.1	1.9	1.6	1.3	1.1	0.8	0.8	0.7	1.0	2.2	1.3	1.2	0.9	1.0	1.8	4.4	2.9	S	3.3	0.7	4.4	1.9	24
26	26	2.4	2.8	2.9	2.1	2.0	2.7	4.2	3.3	3.2	2.0	1.5	1.4	1.6	1.1	1.4	1.8	1.7	2.3	2.3	2.6	3.2	S	2.0	2.1	1.1	4.2	2.3	24
27	27	2.8	2.0	2.9	1.5	1.7	2.2	2.8	2.2	1.8	1.6	1.3	1.5	2.0	1.5	1.7	2.0	1.9	1.8	1.9	3.1	S	2.9	3.1	1.5	1.3	3.1	2.1	24
28	28	1.8	1.9	2.1	1.9	2.4	1.7	1.8	1.5	1.9	2.0	1.7	2.2	2.3	1.7	1.4	0.9	1.2	2.0	2.1	S	2.2	2.5	2.9	2.6	0.9	2.9	1.9	24
29	29	2.5	2.4	1.9	2.2	2.0	1.6	1.3	1.1	1.1	1.2	1.1	1.2	0.9	0.9	0.9	0.8	0.9	0.9	S	1.7	2.4	2.5	2.7	2.2	0.8	2.7	1.6	24
30	30	2.5	1.9	1.7	2.8	1.6	1.9	1.7	1.6	1.6	1.0	0.8	0.7	1.1	1.1	2.4	1.0	0.5	S	1.6	2.4	4.9	4.8	2.4	2.4	0.5	4.9	1.9	24
31	31	1.9	1.7	1.3	1.4	1.6	2.2	1.7	0.8	0.6	0.5	0.6	0.5	0.5	0.6	0.7	0.8	S	1.3	1.1	1.5	2.1	1.8	1.4	2.0	0.5	2.2	1.2	24
HOURLY MAX		9.6	7.7	6.4	7.2	7.3	8.1	10.4	16.7	13.8	7.9	7.2	5.1	4.7	3.6	2.8	3.0	3.3	3.0	2.7	8.8	5.5	6.2	5.7	7.1				
HOURLY AVG		2.7	2.7	2.8	2.9	3.1	3.2	3.6	3.4	2.9	2.1	1.8	1.5	1.5	1.4	1.3	1.3	1.2	1.2	1.4	2.2	2.8	2.8	2.7	2.6				

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

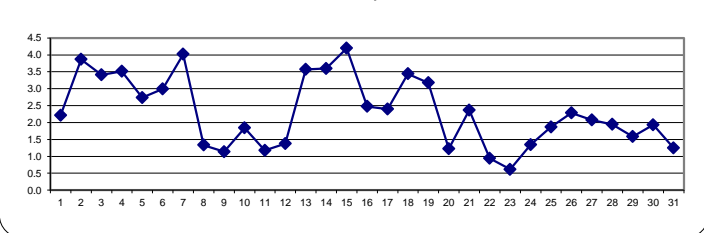
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR 159 PPB

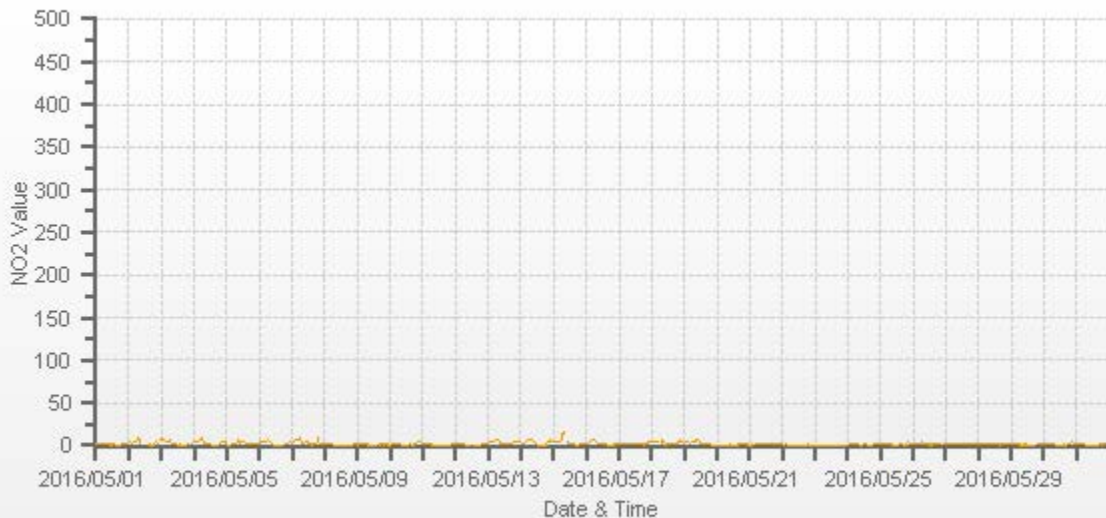
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0				
NUMBER OF NON-ZERO READINGS:	707				
MINIMUM 1-HR AVERAGE:	0.3	PPB	@ HOUR(S)	VAR	ON DAY(S)
MAXIMUM 1-HR AVERAGE:	16.7	PPB	@ HOUR(S)	7	15
MAXIMUM 24-HR AVERAGE:	4.2	PPB			15
					VAR-VARIOUS
IZS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	744	HRS
MONTHLY CALIBRATION TIME:	5	HRS	AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	1.82		MONTHLY AVERAGE:	2.3	PPB

24 HOUR AVERAGES FOR May 2016



NO2[ppb] Station: LICA COLD LAKE SOUTH Monthly: 05/2016 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	DAILY	24-HOUR				
DAY	MIN.	MAX.	AVG.	RDGS.																												
1	5.5	10.6	4.1	4.5	4.6	4.1	4.8	3.2	3.3	3.3	3.1	1.2	4.5	1.4	1.1	S	1.3	0.7	0.8	2.2	4.5	5.7	2.9	4.6	0.7	10.6	3.6	24				
2	4.5	5.2	4.5	5.4	6.0	9.0	7.1	9.4	9.4	C	C	C	C	C	C	C	1.8	1.0	1.0	6.9	12.5	6.6	S	13.0	1.0	13.0	6.5	24				
3	12.6	9.0	7.2	5.6	7.3	7.2	14.2	7.6	3.6	3.3	3.7	2.0	1.1	6.6	4.1	1.1	5.6	1.2	3.9	2.4	7.2	S	4.1	3.6	1.1	14.2	5.4	24				
4	6.0	7.3	10.3	7.3	8.4	15.2	11.1	5.3	2.8	3.3	3.5	3.2	2.3	1.2	1.1	1.4	1.6	1.0	1.2	5.7	S	8.1	6.8	8.7	1.0	15.2	5.3	24				
5	4.4	1.5	1.0	1.4	3.0	1.8	2.1	5.8	7.8	7.6	4.3	4.4	6.5	5.2	3.2	3.5	5.8	2.1	1.4	S	4.4	3.8	3.1	3.9	1.0	7.8	3.8	24				
6	3.8	4.9	8.0	5.6	9.3	6.9	8.0	7.2	7.1	2.9	1.7	1.2	1.4	0.5	0.7	0.6	3.3	1.4	S	5.0	6.2	4.4	6.4	5.1	0.5	9.3	4.4	24				
7	4.3	11.0	7.9	9.6	10.2	16.0	14.7	6.6	3.3	3.7	4.0	5.2	4.4	3.0	2.5	1.4	2.0	S	4.1	18.7	13.2	2.6	1.6	2.6	1.4	18.7	6.6	24				
8	2.6	2.5	2.0	2.6	2.4	2.7	3.4	1.4	0.8	1.0	0.6	0.7	0.8	1.4	1.7	1.0	S	2.1	3.2	0.8	1.2	1.3	1.8	2.9	0.6	3.4	1.8	24				
9	2.3	1.7	1.7	2.9	1.7	2.1	1.8	1.5	1.3	1.2	1.1	1.1	0.7	0.8	1.0	S	1.6	1.6	1.8	3.1	1.5	2.3	1.6	1.1	0.7	3.1	1.6	24				
10	1.6	1.9	2.6	2.3	3.6	3.3	2.0	1.9	0.8	1.2	1.2	1.0	3.7	6.2	S	6.2	1.4	2.5	7.7	3.2	13.0	6.1	8.0	3.1	0.8	13.0	3.7	24				
11	11.7	10.1	3.2	2.7	3.6	2.0	2.5	1.0	1.0	1.0	1.0	4.5	4.4	S	1.5	1.6	1.5	1.4	1.5	1.8	2.0	3.6	4.6	2.3	1.0	11.7	3.1	24				
12	3.1	5.5	5.4	2.7	3.8	6.7	7.0	1.8	3.1	2.0	4.8	0.7	S	2.9	1.9	1.1	0.6	1.0	1.5	3.5	6.9	3.6	3.1	2.3	0.6	7.0	3.2	24				
13	4.1	5.5	6.7	7.1	5.9	7.2	8.0	8.2	5.7	2.8	2.3	S	2.2	1.5	2.3	3.5	1.5	2.7	2.6	6.6	6.0	8.4	7.3	6.1	1.5	8.4	5.0	24				
14	5.9	4.6	5.2	4.5	7.8	7.7	7.4	8.9	7.1	6.4	S	3.5	4.1	3.1	0.7	1.6	0.7	2.5	1.1	6.4	13.1	9.9	6.7	7.4	0.7	13.1	5.5	24				
15	4.4	5.4	4.4	4.6	7.1	7.8	16.7	17.9	17.0	S	7.2	3.9	3.2	2.3	2.0	1.2	1.9	1.1	1.2	2.8	5.0	4.2	4.0	3.9	1.1	17.9	5.6	24				
16	3.9	3.8	5.4	5.8	8.5	10.3	8.6	4.6	S	3.3	2.7	3.8	2.5	2.0	1.2	4.6	3.1	1.0	0.8	0.9	1.2	1.5	1.7	1.8	0.8	10.3	3.6	24				
17	1.7	2.6	2.3	2.6	5.0	5.1	5.0	S	3.1	3.2	6.8	2.7	3.2	33.1	3.3	5.2	2.1	1.7	1.3	2.7	4.7	4.0	4.6	6.0	1.3	33.1	4.9	24				
18	7.2	6.3	6.8	6.0	4.4	5.6	S	7.1	4.4	7.2	6.4	1.2	3.5	10.9	20.1	3.5	15.7	15.7	4.0	8.1	7.7	10.3	5.2	5.6	1.2	20.1	7.5	24				
19	3.9	5.5	5.9	7.5	4.4	S	5.0	4.8	8.1	8.8	10.2	6.6	4.4	3.9	4.0	5.3	2.5	9.7	1.8	1.5	1.4	1.0	0.6	1.0	0.6	10.2	4.7	24				
20	0.6	0.5	0.9	1.0	S	1.9	1.1	1.9	R	1.9	5.1	2.7	1.6	1.6	1.5	4.3	4.0	5.9	5.2	3.3	7.8	3.5	3.3	1.7	0.5	7.8	2.8	23				
21	1.1	1.8	1.2	S	2.4	4.8	2.9	3.5	2.0	2.3	2.4	2.0	3.6	4.9	3.1	3.6	4.6	3.5	4.1	5.3	4.0	4.3	3.9	3.6	1.1	5.3	3.3	24				
22	2.5	1.3	S	1.4	1.2	1.5	1.1	1.0	0.8	1.2	1.5	2.7	1.5	1.2	1.0	1.8	2.2	1.5	1.2	1.6	1.5	0.8	0.6	1.2	0.6	2.7	1.4	24				
23	1.4	S	1.1	0.8	1.0	0.8	0.7	0.6	0.7	0.7	0.7	1.0	0.7	0.8	1.1	0.5	0.7	1.1	1.4	1.8	1.2	1.6	1.6	1.9	0.5	1.9	1.0	24				
24	S	3.7	3.3	2.1	3.8	3.8	3.3	3.6	2.7	1.4	1.4	1.0	15.8	4.6	9.6	2.0	1.9	2.3	1.6	3.1	10.6	2.6	4.9	S	1.0	15.8	4.1	24				
25	3.3	3.5	2.9	2.8	2.7	2.8	2.2	1.8	1.4	2.7	1.8	1.0	1.0	4.1	17.3	2.2	3.3	1.1	1.3	4.4	7.2	4.8	S	4.1	1.0	17.3	3.5	24				
26	2.7	3.8	4.1	3.2	3.2	4.5	4.7	3.9	4.1	2.5	3.7	4.0	13.7	1.4	1.8	3.8	2.2	3.1	4.3	3.1	4.8	S	2.3	4.3	1.4	13.7	3.9	24				
27	4.4	2.4	4.5	1.9	2.0	3.4	4.8	3.1	2.3	3.2	2.5	2.8	3.5	2.7	2.4	4.0	3.5	2.8	2.3	5.7	S	4.5	6.1	1.9	1.9	6.1	3.3	24				
28	2.4	2.7	2.5	2.7	3.1	2.0	7.8	1.7	3.2	3.9	2.4	2.9	3.2	4.6	2.7	1.0	2.2	2.8	2.7	S	3.6	3.3	3.2	3.5	1.0	7.8	3.0	24				
29	2.7	2.8	2.4	4.9	2.8	2.1	1.4	1.2	2.8	1.9	1.4	4.0	1.9	1.5	1.7	1.4	1.5	1.4	S	2.2	7.1	4.5	4.0	3.2	1.2	7.1	2.6	24				
30	3.6	2.9	2.7	9.7	2.0	2.3	2.8	2.2	2.2	1.9	1.0	0.9	1.8	2.7	3.2	2.3	1.2	S	1.9	3.6	6.0	5.7	3.7	3.5	0.9	9.7	3.0	24				
31	2.0	2.2	1.8	2.0	2.2	2.5	2.7	1.5	1.8	1.5	1.5	0.7	0.6	2.4	2.3	2.7	S	4.8	1.6	2.4	4.1	2.9	2.4	4.3	0.6	4.8	2.3	24				
HOURLY MAX	12.6	11.0	10.3	9.7	10.2	16.0	16.7	17.9	17.0	8.8	10.2	6.6	15.8	33.1	20.1	6.2	15.7	15.7	7.7	18.7	13.2	10.3	8.0	13.0								
HOURLY AVG	4.0	4.4	4.1	4.1	4.4	5.1	5.5	4.4	3.9	3.0	3.1	2.5	3.5	4.1	3.5	2.6	2.8	2.8	2.4	4.1	5.8	4.3	3.8	3.9								

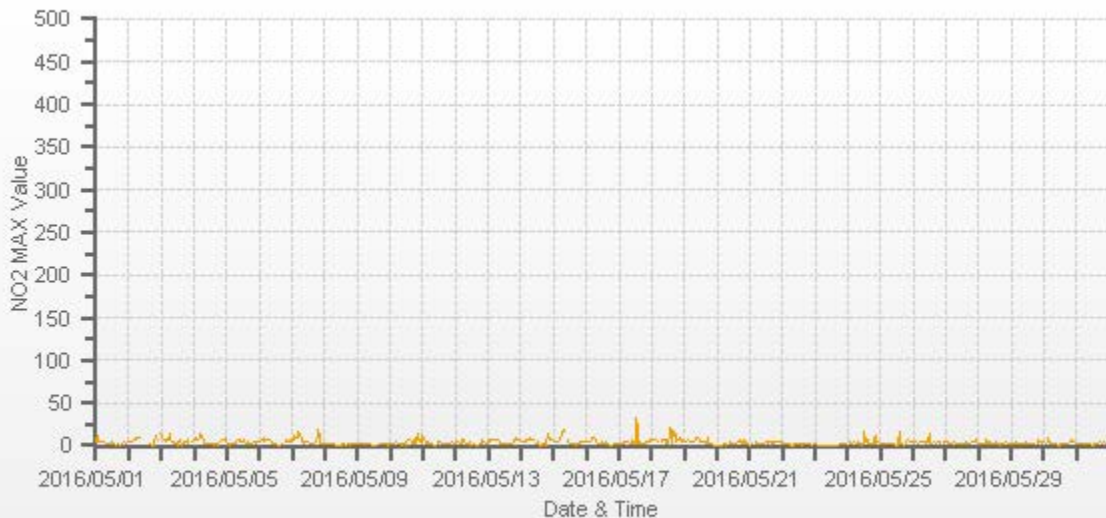
STATUS FLAG CODES

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:	704					
MAXIMUM INSTANTANEOUS VALUE:	33.1	PPB	@ HOUR(S)	13	ON DAY(S)	17
	VAR-VARIOUS					
IZS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	743	HRS	
MONTHLY CALIBRATION TIME:	7	HRS				
STANDARD DEVIATION:	3.22					

NO2 MAX[ppb] Station: LICA COLD LAKE SOUTH Monthly: 05/2016 Type: AVG 1 Hr. [1 Hr.]

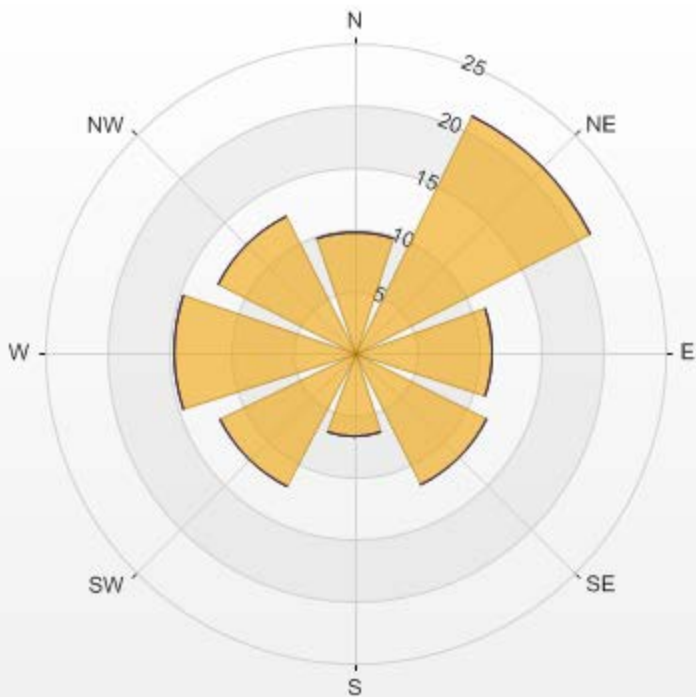


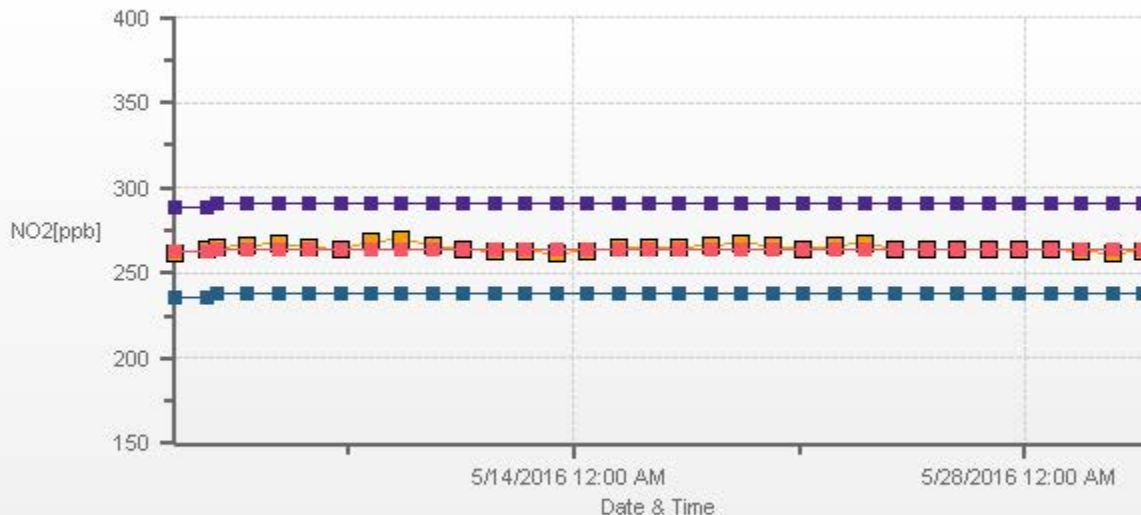
— NO2 MAX[ppb]



Wind: LICA COLD LAKE SOUTH Monitor: NO2 [ppb] Monthly: 05/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 95.03% Calm Avg: 0.00

Direction	0.0-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	9.76	0	0	0	9.76
NE	21.36	0	0	0	21.36
E	11.17	0	0	0	11.17
SE	11.88	0	0	0	11.88
S	6.79	0	0	0	6.79
SW	12.16	0	0	0	12.16
W	14.57	0	0	0	14.57
NW	12.31	0	0	0	12.31
Summary	100	0	0	0	100





## ***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	
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		30.2	22.1	19.2	22.2	25.1	22.5	26.6	32.1	35.0	37.9	42.7	47.4	49.7	51.1	46.8	S	38.7	38.3	36.9	33.0	24.6	19.1	18.5	12.7	12.7	51.1	31.8	24
2		9.6	8.2	9.8	5.9	4.5	5.1	8.4	13.3	22.5	29.7	32.8	33.7	36.9	38.8	40.0	41.1	41.0	40.6	39.2	32.7	22.9	20.4	S	11.7	4.5	41.1	23.9	24
3		5.8	4.9	6.4	7.4	4.4	4.2	6.7	C	C	C	C	C	C	54.7	53.7	54.9	56.9	57.8	55.9	51.4	44.1	S	40.1	37.4	4.2	57.8	32.2	24
4		23.0	18.6	12.7	12.3	10.5	8.0	10.7	35.9	39.2	43.9	51.9	53.4	55.4	55.1	53.7	54.1	53.7	53.1	52.0	43.8	S	25.6	23.4	24.3	8.0	55.4	35.4	24
5		27.3	41.6	41.7	42.0	42.8	43.8	47.3	45.1	42.0	42.4	44.8	39.1	31.3	29.0	34.4	39.2	40.0	39.5	38.3	S	29.6	28.7	31.2	25.7	25.7	47.3	37.7	24
6		20.4	15.5	10.8	7.9	6.9	7.8	18.0	27.1	33.7	39.9	42.2	41.4	42.7	46.1	45.7	45.3	46.2	46.2	S	38.9	29.6	26.4	21.8	18.6	6.9	46.2	29.5	24
7		30.3	23.6	18.1	14.9	13.8	11.1	12.3	30.5	37.4	42.1	42.8	47.8	49.7	52.4	51.9	52.3	50.8	S	46.5	32.2	39.2	45.4	50.0	49.4	11.1	52.4	36.7	24
8		47.7	45.4	43.1	39.5	37.2	35.1	34.8	45.6	50.0	51.5	51.4	55.7	57.2	54.3	48.8	49.1	S	49.1	46.9	39.8	35.8	33.5	30.8	27.4	27.4	57.2	43.9	24
9		26.5	26.1	25.9	25.1	22.7	23.0	24.2	25.4	25.9	26.4	27.7	27.9	28.1	26.8	27.3	S	27.4	28.5	27.6	25.5	29.1	25.1	22.4	22.1	22.1	29.1	25.9	24
10		22.4	23.2	21.3	20.0	18.1	19.4	23.3	27.5	33.6	32.8	35.5	37.1	39.2	39.2	S	39.0	39.1	38.0	37.0	36.1	25.7	20.1	22.4	25.2	18.1	39.2	29.4	24
11		20.7	18.0	15.0	17.9	25.1	26.5	33.0	34.7	36.1	39.1	39.1	40.3	41.6	S	43.0	43.0	43.3	41.8	41.9	41.9	42.3	40.6	37.7	30.3	15.0	43.3	34.5	24
12		25.6	21.9	18.2	19.7	28.4	21.3	29.5	39.1	41.0	42.6	42.7	42.1	S	38.0	37.5	38.3	39.4	39.8	38.6	37.3	29.4	23.6	21.8	20.0	18.2	42.7	32.0	24
13		17.9	15.5	14.0	13.1	16.3	13.4	21.0	25.0	32.2	39.6	40.2	S	43.7	46.0	46.9	44.8	44.2	45.2	43.7	34.2	29.3	24.9	21.1	21.6	13.1	46.9	30.2	24
14		15.4	14.3	15.5	12.7	8.6	6.9	13.1	22.6	30.6	36.7	S	43.0	43.6	43.3	42.5	43.2	43.6	42.7	42.0	33.8	25.9	22.4	18.4	17.2	6.9	43.6	27.7	24
15		17.9	13.9	12.0	9.8	7.1	5.4	3.5	8.5	20.1	S	41.0	46.9	51.4	54.7	54.7	52.4	51.1	51.3	51.1	47.0	34.9	32.0	28.2	24.1	3.5	54.7	31.3	24
16		19.6	17.5	15.6	13.0	8.3	5.8	18.7	36.0	S	51.1	57.9	58.1	56.6	55.6	54.8	54.3	55.2	55.9	53.1	50.2	48.3	46.6	45.4	39.6	5.8	58.1	39.9	24
17		41.6	36.7	37.0	38.3	35.1	32.4	32.0	S	32.8	34.9	37.4	43.3	47.0	47.6	49.5	52.5	52.3	49.1	46.0	45.9	40.5	30.9	25.5	21.2	21.2	52.5	39.5	24
18		16.6	15.9	12.0	8.7	8.2	5.4	S	22.6	32.7	C1	C1	C1	C1	C1	C1	46.0	44.7	43.6	44.5	36.6	23.8	26.1	26.4	23.4	5.4	46.0	25.7	18
19		22.4	19.6	14.8	15.2	21.6	S	24.3	27.8	32.8	35.3	35.5	39.4	39.8	42.9	49.2	51.8	51.7	32.4	26.1	22.8	21.1	21.0	21.1	21.8	14.8	51.8	30.0	24
20		21.0	20.6	20.9	20.8	S	20.4	20.3	20.9	23.4	26.8	26.4	25.9	26.3	27.1	28.1	28.6	25.5	24.7	24.7	22.3	17.3	11.4	14.2	18.0	11.4	28.6	22.4	24
21		16.6	14.8	20.9	S	20.5	16.5	20.9	24.2	29.0	33.0	33.5	32.9	30.9	27.2	26.4	25.4	25.1	28.8	28.7	24.7	17.8	15.1	12.1	9.5	9.5	33.5	23.2	24
22		14.7	21.5	S	18.8	18.4	20.5	19.9	19.4	21.5	23.8	23.1	21.4	20.0	17.9	16.6	15.0	14.3	13.2	12.9	13.5	13.8	13.6	13.7	13.1	12.9	23.8	17.4	24
23		13.6	S	15.8	17.4	18.0	17.4	18.0	19.7	21.2	22.6	23.4	23.8	23.9	24.1	24.9	25.7	26.8	28.5	29.1	32.4	34.6	34.1	34.3	36.4	13.6	36.4	24.6	24
24		S	32.2	27.8	22.6	19.6	23.9	24.4	23.8	24.1	22.9	21.7	24.5	25.2	26.8	29.1	30.5	31.7	31.3	30.6	25.1	28.7	22.6	17.6	S	17.6	32.2	25.8	24
25		17.4	13.6	8.7	2.9	5.8	11.5	13.9	16.4	22.3	27.7	31.1	32.5	34.7	37.8	37.0	37.6	39.6	43.3	43.4	36.2	20.7	16.8	S	11.1	2.9	43.4	24.4	24
26		12.4	9.0	6.0	4.0	3.8	3.7	15.1	23.9	35.1	43.2	46.2	44.5	42.6	44.4	45.5	45.7	44.9	40.7	43.7	41.1	38.3	S	28.8	3.7	46.2	29.9	24	
27		21.3	18.8	20.1	25.7	23.6	25.0	25.9	27.6	31.4	34.4	38.3	39.4	41.7	44.3	40.4	36.6	35.8	39.8	37.5	29.4	S	30.6	23.7	27.5	18.8	44.3	31.3	24
28		25.0	26.6	19.2	14.4	12.0	12.6	12.0	11.5	9.7	9.1	9.3	9.7	11.2	18.8	41.8	44.1	39.5	30.4	31.6	S	32.2	31.1	26.0	24.4	9.1	44.1	21.8	24
29		28.4	27.0	26.1	17.9	29.7	34.3	33.0	33.0	34.0	32.1	25.0	28.4	30.1	30.8	32.7	33.6	32.4	29.8	S	20.4	14.4	8.8	8.4	6.9	6.9	34.3	26.0	24
30		9.4	6.2	3.4	5.6	1.7	4.8	7.4	8.3	10.3	14.2	22.2	26.6	26.4	24.6	28.0	32.3	32.6	S	25.7	26.6	20.3	18.3	21.8	19.1	1.7	32.6	17.2	24
31		16.7	7.7	2.2	2.8	5.8	11.5	12.4	15.4	18.7	20.9	24.6	26.7	27.4	28.7	30.1	31.2	S	31.9	30.4	26.5	16.7	15.2	16.6	8.2	2.2	31.9	18.6	24
HOURLY MAX		47.7	45.4	43.1	42.0	42.8	43.8	47.3	45.6	50.0	51.5	57.9	58.1	57.2	55.6	54.8	54.9	56.9	57.8	55.9	51.4	48.3	46.6	50.0	49.4				
HOURLY AVG		21.2	20.0	17.8	16.6	16.8	16.6	20.4	25.6	29.6	33.5	35.4	36.9	37.7	38.9	40.0	41.0	40.3	39.1	38.1	33.8	28.7	25.2	24.9	22.4				

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

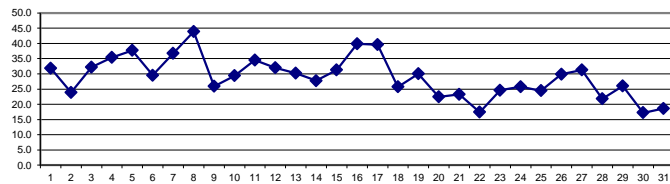
OBJECTIVE LIMIT:

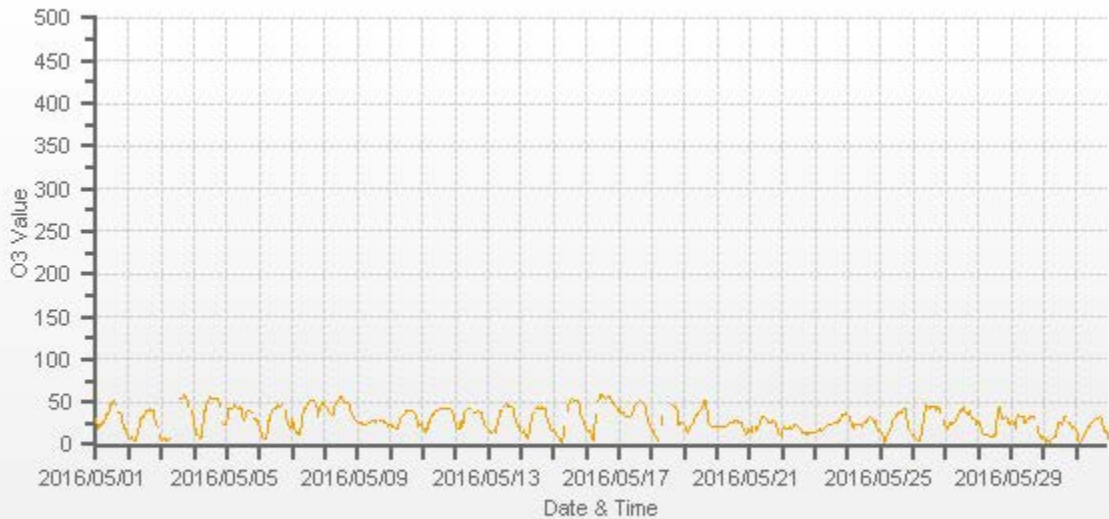
ALBERTA ENVIRONMENT: 1-HR 82 PPB

MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0			
NUMBER OF NON-ZERO READINGS:	700			
MINIMUM 1-HR AVERAGE:	1.7	PPB	@ HOUR(S)	4
MAXIMUM 1-HR AVERAGE:	58.1	PPB	@ HOUR(S)	11
MAXIMUM 24-HR AVERAGE:	43.9	PPB		
			ON DAY(S)	30
			ON DAY(S)	16
			ON DAY(S)	8
			VAR-VARIOUS	
IZS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	738
MONTHLY CALIBRATION TIME:	6	HRS	AMD OPERATION UPTIME:	99.2
				%
STANDARD DEVIATION:	13.21		MONTHLY AVERAGE:	29.0
				PPB

24 HOUR AVERAGES FOR May 2016





— O3[ppb]



OZONE MAX instantaneous maximum in ppb

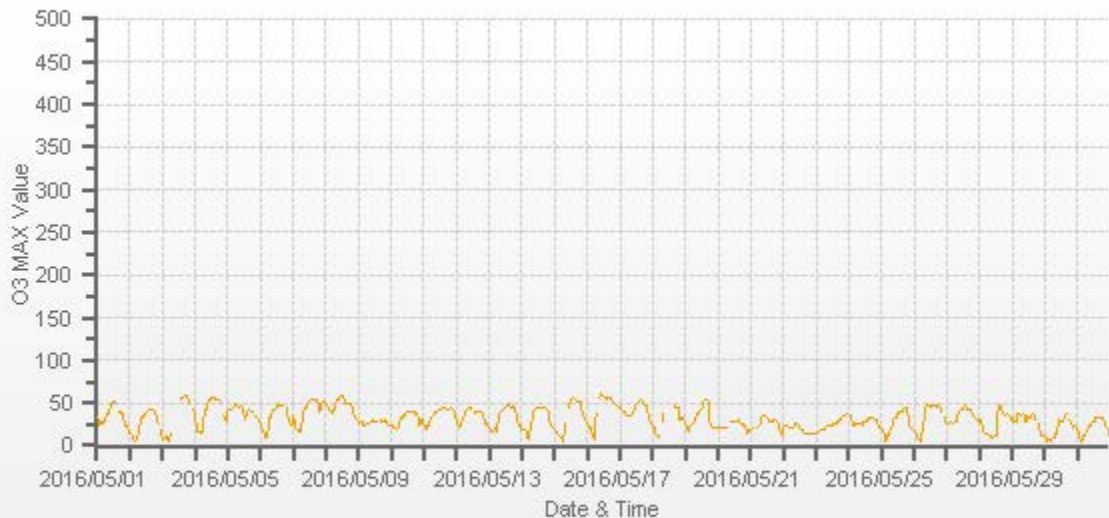
MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
DAY	MIN.	MAX.	AVG.	RDGS.																									
1	33.7	29.5	23.4	27.7	27.2	26.2	29.9	34.3	37.1	40.3	46.1	49.0	51.6	52.5	49.5	S	40.7	39.2	38.1	37.1	27.5	23.3	23.3	18.1	18.1	52.5	35.0	24	
2	14.1	13.6	12.9	8.0	5.6	6.3	11.8	16.0	32.7	32.2	34.6	35.7	39.1	39.9	41.4	41.9	41.9	41.3	40.8	38.8	28.0	26.3	S	17.8	5.6	41.9	27.0	24	
3	7.3	6.7	10.5	11.9	6.4	5.3	13.5	C	C	C	C	C	C	56.3	55.1	56.9	58.2	59.0	58.7	53.7	49.8	S	43.1	42.5	5.3	59.0	35.0	24	
4	29.6	26.5	15.6	15.7	17.0	13.1	30.6	38.0	41.6	49.2	55.1	55.1	56.9	56.8	54.6	55.2	54.6	54.2	53.4	50.8	S	34.6	32.6	27.6	13.1	56.9	39.9	24	
5	38.9	42.9	42.5	43.2	44.2	46.0	48.6	47.2	44.8	45.8	46.0	44.3	34.9	30.5	39.6	41.7	41.2	40.3	39.5	S	35.1	31.9	32.0	31.0	30.5	48.6	40.5	24	
6	24.2	20.3	16.8	14.7	10.3	12.5	25.6	32.3	38.1	42.1	43.0	42.7	44.8	48.4	47.2	46.6	47.0	46.9	S	45.1	35.9	31.2	26.6	23.5	10.3	48.4	33.3	24	
7	34.4	31.2	21.5	19.3	17.8	16.2	21.8	33.9	41.7	43.6	45.0	50.7	52.3	54.7	54.5	53.5	53.1	S	53.5	40.6	42.8	49.5	50.7	50.6	16.2	54.7	40.6	24	
8	48.8	46.8	44.8	42.1	39.0	37.6	41.9	49.5	53.2	53.0	55.5	57.6	59.0	57.5	50.4	50.0	S	50.4	48.7	46.0	37.1	34.7	32.2	29.6	29.6	59.0	46.3	24	
9	27.4	26.8	28.5	28.2	24.0	23.6	25.6	26.4	26.6	27.8	29.5	28.9	29.2	28.3	27.7	S	28.1	29.8	28.7	28.9	30.0	28.3	23.4	22.7	22.7	30.0	27.3	24	
10	22.8	24.2	22.2	20.7	19.7	21.2	25.2	32.4	35.1	34.0	36.6	38.8	40.2	40.0	S	40.0	40.2	39.0	38.2	37.1	33.3	22.7	29.7	29.8	19.7	40.2	31.4	24	
11	26.2	21.4	18.9	24.4	28.0	31.6	34.6	35.7	40.2	40.2	39.9	41.4	42.8	S	44.2	43.9	44.6	42.7	43.1	42.7	43.6	41.9	41.5	32.8	18.9	44.6	36.8	24	
12	29.6	25.2	20.8	24.1	31.6	32.3	38.7	42.5	42.1	43.6	43.9	42.7	S	39.4	38.4	39.7	40.2	40.3	39.6	38.5	33.9	26.5	25.2	22.8	20.8	43.9	34.9	24	
13	20.6	18.3	16.0	16.2	20.3	16.2	23.0	29.8	40.6	40.6	41.2	S	45.2	47.5	48.4	46.9	45.4	46.8	45.4	44.2	33.9	29.2	24.4	23.7	16.0	48.4	33.2	24	
14	19.6	18.9	19.6	15.7	10.2	7.7	18.9	26.3	33.1	41.4	S	44.5	44.5	44.3	43.7	44.2	44.6	43.9	43.0	41.1	30.8	26.5	24.4	21.5	7.7	44.6	30.8	24	
15	19.6	17.2	13.7	12.5	9.6	8.8	5.7	15.0	25.9	S	44.5	50.4	53.7	56.5	56.6	54.2	52.5	52.6	52.2	51.6	41.2	39.1	31.1	29.6	5.7	56.6	34.5	24	
16	25.5	21.9	21.1	15.8	11.7	6.6	33.8	37.6	S	57.4	59.9	59.1	57.6	56.5	56.1	55.1	56.6	57.5	54.3	51.6	49.5	48.7	46.6	44.9	6.6	59.9	42.8	24	
17	43.5	41.6	39.7	39.6	38.0	34.2	34.2	S	34.2	36.7	40.0	46.1	48.7	50.1	52.1	53.9	53.9	51.8	46.9	46.8	45.8	33.6	29.5	25.9	25.9	53.9	42.0	24	
18	20.8	20.1	15.2	10.7	12.1	10.4	S	27.4	38.5	C1	C1	C1	C1	C1	C1	C1	46.7	45.5	45.5	44.5	29.9	33.1	31.7	27.7	10.4	46.7	28.7	17	
19	26.1	24.3	17.2	20.3	22.7	S	25.6	30.8	34.5	37.1	38.2	41.6	41.9	52.0	53.2	53.7	53.2	51.3	28.6	24.2	21.8	21.6	21.9	22.1	17.2	53.7	33.2	24	
20	21.7	20.9	21.1	21.2	S	20.9	20.9	21.6	R	27.5	27.2	27.1	27.2	28.1	29.0	29.5	28.0	26.2	26.6	24.4	22.7	14.6	16.6	19.0	14.6	29.5	23.7	23	
21	17.7	22.2	22.2	S	21.5	20.2	22.7	26.0	31.7	34.3	35.5	35.4	33.7	29.5	28.7	28.7	27.2	30.5	30.2	27.1	25.0	18.1	14.7	12.6	12.6	35.5	25.9	24	
22	21.2	23.1	S	22.8	20.6	21.2	20.9	20.7	22.8	24.9	24.8	22.7	21.2	19.4	17.7	16.3	15.0	14.1	13.3	14.5	14.5	14.5	14.7	13.9	13.3	24.9	18.9	24	
23	14.2	S	17.2	18.4	18.6	18.2	19.3	21.4	22.5	24.1	24.4	24.6	24.6	25.3	25.7	26.9	27.8	29.9	30.9	34.9	36.3	35.1	37.4	38.1	14.2	38.1	25.9	24	
24	S	34.2	31.3	24.2	23.2	25.2	25.7	24.9	25.7	25.7	22.4	28.3	27.5	29.3	31.3	32.3	33.3	33.0	33.1	29.8	31.4	27.4	21.6	S	21.6	34.2	28.2	24	
25	20.0	16.3	13.8	4.2	11.3	12.9	16.0	17.7	26.8	30.8	33.7	34.0	36.6	40.1	40.3	39.8	41.6	45.2	45.5	43.3	28.7	22.2	S	18.1	4.2	45.5	27.8	24	
26	16.2	16.6	8.5	6.8	7.0	5.7	21.8	29.3	41.1	46.1	48.5	48.1	44.3	45.8	47.0	47.8	47.3	43.6	45.9	44.3	40.6	S	33.7	29.2	5.7	48.5	33.3	24	
27	25.7	24.8	26.8	27.7	24.8	26.2	27.5	28.7	34.3	37.4	41.3	43.3	44.0	46.9	47.0	41.2	41.9	41.9	41.7	34.5	S	33.9	30.9	30.5	24.8	47.0	34.9	24	
28	27.8	29.6	22.8	16.5	13.2	13.5	13.0	12.5	10.6	9.8	10.1	11.6	12.6	36.6	47.2	47.8	44.3	36.6	36.3	S	36.9	35.7	34.6	29.6	9.8	47.8	25.6	24	
29	31.7	28.6	28.1	27.5	36.6	36.9	35.2	35.4	36.6	36.0	27.8	35.4	33.9	33.6	35.9	38.4	35.1	31.4	S	24.9	18.3	12.3	10.8	11.3	10.8	38.4	29.6	24	
30	11.7	9.1	5.6	7.1	5.3	7.1	9.4	9.3	13.6	17.4	25.9	29.6	29.0	27.1	32.2	35.4	37.1	S	30.3	29.2	23.7	21.5	23.4	20.4	5.3	37.1	20.0	24	
31	18.6	15.9	5.0	5.2	11.7	12.5	14.1	17.7	21.5	23.9	26.8	28.6	28.7	32.8	32.8	32.3	S	33.3	33.1	29.9	25.3	21.9	21.0	11.1	5.0	33.3	21.9	24	
HOURLY MAX	48.8	46.8	44.8	43.2	44.2	46.0	48.6	49.5	53.2	57.4	59.9	59.1	59.0	57.5	56.6	56.9	58.2	59.0	58.7	53.7	49.8	49.5	50.7	50.6					
HOURLY AVG	24.6	24.0	20.8	19.7	19.6	19.2	24.5	28.3	33.1	35.8	37.4	39.2	39.5	41.6	42.3	42.6	42.1	41.3	40.2	37.9	32.9	29.0	28.6	25.9					

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:	698					
MAXIMUM INSTANTANEOUS VALUE:	59.9	PPB	@ HOUR(S)	10	ON DAY(S)	16
VAR-VARIOUS						
IZS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	736	HRS	
MONTHLY CALIBRATION TIME:	6	HRS				
STANDARD DEVIATION:	12.93					

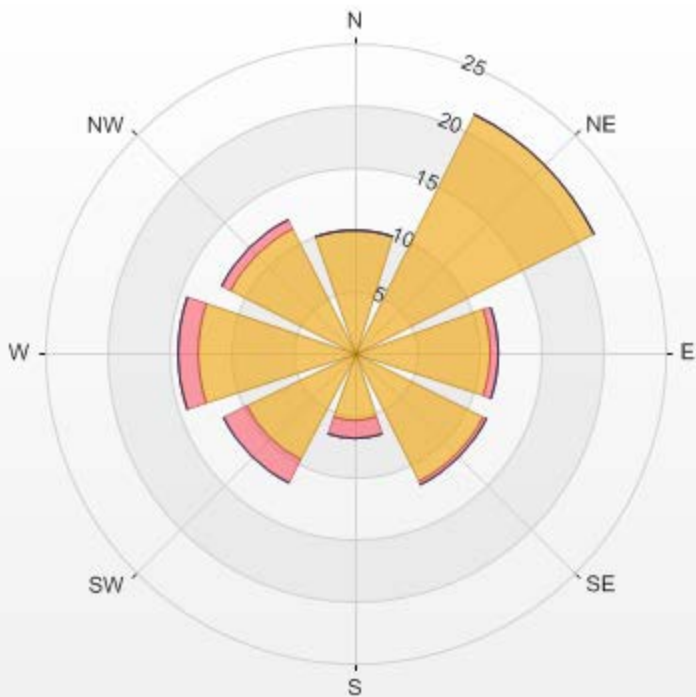


— O3 MAX[ppb]

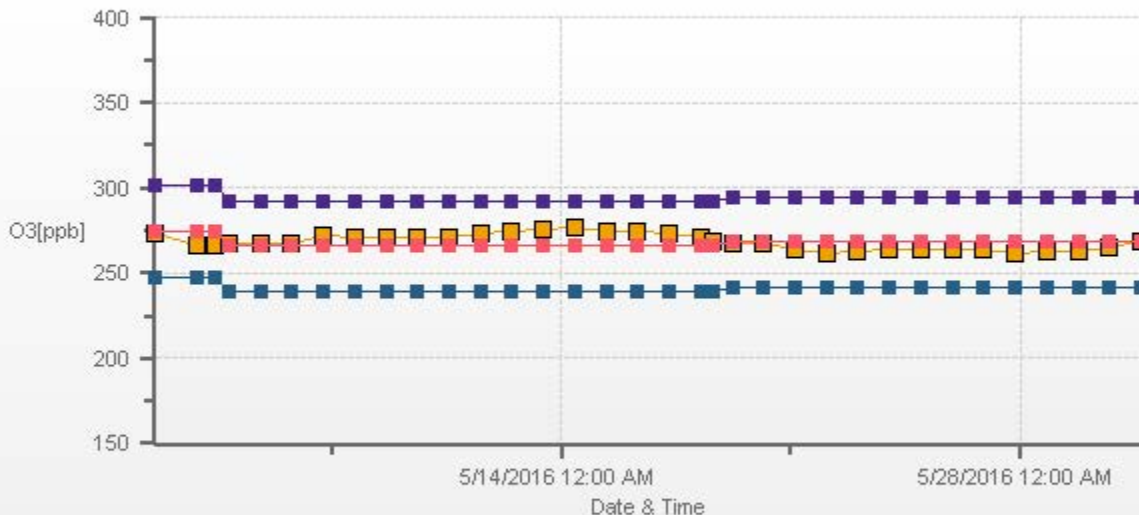


Wind: LICA COLD LAKE SOUTH Monitor: O3 [ppb] Monthly: 05/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 94.09% Calm Avg: 0.00

Direction	0.0-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	9.86	0	0	0	9.86
NE	21.57	0	0	0	21.57
E	11	0.57	0	0	11.57
SE	11.57	0.43	0	0	12
S	5.43	1.43	0	0	6.86
SW	9.71	2.14	0	0	11.85
W	12.71	1.57	0	0	14.28
NW	11.14	0.86	0	0	12
Summary	92.99	7	0	0	100



% Icon Classes (ppb)	93	0.0-50.0	7	50.0-110.0	0	110.0-210.0	0	>210.0
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***PARTICULATE MATTER 2.5***

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

<b>MST</b>		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	MIN.	MAX.	AVG.	MIN.	MAX.	AVG.	MIN.	MAX.	AVG.	MIN.	MAX.	AVG.	MIN.	MAX.	AVG.	MIN.	MAX.	AVG.	MIN.	MAX.	AVG.	MIN.	MAX.	AVG.	MIN.	MAX.	AVG.	MIN.	MAX.	AVG.	RDGS.
1	4.4	5.9	3.9	6.4	4.9	7.9	7.5	5.4	5.4	5.9	5.4	3.9	2.9	1.4	2.4	8.4	5.9	4.4	1.9	2.9	1.0	2.9	4.4	4.4	1.0	8.4	4.6	24			
2	5.9	5.9	4.9	6.4	2.4	1.4	0.4	3.9	4.9	2.4	2.4	0.0	1.9	3.9	6.4	4.4	7.5	9.4	8.9	6.4	9.9	9.4	9.9	9.0	0.0	9.9	5.3	24			
3	12.9	11.4	17.0	8.9	14.9	7.5	8.9	6.9	8.4	7.9	10.9	2.9	0.4	4.4	2.9	C	C	C	14.4	X	7.9	3.4	2.9	0.0	0.0	17.0	7.7	23			
4	13.0	9.9	3.9	X	14.9	31.9	17.9	0.0	6.8	15.1	X	26.6	11.5	5.4	10.8	15.2	28.6	4.3	9.6	0.0	0.0	12.8	11.7	10.2	0.0	31.9	11.8	22			
5	10.4	3.3	4.6	3.8	3.4	0.8	7.8	40.3	170.7	177.8	143.1	64.0	35.4	50.3	36.7	22.7	13.9	8.3	8.5	5.6	12.0	5.8	8.8	4.6	0.8	177.8	35.1	24			
6	10.2	7.1	8.4	8.9	7.5	13.1	12.4	10.5	7.1	0.0	7.4	0.0	0.0	4.1	0.0	2.8	28.1	X	22.3	37.3	18.8	23.0	25.8	9.8	0.0	37.3	11.5	23			
7	13.5	1.7	21.4	23.2	14.7	21.2	5.6	15.2	X	X	X	18.5	29.5	15.0	27.9	7.3	33.0	X	57.7	0.0	5.0	18.0	21.3	9.0	0.0	57.7	17.9	20			
8	8.2	6.7	4.6	9.2	32.4	2.9	19.7	X	1.3	14.7	25.0	7.7	3.7	26.8	1.4	0.0	3.4	9.0	13.7	0.0	15.0	16.0	5.7	12.4	0.0	32.4	10.4	23			
9	12.0	27.0	9.4	14.4	2.1	0.0	10.5	0.0	7.5	4.9	8.4	7.9	3.4	0.4	6.4	4.9	3.9	8.4	8.4	5.9	8.4	2.9	9.9	14.4	0.0	27.0	7.6	24			
10	7.5	13.5	11.4	15.9	7.9	5.4	6.4	4.9	2.4	17.9	8.9	8.4	3.9	X	4.0	10.5	22.5	38.0	22.5	18.9	22.9	18.5	18.5	15.5	2.4	38.0	13.3	23			
11	13.5	4.9	7.9	4.9	14.4	12.4	4.4	13.9	X	4.9	9.9	4.9	12.9	26.9	7.5	X	8.4	10.4	7.9	3.9	7.9	X	0.0	3.4	0.0	26.9	8.8	21			
12	5.9	3.9	1.0	9.4	13.0	9.9	11.9	2.9	12.4	25.4	8.4	10.4	3.9	5.5	4.4	12.4	3.9	7.9	9.9	13.0	7.9	7.5	0.0	0.0	0.0	25.4	8.0	24			
13	5.9	3.4	2.9	5.4	6.9	6.4	10.4	19.5	8.9	9.9	4.4	6.0	7.0	25.0	9.4	6.0	22.9	40.0	31.5	37.0	36.4	26.4	38.4	30.4	2.9	40.0	16.7	24			
14	29.9	29.4	31.4	35.9	38.9	43.0	35.9	37.5	36.5	15.0	33.0	15.9	22.4	10.9	12.9	X	21.9	0.0	6.9	13.0	12.0	13.5	0.0	17.4	0.0	43.0	22.3	23			
15	1.4	0.0	9.9	8.4	9.4	14.9	15.9	26.4	52.0	23.5	1.4	37.5	35.4	29.9	31.4	14.9	14.0	13.0	20.0	14.0	17.0	99.0	15.5	17.0	0.0	99.0	21.7	24			
16	23.9	21.4	15.5	21.4	18.5	26.9	32.0	51.0	37.0	38.4	40.9	40.0	44.5	40.0	24.4	26.9	22.4	11.4	33.0	25.5	29.4	81.5	20.5	9.0	9.0	81.5	30.6	24			
17	7.5	9.4	8.4	9.9	7.5	10.5	19.5	17.5	14.0	7.0	38.5	10.9	24.0	35.5	27.0	24.0	45.5	40.0	28.5	29.5	44.0	17.0	15.5	10.9	7.0	45.5	20.9	24			
18	12.5	16.0	9.4	22.0	22.5	18.0	18.5	28.5	40.5	0.0	9.4	45.5	21.0	27.5	23.9	6.9	3.4	X	X	6.4	18.5	18.5	3.9	7.9	0.0	45.5	17.3	22			
19	21.0	22.0	19.5	21.0	59.0	86.0	88.5	142.5	189.5	306.1	307.6	232.6	134.5	18.0	46.5	46.5	45.0	108.5	52.0	47.4	30.4	28.4	33.0	17.0	17.0	307.6	87.6	24			
20	24.0	12.5	3.4	11.4	3.9	4.4	7.9	0.0	10.1	C	C	Y	Y	Y	Y	Y	4.9	12.9	8.9	17.4	12.0	9.9	7.5	7.5	0.0	24.0	9.3	19			
21	11.4	13.0	8.4	8.9	2.9	23.4	111.5	37.4	21.4	19.5	4.4	3.9	X	26.9	24.9	9.4	35.9	83.0	96.5	105.0	18.9	20.9	11.4	20.0	2.9	111.5	31.3	23			
22	52.0	88.5	81.0	116.0	99.5	111.5	56.0	22.4	10.4	1.0	17.0	22.9	49.0	15.5	11.4	13.5	10.9	34.9	7.9	8.9	6.4	10.4	9.9	2.9	1.0	116.0	35.8	24			
23	7.5	2.4	4.4	0.4	X	9.9	0.0	27.9	24.4	1.9	12.4	X	X	X	X	X	39.0	10.4	1.9	9.4	7.9	5.9	5.9	2.9	0.0	39.0	9.7	18			
24	4.4	11.4	5.5	5.5	9.9	12.0	23.9	0.0	68.5	67.5	C1	C1	C1	Y	Y	Y	Y	0.0	X	15.3	9.2	18.2	7.0	0.0	0.0	68.5	16.1	16			
25	19.2	9.6	5.4	0.0	7.6	26.0	9.7	30.8	17.9	3.3	4.1	36.0	3.2	X	14.3	X	0.0	15.3	10.4	1.3	11.9	25.4	28.3	29.8	0.0	36.0	14.1	22			
26	30.2	22.9	4.4	X	11.4	31.4	11.3	11.7	11.9	1.8	21.9	0.0	5.7	3.1	4.3	X	16.0	13.8	0.0	13.4	8.9	7.6	19.4	16.3	0.0	31.4	12.2	22			
27	22.4	26.5	29.9	33.4	13.5	7.9	0.4	1.9	23.0	17.9	17.5	28.9	17.9	0.0	X	33.0	0.0	X	25.9	16.4	23.9	20.5	19.5	5.4	0.0	33.4	17.5	22			
28	4.4	22.4	14.0	23.9	31.0	28.9	16.4	17.0	2.4	9.4	4.4	14.5	15.9	X	X	8.9	10.4	14.5	24.4	28.9	22.4	35.4	15.9	23.4	2.4	35.4	17.7	22			
29	14.9	21.4	7.9	8.4	0.0	7.9	8.9	13.9	7.5	5.9	3.9	9.9	14.0	3.4	2.4	0.0	3.9	3.4	17.4	8.9	6.4	23.4	15.9	18.9	0.0	23.4	9.5	24			
30	14.9	13.0	4.9	14.4	14.4	11.4	6.4	10.4	7.5	16.4	5.4	4.9	10.9	15.5	13.0	17.4	25.9	30.4	35.9	11.4	23.9	5.9	18.0	12.4	4.9	35.9	14.4	24			
31	8.4	7.5	14.5	12.4	9.9	11.4	12.4	1.9	0.0	0.0	0.0	0.0	13.0	0.0	0.0	6.4	21.4	6.4	14.5	3.9	5.4	15.9	13.9	5.4	0.0	21.4	7.7	24			
HOURLY MAX	52.0	88.5	81.0	116.0	99.5	111.5	111.5	142.5	189.5	306.1	307.6	232.6	134.5	50.3	46.5	46.5	45.5	108.5	96.5	105.0	44.0	99.0	38.4	30.4							
HOURLY AVG	14.0	14.6	12.2	16.2	16.6	19.6	19.3	20.1	27.9	28.3	28.0	23.7	19.5	15.8	13.7	13.1	17.3	20.7	20.7	16.9	14.9	20.1	13.5	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

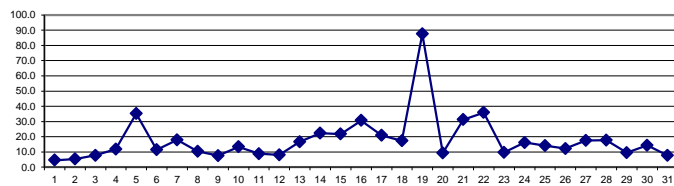
OBJECTIVE LIMIT:

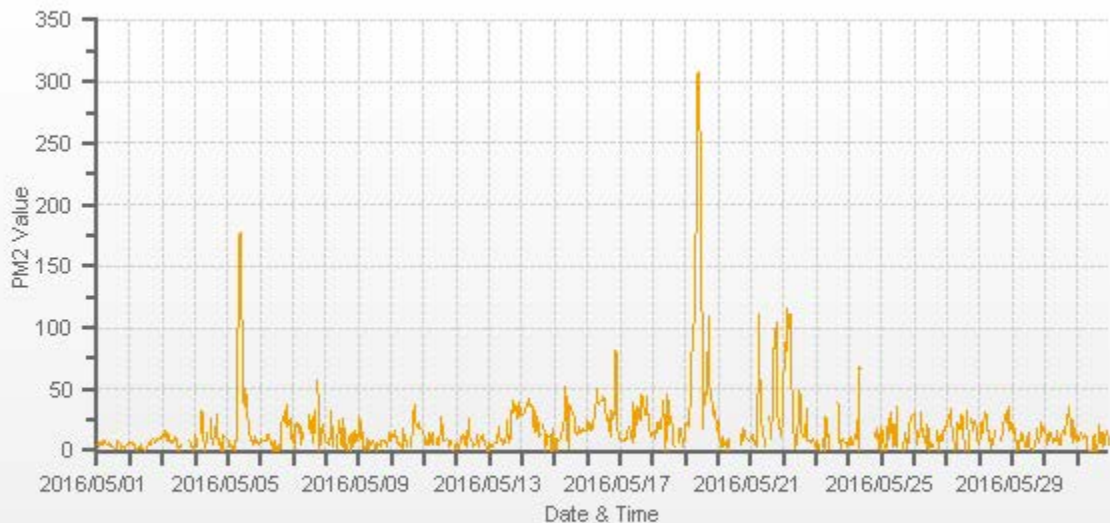
ALBERTA ENVIRONMENT: 1-HR 80 ug/m3 24-HR 30 ug/m3

**MONTHLY SUMMARY**

NUMBER OF 1-HR EXCEEDENCES:	23
NUMBER OF 24-HR EXCEEDENCES:	5
NUMBER OF NON-ZERO READINGS:	655
MINIMUM 1-HR AVERAGE:	0.0 ug/m3 @ HOUR(S) VAR ON DAY(S) VAR
MAXIMUM 1-HR AVERAGE:	307.6 ug/m3 @ HOUR(S) 10 ON DAY(S) 19
MAXIMUM 24-HR AVERAGE:	87.6 ug/m3 VAR-VARIOUS ON DAY(S) 19
MONTHLY CALIBRATION TIME:	5 HRS
MONTHLY CALIBRATION TIME:	5 HRS
OPERATIONAL TIME:	700 HRS
AMD OPERATION UPTIME:	94.1 %
STANDARD DEVIATION:	27.65
MONTHLY AVERAGE:	18.2 ug/m3

**24 HOUR AVERAGES FOR May 2016**

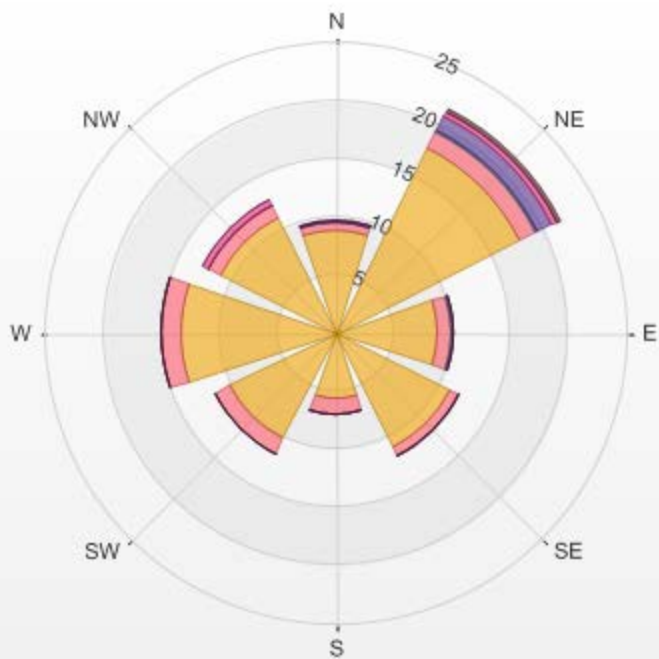




— PM2[ug/m3(L)]

Wind: LICA COLD LAKE SOUTH Monitor: PM2 [ug/m3(L)] Monthly: 05/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 93.41% 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	8.78	0.72	0	0.14	0.14	0	9.78
NE	17.7	1.58	0.14	1.44	0.43	0.29	21.58
E	8.78	1.15	0.14	0.14	0	0	10.21
SE	10.94	0.86	0	0.14	0	0	11.94
S	5.61	1.44	0	0	0	0	7.05
SW	10.22	1.44	0	0	0	0	11.66
W	13.38	1.58	0	0	0	0	14.96
NW	11.08	1.15	0.14	0	0.43	0	12.8
Summary	86.49	9.92	0.42	1.86	1	0.29	100



% Icon Classes (ug/m3(L))		10	30.0-60.0	2	80.0-120.0	1	120.0-240.0	0	>240.0
86	0.0-30.0	0	60.0-80.0						



***WIND SPEED***

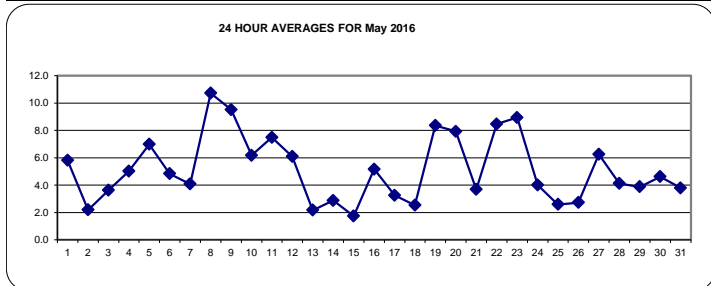
**WIND SPEED (WS) hourly averages in km/hr**

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								
DAY	MIN.	MAX.	AVG.	RDGS.																									MIN.	MAX.	AVG.	RDGS.				
1	2.2	1.6	0.6	4.5	4.9	4.0	4.9	6.9	7.1	6.0	10.0	12.0	9.8	10.5	10.8	10.7	10.6	8.9	6.8	3.1	1.4	1.0	0.7	0.6	0.6	0.6	12.0	5.8	24							
2	0.7	0.6	1.0	0.5	0.3	0.5	0.8	1.4	2.7	2.6	2.3	4.5	4.0	2.7	4.0	6.9	3.5	4.8	3.8	1.5	0.9	0.9	0.2	1.5	0.2	0.2	6.9	2.2	24							
3	0.1	0.7	0.4	0.3	0.5	0.1	0.1	3.0	1.9	5.0	6.0	5.6	6.9	7.1	7.0	7.3	7.0	6.9	5.4	4.8	4.1	3.7	2.3	0.9	0.1	7.3	3.6	24								
4	0.8	0.4	0.6	0.5	1.1	0.5	0.2	2.5	3.7	6.4	6.8	9.3	11.8	12.9	13.8	11.9	11.0	10.8	9.7	2.4	0.6	0.8	0.4	1.5	0.2	13.8	5.0	24								
5	3.8	10.0	8.9	6.0	4.3	5.5	8.9	11.5	13.1	12.4	13.4	11.8	10.3	5.4	2.4	3.5	5.3	6.9	5.5	3.9	2.2	3.9	5.3	3.4	2.2	13.4	7.0	24								
6	2.7	2.7	1.1	0.9	0.7	1.6	3.6	5.2	5.7	8.8	7.6	7.9	8.6	10.1	8.5	9.0	11.7	9.3	5.8	1.6	1.3	0.9	0.4	0.4	0.4	11.7	4.8	24								
7	0.7	0.9	1.5	1.5	1.1	1.1	1.0	2.6	3.1	7.0	5.9	8.4	6.4	6.8	10.3	6.9	5.2	3.4	2.4	2.1	5.0	4.1	5.4	5.1	0.7	10.3	4.1	24								
8	6.1	8.6	9.3	4.0	3.0	4.3	11.0	16.3	19.4	17.1	17.1	15.6	13.8	12.0	12.0	10.0	9.6	12.0	9.7	13.7	10.4	9.1	7.3	6.1	3.0	19.4	10.7	24								
9	7.0	6.3	9.3	14.2	11.9	8.9	9.5	13.1	11.3	11.8	11.4	12.5	10.7	11.1	11.1	10.4	10.8	8.4	4.6	4.1	7.6	9.8	6.8	5.9	4.1	14.2	9.5	24								
10	4.6	4.8	3.3	3.6	3.5	4.9	6.5	8.1	8.9	8.1	9.5	7.5	9.0	9.5	9.5	11.0	10.5	9.9	6.7	4.0	1.2	0.4	1.8	1.5	0.4	11.0	6.2	24								
11	1.3	1.1	1.2	1.5	3.4	4.0	6.3	8.6	10.3	10.9	11.6	11.7	10.9	11.1	12.5	11.6	11.2	11.7	10.9	8.6	9.0	5.8	3.3	1.2	1.1	12.5	7.5	24								
12	0.2	0.6	0.3	1.1	3.5	1.6	2.7	7.2	8.2	10.1	10.4	9.5	8.9	11.6	10.7	12.5	14.6	13.7	9.6	6.3	0.6	0.4	0.9	1.0	0.2	14.6	6.1	24								
13	0.6	0.9	0.7	1.1	3.2	1.3	3.3	3.8	3.0	2.2	0.3	1.6	4.4	5.6	2.6	3.6	7.0	0.7	1.8	0.6	1.0	1.0	0.8	1.0	0.3	7.0	2.2	24								
14	0.6	0.8	0.5	0.3	0.5	0.2	1.3	3.2	3.7	6.1	5.5	5.3	4.3	5.7	4.3	6.4	7.0	5.2	4.0	2.7	0.4	0.3	0.4	0.5	0.2	7.0	2.9	24								
15	0.6	0.3	0.8	0.8	0.3	0.4	0.4	1.8	1.6	2.0	1.7	3.8	1.9	1.3	2.1	5.2	4.9	3.5	3.7	1.5	0.9	1.3	0.3	0.9	0.3	5.2	1.8	24								
16	0.3	0.8	0.2	0.7	0.3	0.7	2.0	3.7	4.5	6.5	7.7	9.9	8.7	9.9	9.9	11.2	11.2	9.2	7.4	4.4	4.4	4.8	3.1	2.5	0.2	11.2	5.2	24								
17	1.4	0.6	1.9	2.6	1.5	1.5	2.6	2.3	4.7	4.5	3.5	5.1	1.4	4.4	7.2	2.3	4.4	4.5	5.6	6.5	3.6	1.6	1.7	2.7	0.6	7.2	3.3	24								
18	0.1	0.6	0.8	0.6	0.6	0.2	1.7	3.5	3.5	4.5	8.0	6.7	4.9	3.0	1.6	2.5	3.9	4.7	4.3	0.7	0.8	1.9	0.8	1.0	0.1	8.0	2.5	24								
19	1.3	2.5	1.7	2.4	3.5	4.9	6.9	8.3	10.4	9.0	8.0	9.4	11.0	8.2	8.6	11.4	11.0	12.4	12.8	12.7	12.9	10.5	10.5	10.3	1.3	12.9	8.4	24								
20	9.0	9.8	9.5	10.8	13.0	12.4	10.5	10.3	9.1	12.6	11.2	9.1	9.2	7.6	8.8	8.5	5.6	5.1	4.7	1.8	1.8	1.4	3.6	4.9	1.4	13.0	7.9	24								
21	3.2	2.5	4.3	3.4	5.4	2.6	3.8	6.6	7.5	9.2	4.2	2.3	4.6	4.5	2.0	3.2	4.1	3.2	3.2	2.9	1.6	2.2	1.3	0.8	0.8	9.2	3.7	24								
22	3.1	6.1	11.7	12.1	9.9	9.4	11.5	11.4	11.3	11.8	9.3	10.4	10.9	8.9	8.8	8.4	5.0	4.4	4.4	5.9	7.4	7.7	7.6	5.7	3.1	12.1	8.5	24								
23	6.0	5.7	7.2	6.0	7.7	6.2	8.0	8.2	8.5	9.8	10.3	12.7	12.7	14.1	14.2	14.5	12.2	10.4	8.0	8.9	8.1	6.8	4.8	3.6	3.6	14.5	8.9	24								
24	3.2	3.0	2.3	2.3	3.0	5.0	5.1	4.3	3.7	4.5	7.2	4.6	3.0	3.6	3.5	4.1	4.3	4.2	4.4	3.3	5.1	3.8	3.3	5.3	2.3	7.2	4.0	24								
25	2.0	2.3	0.2	0.6	3.5	3.1	3.3	3.4	4.0	5.7	5.2	1.5	4.2	3.2	3.1	3.1	1.9	2.7	2.8	2.3	1.1	1.0	0.4	1.5	0.2	5.7	2.6	24								
26	1.6	0.2	0.5	0.4	0.5	0.2	2.0	1.7	2.6	3.5	3.8	3.2	6.4	4.0	6.0	2.8	2.6	5.7	5.0	4.3	3.1	3.6	1.1	0.7	0.2	6.4	2.7	24								
27	1.2	0.4	2.7	3.9	6.4	7.8	6.7	10.2	11.6	10.1	11.0	8.6	10.0	8.0	11.7	6.0	7.1	5.4	4.0	2.3	4.0	3.1	2.1	5.6	0.4	11.7	6.2	24								
28	3.1	4.9	2.7	3.4	3.7	5.9	6.0	9.1	7.5	5.7	7.2	5.8	3.8	3.0	7.4	4.7	3.9	1.5	3.0	2.5	1.9	1.0	0.7	0.8	0.7	9.1	4.1	24								
29	3.0	2.0	1.4	0.3	3.8	2.4	3.1	3.2	3.0	4.9	5.0	5.9	6.9	7.0	6.7	5.1	4.9	7.6	7.0	3.7	2.1	1.2	1.2	1.7	0.3	7.6	3.9	24								
30	1.8	1.6	1.1	1.7	1.1	1.5	3.0	2.9	4.0	4.6	2.3	3.0	7.6	6.5	6.6	5.5	7.7	8.8	6.4	6.9	6.1	7.6	6.7	6.0	1.1	8.8	4.6	24								
31	5.3	1.3	1.2	1.3	3.0	5.1	4.5	6.1	6.5	5.0	5.3	5.9	5.8	5.5	5.3	5.6	4.9	0.5	2.7	3.6	1.2	3.2	1.5	0.8	0.5	6.5	3.8	24								
HOURLY MAX	9.0	10.0	11.7	14.2	13.0	12.4	11.5	16.3	19.4	17.1	17.1	15.6	13.8	14.1	14.2	14.5	14.6	13.7	12.8	13.7	12.9	10.5	10.5	10.3												
HOURLY AVG	2.5	2.7	2.9	3.0	3.5	3.5	4.6	6.1	6.6	7.4	7.4	7.5	7.5	7.3	7.5	7.3	7.2	6.7	5.7	4.3	3.6	3.4	2.8	2.8												

**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

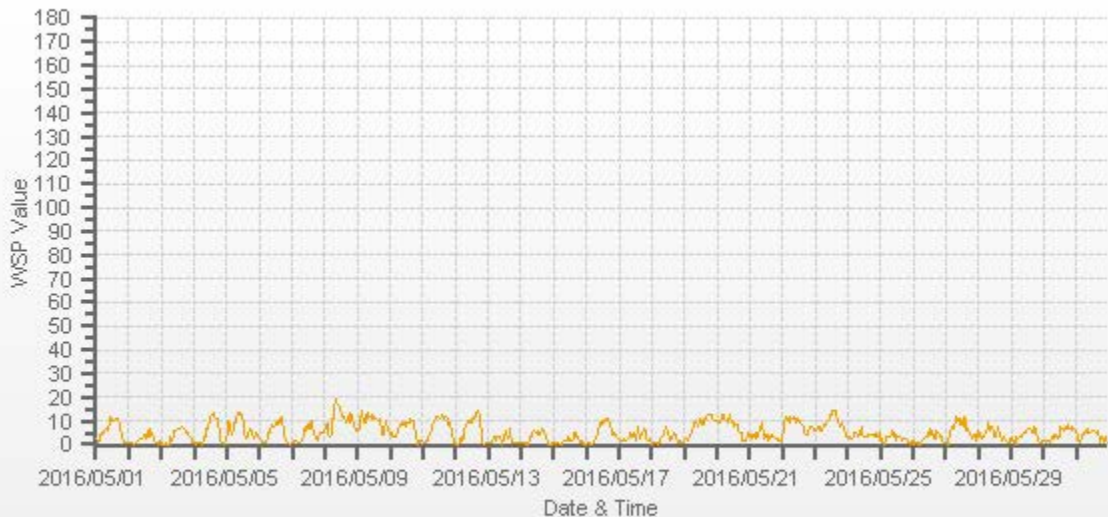
LAST CALIBRATION:	April 1, 2015
DECLINATION:	MAGNETIC DECLINATION 19 DEGREE EAST



**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS:	744
MINIMUM 1-HR AVERAGE:	0.1 KPH @ HOUR(S) VAR , 18 ON DAY(S) 3 , 18
MAXIMUM 1-HR AVERAGE:	19.4 KPH @ HOUR(S) 8 ON DAY(S) 8
MAXIMUM 24-HR AVERAGE:	10.7 KPH ON DAY(S) 8
	VAR-VARIOUS
MONTHLY CALIBRATION TIME:	0 HRS
OPERATIONAL TIME:	744 HRS
AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	3.80
MONTHLY AVERAGE:	5.2 KPH

WSP[kph] Station: LICA COLD LAKE SOUTH Monthly: 05/2016 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	
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		6.2	3.5	3.9	6.4	6.7	5.2	8.9	11.6	12.2	10.6	16.5	19.3	18.3	21.3	16.9	16.5	20.9	16.9	14.2	9.6	3.1	3.0	2.7	2.4	2.4	21.3	10.7	24
2		3.5	3.6	4.5	1.7	2.6	1.7	2.5	5.5	5.9	5.8	11.1	12.0	9.1	11.6	14.0	13.9	11.6	12.9	8.2	2.9	1.9	2.3	1.0	4.1	1.0	14.0	6.4	24
3		2.1	2.1	3.4	2.5	3.0	2.0	3.0	5.9	7.5	10.7	12.6	16.3	15.8	14.0	18.6	18.4	15.3	12.3	9.4	6.8	6.4	6.0	5.0	3.2	2.0	18.6	8.4	24
4		2.9	2.9	2.4	1.9	2.4	2.2	3.8	5.6	10.3	11.4	15.1	20.0	19.9	22.8	21.9	19.3	18.6	20.0	14.4	8.4	1.8	4.4	3.5	3.3	1.8	22.8	10.0	24
5		8.7	17.1	21.2	9.8	8.0	10.1	14.8	18.9	21.1	19.7	20.1	19.0	15.0	9.4	5.9	7.4	10.1	11.5	10.3	6.6	5.7	7.1	7.6	5.8	5.7	21.2	12.1	24
6		4.5	5.2	6.0	4.2	3.5	3.8	6.6	9.1	12.6	15.7	17.3	18.6	20.1	21.9	17.5	17.3	19.6	14.8	12.4	4.0	2.2	2.9	2.3	2.6	2.2	21.9	10.2	24
7		2.9	1.8	2.1	2.5	2.3	2.3	3.6	8.1	11.2	11.7	12.0	14.5	12.3	12.8	17.7	16.3	9.6	8.6	4.2	3.8	9.3	7.4	10.2	8.8	1.8	17.7	8.2	24
8		9.3	14.3	13.4	8.9	8.3	7.9	21.8	30.6	34.2	27.2	23.6	23.5	22.4	20.9	16.9	18.2	17.2	19.5	17.3	23.2	15.6	14.6	13.8	9.6	7.9	34.2	18.0	24
9		13.2	9.4	20.4	22.4	21.5	15.2	17.7	20.2	18.0	20.4	22.6	19.2	21.0	17.2	19.9	15.4	16.5	12.1	9.9	11.3	12.1	18.8	12.4	8.5	8.5	22.6	16.5	24
10		7.8	7.4	4.7	5.2	5.4	8.1	9.8	14.2	15.8	14.5	17.2	16.6	16.6	15.7	14.8	20.4	16.9	15.4	12.3	6.4	4.3	1.7	4.1	3.0	1.7	20.4	10.8	24
11		2.4	2.1	3.1	5.0	5.1	7.6	9.7	16.2	20.2	18.3	18.9	18.4	18.9	18.0	18.9	18.9	15.8	19.9	17.1	12.6	16.4	9.6	7.7	2.6	2.1	20.2	12.6	24
12		1.6	1.9	3.5	2.4	5.6	4.0	12.0	10.4	12.7	18.3	20.3	15.5	16.6	19.4	16.6	18.4	23.1	21.7	15.6	10.6	2.5	2.3	3.1	3.0	1.6	23.1	10.9	24
13		2.3	4.6	2.3	4.7	5.5	2.9	7.0	7.6	12.9	11.1	11.1	12.7	14.3	13.1	11.1	13.1	15.1	13.3	5.4	3.3	4.3	4.6	2.4	4.2	2.3	15.1	7.9	24
14		3.8	3.8	1.6	1.7	1.3	1.1	5.9	6.6	8.6	15.3	16.0	14.8	15.3	13.1	11.1	13.5	14.0	10.4	8.8	5.6	7.9	6.2	3.9	3.3	1.1	16.0	8.1	24
15		4.4	3.1	2.6	3.2	2.1	4.1	4.3	4.3	5.0	6.1	8.6	9.5	10.1	10.8	15.3	11.2	10.0	10.1	11.2	3.3	1.8	4.1	2.6	3.8	1.8	15.3	6.3	24
16		1.7	1.4	1.3	1.8	2.3	2.2	5.8	7.5	9.9	13.0	17.0	21.7	19.9	20.6	19.3	24.0	20.8	15.8	16.8	9.4	7.0	6.9	5.8	4.2	1.3	24.0	10.7	24
17		4.0	3.6	6.2	7.1	5.3	5.3	6.7	7.2	10.1	10.0	10.1	10.8	11.7	10.9	11.3	9.6	10.1	11.4	10.9	11.8	7.6	4.8	3.4	4.2	3.4	11.8	8.1	24
18		6.9	3.8	3.3	1.8	1.5	1.7	5.4	6.6	8.8	11.8	14.3	14.8	11.7	11.3	10.2	12.6	10.5	9.8	7.2	4.8	2.2	7.0	2.6	3.8	1.5	14.8	7.3	24
19		3.8	10.5	4.1	5.4	6.0	9.5	10.9	14.1	14.9	13.9	13.5	13.8	15.9	16.7	16.9	19.4	20.0	19.4	17.4	16.3	18.5	14.7	16.2	13.3	3.8	20.0	13.5	24
20		12.5	14.4	15.6	14.2	18.0	17.9	13.3	18.5	R	19.8	19.8	17.1	15.2	15.3	14.0	12.6	9.8	9.2	7.4	10.7	9.2	4.6	6.4	6.8	4.6	19.8	13.1	23
21		5.8	9.0	9.8	7.2	9.1	6.5	6.9	11.7	14.4	14.6	11.1	5.8	8.7	9.9	4.5	7.0	6.5	5.6	5.6	6.3	4.4	5.0	3.8	3.3	3.3	14.6	7.6	24
22		8.5	10.2	21.0	18.4	16.0	16.3	15.2	16.8	17.6	17.2	12.8	16.4	15.2	15.8	13.9	13.1	10.0	7.8	7.6	9.9	11.3	11.0	13.7	9.2	7.6	21.0	13.5	24
23		10.3	11.6	13.6	9.6	11.3	11.3	12.8	15.1	15.3	16.9	15.1	18.1	22.1	22.8	22.4	20.7	20.0	16.3	16.0	13.9	14.4	12.3	7.7	8.0	7.7	22.8	14.9	24
24		5.8	7.1	4.5	4.9	5.6	8.6	8.6	8.5	9.8	8.8	11.2	9.6	9.3	8.1	9.5	9.3	14.3	10.4	10.7	8.1	7.7	6.5	5.1	7.9	4.5	14.3	8.3	24
25		7.9	5.2	1.9	2.8	5.8	5.4	5.9	7.0	8.8	11.8	12.8	12.2	13.8	11.5	10.7	14.1	8.8	9.7	6.0	6.4	2.2	2.4	1.9	3.8	1.9	14.1	7.5	24
26		2.8	2.0	2.5	3.1	2.6	1.2	5.0	6.6	6.8	10.6	12.3	7.7	15.1	12.4	12.4	12.9	11.1	9.8	8.6	6.4	5.2	5.9	4.8	7.5	1.2	15.1	7.3	24
27		3.7	5.7	6.7	8.7	11.6	15.1	12.4	18.3	19.8	17.6	18.2	24.1	17.8	16.9	19.0	17.0	22.1	18.1	11.2	7.3	6.5	8.2	6.8	12.9	3.7	24.1	13.6	24
28		7.1	10.4	5.3	6.5	7.4	12.1	11.4	15.0	14.2	10.3	15.5	10.2	7.6	8.5	11.2	9.9	6.8	6.1	7.7	8.2	4.4	7.2	3.5	4.2	3.5	15.5	8.8	24
29		5.3	4.3	3.1	2.6	7.6	5.3	5.2	5.7	5.1	10.0	7.5	10.6	11.9	11.2	11.5	11.1	11.2	11.3	12.6	7.6	5.7	3.9	3.3	6.4	2.6	12.6	7.5	24
30		5.3	3.5	3.3	3.5	3.0	4.1	5.7	6.5	7.8	7.7	7.4	7.7	15.3	10.4	12.2	9.8	16.9	13.8	11.2	13.1	9.7	12.4	12.5	10.2	3.0	16.9	8.9	24
31		9.4	4.1	3.3	2.8	6.8	8.9	8.6	11.3	12.0	13.7	11.6	12.8	12.9	11.6	12.9	11.8	11.0	6.2	8.6	7.0	2.7	8.7	4.5	2.2	2.2	13.7	8.6	24
HOURLY MAX		13.2	17.1	21.2	22.4	21.5	17.9	21.8	30.6	34.2	27.2	23.6	24.1	22.4	22.8	22.4	24.0	23.1	21.7	17.4	23.2	18.5	18.8	16.2	13.3				
HOURLY AVG		5.7	6.1	6.5	5.9	6.6	6.8	8.7	11.3	12.8	13.7	14.6	14.9	15.2	14.7	14.5	14.6	14.3	12.9	10.8	8.6	6.9	7.0	5.9	5.7				

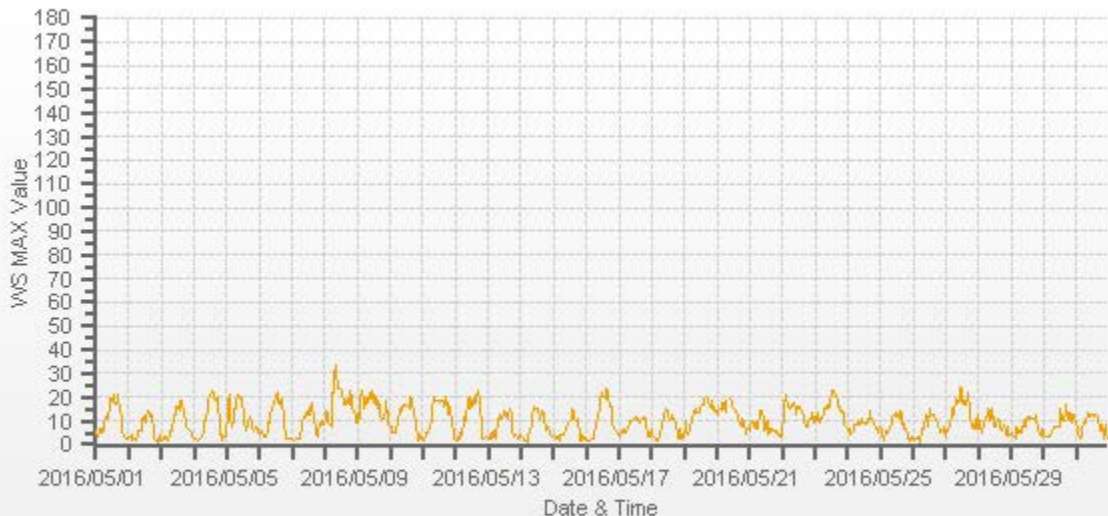
STATUS FLAG CODES

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:	34.2	KPH	@ HOUR(S)	8	ON DAY(S)	8
					VAR-VARIOUS	
OPERATIONAL TIME:					743	HRS

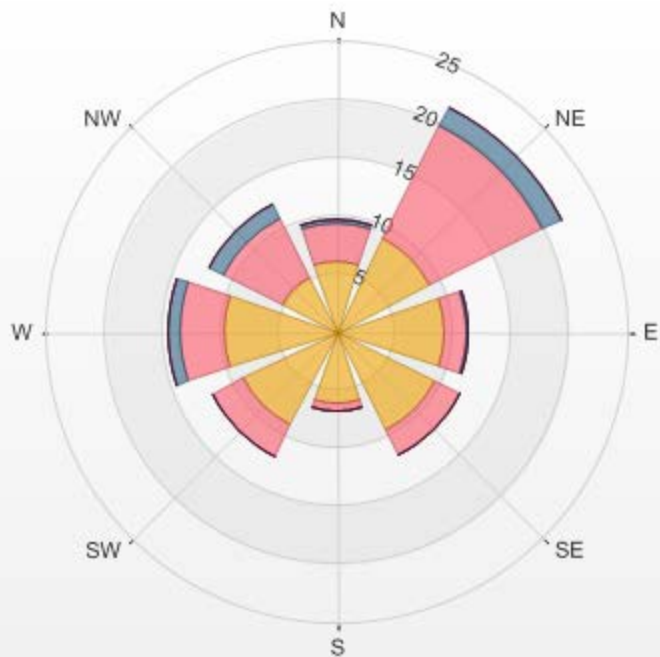
WS MAX[kph] Station: LICA COLD LAKE SOUTH Monthly: 05/2016 Type: AVG 1 Hr. [1 Hr.]



— WS MAX[kph]

Wind: LICA COLD LAKE SOUTH Monitor: WSP [kph] Monthly: 05/2016 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	6.05	3.23	0.4	0	0	0	9.68
NE	9.01	10.75	1.88	0	0	0	21.64
E	9.27	1.88	0.13	0	0	0	11.28
SE	9.41	2.42	0	0	0	0	11.83
S	6.18	0.67	0	0	0	0	6.85
SW	9.01	2.96	0	0	0	0	11.97
W	9.68	3.76	1.08	0	0	0	14.52
NW	5.24	5.65	1.34	0	0	0	12.23
Summary	63.85	31.32	4.83	0	0	0	100



% Icon Classes (kph)

31 6.0-12.0 5 12.0-20.0 0 20.0-29.0 0 29.0-39.0 0 >39.0

64 0.0-6.0

***WIND DIRECTION***





WIND DIRECTION (WD) hourly averages

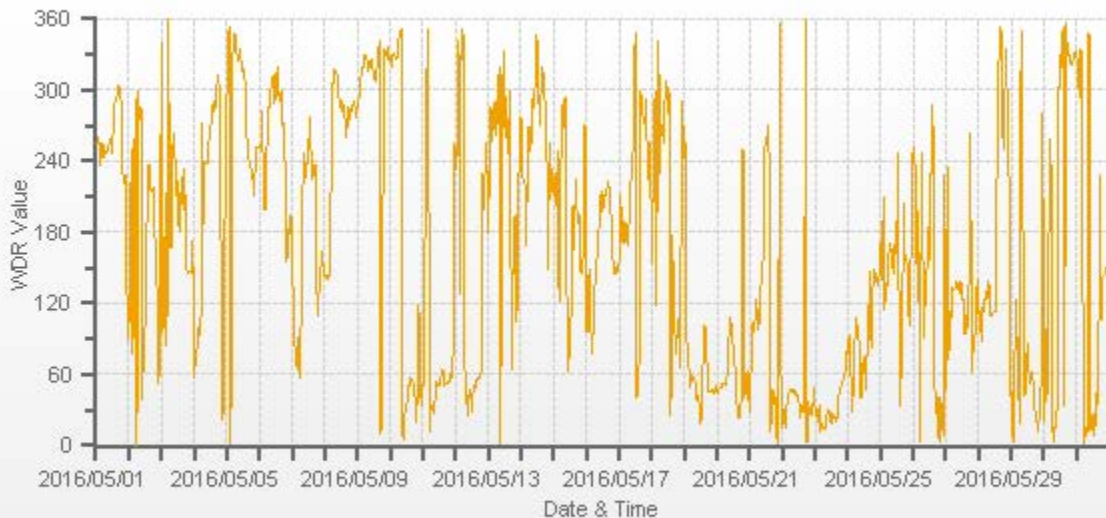
MST																									24-HOUR AVG	RDGS.	
HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	QUADRANT		
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59			
DAY																											
1	WSW	WSW	WSW	SW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	WSW	W	WNW	WNW	WNW	WNW	WNW	W	SW	SW	SW	E	WSW	24		
2	E	S	WSW	ENE	SSW	WNW	N	WNW	W	WNW	NE	E	E	SSE	SW	SW	SW	SSW	SW	S	SSE	SE	NE	E	S	24	
3	NNW	E	ESE	SSW	E	N	SW	SSE	WSW	W	WSW	SSW	SW	S	SSW	SW	SSW	SW	SSE	SE	SE	SE	SE	S	S	24	
4	ENE	ENE	E	E	E	E	W	S	WSW	SW	SW	WSW	W	W	WNW	W	WNW	NW	NW	WNW	SE	NNE	NE	W	WNW	24	
5	WNW	NNW	N	N	NW	NNW	NNW	NNW	NW	NNW	NNW	NW	NW	NW	NW	WSW	WSW	WSW	SW	SW	SSW	SW	WSW	WSW	WNW	24	
6	WSW	WSW	W	SW	SSW	WSW	W	WNW	WNW	NW	NW	WNW	WNW	NW	WNW	WNW	WNW	WNW	W	W	SW	SSE	SSE	SSW	S	W	24
7	S	E	E	ENE	E	ENE	ENE	SSE	SW	WSW	SW	SW	WSW	W	WSW	SW	SW	SW	SE	ESE	SE	SE	SSE	SSE	S	24	
8	SE	SE	SE	SE	SSW	SW	NW	NW	NW	NW	WNW	WNW	W	WNW	W	W	W	WNW	W	WNW	W	WNW	WNW	W	W	24	
9	WNW	WNW	NW	NW	NW	NNW	NNW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NNW	N	NNE	NW	NNW	NNW	NNW	NW	NW	24	
10	NNW	NW	NNW	NNW	NW	NNW	NNW	N	N	N	N	NNE	NNE	NE	NE	ENE	NE	NE	NE	NNE	NE	ESE	NE	NE	NNE	24	
11	NE	E	WSW	NW	N	NNE	NNE	NNE	NE	NE	NE	NE	NE	NE	ENE	ENE	NE	NE	NE	NE	ENE	ENE	ENE	ENE	WSW	NE	24
12	SW	WSW	NNW	SE	N	NW	NNW	NE	NE	NNE	NE	NE	NNE	NE	NE	ENE	NE	ENE	ENE	ENE	SW	SSW	WSW	SW	NNE	24	
13	S	WSW	WNW	WSW	W	WNW	W	WNW	NW	N	WSW	NNW	W	WNW	WSW	W	WNW	ENE	SE	S	SSW	ESE	SSW	WSW	W	24	
14	W	SW	SW	SW	SSE	W	W	WSW	W	WNW	WNW	NNW	NNW	WNW	W	NW	NW	WNW	WNW	WSW	SE	WSW	SW	SSW	W	24	
15	SSW	SW	SSW	WSW	ESE	SW	W	WNW	W	WNW	ENE	E	ENE	ESE	SSW	SSW	SSW	S	SSW	SE	SE	SE	SE	W	SSW	24	
16	E	E	SSE	ESE	ENE	E	SE	SE	SSE	S	SSW	SSW	SSW	SSW	SSW	SW	SW	SW	SSW	SSE	SSE	SE	SSE	SE	SSE	24	
17	SSE	SSW	S	S	S	SSE	S	SSW	SW	SW	NW	NNW	NE	NE	E	WNW	W	W	WNW	W	WNW	SW	WSW	WSW	SW	24	
18	SSE	SSW	WNW	ESE	NNW	SSW	NW	W	W	WSW	WNW	NW	W	WNW	NNE	S	SE	E	ENE	ESE	E	ENE	WNW	W	W	24	
19	WSW	WSW	ENE	ENE	NE	NE	ENE	NE	NE	NE	NE	NNE	NNE	NE	E	E	E	NE	NE	NE	NE	NE	NE	NE	NE	24	
20	NE	NE	NE	NE	NE	NE	NE	NE	ENE	E	ESE	E	E	ENE	NE	NNE	NNE	NNE	NE	WSW	NE	NE	ENE	NE	NE	24	
21	NNE	ENE	ESE	E	ESE	ESE	E	ESE	SE	SE	SSE	WSW	W	WSW	W	NNE	NNE	NE	NE	NE	N	NNE	N	NNE	ENE	24	
22	NNE	NNE	NNE	NNE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NNE	NNE	NNE	NNE	N	N	NE	NNE	NNE	NNE	NE	NNE	24	
23	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NE	NE	NE	NE	ENE	NE	E	NNE	24	
24	ENE	E	ENE	NNE	NE	E	ESE	E	E	NE	NE	ENE	ENE	NE	ENE	E	SE	E	ESE	SE	SE	SE	SE	SE	E	24	
25	SSE	SE	SSW	ESE	SE	SE	SSE	S	SSE	SSE	SE	S	SSE	WSW	NE	ENE	E	SSW	SSE	SSE	SE	E	ESE	SW	SSE	24	
26	WSW	WSW	SW	ESE	SSW	N	WSW	SSE	E	SE	SE	S	SSE	SW	WNW	WSW	NNE	NNE	NE	N	NE	NNE	N	SW	S	24	
27	NE	SW	ENE	ESE	ESE	SE	SE	SE	SE	SE	SE	SE	SE	ESE	ESE	E	SE	W	ENE	E	E	ESE	SE	ESE	ESE	24	
28	ESE	ESE	E	ESE	ESE	SE	ESE	SE	SE	ESE	ESE	ESE	ESE	S	WNW	NNW	N	NNW	WSW	WNW	NNW	WNW	WNW	NE	E	24	
29	NE	N	N	ESE	E	ENE	NNE	NW	N	NE	NE	ENE	E	ENE	NE	ENE	NE	NE	NNE	NNE	NNE	NE	NE	W	NE	24	
30	NNE	E	NE	ENE	WSW	WSW	NNE	N	NNE	NNE	NNE	WNW	NNW	NW	N	NNE	N	NNW	NNW	NNW	NW	NW	NNW	NNW	N	24	
31	NNW	NW	WNW	NNW	NNW	N	N	NNE	NNE	NNW	NNE	NNE	NNE	N	NNE	NE	NE	SW	ESE	SE	SE	SE	SSE	SE	NNE	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:	744	HRS
STANDARD DEVIATION:	107.45		AMD OPERATION UPTIME:	100.0	%



— WDR[Deg]

***STANDARD DEVIATION WIND DIRECTION***



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Cold Lake South Site - May 2016

JOB # 2833-2016-05-1- C

STANDARD DEVIATION WIND DIRECTION (STDWD) hourly averages in degrees

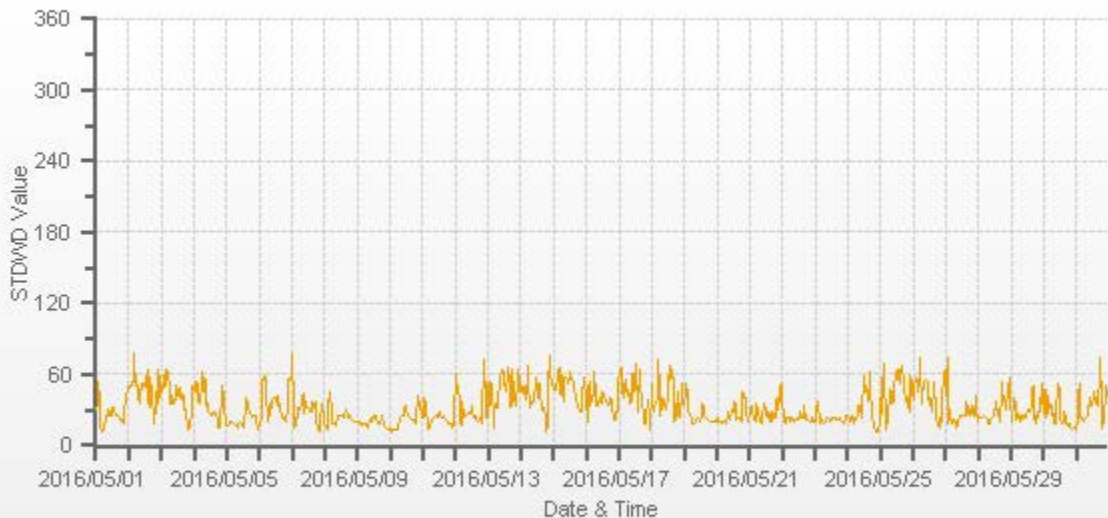
MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	RDGS.	
HOUR START	HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59		
DAY																											
1		31	33	54	15	13	11	18	21	26	30	28	25	32	32	27	26	25	23	22	22	18	33	36	49	24	
2		47	49	54	51	77	50	53	43	36	48	52	53	49	58	64	32	58	41	31	19	45	35	65	41	24	
3		50	46	59	51	64	58	53	36	43	35	39	51	44	41	49	39	42	30	30	17	13	19	25	51	24	
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5		17	17	19	21	21	18	19	17	15	20	20	17	16	17	41	38	30	28	25	24	26	25	18	13	24	
6		17	18	55	56	59	48	21	26	36	32	40	40	38	43	34	36	26	24	22	25	21	54	57	56	24	
7		78	41	16	23	23	32	30	37	44	27	37	32	32	29	28	38	32	37	18	15	12	26	36	26	24	
8		18	16	14	39	45	27	19	19	17	22	25	25	25	23	29	30	24	25	23	22	21	21	21	21	24	
9		21	20	20	17	18	19	19	16	19	21	24	21	26	25	22	19	19	21	25	18	17	15	14	13	24	
10		16	12	13	13	13	13	18	21	26	26	26	34	28	27	24	24	22	21	22	19	43	39	31	30	24	
11		23	41	35	26	13	15	21	22	23	26	25	23	28	26	24	25	23	22	20	19	18	18	15	23	24	
12		61	52	50	34	17	37	23	26	26	27	27	33	24	24	25	21	20	24	18	46	72	39	23	24	24	
13		50	33	54	50	16	36	32	32	49	57	64	62	53	46	56	66	32	65	34	54	34	42	64	56	24	
14		45	51	44	50	39	67	37	32	38	38	42	57	53	40	52	31	33	31	27	12	49	76	58	52	24	
15		47	47	52	56	66	44	60	38	57	57	55	53	62	57	58	47	42	38	33	29	29	43	57	49	24	
16		39	21	54	34	43	43	62	33	34	38	40	36	45	42	39	38	34	35	40	32	23	22	29	28	24	
17		61	64	66	41	53	56	43	48	36	38	61	46	69	50	28	64	45	39	26	19	24	39	32	13	24	
18		53	29	34	37	39	72	26	31	40	39	30	33	48	68	56	65	52	21	23	46	26	23	53	34	24	
19		34	53	48	28	26	23	19	19	21	22	24	22	20	35	33	25	24	22	22	21	21	21	21	21	24	
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21		30	33	27	25	20	36	25	23	21	18	36	33	25	24	29	21	20	29	23	24	40	31	47	53	24	
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30		36	24	48	27	34	35	25	27	19	26	52	51	23	19	20	29	22	17	18	18	14	13	16	16	24	
31		14	40	53	23	23	20	22	24	25	34	41	33	39	46	35	40	34	74	51	16	22	41	51	43	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: 744 HRS



— STDWD[Deg]

***RELATIVE HUMIDITY***

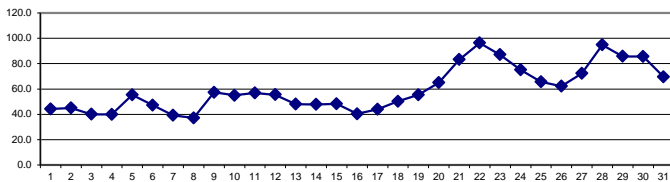
RELATIVE HUMIDITY (RH) hourly averages in %

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		
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		58	70	76	75	74	76	63	52	44	36	29	23	19	19	18	19	20	20	22	28	42	54	59	64	18	76	44.2	24	
2		69	72	81	80	82	82	62	52	41	30	26	22	22	21	19	19	19	19	20	28	42	51	58	63	19	82	45.0	24	
3		71	73	77	83	82	78	60	46	36	29	23	20	18	18	16	15	14	15	17	22	30	34	39	45	14	83	40.0	24	
4		58	63	67	71	76	71	55	43	37	33	27	24	15	<b>13</b>	<b>13</b>	14	16	16	18	26	40	49	52	61	<b>13</b>	76	39.9	24	
5		61	38	38	39	37	40	43	46	49	48	50	57	67	78	69	60	53	50	52	57	69	74	72	80	37	80	55.3	24	
6		87	88	87	90	91	88	67	49	36	26	22	21	19	16	17	18	18	20	22	29	45	52	57	68	16	91	47.2	24	
7		57	65	69	71	73	72	63	48	36	32	30	26	26	20	15	16	18	18	25	35	35	32	29	30	15	73	39.2	24	
8		33	38	44	51	54	55	52	44	39	36	33	29	26	26	31	26	23	17	19	25	35	45	52	59	17	59	37.2	24	
9		66	73	76	70	70	71	69	65	62	56	51	47	46	48	47	45	45	44	46	51	50	55	59	62	44	76	57.3	24	
10		67	70	72	72	73	72	67	59	50	50	47	43	38	36	35	35	34	36	39	45	58	72	73	76	34	76	55.0	24	
11		82	85	90	91	88	82	72	66	61	51	47	42	38	35	33	32	32	32	36	39	42	47	49	53	71	32	91	56.8	24
12		81	85	87	84	83	84	74	57	52	44	39	37	34	34	33	30	28	29	31	35	51	64	75	80	28	87	55.5	24	
13		78	80	84	86	85	77	63	47	35	28	27	25	23	21	21	21	21	22	22	37	51	56	67	75	21	86	48.0	24	
14		81	85	88	89	89	86	73	51	36	27	22	21	20	19	20	20	19	19	21	32	47	53	62	69	19	89	47.9	24	
15		76	80	83	87	89	87	75	63	46	33	27	22	20	19	19	18	18	18	20	26	43	54	61	73	18	89	48.2	24	
16		76	78	81	84	83	78	60	46	41	29	22	21	19	18	16	17	16	16	16	21	26	30	33	42	16	84	40.4	24	
17		40	50	49	44	48	46	47	49	45	41	37	33	31	32	32	32	30	30	32	37	48	65	75	80	30	80	43.9	24	
18		80	84	89	87	89	83	65	52	41	33	26	26	27	25	24	24	25	28	26	36	53	55	60	68	24	89	50.3	24	
19		71	73	76	72	70	69	66	58	54	54	49	46	37	29	24	26	44	51	56	60	60	64	66	24	76	55.4	24		
20		68	71	73	76	78	74	71	66	59	54	51	48	45	44	44	48	48	52	59	83	94	91	84	44	94	65.0	24		
21		85	85	75	78	77	80	76	70	64	60	59	60	69	92	93	96	98	95	92	94	97	<b>100</b>	<b>100</b>	<b>100</b>	59	<b>100</b>	83.1	24	
22		<b>100</b>	<b>100</b>	<b>100</b>	99	97	94	91	89	86	84	84	87	98	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	84	<b>100</b>	<b>96.2</b>	24	
23		99	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	98	98	94	89	84	82	78	74	71	71	76	80	80	82	87	84	81	80	71	<b>100</b>	87.0	24	
24		81	82	84	89	91	88	90	90	85	83	78	69	64	62	58	57	53	54	56	66	68	78	87	87	53	91	75.0	24	
25		89	94	96	97	98	93	83	74	66	59	52	49	43	39	42	40	38	34	35	44	65	76	84	86	34	98	65.7	24	
26		87	92	93	95	95	82	71	65	56	49	43	45	43	39	40	37	43	50	47	49	58	65	73	75	37	95	62.2	24	
27		76	80	78	72	76	74	69	65	61	55	49	61	52	46	53	59	67	67	91	98	98	96	97	95	46	98	72.3	24	
28		99	97	99	98	98	95	94	93	97	99	98	99	99	97	80	75	79	85	95	98	99	<b>100</b>	<b>100</b>	<b>100</b>	75	<b>100</b>	94.7	24	
29		<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	97	92	88	85	88	81	74	71	69	65	64	65	68	76	87	95	95	97	64	<b>100</b>	85.7	24	
30		96	97	99	<b>100</b>	<b>100</b>	95	93	91	90	86	74	67	82	92	79	70	66	75	78	77	84	87	87	90	66	<b>100</b>	85.6	24	
31		93	95	97	98	99	93	89	83	77	71	64	60	53	48	46	40	39	36	37	45	62	73	79	90	36	99	69.5	24	
HOURLY MAX		100	100	100	100	100	100	98	98	97	99	98	99	99	100	100	100	100	100	100	100	100	100	100	100					
HOURLY AVG		76.3	78.8	80.9	81.5	82.1	79.6	71.6	63.7	57.1	51.5	47.3	45.1	43.8	43.2	41.4	40.0	40.2	41.5	44.2	50.2	60.0	66.2	70.1	74.7					

STATUS FLAG CODES

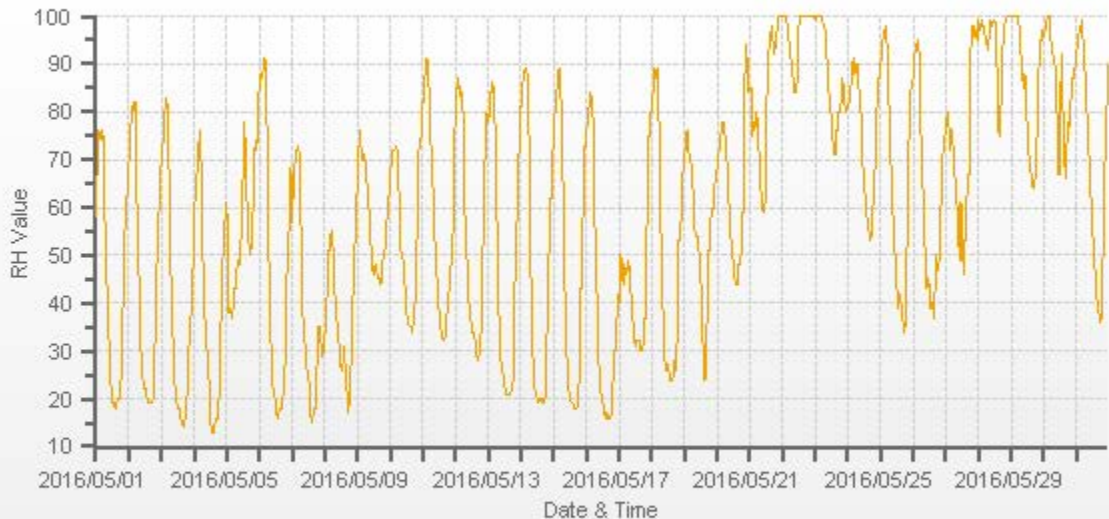
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

24 HOUR AVERAGES FOR May 2016



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	13	%	@ HOUR(S)	13 , 14	ON DAY(S)	4 , 4
MAXIMUM 1-HR AVERAGE:	100	%	@ HOUR(S)	VAR	ON DAY(S)	VAR
MAXIMUM 24-HR AVERAGE:	96.2	%			ON DAY(S)	22
					VAR-VARIOUS	
OPERATIONAL TIME:						744 HRS
AMD OPERATION UPTIME:						100.0 %
STANDARD DEVIATION:	25.71					MONTHLY AVERAGE: 60 %



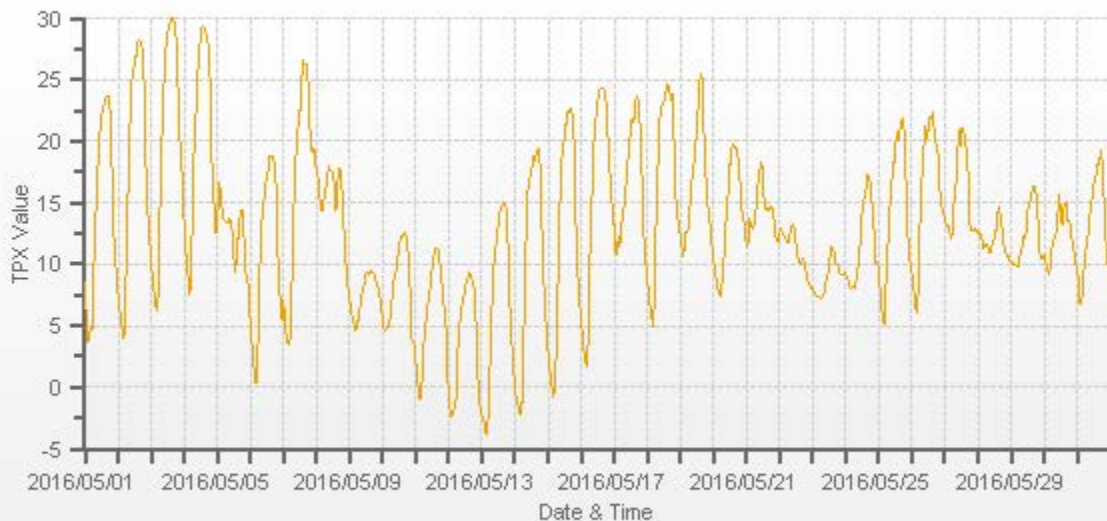
— RH[%RH]



***AMBIENT TEMPERATURE***



TPX[C\*] Station: LICA COLD LAKE SOUTH Monthly: 05/2016 Type: AVG 1 Hr. [1 Hr.]



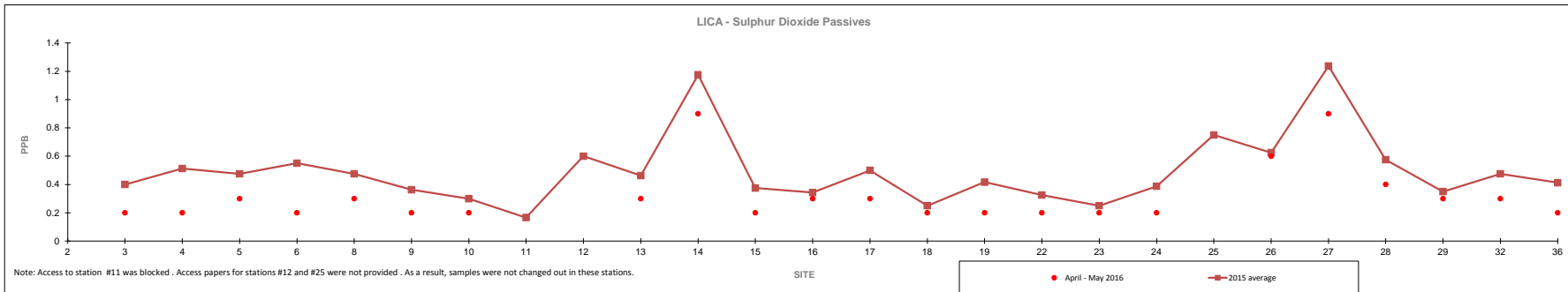
— TPX[C\*]

***APPENDIX II***  
***NON-CONTINUOUS MONITORING DATA RESULTS***

***PASSIVE RESULTS***

### Passive Summary Results for April - May 2016 Lakeland Industry & Community Association

	Sulphur Dioxide ppb																												April - May 2016	
	2	3	4	5	6	8	9	10	11	12	13	14	15	16	17	18	19	22	23	24	25	26	27	28	29	32	36	Reading	Site	
Mean	NA	0.4	0.5	0.5	0.6	0.5	0.4	0.3	0.2	0.6	0.5	1.2	0.4	0.3	0.5	0.3	0.4	0.3	0.3	0.4	0.8	0.6	1.2	0.6	0.4	0.5	0.4	0.3	-	
Minimum	NA	0.2	0.2	0.2	0.2	0.3	0.2	0.1	0.1	0.5	0.2	0.5	0.2	0.2	0.3	0.1	0.2	0.1	0.1	0.2	0.7	0.3	0.5	0.3	0.1	0.2	0.1	0.2	VAR	
Maximum	NA	0.7	1.1	0.9	1.1	0.8	0.6	0.5	0.3	0.7	0.8	1.7	0.7	0.6	0.8	0.5	0.7	0.6	0.4	0.6	0.8	1.1	2.0	1.0	0.5	0.9	0.8	0.9	#14	



# Lakeland Industry & Community Association SO<sub>2</sub> Passive Bubble Map

APRIL - MAY 2016

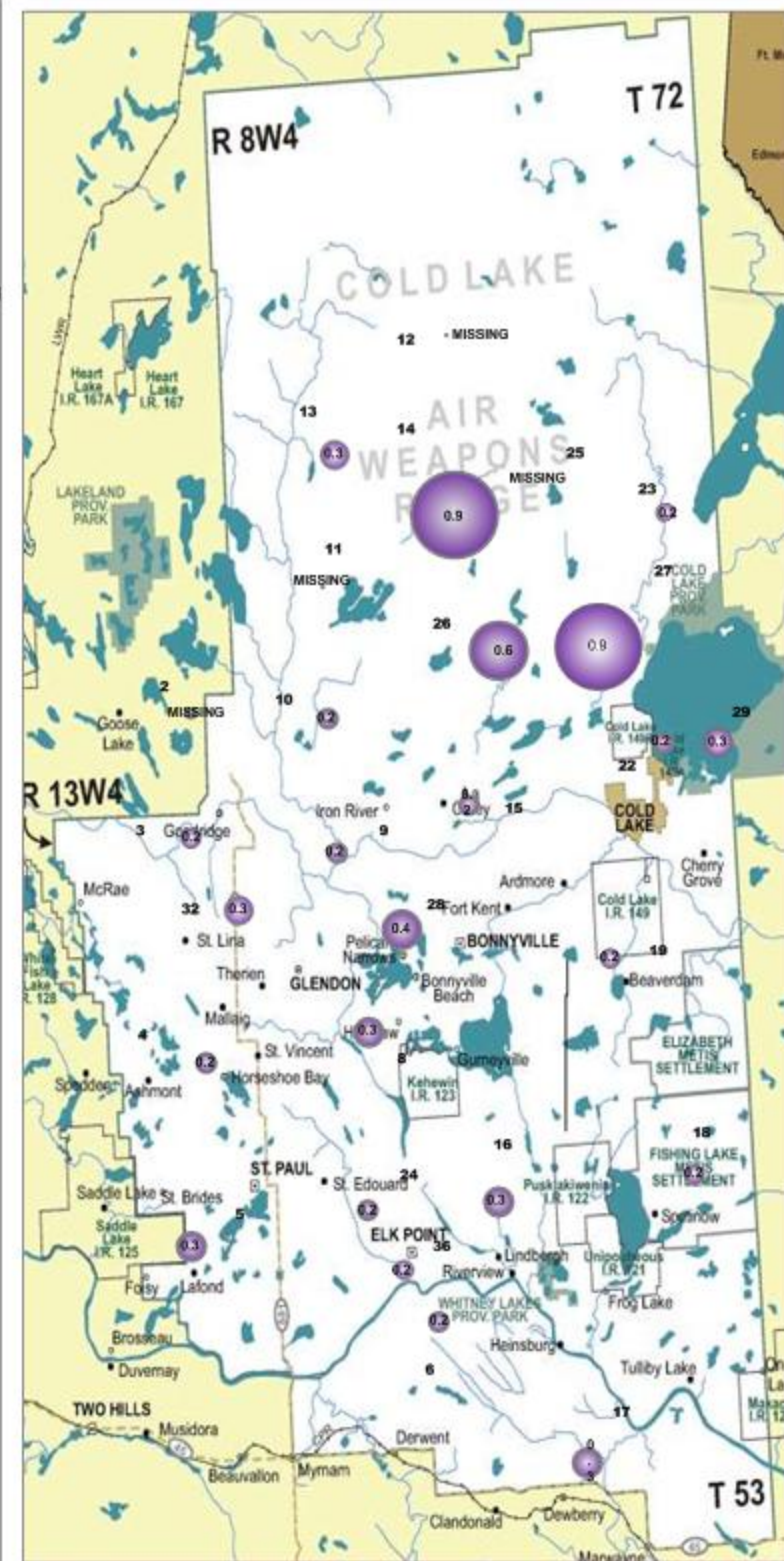
## PASSIVE STATIONS

		DUPLICATE
2 – Sand River	MISSING	NA
3 – Therien	0.2 PPB	NA
4 – Flat Lake	0.2 PPB	NA
5 – Lake Eliza	0.3 PPB	NA
6 – Telegraph Creek	0.2 PPB	NA
8 – Muriel-Kehewin	0.3 PPB	NA
9 – Dupre	0.2 PPB	NA
10 – La Corey	0.2 PPB	NA
11 – Wolf Lake	MISSING	NA
12 – Foster Creek	MISSING	NA
13 – Primrose	0.3 PPB	NA
14 – Maskwa	0.9 PPB	NA
15 – Ardmore	0.2 PPB	NA
16 – Frog Lake	0.3 PPB	NA
17 – Clear Range	0.3 PPB	NA
18 – Fishing Lake	0.2 PPB	NA
19 – Beaverdam	0.2 PPB	NA
22 – Cold Lake South	0.2 PPB	NA
23 – Medley-Martineau	0.2 PPB	NA
24 – Fort George	0.2 PPB	NA
25 – Burnt Lake	MISSING	NA
26 – Mahikan	0.6 PPB	NA
27 – Mahkeses	0.9 PPB	NA
28 – Town of Bonnyville	0.3 PPB	0.4 PPB
29 – Cold Lake South 2	0.2 PPB	0.3 PPB
32 – St. Lina	0.2 PPB	0.3 PPB
36 – Elk Point	0.2 PPB	NA



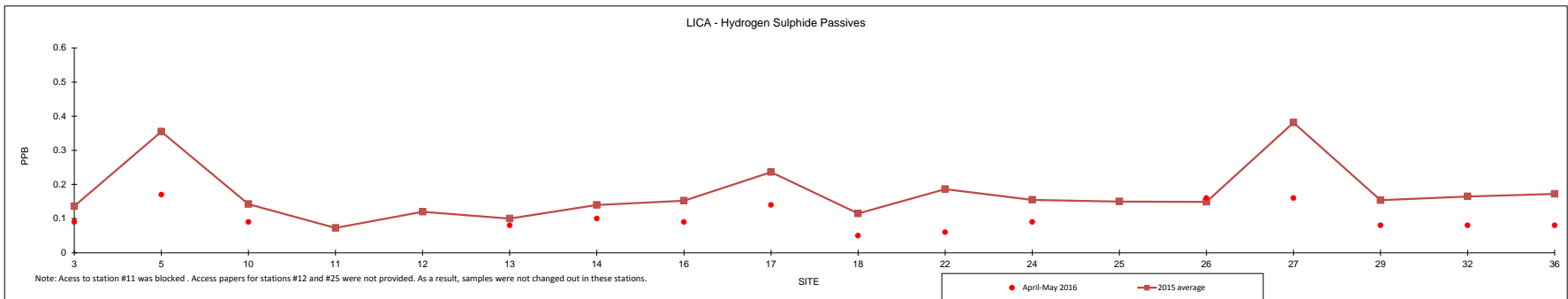
## Summary

Minimum : 0.2 PPB – Various stations  
 Maximum: 0.9 PPB – Maskwa  
 Average: 0.3 PPB \*Includes Duplicates



### Passive Summary Results for April - May 2016 Lakeland Industry & Community Association

	Hydrogen Sulphide ppb																	April - May 2016		
	3	5	10	11	12	13	14	2015 16	17	18	22	24	25	26	27	29	32	36	Reading	Site
Mean	0.14	0.36	0.14	0.07	0.12	0.10	0.14	0.15	0.24	0.12	0.19	0.16	0.15	0.15	0.38	0.15	0.17	0.17	0.10	-
Minimum	0.09	0.13	0.10	0.05	0.09	0.07	0.11	0.10	0.15	0.08	0.10	0.11	0.12	0.08	0.15	0.09	0.08	0.11	0.05	#18
Maximum	0.22	0.86	0.20	0.10	0.15	0.14	0.19	0.22	0.46	0.15	0.43	0.25	0.18	0.24	0.87	0.27	0.30	0.28	0.17	#5



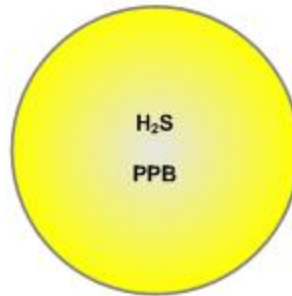


# Lakeland Industry & Community Association H<sub>2</sub>S Passive Bubble Map

APRIL - MAY 2016

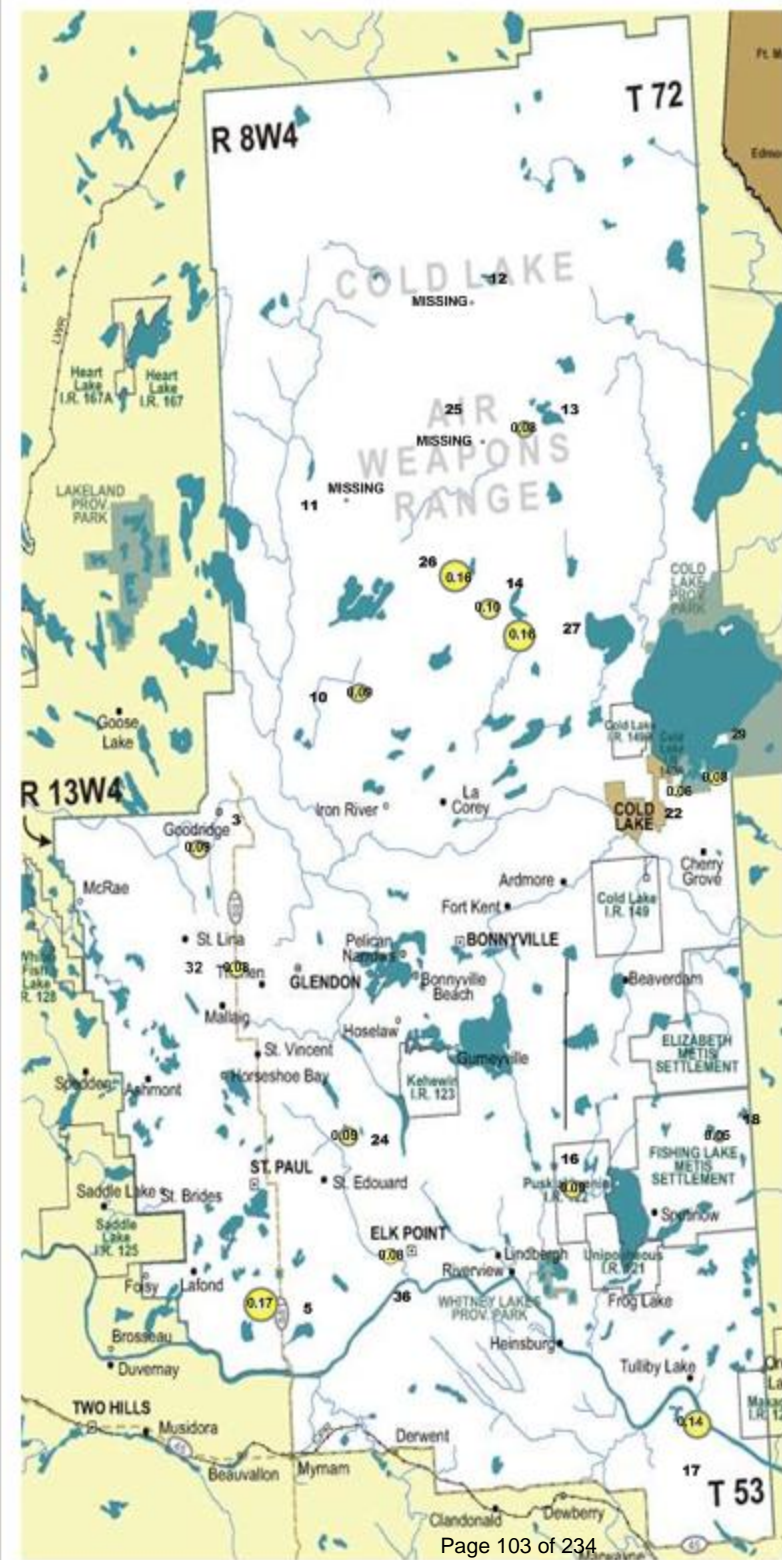
## PASSIVE STATIONS

Station Number	Reading	Duplicate Reading
3 - Therien	0.09 PPB	0.09 PPB
5 - Lake Eliza	0.17 PPB	NA
10 - La Corey	0.09 PPB	NA
11 - Wolf Lake	MISSING	NA
12 - Foster Creek	MISSING	NA
13 - Primrose	0.08 PPB	NA
14 - Maskwa	0.10 PPB	NA
16 - Frog Lake	0.09 PPB	NA
17 - Clear Range	0.14 PPB	NA
18 - Fishing Lake	0.05 PPB	NA
22 - Cold Lake South	0.06 PPB	NA
24 - Fort George	0.09 PPB	NA
25 - Burnt Lake	MISSING	NA
26 - Mahihkan	0.16 PPB	NA
27 - Mahkeses	0.16 PPB	NA
29 - Cold Lake South 2	0.08 PPB	NA
32 - St. Lina	0.08 PPB	NA
36 - Elk Point	0.08 PPB	0.08 PPB



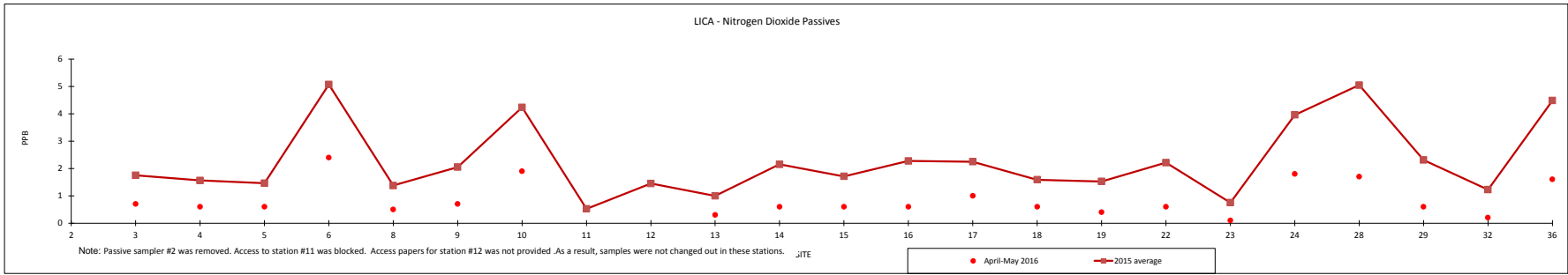
## Summary

Minimum : 0.05 PPB - Fishing Lake  
Maximum: 0.17 PPB - Lake Eliza  
Average: 0.10 PPB



### Passive Summary Results for April - May 2016 Lakeland Industry & Community Association

	2015																				April - May 2016					
	2	3	4	5	6	8	9	10	11	12	13	14	15	16	17	18	19	22	23	24	28	29	32	36	Reading	Site
Mean	NA	1.8	1.6	1.5	5.1	1.4	2.1	4.2	0.5	1.5	1.0	2.2	1.7	2.3	2.3	1.6	1.5	2.2	0.8	4.0	5.1	2.3	1.2	4.5	0.9	-
Minimum	NA	0.7	0.7	0.5	3.2	0.6	0.9	2.0	0.3	1.4	0.4	0.5	0.6	0.6	1.0	0.7	0.5	0.6	0.1	1.8	1.4	0.5	0.2	1.5	0.1	#23
Maximum	NA	4.5	3.5	3.8	8.8	4.0	4.8	9.0	0.8	1.5	2.1	5.1	3.5	4.8	3.4	3.7	3.8	7.0	1.9	7.3	10.7	6.0	4.0	11.2	2.4	#6

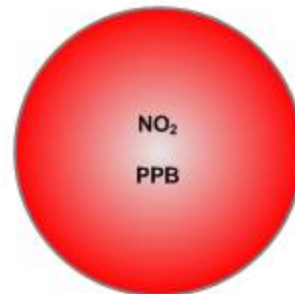


# Lakeland Industry & Community Association NO<sub>2</sub> Passive Bubble Map

APRIL - MAY 2016

## PASSIVE STATIONS

		DUPLICATE
2 – Sand River	MISSING	NA
3 – Therien	0.7 PPB	NA
4 – Flat Lake	0.6 PPB	NA
5 – Lake Eliza	0.6 PPB	NA
6 – Telegraph Creek	2.4 PPB	NA
8 – Muriel-Kehewin	0.5 PPB	NA
9 – Dupre	0.7 PPB	NA
10 – La Corey	1.9 PPB	NA
11 – Wolf Lake	MISSING	NA
12 – Foster Creek	MISSING	NA
13 – Primrose	0.3 PPB	NA
14 – Maskwa	0.6 PPB	NA
15 – Ardmore	0.6 PPB	NA
16 – Frog Lake	0.6 PPB	NA
17 – Clear Range	1.0 PPB	NA
18 – Fishing Lake	0.6 PPB	NA
19 – Beaverdam	0.4 PPB	NA
22 – Cold Lake South	0.6 PPB	0.5 PPB
23 – Medley-Martineau	0.1 PPB	0.1 PPB
24 – Fort George	1.8 PPB	NA
28 – Town of Bonnyville	1.7 PPB	NA
29 – Cold Lake South 2	0.6 PPB	NA
32 – St. Lina	0.2 PPB	NA
36 – Elk Point	1.6 PPB	NA



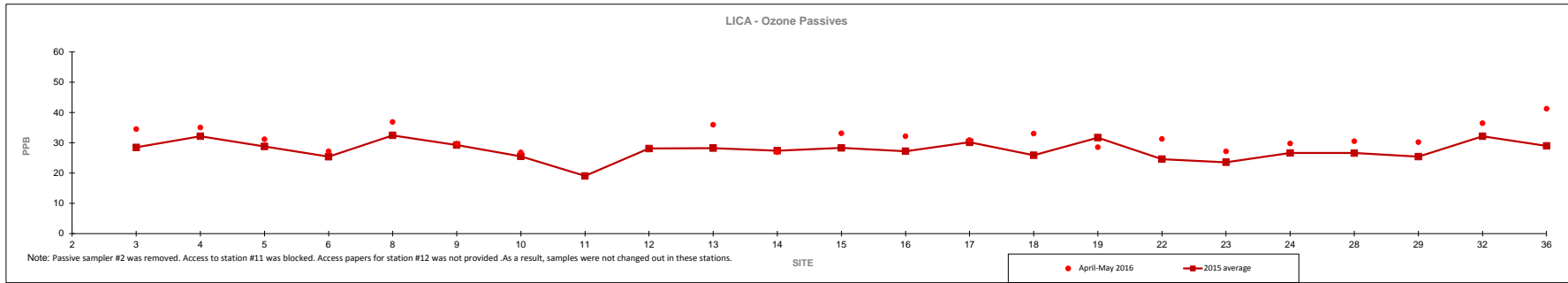
## Summary

Minimum : 0.1 PPB – Medley-Martineau  
 Maximum: 2.4 PPB – Telegraph Creek  
 Average: 0.9 PPB \*Includes Duplicates



### Passive Summary Results for April - May 2016 Lakeland Industry & Community Association

	Ozone ppb																												April - May 2016	
	2	3	4	5	6	8	9	10	11	12	2015 13	14	15	16	17	18	19	22	23	24	28	29	32	36	Reading	Site				
Mean	NA	28.5	32.2	28.8	25.4	32.5	29.2	25.5	19.0	28.1	28.2	27.4	28.3	27.2	30.1	25.9	31.7	24.6	23.6	26.6	26.6	25.4	32.2	29.0	31.83	-				
Minimum	NA	21.1	24.8	20.5	17.3	25.5	18.4	16.6	14.5	28.1	20.4	20.3	18.2	19.2	20.6	16.3	24.6	18.7	15.0	17.6	17.7	19.0	24.4	18.6	26.80	#10				
Maximum	NA	36.5	39.1	36.3	35.3	42.3	40.1	35.6	22.9	28.1	37.2	33.5	39.3	42.4	42.2	36.9	36.8	29.5	31.9	34.0	40.5	33.0	42.2	37.6	41.23	#36				



# Lakeland Industry & Community Association O<sub>3</sub> Passive Bubble Map

APRIL - MAY 2016

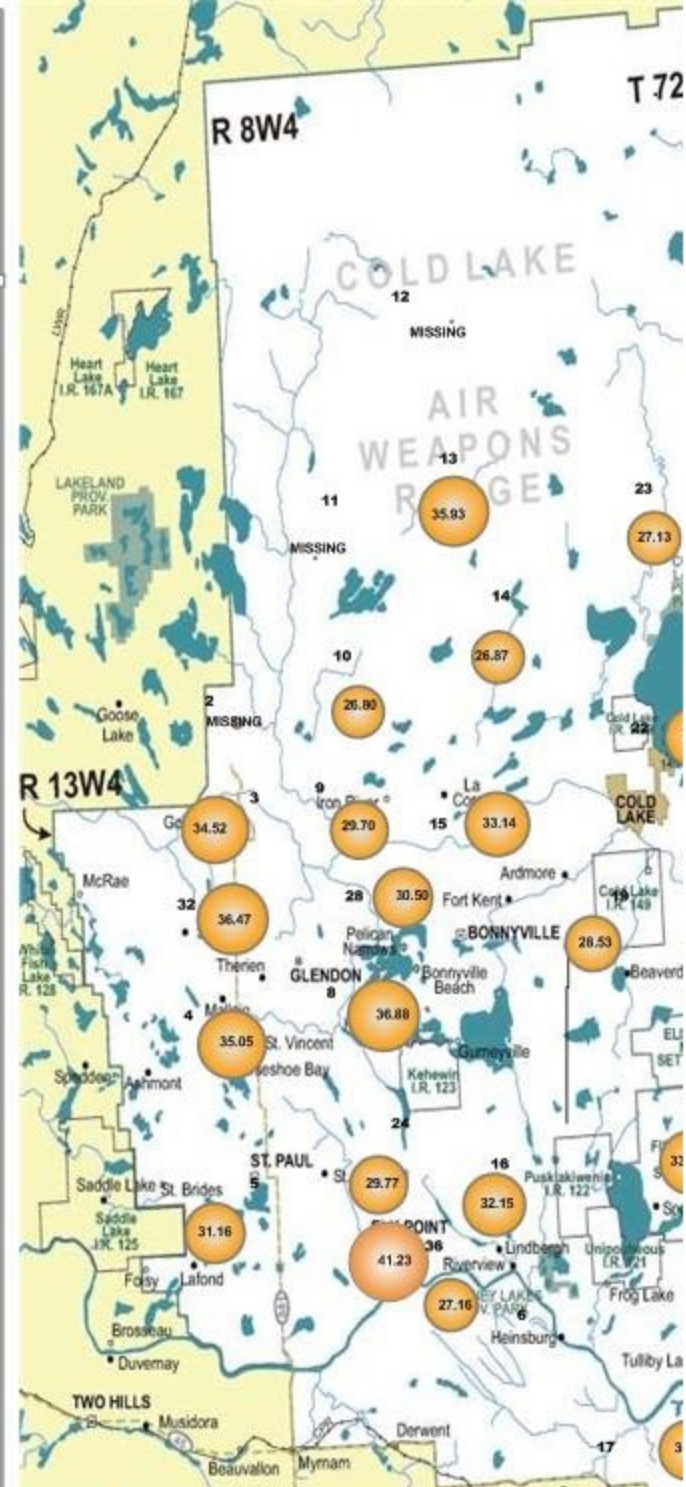
## PASSIVE STATIONS

		DUPLICATE
2 – Sand River	MISSING	NA
3 – Therien	34.52 PPB	NA
4 – Flat Lake	35.05 PPB	NA
5 – Lake Eliza	31.16 PPB	NA
6 – Telegraph Creek	27.16 PPB	NA
8 – Muriel-Kehewin	36.88 PPB	NA
9 – Dupre	29.70 PPB	NA
10 – La Corey	26.80 PPB	NA
11 – Wolf Lake	MISSING	NA
12 – Foster Creek	MISSING	NA
13 – Primrose	35.93 PPB	NA
14 – Maskwa	26.87 PPB	NA
15 – Ardmore	33.14 PPB	NA
16 – Frog Lake	32.15 PPB	NA
17 – Clear Range	30.89 PPB	NA
18 – Fishing Lake	33.01 PPB	NA
19 – Beaverdam	28.53 PPB	NA
22 – Cold Lake South	31.25 PPB	31.25 PPB
23 – Medley-Martineau	28.56 PPB	25.69 PPB
24 – Fort George	29.77 PPB	NA
28 – Town of Bonnyville	30.50 PPB	NA
29 – Cold Lake South 2	30.19 PPB	NA
32 – St. Lina	36.47 PPB	NA
36 – Elk Point	41.23 PPB	NA



## Summary

Minimum : 26.80 PPB – La Corey  
 Maximum: 41.23 PPB – Elk Point  
 Average: 31.83 PPB \*Includes Duplicates



***VOC RESULTS***

Customer ID: LICA

Cust Samp ID: LICA/VOC/CLS/May 6, 2016

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: 2652  
 Station ID: LICA 01 Installation Date/Time (mst): May 3, 2016 @ 12:54  
 Sample ID: LICA/VOC/CLS/May 6, 2016 Removal Date/Time (mst): May 9, 2016 @ 09:57

Date and Time Information

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
<u>May 6, 2016</u>	<u>00:00</u>	<u>00:00</u> <u>May 7, 2016</u>	<u>24.0</u>

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
<u>-28.0</u>	<u>+20.8</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: Mar 29, 2016 (due every 3 months)  
 Last date of sample line & fitting replacement: May 3, 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 have been renewed on May 3, 2016

Deployment Technician Signature: Alex Yakupov

Collection Technician Signature: Alex Yakupov Date: May 9, 2016



## Volatile Organics Data Results

Date: May 6, 2016  
Canister ID: 16050079-001

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	0.05
1-Hexene	< 0.02
1-Pentene	0.01
2,2,4-Trimethylpentane	0.02
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	0.02
2-Methylpentane	0.03
3-Methylheptane	< 0.02
3-Methylhexane	< 0.02
3-Methylpentane	0.03
Acetone	4.3
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	0.11
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.04
Chloromethane	0.88
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	0.02
Dibromochloromethane	< 0.01
Ethanol	1.0
Ethyl acetate	< 0.4
Ethylbenzene	< 0.01
Freon-11	0.37



## Volatile Organics Data Results

Date: May 6, 2016  
Canister ID: 16050079-001

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.10
Freon-114	0.03
Freon-12	0.77
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.22
Isopentane	0.36
Isoprene	0.08
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	0.04
Methylene chloride	< 0.3
n-Butane	0.45
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	< 0.5
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	0.07
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	0.6
Vinyl chloride	< 0.02

**Sample ID: 16050120-003**

Customer ID: LICA

Cust Samp ID: LICAVOC/CLS/May 12, 2016

**Maxxam Analytics**

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

Client: LICA Sampler S/N: 6167  
 Location: Cold Lake South Canister ID: 14715  
 Station ID: LICA 01 Installation Date/Time (mst): May 9, 2016 @ 09:58  
 Sample ID: LICA/VOC/CLS/May 12, 2016 Removal Date/Time (mst): May 13, 2016 @ 09:26

**Date and Time Information**

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
<u>May 12, 2016</u>	<u>00:00</u>	<u>00:00</u> <u>May 13, 2016</u>	<u>24.0</u>

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
<u>-28.0</u>	<u>+22.2</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: May 3, 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 13, 2016



## Volatile Organics Data Results

Date: May 12, 2016  
Canister ID: 16050120-003

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	2.2
Acrolein	< 0.3
Benzene	0.01
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	0.01
Carbon disulfide	< 0.01
Carbon tetrachloride	0.10
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.03
Chloromethane	0.92
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	0.6
Ethyl acetate	< 0.4
Ethylbenzene	< 0.01
Freon-11	0.32

## Volatile Organics Data Results

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Date: May 12, 2016  
Canister ID: 16050120-003

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.08
Freon-114	0.03
Freon-12	0.76
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.12
Isopentane	0.11
Isoprene	0.02
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	0.20
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	0.02
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

Customer ID: LICA

Cust Samp ID: LICA/VOC/CLS/May 18, 2016

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: 2661  
 Station ID: LICA 01 Installation Date/Time (mst): May 13, 2016 @ 09:27  
 Sample ID: LICA/VOC/CLS/May 18, 2016 Removal Date/Time (mst): May 20, 2016 @ 09:11

Date and Time Information

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

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
<u>-28.0</u>	<u>+23.6</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: Mar 29, 2016 (due every 3 months)  
 Last date of sample line & fitting replacement: May 3, 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 20, 2016



## Volatile Organics Data Results

Date: May 18, 2016  
Canister ID: 16050202-001

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	0.01
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	0.19
1-Hexene	< 0.02
1-Pentene	0.03
2,2,4-Trimethylpentane	0.05
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	0.51
3-Methylheptane	< 0.02
3-Methylhexane	0.06
3-Methylpentane	0.20
Acetone	7.1
Acrolein	1.3
Benzene	0.05
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	0.01
Carbon disulfide	0.72
Carbon tetrachloride	0.08
Chlorobenzene	< 0.02
Chloroethane	0.02
Chloroform	0.03
Chloromethane	< 0.02
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	< 0.02
cis-2-Pentene	< 0.02
Cyclohexane	0.04
Cyclopentane	0.04
Dibromochloromethane	< 0.01
Ethanol	2.2
Ethyl acetate	< 0.4
Ethylbenzene	0.01
Freon-11	0.27

## Volatile Organics Data Results

Date: May 18, 2016  
Canister ID: 16050202-001

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.07
Freon-114	0.02
Freon-12	0.03
Hexachloro-1,3-butadiene	< 0.50
Isobutane	1.00
Isopentane	0.81
Isoprene	0.39
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	0.05
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	0.6
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.06
Methylcyclopentane	0.09
Methylene chloride	< 0.3
n-Butane	1.14
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	0.03
n-Hexane	0.10
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane	0.3
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	< 0.01
o-Xylene	0.02
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	0.13
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: H3284  
 Station ID: LICA 01 Installation Date/Time (mst): May 20, 2016 @ 09:11  
 Sample ID: LICA/VOC/CLS/ May 24, 2016 Removal Date/Time (mst): May 25, 2016 @ 09:46

**Date and Time Information**

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

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
<u>- 28.0</u>	<u>+23.9</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: May 3, 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: May 25, 2016

**Sample ID: 16050229-001**

Customer ID: LICA  
 Cust Samp ID: LICA/VOC/CLS/May 24, 2016





## Volatile Organics Data Results

Date: May 24, 2016  
Canister ID: 16050229-001

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	0.04
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	0.17
1-Hexene	0.13
1-Pentene	0.02
2,2,4-Trimethylpentane	0.06
2,2-Dimethylbutane	< 0.01
2,3,4-Trimethylpentane	0.02
2,3-Dimethylbutane	< 0.02
2,3-Dimethylpentane	0.05
2,4-Dimethylpentane	0.03
2-Methylheptane	< 0.01
2-Methylhexane	< 0.01
2-Methylpentane	0.10
3-Methylheptane	< 0.02
3-Methylhexane	0.04
3-Methylpentane	0.08
Acetone	4.9
Acrolein	7.4
Benzene	0.05
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	0.01
Carbon disulfide	2.10
Carbon tetrachloride	0.11
Chlorobenzene	< 0.02
Chloroethane	0.02
Chloroform	0.03
Chloromethane	0.65
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	0.02
Dibromochloromethane	< 0.01
Ethanol	60.3
Ethyl acetate	< 0.4
Ethylbenzene	0.02
Freon-11	0.30

## Volatile Organics Data Results

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Date: May 24, 2016  
Canister ID: 16050229-001

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.07
Freon-114	0.03
Freon-12	0.76
Hexachloro-1,3-butadiene	< 0.50
Isobutane	1.09
Isopentane	0.60
Isoprene	0.19
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	0.08
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	1.1
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.02
Methylcyclopentane	0.10
Methylene chloride	0.8
n-Butane	0.56
n-Decane	< 0.06
n-Dodecane	5.6
n-Heptane	0.05
n-Hexane	0.16
n-Nonane	< 0.01
n-Octane	0.02
n-Pentane	0.2
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	1.7
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	0.15
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	0.03
trans-2-Pentene	0.02
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02

Sample ID: 16060006-001

Customer ID: LICA

Cust Samp ID: LICA/VOC/CLS/May 30, 2016

Maxxam Analytics

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>1516</u>
Station ID: <u>LICA 01</u>	Installation Date/Time (mst): <u>May 25, 2016 @ 09:46</u>
Sample ID: <u>LICA/VOC/CLS/May 30, 2016</u>	Removal Date/Time (mst): <u>May 31, 2016 @ 08:59</u>

Date and Time Information

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
<u>May 30, 2016</u>	<u>00:00</u>	<u>00:00</u> <u>May 31, 2016</u>	<u>24.0</u>

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
<u>-28.0</u>	<u>+22.0</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)

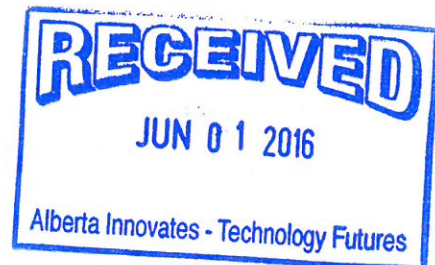
Last date of sample line & fitting replacement: May 3, 2016 (due every 6 months)

\*\*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: May 31, 2016



## Volatile Organics Data Results

Date: May 30, 2016  
Canister ID: 16060006-001

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	0.11
1-Hexene	0.06
1-Pentene	0.02
2,2,4-Trimethylpentane	0.05
2,2-Dimethylbutane	< 0.01
2,3,4-Trimethylpentane	0.01
2,3-Dimethylbutane	0.02
2,3-Dimethylpentane	0.04
2,4-Dimethylpentane	0.02
2-Methylheptane	0.02
2-Methylhexane	< 0.01
2-Methylpentane	0.07
3-Methylheptane	< 0.02
3-Methylhexane	0.08
3-Methylpentane	0.03
Acetone	10.7
Acrolein	< 0.3
Benzene	0.06
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	0.69
Carbon tetrachloride	0.11
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.03
Chloromethane	0.65
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	0.9
Ethyl acetate	< 0.4
Ethylbenzene	0.01
Freon-11	0.30

## Volatile Organics Data Results

Date: May 30, 2016  
Canister ID: 16060006-001

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.08
Freon-114	0.03
Freon-12	0.81
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.38
Isopentane	0.33
Isoprene	0.31
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	0.06
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	0.09
Methylcyclopentane	0.04
Methylene chloride	< 0.3
n-Butane	0.36
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	0.15
n-Hexane	0.06
n-Nonane	< 0.01
n-Octane	0.02
n-Pentane	0.2
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	1.9
o-Ethyltoluene	< 0.01
o-Xylene	0.02
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	0.13
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	0.03
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02

***PAH RESULTS***

Sample ID: 16050079-002

Customer ID: LICA

Cust Samp ID: LICA/PUF/CLS/May 6, 2016

**TISCH PUF PLUS Sample Collection Data Sheet**

Priority: Normal

Unit: LICA

Puff S/N: TE-05

Location: Cold Lake South

Motor S/N: 1138/100-1020

Station ID: LICA01

Installation Date/Time: May 3, 2016 / 13:56

Field Sample ID: LICA/PUF/CLS/May 6, 2016

Removal Date/Time: May 9, 2016 / 09:41

**Sample Data Collection Information**

Sample Date: May 6, 2016

Average Pressure (mmHg) 715

Start Time (mst): 00:00

Average Flow (Q<sub>std</sub>) 229

End Time (mst): 00:00 May 7, 2016

Average Temperature (°C) 12.4°

Elapsed Time (Hours): 24.0

Volume (V<sub>std</sub> m<sup>3</sup>) 330.19

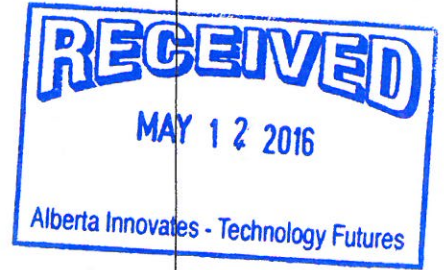
**Sample Recovery Checklist**

(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: May 3, 2016

Other observations: \_\_\_\_\_



Deployed By: Alex Yakupov

Collected By: Alex Yakupov Date: May 9, 2016

## Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: May 6, 2016  
PUF S/N: 16050079-002

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.05
2-Methylnaphthalene	0.07
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	< 0.01
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	0.05
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.04
Perylene	< 0.01
Phenanthrene	0.14
Pyrene	0.01
Retene	0.07



Sample ID: 16050120-004

Customer ID: LICA

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

### TISCH PUF PLUS Sample Collection Data Sheet

Client:	<u>LICA</u>	Puf+ 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>May 9, 2016 / 09:42</u>
Field Sample ID:	<u>LICA/PUF/CLS/May 12, 2016</u>	Removal Date/Time:	<u>May 13, 2016 / 09:31</u>

### Sample Data Collection Information

Sample Date:	<u>May 12, 2016</u>	Average Pressure (mmHg)	<u>721</u>
Start Time (mst):	<u>00:00</u>	Average Flow (Q <sub>std</sub> )	<u>229</u>
End Time (mst):	<u>00:00 May 13, 2016</u>	Average Temperature (°C)	<u>5.0°</u>
Elapsed Time (Hours):	<u>24.0</u>	Volume (Vstd m <sup>3</sup> )	<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>May 3, 2016</u>	
Other observations?		



Deployed By:	<u>Alex Yakupov</u>	
Collected By:	<u>Alex Yakupov</u>	<u>Date: May 13, 2016</u>

## Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: May 12, 2016  
PUF S/N: 16050120-004

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.11
2-Methylnaphthalene	0.18
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	0.04
Acenaphthylene	0.02
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	0.06
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.09
Perylene	< 0.01
Phenanthrene	0.10
Pyrene	0.01
Retene	0.01

Sample ID: 16050202-002

Customer ID: LICA

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

### TISCH PUF PLUS Sample Collection Data Sheet

Client:	<u>LICA</u>	Puf+ S/N:	<u>TE-09</u>
Location:	<u>Cold Lake South</u>	Motor S/N:	<u>1138/100-102Q</u>
Station ID:	<u>LICA 01</u>	Installation Date/Time:	<u>May 13, 2016/09:31</u>
Field Sample ID:	<u>LICA/PUF/CLS/May 18, 2016</u>	Removal Date/Time:	<u>May 20, 2016/09:05</u>

### Sample Data Collection Information

Sample Date:	<u>May 18, 2016</u>	Average Pressure (mmHg)	<u>707</u>
Start Time (mst):	<u>00:00</u>	Average Flow (Q <sub>std</sub> )	<u>229</u>
End Time (mst):	<u>00:00 May 19, 2016</u>	Average Temperature (°C)	<u>18.8°</u>
Elapsed Time (Hours):	<u>24.0</u>	Volume (V <sub>std</sub> m <sup>3</sup> )	<u>330.19</u>

### Sample Recovery Checklist

(circle one)

Flow Rate 230 slpm +/- 0.2 slpm ?	<input checked="" type="radio"/> YES	NO
Average temperature appears correct?	<input checked="" type="radio"/> YES	NO
Average pressure appears correct?	<input checked="" type="radio"/> YES	NO
Any error messages? (if yes list below)	YES	<input checked="" type="radio"/> NO
Sample duration 24 hours?	<input checked="" type="radio"/> YES	NO
Date of last calibration/audit:	<u>May 3, 2016</u>	
Other observations?		



Deployed By: Alex Yakupov

Collected By: Alex Yakupov Date: May 20, 2016

## Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: May 18, 2016  
PUF S/N: 16050202-002

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.13
2-Methylnaphthalene	0.16
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	0.11
Acenaphthylene	0.03
Acridine	< 0.01
Anthracene	0.03
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	0.06
Fluorene	0.13
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.07
Perylene	< 0.01
Phenanthrene	0.35
Pyrene	0.04
Retene	0.06

Sample ID: 16050229-002

Customer ID: LICA

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

### TISCH PUF PLUS Sample Collection Data Sheet

Client:	<u>LICA</u>	Puf+ S/N:	<u>TE-03</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>May 20, 2016/09:06</u>
Field Sample ID:	<u>LICA/PUF/CLS/May 24, 2016</u>	Removal Date/Time:	<u>May 25, 2016/09:39</u>

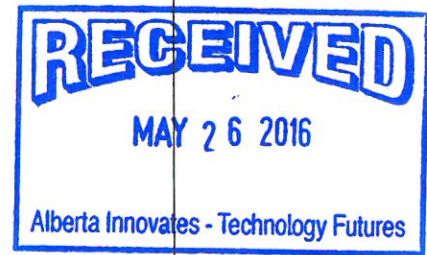
### Sample Data Collection Information

Sample Date:	<u>May 24, 2016</u>	Average Pressure (mmHg)	<u>709</u>
Start Time (mst):	<u>00:00</u>	Average Flow (Q <sub>std</sub> )	<u>229</u>
End Time (mst):	<u>00:00 May 25, 2016</u>	Average Temperature (°C)	<u>13.5°</u>
Elapsed Time (Hours):	<u>24.0</u>	Volume (V <sub>std</sub> m <sup>3</sup> )	<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>May 3, 2016</u>	
Other observations?		



Deployed By:	<u>Alex Yakupov</u>	
Collected By:	<u>Alex Yakupov</u>	Date: <u>May 25, 2016</u>

## Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: May 24, 2016  
PUF S/N: 16050229-002

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.03
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	0.03
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	0.06
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.03
Perylene	< 0.01
Phenanthrene	0.15
Pyrene	0.04
Retene	0.03

Sample ID: 16060006-002

Customer ID: LICA

Cust Samp ID: LICA/PUF/CLS/May 30, 2016

### TISCH PUF PLUS Sample Collection Data Sheet

Client:	<u>LICA</u>	Puf+ S/N:	<u>TE-03</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>May 25, 2016/09:39</u>
Field Sample ID:	<u>LICA/PUF/CLS/May 30, 2016</u>	Removal Date/Time:	<u>May 31, 2016/08:54</u>

### Sample Data Collection Information

Sample Date:	<u>May 30, 2016</u>	Average Pressure (mmHg)	<u>713</u>
Start Time (mst):	<u>00:00</u>	Average Flow (Q <sub>std</sub> )	<u>229</u>
End Time (mst):	<u>00:00 May 31, 2016</u>	Average Temperature (°C)	<u>13.9°</u>
Elapsed Time (Hours):	<u>24.0</u>	Volume (V <sub>std</sub> m <sup>3</sup> )	<u>330.20</u>

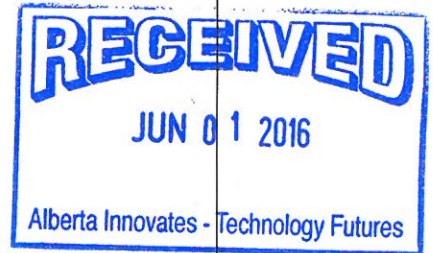
### Sample Recovery Checklist

(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>May 3, 2016</u>	
Other observations?		

Deployed By: Alex Yakupov

Collected By: Alex Yakupov Date: May 31, 2016



## Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: May 30, 2016  
PUF S/N: 16060006-002

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	0.03
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	0.06
Fluorene	0.07
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.03
Perylene	< 0.01
Phenanthrene	0.19
Pyrene	0.05
Retene	0.04



***PARTISOL RESULTS***

Sample ID: 16050080-001

AIR FCD-01318/2

Customer ID: LICA

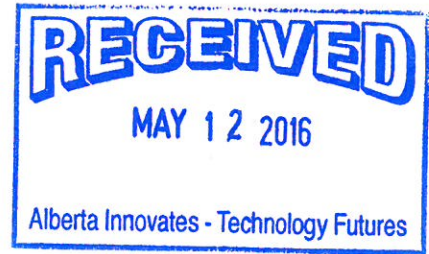
Cust Samp ID: LICA P6055849

Partisol Sample Data Sheet

Priority: Normal

Date Sampled: May 6, 2016  
 Location: Cold Lake South  
 Parameter: TSP PM10 **PM2.5**  
 Filter #: LICA P 60 55 849

Start Time 00:00 May 6, 2016  
 End Time 00:00 May 7, 2016  
 Status OK  
 Std Vol 23.847  
 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 9, 2016  
10:13

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: 16050119-001

Customer ID: LICA

AIR FCD-01318/2

Cust Samp ID: LICA flt# P4131726

Partisol Sample Data Sheet

Priority: Normal

Date Sampled: May 12, 2016

Location: Cold Lake South

Parameter: TSP PM10

PM2.5

Filter #: P 41 31 726



Start Time 00:00 May 12, 2016

End Time 00:00 May 13, 2016

Status OK

Std Vol 24.632

Valid Time 24:00

Total Time 24.0

Comments: Weather Conditions, etc.

Sample inlet head cleaned on April 29, 2016  
Date of last calibration: April 8, 2016

Technician Signature: Alex Yakupov

Date: May 13, 2016  
Time: 08:52

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: 16050201-001

Customer ID: LICA

AIR FCD-01318/2

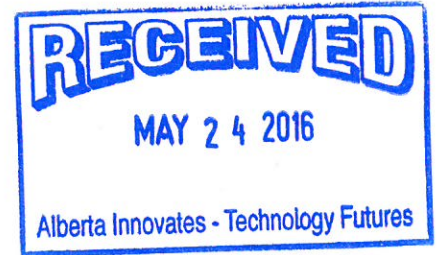
Cust Samp ID: LICA Fit#P4149579

### Partisol Sample Data Sheet

Priority: Normal

Date Sampled: May 18, 2016  
 Location: Cold Lake South  
 Parameter: TSP PM10 **PM2.5**  
 Filter #: P 414 95 79

Start Time 00:00 May 18, 2016  
 End Time 00:00 May 19, 2016  
 Status OK  
 Std Vol 23.115  
 Valid Time 24:00  
 Total Time 24.0



**Comments: Weather Conditions, etc.**

Sample inlet head cleaned on April 29, 2016  
Date of last calibration: April 8, 2016  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Technician Signature: Alex Yakupov  
 Date: May 20, 2016  
 Time: 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: 16050228-001

Customer ID: LICA

AIR FCD-01318/2

Cust Samp ID: LICA Fit #P4149576

### Partisol Sample Data Sheet

Priority: Normal

Date Sampled: May 24, 2016  
 Location: Cold Lake South  
 Parameter: TSP PM10  
 Filter #: P414 95 76

PM2.5

Start Time 00:00 May 24, 2016  
 End Time 00:00 May 25, 2016  
 Status OK  
 Std Vol 23.569  
 Valid Time 24:00  
 Total Time 24.0



**Comments: Weather Conditions, etc.**

Sample inlet head cleaned on April 29, 2016  
Date of last calibration: April 8, 2016  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Technician Signature:**

Alex Yakupov  
 Date: May 25, 2016  
 Time: 10:24

**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: 16060005-001

Customer ID: LICA

AIR FCD-01318/2

Cust Samp ID: LICA Fit #P4149578

### Partisol Sample Data Sheet

Priority: Normal

Date Sampled: May 30, 2016

Location: Cold Lake South

Parameter: TSP PM10

PM2.5

Filter #: P414 95 78

Start Time 00:00 May 30, 2016

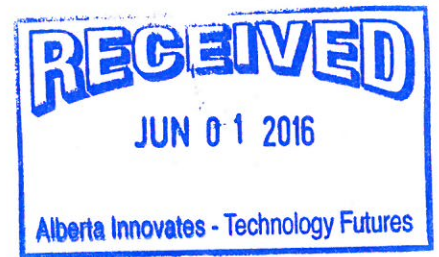
End Time 00:00 May 31, 2016

Status OK

Std Vol 23.663

Valid Time 24:00

Total Time 24.0



**Comments: Weather Conditions, etc.**

Sample inlet head cleaned on April 29, 2016

Date of last calibration: April 8, 2016

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Technician Signature:**

Alex Yakupov  
Date: May 31, 2016  
Time: 08:48

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

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### Partisol Sampler Results

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Date	Filter NO.	Concentration (mg)
May 6	16050080-001	0.102
May 12	16050119-001	0.031
May 18	16050201-001	0.155
May 24	16050228-001	0.067
May 30	16060005-001	0.091

***APPENDIX III***  
***EQUIPMENT CALIBRATION RESULTS***



***SULPHUR DIOXIDE***



## Thermo 43i Sulphur Dioxide Analyzer Calibration

<b>Date:</b> May 2, 2016	<b>Barometric Pressure:</b> 0.947 atm
<b>Company/Airshed:</b> LICA	<b>Station Temperature °C:</b> 23
<b>Location/Station Name:</b> Cold Lake South	<b>Weather Conditions:</b> Clear
<b>Parameter:</b> Sulphur Dioxide	<b>Calibration Purpose:</b> routine monthly
<b>Start Time 24 hr. (mst):</b> 9:52	<b>Performed By/Reviewer:</b> Alex Yakupov   Trina Whitsitt
<b>End Time 24 hr. (mst):</b> 13:11	<b>Cal Gas Expiry Date:</b> December 2, 2023
<b>Calibration Method:</b> Gas Dilution	<b>Converter Model &amp; s/n (if applicable):</b> n/a

<b>Analyzer:</b>	
<b>Serial Number:</b> 806528242	<b>Range ppb:</b> 500
<b>Last Calibration Date:</b> April 19, 2016	<b>As Found C.F.:</b> 1.019
<b>Previous C.F.:</b> 0.997	<b>New C.F.:</b> 1.000

<b>Calibrator:</b>	<b>Standard Calibration Points for Ranges</b>								
<b>Flow Meter ID's:</b> 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							
<b>Make &amp; Model:</b> SABIO 2010 D									
<b>Serial #:</b> 11900613									
<b>Cal Gas Cylinder I.D. #:</b> LL119346									
<b>Cal Gas Conc. (ppm):</b> 50.0									

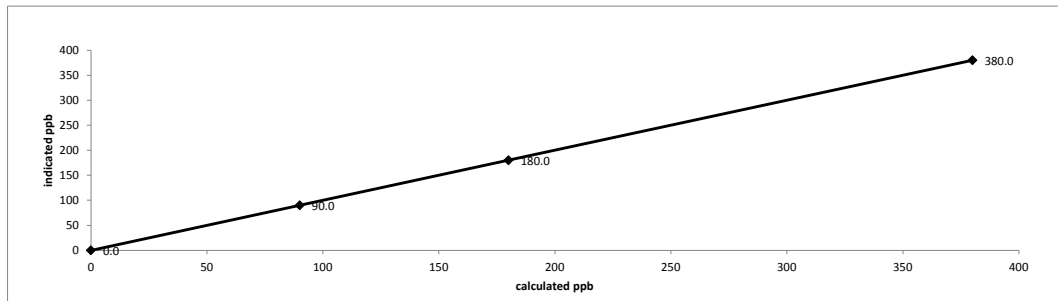
**ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015**

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	4962	38.00	5000	380.0	373.0	1.019
adjusted zero	5000	0.00	5000	0.0	0.0	n/a
adjusted high	4962	38.00	5000	380.0	380.0	1.000
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
<b>Average C.F.=</b>						1.000

**Linear Regression/Calibration Results:**

<b>Correlation Coefficient =</b> 1.000	<b>LIMITS</b>
<b>Slope =</b> 1.000	> or = 0.995
<b>b (Intercept as % of full scale) =</b> 0.00%	.95-1.05
<b>% change in C.F. from last cal =</b> -2.18%	± 3% F.S.
	± 10%

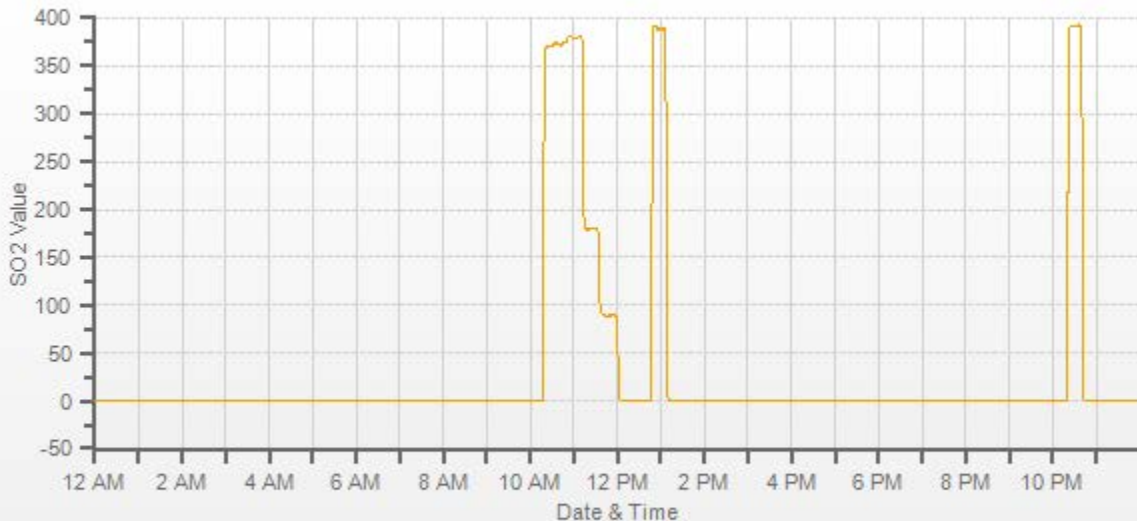
**Thermo 43i Sulphur Dioxide Analyzer Calibration**



<b>As found:</b>	<b>As left:</b>
BKG: 7.5	BKG: 7.7
COEF: 1.169	COEF: 1.188
PMT: -632.0	PMT: -632.0
FLASH: 703	FLASH: 705
INTERNAL: 27.7	INTERNAL: 27.7
CHAMBER: 44.9	CHAMBER: 45.2
PERM OVEN GAS: 45.0	PERM OVEN GAS: 45.0
PERM OVEN HEATER: 44.19	PERM OVEN HEATER: 44.19
PRESSURE: 678.6	PRESSURE: 678.3
SAMPLE FLOW: 0.474	SAMPLE FLOW: 0.473
LAMP INTENSITY: 78	LAMP INTENSITY: 78
CONVERTER: n/a	CONVERTER: n/a
CONVERTER SET: n/a	CONVERTER SET: n/a
Internal Span: 387.7	Internal Span: 388.9

**Comments:**

Sample filter changed. No ZERO adjustment made. Sample line connected to a wall-mounted filter holder.



— SO2[ppb]

***TOTAL REDUCED SULPHUR***



## Thermo 450i Total Reduced Sulphur Analyzer Calibration

Date: <u>May 2, 2016</u>	Barometric Pressure: <u>0.947 atm</u>
Company/Airshed: <u>LICA</u>	Station Temperature °C: <u>23</u>
Location/Station Name: <u>Cold Lake South</u>	Weather Conditions: <u>Clear</u>
Parameter: <u>Total Reduced Sulphur</u>	Calibration Purpose: <u>shut down</u>
Start Time 24 hr. (mst): <u>9:52</u>	Performed By/Reviewer: <u>Alex Yakupov</u>   <u>Trina Whitsitt</u>
End Time 24 hr. (mst): <u>10:48</u>	Cal Gas Expiry Date: <u>July 15, 2017</u>
Calibration Method: <u>Gas Dilution</u>	Converter Model & s/n (if applicable): <u>CDNova CDN-101 #501</u>

Analyzer:	
Serial Number: <u>812728560</u>	Range ppb: <u>100</u>
Last Calibration Date: <u>April 29, 2016</u>	As Found C.F.: <u>1.345</u>
Previous C.F.: <u>1.000</u>	New C.F.: <u>n/a</u>

Calibrator:		<b>Standard Calibration Points for Ranges</b>								
Flow Meter ID's: <u>n/a</u>		<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 style="text-align: center;">78</td> </tr> <tr> <td>Mid</td> <td style="text-align: center;">38</td> </tr> <tr> <td>Low</td> <td style="text-align: center;">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: <u>API 700</u>										
Serial #: <u>627</u>										
Cal Gas Cylinder I.D. #: <u>LL36837</u>										
Cal Gas Conc. (ppm): <u>10.0</u>										

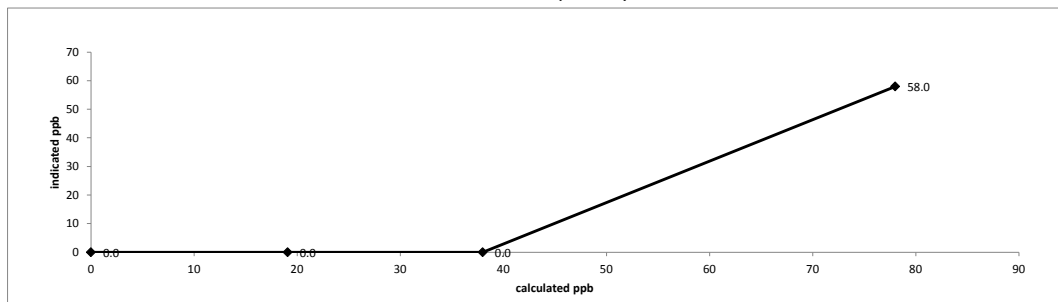
**ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015**

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	0.0	N/A
as found high	7441	58.50	7500	78.0	58.0	1.345
mid	7472	28.50	7501	38.0		#DIV/0!
low	7482	14.30	7496	19.1		#DIV/0!
Average C.F.=						#DIV/0!

**Linear Regression/Calibration Results:**

Correlation Coefficient = <u>0.885</u>	LIMITS > or = 0.995
Slope = <u>1.017</u>	0.90-1.10
b (Intercept as % of full scale) = <u>19.02%</u>	± 3% F.S.
% change in C.F. from last cal = <u>-34.49%</u>	± 10%

**Thermo 450i Total Reduced Sulphur Analyzer Calibration**



<p style="text-align: center;"><b>As found:</b></p> BKG: <u>13.6</u> COEF: <u>0.942</u> PMT: <u>-650.8</u> FLASH: <u>743</u> INTERNAL: <u>31.1</u> CHAMBER: <u>45.1</u> CONVERTER TEMP: <u>810</u> CONVERTER SET: <u>810</u> PERM OVEN GAS: <u>45.0</u> PERM OVEN HTR: <u>44.37</u> PRESSURE: <u>659.0</u> SAMPLE FLOW: <u>0.510</u> LAMP INTENSITY: <u>92</u> Internal Span: <u>37</u>	<p style="text-align: center;"><b>As left:</b></p> 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> CONVERTER TEMP: <u>n/a</u> CONVERTER SET: <u>n/a</u> PERM OVEN GAS: <u>n/a</u> PERM OVEN HTR: <u>n/a</u> PRESSURE: <u>n/a</u> SAMPLE FLOW: <u>n/a</u> LAMP INTENSITY: <u>n/a</u> Internal Span: <u>n/a</u>
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**Comments:**

Shutdown calibration performed to investigate the failure at High Point. No ZERO adjustment made. High Point failed at 58 ppb. Calibration stopped at 10:48 to complete a leak check and scrubber check. A new scrubber was installed on April 29. According to a daily report, daily ZS check showed low result: TRS span check 24.1/37, -34.86%. The issue was traced to a newly installed scrubber. The scrubber was rebuilt, SO2 material was changed and the scrubber was reduced in length.



## Thermo 450i Total Reduced Sulphur Analyzer Calibration

<b>Date:</b> May 2, 2016	<b>Barometric Pressure:</b> 0.947 atm
<b>Company/Airshed:</b> LICA	<b>Station Temperature °C:</b> 23
<b>Location/Station Name:</b> Cold Lake South	<b>Weather Conditions:</b> Clear
<b>Parameter:</b> Total Reduced Sulphur	<b>Calibration Purpose:</b> post repair
<b>Start Time 24 hr. (mst):</b> 14:52	<b>Performed By/Reviewer:</b> Alex Yakupov   Trina Whitsitt
<b>End Time 24 hr. (mst):</b> 17:51	<b>Cal Gas Expiry Date:</b> July 15, 2017
<b>Calibration Method:</b> Gas Dilution	<b>Converter Model &amp; s/n (if applicable):</b> CDNova CDN-101 #501

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

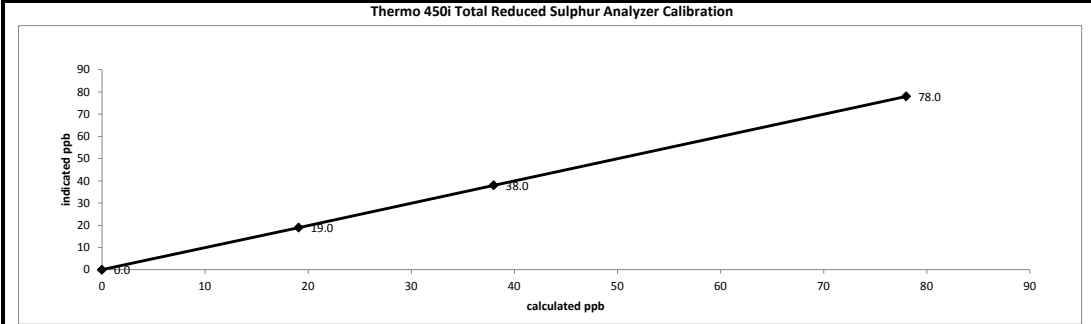
<b>Calibrator:</b>	<b>Standard Calibration Points for Ranges</b>								
<b>Flow Meter ID's:</b> n/a									
<b>Make &amp; Model:</b> API 700	<table border="1" style="margin: auto;"> <tr><th>Point</th><th>Total Reduced Sulphur Standard Calibration Points</th></tr> <tr><td>High</td><td style="text-align: center;">78</td></tr> <tr><td>Mid</td><td style="text-align: center;">38</td></tr> <tr><td>Low</td><td style="text-align: center;">19</td></tr> </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								
<b>Serial #:</b> 627									
<b>Cal Gas Cylinder I.D. #:</b> LL36837									
<b>Cal Gas Conc. (ppm):</b> 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	7498	0.00	7498	0.0	0.0	N/A
adjusted high	7441	58.50	7500	78.0	78.0	1.000
mid	7472	28.50	7501	38.0	38.0	1.000
low	7482	14.30	7496	19.1	19.0	1.004
calibrator zero	7498	0.00	7498	0.0	0.0	n/a
<b>Average C.F.=</b>						1.001

**Linear Regression/Calibration Results:**

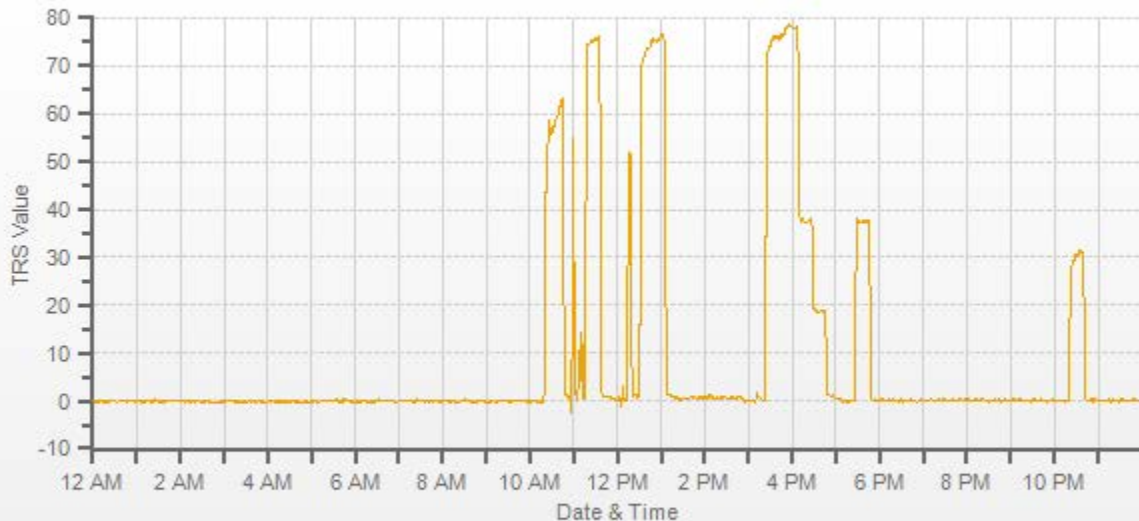
<b>Correlation Coefficient =</b> 1.000	<b>LIMITS</b>
<b>Slope =</b> 1.000	> or = 0.995
<b>b (Intercept as % of full scale) =</b> 0.03%	.95-1.05
<b>% change in C.F. from last cal =</b> n/a	± 3% F.S.
	± 10%



<b>As found:</b>	<b>As left:</b>
BKG: n/a	BKG: 13.7
COEF: n/a	COEF: 0.954
PMT: n/a	PMT: -650.8
FLASH: n/a	FLASH: 743
INTERNAL: n/a	INTERNAL: 31.4
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: 659.0
SAMPLE FLOW: n/a	SAMPLE FLOW: 0.512
LAMP INTENSITY: n/a	LAMP INTENSITY: 92
Internal Span: n/a	Internal Span: 37.6

**Comments:**

Sample filter changed. No ZERO adjustment made. Sample line connected to a wall-mounted filter holder. SO2 scrubber test: 100 bpb of SO2 from 15:11 to 15:20, response is 0.0 ppb.



— TRS[ppb]



## Thermo 450i Total Reduced Sulphur Analyzer Calibration

Date: May 5, 2016	Barometric Pressure: 0.937 atm
Company/Airshed: LICA	Station Temperature °C: 22
Location/Station Name: Cold Lake South	Weather Conditions: Smoke
Parameter: Total Reduced Sulphur	Calibration Purpose: shut down
Start Time 24 hr. (mst): 10:40	Performed By/Reviewer: Alex Yakupov   Trina Whitsitt
End Time 24 hr. (mst): 11:17	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: May 2, 2016	As Found C.F.: 1.219
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			

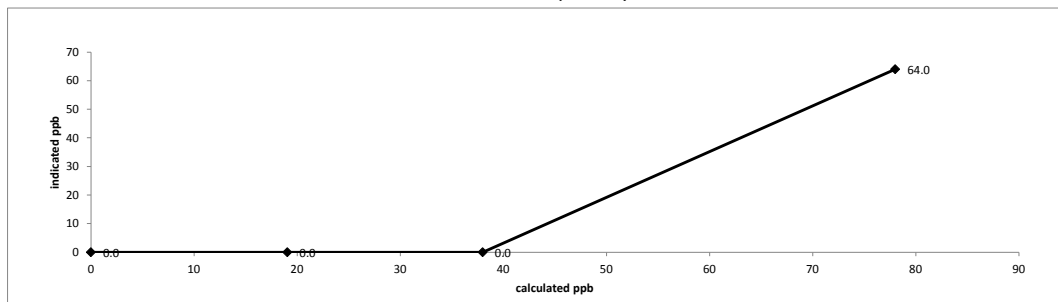
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Point	Calibrator Flow Rates (cc/min)			Calculated Concentration: (ppb)	Indicated Concentration: (ppb)	Correction Factors (C.F.):
	Diluent	Cal Gas	Total			
as found zero	7498	0.00	7498	0.0	0.0	N/A
as found high	7441	58.50	7500	78.0	64.0	1.219
mid	7472	28.50	7501	38.0		#DIV/0!
low	7490	14.30	7504	19.1		#DIV/0!
Average C.F. =						#DIV/0!

Linear Regression/Calibration Results:

Correlation Coefficient = <u>0.885</u>	LIMITS > or = 0.995
Slope = <u>0.922</u>	0.90-1.10
b (Intercept as % of full scale) = <u>19.02%</u>	± 3% F.S.
% change in C.F. from last cal = <u>-21.88%</u>	± 10%

Thermo 450i Total Reduced Sulphur Analyzer Calibration



<p style="text-align: center; font-weight: bold; font-size: x-small;">As found:</p> BKG: <u>13.7</u> COEF: <u>0.954</u> PMT: <u>-650.8</u> FLASH: <u>743</u> INTERNAL: <u>32.2</u> CHAMBER: <u>45.0</u> CONVERTER TEMP: <u>810</u> CONVERTER SET: <u>810</u> PERM OVEN GAS: <u>45.0</u> PERM OVEN HTR: <u>44.38</u> PRESSURE: <u>662.7</u> SAMPLE FLOW: <u>0.513</u> LAMP INTENSITY: <u>92</u> Internal Span: <u>37.6</u>	<p style="text-align: center; font-weight: bold; font-size: x-small;">As left:</p> 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> CONVERTER TEMP: <u>n/a</u> CONVERTER SET: <u>n/a</u> PERM OVEN GAS: <u>n/a</u> PERM OVEN HTR: <u>n/a</u> PRESSURE: <u>n/a</u> SAMPLE FLOW: <u>n/a</u> LAMP INTENSITY: <u>n/a</u> Internal Span: <u>n/a</u>
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**Comments:**

Shutdown calibration performed to replace SO2 scrubber. No ZERO adjustment made. High Point stopped at 64 ppb. Calibration stopped at 11:17. The previously renewed SO2 scrubber material assumingly is not good and will be renewed.





## Thermo 450i Total Reduced Sulphur Analyzer Calibration

<b>Date:</b> May 5, 2016	<b>Barometric Pressure:</b> 0.937 atm
<b>Company/Airshed:</b> LICA	<b>Station Temperature °C:</b> 22
<b>Location/Station Name:</b> Cold Lake South	<b>Weather Conditions:</b> Smoke
<b>Parameter:</b> Total Reduced Sulphur	<b>Calibration Purpose:</b> post repair
<b>Start Time 24 hr. (mst):</b> 11:48	<b>Performed By/Reviewer:</b> Alex Yakupov   Trina Whitsitt
<b>End Time 24 hr. (mst):</b> 14:45	<b>Cal Gas Expiry Date:</b> July 15, 2017
<b>Calibration Method:</b> Gas Dilution	<b>Converter Model &amp; s/n (if applicable):</b> CDNova CDN-101 #501

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

<b>Calibrator:</b>	<b>Standard Calibration Points for Ranges</b>
<b>Flow Meter ID's:</b> n/a	
<b>Make &amp; Model:</b> API 700	
<b>Serial #:</b> 627	
<b>Cal Gas Cylinder I.D. #:</b> LL36837	
<b>Cal Gas Conc. (ppm):</b> 10.0	

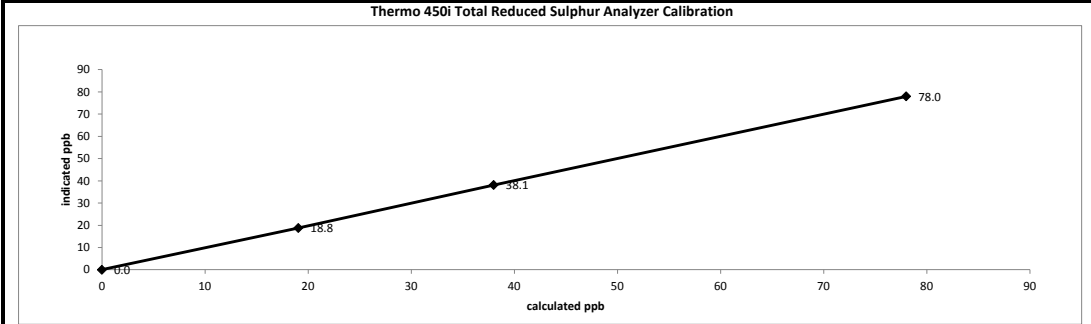
Point	Total Reduced Sulphur Standard Calibration Points
High	78
Mid	38
Low	19

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)	
adjusted zero	7498	0.00	7498	0.0	0.0	N/A
adjusted high	7441	58.50	7500	78.0	78.0	1.000
mid	7472	28.50	7501	38.0	38.1	0.997
low	7490	14.30	7504	19.1	18.8	1.014
calibrator zero	7498	0.00	7498	0.0	0.0	n/a
<b>Average C.F.=</b>						1.004

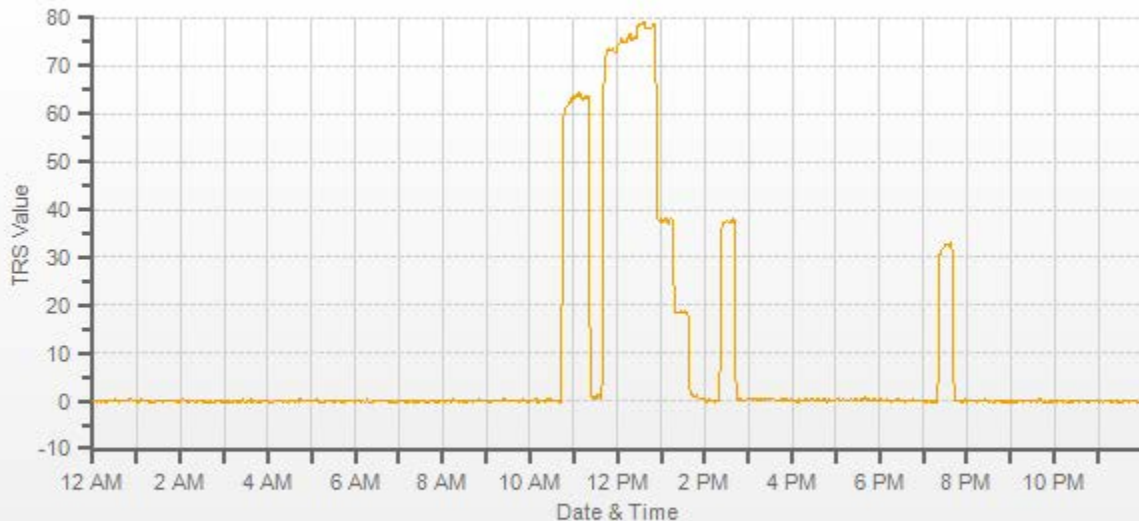
**Linear Regression/Calibration Results:**

<b>Correlation Coefficient =</b> 1.000	<b>LIMITS</b>
<b>Slope =</b> 0.999	> or = 0.995
<b>b (Intercept as % of full scale) =</b> 0.08%	.95-1.05
<b>% change in C.F. from last cal =</b> n/a	± 3% F.S.
	± 10%



**Comments:**

Sample filter changed on May 2, 2016. No ZERO adjustment made. SO2 scrubber tested with 100 ppb of SO2, readings are 0.0 ppb. No change in EV since the previous calibration.



— TRS[ppb]



## Thermo 450i Total Reduced Sulphur Analyzer Calibration

Date: May 6, 2016	Barometric Pressure: 0.946 atm
Company/Airshed: LICA	Station Temperature °C: 23
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): 8:26	Performed By/Reviewer: Alex Yakupov   Trina Whitsitt
End Time 24 hr. (mst): 10:12	Cal Gas Expiry Date: July 15, 2017
Calibration Method: Gas Dilution	Converter Model & s/n (if applicable): CDNova CDN-101 #501

<b>Analyzer:</b>	
Serial Number: 812728560	Range ppb: 100
Last Calibration Date: May 5, 2016	As Found C.F.: 1.083
Previous C.F.: 1.000	New C.F.: n/a

<b>Calibrator:</b>	<b>Standard Calibration Points for Ranges</b>								
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									

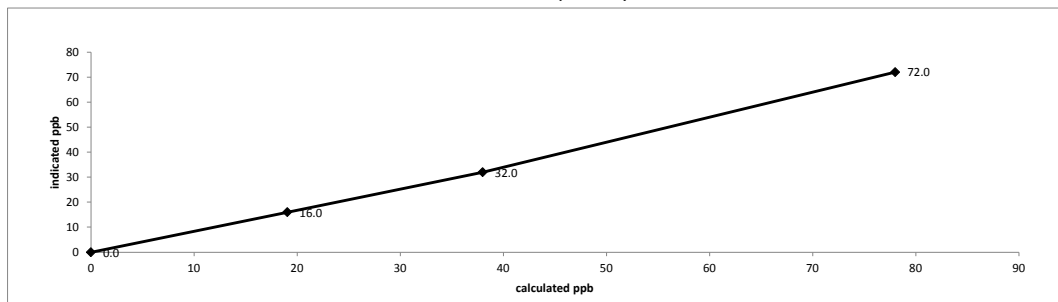
**ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015**

Point	Calibrator Flow Rates (cc/min)			Calculated Concentration: (ppb)	Indicated Concentration: (ppb)	Correction Factors (C.F.):
	Diluent	Cal Gas	Total			
as found zero	7498	0.00	7498	0.0	0.0	N/A
as found high	7441	58.50	7500	78.0	72.0	1.083
mid	7472	28.50	7501	38.0	32.0	1.187
low	7490	14.30	7504	19.1	16.0	1.191
Average C.F.=						1.154

**Linear Regression/Calibration Results:**

Correlation Coefficient =	0.999	<b>LIMITS</b>
Slope =	1.077	> or = 0.995
b (Intercept as % of full scale) =	1.45%	0.90-1.10
% change in C.F. from last cal =	-8.34%	± 3% F.S.
		± 10%

Thermo 450i Total Reduced Sulphur Analyzer Calibration



<b>As found:</b>	<b>As left:</b>
BKG: 13.8	BKG: n/a
COEF: 0.996	COEF: n/a
PMT: -650.8	PMT: n/a
FLASH: 742	FLASH: n/a
INTERNAL: 32.3	INTERNAL: n/a
CHAMBER: 45.0	CHAMBER: n/a
CONVERTER TEMP: 810	CONVERTER TEMP: n/a
CONVERTER SET: 810	CONVERTER SET: n/a
PERM OVEN GAS: 45.0	PERM OVEN GAS: n/a
PERM OVEN HTR: 44.37	PERM OVEN HTR: n/a
PRESSURE: 663.0	PRESSURE: n/a
SAMPLE FLOW: 0.514	SAMPLE FLOW: n/a
LAMP INTENSITY: 92	LAMP INTENSITY: n/a
Internal Span: 37.6	Internal Span: n/a

**Comments:**  
 Shutdown calibration performed to complete maintenance on the converter. Reason: according to a daily report, SPAN drifted over 10% after post-repair calibration yesterday. Contaminated converter chamber is suspected in causing the drift as well as new SO2 beads may require time for stabilizing/conditioning. Converter check and re-calibration required. No ZERO adjustment made. No High Point adjustment made.



## Thermo 450i Total Reduced Sulphur Analyzer Calibration

<b>Date:</b> May 6, 2016	<b>Barometric Pressure:</b> 0.946 atm
<b>Company/Airshed:</b> LICA	<b>Station Temperature °C:</b> 23
<b>Location/Station Name:</b> Cold Lake South	<b>Weather Conditions:</b> Mix of sun and clouds
<b>Parameter:</b> Total Reduced Sulphur	<b>Calibration Purpose:</b> post repair
<b>Start Time 24 hr. (mst):</b> 11:32	<b>Performed By/Reviewer:</b> Alex Yakupov   Trina Whitsitt
<b>End Time 24 hr. (mst):</b> 14:37	<b>Cal Gas Expiry Date:</b> July 15, 2017
<b>Calibration Method:</b> Gas Dilution	<b>Converter Model &amp; s/n (if applicable):</b> CDNova CDN-101 #501

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

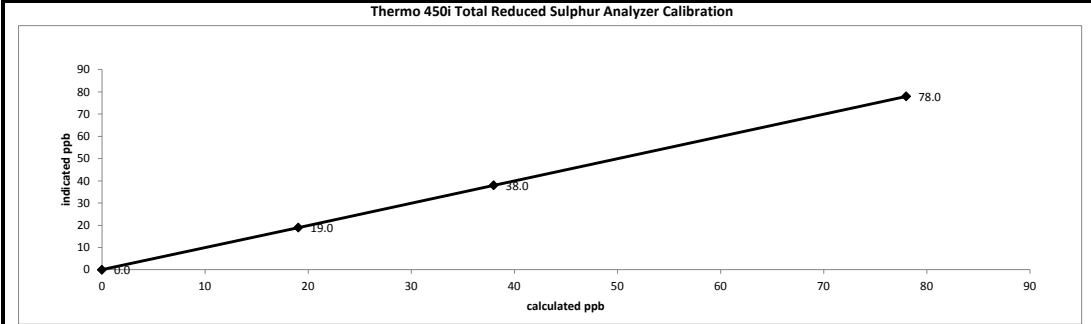
<b>Calibrator:</b>	<b>Standard Calibration Points for Ranges</b>								
<b>Flow Meter ID's:</b> n/a	<table border="1" style="margin: auto;"><tr><th>Point</th><th>Total Reduced Sulphur Standard Calibration Points</th></tr><tr><td>High</td><td>78</td></tr><tr><td>Mid</td><td>38</td></tr><tr><td>Low</td><td>19</td></tr></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								
<b>Make &amp; Model:</b> API 700									
<b>Serial #:</b> 627									
<b>Cal Gas Cylinder I.D. #:</b> LL36837									
<b>Cal Gas Conc. (ppm):</b> 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	7498	0.00	7498	0.0	0.0	N/A
adjusted high	7441	58.50	7500	78.0	78.0	1.000
mid	7472	28.50	7501	38.0	38.0	1.000
low	7490	14.30	7504	19.1	19.0	1.003
calibrator zero	7498	0.00	7498	0.0	0.0	n/a
<b>Average C.F.=</b>						1.001

**Linear Regression/Calibration Results:**

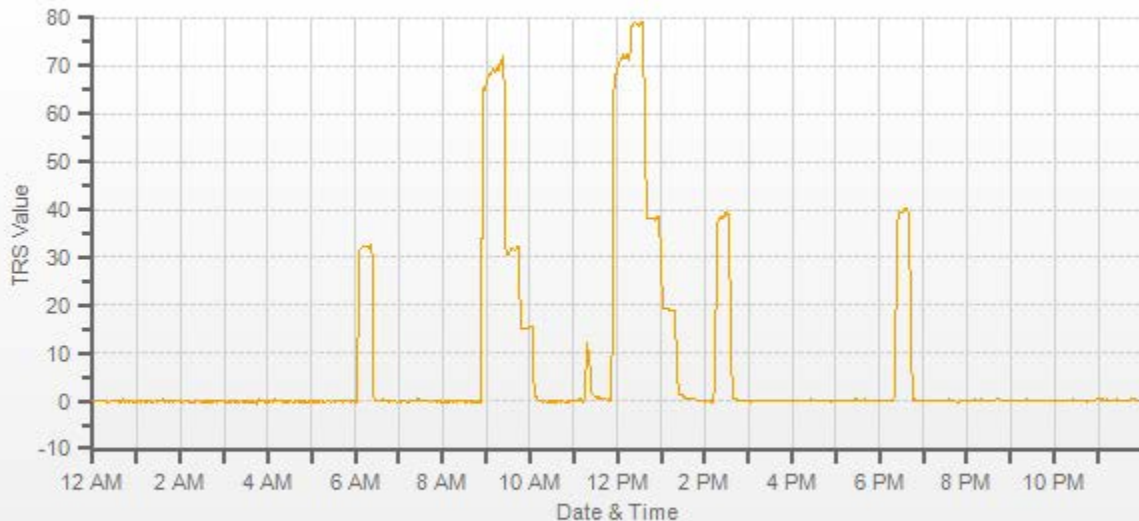
<b>Correlation Coefficient =</b> 1.000	<b>LIMITS</b>
<b>Slope =</b> 1.000	> or = 0.995
<b>b (Intercept as % of full scale) =</b> 0.02%	.95-1.05
<b>% change in C.F. from last cal =</b> n/a	± 3% F.S.
	± 10%



<b>As found:</b>	<b>As left:</b>
BKG: n/a	BKG: 14.9
COEF: n/a	COEF: 1.042
PMT: n/a	PMT: -650.8
FLASH: n/a	FLASH: 743
INTERNAL: n/a	INTERNAL: 32.4
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: 662.7
SAMPLE FLOW: n/a	SAMPLE FLOW: 0.512
LAMP INTENSITY: n/a	LAMP INTENSITY: 92
Internal Span: n/a	Internal Span: 39.0

**Comments:**

Sample filter changed on May 2, 2016. Converter chamber and tubing were checked, cleaned of any possible contamination, and re-tested.



— TRS[ppb]



### Thermo 450i Total Reduced Sulphur Analyzer Calibration

Date:	May 18, 2016	Barometric Pressure:	0.934 atm
Company/Airshed:	LICA	Station Temperature °C:	22
Location/Station Name:	Cold Lake South	Weather Conditions:	Clear
Parameter:	Total Reduced Sulphur	Calibration Purpose:	as found
Start Time 24 hr. (mst):	9:16	Performed By/Reviewer:	Alex Yakupov   Trina Whitsitt
End Time 24 hr. (mst):	10:44	Cal Gas Expiry Date:	July 15, 2017
Calibration Method:	Gas Dilution	Converter Model & s/n (if applicable):	CDNova CDN-101 #501

<b>Analyzer:</b>	
Serial Number:	812728560
Last Calibration Date:	May 6, 2016
Previous C.F.:	1.000
Range ppb:	100
As Found C.F.:	0.929
New C.F.:	n/a

<b>Calibrator:</b>		<b>Standard Calibration Points for Ranges</b>	
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

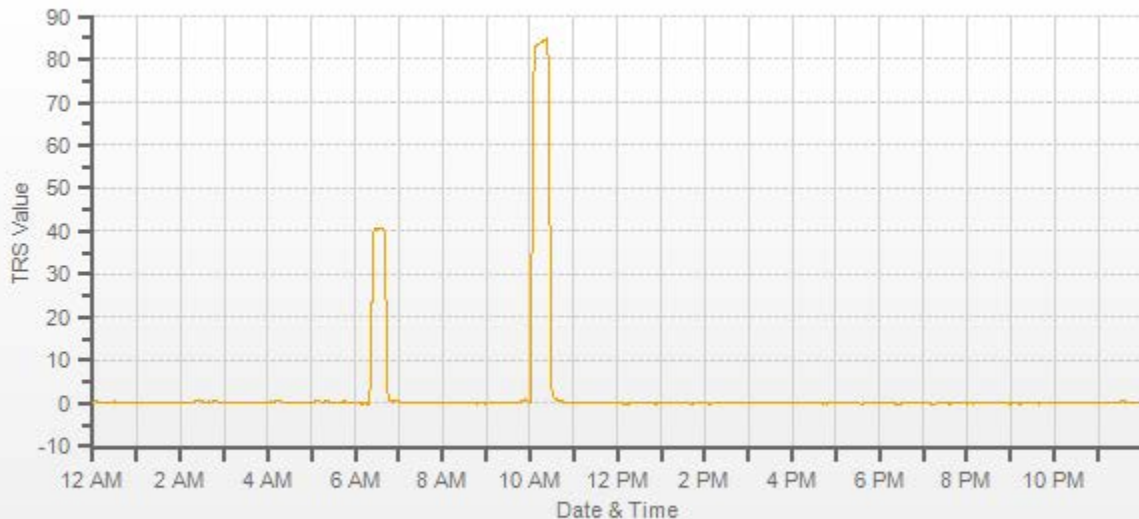
Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
as found zero	7498	0.00	7498	0.0	0.0	N/A
as found high	7441	58.50	7500	78.0	84.0	0.929
Average C.F.=						n/a

**Linear Regression/Calibration Results:**

Correlation Coefficient =	n/a	LIMITS	> or = 0.995
Slope =	n/a		.95-1.05
b (Intercept as % of full scale)=	n/a		± 3% F.S.
% change in C.F. from last cal=	7.14%		± 10%

As found:		As left:	
BKG:	15.1	BKG:	15.1
COEF:	1.042	COEF:	1.042
PMT:	-650.5	PMT:	-650.8
FLASH:	741	FLASH:	740
INTERNAL:	30.6	INTERNAL:	30.7
CHAMBER:	45.2	CHAMBER:	44.9
CONVERTER TEMP:	810	CONVERTER TEMP:	810
CONVERTER SET:	810	CONVERTER SET:	810
PERM OVEN GAS:	44.99	PERM OVEN GAS:	45.0
PERM OVEN HTR:	44.37	PERM OVEN HTR:	44.38
PRESSURE:	657.2	PRESSURE:	657.0
SAMPLE FLOW:	0.510	SAMPLE FLOW:	0.510
LAMP INTENSITY:	91	LAMP INTENSITY:	92
Internal Span:	39	Internal Span:	39

**Comments:**  
 As Found calibration required to verify the analyzer performance a week after the renewal of SO2 scrubber (on May 5, 2016). No ZERO adjustment made. No High Point adjustment made. SO2 scrubber test: 200 ppb of SO2 from 09:48 to 09:57, response is 1.0 ppb.



— TRS[ppb]

***TOTAL HYDROCARBON***





# Thermo 51C Total Hydrocarbon Analyzer Calibration

Date: May 3, 2016 Barometric Pressure: 0.944 atm  
 Company/Airshed: LICA Station Temperature °C: 22  
 Location/Station Name: Cold Lake South Weather Conditions: Clear  
 Parameter: Total Hydrocarbon Calibration Purpose: routine monthly  
 Start/End Time 24 hr. (mst): 7:29 / 11:46 Performed By/Reviewer: Alex Yakupov Trina Whitsitt  
 Calibration Method: Gas Dilution Cal Gas Expiry Date: November 25, 2023

Analyzer: Serial Number: 427408718 Range ppm: 50  
 Last Calibration Date: April 6, 2016 As Found C.F.: 0.975  
 Previous Cal High Point C.F.: 1.002 New C.F.: 1.001

Calibrator: Flow Meter ID's: n/a  
 Make & Model: API 700  
 Serial #: 627  
 Cal Gas Cylinder I.D. #: LL165372  
 CH<sub>4</sub>/C<sub>2</sub>H<sub>6</sub> Cylinder Conc. (ppm): 606.0 212.0  
 CH<sub>4</sub> as propane/total CH<sub>4</sub> equivalents (ppm): 583.0 1189.0

Point	Target ppm
High	38
Mid	18
Low	9

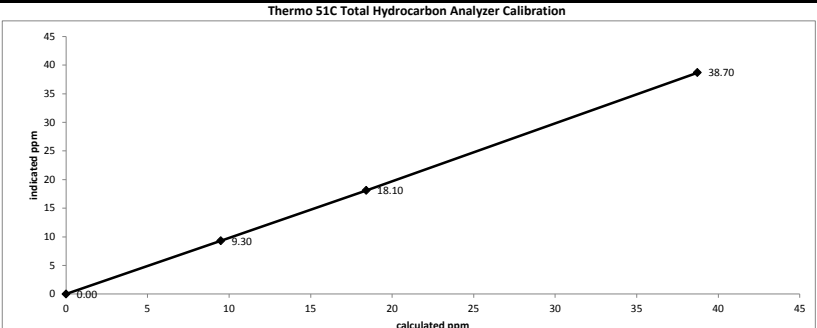
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Point	Calibrator Flow Rates (cc/min)			Calculated Concentration: (ppm)	Indicated Concentration: (ppm)	Correction Factors:
	Diluent	Cal Gas	Total			
as found zero	1999	0.00	1999	0.0	0.10	n/a
as found high	1931	65.00	1996	38.72	39.80	0.975
adjusted zero	1999	0.00	1999	0.00	0.00	n/a
adjusted high	1931	65.00	1996	38.72	38.70	1.001
mid	1971	31.00	2002	18.41	18.10	1.017
low	1987	16.00	2003	9.50	9.30	1.021
calibrator zero	1999	0.00	1999	0.0	0.00	n/a

Average C.F.= 1.013

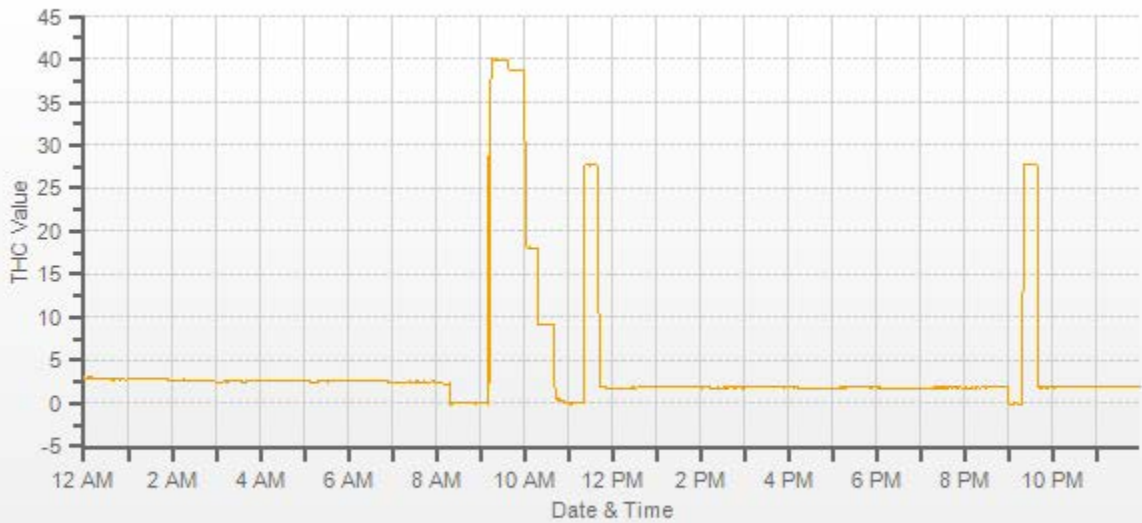
Linear Regression/Calibration Results:

Correlation Coefficient = 1.000 LIMITS > or = 0.995  
 Slope = 0.999 .95-1.05  
 b (Intercept as % of full scale) = 0.28% ± 3% F.S.  
 % change in C.F. from last cal = 2.66% ± 10%



<b>As found:</b>	<b>As left:</b>
H2 cylinder (psi): 100	H2 cylinder (psi): 2000
H2 cylinder reg set (psi): 22	H2 cylinder reg set (psi): 22
Span Cylinder (psi): 150	Span Cylinder (psi): 2000
Span Cylinder Reg Set (psi): 22	Span Cylinder Reg Set (psi): 22
Zero Air Gen Pressure: 34	Zero Air Gen Pressure: 34
measurement alarms: None	measurement alarms: None
service alarms: None	service alarms: None
cnt: 1442	cnt: 1474
rng: 1	rng: 1
try: 0	try: 0
flm: 182.2	flm: 182.4
det: 125.2	det: 125.6
Flame: 182	Flame: 182
Filter: 125	Filter: 125
Base: 125	Base: 125
Sample psi: 06.51	Sample psi: 06.51
Internal Air Pressure: 20	Internal Air Pressure: 20
Internal Fuel Pressure: 14	Internal Fuel Pressure: 14
Intenal Pressure Gauge psi: 27	Intenal Pressure Gauge psi: 27
Internal Span: 26.59	Internal Span: 27.6

Comments: Sample filter changed. New CH4 and H2 gas cylinders connected. Sample line rebuilt and connected to a wall-mounted filter holder. High Point "As Found" starts at 09:14.



— THC[ppm]

***NITROGEN DIOXIDE***



## Thermo 42i NO-NO2-NOx Analyzer Calibration

Date: May 2, 2016	Barometric Pressure: 0.947 atm
Company/Airshed: LICA	Station Temperature °C: 23
Location/Station Name: Cold Lake South	Weather Conditions: Clear
Start/End Time 24 hr. (mst): 9:52 / 15:07	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

<b>Analyzer:</b>  Serial Number: 1505664393 Last Calibration Date: April 6, 2016 Range ppb: 500	<b>Correction Factors:</b> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <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>0.997</td> <td>1.011</td> <td>1.000</td> </tr> <tr> <td>NO<sub>2</sub> =</td> <td>1.000</td> <td>1.000</td> <td>1.000</td> </tr> <tr> <td>NOx =</td> <td>1.000</td> <td>1.011</td> <td>1.000</td> </tr> </tbody> </table>		Previous C.F.:	As Found C.F.:	New C.F.:	NO =	0.997	1.011	1.000	NO <sub>2</sub> =	1.000	1.000	1.000	NOx =	1.000	1.011	1.000
	Previous C.F.:	As Found C.F.:	New C.F.:														
NO =	0.997	1.011	1.000														
NO <sub>2</sub> =	1.000	1.000	1.000														
NOx =	1.000	1.011	1.000														

<b>Calibrator:</b>  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	<b>Standard Calibration Points for a Range of: 500 ppb</b> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Point</th> <th>Target NO (ppb)</th> <th>Target NO<sub>2</sub> (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 <sub>2</sub> (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
Point	Target NO (ppb)	Target NO <sub>2</sub> (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																						

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	4962	38.00	5000	380.0	380.0	376.0	376.0	1.011	1.011
adjusted zero	5000	0.00	5000	0.0	0.0	0.0	0.0	n/a	n/a
adjusted high	4962	38.00	5000	380.0	380.0	380.0	380.0	1.000	1.000
mid	4981	18.00	4999	180.0	180.0	180.0	180.0	1.000	1.000
low	4990	9.00	4999	90.0	90.0	90.0	90.0	1.000	1.000
calibrator zero	5000	0.00	5000	0	0	0.0	0.0	n/a	n/a
<b>Average C.F.=</b>								1.000	1.000

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 <sub>2</sub>	NO drop	NO <sub>2</sub> gain	NO <sub>2</sub> C.F.
Point	Diluent	Cal Gas	Total Flow	volts or ppb	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)
NOx reference	4962	38.00	5000	0.0	381.0	381.0	0.0	0.0	0.0	
as found high NO2	4962	38.00	5000	250.0	123.0	381.0	258.0	258.0	258.0	1.000
adjusted high NO2	4962	38.00	5000	250.0	123.0	381.0	258.0	258.0	258.0	1.000
gpt mid	4962	38.00	5000	140.0	237.0	381.0	144.0	144.0	144.0	1.000
gpt low	4962	38.00	5000	50.0	327.0	381.0	54.0	54.0	54.0	1.000
<b>Average NO<sub>2</sub> C.F.=</b>										1.000

Linear Regression/Calibration Results:

	NO	NOx	NO <sub>2</sub>	LIMITS
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995
Slope =	1.000	1.000	1.000	.95-1.05
b (Intercept as % of full scale) =	0.00%	0.00%	0.00%	± 3% F.S.
% change in C.F. from last cal =	-1.37%	-1.06%	0.00%	± 10%
NO2 converter efficiency			1.00	0.96 to 1.04

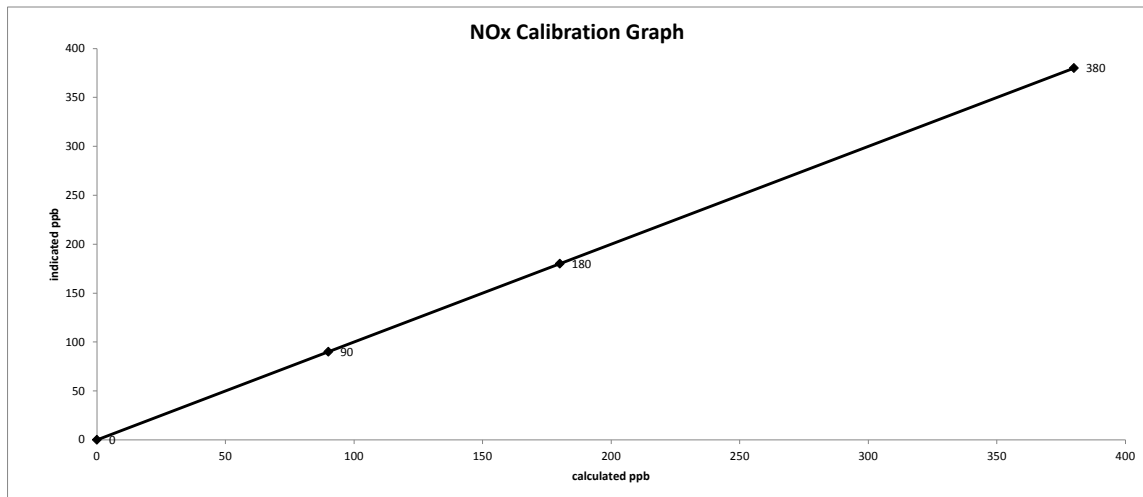
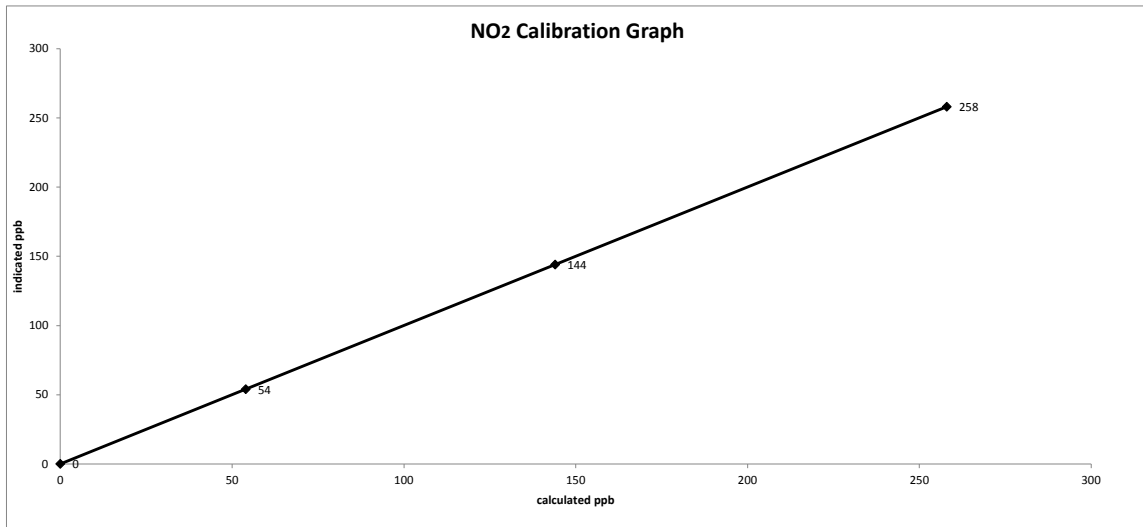
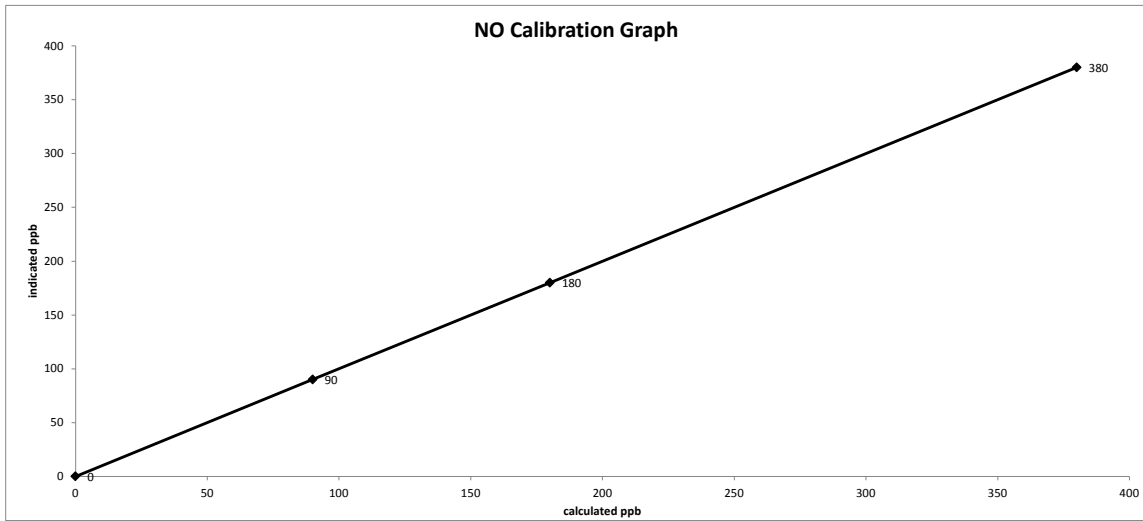
As found:	As left:
NO Bkg: 3.4	NO Bkg: 3.4
NOx Bkg: 3.5	NOx Bkg: 3.5
NO Coef: 1.015	NO Coef: 1.025
NO2 Coef: 1.000	NO2 Coef: 1.000
NOx Coef: 0.997	NOx Coef: 0.998
PMT: -854.3	PMT: -854.7
Internal: 24.6	Internal: 24.8
Chamber: 50.3	Chamber: 50.2
Cooler: -3.1	Cooler: -3.1
NO2 Converter: 325.0	NO2 Converter: 325.3
NO2 Converter Set: 325.0	NO2 Converter Set: 325.0
Pressure: 185.6	Pressure: 186.2
Flow: 0.793	Flow: 0.792
Ozonator Flow: OK	Ozonator Flow: OK
Internal Span NO: 2.1	Internal Span NO: 2.0
Internal Span NO2: 262.4	Internal Span NO2: 264.3
Internal Span NOx: 264.8	Internal Span NOx: 266.5

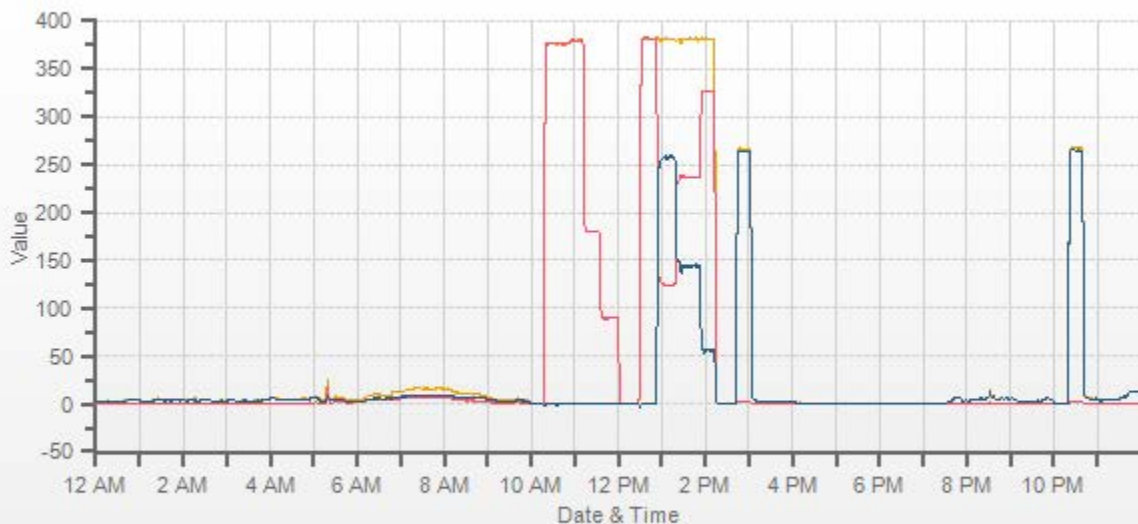
**Comments:**

Sample filter changed. No ZERO adjustment made. No NO2 adjustment made. Sample line connected to a wall-mounted filter holder.

Date: May 2, 2016  
Company/Airshed: LICA  
Location/Station Name: Cold Lake South

Start/End Time 24 hr. (mst): 9:52 / 15:07  
Calibration Purpose: routine monthly  
Calibration Method: Gas Dilution & Varying UV Lamp Power





— NOX[ppb] — NO[ppb] — NO2[ppb]

***OZONE***



# Thermo 49i Ozone Analyzer Calibration

Date:	May 3, 2016	Barometric Pressure:	0.944 atm
Company/Airshed:	LICA	Station Temperature °C:	22
Location/Station Name:	Cold Lake South	Weather Conditions:	Clear
Start/End Time 24 hr. (mst):	7:29 / 12:17	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:	700419951	Ozone Range ppb:	500
	Last Calibration Date:	April 7, 2016	As Found C.F.:	1.008
	Previous Cal High Point C.F.:	1.003	New C.F.:	0.997

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

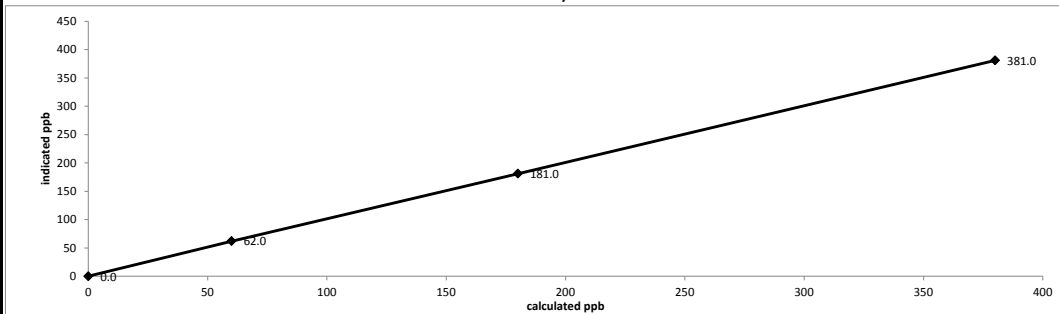
Point	Calibrator Flow Rate (cc/min)		Calculated Concentration:	Corrected Calculated Concentration:	Indicated Concentration:	Correction Factors:
	Total Flow @ Point Start	Total Flow @ Point Finish	(ppb)	(ppb)	(ppb)	
as found zero	5000	5000	0.0	n/a	0.0	n/a
as found high	5000	5000	380.0	380.0	377.0	1.008
adjusted zero	5000	5000	0.0	0.0	0.0	n/a
adjusted high	5000	5000	380.0	380.0	381.0	0.997
mid	5000	5000	180.0	180.0	181.0	0.994
low	5000	5000	60.0	60.0	62.0	0.968
calibrator zero	5000	5000	0.0	n/a	0.0	n/a

Average C.F. = 0.987

Linear Regression/Calibration Results:

Correlation Coefficient =	1.000	LIMITS	> or = 0.995
Slope =	0.999		.95-1.05
b (Intercept as % of full scale) =	-0.18%		± 3% F.S.
% change in C.F. from last cal =	-0.49%		± 10%

Thermo 49i Ozone Analyzer Calibration

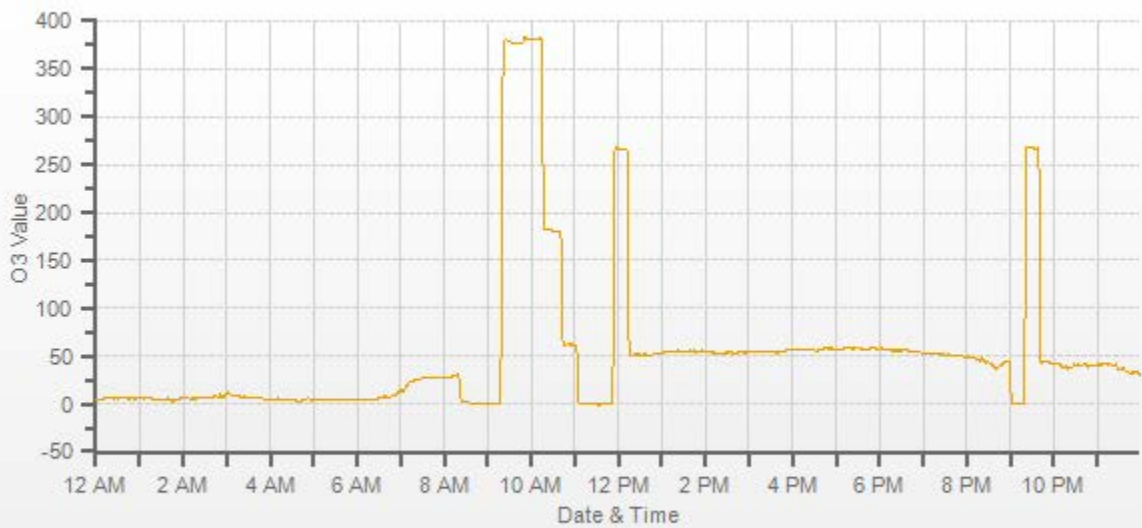


As found:	As left:
O3 Bkg: -0.1	O3 Bkg: 0.2
O3 Coef: 1.000	O3 Coef: 1.010
Photo Lamp: 8.7	Photo Lamp: 8.7
O3 Lamp: 9.0	O3 Lamp: 9.0
Bench: 27.5	Bench: 27.8
Bench Lamp: 53.4	Bench Lamp: 53.4
O3 Lamp: 67.4	O3 Lamp: 67.4
Pressure: 705.6	Pressure: 705.0
Cell A lpm: 0.716	Cell A lpm: 0.715
Cell B lpm: 0.755	Cell B lpm: 0.754
O3 ppb: 1.7	O3 ppb: -0.1
Cell A ppb: 0.7	Cell A ppb: 2.2
Cell B ppb: 2.7	Cell B ppb: -2.3
Cell A int: 56373	Cell A int: 56434
Cell B int: 55380	Cell B int: 55429
Internal Span: 274.4	Internal Span: 266

Comments:

Sample filter changed. No ZERO adjustment made. Sample line rebuilt and connected to a wall-mounted filter holder.





— O3[ppb]



## Thermo 49i Ozone Analyzer Calibration

Date:	May 18, 2016	Barometric Pressure:	0.934 atm
Company/Airshed:	LICA	Station Temperature °C:	22
Location/Station Name:	Cold Lake South	Weather Conditions:	Clear
Start/End Time 24 hr. (mst):	9:16 / 11:15	Calibration Purpose:	shut down
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:	700419951	Ozone Range ppb:	500
	Last Calibration Date:	May 3, 2016	As Found C.F.:	0.995
	Previous Cal High Point C.F.:	0.997	New C.F.:	n/a

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

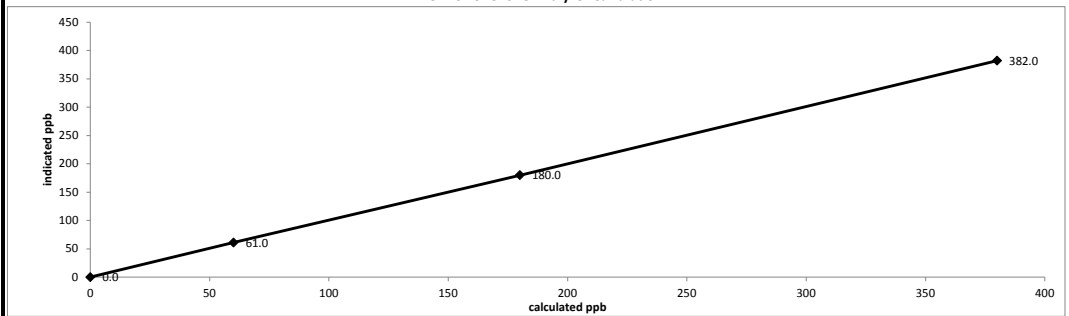
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

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	0.0	n/a
as found high	5000	5000	380.0	380.0	382.0	0.995
mid	5000	5000	180.0	180.0	180.0	1.000
low	5000	5000	60.0	60.0	61.0	0.984
Average C.F. =						0.993

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) =	-0.02%		± 3% F.S.
% change in C.F. from last cal =	0.22%		± 10%

Thermo 49i Ozone Analyzer Calibration



**As found:**

- O3 Bkg: 0.2
- O3 Coef: 1.010
- Photo Lamp: 8.7
- O3 Lamp: 9.0
- Bench: 27.2
- Bench Lamp: 53.4
- O3 Lamp: 67.4
- Pressure: 700.2
- Cell A lpm: 0.712
- Cell B lpm: 0.750
- O3 ppb: 2.7
- Cell A ppb: 2.8
- Cell B ppb: 2.5
- Cell A int: 56256
- Cell B int: 55356
- Internal Span: 266

**As left:**

- O3 Bkg: n/a
- O3 Coef: n/a
- Photo Lamp: n/a
- O3 Lamp: n/a
- Bench: n/a
- Bench Lamp: n/a
- O3 Lamp: n/a
- Pressure: n/a
- Cell A lpm: n/a
- Cell B lpm: n/a
- O3 ppb: n/a
- Cell A ppb: n/a
- Cell B ppb: n/a
- Cell A int: n/a
- Cell B int: n/a
- Internal Span: n/a

Comments:

Shutdown calibration completed to replace a screen (screen replacing required by AEMERA). No ZERO adjustment made. No High Point adjustment made.



## Thermo 49i Ozone Analyzer Calibration

Date:	May 18, 2016	Barometric Pressure:	0.934 atm
Company/Airshed:	LICA	Station Temperature °C:	22
Location/Station Name:	Cold Lake South	Weather Conditions:	Clear
Start/End Time 24 hr. (mst):	12:41 / 15:11	Calibration Purpose:	post repair
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:	700419951	Ozone Range ppb:	500
	Last Calibration Date:	n/a	As Found C.F.:	n/a
	Previous Cal High Point C.F.:	n/a	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

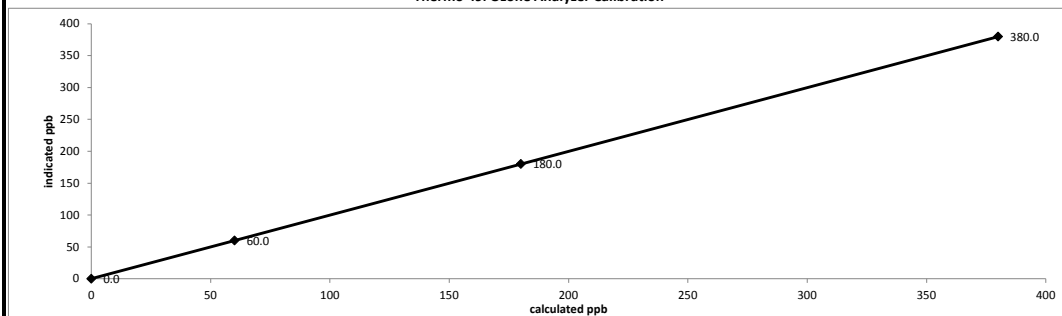
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

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)	
adjusted zero	5000	5000	0.0	n/a	0.0	n/a
adjusted 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	60.0	60.0	60.0	1.000
calibrator zero	5000	5000	0.0	0.0	0.0	n/a
Average C.F. =						1.000

### Linear Regression/Calibration Results:

Correlation Coefficient =	1.000	LIMITS	> or = 0.995
Slope =	1.000	LIMITS	.95-1.05
b (Intercept as % of full scale) =	0.00%	LIMITS	± 3% F.S.
% change in C.F. from last cal =	n/a	LIMITS	± 10%

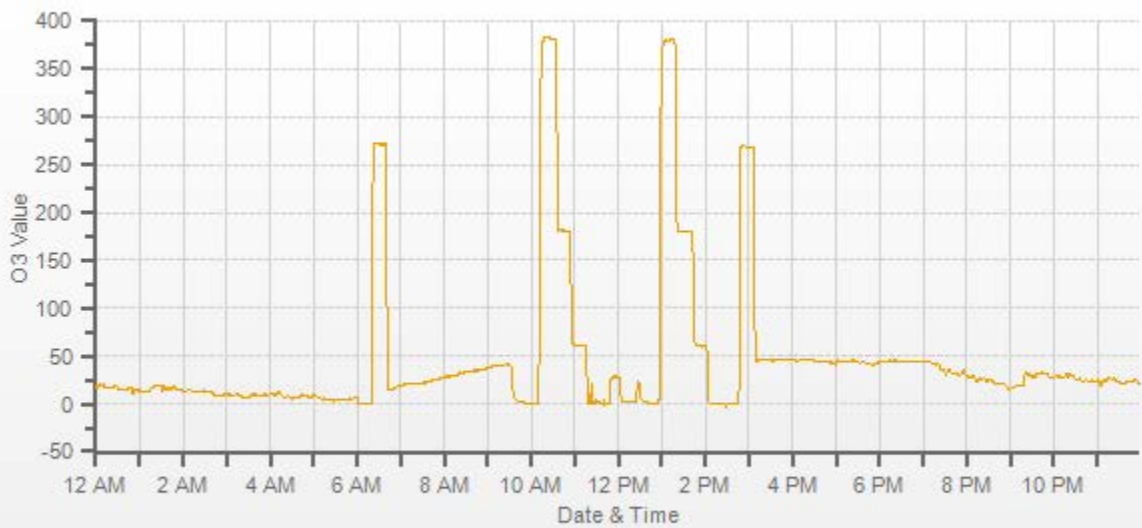
Thermo 49i Ozone Analyzer Calibration



As found:	As left:
O3 Bkg: n/a	O3 Bkg: 0.2
O3 Coef: n/a	O3 Coef: 1.010
Photo Lamp: n/a	Photo Lamp: 8.7
O3 Lamp: n/a	O3 Lamp: 5.7
Bench: n/a	Bench: 26.9
Bench Lamp: n/a	Bench Lamp: 53.4
O3 Lamp: n/a	O3 Lamp: 67.4
Pressure: n/a	Pressure: 698.9
Cell A lpm: n/a	Cell A lpm: 0.711
Cell B lpm: n/a	Cell B lpm: 0.749
O3 ppb: n/a	O3 ppb: 0.0
Cell A ppb: n/a	Cell A ppb: -1.4
Cell B ppb: n/a	Cell B ppb: 1.4
Cell A int: n/a	Cell A int: 54882
Cell B int: n/a	Cell B int: 55443
Internal Span: n/a	Internal Span: 268

### Comments:

Sample filter changed on May 3, 2016. No ZERO adjustment made. No High Point adjustment made. The post-repair calibration completed after a new screen had been installed.



— O3[ppb]

***PARTICULATE MATTER***



# R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date: May 3, 2016  
 Company: LICA  
 Station Name/Location: Cold Lake South  
 Previous Audit Date: April 19, 2016  
 Parameter: PM 2.5

Performed By/Reviewer: Alex Yakupov | Trina Whitsitt  
 Start Time (mst): 15:01  
 End Time (mst): 17:36  
 Calibration Purpose: Bi-monthly #1  
 Weather Conditions: Mainly clear

### 1400A Information and Status:

Serial Number: 1405A201620804 As Found Filter Loading %: 27.77  
 Ko Factor: 14578 As Left Filter Loading %: 15.72  
 Ambient Temperature °C: 29.83 As Found Noise: 0.005  
 Ambient Pressure atm: 0.939 As Left Noise: 0.000  
 Main Flow Reading lpm: 3.00 Pump Vacuum: 0.30  
 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	0.12	0.02	0.12
	limit	0.15	<del>0.12</del>	0.15	<del>0.12</del>
Bypass Flow	actual	0.12	-0.08	0.10	-0.08
	limit	0.60	<del>0.12</del>	0.60	<del>0.12</del>

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

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	0.03	0.12	0.02	0.12
	limit	0.15	<del>0.12</del>	0.15	<del>0.12</del>
Bypass Flow	actual	0.12	-0.08	0.10	-0.08
	limit	0.60	<del>0.12</del>	0.60	<del>0.12</del>

### As found temperature and pressure:

tolerance +/- 2.0°C	tolerance +/- 0.01 atm
1405F temperature °C: <u>29.8</u>	1405F pressure atm: <u>0.939</u>
reference temperature °C: <u>31.1</u>	reference pressure: <u>0.934</u>
difference °C: <u>1.3</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>31.1</u>	1405F pressure atm: <u>0.934</u>
reference temperature °C: <u>31.1</u>	reference pressure: <u>0.934</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>3.04</u>	reference total/aux flow lpm: <u>16.92</u>
difference lpm: <u>0.04</u>	difference lpm: <u>0.25</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>3.04</u>	reference total/aux flow lpm: <u>16.92</u>
difference lpm: <u>0.04</u>	difference lpm: <u>0.25</u>

### K<sub>o</sub> Audit:

Last K<sub>o</sub> audit date: May 3, 2016  
 1405F K<sub>o</sub> factor: 14578  
 Measured K<sub>o</sub> factor: 14848.5000  
 % difference: 1.86

### Comments:

47 mm FDMS filter changed. Ko audited. Sample inlet head PM 10/2.5 cleaned. TEOM sample filter changed. TEOM showed very unstable reading after sample head was washed and cleaned. Noise red 0.086 mg. The head was completely dried and replaced again.



# R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date: May 20, 2016  
 Company: LICA  
 Station Name/Location: Cold Lake South  
 Previous Audit Date: May 3, 2016  
 Parameter: PM 2.5

Performed By/Reviewer: Alex Yakupov | Trina Whitsitt  
 Start Time (mst): 8:50  
 End Time (mst): 9:39  
 Calibration Purpose: Bi-monthly #2  
 Weather Conditions: Mainly clear

### 1400A Information and Status:

Serial Number: 1405A201620804 As Found Filter Loading %: 32.88  
 Ko Factor: 14578 As Left Filter Loading %: 18.27  
 Ambient Temperature °C: 13.33 As Found Noise: 0.007  
 Ambient Pressure atm: 0.935 As Left Noise: 0.000  
 Main Flow Reading lpm: 3.00 Pump Vacuum: 0.30  
 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	<del>0.15</del>	0.15	<del>0.15</del>
Bypass Flow	actual	0.12	-0.08	0.11	-0.08
	limit	0.60	<del>0.60</del>	0.60	<del>0.60</del>

### 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	<del>0.15</del>	0.15	<del>0.15</del>
Bypass Flow	actual	0.12	-0.08	0.11	-0.08
	limit	0.60	<del>0.60</del>	0.60	<del>0.60</del>

### As found temperature and pressure:

tolerance +/- 2.0°C	tolerance +/- 0.01 atm
1405F temperature °C: <u>13.3</u>	1405F pressure atm: <u>0.935</u>
reference temperature °C: <u>13.6</u>	reference pressure: <u>0.935</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>13.6</u>	1405F pressure atm: <u>0.935</u>
reference temperature °C: <u>13.6</u>	reference pressure: <u>0.935</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>2.99</u>	reference total/aux flow lpm: <u>16.67</u>
difference lpm: <u>-0.01</u>	difference lpm: <u>0.00</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>2.99</u>	reference total/aux flow lpm: <u>16.67</u>
difference lpm: <u>-0.01</u>	difference lpm: <u>0.00</u>

### K<sub>o</sub> Audit:

Last K<sub>o</sub> audit date: May 3, 2016  
 1405F K<sub>o</sub> factor: 14578  
 Measured K<sub>o</sub> factor: 14848.5000  
 % difference: 1.86

### Comments:

47 mm FDMS filter changed. Sample inlet head PM 10/2.5 cleaned. TEOM sample filter changed.



# R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date: May 24, 2016  
 Company: LICA  
 Station Name/Location: Cold Lake South  
 Previous Audit Date: May 20, 2016  
 Parameter: PM 2.5

Performed By/Reviewer: Alex Yakupov | Trina Whitsitt  
 Start Time (mst): 10:37  
 End Time (mst): 12:00  
 Calibration Purpose: post repair  
 Weather Conditions: Mainly clear

### 1400A Information and Status:

Serial Number: 1405A201620804 As Found Filter Loading %: 18.78  
 Ko Factor: 14578 As Left Filter Loading %: 21.96  
 Ambient Temperature °C: 14.41 As Found Noise: 0.027  
 Ambient Pressure atm: 0.935 As Left Noise: 0.000  
 Main Flow Reading lpm: 3.00 Pump Vacuum: 0.31  
 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	0.10	0.02	0.10
	limit	0.15	<del>0.15</del>	0.15	<del>0.15</del>
Bypass Flow	actual	0.09	-0.08	0.07	-0.08
	limit	0.60	<del>0.60</del>	0.60	<del>0.60</del>

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

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	0.03	0.10	0.02	0.10
	limit	0.15	<del>0.15</del>	0.15	<del>0.15</del>
Bypass Flow	actual	0.09	-0.08	0.07	-0.08
	limit	0.60	<del>0.60</del>	0.60	<del>0.60</del>

### As found temperature and pressure:

tolerance +/- 2.0°C	tolerance +/- 0.01 atm
1405F temperature °C: <u>14.4</u>	1405F pressure atm: <u>0.935</u>
reference temperature °C: <u>13.9</u>	reference pressure: <u>0.936</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>14.4</u>	1405F pressure atm: <u>0.935</u>
reference temperature °C: <u>13.9</u>	reference pressure: <u>0.936</u>
difference °C: <u>-0.5</u>	difference: <u>0.001</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>2.99</u>	reference total/aux flow lpm: <u>16.68</u>
difference lpm: <u>-0.01</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>2.99</u>	reference total/aux flow lpm: <u>16.68</u>
difference lpm: <u>-0.01</u>	difference lpm: <u>0.01</u>

### K<sub>o</sub> Audit:

Last K<sub>o</sub> audit date: May 3, 2016  
 1405F K<sub>o</sub> factor: 14578  
 Measured K<sub>o</sub> factor: 14848.5000  
 % difference: 1.86

### Comments:

47 mm FDMS filter was changed on May 20, 2016. TEOM sample filter was changed. Sample inlet head PM 10/2.5 cleaned on May 20. Audit performed to make sure the instrument working properly and to find possible reason for negative readings.



## ***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***



**TISCH PUF PLUS SAMPLER AUDIT**

Check to remove

Date:	May 3, 2016	PUF PLUS Serial #:	100-1020
Company/Airshed:	LICA	Performed By/Reviewer:	Alex Yakupov   Trina Whitsitt
Location/Station Name:	Cold Lake South	Weather Conditions:	Clear
Reference Standards:	Flow:	Pressure:	Temperature:
Make:	Dwyer	Fisher Scientific	Fisher Scientific
Model:	475 Mark III	FB61291	FB61291
Serial Number:	#2	130168457	130168457
Calibration Date:	January 15, 2016	February 7, 2016	February 7, 2016

**TISCH PUF PLUS PRESSURE AND TEMPERATURE AUDIT**

AS FOUND Reference Barometric Pressure (mmHg):	710	AS FOUND Reference Temperature (°C):	31.0
AS FOUND PUF PLUS Barometric Pressure (mmHg):	710	AS FOUND PUF PLUS Temperature (°C):	31.4
% Difference (+/- 2% max.):	0.00%	% Difference (+/- 2 °C max.):	-0.4
**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)	27.96
Barometric Pressure (mmHg)	710.0
Enter Ambient Temperature from reference °C	31.4
Enter "m" variable from calibrated orifice	6.07570
Enter "b" variable from calibrated orifice	-0.03578
Enter Δp in. H <sub>2</sub> O	2.04
Standardized Flow lpm=	230.65
Flow Set Point lpm=	230.00
% Difference (+/- 2% max.)=	-0.28%
**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:	#VALUE! Max 2.0%

Calibration Point (mmHg):	Δp (in. H <sub>2</sub> O) required for target barometric pressure:	As Found barometric pressure (mmHg):	As Left barometric pressure (mmHg):	% Difference vs. Calibration Target:
750	1.57	n/a	n/a	#VALUE!
730	0.79	n/a	n/a	#VALUE!
710	0.00	n/a	n/a	#VALUE!
690	-0.79	n/a	n/a	#VALUE!
670	-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):	#VALUE! 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. H <sub>2</sub> O	n/a
Standardized Flow lpm=	#VALUE!
Flow Set Point lpm=	230.00
% Difference (+/- 2% max.)=	#VALUE!
**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	14823.1796	-6613.4765	0.2879
A1	22.8942	0.1641	16.8673
R	0.0000	0.0000	0.0000

Notes:  
Sample compartment of the PUF cleaned.

## ***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>O<sub>3</sub></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
<b>Audit Calibrator</b>	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

## Oxides Of Nitrogen

File No. 2015-119

Company <u>Maxxam</u>		Operator: <u>Chris Wesson</u>	
<b>Calibrator:</b>		<b>Flow Measurement Device:</b>	
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 <sub>2</sub>	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%

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

Flow	O <sub>2</sub> Conc	NO Decrease	NO	NO <sub>2</sub>	NOX	% Diff. Vs Audit gas	
5003	0	0.000	0.787	0.001	0.788	NO <sub>2</sub>	% 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%

<b>LINEAR REGRESSION ANALYSIS</b>				<i>y=mx+b (where x=calculated concentration, y=indicated concentration)</i>			
<b>NO<sub>2</sub></b>		<b>LIMITS</b>					
Correlation=	1.0000	≥ 0.995					
m (Slope)=	1.0089	<b>0.90-1.10</b>					
b (Intercept % of FS)=	0.1591	<b>± 3% F.S.</b>					

<b>AENV Standards</b>	<b>NO<sub>x</sub> Analyzer</b>
<b>Audit Calibrator</b>	
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. 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:** Thermo146i  
**Serial Number:** 1809  
**Last Verification Date:** February 2, 2016  
**Gas Type:** SO2 **Conc.** 98.07  
**Cylinder Number:** CAL016625

**Flow Measurement Device:**

**Make/Model:** Bios DC-2  
**Serial Number:** Bios D  
**Temp.°C:** 24.5  
**B.P.** 702mmHg

**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	<del>0.000</del>	<del>50.0</del>	<del>50.0</del>
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:					<b>49.4</b>

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:						<b>50.5</b>	<b>50.4</b>

<b>NO</b>	<b>NOx</b>
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



# 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 (sccm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.0000	<del>0.0000</del>	<del>132.442</del>	<del>10.0</del>
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:					<b>9.9</b>

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	<del>0.02140</del>	<del>46.722</del>	<del>607</del>	<del>214</del>
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:						<b>608</b>	<b>215</b>

<b>CH4</b>	<b>C3H8</b>
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: [Signature]

Date: January 19, 2016  
 Location: McIntyre Center Edmonton

***APPENDIX IV***  
***ANALYTICAL RESULTS***

***VOCS SAMPLES***

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/CLS/May 6, 2016	2652	Ambient Air	06-May-16	0:00
<b>DESCRIPTION:</b>	Cold Lake South			
<b>REPORT NUMBER:</b>	16050079	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050079-001	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16
16050079-001	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16
16050079-001	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16
16050079-001	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16
16050079-001	1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-May-16
16050079-001	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	13-May-16
16050079-001	1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	13-May-16
16050079-001	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-May-16
16050079-001	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16
16050079-001	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-May-16
16050079-001	1,2-Dichloroethane	I	0.02	ppbv	0.01	AC-058	13-May-16
16050079-001	1,2-Dichloropropane	I	0.01	ppbv	0.01	AC-058	13-May-16
16050079-001	1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16
16050079-001	1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16
16050079-001	1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	13-May-16
16050079-001	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	13-May-16
16050079-001	1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	13-May-16
16050079-001	1-Butene	I	0.05	ppbv	0.02	AC-058	13-May-16
16050079-001	1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16
16050079-001	1-Pentene	I	0.01	ppbv	0.01	AC-058	13-May-16
16050079-001	2,2,4-Trimethylpentane	I	0.02	ppbv	0.01	AC-058	13-May-16
16050079-001	2,2-Dimethylbutane	I	0.01	ppbv	0.01	AC-058	13-May-16
16050079-001	2,3,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	13-May-16
16050079-001	2,3-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16
16050079-001	2,3-Dimethylpentane	I	0.03	ppbv	0.02	AC-058	13-May-16

**Report certified by:** Graham Knox, Team Lead

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

**Date:** June 17, 2016

**Inquiries:** (780) 632 8455

**E-mail:** EAS.Results@albertainnovates.ca

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/CLS/May 6, 2016	2652	Ambient Air	06-May-16	0:00
<b>DESCRIPTION:</b>	Cold Lake South			
<b>REPORT NUMBER:</b>	16050079	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050079-001	2,4-Dimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	13-May-16
16050079-001	2-Methylheptane	K, T, U	< 0.01	ppbv	0.01	AC-058	13-May-16
16050079-001	2-Methylhexane	I	0.02	ppbv	0.01	AC-058	13-May-16
16050079-001	2-Methylpentane	I	0.03	ppbv	0.01	AC-058	13-May-16
16050079-001	3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16
16050079-001	3-Methylhexane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16
16050079-001	3-Methylpentane	I	0.03	ppbv	0.01	AC-058	13-May-16
16050079-001	Acetone		4.3	ppbv	0.4	AC-058	13-May-16
16050079-001	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	13-May-16
16050079-001	Benzene	I	0.08	ppbv	0.01	AC-058	13-May-16
16050079-001	Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	13-May-16
16050079-001	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16
16050079-001	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16
16050079-001	Bromomethane	I	0.01	ppbv	0.01	AC-058	13-May-16
16050079-001	Carbon disulfide	I	0.01	ppbv	0.01	AC-058	13-May-16
16050079-001	Carbon tetrachloride	I	0.11	ppbv	0.01	AC-058	13-May-16
16050079-001	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16
16050079-001	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16
16050079-001	Chloroform	I	0.04	ppbv	0.02	AC-058	13-May-16
16050079-001	Chloromethane		0.88	ppbv	0.02	AC-058	13-May-16
16050079-001	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	13-May-16
16050079-001	cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-May-16
16050079-001	cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16
16050079-001	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16
16050079-001	Cyclohexane	I	0.03	ppbv	0.02	AC-058	13-May-16

<b>Report certified by:</b> Graham Knox, Team Lead	<b>On behalf of:</b> PJ Pretorius, Manager, Analysis and Testing Services
<b>Date:</b> June 17, 2016	<b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca



<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/CLS/May 6, 2016	2652	Ambient Air	06-May-16	0:00
<b>DESCRIPTION:</b>	Cold Lake South			
<b>REPORT NUMBER:</b>	16050079	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050079-001	Cyclopentane	I	0.02	ppbv	0.01	AC-058	13-May-16
16050079-001	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	13-May-16
16050079-001	Ethanol		1.0	ppbv	0.3	AC-058	13-May-16
16050079-001	Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	13-May-16
16050079-001	Ethylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	13-May-16
16050079-001	Freon-11		0.37	ppbv	0.02	AC-058	13-May-16
16050079-001	Freon-113	I	0.10	ppbv	0.01	AC-058	13-May-16
16050079-001	Freon-114	I	0.03	ppbv	0.02	AC-058	13-May-16
16050079-001	Freon-12		0.77	ppbv	0.02	AC-058	13-May-16
16050079-001	Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.50	AC-058	13-May-16
16050079-001	Isobutane	I	0.22	ppbv	0.02	AC-058	13-May-16
16050079-001	Isopentane		0.36	ppbv	0.03	AC-058	13-May-16
16050079-001	Isoprene	I	0.08	ppbv	0.01	AC-058	13-May-16
16050079-001	Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	13-May-16
16050079-001	Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	13-May-16
16050079-001	m,p-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-May-16
16050079-001	m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-May-16
16050079-001	m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	13-May-16
16050079-001	Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.50	AC-058	13-May-16
16050079-001	Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	13-May-16
16050079-001	Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	13-May-16
16050079-001	Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	13-May-16
16050079-001	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	13-May-16
16050079-001	Methylcyclohexane	I	0.03	ppbv	0.01	AC-058	13-May-16
16050079-001	Methylcyclopentane	I	0.04	ppbv	0.02	AC-058	13-May-16

Report certified by: Graham Knox, Team Lead

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

Date: June 17, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/CLS/May 6, 2016	2652	Ambient Air	06-May-16	0:00
<b>DESCRIPTION:</b>	Cold Lake South			
<b>REPORT NUMBER:</b>	16050079	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050079-001	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	13-May-16
16050079-001	n-Butane		0.45	ppbv	0.03	AC-058	13-May-16
16050079-001	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	13-May-16
16050079-001	n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	13-May-16
16050079-001	n-Heptane	I	0.02	ppbv	0.01	AC-058	13-May-16
16050079-001	n-Hexane	I	0.04	ppbv	0.01	AC-058	13-May-16
16050079-001	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16
16050079-001	n-Pentane	I	0.1	ppbv	0.1	AC-058	13-May-16
16050079-001	n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	13-May-16
16050079-001	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	13-May-16
16050079-001	Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	13-May-16
16050079-001	n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	13-May-16
16050079-001	o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	13-May-16
16050079-001	o-Xylene	I	0.01	ppbv	0.01	AC-058	13-May-16
16050079-001	p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-May-16
16050079-001	p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	13-May-16
16050079-001	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-May-16
16050079-001	Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-May-16
16050079-001	Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	13-May-16
16050079-001	Toluene	I	0.07	ppbv	0.01	AC-058	13-May-16
16050079-001	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	13-May-16
16050079-001	trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-May-16
16050079-001	trans-2-Butene	K, T, U	< 0.01	ppbv	0.01	AC-058	13-May-16
16050079-001	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16
16050079-001	Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-May-16

<b>Report certified by:</b> Graham Knox, Team Lead	<b>On behalf of:</b> PJ Pretorius, Manager, Analysis and Testing Services
<b>Date:</b> June 17, 2016	<b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/CLS/May 6, 2016	2652	Ambient Air	06-May-16	0:00
<b>DESCRIPTION:</b>	Cold Lake South			
<b>REPORT NUMBER:</b>	16050079	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050079-001	Vinyl acetate		0.6	ppbv	0.4	AC-058	13-May-16
16050079-001	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16

<b>Report certified by:</b> Graham Knox, Team Lead	<b>On behalf of:</b> PJ Pretorius, Manager, Analysis and Testing Services
<b>Date:</b> June 17, 2016	<b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/CLS/May 12, 2016	14715	Ambient Air	12-May-16	0:00
<b>DESCRIPTION:</b>	Cold Lake South			
<b>REPORT NUMBER:</b>	16050120	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050120-003	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-003	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-003	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-003	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-003	1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	19-May-16
16050120-003	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	19-May-16
16050120-003	1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	19-May-16
16050120-003	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	19-May-16
16050120-003	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-003	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	19-May-16
16050120-003	1,2-Dichloroethane	I	0.02	ppbv	0.01	AC-058	19-May-16
16050120-003	1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-003	1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-003	1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-003	1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	19-May-16
16050120-003	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	19-May-16
16050120-003	1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	19-May-16
16050120-003	1-Butene	I	0.03	ppbv	0.02	AC-058	19-May-16
16050120-003	1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-003	1-Pentene	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-003	2,2,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-003	2,2-Dimethylbutane	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-003	2,3,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-003	2,3-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-003	2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16

<b>Report certified by:</b> Graham Knox, Team Lead	<b>On behalf of:</b> PJ Pretorius, Manager, Analysis and Testing Services
<b>Date:</b> June 17, 2016	<b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/CLS/May 12, 2016	14715	Ambient Air	12-May-16	0:00
<b>DESCRIPTION:</b>	Cold Lake South			
<b>REPORT NUMBER:</b>	16050120	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050120-003	2,4-Dimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-003	2-Methylheptane	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-003	2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-003	2-Methylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-003	3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-003	3-Methylhexane	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-003	3-Methylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-003	Acetone		2.2	ppbv	0.4	AC-058	19-May-16
16050120-003	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	19-May-16
16050120-003	Benzene	I	0.01	ppbv	0.01	AC-058	19-May-16
16050120-003	Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	19-May-16
16050120-003	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-003	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-003	Bromomethane	I	0.01	ppbv	0.01	AC-058	19-May-16
16050120-003	Carbon disulfide	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-003	Carbon tetrachloride	I	0.10	ppbv	0.01	AC-058	19-May-16
16050120-003	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-003	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-003	Chloroform	I	0.03	ppbv	0.02	AC-058	19-May-16
16050120-003	Chloromethane		0.92	ppbv	0.02	AC-058	19-May-16
16050120-003	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-003	cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	19-May-16
16050120-003	cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-003	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-003	Cyclohexane	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16

<b>Report certified by:</b> Graham Knox, Team Lead	<b>On behalf of:</b> PJ Pretorius, Manager, Analysis and Testing Services
<b>Date:</b> June 17, 2016	<b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/CLS/May 12, 2016	14715	Ambient Air	12-May-16	0:00
<b>DESCRIPTION:</b>	Cold Lake South			
<b>REPORT NUMBER:</b>	16050120	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050120-003	Cyclopentane	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-003	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-003	Ethanol		0.6	ppbv	0.3	AC-058	19-May-16
16050120-003	Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	19-May-16
16050120-003	Ethylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-003	Freon-11		0.32	ppbv	0.02	AC-058	19-May-16
16050120-003	Freon-113	I	0.08	ppbv	0.01	AC-058	19-May-16
16050120-003	Freon-114	I	0.03	ppbv	0.02	AC-058	19-May-16
16050120-003	Freon-12		0.76	ppbv	0.02	AC-058	19-May-16
16050120-003	Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.50	AC-058	19-May-16
16050120-003	Isobutane	I	0.12	ppbv	0.02	AC-058	19-May-16
16050120-003	Isopentane	I	0.11	ppbv	0.03	AC-058	19-May-16
16050120-003	Isoprene	I	0.02	ppbv	0.01	AC-058	19-May-16
16050120-003	Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	19-May-16
16050120-003	Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-003	m,p-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	19-May-16
16050120-003	m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	19-May-16
16050120-003	m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	19-May-16
16050120-003	Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.50	AC-058	19-May-16
16050120-003	Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	19-May-16
16050120-003	Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	19-May-16
16050120-003	Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	19-May-16
16050120-003	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	19-May-16
16050120-003	Methylcyclohexane	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-003	Methylcyclopentane	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16

<b>Report certified by:</b> Graham Knox, Team Lead	<b>On behalf of:</b> PJ Pretorius, Manager, Analysis and Testing Services
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<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/CLS/May 12, 2016	14715	Ambient Air	12-May-16	0:00
<b>DESCRIPTION:</b>	Cold Lake South			
<b>REPORT NUMBER:</b>	16050120	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050120-003	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	19-May-16
16050120-003	n-Butane	I	0.20	ppbv	0.03	AC-058	19-May-16
16050120-003	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	19-May-16
16050120-003	n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	19-May-16
16050120-003	n-Heptane	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-003	n-Hexane	I	0.01	ppbv	0.01	AC-058	19-May-16
16050120-003	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-003	n-Pentane	K, T, U	< 0.1	ppbv	0.1	AC-058	19-May-16
16050120-003	n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	19-May-16
16050120-003	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	19-May-16
16050120-003	Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	19-May-16
16050120-003	n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-003	o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-003	o-Xylene	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-003	p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	19-May-16
16050120-003	p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	19-May-16
16050120-003	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	19-May-16
16050120-003	Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	19-May-16
16050120-003	Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	19-May-16
16050120-003	Toluene	I	0.02	ppbv	0.01	AC-058	19-May-16
16050120-003	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-003	trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	19-May-16
16050120-003	trans-2-Butene	I	0.01	ppbv	0.01	AC-058	19-May-16
16050120-003	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-003	Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	19-May-16

<b>Report certified by:</b> Graham Knox, Team Lead	<b>On behalf of:</b> PJ Pretorius, Manager, Analysis and Testing Services
<b>Date:</b> June 17, 2016	<b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>
LICA/VOC/CLS/May 12, 2016	14715	Ambient Air	12-May-16 0:00
<b>DESCRIPTION:</b>	Cold Lake South		
<b>REPORT NUMBER:</b>	16050120	<b>REPORT CREATED:</b>	17-Jun-16
		<b>VERSION:</b>	Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
16050120-003	Vinyl acetate	K, T, U	< 0.4 ppbv	0.4	AC-058	19-May-16
16050120-003	Vinyl chloride	K, T, U	< 0.02 ppbv	0.02	AC-058	19-May-16

<b>Report certified by:</b>	Graham Knox, Team Lead	<b>On behalf of:</b>	PJ Pretorius, Manager, Analysis and Testing Services
<b>Date:</b>	June 17, 2016	<b>Inquiries:</b>	(780) 632 8455
		<b>E-mail:</b>	EAS.Results@albertainnovates.ca



<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/CLS/May 18, 2016	2661	Ambient Air	18-May-16	0:00
<b>DESCRIPTION:</b>				
<b>REPORT NUMBER:</b>	16050202	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050202-001	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-16
16050202-001	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-16
16050202-001	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-16
16050202-001	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-16
16050202-001	1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	27-May-16
16050202-001	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	27-May-16
16050202-001	1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	27-May-16
16050202-001	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	27-May-16
16050202-001	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-16
16050202-001	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	27-May-16
16050202-001	1,2-Dichloroethane	I	0.01	ppbv	0.01	AC-058	27-May-16
16050202-001	1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	27-May-16
16050202-001	1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-16
16050202-001	1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-16
16050202-001	1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	27-May-16
16050202-001	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	27-May-16
16050202-001	1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	27-May-16
16050202-001	1-Butene	I	0.19	ppbv	0.02	AC-058	27-May-16
16050202-001	1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-16
16050202-001	1-Pentene	I	0.03	ppbv	0.01	AC-058	27-May-16
16050202-001	2,2,4-Trimethylpentane	I	0.05	ppbv	0.01	AC-058	27-May-16
16050202-001	2,2-Dimethylbutane	I	0.02	ppbv	0.01	AC-058	27-May-16
16050202-001	2,3,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	27-May-16
16050202-001	2,3-Dimethylbutane	I	0.04	ppbv	0.02	AC-058	27-May-16
16050202-001	2,3-Dimethylpentane	I	0.06	ppbv	0.02	AC-058	27-May-16

<b>Report certified by:</b> Graham Knox, Team Lead	<b>On behalf of:</b> PJ Pretorius, Manager, Analysis and Testing Services
<b>Date:</b> June 17, 2016	<b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/CLS/May 18, 2016	2661	Ambient Air	18-May-16	0:00
<b>DESCRIPTION:</b>				
<b>REPORT NUMBER:</b>	16050202	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050202-001	2,4-Dimethylpentane	I	0.02	ppbv	0.01	AC-058	27-May-16
16050202-001	2-Methylheptane	I	0.01	ppbv	0.01	AC-058	27-May-16
16050202-001	2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	27-May-16
16050202-001	2-Methylpentane		0.51	ppbv	0.01	AC-058	27-May-16
16050202-001	3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-16
16050202-001	3-Methylhexane	I	0.06	ppbv	0.02	AC-058	27-May-16
16050202-001	3-Methylpentane	I	0.20	ppbv	0.01	AC-058	27-May-16
16050202-001	Acetone		7.1	ppbv	0.4	AC-058	27-May-16
16050202-001	Acrolein		1.3	ppbv	0.3	AC-058	27-May-16
16050202-001	Benzene	I	0.05	ppbv	0.01	AC-058	27-May-16
16050202-001	Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	27-May-16
16050202-001	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-16
16050202-001	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-16
16050202-001	Bromomethane	I	0.01	ppbv	0.01	AC-058	27-May-16
16050202-001	Carbon disulfide		0.72	ppbv	0.01	AC-058	27-May-16
16050202-001	Carbon tetrachloride	I	0.08	ppbv	0.01	AC-058	27-May-16
16050202-001	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-16
16050202-001	Chloroethane	I	0.02	ppbv	0.02	AC-058	27-May-16
16050202-001	Chloroform	I	0.03	ppbv	0.02	AC-058	27-May-16
16050202-001	Chloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-16
16050202-001	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	27-May-16
16050202-001	cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	27-May-16
16050202-001	cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-16
16050202-001	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-16
16050202-001	Cyclohexane	I	0.04	ppbv	0.02	AC-058	27-May-16

<b>Report certified by:</b> Graham Knox, Team Lead	<b>On behalf of:</b> PJ Pretorius, Manager, Analysis and Testing Services
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<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/CLS/May 18, 2016	2661	Ambient Air	18-May-16	0:00
<b>DESCRIPTION:</b>				
<b>REPORT NUMBER:</b>	16050202	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050202-001	Cyclopentane	I	0.04	ppbv	0.01	AC-058	27-May-16
16050202-001	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	27-May-16
16050202-001	Ethanol		2.2	ppbv	0.3	AC-058	27-May-16
16050202-001	Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	27-May-16
16050202-001	Ethylbenzene	I	0.01	ppbv	0.01	AC-058	27-May-16
16050202-001	Freon-11	I	0.27	ppbv	0.02	AC-058	27-May-16
16050202-001	Freon-113	I	0.07	ppbv	0.01	AC-058	27-May-16
16050202-001	Freon-114	I	0.02	ppbv	0.02	AC-058	27-May-16
16050202-001	Freon-12	I	0.03	ppbv	0.02	AC-058	27-May-16
16050202-001	Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.50	AC-058	27-May-16
16050202-001	Isobutane		1.00	ppbv	0.02	AC-058	27-May-16
16050202-001	Isopentane		0.81	ppbv	0.03	AC-058	27-May-16
16050202-001	Isoprene		0.39	ppbv	0.01	AC-058	27-May-16
16050202-001	Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	27-May-16
16050202-001	Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	27-May-16
16050202-001	m,p-Xylene	I	0.05	ppbv	0.03	AC-058	27-May-16
16050202-001	m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	27-May-16
16050202-001	m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	27-May-16
16050202-001	Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.50	AC-058	27-May-16
16050202-001	Methyl ethyl ketone		0.6	ppbv	0.3	AC-058	27-May-16
16050202-001	Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	27-May-16
16050202-001	Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	27-May-16
16050202-001	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	27-May-16
16050202-001	Methylcyclohexane	I	0.06	ppbv	0.01	AC-058	27-May-16
16050202-001	Methylcyclopentane	I	0.09	ppbv	0.02	AC-058	27-May-16

<b>Report certified by:</b> Graham Knox, Team Lead	<b>On behalf of:</b> PJ Pretorius, Manager, Analysis and Testing Services
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<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/CLS/May 18, 2016	2661	Ambient Air	18-May-16	0:00
<b>DESCRIPTION:</b>				
<b>REPORT NUMBER:</b>	16050202	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050202-001	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	27-May-16
16050202-001	n-Butane		1.14	ppbv	0.03	AC-058	27-May-16
16050202-001	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	27-May-16
16050202-001	n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	27-May-16
16050202-001	n-Heptane	I	0.03	ppbv	0.01	AC-058	27-May-16
16050202-001	n-Hexane	I	0.10	ppbv	0.01	AC-058	27-May-16
16050202-001	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-16
16050202-001	n-Pentane	I	0.3	ppbv	0.1	AC-058	27-May-16
16050202-001	n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	27-May-16
16050202-001	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	27-May-16
16050202-001	Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	27-May-16
16050202-001	n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	27-May-16
16050202-001	o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	27-May-16
16050202-001	o-Xylene	I	0.02	ppbv	0.01	AC-058	27-May-16
16050202-001	p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	27-May-16
16050202-001	p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	27-May-16
16050202-001	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	27-May-16
16050202-001	Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	27-May-16
16050202-001	Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	27-May-16
16050202-001	Toluene	I	0.13	ppbv	0.01	AC-058	27-May-16
16050202-001	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	27-May-16
16050202-001	trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	27-May-16
16050202-001	trans-2-Butene	I	0.01	ppbv	0.01	AC-058	27-May-16
16050202-001	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-16
16050202-001	Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	27-May-16

<b>Report certified by:</b> Graham Knox, Team Lead	<b>On behalf of:</b> PJ Pretorius, Manager, Analysis and Testing Services
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<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>
LICA/VOC/CLS/May 18, 2016	2661	Ambient Air	18-May-16 0:00
<b>DESCRIPTION:</b>			
<b>REPORT NUMBER:</b> 16050202	<b>REPORT CREATED:</b> 17-Jun-16	<b>VERSION:</b> Version 01	

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
16050202-001	Vinyl acetate	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May-16
16050202-001	Vinyl chloride	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-16

<b>Report certified by:</b> Graham Knox, Team Lead	<b>On behalf of:</b> PJ Pretorius, Manager, Analysis and Testing Services
<b>Date:</b> June 17, 2016	<b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/CLS/May 24, 2016	H3284	Ambient Air	24-May-16	0:00
<b>DESCRIPTION:</b>	Cold Lake South			
<b>REPORT NUMBER:</b>	16050229	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050229-001	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	04-Jun-16
16050229-001	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	04-Jun-16
16050229-001	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	04-Jun-16
16050229-001	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	04-Jun-16
16050229-001	1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	04-Jun-16
16050229-001	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	04-Jun-16
16050229-001	1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	04-Jun-16
16050229-001	1,2,4-Trimethylbenzene	I	0.04	ppbv	0.03	AC-058	04-Jun-16
16050229-001	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	04-Jun-16
16050229-001	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	04-Jun-16
16050229-001	1,2-Dichloroethane	I	0.02	ppbv	0.01	AC-058	04-Jun-16
16050229-001	1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	04-Jun-16
16050229-001	1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	04-Jun-16
16050229-001	1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	04-Jun-16
16050229-001	1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	04-Jun-16
16050229-001	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	04-Jun-16
16050229-001	1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	04-Jun-16
16050229-001	1-Butene	I	0.17	ppbv	0.02	AC-058	04-Jun-16
16050229-001	1-Hexene	I	0.13	ppbv	0.02	AC-058	04-Jun-16
16050229-001	1-Pentene	I	0.02	ppbv	0.01	AC-058	04-Jun-16
16050229-001	2,2,4-Trimethylpentane	I	0.06	ppbv	0.01	AC-058	04-Jun-16
16050229-001	2,2-Dimethylbutane	K, T, U	< 0.01	ppbv	0.01	AC-058	04-Jun-16
16050229-001	2,3,4-Trimethylpentane	I	0.02	ppbv	0.01	AC-058	04-Jun-16
16050229-001	2,3-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	04-Jun-16
16050229-001	2,3-Dimethylpentane	I	0.05	ppbv	0.02	AC-058	04-Jun-16

<b>Report certified by:</b> Graham Knox, Team Lead	<b>On behalf of:</b> PJ Pretorius, Manager, Analysis and Testing Services
<b>Date:</b> June 17, 2016	<b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/CLS/May 24, 2016	H3284	Ambient Air	24-May-16	0:00
<b>DESCRIPTION:</b>	Cold Lake South			
<b>REPORT NUMBER:</b>	16050229	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050229-001	2,4-Dimethylpentane	I	0.03	ppbv	0.01	AC-058	04-Jun-16
16050229-001	2-Methylheptane	K, T, U	< 0.01	ppbv	0.01	AC-058	04-Jun-16
16050229-001	2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	04-Jun-16
16050229-001	2-Methylpentane	I	0.10	ppbv	0.01	AC-058	04-Jun-16
16050229-001	3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	04-Jun-16
16050229-001	3-Methylhexane	I	0.04	ppbv	0.02	AC-058	04-Jun-16
16050229-001	3-Methylpentane	I	0.08	ppbv	0.01	AC-058	04-Jun-16
16050229-001	Acetone		4.9	ppbv	0.4	AC-058	04-Jun-16
16050229-001	Acrolein		7.4	ppbv	0.3	AC-058	04-Jun-16
16050229-001	Benzene	I	0.05	ppbv	0.01	AC-058	04-Jun-16
16050229-001	Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	04-Jun-16
16050229-001	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	04-Jun-16
16050229-001	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	04-Jun-16
16050229-001	Bromomethane	I	0.01	ppbv	0.01	AC-058	04-Jun-16
16050229-001	Carbon disulfide		2.10	ppbv	0.01	AC-058	04-Jun-16
16050229-001	Carbon tetrachloride	I	0.11	ppbv	0.01	AC-058	04-Jun-16
16050229-001	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	04-Jun-16
16050229-001	Chloroethane	I	0.02	ppbv	0.02	AC-058	04-Jun-16
16050229-001	Chloroform	I	0.03	ppbv	0.02	AC-058	04-Jun-16
16050229-001	Chloromethane		0.65	ppbv	0.02	AC-058	04-Jun-16
16050229-001	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	04-Jun-16
16050229-001	cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	04-Jun-16
16050229-001	cis-2-Butene	I	0.02	ppbv	0.02	AC-058	04-Jun-16
16050229-001	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	04-Jun-16
16050229-001	Cyclohexane	I	0.02	ppbv	0.02	AC-058	04-Jun-16

<b>Report certified by:</b> Graham Knox, Team Lead	<b>On behalf of:</b> PJ Pretorius, Manager, Analysis and Testing Services
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<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/CLS/May 24, 2016	H3284	Ambient Air	24-May-16	0:00
<b>DESCRIPTION:</b>	Cold Lake South			
<b>REPORT NUMBER:</b>	16050229	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050229-001	Cyclopentane	I	0.02	ppbv	0.01	AC-058	04-Jun-16
16050229-001	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	04-Jun-16
16050229-001	Ethanol		60.3	ppbv	1.8	AC-058	07-Jun-16
16050229-001	Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	04-Jun-16
16050229-001	Ethylbenzene	I	0.02	ppbv	0.01	AC-058	04-Jun-16
16050229-001	Freon-11		0.30	ppbv	0.02	AC-058	04-Jun-16
16050229-001	Freon-113	I	0.07	ppbv	0.01	AC-058	04-Jun-16
16050229-001	Freon-114	I	0.03	ppbv	0.02	AC-058	04-Jun-16
16050229-001	Freon-12		0.76	ppbv	0.02	AC-058	04-Jun-16
16050229-001	Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.50	AC-058	04-Jun-16
16050229-001	Isobutane		1.09	ppbv	0.02	AC-058	04-Jun-16
16050229-001	Isopentane		0.60	ppbv	0.03	AC-058	04-Jun-16
16050229-001	Isoprene	I	0.19	ppbv	0.01	AC-058	04-Jun-16
16050229-001	Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	04-Jun-16
16050229-001	Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	04-Jun-16
16050229-001	m,p-Xylene	I	0.08	ppbv	0.03	AC-058	04-Jun-16
16050229-001	m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	04-Jun-16
16050229-001	m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	04-Jun-16
16050229-001	Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.50	AC-058	04-Jun-16
16050229-001	Methyl ethyl ketone		1.1	ppbv	0.3	AC-058	04-Jun-16
16050229-001	Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	04-Jun-16
16050229-001	Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	04-Jun-16
16050229-001	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	04-Jun-16
16050229-001	Methylcyclohexane	I	0.02	ppbv	0.01	AC-058	04-Jun-16
16050229-001	Methylcyclopentane	I	0.10	ppbv	0.02	AC-058	04-Jun-16

<b>Report certified by:</b> Graham Knox, Team Lead	<b>On behalf of:</b> PJ Pretorius, Manager, Analysis and Testing Services
<b>Date:</b> June 17, 2016	<b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca



<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/CLS/May 24, 2016	H3284	Ambient Air	24-May-16	0:00
<b>DESCRIPTION:</b>	Cold Lake South			
<b>REPORT NUMBER:</b>	16050229	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050229-001	Methylene chloride		0.8	ppbv	0.3	AC-058	04-Jun-16
16050229-001	n-Butane		0.56	ppbv	0.03	AC-058	04-Jun-16
16050229-001	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	04-Jun-16
16050229-001	n-Dodecane		5.6	ppbv	0.4	AC-058	04-Jun-16
16050229-001	n-Heptane	I	0.05	ppbv	0.01	AC-058	04-Jun-16
16050229-001	n-Hexane	I	0.16	ppbv	0.01	AC-058	04-Jun-16
16050229-001	n-Octane	I	0.02	ppbv	0.02	AC-058	04-Jun-16
16050229-001	n-Pentane	I	0.2	ppbv	0.1	AC-058	04-Jun-16
16050229-001	n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	04-Jun-16
16050229-001	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	04-Jun-16
16050229-001	Naphthalene		1.7	ppbv	0.5	AC-058	04-Jun-16
16050229-001	n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	04-Jun-16
16050229-001	o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	04-Jun-16
16050229-001	o-Xylene	I	0.03	ppbv	0.01	AC-058	04-Jun-16
16050229-001	p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	04-Jun-16
16050229-001	p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	04-Jun-16
16050229-001	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	04-Jun-16
16050229-001	Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	04-Jun-16
16050229-001	Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	04-Jun-16
16050229-001	Toluene	I	0.15	ppbv	0.01	AC-058	04-Jun-16
16050229-001	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	04-Jun-16
16050229-001	trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	04-Jun-16
16050229-001	trans-2-Butene	I	0.03	ppbv	0.01	AC-058	04-Jun-16
16050229-001	trans-2-Pentene	I	0.02	ppbv	0.02	AC-058	04-Jun-16
16050229-001	Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	04-Jun-16

<b>Report certified by:</b> Graham Knox, Team Lead	<b>On behalf of:</b> PJ Pretorius, Manager, Analysis and Testing Services
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<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>
LICA/VOC/CLS/May 24, 2016	H3284	Ambient Air	24-May-16 0:00
<b>DESCRIPTION:</b>	Cold Lake South		
<b>REPORT NUMBER:</b>	16050229	<b>REPORT CREATED:</b>	17-Jun-16
			<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
16050229-001	Vinyl acetate	K, T, U	< 0.4 ppbv	0.4	AC-058	04-Jun-16
16050229-001	Vinyl chloride	K, T, U	< 0.02 ppbv	0.02	AC-058	04-Jun-16

<b>Report certified by:</b> Graham Knox, Team Lead	<b>On behalf of:</b> PJ Pretorius, Manager, Analysis and Testing Services
<b>Date:</b> June 17, 2016	<b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/CLS/May 30, 2016	1516	Ambient Air	30-May-16	0:00
<b>DESCRIPTION:</b>	Cold Lake South			
<b>REPORT NUMBER:</b>	16060006	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060006-001	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	04-Jun-16
16060006-001	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	04-Jun-16
16060006-001	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	04-Jun-16
16060006-001	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	04-Jun-16
16060006-001	1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	04-Jun-16
16060006-001	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	04-Jun-16
16060006-001	1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	04-Jun-16
16060006-001	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	04-Jun-16
16060006-001	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	04-Jun-16
16060006-001	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	04-Jun-16
16060006-001	1,2-Dichloroethane	I	0.02	ppbv	0.01	AC-058	04-Jun-16
16060006-001	1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	04-Jun-16
16060006-001	1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	04-Jun-16
16060006-001	1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	04-Jun-16
16060006-001	1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	04-Jun-16
16060006-001	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	04-Jun-16
16060006-001	1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	04-Jun-16
16060006-001	1-Butene	I	0.11	ppbv	0.02	AC-058	04-Jun-16
16060006-001	1-Hexene	I	0.06	ppbv	0.02	AC-058	04-Jun-16
16060006-001	1-Pentene	I	0.02	ppbv	0.01	AC-058	04-Jun-16
16060006-001	2,2,4-Trimethylpentane	I	0.05	ppbv	0.01	AC-058	04-Jun-16
16060006-001	2,2-Dimethylbutane	K, T, U	< 0.01	ppbv	0.01	AC-058	04-Jun-16
16060006-001	2,3,4-Trimethylpentane	I	0.01	ppbv	0.01	AC-058	04-Jun-16
16060006-001	2,3-Dimethylbutane	I	0.02	ppbv	0.02	AC-058	04-Jun-16
16060006-001	2,3-Dimethylpentane	I	0.04	ppbv	0.02	AC-058	04-Jun-16

<b>Report certified by:</b> Graham Knox, Team Lead	<b>On behalf of:</b> PJ Pretorius, Manager, Analysis and Testing Services
<b>Date:</b> June 17, 2016	<b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/CLS/May 30, 2016	1516	Ambient Air	30-May-16	0:00
<b>DESCRIPTION:</b>	Cold Lake South			
<b>REPORT NUMBER:</b>	16060006	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060006-001	2,4-Dimethylpentane	I	0.02	ppbv	0.01	AC-058	04-Jun-16
16060006-001	2-Methylheptane	I	0.02	ppbv	0.01	AC-058	04-Jun-16
16060006-001	2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	04-Jun-16
16060006-001	2-Methylpentane	I	0.07	ppbv	0.01	AC-058	04-Jun-16
16060006-001	3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	04-Jun-16
16060006-001	3-Methylhexane	I	0.08	ppbv	0.02	AC-058	04-Jun-16
16060006-001	3-Methylpentane	I	0.03	ppbv	0.01	AC-058	04-Jun-16
16060006-001	Acetone		10.7	ppbv	0.4	AC-058	04-Jun-16
16060006-001	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	04-Jun-16
16060006-001	Benzene	I	0.06	ppbv	0.01	AC-058	04-Jun-16
16060006-001	Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	04-Jun-16
16060006-001	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	04-Jun-16
16060006-001	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	04-Jun-16
16060006-001	Bromomethane	K, T, U	< 0.01	ppbv	0.01	AC-058	04-Jun-16
16060006-001	Carbon disulfide		0.69	ppbv	0.01	AC-058	04-Jun-16
16060006-001	Carbon tetrachloride	I	0.11	ppbv	0.01	AC-058	04-Jun-16
16060006-001	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	04-Jun-16
16060006-001	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	04-Jun-16
16060006-001	Chloroform	I	0.03	ppbv	0.02	AC-058	04-Jun-16
16060006-001	Chloromethane		0.65	ppbv	0.02	AC-058	04-Jun-16
16060006-001	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	04-Jun-16
16060006-001	cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	04-Jun-16
16060006-001	cis-2-Butene	I	0.02	ppbv	0.02	AC-058	04-Jun-16
16060006-001	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	04-Jun-16
16060006-001	Cyclohexane	I	0.02	ppbv	0.02	AC-058	04-Jun-16

<b>Report certified by:</b> Graham Knox, Team Lead	<b>On behalf of:</b> PJ Pretorius, Manager, Analysis and Testing Services
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<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/CLS/May 30, 2016	1516	Ambient Air	30-May-16	0:00
<b>DESCRIPTION:</b>	Cold Lake South			
<b>REPORT NUMBER:</b>	16060006	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060006-001	Cyclopentane	K, T, U	< 0.01	ppbv	0.01	AC-058	04-Jun-16
16060006-001	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	04-Jun-16
16060006-001	Ethanol		0.9	ppbv	0.3	AC-058	04-Jun-16
16060006-001	Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	04-Jun-16
16060006-001	Ethylbenzene	I	0.01	ppbv	0.01	AC-058	04-Jun-16
16060006-001	Freon-11		0.30	ppbv	0.02	AC-058	04-Jun-16
16060006-001	Freon-113	I	0.08	ppbv	0.01	AC-058	04-Jun-16
16060006-001	Freon-114	I	0.03	ppbv	0.02	AC-058	04-Jun-16
16060006-001	Freon-12		0.81	ppbv	0.02	AC-058	04-Jun-16
16060006-001	Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.50	AC-058	04-Jun-16
16060006-001	Isobutane		0.38	ppbv	0.02	AC-058	04-Jun-16
16060006-001	Isopentane		0.33	ppbv	0.03	AC-058	04-Jun-16
16060006-001	Isoprene		0.31	ppbv	0.01	AC-058	04-Jun-16
16060006-001	Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	04-Jun-16
16060006-001	Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	04-Jun-16
16060006-001	m,p-Xylene	I	0.06	ppbv	0.03	AC-058	04-Jun-16
16060006-001	m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	04-Jun-16
16060006-001	m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	04-Jun-16
16060006-001	Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.50	AC-058	04-Jun-16
16060006-001	Methyl ethyl ketone		0.4	ppbv	0.3	AC-058	04-Jun-16
16060006-001	Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	04-Jun-16
16060006-001	Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	04-Jun-16
16060006-001	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	04-Jun-16
16060006-001	Methylcyclohexane	I	0.09	ppbv	0.01	AC-058	04-Jun-16
16060006-001	Methylcyclopentane	I	0.04	ppbv	0.02	AC-058	04-Jun-16

**Report certified by:** Graham Knox, Team Lead

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

**Date:** June 17, 2016

**Inquiries:** (780) 632 8455

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<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/CLS/May 30, 2016	1516	Ambient Air	30-May-16	0:00
<b>DESCRIPTION:</b>	Cold Lake South			
<b>REPORT NUMBER:</b>	16060006	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060006-001	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	04-Jun-16
16060006-001	n-Butane		0.36	ppbv	0.03	AC-058	04-Jun-16
16060006-001	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	04-Jun-16
16060006-001	n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	04-Jun-16
16060006-001	n-Heptane	I	0.15	ppbv	0.01	AC-058	04-Jun-16
16060006-001	n-Hexane	I	0.06	ppbv	0.01	AC-058	04-Jun-16
16060006-001	n-Octane	I	0.02	ppbv	0.02	AC-058	04-Jun-16
16060006-001	n-Pentane	I	0.2	ppbv	0.1	AC-058	04-Jun-16
16060006-001	n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	04-Jun-16
16060006-001	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	04-Jun-16
16060006-001	Naphthalene		1.9	ppbv	0.5	AC-058	04-Jun-16
16060006-001	n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	04-Jun-16
16060006-001	o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	04-Jun-16
16060006-001	o-Xylene	I	0.02	ppbv	0.01	AC-058	04-Jun-16
16060006-001	p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	04-Jun-16
16060006-001	p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	04-Jun-16
16060006-001	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	04-Jun-16
16060006-001	Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	04-Jun-16
16060006-001	Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	04-Jun-16
16060006-001	Toluene	I	0.13	ppbv	0.01	AC-058	04-Jun-16
16060006-001	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	04-Jun-16
16060006-001	trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	04-Jun-16
16060006-001	trans-2-Butene	I	0.03	ppbv	0.01	AC-058	04-Jun-16
16060006-001	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	04-Jun-16
16060006-001	Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	04-Jun-16

<b>Report certified by:</b> Graham Knox, Team Lead	<b>On behalf of:</b> PJ Pretorius, Manager, Analysis and Testing Services
<b>Date:</b> June 17, 2016	<b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/CLS/May 30, 2016	1516	Ambient Air	30-May-16	0:00
<b>DESCRIPTION:</b>	Cold Lake South			
<b>REPORT NUMBER:</b>	16060006	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060006-001	Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	04-Jun-16
16060006-001	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	04-Jun-16

**Report certified by:** Graham Knox, Team Lead

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

**Date:** June 17, 2016

**Inquiries:** (780) 632 8455

**E-mail:** EAS.Results@albertainnovates.ca

***PAHS SAMPLES***



<p><b>RESULTS:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>CLIENT SAMPLE ID</b> LICA/PUF/CLS/May 6, 2016</p> <p><b>CANISTER ID</b> TE-05</p> <p><b>Matrix</b> Air Filter</p> <p><b>Priority</b> Normal</p> <p><b>DESCRIPTION:</b> Cold Lake South</p> <p><b>DATE SAMPLED:</b> 06-May-16 0:00</p> <p><b>REPORT CREATED:</b> 17-Jun-16</p> <p><b>DATE RECEIVED:</b> 12-May-16</p> <p><b>REPORT NUMBER:</b> 16050079</p> <p><b>VERSION:</b> Version 01</p>
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Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050079-002	1-Methylnaphthalene		0.05	ug/puf	0.01	NA-017	02-Jun-16
16050079-002	2-Methylnaphthalene		0.07	ug/puf	0.01	NA-017	02-Jun-16
16050079-002	3-Methylcholanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050079-002	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050079-002	Acenaphthene		0.02	ug/puf	0.01	NA-017	02-Jun-16
16050079-002	Acenaphthylene		0.01	ug/puf	0.01	NA-017	02-Jun-16
16050079-002	Acridine	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050079-002	Anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050079-002	Benzo(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050079-002	Benzo(a)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050079-002	Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050079-002	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050079-002	Benzo(e)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050079-002	Benzo(ghi)perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050079-002	Chrysene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050079-002	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050079-002	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050079-002	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16

Report certified by: Graham Knox, Team Lead

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

Date: June 17, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/PUF/CLS/May 6, 2016	TE-05	Air Filter	06-May-16	0:00
<b>DESCRIPTION:</b>	Cold Lake South			
<b>REPORT NUMBER:</b>	16050079	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050079-002	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050079-002	Fluoranthene		0.03	ug/puf	0.01	NA-017	02-Jun-16
16050079-002	Fluorene		0.05	ug/puf	0.01	NA-017	02-Jun-16
16050079-002	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050079-002	Naphthalene		0.04	ug/puf	0.01	NA-017	02-Jun-16
16050079-002	Perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050079-002	Phenanthrene		0.14	ug/puf	0.01	NA-017	02-Jun-16
16050079-002	Pyrene		0.01	ug/puf	0.01	NA-017	02-Jun-16
16050079-002	Retene		0.07	ug/puf	0.01	NA-017	02-Jun-16

**Report certified by:** Graham Knox, Team Lead

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

**Date:** June 17, 2016

**Inquiries:** (780) 632 8455

**E-mail:** EAS.Results@albertainnovates.ca

<p><b>RESULTS:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>CLIENT SAMPLE ID</b> LICA/PUF/CLS/May 12, 2016</p> <p><b>CANISTER ID</b> TE-07</p> <p><b>Matrix</b> Air Filter</p> <p><b>Priority</b> Normal</p> <p><b>DESCRIPTION:</b> Cold Lake South</p> <p><b>DATE SAMPLED:</b> 12-May-16 0:00</p> <p><b>REPORT CREATED:</b> 17-Jun-16</p> <p><b>DATE RECEIVED:</b> 17-May-16</p> <p><b>REPORT NUMBER:</b> 16050120</p> <p><b>VERSION:</b> Version 01</p>
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Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050120-004	1-Methylnaphthalene		0.11	ug/puf	0.01	NA-017	02-Jun-16
16050120-004	2-Methylnaphthalene		0.18	ug/puf	0.01	NA-017	02-Jun-16
16050120-004	3-Methylcholanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-004	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-004	Acenaphthene		0.04	ug/puf	0.01	NA-017	02-Jun-16
16050120-004	Acenaphthylene		0.02	ug/puf	0.01	NA-017	02-Jun-16
16050120-004	Acridine	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-004	Anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-004	Benzo(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-004	Benzo(a)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-004	Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-004	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-004	Benzo(e)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-004	Benzo(ghi)perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-004	Chrysene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-004	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-004	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-004	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16

**Report certified by:** Graham Knox, Team Lead

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

**Date:** June 17, 2016

**Inquiries:** (780) 632 8455

**E-mail:** EAS.Results@albertainnovates.ca

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/PUF/CLS/May 12, 2016	TE-07	Air Filter	12-May-16	0:00
<b>DESCRIPTION:</b>	Cold Lake South			
<b>REPORT NUMBER:</b>	16050120	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050120-004	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-004	Fluoranthene		0.04	ug/puf	0.01	NA-017	02-Jun-16
16050120-004	Fluorene		0.06	ug/puf	0.01	NA-017	02-Jun-16
16050120-004	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-004	Naphthalene		0.09	ug/puf	0.01	NA-017	02-Jun-16
16050120-004	Perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-004	Phenanthrene		0.10	ug/puf	0.01	NA-017	02-Jun-16
16050120-004	Pyrene		0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-004	Retene		0.01	ug/puf	0.01	NA-017	02-Jun-16

<b>Report certified by:</b> Graham Knox, Team Lead	<b>On behalf of:</b> PJ Pretorius, Manager, Analysis and Testing Services
<b>Date:</b> June 17, 2016	<b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca

<p><b>RESULTS:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>CLIENT SAMPLE ID</b> LICA/PUF/CLS/May 18, 2016</p> <p><b>CANISTER ID</b> TE-09</p> <p><b>Matrix</b> Air Filter</p> <p><b>Priority</b> Normal</p> <p><b>DESCRIPTION:</b></p> <p><b>DATE SAMPLED:</b> 18-May-16 0:00</p> <p><b>REPORT CREATED:</b> 17-Jun-16</p> <p><b>DATE RECEIVED:</b> 24-May-16</p> <p><b>REPORT NUMBER:</b> 16050202</p> <p><b>VERSION:</b> Version 01</p>
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Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050202-002	1-Methylnaphthalene		0.13	ug/puf	0.01	NA-017	02-Jun-16
16050202-002	2-Methylnaphthalene		0.16	ug/puf	0.01	NA-017	02-Jun-16
16050202-002	3-Methylcholanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050202-002	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050202-002	Acenaphthene		0.11	ug/puf	0.01	NA-017	02-Jun-16
16050202-002	Acenaphthylene		0.03	ug/puf	0.01	NA-017	02-Jun-16
16050202-002	Acridine	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050202-002	Anthracene		0.03	ug/puf	0.01	NA-017	02-Jun-16
16050202-002	Benzo(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050202-002	Benzo(a)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050202-002	Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050202-002	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050202-002	Benzo(e)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050202-002	Benzo(ghi)perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050202-002	Chrysene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050202-002	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050202-002	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050202-002	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16

**Report certified by:** Graham Knox, Team Lead

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

**Date:** June 17, 2016

**Inquiries:** (780) 632 8455

**E-mail:** EAS.Results@albertainnovates.ca

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>
LICA/PUF/CLS/May 18, 2016	TE-09	Air Filter	18-May-16 0:00
<b>DESCRIPTION:</b>			
<b>REPORT NUMBER:</b> 16050202	<b>REPORT CREATED:</b> 17-Jun-16	<b>VERSION:</b> Version 01	

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050202-002	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050202-002	Fluoranthene		0.06	ug/puf	0.01	NA-017	02-Jun-16
16050202-002	Fluorene		0.13	ug/puf	0.01	NA-017	02-Jun-16
16050202-002	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050202-002	Naphthalene		0.07	ug/puf	0.01	NA-017	02-Jun-16
16050202-002	Perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050202-002	Phenanthrene		0.35	ug/puf	0.01	NA-017	02-Jun-16
16050202-002	Pyrene		0.04	ug/puf	0.01	NA-017	02-Jun-16
16050202-002	Retene		0.06	ug/puf	0.01	NA-017	02-Jun-16

<b>Report certified by:</b> Graham Knox, Team Lead	<b>On behalf of:</b> PJ Pretorius, Manager, Analysis and Testing Services
<b>Date:</b> June 17, 2016	<b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca

<b>RESULTS:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE  Calgary AB T2E 6P8	<b>CLIENT SAMPLE ID</b> LICA/PUF/CLS/May 24, 2016	<b>CANISTER ID</b> TE-03	<b>Matrix</b> Air Filter	<b>Priority</b> Normal
	<b>DESCRIPTION:</b> Cold Lake South			
<b>INVOICE:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5	<b>DATE SAMPLED:</b> 24-May-16 0:00	<b>DATE RECEIVED:</b> 26-May-16		
	<b>REPORT CREATED:</b> 17-Jun-16	<b>REPORT NUMBER:</b> 16050229		
		<b>VERSION:</b> Version 01		

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050229-002	1-Methylnaphthalene		0.03	ug/puf	0.01	NA-017	15-Jun-16
16050229-002	2-Methylnaphthalene		0.05	ug/puf	0.01	NA-017	15-Jun-16
16050229-002	3-Methylcholanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jun-16
16050229-002	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jun-16
16050229-002	Acenaphthene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jun-16
16050229-002	Acenaphthylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jun-16
16050229-002	Acridine	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jun-16
16050229-002	Anthracene		0.03	ug/puf	0.01	NA-017	15-Jun-16
16050229-002	Benzo(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jun-16
16050229-002	Benzo(a)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jun-16
16050229-002	Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jun-16
16050229-002	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jun-16
16050229-002	Benzo(e)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jun-16
16050229-002	Benzo(ghi)perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jun-16
16050229-002	Chrysene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jun-16
16050229-002	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jun-16
16050229-002	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jun-16
16050229-002	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jun-16

**Report certified by:** Graham Knox, Team Lead

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

**Date:** June 17, 2016

**Inquiries:** (780) 632 8455

**E-mail:** EAS.Results@albertainnovates.ca

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/PUF/CLS/May 24, 2016	TE-03	Air Filter	24-May-16	0:00
<b>DESCRIPTION:</b>	Cold Lake South			
<b>REPORT NUMBER:</b>	16050229	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050229-002	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jun-16
16050229-002	Fluoranthene		0.05	ug/puf	0.01	NA-017	15-Jun-16
16050229-002	Fluorene		0.06	ug/puf	0.01	NA-017	15-Jun-16
16050229-002	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jun-16
16050229-002	Naphthalene		0.03	ug/puf	0.01	NA-017	15-Jun-16
16050229-002	Perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jun-16
16050229-002	Phenanthrene		0.15	ug/puf	0.01	NA-017	15-Jun-16
16050229-002	Pyrene		0.04	ug/puf	0.01	NA-017	15-Jun-16
16050229-002	Retene		0.03	ug/puf	0.01	NA-017	15-Jun-16

<b>Report certified by:</b> Graham Knox, Team Lead	<b>On behalf of:</b> PJ Pretorius, Manager, Analysis and Testing Services
<b>Date:</b> June 17, 2016	<b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca



<p><b>RESULTS:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>CLIENT SAMPLE ID</b> LICA/PUF/CLS/May 30, 2016</p> <p><b>CANISTER ID</b> TE-03</p> <p><b>Matrix</b> Air Filter</p> <p><b>Priority</b> Normal</p> <p><b>DESCRIPTION:</b> Cold Lake South</p> <p><b>DATE SAMPLED:</b> 30-May-16 0:00</p> <p><b>REPORT CREATED:</b> 17-Jun-16</p> <p><b>DATE RECEIVED:</b> 01-Jun-16</p> <p><b>REPORT NUMBER:</b> 16060006</p> <p><b>VERSION:</b> Version 01</p>
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Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060006-002	1-Methylnaphthalene		0.03	ug/puf	0.01	NA-017	16-Jun-16
16060006-002	2-Methylnaphthalene		0.06	ug/puf	0.01	NA-017	16-Jun-16
16060006-002	3-Methylcholanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060006-002	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060006-002	Acenaphthene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060006-002	Acenaphthylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060006-002	Acridine	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060006-002	Anthracene		0.03	ug/puf	0.01	NA-017	16-Jun-16
16060006-002	Benzo(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060006-002	Benzo(a)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060006-002	Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060006-002	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060006-002	Benzo(e)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060006-002	Benzo(ghi)perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060006-002	Chrysene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060006-002	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060006-002	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060006-002	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16

**Report certified by:** Graham Knox, Team Lead

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

**Date:** June 17, 2016

**Inquiries:** (780) 632 8455

**E-mail:** EAS.Results@albertainnovates.ca

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/PUF/CLS/May 30, 2016	TE-03	Air Filter	30-May-16	0:00
<b>DESCRIPTION:</b>	Cold Lake South			
<b>REPORT NUMBER:</b>	16060006	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060006-002	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060006-002	Fluoranthene		0.06	ug/puf	0.01	NA-017	16-Jun-16
16060006-002	Fluorene		0.07	ug/puf	0.01	NA-017	16-Jun-16
16060006-002	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060006-002	Naphthalene		0.03	ug/puf	0.01	NA-017	16-Jun-16
16060006-002	Perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060006-002	Phenanthrene		0.19	ug/puf	0.01	NA-017	16-Jun-16
16060006-002	Pyrene		0.05	ug/puf	0.01	NA-017	16-Jun-16
16060006-002	Retene		0.04	ug/puf	0.01	NA-017	16-Jun-16

<b>Report certified by:</b> Graham Knox, Team Lead	<b>On behalf of:</b> PJ Pretorius, Manager, Analysis and Testing Services
<b>Date:</b> June 17, 2016	<b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca

***PARTISOL SAMPLES***

<p><b>RESULTS:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>CLIENT SAMPLE ID</b> LICA P6055849</p> <p><b>CANISTER ID</b></p> <p><b>Matrix</b> Air Filter</p> <p><b>Priority</b> Normal</p> <p><b>DESCRIPTION:</b></p> <p><b>DATE SAMPLED:</b> 06-May-16 0:00      <b>DATE RECEIVED:</b> 12-May-16</p> <p><b>REPORT CREATED:</b> 03-Jun-16      <b>REPORT NUMBER:</b> 16050080</p> <p><b>VERSION:</b> Version 01</p>
--	---

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050080-001	Particulate Weight		0.102	mg	0.004	AC-029	01-Jun-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

<p><b>RESULTS:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>CLIENT SAMPLE ID</b> LICA flt# P4131726</p> <p><b>CANISTER ID</b></p> <p><b>Matrix</b> Air Filter</p> <p><b>Priority</b> Normal</p> <p><b>DESCRIPTION:</b></p> <p><b>DATE SAMPLED:</b> 12-May-16 0:00      <b>DATE RECEIVED:</b> 17-May-16</p> <p><b>REPORT CREATED:</b> 03-Jun-16      <b>REPORT NUMBER:</b> 16050119</p> <p><b>VERSION:</b> Version 01</p>
--	--

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050119-001	Particulate Weight		0.031	mg	0.004	AC-029	01-Jun-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

<p><b>RESULTS:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>CLIENT SAMPLE ID</b> LICA Flt #P4149579</p> <p><b>CANISTER ID</b></p> <p><b>Matrix</b> Air Filter</p> <p><b>Priority</b> Normal</p> <p><b>DESCRIPTION:</b> Cold Lake South</p> <p><b>DATE SAMPLED:</b> 18-May-16 0:00      <b>DATE RECEIVED:</b> 24-May-16</p> <p><b>REPORT CREATED:</b> 03-Jun-16      <b>REPORT NUMBER:</b> 16050201</p> <p><b>VERSION:</b> Version 01</p>
--	--

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
16050201-001	Particulate Weight		0.155 mg	0.004	AC-029	01-Jun-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

<p><b>RESULTS:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>CLIENT SAMPLE ID</b> LICA Flt #P4149576</p> <p><b>CANISTER ID</b></p> <p><b>Matrix</b> Air Filter</p> <p><b>Priority</b> Normal</p> <p><b>DESCRIPTION:</b> Cold Lake South</p> <p><b>DATE SAMPLED:</b> 24-May-16 0:00</p> <p><b>REPORT CREATED:</b> 03-Jun-16</p> <p><b>DATE RECEIVED:</b> 26-May-16</p> <p><b>REPORT NUMBER:</b> 16050228</p> <p><b>VERSION:</b> Version 01</p>
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Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
16050228-001	Particulate Weight		0.067 mg	0.004	AC-029	01-Jun-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

<p><b>RESULTS:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE</p> <p>Calgary AB T2E 6P8</p> <p><b>INVOICE:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5</p>	<p><b>CLIENT SAMPLE ID</b> LICA Flt #P4149578</p> <p><b>CANISTER ID</b></p> <p><b>Matrix</b> Air Filter</p> <p><b>Priority</b> Normal</p> <p><b>DESCRIPTION:</b> Cold Lake South</p> <p><b>DATE SAMPLED:</b> 30-May-16 0:00</p> <p><b>REPORT CREATED:</b> 03-Jun-16</p> <p><b>DATE RECEIVED:</b> 01-Jun-16</p> <p><b>REPORT NUMBER:</b> 16060005</p> <p><b>VERSION:</b> Version 01</p>
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Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
16060005-001	Particulate Weight		0.091 mg	0.004	AC-029	02-Jun-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

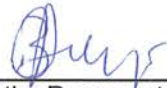


***APPENDIX V***  
***REPORT CERTIFICATION FORM***

**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
Bim Adeniji	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.



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

30-06-2016





\_\_\_\_\_  
Report Issued Date (dd-mm-yyyy)

***APPENDIX VI***  
***DATA VALIDATION CERTIFICATION FORM***



### Validation Certificate Form

<b>Client:</b> <u>Lakeland Industry &amp; Community Association</u>	<b>Project #:</b> <u>2833-2016-05-1- C</u>
<b>Site:</b> <u>Cold Lake South Site</u>	<b>Contact:</b> <u>Mike Bisaga</u>

Level 0 Preliminary Verification	<u></u>	Date <u>28-June-2016</u>
Level 1 Primary Validation	<u></u>	Date <u>28-June-2016</u>
Level 2 Final Validation	<u></u>	Date <u>28-June-2016</u>
Level 3 Independent Data Review	<u></u>	Date <u>28-JUN-2016</u>
Post-Final Validation	<u>NA</u>	Date <u>NA</u>

<b>Notes</b>
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 #:2833-2016-05-30- C**

**May 2016**

Prepared for:

**LAKELAND INDUSTRY & COMMUNITY ASSOCIATION**  
BOX 8237, 5107W - 50 STREET  
BONNYVILLE, ALBERTA  
T9N 2J5

**Attention: MIKE BISAGA**

DATE: **June 17, 2016**

Prepared by:



\_\_\_\_\_  
Bim Adeniji,  
Project Manager Assistant, Customer Service, Air Services

Reviewed by:



*for* \_\_\_\_\_  
Tom Bourque, C.Tech,  
Technical Specialist, Air Services

## **SUMMARY**

In May 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.

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

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	0.3	11.1	8	6	7.9	NW	1.8	9	100.0
H2S (PPB)	10	3	0	0	0.1	5.4	1	2	3.4	SW	0.5	28	100.0
THC (PPM)	-	-	-	-	2.08	2.91	3	4	0.7	ESE	2.28	3	100.0
NO2 (PPB)	159	-	0	-	2.2	15.8	13	7	3.1	WNW	4.3	1	99.9
NO (PPB)	-	-	-	-	0.4	15.2	2	8	1.6	NW	1.6	2	99.9
NOX (PPB)	-	-	-	-	2.6	29.8	2	8	1.6	NW	5.7	9	99.9
RELATIVE HUMIDITY (%)	-	-	-	-	59.4	93	VAR	VAR	VAR	VAR	89.4	28	100.0
BAROMETRIC PRESSURE (MILIBAR)	-	-	-	-	941	959	13	9	3.2	WNW	956	13	100.0
AMBIENT TEMPERATURE (DEG C)	-	-	-	-	12.8	30.6	4, 4	12, 13	8.8 9.6	W W	20.6	4	100.0
PRECIPITATION (MM)	-	-	-	-	0.1	7.0	27	18	8.1	SSW	1.0	28	99.9
VECTOR WS (KPH)	-	-	-	-	5.4	18.0	19	17	-	NE	11.6	22	100.0
VECTOR WD (DEG)	-	-	-	-	-	-	-	-	-	-	-	-	100.0

NA-NOT AVAILABLE VAR-VARIOUS

**SOUR GAS PROCESSING INDUSTRY  
MONTHLY REPORT SUMMARY**

**Maskwa Site**

**Lakeland Industry & Community Association**

Plant Name / Location

Company

Licence Number	Report Date	
	YEAR	MONTH
N/A	2016	May

CONTINUOUS AMBIENT MONITORING						
PARAMETER	STN NO.	% TIME OPERATIONAL	ONE - HOUR AVERAGE		24 - HOUR AVERAGE	
			MAXIMUM CONC. (PPM)	NO. READINGS > REGULATION	MAXIMUM CONC. (PPM)	NO. READINGS > REGULATION
SO2	1	100.0	0.011	0	0.0018	0
H2S	1	100.0	0.005	0	0.0005	0
THC	1	100.0	2.91	-	2.28	-
NOX	1	99.9	0.0298	-	0.0057	-
NO	1	99.9	0.0152	-	0.0016	-
NO2	1	99.9	0.0158	0	0.0043	-
RH	1	100.0	93 %	-	89.4 %	-
BP	1	100.0	959 MB	-	956 MB	-
Ambient TPX	1	100.0	30.6 Deg C	-	20.6 Deg C	-
PRECIPITATION	1	99.9	7.0 MM	-	1.0 MM	-
Wind Speed	1	100.0	18.0 KPH	-	11.6 KPH	-
Wind Direction	1	100.0	-	-	-	-

SIGNATURE OF COMPANY REPRESENTATIVE

FOR ALBERTA ENVIRONMENT USE ONLY



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## Exceedence Summary Report

---

**SO<sub>2</sub> 1- Hour Exceedences**

**No Exceedences Recorded During the Month**

**SO<sub>2</sub> 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**

**NO<sub>2</sub> 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 (SO<sub>2</sub>), Hydrogen Sulphide (H<sub>2</sub>S), Total Hydrocarbon (THC), Oxides of Nitrogen (NO<sub>x</sub>), Nitric Oxides (NO), Nitrogen Dioxide (NO<sub>2</sub>), 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 May 10. No issues were identified. A new extended surface air filter 10x20x2 NORSPEC filtration HE 40-1002 was installed on May 9 to replace the old filter in the BARD HVAC.

**SULPHUR DIOXIDE (SO2)**

The analyzer was working well throughout the month.  
The routine monthly calibration was performed on May 10.

**HYDROGEN SULPHIDE (H2S)**

The analyzer was working well throughout the month.  
The routine monthly calibration was performed on May 10.

**TOTAL HYDROCARBONS (THC)**

The analyzer was working well throughout the month.  
The routine monthly calibration was performed on May 10.

**NITROGEN DIOXIDE (NO2)**

The routine monthly calibration was performed on May 10. The analyzer spanned high on May 14. An additional span check was performed on May 15 to confirm the analyzer's functionality and the result was within acceptance limits. No further issues were identified.

**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.

**BAROMETRIC PRESSURE (BP)**

The pressure sensor was working well throughout the month.

**PRECIPITATION**

The rain gauge system was working well throughout the month. A routine check was conducted on the precipitation sensor on May 17.

**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 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-00209: Ambient H<sub>2</sub>S Monitoring
- Maxxam AIR SOP-00211: Ambient SO<sub>2</sub> Monitoring
- Maxxam AIR SOP-00213: Ambient NO/NO<sub>2</sub>/NO<sub>x</sub> 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

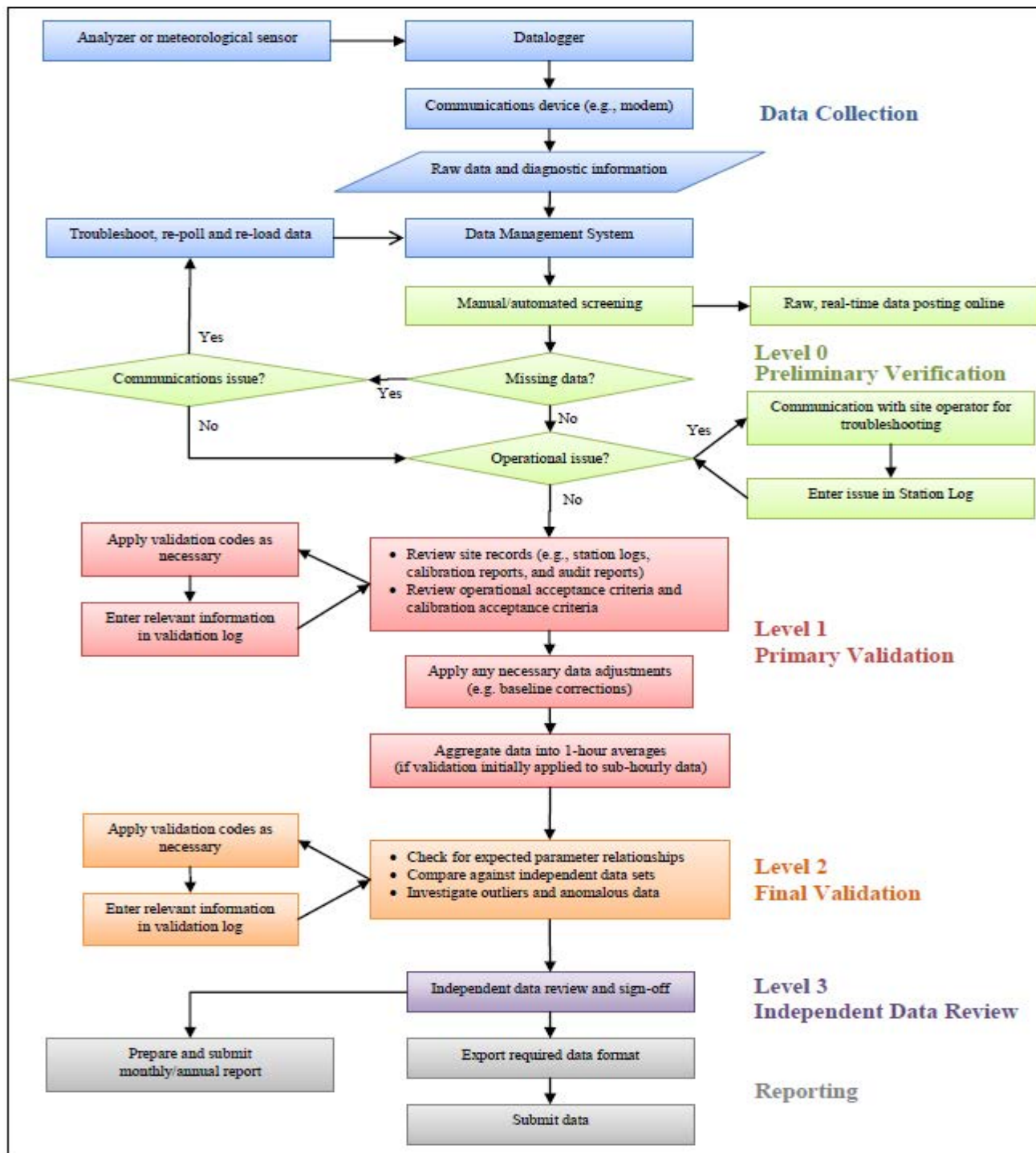
The purpose of Level 2 validation is to verify that there are no inconsistencies among related data, or among regional data measured at nearby sites.

#### 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

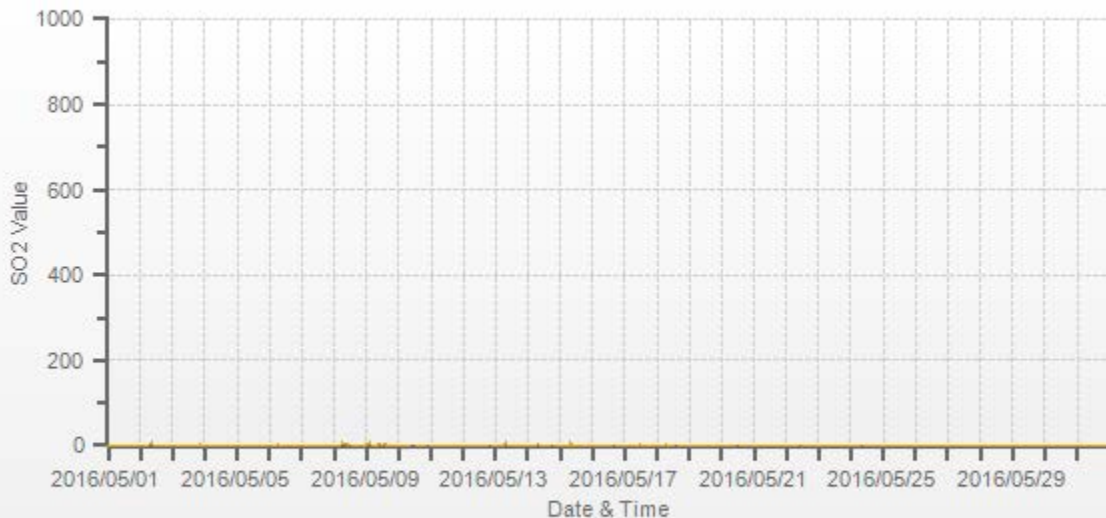


***APPENDIX I***  
***CONTINUOUS MONITORING DATA RESULTS***

***SULPHUR DIOXIDE***



SO2[ppb] Station: LICA MASKWA Monthly: 05/2016 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	DAILY	24-HOUR		
DAY	MIN.	MAX.	AVG.	RDGS.																										
1	1.2	2.4	2.4	2.4	2.1	1.6	2.6	3.2	3.1	3.7	3.7	2.6	2.4	1.4	1.6	3.2	1.7	2.9	1.6	S	1.5	1.6	1.6	1.8	1.2	3.7	2.3	24		
2	1.7	2.1	2.1	1.8	2.2	1.8	1.8	16.2	24.0	10.8	4.0	3.4	2.8	1.8	2.0	1.8	1.8	1.8	S	1.6	1.8	1.7	1.8	1.8	1.6	24.0	4.0	24		
3	1.8	1.8	1.8	1.8	1.8	1.9	1.9	2.1	3.0	2.9	3.2	2.6	2.1	2.1	2.3	2.2	2.1	S	2.1	6.1	7.3	4.2	2.2	2.2	1.8	7.3	2.7	24		
4	2.5	2.4	2.3	2.3	2.2	2.3	2.4	2.8	2.7	3.1	3.2	3.7	2.8	2.3	2.5	4.5	S	2.4	2.7	2.8	2.7	2.4	2.5	5.0	2.2	5.0	2.8	24		
5	5.0	4.2	3.7	3.5	3.7	2.9	2.2	3.2	3.0	2.7	5.8	5.6	2.7	3.4	3.7	S	2.6	2.4	2.2	2.2	2.2	3.7	2.9	1.9	1.9	5.8	3.3	24		
6	1.8	2.0	12.2	2.4	4.2	5.0	7.6	7.7	6.2	5.8	4.4	8.5	2.9	2.5	S	8.5	6.7	2.2	1.6	1.7	1.8	1.8	1.8	1.9	1.6	12.2	4.4	24		
7	1.9	2.2	2.1	2.1	2.2	2.2	2.1	2.4	3.2	3.6	3.6	3.2	3.4	S	3.0	2.7	2.8	3.0	3.3	3.2	4.6	4.5	4.6	4.3	1.9	4.6	3.1	24		
8	4.0	4.6	5.2	4.8	3.7	11.4	25.5	17.9	15.9	31.7	14.5	3.3	S	3.0	3.0	3.0	3.0	3.0	3.1	2.9	4.9	2.8	2.7	12.4	2.7	31.7	8.1	24		
9	15.9	10.6	15.2	17.9	3.7	2.6	5.8	6.9	14.7	7.0	11.5	S	15.0	17.6	18.7	18.5	2.1	2.2	1.9	2.3	1.8	2.0	2.7	3.0	1.8	18.7	8.7	24		
10	2.5	2.4	2.2	1.9	1.9	2.4	2.0	1.8	1.6	C	C	C	C	1.1	1.2	1.1	1.0	1.2	1.1	1.1	1.2	1.3	S	1.0	1.0	2.5	1.6	24		
11	1.0	1.0	1.0	1.0	1.0	1.1	1.0	1.1	1.4	1.1	1.1	1.1	1.4	1.1	1.0	1.0	1.0	1.1	1.0	1.1	1.0	1.1	1.0	S	0.8	1.0	0.8	1.4	1.1	24
12	1.1	0.8	0.7	0.7	0.8	0.8	0.8	1.0	1.0	0.9	0.9	0.8	0.8	1.0	0.7	1.0	0.8	0.8	0.7	0.8	S	0.8	0.8	0.6	0.6	1.1	0.8	24		
13	0.6	0.5	0.8	0.8	0.7	0.8	1.0	15.1	17.9	4.7	8.0	2.9	3.1	3.6	2.6	3.3	2.5	9.2	3.2	S	1.0	1.1	1.1	1.1	0.5	17.9	3.7	24		
14	1.0	1.0	1.0	1.0	1.1	1.7	3.4	20.4	8.6	4.4	4.7	6.7	6.0	5.8	5.3	5.0	7.8	10.5	S	4.6	1.8	1.7	1.7	1.7	1.0	20.4	4.6	24		
15	1.6	1.6	1.5	1.6	1.6	1.7	2.1	8.0	15.6	2.1	3.4	4.4	3.7	3.9	3.3	3.4	2.7	S	2.0	1.9	1.9	1.9	1.8	1.9	1.5	15.6	3.2	24		
16	1.7	1.9	1.8	1.6	1.8	1.7	1.8	2.1	2.2	1.9	2.2	2.1	2.0	1.9	1.9	2.2	S	2.0	2.2	2.1	2.2	1.9	1.9	1.8	1.6	2.2	2.0	24		
17	1.9	1.8	1.8	2.5	2.2	2.1	2.1	2.0	1.9	2.2	6.1	7.8	6.4	2.6	5.1	S	3.5	2.6	2.7	5.3	2.4	2.1	2.1	2.2	1.8	7.8	3.1	24		
18	2.5	2.9	2.7	2.2	2.4	2.4	4.8	12.2	10.1	7.0	7.7	3.7	5.7	5.6	S	4.7	2.6	2.7	3.2	3.3	2.8	2.6	2.7	2.6	2.2	12.2	4.3	24		
19	2.7	3.0	3.2	3.0	3.0	3.0	3.0	3.3	3.7	3.4	3.2	3.2	3.2	S	3.0	3.1	3.0	3.0	3.0	2.6	2.6	2.6	2.5	2.4	2.4	3.7	3.0	24		
20	2.5	2.4	2.5	2.5	2.5	2.4	2.4	2.4	2.4	2.4	2.4	S	2.4	2.6	2.4	2.7	2.7	2.6	3.2	3.2	3.4	2.4	2.4	2.5	2.4	3.4	2.5	24		
21	2.7	2.7	2.6	2.6	2.7	2.7	2.7	2.7	4.8	6.1	6.2	S	3.1	3.0	3.0	3.0	3.0	3.2	3.2	3.1	3.2	3.2	3.3	3.3	2.6	6.2	3.3	24		
22	3.5	3.5	3.5	3.8	3.7	3.7	3.7	3.7	3.7	3.7	3.7	S	3.8	3.7	3.7	3.8	3.6	3.6	3.4	3.6	3.4	3.4	3.5	3.6	3.7	3.4	3.8	3.6	24	
23	3.7	3.6	3.6	3.5	3.4	3.4	3.5	3.4	3.6	S	3.2	3.5	3.4	3.4	3.3	3.2	3.2	3.0	2.9	3.0	2.9	3.0	2.9	2.8	3.0	2.9	2.8	3.3	24	
24	3.0	2.7	2.9	2.8	2.6	2.7	2.6	2.7	S	5.0	4.1	6.4	5.9	3.3	3.2	3.0	2.9	3.0	3.0	3.0	3.0	3.0	3.5	3.7	3.5	2.6	6.4	3.4	24	
25	3.0	2.9	2.9	2.9	2.9	3.0	2.9	S	3.0	3.0	3.0	3.0	3.0	2.9	2.9	2.9	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.9	3.0	3.0	24		
26	2.9	2.9	2.9	2.9	3.0	3.0	S	5.5	4.6	4.3	3.8	3.5	3.1	3.0	3.4	3.3	3.2	3.5	3.3	3.2	3.2	3.2	3.2	3.2	2.9	5.5	3.4	24		
27	3.3	3.2	3.2	3.2	3.2	S	7.2	7.0	5.9	6.7	6.6	8.2	7.2	7.2	6.9	7.4	4.5	6.7	3.6	3.4	3.4	3.5	4.1	3.3	3.2	8.2	5.2	24		
28	3.4	3.4	3.4	3.7	S	3.7	3.8	3.8	3.3	3.5	5.8	6.1	5.4	4.1	4.4	4.1	4.0	4.0	3.4	3.5	3.5	3.2	3.2	3.3	3.2	6.1	3.9	24		
29	3.2	3.2	3.2	S	3.3	3.3	3.4	3.4	3.4	3.4	3.5	3.3	3.4	3.7	4.4	3.7	5.1	3.7	3.2	3.3	3.2	3.2	3.2	5.4	3.2	5.4	3.6	24		
30	3.2	3.4	S	3.2	3.2	3.4	3.4	3.2	3.1	3.0	5.6	7.4	9.4	12.4	6.6	6.0	3.2	3.2	3.7	3.6	3.0	2.9	3.0	3.1	2.9	12.4	4.4	24		
31	3.1	S	3.2	3.2	3.2	3.2	3.2	3.2	3.0	3.2	2.9	3.0	3.0	4.0	7.0	7.0	3.8	3.2	9.3	6.6	3.2	3.7	3.2	4.3	2.9	9.3	4.0	24		
HOURLY MAX	15.9	10.6	15.2	17.9	4.2	11.4	25.5	20.4	24.0	31.7	14.5	8.5	15.0	17.6	18.7	18.5	7.8	10.5	9.3	6.6	7.3	4.5	4.6	12.4						
HOURLY AVG	2.9	2.8	3.3	3.0	2.5	2.8	3.8	5.7	6.0	4.9	4.8	4.2	4.2	3.9	3.9	4.1	3.1	3.3	2.8	3.0	2.8	2.6	2.6	3.0						

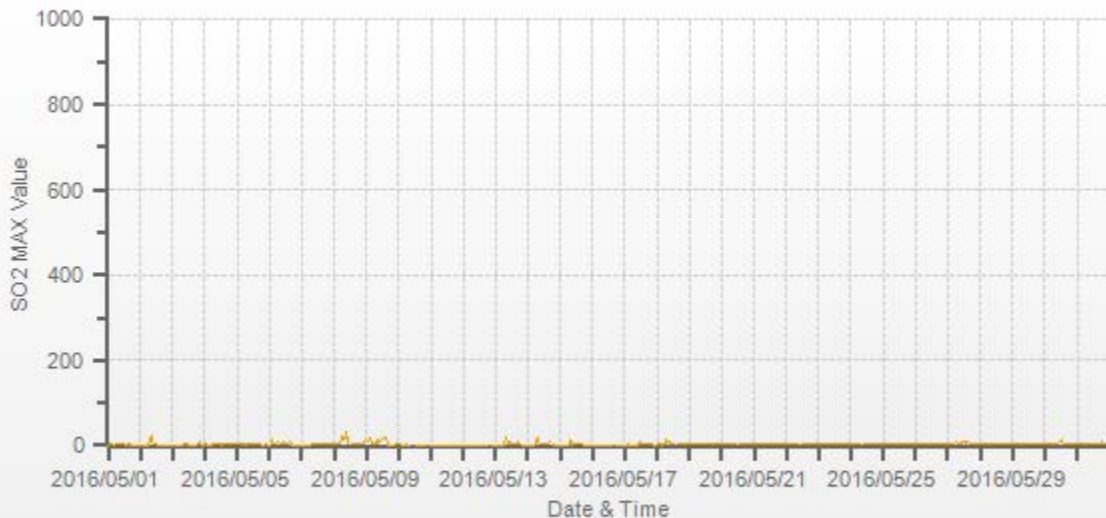
STATUS FLAG CODES

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:	709
MAXIMUM INSTANTANEOUS VALUE:	31.7 PPB @ HOUR(S) 9 ON DAY(S) 8
	VAR-VARIOUS
IZS CALIBRATION TIME:	31 HRS
MONTHLY CALIBRATION TIME:	4 HRS
OPERATIONAL TIME:	744 HRS
STANDARD DEVIATION:	3.11

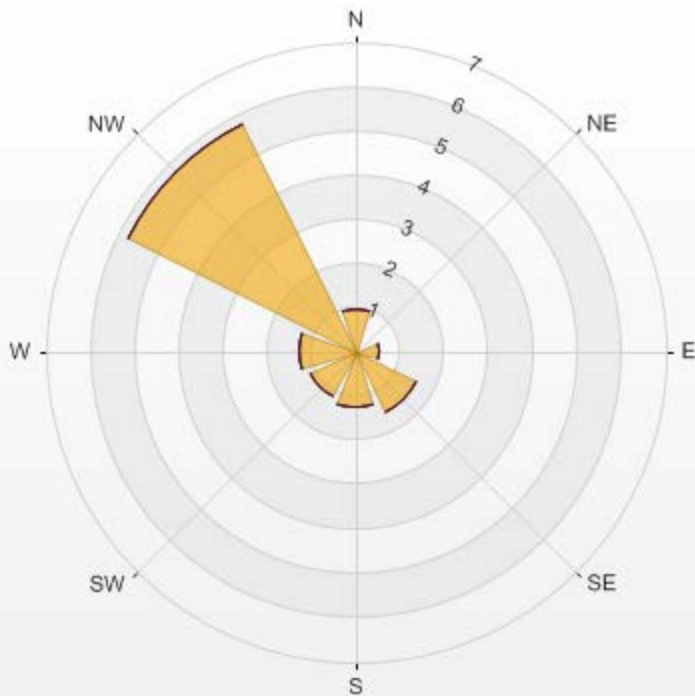
SO2 MAX[ppb] Station: LICA MASKWA Monthly: 05/2016 Type: AVG 1 Hr. [1 Hr.]



— SO2 MAX[ppb]

Wind: LICA MASKWA Monitor: SO2 [ppb] Monthly: 05/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 87.45% Valid Data: 95.30% Calm Avg: 0.00

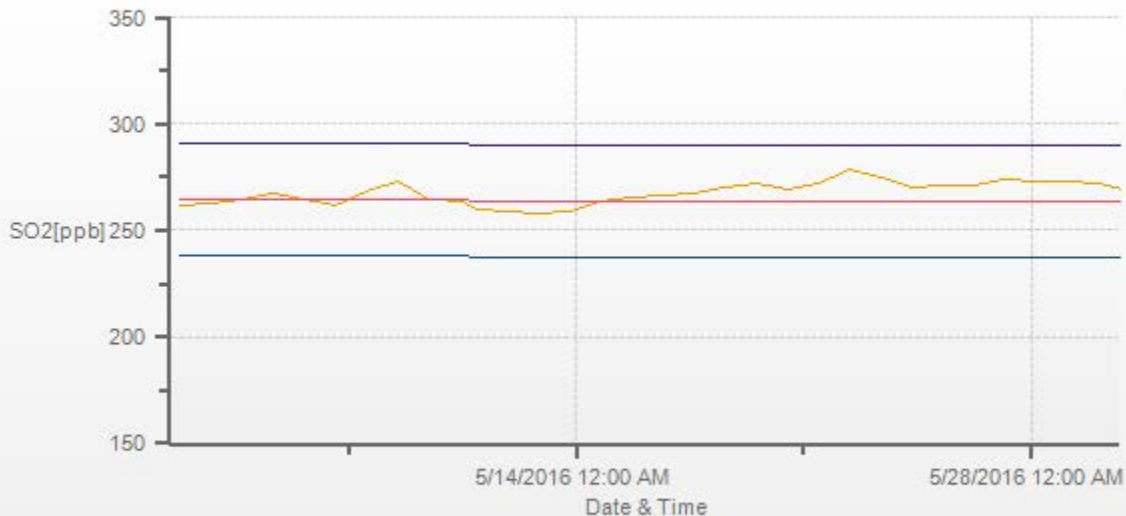
Direction	0.5-20.0	20.0-60.0	60.0-110.0	110.0-170.0	170.0-340.0	>340.0	Total
N	0.99	0	0	0	0	0	0.99
NE	0	0	0	0	0	0	0
E	0.56	0	0	0	0	0	0.56
SE	1.55	0	0	0	0	0	1.55
S	1.27	0	0	0	0	0	1.27
SW	1.13	0	0	0	0	0	1.13
W	1.27	0	0	0	0	0	1.27
NW	5.78	0	0	0	0	0	5.78
Summary	12.55	0	0	0	0	0	12.55



% Icon Classes (ppb)	13	0	0	0	0	0
	0.5-20.0	20.0-60.0	60.0-110.0	110.0-170.0	170.0-340.0	>340.0



SO2[ppb] Calibration: LICA MASKWA Monthly: 05/2016 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		
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		0.7	0.6	5.4	0.0	0.0	0.0	0.4	1.1	0.2	0.0	0.4	0.3	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	5.4	0.4	24
2		0.0	0.0	0.1	0.2	0.5	0.3	0.3	0.4	0.4	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	0.5	0.1	24
3		0.0	0.1	0.3	0.6	1.1	1.7	0.6	0.2	0.0	0.0	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	0.0	1.7	0.2	24
4		0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.2	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	0.2	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	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
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	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
7		0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.5	0.5	0.2	0.0	S	0.1	0.0	0.1	0.1	0.0	0.5	3.8	0.2	0.2	0.0	0.0	0.0	3.8	0.3	24
8		0.1	0.2	0.3	0.3	0.4	0.5	0.5	0.2	0.3	0.3	0.1	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.0	0.5	0.2	24
9		0.5	0.4	0.5	1.1	0.7	0.3	0.1	0.2	0.1	0.1	0.2	S	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.2	0.0	0.0	1.1	0.2	24
10		0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.3	0.0	C	C	C	C	0.0	0.0	0.0	0.0	0.2	0.0	0.0	S	0.1	0.0	0.0	0.3	0.1	24
11		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	S	0.0	0.0	0.0	0.0	0.1	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	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
13		0.0	0.0	0.0	0.0	0.1	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	S	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.0	24
14		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	0.0	S	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	1.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.2	0.0	0.0	0.2	0.1	0.0	S	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.2	24
16		0.0	0.0	0.0	0.0	0.1	0.1	0.4	0.6	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	0.6	0.1	24
17		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	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	0.1	0.0	24
18		0.2	0.0	0.0	0.0	0.0	0.1	0.3	0.0	0.0	0.0	0.0	0.1	0.0	S	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	24
19		0.0	0.0	0.0	0.0	0.2	0.1	0.1	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	0.2	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	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
21		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.5	0.2	S	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	1.4	0.7	0.0	0.0	0.0	1.4	0.1	24
22		0.0	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	0.1	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	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	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.0	24
24		0.0	0.1	0.0	0.1	0.2	0.1	0.1	0.1	S	0.6	0.3	0.5	0.6	0.2	0.4	0.1	0.2	0.0	0.3	0.7	0.7	0.2	0.4	0.3	0.0	0.0	0.7	0.3	24
25		0.5	0.3	0.2	0.3	0.3	0.3	0.1	S	0.4	0.2	0.2	0.1	0.1	0.0	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.2	24
26		0.0	0.0	0.0	0.0	0.0	0.0	S	0.3	0.0	0.1	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	0.3	0.0	24
27		0.3	0.1	0.0	0.0	0.0	S	0.4	1.0	0.5	0.3	0.2	0.2	0.2	0.5	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.1	0.4	0.5	0.0	0.0	1.0	0.2	24
28		0.7	1.8	0.9	S	1.6	1.5	0.7	0.7	0.7	0.2	0.1	0.3	0.8	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	1.8	0.5	24
29		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
30		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
31		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	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	24
HOURLY MAX		0.7	1.8	5.4	1.1	1.1	1.7	1.5	1.1	0.7	0.7	1.5	1.2	0.6	0.8	0.4	0.2	0.2	0.2	0.3	0.7	3.8	1.4	0.7	0.5					
HOURLY AVG		0.1	0.1	0.3	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1	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

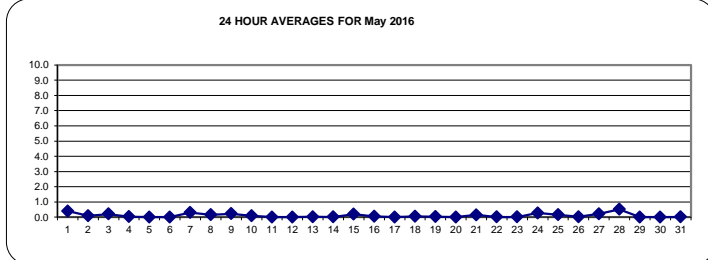
OBJECTIVE LIMIT:

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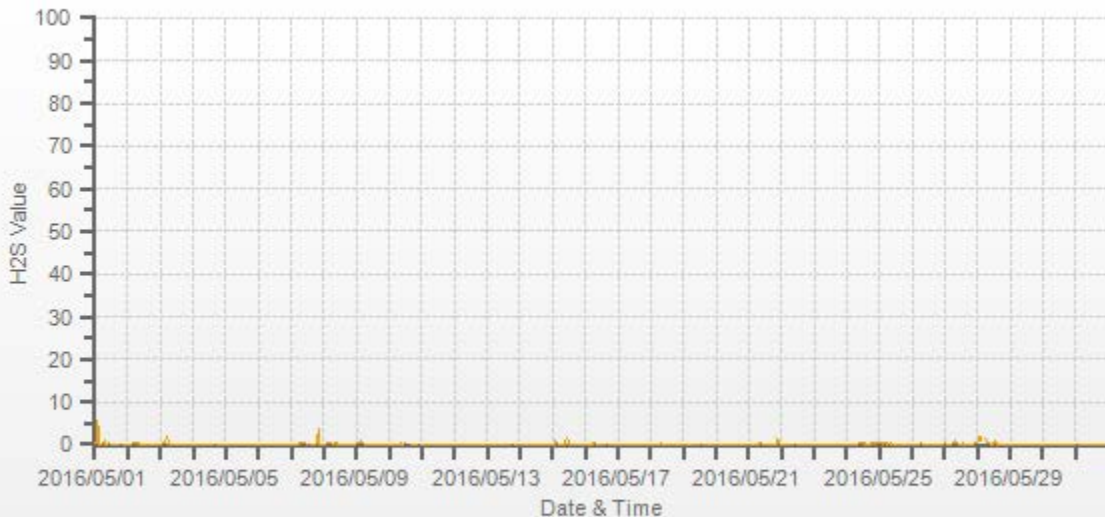
**MONTHLY SUMMARY**

NUMBER OF 1-HR EXCEEDENCES:	0			
NUMBER OF 24-HR EXCEEDENCES:	0			
NUMBER OF NON-ZERO READINGS:	191			
MINIMUM 1-HR AVERAGE:	0.0 PPB @ HOUR(S)	VAR	ON DAY(S)	ALL
MAXIMUM 1-HR AVERAGE:	5.4 PPB @ HOUR(S)	2	ON DAY(S)	1
MAXIMUM 24-HR AVERAGE:	0.5 PPB		ON DAY(S)	28
			VAR-VARIOUS	
IZS CALIBRATION TIME:	31 HRS	OPERATIONAL TIME:	744 HRS	
MONTHLY CALIBRATION TIME:	4 HRS	AMD OPERATION UPTIME:	100.0 %	
STANDARD DEVIATION:	0.34	MONTHLY AVERAGE:	0.1 PPB	

24 HOUR AVERAGES FOR May 2016



H2S[ppb] Station: LICA MASKWA Monthly: 05/2016 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	DAILY	24-HOUR	
DAY	MIN.	MAX.	AVG.	RDGS.																									
1	0.9	0.8	30.3	1.6	1.5	0.3	1.4	2.2	1.2	1.2	2.9	1.8	0.9	0.9	0.8	1.1	0.9	1.0	1.1	S	0.8	1.0	1.0	1.1	0.3	30.3	2.5	24	
2	1.0	1.4	1.4	1.8	1.9	1.6	1.7	2.0	2.3	1.4	1.2	1.1	1.1	1.3	1.1	1.3	1.0	S	1.3	1.3	1.1	1.3	1.3	1.0	2.3	1.4	24		
3	1.3	1.4	1.8	2.1	3.0	3.4	2.4	1.7	1.5	1.2	1.1	1.2	0.8	1.1	1.2	1.0	1.3	S	1.4	1.3	1.6	1.4	1.4	1.3	0.8	3.4	1.6	24	
4	1.2	1.5	1.6	1.6	1.7	1.3	1.6	1.6	1.6	1.9	1.8	1.6	1.4	1.4	1.5	1.5	S	1.6	1.4	1.3	1.5	1.5	1.5	1.5	1.2	1.9	1.5	24	
5	3.2	2.7	1.4	1.1	1.5	1.2	1.1	1.3	1.2	1.3	1.2	1.1	1.5	1.3	1.4	S	1.4	1.1	1.1	1.1	1.2	1.0	1.0	1.2	1.0	3.2	1.4	24	
6	0.9	1.5	1.4	1.2	1.2	1.5	1.7	1.0	0.8	0.9	0.9	1.2	0.9	0.8	S	0.9	1.1	1.1	1.0	1.1	1.0	1.0	1.2	1.1	0.8	1.7	1.1	24	
7	1.1	1.4	1.2	1.2	1.1	1.5	1.6	1.7	1.6	1.9	1.7	1.6	1.3	S	1.6	1.4	1.4	1.6	1.6	4.8	6.9	1.9	1.7	1.6	1.1	6.9	1.9	24	
8	2.0	1.9	2.0	2.0	2.1	2.3	2.5	2.0	2.1	2.4	2.2	1.6	S	1.6	1.6	1.5	1.5	1.7	1.5	1.7	1.6	1.6	1.6	2.2	1.5	2.5	1.9	24	
9	2.3	2.0	1.9	2.6	2.3	1.7	1.5	1.5	1.7	1.4	1.8	S	1.4	1.6	1.6	1.3	1.1	1.0	1.4	1.2	1.2	0.9	1.3	1.1	0.9	2.6	1.6	24	
10	1.1	1.2	1.1	0.9	1.0	1.0	1.1	0.8	0.9	2.4	0.8	C	C	C	C	C	0.3	0.4	0.5	0.6	0.3	0.5	S	0.5	0.3	2.4	0.9	24	
11	0.4	0.4	0.5	0.4	0.3	0.3	0.5	0.2	0.2	0.4	0.5	0.5	0.4	0.4	0.3	0.2	0.3	0.3	0.2	0.3	0.3	S	0.0	0.4	0.0	0.5	0.3	24	
12	0.4	0.3	0.2	0.4	0.3	0.3	0.4	0.5	0.2	0.1	0.4	0.3	0.4	0.4	0.5	0.4	0.4	0.1	0.2	0.1	S	0.3	0.2	0.3	0.1	0.5	0.3	24	
13	0.4	0.4	0.3	0.4	0.5	0.4	0.3	1.0	0.3	0.3	0.3	0.1	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.4	S	0.5	1.0	1.2	0.8	0.1	1.2	0.4	24
14	0.6	0.9	1.1	0.7	0.8	0.7	0.8	1.2	0.9	0.5	0.1	0.8	1.0	0.3	0.6	1.0	1.2	1.0	S	1.5	0.3	0.6	0.5	1.1	0.1	1.5	0.8	24	
15	1.2	0.9	4.3	1.5	0.8	3.4	1.5	1.1	1.0	0.9	8.3	5.0	0.2	1.0	1.3	1.1	0.5	S	1.0	0.9	0.7	0.8	0.9	0.6	0.2	8.3	1.7	24	
16	0.7	0.7	0.8	0.7	1.0	0.9	1.3	1.5	1.0	0.7	0.9	0.9	0.8	0.8	0.7	0.7	S	0.8	0.7	0.9	0.8	0.7	0.7	0.7	0.7	1.5	0.8	24	
17	0.8	0.7	0.9	0.8	0.9	1.0	0.9	0.9	1.0	1.0	1.1	1.4	1.0	0.8	0.9	S	0.8	0.9	0.7	1.0	1.0	0.8	1.0	0.8	0.7	1.4	0.9	24	
18	1.8	1.0	1.0	1.0	0.7	1.0	1.0	1.4	0.9	1.0	0.7	1.4	1.3	0.9	S	1.0	1.0	1.0	1.2	1.2	1.0	1.2	1.0	0.9	0.7	1.8	1.1	24	
19	1.1	1.1	1.3	1.2	1.4	1.2	1.2	1.3	3.3	1.3	1.2	1.2	1.2	S	1.2	1.1	1.1	1.2	1.0	1.1	1.0	1.0	0.9	0.9	3.3	1.2	24		
20	0.8	0.8	1.0	1.0	0.9	0.8	1.0	1.1	0.6	0.9	0.9	1.0	S	3.1	2.4	1.0	0.8	0.9	1.0	0.9	0.9	1.1	1.1	0.8	0.6	3.1	1.1	24	
21	1.1	1.0	0.9	1.0	1.0	1.2	1.2	1.3	2.4	2.0	1.7	S	1.2	1.3	1.4	1.4	1.3	1.4	1.3	1.2	1.4	3.5	3.3	0.9	0.9	3.5	1.5	24	
22	1.4	1.5	1.3	1.5	1.5	1.3	1.3	1.4	1.5	1.4	S	1.4	1.3	1.3	1.4	1.5	3.4	1.5	1.3	1.2	1.2	2.5	1.2	1.4	1.2	3.4	1.5	24	
23	1.5	1.2	1.1	1.3	1.3	1.3	1.3	1.3	1.4	S	1.3	1.3	1.2	1.0	1.1	3.8	1.0	1.0	1.3	1.2	0.9	0.9	0.9	0.9	0.9	3.8	1.3	24	
24	0.8	1.1	0.8	0.9	1.0	0.9	0.9	0.8	S	1.7	1.1	1.2	1.4	0.9	1.0	0.7	0.8	0.7	1.1	1.4	2.0	0.9	1.1	1.0	0.7	2.0	1.1	24	
25	1.3	1.1	0.9	0.9	1.1	0.9	0.8	S	1.2	1.2	1.0	3.2	0.9	0.8	0.9	1.1	1.2	0.9	0.8	0.9	0.9	0.6	0.7	0.9	0.6	3.2	1.1	24	
26	0.9	0.9	1.0	0.9	1.1	1.1	S	2.0	1.0	1.1	1.1	1.1	0.9	0.8	1.6	0.9	1.0	1.0	1.1	1.1	1.0	1.1	1.0	1.1	0.8	2.0	1.1	24	
27	1.4	1.2	1.0	1.0	1.1	S	2.0	3.0	2.2	1.8	1.2	1.3	1.3	2.3	1.2	1.1	1.3	1.6	1.1	1.0	1.4	1.4	2.1	1.8	1.0	3.0	1.5	24	
28	3.2	4.5	5.6	3.2	S	4.2	2.8	3.1	3.2	4.1	1.8	1.5	2.0	4.1	2.3	1.3	1.2	1.1	1.3	1.2	0.6	1.1	1.2	1.3	0.6	5.6	2.4	24	
29	1.0	1.2	1.1	S	1.1	1.1	0.9	0.9	1.0	1.0	1.0	1.0	0.9	1.2	0.9	0.8	1.1	0.9	0.9	0.8	1.1	1.1	1.1	1.0	0.8	1.2	1.0	24	
30	0.9	0.9	S	0.8	0.9	1.2	1.0	1.0	0.9	0.9	1.0	1.1	2.5	0.9	1.2	0.9	0.8	0.8	0.7	0.7	0.6	0.7	0.5	0.5	2.5	0.9	24		
31	0.5	S	0.5	0.9	0.8	0.8	0.8	0.9	0.7	0.8	0.6	0.7	0.9	0.8	0.9	0.8	0.8	0.6	1.2	1.3	0.8	0.8	0.7	0.7	0.5	1.3	0.8	24	
HOURLY MAX	3.2	4.5	30.3	3.2	3.0	4.2	2.8	3.1	3.3	4.1	8.3	5.0	2.0	4.1	2.4	1.5	3.8	1.7	1.6	4.8	6.9	3.5	3.3	2.2					
HOURLY AVG	1.2	1.3	2.3	1.2	1.2	1.3	1.3	1.4	1.3	1.3	1.4	1.3	1.0	1.2	1.2	1.0	1.2	1.0	1.0	1.2	1.2	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

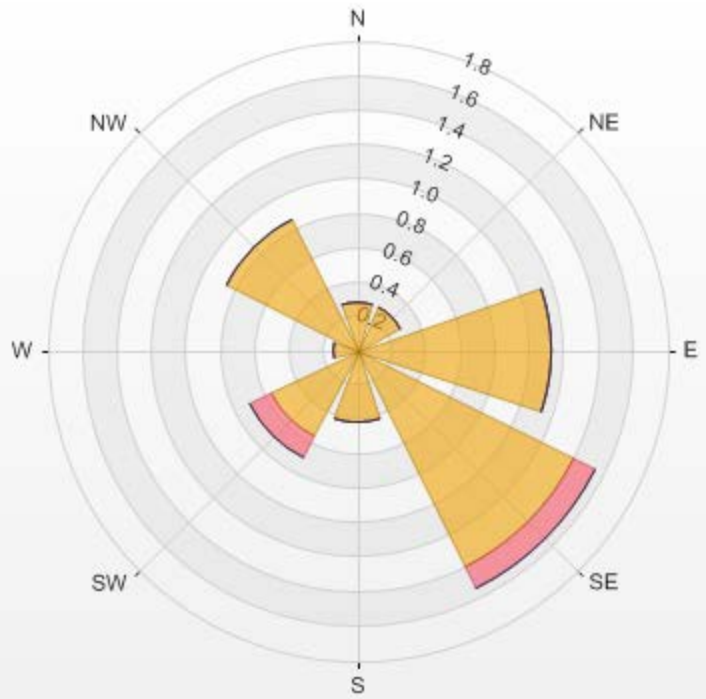
NUMBER OF NON-ZERO READINGS:	707
MAXIMUM INSTANTANEOUS VALUE:	30.3 PPB @ HOUR(S) 2 ON DAY(S) 1
	VAR-VARIOUS
IZS CALIBRATION TIME:	31 HRS
MONTHLY CALIBRATION TIME:	5 HRS
STANDARD DEVIATION:	1.33
OPERATIONAL TIME:	744 HRS



— H2S MAX[ppb]

Wind: LICA MASKWA Monitor: H2S [ppb] Monthly: 05/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 94.64% Valid Data: 95.30% Calm Avg: 0.00

Direction	0.5-3.0	3.0-10.0	10.0-50.0	>50.0	Total
N	0.28	0	0	0	0.28
NE	0.28	0	0	0	0.28
E	1.13	0	0	0	1.13
SE	1.41	0.14	0	0	1.55
S	0.42	0	0	0	0.42
SW	0.56	0.14	0	0	0.7
W	0.14	0	0	0	0.14
NW	0.85	0	0	0	0.85
Summary	5.07	0.28	0	0	5.35



% Icon	Classes (ppb)	5.1		0.5-3.0	0.3		3.0-10.0	0.0		10.0-50.0	0.0		>50.0
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H2S[ppb] Calibration: LICA MASKWA Monthly: 05/2016 Type: Span



Span Meas

Span Ref

-10%

+10%

***TOTAL HYDROCARBON***

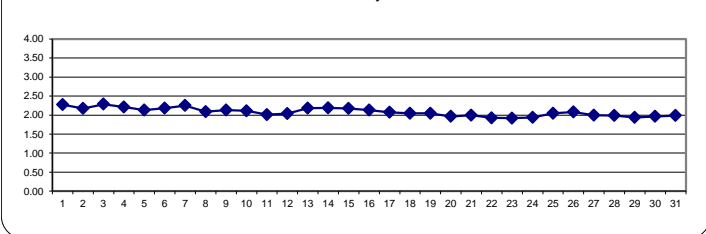
**TOTAL HYDROCARBONS (THC) hourly averages in ppm**

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 MIN.	DAILY MAX.	24-HOUR AVG.	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					
1	1	2.25	2.29	2.34	2.40	2.47	2.59	2.59	2.49	2.46	2.42	2.27	2.19	2.16	2.15	2.13	2.13	2.12	2.12	2.08	S	2.08	2.11	2.17	2.24	2.08	2.59	2.27	24	
2	2	2.24	2.27	2.31	2.34	2.33	2.33	2.38	2.41	2.26	2.13	2.09	2.08	2.10	2.09	2.08	2.08	2.09	2.07	S	2.03	2.03	2.04	2.05	2.12	2.03	2.41	2.17	24	
3	3	2.39	2.35	2.71	2.65	<b>2.91</b>	2.78	2.59	2.34	2.21	2.19	2.20	2.12	2.13	2.16	2.10	2.08	2.06	S	2.06	2.07	2.09	2.09	2.11	2.16	2.06	<b>2.91</b>	<b>2.28</b>	24	
4	4	2.22	2.27	2.31	2.34	2.36	2.37	2.38	2.37	2.27	2.39	2.30	2.38	2.08	2.08	2.08	2.11	S	2.08	2.08	2.05	2.09	2.11	2.07	2.07	2.05	2.39	2.21	24	
5	5	2.06	2.06	2.06	2.06	2.06	2.06	2.08	2.17	2.18	2.19	2.13	2.14	2.14	2.12	2.12	S	2.12	2.14	2.12	2.11	2.11	2.21	2.24	2.25	2.06	2.25	2.13	24	
6	6	2.19	2.20	2.30	2.19	2.21	2.28	2.36	2.19	2.16	2.14	2.13	2.12	2.14	2.13	S	2.15	2.16	2.15	2.15	2.15	2.15	2.16	2.18	2.18	2.12	2.36	2.18	24	
7	7	2.29	2.37	2.41	2.44	2.37	2.33	2.38	2.42	2.40	2.45	2.31	2.23	2.19	S	2.13	2.09	2.08	2.08	2.07	2.09	2.14	2.12	2.16	2.17	2.07	2.45	2.25	24	
8	8	2.14	2.11	2.12	2.12	2.12	2.23	2.16	2.03	2.03	2.05	2.06	2.06	S	2.05	2.05	2.06	2.06	2.07	2.07	2.07	2.06	2.06	2.07	2.12	2.03	2.23	2.09	24	
9	9	2.17	2.17	2.13	2.13	2.11	2.10	2.10	2.11	2.11	2.10	2.12	S	2.12	2.15	2.13	2.12	2.11	2.12	2.13	2.14	2.14	2.15	2.16	2.16	2.10	2.17	2.13	24	
10	10	2.18	2.18	2.19	2.20	2.20	2.21	2.20	2.20	2.18	C	C	C	C	2.03	2.02	2.02	2.03	2.03	2.03	2.03	2.05	2.07	S	2.05	2.02	2.21	2.11	24	
11	11	2.03	2.03	2.05	2.05	2.05	2.04	2.04	2.01	2.01	2.01	1.98	1.98	1.98	1.98	1.98	1.99	1.99	2.00	2.00	2.00	S	2.01	2.02	1.98	2.05	2.01	24		
12	12	2.06	2.07	2.05	2.04	2.04	2.03	2.03	2.02	2.03	2.02	2.03	2.03	2.03	2.03	2.03	2.03	2.01	2.01	2.02	2.04	S	2.06	2.08	2.12	2.01	2.12	2.04	24	
13	13	2.23	2.26	2.34	2.38	2.43	2.39	2.32	2.30	2.13	2.07	2.06	2.05	2.05	2.06	2.06	2.06	2.07	2.07	2.08	S	2.09	2.18	2.25	2.24	2.05	2.43	2.18	24	
14	14	2.29	2.42	2.50	2.52	2.70	2.51	2.44	2.23	2.08	2.05	2.04	2.04	2.04	2.04	2.03	2.03	2.01	2.02	S	2.03	2.04	2.05	2.09	2.15	2.01	2.70	2.19	24	
15	15	2.17	2.24	2.31	2.34	2.50	2.59	2.57	2.41	2.21	2.06	2.05	2.04	2.05	2.04	2.04	2.04	2.03	S	2.03	2.04	2.05	2.05	2.06	2.11	2.03	2.59	2.18	24	
16	16	2.16	2.20	2.22	2.25	2.24	2.21	2.30	2.30	2.33	2.36	2.16	2.14	2.05	2.03	2.03	2.02	S	2.01	2.00	1.99	1.99	2.00	2.03	2.05	1.99	2.36	2.13	24	
17	17	2.10	2.13	2.16	2.18	2.16	2.16	2.14	2.13	2.14	2.17	2.15	2.12	2.08	2.04	2.02	S	1.97	1.95	1.97	1.96	1.95	2.00	2.02	1.95	2.02	1.95	2.18	2.07	24
18	18	2.03	2.14	2.18	2.11	2.10	2.31	2.30	2.24	1.99	1.98	2.00	1.98	1.98	1.97	S	1.96	1.95	1.93	1.96	1.98	1.97	1.97	1.97	1.98	1.93	2.31	2.04	24	
19	19	1.99	2.02	2.05	2.03	2.05	2.09	2.18	2.25	2.30	2.17	2.10	2.08	2.04	S	2.00	1.99	1.98	1.97	1.97	1.97	1.97	1.97	1.96	1.96	1.96	2.30	2.05	24	
20	20	1.95	1.96	1.96	1.96	1.97	1.96	1.97	1.96	1.96	1.95	1.94	1.95	S	1.95	1.95	1.96	1.96	1.95	1.96	1.96	1.99	1.99	2.00	1.97	1.94	2.00	1.96	24	
21	21	1.96	1.97	1.99	1.99	2.00	2.00	1.99	1.97	2.00	2.01	1.99	S	1.98	1.98	1.98	2.01	2.03	2.02	2.01	2.00	2.03	2.05	1.99	1.97	1.96	2.05	2.00	24	
22	22	1.96	1.94	1.96	1.98	1.94	1.92	1.90	1.90	1.91	1.93	S	1.91	1.90	1.90	1.90	1.91	1.91	1.91	1.91	1.92	1.93	1.93	1.94	1.94	1.94	1.90	1.98	1.92	24
23	23	1.93	1.93	1.93	1.93	1.92	1.93	1.92	1.92	1.92	S	1.90	1.91	1.90	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.92	1.92	1.92	1.92	1.93	1.90	1.93	1.92	24
24	24	1.95	1.95	1.96	1.96	1.97	1.96	1.93	1.92	S	1.92	1.92	1.94	1.93	1.93	1.91	1.91	1.91	1.91	1.91	1.91	1.94	1.96	1.99	2.03	1.91	2.03	1.94	24	
25	25	2.07	2.11	2.16	2.16	2.18	2.20	2.15	S	2.11	2.06	2.01	1.97	1.97	1.97	1.97	1.97	1.97	1.98	1.99	2.00	1.99	2.00	2.02	2.04	1.97	2.20	2.05	24	
26	26	2.17	2.29	2.33	2.35	2.41	2.38	S	2.27	2.12	2.02	2.00	2.03	1.98	1.95	1.96	1.93	1.94	1.95	1.96	1.97	1.98	1.97	1.98	1.97	1.98	1.93	2.41	2.08	24
27	27	1.98	1.99	1.99	1.97	1.97	S	2.07	2.19	2.12	2.06	1.99	1.99	1.97	1.95	1.96	1.94	1.94	1.97	1.95	1.95	1.97	1.98	1.96	1.99	1.94	2.19	1.99	24	
28	28	1.98	2.00	1.98	1.99	S	1.99	2.00	1.99	1.99	2.00	2.01	2.01	1.99	2.02	2.02	1.96	1.95	1.94	1.95	1.96	1.96	1.97	2.03	2.00	1.94	2.03	1.99	24	
29	29	1.97	1.97	1.97	S	1.98	1.98	1.94	1.91	1.91	1.90	1.92	1.91	1.91	1.91	1.92	1.90	1.91	1.91	1.92	1.93	1.91	1.94	1.95	1.99	1.97	1.90	1.99	1.94	24
30	30	1.95	1.97	S	2.03	2.05	1.99	1.96	1.94	1.94	1.94	1.96	1.94	1.98	1.96	1.94	1.96	1.95	1.96	1.97	1.97	1.97	1.96	1.96	1.97	1.94	2.05	1.97	24	
31	31	1.99	S	2.00	2.04	2.05	2.03	2.01	1.99	1.97	1.98	1.97	1.96	1.96	1.97	1.97	1.97	1.97	1.96	1.97	1.96	1.96	1.98	2.00	2.07	1.96	2.07	1.99	24	
HOURLY MAX		2.39	2.42	2.71	2.65	2.91	2.78	2.59	2.49	2.46	2.45	2.31	2.38	2.19	2.16	2.13	2.15	2.16	2.15	2.15	2.15	2.15	2.21	2.25	2.25					
HOURLY AVG		2.10	2.13	2.17	2.17	2.20	2.20	2.18	2.15	2.11	2.09	2.06	2.05	2.03	2.02	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.02	2.04	2.05	2.07				

**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 May 2016**



**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS:	709				
MINIMUM 1-HR AVERAGE:	1.90	PPM	@ HOUR(S)	VAR	ON DAY(S)
MAXIMUM 1-HR AVERAGE:	2.91	PPM	@ HOUR(S)	4	3
MAXIMUM 24-HR AVERAGE:	2.28	PPM			3
					VAR-VARIOUS
IZS CALIBRATION TIME:	31	HRS	OPERATIONAL TIME:	744	HRS
MONTHLY CALIBRATION TIME:	4	HRS	AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	0.15		MONTHLY AVERAGE:	2.08	PPM

THC[ppm] Station: LICA MASKWA Monthly: 05/2016 Type: AVG 1 Hr. [1 Hr.]



— THC[ppm]



**TOTAL HYDROCARBONS MAX** instantaneous maximum in ppm

<b>MST</b>																									DAILY MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.	
		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
		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	2.29	2.38	2.41	2.47	2.60	2.67	2.68	2.57	2.51	2.51	2.39	2.48	2.23	2.23	2.18	2.20	2.20	2.23	2.14	S	2.12	2.23	2.26	2.29	2.12	2.68	2.36	24
	2	2.32	2.38	2.39	2.52	2.45	2.41	2.54	2.85	2.55	2.23	2.17	2.15	2.17	2.17	2.15	2.15	2.15	2.15	S	2.11	2.11	2.11	2.12	2.26	2.11	2.85	2.29	24
	3	2.78	2.85	3.03	3.16	<b>3.51</b>	3.12	2.81	2.48	2.27	2.24	2.28	2.20	2.20	2.21	2.17	2.12	2.11	S	2.10	2.11	2.15	2.12	2.17	2.23	2.10	<b>3.51</b>	2.45	24
	4	2.27	2.33	2.38	2.42	2.51	2.44	2.48	2.46	2.35	2.51	2.38	2.48	2.20	2.12	2.17	2.17	S	2.15	2.12	2.08	2.15	2.18	2.10	2.17	2.08	2.51	2.29	24
	5	2.14	2.08	2.08	2.08	2.07	2.08	2.12	2.26	2.20	2.26	2.20	2.17	2.17	2.17	2.15	S	2.17	2.17	2.15	2.14	2.15	2.29	2.29	2.29	2.07	2.29	2.17	24
	6	2.23	2.54	2.51	2.24	2.27	2.54	2.81	2.23	2.20	2.20	2.17	2.20	2.20	2.23	S	2.20	2.24	2.18	2.18	2.18	2.20	2.20	2.21	2.23	2.17	2.81	2.28	24
	7	2.36	2.41	2.49	2.49	2.54	2.36	2.43	2.46	2.44	2.48	2.44	2.26	2.23	S	2.14	2.11	2.10	2.09	2.07	2.14	2.17	2.14	2.17	2.17	2.07	2.54	2.29	24
	8	2.15	2.10	2.10	2.14	2.14	2.38	2.23	2.17	2.05	2.15	2.07	2.12	S	2.04	2.02	2.05	2.04	2.04	2.07	2.12	2.12	2.05	2.07	2.23	2.02	2.38	2.12	24
	9	2.23	2.20	2.18	2.18	2.11	2.11	2.12	2.14	2.17	2.12	2.23	S	2.21	2.24	2.23	2.18	2.12	2.14	2.15	2.17	2.17	2.17	2.18	2.18	2.11	2.24	2.17	24
	10	2.20	2.20	2.21	2.23	2.23	2.23	2.23	2.24	2.23	C	C	C	C	2.07	2.04	2.05	2.05	2.05	2.07	2.09	2.12	S	2.07	2.04	2.24	2.14	24	
	11	2.07	2.07	2.08	2.09	2.10	2.07	2.07	2.04	2.04	2.04	2.04	2.04	2.02	2.02	2.02	2.02	2.04	2.04	2.04	2.04	2.05	S	2.05	2.07	2.02	2.10	2.05	24
	12	2.11	2.13	2.11	2.10	2.08	2.10	2.07	2.07	2.08	2.07	2.07	2.08	2.08	2.07	2.07	2.07	2.07	2.07	2.07	2.10	S	2.12	2.20	2.23	2.07	2.23	2.10	24
	13	2.32	2.35	2.48	2.46	2.51	2.49	2.44	2.46	2.36	2.14	2.14	2.10	2.10	2.11	2.11	2.14	2.12	2.13	S	2.15	2.41	2.35	2.32	2.10	2.51	2.27	24	
	14	2.39	2.54	2.57	2.88	2.90	2.61	2.66	2.44	2.12	2.12	2.10	2.09	2.17	2.09	2.09	2.07	2.04	2.08	S	2.07	2.07	2.08	2.15	2.17	2.04	2.90	2.28	24
	15	2.29	2.35	2.38	2.38	2.75	2.84	2.85	2.54	2.33	2.07	2.07	2.07	2.07	2.05	2.04	2.07	2.04	S	2.02	2.04	2.05	2.04	2.07	2.12	2.02	2.85	2.24	24
	16	2.20	2.24	2.23	2.26	2.29	2.26	2.32	2.33	2.39	2.41	2.29	2.15	2.09	2.02	2.01	2.02	S	2.01	1.99	1.99	1.99	2.01	2.04	2.07	1.99	2.41	2.16	24
	17	2.11	2.14	2.17	2.17	2.17	2.17	2.17	2.14	2.17	2.17	2.17	2.15	2.12	2.07	2.05	S	2.04	1.96	2.01	2.05	1.96	2.01	2.04	2.02	1.96	2.17	2.10	24
	18	2.05	2.20	2.32	2.11	2.17	2.38	2.33	2.32	2.08	2.04	2.07	1.98	1.96	1.95	S	1.95	1.95	1.92	1.96	1.98	1.97	1.95	1.96	1.97	1.92	2.38	2.07	24
	19	1.98	2.09	2.08	2.01	2.07	2.12	2.20	2.27	2.29	2.23	2.08	2.07	2.02	S	1.98	1.98	1.97	1.96	1.96	1.96	1.95	1.96	1.96	1.95	1.95	2.29	2.05	24
	20	1.95	1.95	1.96	1.96	1.98	1.96	1.98	1.97	1.96	1.95	1.95	1.95	S	1.96	1.96	1.98	1.98	1.96	1.96	1.98	2.04	2.01	2.02	1.96	1.95	2.04	1.97	24
	21	1.96	1.97	1.98	1.98	1.99	1.99	1.98	1.96	2.00	2.06	1.98	S	1.96	1.96	1.96	2.00	2.01	2.01	2.23	2.00	2.01	2.02	1.99	1.93	1.93	2.23	2.00	24
	22	1.92	1.88	1.94	1.94	1.90	1.88	1.86	1.84	1.86	1.86	S	1.85	1.85	1.84	1.83	1.84	1.85	1.86	1.87	1.88	1.89	1.89	1.91	1.83	1.94	1.88	24	
	23	1.90	1.92	1.90	1.89	1.90	1.89	1.89	1.89	1.89	S	1.89	1.89	1.89	1.89	1.89	1.90	1.90	1.90	1.91	1.91	1.92	1.92	1.93	1.95	1.89	1.95	1.90	24
	24	1.96	1.98	1.98	1.98	1.98	1.98	1.96	1.95	S	1.97	1.97	2.05	1.98	1.95	1.93	1.93	1.93	1.93	1.93	1.93	1.95	1.98	2.01	2.05	1.93	2.05	1.97	24
	25	2.09	2.17	2.18	2.18	2.20	2.27	2.20	S	2.14	2.12	2.04	2.01	1.99	2.00	2.00	1.99	2.01	2.01	2.01	2.01	2.01	2.04	2.05	2.09	1.99	2.27	2.08	24
	26	2.24	2.46	2.46	2.45	2.45	2.42	S	2.36	2.23	2.06	2.06	2.09	2.01	1.96	2.14	1.94	1.94	1.94	1.96	1.96	1.98	1.98	1.97	1.97	1.94	2.46	2.13	24
	27	1.97	1.99	2.00	1.97	1.95	S	2.34	2.23	2.15	2.07	2.00	1.99	1.97	1.97	1.97	1.96	1.96	2.01	1.93	1.94	1.98	2.01	1.98	2.06	1.93	2.34	2.02	24
	28	1.99	2.01	1.99	1.98	S	1.99	1.99	1.98	1.98	2.00	2.03	2.03	2.03	2.73	2.21	2.07	1.94	1.95	1.94	1.97	1.97	2.05	2.06	2.03	1.94	2.73	2.04	24
	29	1.97	1.98	1.99	S	2.01	2.06	1.99	1.91	1.91	1.94	1.94	1.93	1.94	2.00	1.91	1.91	1.94	1.94	1.94	1.93	1.95	1.99	2.12	2.00	1.91	2.12	1.97	24
	30	1.97	2.00	S	2.07	2.08	2.03	1.98	1.96	1.98	1.96	1.99	1.98	2.09	2.05	1.99	2.05	1.97	1.97	2.00	1.99	1.98	1.98	1.97	2.00	1.96	2.09	2.00	24
	31	2.02	S	2.02	2.07	2.07	2.04	2.01	1.99	2.00	2.01	1.98	1.99	1.99	2.03	2.00	2.01	1.98	2.02	1.98	1.98	2.01	2.04	2.09	1.98	2.09	2.02	24	
HOURLY MAX		2.78	2.85	3.03	3.16	3.51	3.12	2.85	2.85	2.55	2.51	2.44	2.48	2.23	2.73	2.23	2.20	2.24	2.23	2.23	2.18	2.20	2.41	2.35	2.32				
HOURLY AVG		2.14	2.20	2.22	2.23	2.27	2.26	2.26	2.22	2.16	2.14	2.11	2.09	2.07	2.08	2.05	2.04	2.03	2.03	2.03	2.03	2.04	2.07	2.08	2.10				

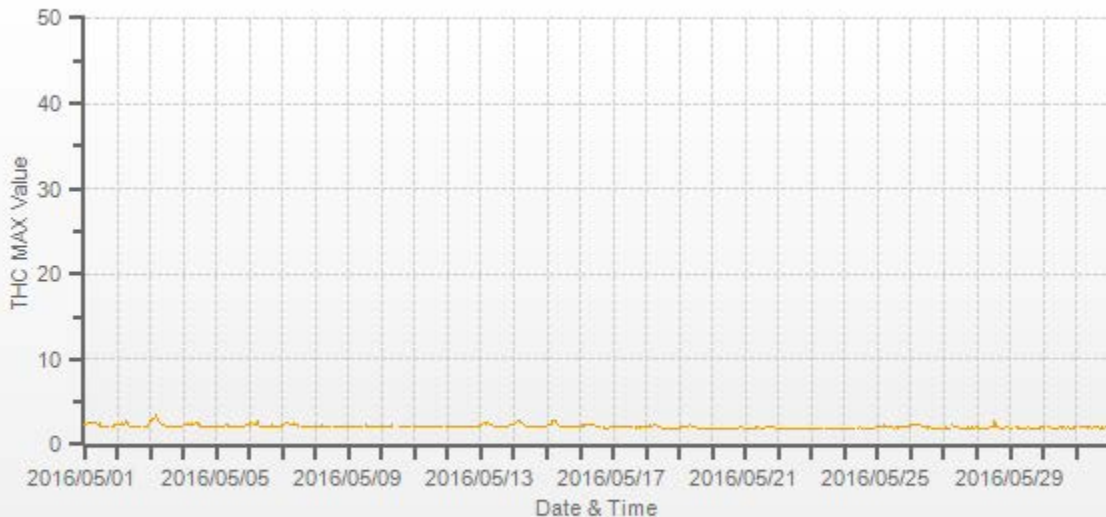
**STATUS FLAG CODES**

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:	709		
MAXIMUM INSTANTANEOUS VALUE:	3.51 PPM @ HOUR(S) 4 ON DAY(S) 3		
	VAR-VARIOUS		
IZS CALIBRATION TIME:	31 HRS	OPERATIONAL TIME:	744 HRS
MONTHLY CALIBRATION TIME:	4 HRS		
STANDARD DEVIATION:	0.20		

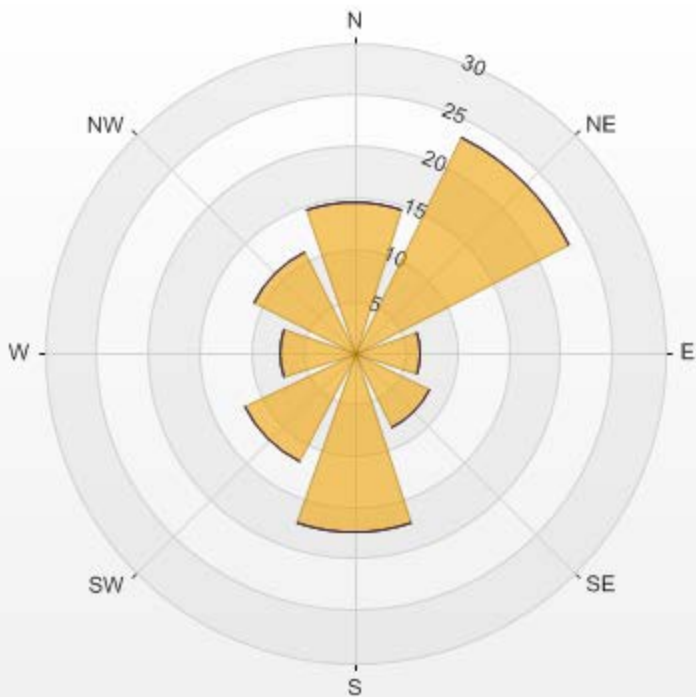
THC MAX[ppm] Station: LICA MASKWA Monthly: 05/2016 Type: AVG 1 Hr. [1 Hr.]



— THC MAX[ppm]

Wind: LICA MASKWA Monitor: THC [ppm] Monthly: 05/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 95.30% Calm Avg: 0.00

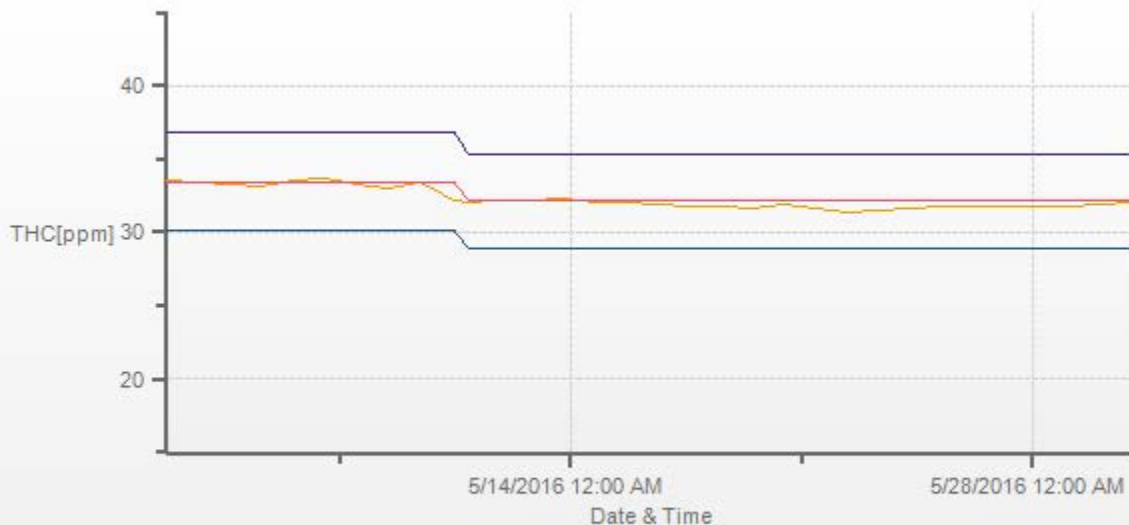
Direction	0.5-3.0	3.0-10.0	10.0-50.0	>50.0	Total
N	14.53	0	0	0	14.53
NE	23.27	0	0	0	23.27
E	6.35	0	0	0	6.35
SE	8.18	0	0	0	8.18
S	17.49	0	0	0	17.49
SW	11.85	0	0	0	11.85
W	7.33	0	0	0	7.33
NW	11	0	0	0	11
Summary	100	0	0	0	100



% 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: 05/2016 Type: Span



Span Meas

Span Ref

-10%

+10%

## ***OXIDES OF NITROGEN***



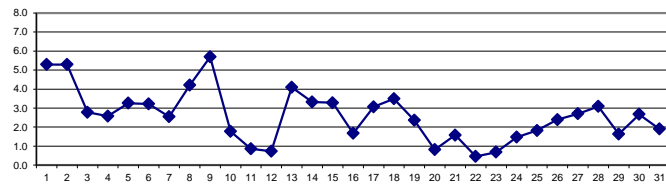
**OXIDES OF NITROGEN (NOx) hourly averages in ppb**

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 MIN.	DAILY MAX.	24-HOUR AVG.	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.	RDGS.
1	1	3.0	4.2	7.7	9.4	9.5	14.1	13.0	13.3	11.5	9.0	5.9	3.0	1.4	0.7	0.7	2.2	0.8	0.8	0.6	S	2.7	1.9	2.8	3.5	0.6	14.1	5.3	24
2	2	3.4	4.2	7.4	3.3	4.1	6.1	5.9	17.2	29.8	13.4	4.8	4.2	2.4	1.9	1.3	1.2	1.2	1.0	S	2.3	1.8	1.7	1.6	1.6	1.0	29.8	5.3	24
3	3	1.5	1.3	1.9	1.8	1.9	11.0	3.7	4.1	3.9	5.1	2.5	1.6	1.4	1.2	1.3	1.3	0.8	S	2.7	2.6	5.5	2.5	1.9	2.4	0.8	11.0	2.8	24
4	4	2.9	3.3	3.4	3.0	2.8	2.4	2.5	3.2	3.9	5.1	3.9	5.3	1.0	0.6	0.6	2.2	S	2.8	1.8	1.6	1.4	1.5	1.0	3.0	0.6	5.3	2.6	24
5	5	3.4	3.0	2.6	2.4	2.8	1.5	0.8	4.4	3.9	3.7	4.2	5.1	3.2	5.0	5.4	S	3.7	2.7	2.4	1.8	1.8	3.6	4.5	2.9	0.8	5.4	3.3	24
6	6	1.8	0.9	12.3	1.3	3.6	13.2	9.0	5.4	4.5	1.9	1.2	3.6	1.0	0.5	S	3.9	3.1	1.2	0.7	0.7	1.2	0.9	1.1	1.0	0.5	13.2	3.2	24
7	7	2.1	2.5	2.5	2.0	2.0	1.7	1.2	3.1	4.5	5.7	4.8	3.3	2.3	S	4.1	2.0	1.4	1.4	1.3	1.4	1.8	1.9	3.0	2.4	1.2	5.7	2.5	24
8	8	1.7	2.9	3.3	3.0	2.2	5.2	21.9	10.5	8.1	10.7	5.3	0.7	S	3.2	1.9	1.3	1.2	0.7	0.7	1.5	3.2	1.0	1.2	5.2	0.7	21.9	4.2	24
9	9	16.2	15.3	18.7	12.7	1.3	0.7	3.3	2.8	6.1	2.4	8.2	S	7.2	11.0	7.1	6.0	1.3	1.2	1.2	1.4	0.7	1.1	2.5	2.6	0.7	18.7	5.7	24
10	10	2.6	2.5	1.7	1.5	1.9	3.0	2.8	1.6	1.9	C	C	C	C	C	C	3.1	1.1	0.8	0.7	0.7	0.6	0.6	S	2.9	0.6	3.1	1.8	24
11	11	1.3	0.9	0.7	0.7	0.8	1.8	1.7	0.3	0.7	0.6	0.5	0.4	0.4	0.7	0.5	0.5	0.5	0.5	0.6	0.6	S	2.7	1.7	0.3	2.7	0.9	24	
12	12	1.1	1.1	1.0	1.5	1.6	1.6	1.0	1.4	0.4	0.4	0.3	0.2	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	S	2.6	1.2	0.7	0.0	2.6	0.7	24
13	13	0.9	1.4	1.8	2.3	4.6	5.5	5.8	29.2	11.4	1.3	3.8	1.5	1.6	2.1	1.8	2.2	1.4	3.5	1.6	S	4.1	2.4	1.9	1.9	0.9	29.2	4.1	24
14	14	2.2	3.7	3.7	3.2	4.9	4.3	7.6	13.8	6.5	1.8	1.5	1.8	1.9	2.3	1.6	1.9	0.9	2.6	S	4.7	1.9	1.2	1.2	1.2	0.9	13.8	3.3	24
15	15	1.2	1.2	1.6	2.7	3.1	3.4	S1	10.4	20.2	1.9	2.0	2.9	3.2	2.4	1.7	1.4	0.8	S	3.5	2.2	1.8	1.8	1.3	1.4	0.8	20.2	3.3	23
16	16	1.6	2.1	1.8	1.8	1.2	1.1	1.7	2.1	4.1	3.8	1.9	1.7	1.2	0.7	0.6	0.6	S	2.8	1.4	1.2	1.2	1.2	1.2	1.3	0.6	4.1	1.7	24
17	17	1.8	2.3	2.4	2.6	2.4	2.8	3.0	3.2	2.9	3.7	6.6	9.8	4.9	2.1	2.0	S	3.8	2.3	2.2	2.9	1.4	2.1	1.7	1.5	1.4	9.8	3.1	24
18	18	2.1	6.6	4.6	3.2	2.2	5.4	8.2	20.2	3.4	2.4	2.3	2.3	3.4	2.4	S	3.6	1.5	1.1	1.5	1.5	1.1	0.6	0.4	0.3	0.3	20.2	3.5	24
19	19	0.3	0.8	2.7	1.5	1.4	3.0	6.8	7.4	8.3	5.8	3.9	3.3	2.2	S	1.9	1.2	0.8	0.7	0.7	0.7	0.2	0.2	0.2	0.3	0.2	8.3	2.4	24
20	20	0.3	0.3	0.3	0.4	0.4	0.5	0.5	0.4	0.5	0.6	0.6	S	1.8	1.8	1.3	1.2	1.1	0.7	0.6	1.9	1.5	0.9	0.6	0.3	1.9	0.8	24	
21	21	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	3.1	3.1	3.5	S	2.0	1.8	1.8	1.8	1.8	2.3	2.6	2.2	2.1	1.9	0.8	0.6	0.6	3.5	1.6	24
22	22	0.7	1.2	0.6	1.3	0.6	0.3	0.0	0.0	0.0	0.1	S	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.2	0.5	0.0	0.1	0.0	0.6	0.0	1.3	0.5	24
23	23	0.6	0.6	0.5	0.3	0.4	0.4	0.4	0.6	0.3	S	0.9	1.1	1.2	1.3	1.2	1.0	0.7	0.6	0.6	0.6	0.6	0.6	0.5	0.3	1.3	0.7	24	
24	24	0.4	0.1	0.3	0.3	0.2	0.3	0.2	0.4	S	3.3	2.4	3.7	5.4	1.4	1.3	1.2	1.2	1.2	1.0	0.6	0.8	2.0	3.3	2.7	0.1	5.4	1.5	24
25	25	1.8	2.4	2.4	2.4	1.7	2.2	2.9	S	2.5	2.7	2.4	2.2	1.9	1.8	1.6	1.3	1.2	1.2	1.2	1.2	1.2	1.2	0.9	1.5	0.9	2.9	1.8	24
26	26	2.4	1.9	1.9	1.7	1.4	1.7	S	7.5	6.9	4.9	3.3	2.8	2.4	1.9	2.1	2.0	1.2	1.6	1.3	2.2	1.3	1.2	0.7	0.6	0.6	7.5	2.4	24
27	27	1.3	1.0	0.6	0.6	0.6	S	3.1	6.7	4.8	4.3	5.4	4.4	3.7	3.9	2.7	2.3	2.1	4.0	1.3	1.2	1.5	2.1	3.1	1.4	0.6	6.7	2.7	24
28	28	1.8	2.6	2.0	2.8	S	3.8	4.2	3.4	2.7	2.9	6.2	7.7	3.9	2.8	3.0	1.6	1.7	5.1	3.1	1.9	2.2	1.3	2.2	2.1	1.3	7.7	3.1	24
29	29	1.8	1.5	1.2	S	1.1	2.0	2.8	2.2	2.2	1.8	2.2	2.6	2.0	1.9	1.2	1.2	1.0	0.7	0.6	0.6	0.6	1.2	4.6	0.6	4.6	1.6	24	
30	30	0.9	1.8	S	2.1	2.6	1.9	1.9	1.5	1.5	1.3	3.3	4.7	8.7	8.6	3.1	3.0	1.8	1.4	3.6	1.5	1.3	0.7	1.8	2.4	0.7	8.7	2.7	24
31	31	1.7	S	4.2	4.5	5.2	3.8	2.2	1.9	1.7	1.2	1.2	0.9	0.9	1.1	2.0	1.5	0.9	0.6	2.1	1.1	0.1	0.5	1.1	3.2	0.1	5.2	1.9	24
HOURLY MAX		16.2	15.3	18.7	12.7	9.5	14.1	21.9	29.2	29.8	13.4	8.2	9.8	8.7	11.0	7.1	6.0	3.8	5.1	3.6	4.7	5.5	3.6	4.5	5.2				
HOURLY AVG		2.1	2.5	3.2	2.6	2.3	3.5	4.1	6.0	5.4	3.6	3.3	2.9	2.6	2.4	2.0	1.8	1.4	1.6	1.4	1.4	1.6	1.4	1.6	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

**24 HOUR AVERAGES FOR May 2016**



**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS:	697		
MINIMUM 1-HR AVERAGE:	0.0	PPB @ HOUR(S)	VAR ON DAY(S) 12, 22
MAXIMUM 1-HR AVERAGE:	29.8	PPB @ HOUR(S)	8 ON DAY(S) 2
MAXIMUM 24-HR AVERAGE:	5.7	PPB	9 ON DAY(S) 9
			VAR-VARIOUS
IZS CALIBRATION TIME:	31	HRS	OPERATIONAL TIME: 743 HRS
MONTHLY CALIBRATION TIME:	6	HRS	AMD OPERATION UPTIME: 99.9 %
STANDARD DEVIATION:	3.10		MONTHLY AVERAGE: 2.6 PPB

NOX[ppb] Station: LICA MASKWA Monthly: 05/2016 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	DAILY	24-HOUR	RDGS.		
	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	MIN.	MAX.		AVG.	
DAY																														
1	3.5	6.5	8.8	10.0	12.3	17.0	14.1	22.9	15.8	10.0	8.2	4.7	2.4	1.2	1.2	4.1	1.8	1.8	1.2	S	3.5	2.4	3.5	4.7	1.2	22.9	7.0	24		
2	4.1	7.1	8.8	5.9	5.9	8.2	8.2	35.8	<b>62.1</b>	20.6	7.1	5.3	7.6	15.2	1.8	1.2	1.2	1.2	S	3.0	1.8	1.8	1.8	1.8	1.2	<b>62.1</b>	9.5	24		
3	1.8	1.8	2.4	1.8	2.4	38.7	8.8	7.1	5.9	25.8	3.0	2.4	2.4	1.8	1.8	1.8	1.2	S	3.5	5.3	6.5	4.7	2.4	2.4	1.2	38.7	5.9	24		
4	3.0	3.5	3.5	3.0	3.0	3.0	4.7	4.1	4.1	5.9	4.1	6.5	3.0	0.6	1.8	5.3	S	3.5	2.4	1.8	1.8	2.4	1.2	7.1	0.6	7.1	3.4	24		
5	7.1	4.7	4.7	4.1	4.1	3.0	1.8	7.1	4.7	4.7	13.0	10.6	4.7	38.1	8.2	S	5.3	4.1	3.0	3.0	2.4	8.8	8.2	4.1	1.8	38.1	6.9	24		
6	4.1	5.3	34.0	3.0	9.4	19.4	14.1	12.4	23.5	8.8	5.2	11.8	3.5	2.4	S	11.2	9.4	5.3	1.8	2.4	3.0	1.8	2.4	1.8	1.8	34.0	8.5	24		
7	3.0	3.6	3.6	3.0	3.0	2.4	1.8	5.9	5.9	6.5	6.5	4.7	3.5	S	7.6	3.0	2.4	2.4	1.8	2.4	3.0	3.5	3.5	3.0	1.8	7.6	3.7	24		
8	2.4	3.5	4.1	4.1	2.4	17.6	50.4	24.7	17.6	39.3	13.5	1.2	S	4.7	2.4	1.8	1.3	1.2	1.2	3.0	10.0	1.2	1.3	18.8	1.2	50.4	9.9	24		
9	24.7	21.1	25.9	30.5	3.0	1.2	7.1	7.6	22.3	6.4	24.7	S	14.1	21.8	17.0	18.2	1.3	1.2	1.3	1.8	0.6	1.8	2.4	3.0	0.6	30.5	11.3	24		
10	3.0	2.4	2.4	1.8	1.8	3.6	3.0	1.8	3.0	C	C	C	C	C	C	C	1.3	0.6	0.6	0.7	0.6	0.6	S	5.3	0.6	5.3	2.0	24		
11	1.8	1.3	0.6	0.6	0.6	1.8	2.4	0.6	0.6	0.6	0.6	0.1	0.1	1.2	0.6	0.1	0.0	0.0	0.6	0.1	0.0	S	4.1	1.2	0.0	4.1	0.9	24		
12	1.2	0.6	1.2	1.2	1.3	1.3	1.2	1.8	0.6	0.6	0.6	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	S	4.7	1.8	1.2	0.0	4.7	0.9	24
13	1.2	1.8	1.8	3.0	6.4	7.1	7.6	46.4	31.1	4.7	8.2	2.4	3.5	3.5	3.0	3.5	3.0	8.8	4.1	S	7.6	3.0	2.4	2.4	1.2	46.4	7.2	24		
14	4.1	4.1	4.1	5.9	5.9	6.4	14.1	23.5	10.6	3.0	4.7	4.1	5.3	4.1	4.7	4.7	6.5	9.4	S	7.6	2.4	1.2	1.3	1.2	1.2	23.5	6.0	24		
15	1.2	1.3	2.4	3.0	3.6	4.1	<b>S1</b>	<b>S1</b>	29.4	3.6	3.0	4.1	4.7	3.5	3.0	2.4	1.8	S	5.9	2.4	1.8	1.8	1.8	1.8	1.2	29.4	4.1	22		
16	1.8	2.4	2.4	2.4	1.8	1.3	2.4	3.0	4.7	4.7	3.0	1.8	1.8	1.2	0.6	0.6	S	4.1	1.8	1.3	1.3	1.3	1.2	1.8	0.6	4.7	2.1	24		
17	1.8	2.4	2.4	3.0	3.0	3.0	5.3	3.5	4.1	10.0	12.4	7.6	3.0	3.5	S	26.9	3.5	3.5	7.1	1.8	2.4	1.8	1.8	1.8	1.8	26.9	5.1	24		
18	3.5	8.2	8.2	3.6	3.6	7.1	13.0	31.1	20.0	7.0	5.9	6.4	5.9	4.7	S	5.9	2.4	1.3	1.8	2.4	1.8	1.2	1.2	0.6	0.6	31.1	6.4	24		
19	0.6	1.8	4.1	2.4	1.8	5.3	8.2	8.8	9.4	8.2	5.3	4.1	3.5	S	3.0	1.8	1.8	1.2	1.2	1.3	1.2	0.6	0.6	0.6	0.6	9.4	3.3	24		
20	0.6	0.7	0.6	0.6	0.6	1.2	1.2	0.6	0.6	0.6	0.6	0.6	S	2.4	1.8	1.8	1.3	1.2	1.2	1.2	2.4	1.8	1.2	1.2	0.6	2.4	1.1	24		
21	0.6	0.7	0.6	0.6	0.6	0.6	0.6	1.2	4.7	5.3	5.9	S	2.4	2.4	1.8	1.8	2.4	2.4	3.0	2.4	2.4	2.4	1.8	0.6	0.6	5.9	2.1	24		
22	1.3	1.8	0.6	1.8	1.2	0.6	0.1	0.1	0.6	0.6	S	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.6	0.6	0.6	0.6	0.6	1.3	0.1	1.8	0.8	24		
23	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	S	1.3	1.3	1.3	1.8	1.8	1.3	1.3	1.2	0.6	0.6	0.6	0.6	0.6	0.6	1.8	0.9	24		
24	0.6	0.6	0.6	0.6	0.6	0.6	0.6	1.2	S	6.5	3.0	6.5	7.1	1.8	1.8	1.3	1.3	1.3	1.2	1.3	1.2	1.3	3.5	3.5	3.5	0.6	7.1	2.2	24	
25	2.4	2.4	2.4	2.4	2.4	3.0	3.0	S	3.0	3.0	3.0	2.4	2.4	2.4	1.8	1.8	1.3	1.3	1.3	1.3	1.3	1.3	1.2	2.4	1.2	3.0	2.1	24		
26	3.0	3.0	2.4	1.8	1.8	1.8	S	8.8	8.2	6.4	4.1	3.5	3.0	2.4	4.1	4.7	1.3	1.8	1.8	2.4	2.4	1.3	1.2	0.6	0.6	8.8	3.1	24		
27	1.8	1.2	0.6	0.6	0.6	S	8.8	8.2	8.2	6.4	6.5	5.9	5.3	8.2	6.5	4.7	3.0	8.2	1.8	1.2	2.4	3.5	7.7	3.0	0.6	8.8	4.5	24		
28	3.5	4.1	3.0	3.5	S	5.3	5.3	5.9	3.0	4.1	10.6	8.8	7.6	4.7	5.3	3.0	7.1	7.6	4.7	2.4	3.0	2.4	3.0	2.4	2.4	10.6	4.8	24		
29	2.4	1.8	1.3	S	1.8	3.5	4.1	3.0	2.4	1.8	2.4	3.0	2.4	2.4	1.3	1.8	1.8	0.6	0.6	0.6	0.6	0.6	2.4	12.9	0.6	12.9	2.5	24		
30	2.4	1.8	S	3.0	3.0	2.4	2.4	1.8	1.8	1.8	7.6	19.4	45.7	41.6	11.8	6.4	2.4	1.8	5.9	2.4	1.8	1.8	2.4	3.0	1.8	45.7	7.6	24		
31	1.8	S	5.9	5.9	5.9	5.9	3.0	2.4	3.5	1.8	1.8	1.3	1.3	3.0	6.4	4.7	3.0	1.3	5.3	4.7	0.6	2.4	1.8	5.3	0.6	6.4	3.4	24		
HOURLY MAX	24.7	21.1	34.0	30.5	12.3	38.7	50.4	46.4	62.1	39.3	24.7	19.4	45.7	41.6	17.0	18.2	26.9	9.4	5.9	7.6	10.0	8.8	8.2	18.8						
HOURLY AVG	3.1	3.4	4.8	3.8	3.1	5.9	6.7	9.8	10.4	7.0	6.0	4.9	5.5	6.5	3.8	3.6	3.3	2.8	2.2	2.3	2.4	2.2	2.3	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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	699
MAXIMUM INSTANTANEOUS VALUE:	62.1 PPB @ HOUR(S) 8 ON DAY(S) 2
	VAR-VARIOUS
IZS CALIBRATION TIME:	31 HRS
MONTHLY CALIBRATION TIME:	7 HRS
OPERATIONAL TIME:	742 HRS
STANDARD DEVIATION:	6.65

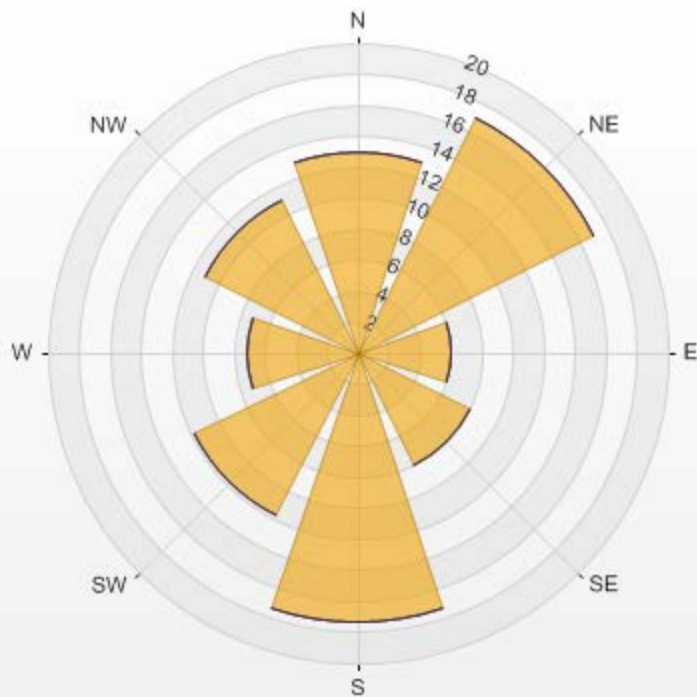
NOX MAX[ppb] Station: LICA MASKWA Monthly: 05/2016 Type: AVG 1 Hr. [1 Hr.]



— NOX MAX[ppb]

Wind: LICA MASKWA Monitor: NOX [ppb] Monthly: 05/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 8.36% Valid Data: 94.89% Calm Avg: 0.00

Direction	0.5-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	13.03	0	0	0	13.03
NE	17	0	0	0	17
E	6.09	0	0	0	6.09
SE	8.07	0	0	0	8.07
S	17.42	0	0	0	17.42
SW	11.76	0	0	0	11.76
W	7.22	0	0	0	7.22
NW	11.05	0	0	0	11.05
Summary	91.64	0	0	0	91.64



% Icon Classes (ppb)	92	0.5-50.0	0	50.0-110.0	0	110.0-210.0	0	>210.0



NOX[ppb] Calibration: LICA MASKWA Monthly: 05/2016 Type: Span



Span Meas

Span Ref

-10%

+10%

***NITRIC OXIDES***

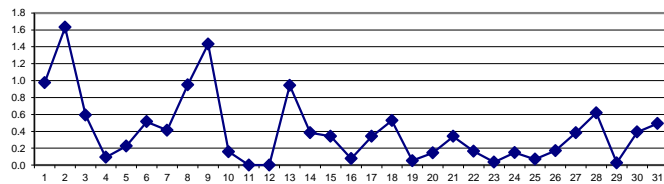
NITRIC OXIDE (NO) hourly averages in ppb

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	0.2	0.3	0.4	0.5	1.6	3.1	4.4	3.9	2.9	1.5	0.7	0.5	0.2	0.2	0.7	0.5	0.1	0.3	S	0.3	0.0	0.0	0.1	0.0	0.0	0.0	4.4	1.0	24
2	0.1	0.1	0.1	0.1	0.0	1.1	2.2	8.7	15.2	5.0	1.6	1.3	0.6	0.5	0.3	0.1	0.4	0.1	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.2	1.6	24
3	0.0	0.0	0.0	0.0	0.1	5.7	1.3	1.3	0.8	1.4	0.6	0.1	0.3	0.5	0.6	0.4	0.2	S	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.7	0.6	24
4	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.4	0.7	0.1	0.4	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	0.7	0.1	24
5	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.6	0.4	0.2	1.1	1.3	S	0.5	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.2	24
6	0.0	0.0	2.2	0.0	0.1	1.6	2.2	1.6	1.3	0.5	0.3	1.1	0.2	0.0	S	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	0.5	24
7	0.1	0.0	0.0	0.2	0.3	0.4	0.4	0.9	1.1	1.3	1.2	0.7	0.6	S	0.6	0.4	0.4	0.3	0.1	0.1	0.0	0.0	0.3	0.1	0.0	0.0	1.3	0.4	24	
8	0.2	0.3	0.1	0.2	0.3	1.0	6.6	2.7	2.2	3.3	1.5	0.4	S	0.2	0.2	0.0	0.3	0.0	0.1	0.3	0.3	0.2	0.4	1.0	0.0	0.0	6.6	0.9	24	
9	2.3	1.7	5.5	4.6	0.1	0.2	0.8	0.7	2.4	0.6	3.2	S	1.5	3.9	2.4	1.9	0.0	0.0	0.2	0.1	0.3	0.3	0.1	0.1	0.0	0.0	5.5	1.4	24	
10	0.1	0.3	0.0	0.0	0.1	0.3	0.5	0.5	0.6	C	C	C	C	C	C	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.6	0.2	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	S	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	S	0.0	0.0	0.0	0.0	0.0	24	
13	0.0	0.0	0.0	0.0	0.0	0.5	1.2	13.5	4.4	0.2	0.9	0.2	0.2	0.1	0.1	0.1	0.0	0.3	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	13.5	0.9	24	
14	0.0	0.0	0.0	0.0	0.0	0.0	1.2	3.9	1.4	0.1	0.2	0.4	0.3	0.4	0.2	0.2	0.1	0.4	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.9	0.4	24	
15	0.0	0.0	0.0	0.0	0.0	0.1	S1	1.2	5.6	0.1	0.0	0.2	0.1	0.1	0.1	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.6	0.3	23	
16	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.4	0.5	0.0	0.1	0.0	0.0	0.0	0.0	S	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.5	0.1	24	
17	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.4	0.7	1.7	2.4	0.8	0.1	0.2	S	0.6	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.3	24	
18	0.0	0.0	0.0	0.0	0.0	0.4	1.9	7.2	0.6	0.3	0.2	0.2	0.6	0.3	S	0.2	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.2	0.5	24	
19	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.2	0.1	0.0	0.1	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.4	0.1	24	
20	0.1	0.0	0.2	0.2	0.3	0.3	0.2	0.2	0.1	0.2	0.2	0.1	S	0.1	0.1	0.2	0.2	0.1	0.0	0.3	0.0	0.0	0.0	0.2	0.0	0.0	0.3	0.1	24	
21	0.1	0.0	0.0	0.2	0.1	0.2	0.3	0.4	0.6	0.9	0.8	S	0.5	0.4	0.5	0.3	0.5	0.5	0.5	0.2	0.1	0.1	0.2	0.4	0.0	0.0	0.9	0.3	24	
22	0.1	0.3	0.3	0.2	0.0	0.3	0.0	0.0	0.0	0.1	S	0.3	0.3	0.5	0.1	0.1	0.2	0.3	0.1	0.3	0.0	0.1	0.0	0.2	0.0	0.0	0.5	0.2	24	
23	0.1	0.2	0.2	0.1	0.1	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	0.2	0.0	24	
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.7	0.3	0.8	1.5	0.1	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	
25	0.0	0.0	0.0	0.0	0.0	0.2	0.6	S	0.6	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	0.6	0.1	24	
26	0.0	0.0	0.0	0.0	0.0	0.2	S	1.8	1.3	0.4	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	1.8	0.2	24	
27	0.0	0.0	0.0	0.0	0.0	S	0.4	1.3	0.7	0.6	1.1	0.7	0.5	0.7	0.4	0.4	0.3	0.5	0.0	0.1	0.3	0.3	0.4	0.1	0.0	1.3	0.4	24		
28	0.4	0.4	0.4	0.4	S	0.9	1.1	0.8	0.5	0.7	2.7	2.8	1.0	0.5	0.5	0.3	0.1	0.5	0.1	0.0	0.1	0.0	0.0	0.0	0.0	2.8	0.6	24		
29	0.0	0.0	0.0	S	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	0.5	0.0	0.5	0.0	24		
30	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.6	0.6	3.2	3.1	0.6	0.6	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2	0.4	24	
31	0.0	S	0.4	0.3	0.5	0.6	0.5	0.5	0.7	0.5	0.5	0.5	0.5	0.6	0.8	0.7	0.6	0.5	0.7	0.5	0.1	0.5	0.4	0.4	0.0	0.0	0.8	0.5	24	
HOURLY MAX	2.3	1.7	5.5	4.6	0.5	5.7	6.6	13.5	15.2	5.0	3.2	2.8	3.2	3.9	2.4	1.9	0.6	0.5	0.7	0.5	0.3	0.5	0.4	1.0						
HOURLY AVG	0.1	0.1	0.3	0.2	0.1	0.5	0.9	1.7	1.5	0.8	0.7	0.5	0.5	0.5	0.3	0.3	0.2	0.2	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

24 HOUR AVERAGES FOR May 2016



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	369				
MINIMUM 1-HR AVERAGE:	0.0	PPB @ HOUR(S)	VAR	ON DAY(S)	ALL
MAXIMUM 1-HR AVERAGE:	15.2	PPB @ HOUR(S)	8	ON DAY(S)	2
MAXIMUM 24-HR AVERAGE:	1.6	PPB		ON DAY(S)	2
				VAR-VARIOUS	
IZS CALIBRATION TIME:	31	HRS	OPERATIONAL TIME:	743	HRS
MONTHLY CALIBRATION TIME:	6	HRS	AMD OPERATION UPTIME:	99.9	%
STANDARD DEVIATION:	1.15		MONTHLY AVERAGE:	0.4	PPB

NO[ppb] Station: LICA MASKWA Monthly: 05/2016 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	0.5	0.5	0.5	0.5	0.5	3.4	3.9	13.4	5.7	3.4	2.3	1.1	0.5	0.5	0.5	1.1	0.5	0.5	0.5	0.5	S	0.5	0.0	0.5	0.5	0.0	0.0	13.4	1.8	24
2	0.5	0.5	0.5	0.5	0.5	2.3	3.4	20.4	38.6	8.1	2.8	1.7	1.7	5.1	1.1	0.5	0.5	0.5	S	0.0	0.0	0.5	0.0	0.0	0.0	0.0	38.6	3.9	24	
3	0.0	0.0	0.0	0.0	0.5	22.2	3.4	2.3	1.1	16.8	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	S	0.5	0.5	0.0	0.5	0.5	0.5	0.0	22.2	2.3	24	
4	0.0	0.0	0.5	0.5	0.0	0.5	1.1	0.5	1.1	1.1	0.5	1.1	0.5	0.5	0.5	1.1	S	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	1.1	0.6	24	
5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	1.7	1.1	0.5	16.2	1.7	S	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	0.5	0.0	16.2	1.3	24	
6	0.5	0.5	12.8	0.0	0.5	3.4	3.9	3.9	9.3	2.8	1.7	5.1	1.1	1.1	S	2.8	2.3	1.1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	12.8	2.4	24	
7	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.7	1.7	1.7	1.1	0.5	S	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	0.5	0.5	0.5	0.0	1.7	0.7	24	
8	0.5	0.5	0.5	0.5	0.5	3.9	20.4	6.3	5.1	12.8	3.9	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	4.6	0.5	20.4	2.8	24	
9	6.3	4.6	8.7	13.4	1.1	0.5	2.3	2.3	9.9	2.8	11.1	S	6.3	9.9	8.1	8.1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	13.4	4.3	24	
10	0.5	0.5	0.5	0.0	0.5	0.5	0.5	0.5	1.1	C	C	C	C	C	C	C	C	0.5	0.5	0.5	0.5	0.5	0.5	S	0.5	0.0	1.1	0.5	24	
11	0.5	0.5	0.5	0.5	0.5	0.5	1.1	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	0.5	0.5	0.5	1.1	0.5	24
12	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	0.5	0.5	0.5	0.5	0.5	24
13	0.5	0.5	0.5	0.5	0.5	1.1	2.3	24.0	14.6	1.7	2.8	1.1	1.1	1.1	1.1	1.1	0.5	2.3	0.5	S	0.5	0.5	0.5	0.5	0.5	0.5	24.0	2.6	24	
14	0.5	0.5	0.5	0.5	0.5	1.1	2.8	8.1	2.8	1.1	1.7	1.7	1.7	1.7	1.1	1.1	1.7	2.3	S	0.5	0.5	0.5	0.0	0.5	0.0	8.1	1.5	24		
15	0.5	0.5	0.5	0.5	0.5	S1	S1	8.7	0.5	0.5	1.1	1.1	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	8.7	0.9	22	
16	0.5	0.5	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1	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	1.1	0.6	24	
17	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.7	1.1	1.6	3.4	3.9	2.3	0.5	1.1	S	19.2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	19.2	1.8	24	
18	0.5	0.5	0.5	0.0	0.5	1.7	3.9	13.4	6.9	1.7	1.7	1.7	1.7	1.1	S	1.1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	13.4	1.8	24	
19	0.5	0.5	0.5	0.5	0.0	0.5	0.5	0.5	0.5	0.0	0.5	0.5	0.5	S	0.5	0.0	0.5	0.5	0.5	0.5	0.5	0.5	0.0	0.5	0.5	0.0	0.5	0.4	24	
20	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	0.5	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	24
21	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.1	1.7	1.1	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	0.5	0.5	1.7	0.6	24	
22	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	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	24
23	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	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	24
24	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	S	2.3	1.1	2.3	2.8	1.1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2.8	0.8	24	
25	0.5	0.5	0.5	0.5	0.5	1.1	1.1	S	1.1	1.1	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	1.1	0.6	24	
26	0.5	0.5	0.5	0.5	0.5	1.1	S	2.8	2.3	1.1	1.1	0.5	0.5	0.5	1.1	1.1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2.8	0.8	24	
27	0.5	0.5	0.5	0.5	0.5	S	2.3	2.3	2.3	1.7	1.7	1.7	1.1	2.8	1.7	1.1	0.5	1.1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2.8	1.1	24	
28	0.5	0.5	0.5	0.5	S	1.1	1.1	1.7	0.5	1.6	4.5	3.4	2.8	1.1	1.1	1.1	1.1	1.1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	4.5	1.2	24	
29	0.5	0.5	0.5	S	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	3.4	0.5	3.4	0.7	24	
30	0.5	0.5	S	0.5	0.5	0.5	0.5	0.5	1.1	1.1	2.3	3.9	24.5	21.6	3.9	2.3	0.5	0.5	1.1	0.5	0.5	1.1	0.5	0.5	0.5	0.5	24.5	3.0	24	
31	0.5	S	0.5	0.5	1.1	1.1	0.5	0.5	1.7	0.5	0.5	0.5	0.5	1.1	2.3	1.7	1.1	0.5	1.7	1.1	0.5	1.1	0.5	0.5	0.5	0.5	2.3	0.9	24	
HOURLY MAX	6.3	4.6	12.8	13.4	1.1	22.2	20.4	24.0	38.6	16.8	11.1	5.1	24.5	21.6	8.1	8.1	19.2	2.3	1.7	1.1	0.5	0.5	0.5	0.5	4.6					
HOURLY AVG	0.7	0.6	1.2	0.9	0.5	1.8	2.1	3.9	4.1	2.4	1.8	1.4	2.0	2.6	1.2	1.1	1.3	0.7	0.6	0.5	0.5	0.5	0.5	0.5	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:	680
MAXIMUM INSTANTANEOUS VALUE:	38.6 PPB @ HOUR(S) 8 ON DAY(S) 2
	VAR-VARIOUS
IZS CALIBRATION TIME:	31 HRS
MONTHLY CALIBRATION TIME:	7 HRS
STANDARD DEVIATION:	3.15
OPERATIONAL TIME:	742 HRS

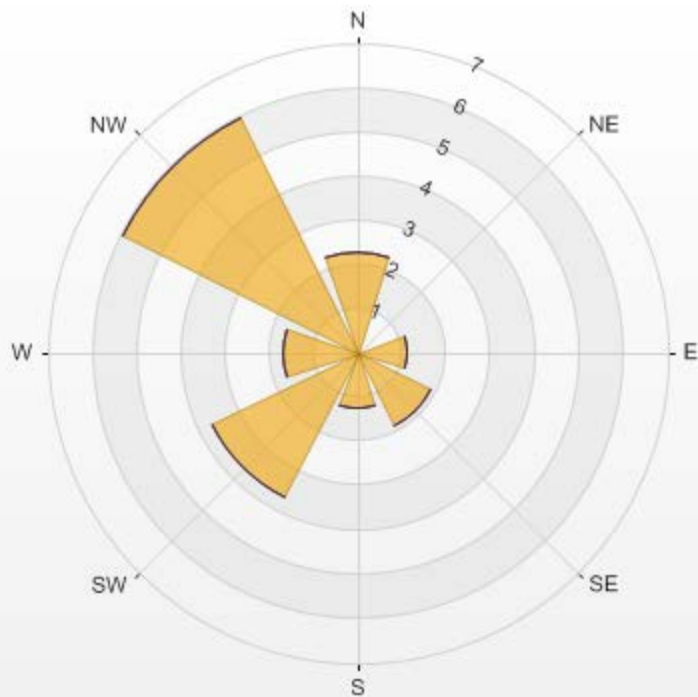
NO MAX[ppb] Station: LICA MASKWA Monthly: 05/2016 Type: AVG 1 Hr. [1 Hr.]



— NO MAX[ppb]

Wind: LICA MASKWA Monitor: NO [ppb] Monthly: 05/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 82.15% Valid Data: 94.89% Calm Avg: 0.00

Direction	0.5-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	2.27	0	0	0	2.27
NE	0	0	0	0	0
E	1.13	0	0	0	1.13
SE	1.84	0	0	0	1.84
S	1.27	0	0	0	1.27
SW	3.68	0	0	0	3.68
W	1.7	0	0	0	1.7
NW	5.95	0	0	0	5.95
Summary	17.84	0	0	0	17.84



% Icon Classes (ppb)	18	 0.5-50.0	0	 50.0-110.0	0	 110.0-210.0	0	 >210.0
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***NITROGEN DIOXIDE***

NITROGEN DIOXIDE (NO2) 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 MIN.	DAILY MAX.	24-HOUR AVG.	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				
1	1	3.0	4.0	7.5	9.0	9.0	12.5	9.9	8.9	7.6	6.1	4.4	2.2	0.9	0.5	0.4	1.4	0.3	0.6	0.3	S	2.4	1.9	2.8	3.4	0.3	12.5	4.3	24
2	2	3.3	4.1	7.3	3.2	4.1	4.9	3.7	8.6	14.6	8.4	3.2	2.9	1.8	1.4	0.9	1.1	0.8	0.8	S	2.3	1.8	1.7	1.6	1.6	0.8	14.6	3.7	24
3	3	1.5	1.3	1.9	1.8	1.8	5.4	2.4	2.8	3.1	3.7	1.9	1.5	1.1	0.7	0.8	0.9	0.6	S	2.6	2.5	5.5	2.5	1.9	2.4	0.6	5.5	2.2	24
4	4	2.9	3.3	3.4	3.0	2.8	2.4	2.4	3.0	3.5	4.4	3.8	4.9	1.0	0.6	0.6	2.1	S	2.8	1.8	1.6	1.4	1.5	1.0	3.0	0.6	4.9	2.5	24
5	5	3.4	3.0	2.6	2.3	2.8	1.5	0.8	4.4	3.7	3.7	3.6	4.7	3.0	3.9	4.0	S	3.1	2.2	1.9	1.8	1.8	3.6	4.5	2.9	0.8	4.7	3.0	24
6	6	1.8	0.9	10.2	1.3	3.5	11.6	6.8	3.8	3.1	1.3	0.9	2.4	0.8	0.5	S	3.5	2.8	1.2	0.7	0.7	1.2	0.9	1.1	1.0	0.5	11.6	2.7	24
7	7	2.0	2.5	2.5	1.8	1.7	1.3	0.7	2.3	3.4	4.4	3.5	2.5	1.7	S	3.5	1.6	1.0	1.1	1.2	1.3	1.8	1.9	2.8	2.2	0.7	4.4	2.1	24
8	8	1.5	2.6	3.2	2.8	1.9	4.2	15.3	7.8	5.9	7.4	3.8	0.2	S	3.1	1.7	1.3	0.9	0.6	0.6	1.2	3.0	0.8	0.8	4.2	0.2	15.3	3.3	24
9	9	14.0	13.6	13.2	8.2	1.1	0.5	2.6	2.1	3.8	1.8	5.0	S	5.8	7.1	4.7	4.1	1.3	1.2	1.0	1.3	0.5	0.8	2.4	2.5	0.5	14.0	4.3	24
10	10	2.4	2.1	1.7	1.5	1.9	2.7	2.4	1.1	1.3	C	C	C	C	C	C	3.1	1.1	0.5	0.7	0.7	0.6	0.6	S	2.9	0.5	3.1	1.6	24
11	11	1.3	0.9	0.7	0.7	0.8	1.8	1.7	0.3	0.7	0.6	0.5	0.4	0.4	0.7	0.5	0.5	0.5	0.6	0.6	0.6	S	2.7	1.7	0.3	2.7	0.9	24	
12	12	1.1	1.1	1.0	1.5	1.6	1.6	1.0	1.4	0.4	0.4	0.3	0.2	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	S	2.6	1.2	0.7	0.0	2.6	0.7	24
13	13	0.9	1.4	1.8	2.3	4.6	5.0	4.6	15.8	6.9	1.1	2.9	1.3	1.4	1.9	1.7	2.1	1.4	3.1	1.6	S	4.1	2.4	1.9	1.9	0.9	15.8	3.1	24
14	14	2.2	3.7	3.7	3.2	4.9	4.3	6.5	9.9	5.1	1.7	1.3	1.4	1.5	1.9	1.4	1.7	0.8	2.2	S	4.7	1.9	1.2	1.2	1.2	0.8	9.9	2.9	24
15	15	1.2	1.2	1.6	2.7	3.1	3.3	S1	9.2	14.7	1.9	2.0	2.7	3.0	2.4	1.7	1.4	0.8	S	3.5	2.2	1.8	1.8	1.3	1.4	0.8	14.7	3.0	23
16	16	1.6	2.1	1.8	1.8	1.2	1.1	1.4	2.0	3.6	3.3	1.9	1.6	1.2	0.7	0.6	0.6	S	2.8	1.4	1.1	1.2	1.2	1.2	1.3	0.6	3.6	1.6	24
17	17	1.8	2.3	2.3	2.5	2.4	2.7	2.9	2.9	2.5	3.1	4.9	7.4	4.1	2.0	1.8	S	3.1	2.2	2.2	2.8	1.4	2.1	1.7	1.5	1.4	7.4	2.7	24
18	18	2.1	6.6	4.6	3.2	2.2	5.0	6.2	12.9	2.7	2.2	2.1	2.1	2.8	2.0	S	3.4	1.5	1.0	1.4	1.5	1.1	0.6	0.4	0.3	0.3	12.9	3.0	24
19	19	0.3	0.8	2.7	1.5	1.4	2.8	6.4	7.2	8.2	5.8	3.8	3.3	2.2	S	1.9	1.2	0.8	0.7	0.7	0.7	0.1	0.2	0.2	0.3	0.1	8.2	2.3	24
20	20	0.2	0.3	0.1	0.2	0.1	0.2	0.3	0.3	0.3	0.3	0.4	0.5	S	1.7	1.6	1.0	1.0	1.0	0.7	0.4	1.9	1.5	0.9	0.5	0.1	1.9	0.7	24
21	21	0.5	0.6	0.5	0.4	0.5	0.3	0.3	0.3	2.4	2.2	2.7	S	1.5	1.4	1.3	1.4	1.4	1.8	2.1	2.0	2.0	1.8	0.6	0.2	0.2	2.7	1.2	24
22	22	0.6	0.8	0.3	1.0	0.6	0.0	0.0	0.0	0.0	0.0	S	0.3	0.3	0.1	0.4	0.5	0.4	0.2	0.1	0.2	0.0	0.0	0.0	0.4	0.0	1.0	0.3	24
23	23	0.5	0.4	0.4	0.2	0.3	0.3	0.4	0.6	0.3	S	0.9	1.1	1.2	1.3	1.2	1.0	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.2	1.3	0.6	24
24	24	0.4	0.1	0.3	0.3	0.2	0.3	0.2	0.4	S	2.7	2.1	2.9	4.0	1.3	1.3	1.2	1.2	1.2	1.0	0.6	0.8	2.0	3.3	2.7	0.1	4.0	1.3	24
25	25	1.8	2.4	2.4	2.4	1.7	2.0	2.3	S	1.9	2.4	2.4	2.2	1.9	1.8	1.6	1.3	1.2	1.2	1.2	1.2	1.2	1.2	0.9	1.5	0.9	2.4	1.7	24
26	26	2.4	1.9	1.9	1.7	1.4	1.4	S	5.7	5.7	4.5	3.3	2.8	2.4	1.9	2.1	1.9	1.2	1.6	1.3	2.2	1.3	1.2	0.7	0.6	0.6	5.7	2.2	24
27	27	1.3	1.0	0.6	0.6	0.6	S	2.6	5.4	4.1	3.8	4.3	3.7	3.2	3.2	2.3	1.9	1.8	3.5	1.3	1.0	1.1	1.8	2.7	1.4	0.6	5.4	2.3	24
28	28	1.4	2.2	1.5	2.4	S	2.9	3.1	2.5	2.2	2.2	3.6	4.9	2.9	2.3	2.6	1.2	1.6	4.6	3.0	1.9	2.0	1.3	2.2	2.1	1.2	4.9	2.5	24
29	29	1.8	1.5	1.2	S	1.1	2.0	2.8	2.2	2.2	1.8	2.2	2.5	2.0	1.9	1.1	1.1	0.9	0.7	0.6	0.6	0.6	0.6	1.2	4.1	0.6	4.1	1.6	24
30	30	0.9	1.8	S	2.1	2.6	1.8	1.9	1.5	1.5	1.2	2.7	4.0	5.6	5.5	2.5	2.4	1.8	1.4	3.4	1.5	1.3	0.7	1.8	2.4	0.7	5.6	2.3	24
31	31	1.7	S	3.9	4.2	4.7	3.2	1.7	1.5	1.0	0.7	0.7	0.4	0.4	0.5	1.1	0.8	0.3	0.2	1.3	0.6	0.0	0.0	0.6	2.8	0.0	4.7	1.4	24
HOURLY MAX		14.0	13.6	13.2	9.0	9.0	12.5	15.3	15.8	14.7	8.4	5.0	7.4	5.8	7.1	4.7	4.1	3.1	4.6	3.5	4.7	5.5	3.6	4.5	4.2				
HOURLY AVG		2.0	2.4	2.9	2.3	2.2	3.0	3.2	4.2	3.9	2.9	2.6	2.4	2.1	1.9	1.6	1.6	1.2	1.4	1.3	1.4	1.5	1.4	1.5	1.8				

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

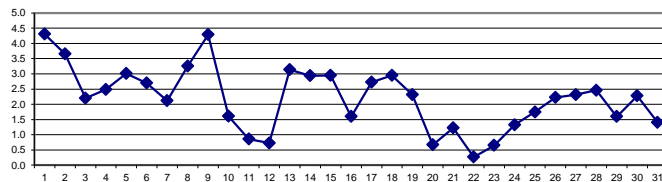
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR 159 PPB

MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0				
NUMBER OF NON-ZERO READINGS:	692				
MINIMUM 1-HR AVERAGE:	0.0	PPB	@ HOUR(S)	VAR	ON DAY(S)
MAXIMUM 1-HR AVERAGE:	15.8	PPB	@ HOUR(S)	7	ON DAY(S)
MAXIMUM 24-HR AVERAGE:	4.3	PPB			ON DAY(S)
					VAR-VARIOUS
IZS CALIBRATION TIME:	31	HRS	OPERATIONAL TIME:	743	HRS
MONTHLY CALIBRATION TIME:	6	HRS	AMD OPERATION UPTIME:	99.9	%
STANDARD DEVIATION:	2.19		MONTHLY AVERAGE:	2.2	PPB

24 HOUR AVERAGES FOR May 2016



NO2[ppb] Station: LICA MASKWA Monthly: 05/2016 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	DAILY	24-HOUR	
DAY	MIN.	MAX.	AVG.	RDGS.																									
1	3.3	6.7	8.5	9.7	11.5	13.9	10.3	11.5	10.3	6.7	5.6	3.2	1.5	0.9	0.9	3.3	0.9	1.5	0.9	S	3.8	2.1	3.3	4.4	0.9	13.9	5.4	24	
2	4.4	7.3	9.1	5.6	6.2	6.2	5.0	15.0	23.8	12.1	4.4	3.8	6.2	10.3	1.5	0.9	1.5	0.9	S	2.7	2.1	1.5	1.5	1.5	0.9	23.8	5.8	24	
3	1.5	1.5	2.1	2.1	2.1	17.3	5.0	5.0	4.4	10.3	2.7	2.1	2.1	1.5	1.5	1.5	0.9	S	3.3	5.0	6.7	4.4	2.1	2.7	0.9	17.3	3.8	24	
4	3.3	3.3	3.8	3.3	3.3	2.7	3.8	3.8	3.2	5.0	3.8	5.6	2.7	0.9	0.9	4.4	S	3.8	2.1	1.5	2.1	2.1	1.5	6.7	0.9	6.7	3.2	24	
5	6.7	5.0	4.4	3.8	3.8	2.7	1.5	6.2	4.4	5.0	11.5	9.7	4.4	26.1	6.7	S	5.0	3.8	2.7	2.7	2.1	8.5	7.9	4.4	1.5	26.1	6.0	24	
6	3.8	5.0	21.5	2.7	9.1	17.9	10.3	8.5	14.4	6.2	3.2	6.7	2.7	1.5	S	7.9	7.3	4.4	1.5	2.1	2.7	1.5	2.1	1.5	1.5	21.5	6.3	24	
7	2.7	3.3	3.3	2.7	2.7	2.1	1.5	4.4	4.4	5.6	5.0	3.8	2.7	S	7.3	3.3	2.1	2.1	2.1	2.1	2.1	2.7	3.3	3.3	3.3	1.5	7.3	3.3	24
8	2.7	3.8	3.8	3.8	2.1	14.4	32.0	18.5	12.7	26.1	9.7	0.9	S	5.0	2.7	1.5	0.9	0.9	1.5	2.7	9.7	0.9	0.9	13.9	0.9	32.0	7.4	24	
9	18.5	17.3	17.3	17.3	2.1	0.9	5.0	5.0	12.1	3.8	13.9	S	7.9	12.1	9.1	9.7	0.9	0.9	1.5	1.5	0.9	1.5	2.7	2.7	0.9	18.5	7.1	24	
10	2.7	2.1	2.1	1.5	1.5	3.3	2.7	1.5	2.1	C	C	C	C	C	C	C	C	0.9	0.3	0.3	0.3	0.3	0.3	S	5.0	0.3	5.0	1.7	24
11	1.5	0.9	0.3	0.3	0.9	1.5	1.5	0.3	0.3	0.3	0.3	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	3.8	0.9	0.0	3.8	0.6	24
12	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	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	S	5.0	1.5	0.9	0.0	5.0	0.7	24
13	0.9	1.5	2.1	2.7	5.6	6.2	5.0	22.6	16.7	3.3	5.0	1.5	2.7	2.7	2.1	2.7	2.1	6.7	3.8	S	7.3	2.7	2.1	2.1	0.9	22.6	4.8	24	
14	3.8	3.8	3.8	5.6	6.2	5.6	10.9	15.0	7.3	2.1	3.2	2.1	3.3	2.7	3.8	3.3	5.0	6.7	S	7.3	2.7	0.9	1.5	0.9	0.9	15.0	4.7	24	
15	0.9	1.5	2.1	2.7	3.3	3.8	S1	S1	20.3	3.2	2.7	3.3	3.8	3.2	2.1	2.1	1.5	S	6.2	2.1	2.1	1.5	1.5	1.5	0.9	20.3	3.4	22	
16	2.1	2.1	2.1	2.1	1.5	0.9	1.5	2.7	3.8	3.8	2.1	1.5	1.5	0.9	0.3	0.3	S	4.4	1.5	1.5	0.9	0.9	0.9	1.5	0.3	4.4	1.8	24	
17	2.1	2.1	2.1	2.7	2.7	2.7	2.7	3.8	2.1	3.3	6.7	8.5	5.6	2.1	2.7	S	10.3	2.7	3.3	6.7	1.5	2.1	1.5	1.5	1.5	10.3	3.5	24	
18	3.3	8.5	8.5	3.8	3.3	5.6	8.5	17.9	12.7	4.9	3.8	4.9	4.4	3.2	S	5.0	2.1	0.9	1.5	2.1	1.5	0.9	0.9	0.3	0.3	17.9	4.7	24	
19	0.3	2.1	4.4	2.1	2.1	5.6	7.9	8.5	9.1	7.9	5.0	3.8	3.2	S	2.7	2.1	1.5	1.5	0.9	0.9	0.9	0.9	0.9	0.3	0.3	9.1	3.2	24	
20	0.3	0.9	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	S	2.1	1.5	1.5	0.9	0.9	0.9	1.5	2.1	2.1	0.9	0.9	0.3	2.1	0.8	24	
21	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.9	3.8	3.8	4.4	S	2.1	2.1	2.1	1.5	2.1	2.1	2.7	2.1	2.1	2.1	1.5	0.3	0.3	4.4	1.6	24	
22	0.9	1.5	0.9	1.5	0.9	0.9	0.3	0.3	0.3	0.3	S	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.0	0.9	1.5	0.5	24	
23	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	S	0.3	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.9	0.5	24	
24	0.3	0.3	0.3	0.3	0.0	0.3	0.0	0.9	S	4.4	2.1	4.4	4.4	1.5	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	3.3	3.3	0.0	4.4	1.5	24	
25	2.1	2.1	2.1	2.1	2.1	2.1	2.1	S	2.1	2.1	2.1	2.1	2.1	2.1	1.5	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.5	0.9	2.1	1.6	24
26	2.7	2.7	2.1	1.5	1.5	0.9	S	6.2	6.2	4.9	3.2	2.7	2.7	2.1	3.2	3.8	0.9	1.5	1.5	2.1	2.1	0.9	0.9	0.3	0.3	6.2	2.5	24	
27	1.5	0.9	0.9	0.3	0.3	S	6.2	6.2	6.2	4.9	4.4	4.9	4.4	5.6	4.4	3.8	2.7	6.7	1.5	0.9	2.1	3.3	7.3	2.7	0.3	7.3	3.6	24	
28	3.2	3.8	3.2	3.8	S	4.4	4.4	4.4	2.7	3.2	5.6	5.6	5.0	3.8	3.8	2.1	5.6	6.2	4.4	2.1	2.7	2.1	3.2	2.1	2.1	6.2	3.8	24	
29	2.1	1.5	0.9	S	1.5	3.3	3.3	2.7	2.1	1.5	2.1	2.1	2.1	2.1	0.9	0.9	1.5	0.9	0.3	0.3	0.3	0.3	2.1	9.1	0.3	9.1	1.9	24	
30	2.1	1.5	S	2.7	2.7	2.1	2.1	1.5	1.5	1.5	4.9	15.6	21.4	20.9	7.3	3.8	2.1	1.5	5.0	1.5	1.5	1.5	2.1	2.7	1.5	21.4	4.8	24	
31	1.5	S	5.6	5.6	5.0	5.0	2.1	2.1	2.1	1.5	1.5	0.9	0.9	1.5	4.4	3.2	1.5	0.9	3.8	3.8	0.3	2.1	1.5	5.0	0.3	5.6	2.7	24	
HOURLY MAX	18.5	17.3	21.5	17.3	11.5	17.9	32.0	22.6	23.8	26.1	13.9	15.6	21.4	26.1	9.1	9.7	10.3	6.7	6.2	7.3	9.7	8.5	7.9	13.9					
HOURLY AVG	2.7	3.2	4.0	3.1	2.9	4.5	4.7	6.1	6.4	4.8	4.1	3.6	3.6	4.2	2.7	2.6	2.2	2.2	1.9	2.0	2.2	2.0	2.1	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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	683
MAXIMUM INSTANTANEOUS VALUE:	32.0 PPB @ HOUR(S) 6 ON DAY(S) 8
	VAR-VARIOUS
IZS CALIBRATION TIME:	31 HRS
MONTHLY CALIBRATION TIME:	7 HRS
STANDARD DEVIATION:	3.96
OPERATIONAL TIME:	742 HRS

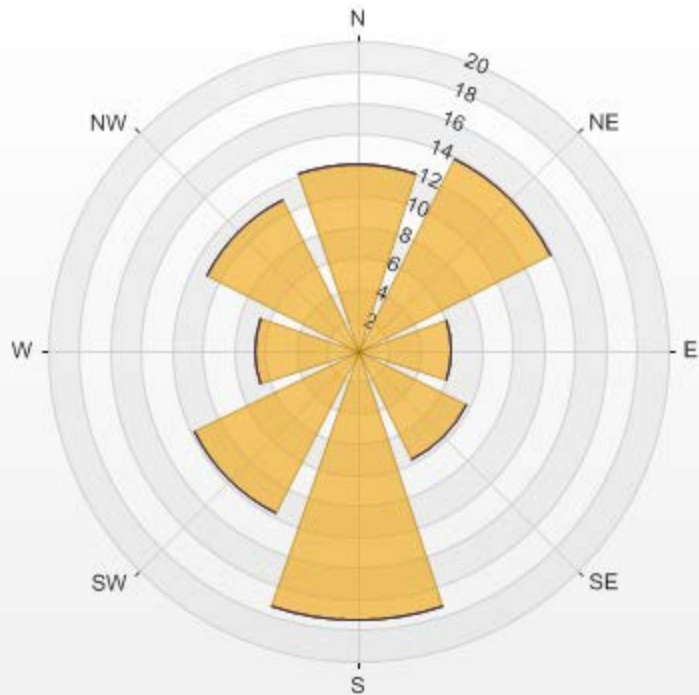
NO2 MAX[ppb] Station: LICA MASKWA Monthly: 05/2016 Type: AVG 1 Hr. [1 Hr.]



— NO2 MAX[ppb]

Wind: LICA MASKWA Monitor: NO2 [ppb] Monthly: 05/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 13.31% Valid Data: 94.89% Calm Avg: 0.00

Direction	0.5-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	12.04	0	0	0	12.04
NE	13.88	0	0	0	13.88
E	6.09	0	0	0	6.09
SE	7.93	0	0	0	7.93
S	17.42	0	0	0	17.42
SW	11.76	0	0	0	11.76
W	6.66	0	0	0	6.66
NW	10.91	0	0	0	10.91
Summary	86.69	0	0	0	86.69



NO2[ppb] Calibration: LICA MASKWA Monthly: 05/2016 Type: Span



Span Meas

Span Ref

-10%

+10%



***WIND SPEED***



WSP[kph] Station: LICA MASKWA Monthly: 05/2016 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		
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		13.3	10.9	9.3	11.3	11.8	10.3	12.5	13.8	13.4	21.0	22.7	31.2	29.2	36.5	32.8	32.3	27.5	22.9	21.4	12.2	5.2	5.6	6.1	4.5	4.5	4.5	36.5	17.4	24
2		3.4	3.0	10.0	10.7	6.7	5.8	5.0	6.3	8.2	18.3	17.6	18.8	20.7	20.5	22.7	25.3	21.6	20.9	20.1	17.4	9.3	6.3	3.9	1.5	1.5	1.5	25.3	12.7	24
3		7.0	3.3	3.4	1.9	2.6	2.3	3.4	7.3	14.6	15.2	25.3	25.3	25.5	38.6	28.8	29.0	25.5	24.0	20.7	14.6	16.3	15.7	16.6	14.4	1.9	38.6	15.9	24	
4		13.5	11.3	9.8	4.3	3.2	5.2	4.5	17.4	21.4	19.4	25.1	31.6	36.5	41.1	40.9	34.4	33.1	34.2	26.9	11.8	13.7	13.0	14.8	26.6	3.2	41.1	20.6	24	
5		33.9	28.2	30.8	33.0	35.4	27.3	35.0	27.9	26.6	22.0	20.3	24.2	11.1	9.8	14.1	16.4	24.7	24.2	18.5	15.0	12.6	18.1	10.9	9.0	9.0	35.4	22.0	24	
6		8.8	10.1	20.1	23.6	8.7	6.7	16.1	17.2	19.4	24.7	30.6	23.8	38.0	36.7	33.2	26.8	30.6	23.6	20.5	13.3	8.3	10.0	12.2	13.9	6.7	38.0	19.9	24	
7		14.8	11.6	14.9	9.0	2.6	4.1	3.6	19.2	15.2	20.1	20.1	19.4	23.8	19.2	27.0	24.6	21.8	16.5	10.6	8.2	14.8	15.9	20.7	17.4	2.6	27.0	15.6	24	
8		20.5	23.1	21.8	18.1	15.3	21.1	35.0	46.6	60.4	53.8	45.0	38.7	31.7	33.4	33.4	32.8	30.9	38.8	40.1	38.3	36.6	29.3	20.3	33.0	15.3	60.4	<b>33.3</b>	24	
9		26.4	36.1	34.6	34.3	41.1	25.3	29.7	31.9	31.9	32.1	28.6	28.0	32.0	31.8	45.6	24.0	22.5	21.2	23.6	19.9	28.6	18.1	16.4	14.6	14.6	45.6	28.3	24	
10		10.4	22.1	11.5	10.9	13.3	13.5	16.6	20.2	21.5	29.5	32.3	27.7	30.8	31.9	29.7	27.3	34.3	31.2	27.3	21.0	11.5	8.5	9.8	8.3	8.3	34.3	20.9	24	
11		7.1	5.9	4.3	5.7	2.6	8.7	19.0	27.5	28.2	31.0	32.8	28.4	27.9	37.4	40.9	39.3	36.3	40.0	36.3	31.5	28.0	18.6	8.1	3.4	2.6	40.9	22.9	24	
12		2.8	3.2	2.8	4.8	4.8	9.3	21.0	22.1	29.2	26.3	32.4	33.0	40.2	34.1	37.6	34.3	34.6	32.1	28.2	15.0	3.2	4.1	4.5	3.4	2.8	40.2	19.3	24	
13		5.9	3.7	4.5	4.3	4.5	4.8	9.6	10.0	13.9	18.3	19.4	18.3	18.8	20.5	21.4	20.1	22.6	15.8	13.4	6.6	8.3	10.4	3.6	5.2	3.6	22.6	11.8	24	
14		4.8	3.9	4.1	6.9	6.1	3.6	9.4	14.7	20.0	22.6	23.9	28.9	24.0	25.3	22.7	20.3	19.2	21.8	14.6	10.9	20.5	5.2	6.1	2.8	2.8	28.9	14.3	24	
15		5.2	6.1	5.0	4.8	4.1	4.8	4.1	8.1	10.3	12.3	19.3	17.1	24.6	38.4	19.4	23.1	46.5	20.5	17.0	13.0	6.9	5.0	5.8	7.8	4.1	46.5	13.7	24	
16		4.5	2.1	2.6	2.1	4.1	3.6	3.4	12.8	20.7	22.7	45.0	44.1	43.5	46.2	47.1	44.4	43.8	44.0	37.9	26.1	23.7	22.8	23.3	20.5	2.1	47.1	24.6	24	
17		28.1	17.0	14.6	18.6	14.8	18.3	20.7	15.2	17.0	14.1	11.1	12.2	15.0	20.1	15.4	17.6	16.1	15.2	17.4	21.8	5.4	10.9	9.6	7.1	5.4	28.1	15.6	24	
18		8.3	4.1	6.9	6.1	11.1	7.4	7.9	10.5	19.0	19.4	22.2	21.1	16.8	15.5	21.6	15.5	14.8	8.5	8.0	5.6	7.8	8.9	10.9	8.5	4.1	22.2	11.9	24	
19		6.7	8.0	5.8	9.1	9.1	23.4	20.7	24.4	26.4	39.8	32.8	30.8	35.1	36.9	38.7	45.4	44.6	51.1	47.0	44.6	42.6	41.3	46.1	42.1	5.8	51.1	31.4	24	
20		33.5	30.0	29.9	31.5	35.8	37.6	41.1	36.9	31.5	37.8	34.3	28.6	27.1	27.1	27.9	23.1	25.3	24.2	19.9	10.9	10.7	12.8	13.9	10.7	41.1	27.4	24		
21		9.3	10.0	8.9	9.1	9.0	7.9	11.6	10.9	14.8	13.9	14.8	11.8	<b>66.5</b>	9.6	6.9	5.2	5.0	5.6	5.2	6.7	4.7	8.5	10.7	8.7	4.7	<b>66.5</b>	11.5	24	
22		13.1	15.0	23.1	32.1	31.7	29.7	37.6	37.6	40.7	36.1	37.2	36.1	40.7	35.3	30.5	30.7	34.8	26.6	27.3	25.1	27.7	23.4	21.2	24.5	13.1	40.7	29.9	24	
23		19.2	17.7	21.0	18.1	18.8	16.6	22.7	25.3	25.8	29.8	32.5	30.4	30.2	29.1	36.1	34.3	34.6	33.0	28.2	22.9	20.3	23.6	13.5	5.2	5.2	36.1	24.5	24	
24		4.7	4.5	4.7	5.4	6.8	8.4	12.9	13.5	16.6	10.9	19.2	15.2	15.9	20.1	17.7	19.4	19.2	20.5	15.9	13.7	10.7	12.2	19.0	21.8	4.5	21.8	13.7	24	
25		19.0	14.6	13.3	11.3	6.3	12.6	20.1	16.0	16.4	18.6	20.4	22.1	22.3	18.6	15.9	14.8	18.8	15.7	12.2	10.7	7.6	7.8	6.7	10.7	6.3	22.3	14.7	24	
26		12.6	9.3	4.3	5.2	3.4	3.4	8.7	11.3	10.2	19.6	19.8	18.1	19.0	32.8	18.5	11.1	10.2	9.8	7.6	9.3	10.2	10.7	12.1	3.4	32.8	12.0	24		
27		9.2	7.5	10.1	11.8	12.8	13.3	14.8	25.3	26.0	26.2	33.0	32.5	34.5	32.6	45.7	34.1	34.8	35.4	25.5	12.8	13.3	10.9	14.6	7.4	7.4	45.7	21.8	24	
28		12.2	11.8	12.2	16.1	16.1	21.6	22.9	23.2	16.9	18.9	16.2	19.7	20.5	10.2	6.7	11.3	8.9	6.9	10.4	7.6	7.1	5.8	4.3	5.0	4.3	23.2	13.0	24	
29		8.3	6.3	3.4	3.2	5.0	5.0	6.5	7.4	7.4	8.9	8.3	20.0	13.6	15.1	22.0	21.8	24.2	23.3	15.2	11.8	10.0	5.2	10.2	10.4	3.2	24.2	11.4	24	
30		6.5	4.5	3.9	6.9	8.5	9.1	13.3	17.2	18.5	15.0	21.6	15.2	14.1	17.9	15.9	21.0	21.4	19.5	21.5	17.1	18.2	15.7	15.0	19.6	3.9	21.6	14.9	24	
31		11.3	12.8	13.9	15.5	17.9	15.9	18.1	21.2	25.1	25.3	23.6	24.9	23.6	25.5	19.4	19.0	19.0	11.1	24.4	11.5	11.5	11.3	11.1	12.7	11.1	25.5	17.7	24	
HOURLY MAX		33.9	36.1	34.6	34.3	41.1	37.6	41.1	46.6	60.4	53.8	45.0	44.1	66.5	46.2	47.1	45.4	46.5	51.1	47.0	44.6	42.6	41.3	46.1	42.1					
HOURLY AVG		12.4	11.5	11.8	12.4	12.1	12.5	16.4	19.3	21.5	23.3	25.4	25.1	27.5	27.3	26.9	25.3	26.0	23.8	21.5	16.6	14.7	13.3	12.9	12.8					

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

MAXIMUM INSTANTANEOUS VALUE:	66.5	KPH	@ HOUR(S)	12	ON DAY(S)	21
					VAR-VARIOUS	
OPERATIONAL TIME:					744	HRS

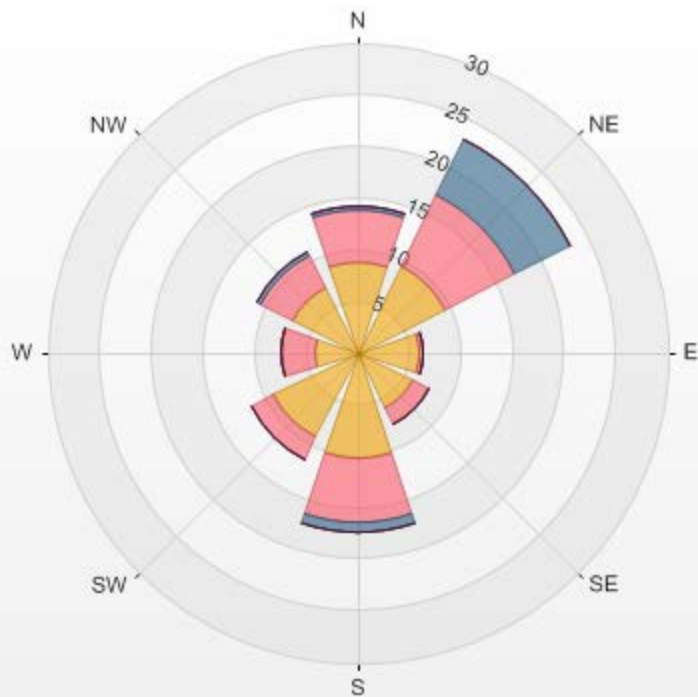
WS MAX[kph] Station: LICA MASKWA Monthly: 05/2016 Type: AVG 1 Hr. [1 Hr.]



— WS MAX[kph]

Wind: LICA MASKWA Monitor: WSP [kph] Monthly: 05/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 1.48% 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	8.87	4.97	0.4	0	0	0	14.24
NE	9.41	7.66	6.05	0	0	0	23.12
E	5.91	0.4	0	0	0	0	6.31
SE	6.05	1.61	0	0	0	0	7.66
S	10.22	6.18	0.94	0	0	0	17.34
SW	9.14	2.42	0	0	0	0	11.56
W	4.17	3.23	0	0	0	0	7.4
NW	7.12	3.49	0.27	0	0	0	10.88
Summary	60.89	29.96	7.66	0	0	0	98.51



% Icon	Classes (kph)	61	 0.5-6.0	30	 6.0-12.0	8	 12.0-20.0	0	 20.0-29.0	0	 29.0-39.0	0	 >39.0
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***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	SSW	SW	SW	SSW	SSW	SW	SW	SSW	SSW	SSW	SSW	SW	W	WNW	W	WNW	WNW	WNW	W	WSW	S	SSW	SW	SW	SW	SW	24
2	SE	S	SSW	SSE	SSW	S	W	WNW	NW	N	W	WSW	SW	SSW	SW	SSW	SSW	S	SSW	S	S	S	SSW	ENE	SSW	24	
3	E	E	WNW	SE	ESE	WNW	NNE	S	SSW	SW	SSW	SSW	SSW	SSW	SSW	SSW	S	SSE	SSE	SSE	SE	SE	S	S	S	24	
4	SE	SSE	SSW	E	E	ENE	NNE	S	S	SSW	SW	SW	W	W	W	WNW	WNW	WNW	WNW	WSW	N	N	N	NNW	W	24	
5	NNW	N	N	N	N	N	N	NNW	NNW	N	NW	NNW	NNW	SW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	WNW	24
6	SW	WSW	WNW	NNW	W	WSW	NW	NW	NW	NNW	NNW	WNW	NW	W	W	WNW	WNW	W	W	SW	S	S	SSW	S	W	24	
7	SSW	SSW	S	NNE	ENE	ENE	NNE	SSW	SW	SSW	SSW	SW	SSW	SSW	SSW	SSW	SSW	SSW	SSE	ESE	SE	SSE	SSE	SSE	S	24	
8	SSE	SSE	SSE	SSE	SSW	WNW	NW	NW	NW	NW	WNW	WNW	W	WNW	W	W	W	W	W	WNW	WNW	W	W	WNW	W	24	
9	WNW	WNW	NW	NW	NNW	NNW	NNW	NNW	NW	NNW	NW	NNW	NW	NNW	NW	NNW	N	N	N	NNW	N	NNW	N	NNW	N	NNW	24
10	N	N	N	N	N	N	N	NNW	NNW	NNE	N	N	N	N	NNE	N	NNE	NNE	NNE	NNE	NNE	NNE	NE	ENE	ENE	NNE	24
11	ENE	ENE	ENE	ENE	SSE	NE	NNE	NE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NE	ENE	ENE	SSW	NE	24	
12	SSW	ESE	SE	NE	NE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NE	NE	ENE	SSE	SSW	S	SSW	NE	24
13	SSW	SSE	SSW	SSW	S	SSW	W	WNW	NNW	WNW	WSW	WSW	NW	NW	N	NW	NW	WNW	N	NE	SE	SE	SE	SW	WSW	24	
14	SSW	S	SSW	SSW	SSW	S	W	WNW	NW	NW	NW	WNW	NW	NW	NW	NNW	NW	WNW	WSW	NE	E	S	S	WNW	24		
15	SSW	S	S	SSW	S	SSW	SSW	WNW	WNW	N	ESE	SW	NNW	WSW	SW	SSE	S	SSW	SSW	S	SSW	SSW	SSW	SSW	SSW	24	
16	SW	S	SSE	ESE	E	ENE	N	NNE	SSW	S	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	S	S	SSE	S	S	S	S	24	
17	S	S	S	S	S	S	S	SSW	SSW	SSW	SSW	NNE	NNE	NNE	NNE	W	W	WSW	WNW	N	SW	SW	WSW	SSW	SW	24	
18	SW	S	S	SSW	SSW	SW	WNW	WNW	NNW	NW	WNW	W	NW	NW	WNW	W	NNE	NE	ESE	NE	ENE	NE	NE	NW	24		
19	NNE	W	NE	ENE	NE	NE	NE	NNE	NNE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	24	
20	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	ENE	NE	NE	NE	NNE	NNE	NE	ENE	ESE	ENE	NNE	NE	NE	24	
21	NE	NE	NE	NE	NE	NE	ENE	ENE	E	ESE	ESE	SE	SW	SW	WSW	W	N	NNE	NNW	NNE	N	NNE	NNE	NNE	NE	24	
22	NNE	NNE	NNE	NNE	NNE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NNE	NE	24	
23	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NE	NE	NE	NE	ENE	NE	ESE	NNE	24
24	NE	N	NE	NNE	ENE	NE	NE	ENE	NE	E	ENE	ESE	S	S	S	S	SSE	SE	SE	SE	SE	SSE	SSE	SSE	ESE	24	
25	S	SSW	SSW	SSW	SSE	S	SSW	S	SSW	SSW	SSW	S	SSW	SSW	SSW	SSE	SSE	S	SSE	SE	SSE	SSE	S	S	S	24	
26	SSW	WSW	SW	S	S	SE	SW	SSW	SSW	S	S	SSW	SE	S	SW	NNE	N	NNE	NNE	NE	ENE	NE	ENE	ENE	S	24	
27	SSE	E	ENE	ENE	ENE	ENE	E	ESE	SE	ESE	ESE	ESE	ESE	SE	E	E	E	SE	SSW	SSW	ENE	E	ESE	ENE	ESE	24	
28	SE	E	ENE	ESE	ESE	ESE	ESE	SE	SE	E	E	ESE	ESE	W	N	WNW	NNW	NE	SW	SW	WSW	WNW	WNW	NNE	ESE	24	
29	NE	NNE	E	ENE	ENE	E	SE	S	S	WSW	NNW	NE	E	ENE	ENE	ENE	ENE	NE	ENE	ENE	ENE	ESE	WNW	WNW	ENE	24	
30	NNW	N	NE	ENE	NE	NNE	NNE	NE	NE	N	NW	WNW	NW	NNW	NW	N	N	NNW	NW	NNW	NNW	NNW	NNW	NNW	N	24	
31	N	NNW	N	NNW	NNW	N	N	NNE	NNE	N	N	NNE	N	N	NNW	N	N	SE	SE	SE	SSE	S	S	SSE	N	24	

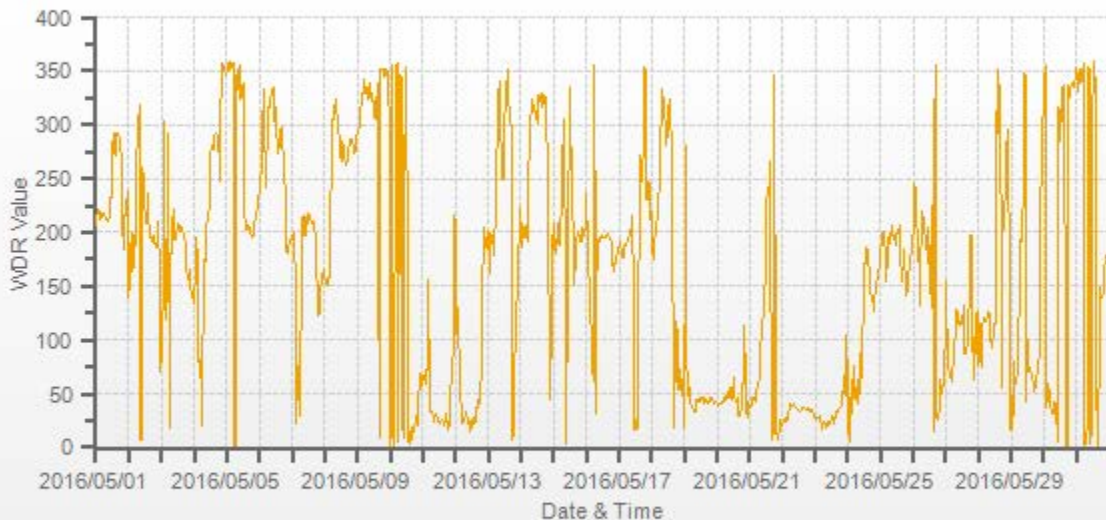
STATUS FLAG CODES

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:	744	HRS
STANDARD DEVIATION:	109.75		AMD OPERATION UPTIME:	100.0	%

WDR[Deg] Station: LICA MASKWA Monthly: 05/2016 Type: AVG 1 Hr. [1 Hr.]



— WDR[Deg]

***STANDARD DEVIATION WIND DIRECTION***



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Maskwa Site - May 2016

JOB # 2833-2016-05-30- 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		14	18	19	14	15	22	23	23	25	28	27	43	41	35	42	41	32	33	32	29	26	22	23	48	24	
2		29	31	26	26	52	65	60	36	59	46	80	57	62	51	60	47	24	27	20	13	12	19	68	61	24	
3		32	65	55	50	47	49	31	46	36	35	31	34	33	31	35	33	22	25	23	15	15	20	29	27	24	
4		24	22	36	50	48	18	49	38	42	38	32	32	40	36	41	34	32	29	28	37	65	27	31	38	24	
5		36	33	33	29	34	34	30	36	38	32	38	35	66	35	22	26	24	21	17	14	11	41	16	29	24	
6		30	33	38	38	54	32	40	36	37	43	44	45	49	48	38	48	41	38	31	9	11	11	11	13	24	
7		21	20	17	32	61	40	39	41	30	25	24	44	31	31	42	32	30	24	22	10	17	17	19	20	24	
8		19	21	24	43	26	39	36	40	39	37	34	35	40	36	38	42	41	42	34	32	33	34	29	32	24	
9		32	33	37	38	43	43	41	42	44	39	39	41	44	38	42	38	31	40	41	37	36	36	38	39	24	
10		32	29	21	32	30	28	31	43	41	26	32	40	38	35	27	38	23	22	18	17	37	24	19	20	24	
11		22	20	43	32	73	17	14	18	21	23	21	29	32	30	23	20	24	19	20	21	23	26	30	19	24	
12		34	62	64	56	38	18	19	21	23	28	23	29	23	21	22	27	26	34	29	25	33	14	25	20	24	
13		33	47	22	13	22	16	40	37	52	60	67	73	77	67	72	60	52	48	34	33	58	22	47	26	24	
14		16	18	13	20	16	29	38	43	46	38	51	53	47	48	45	48	46	43	43	52	58	41	49	45	24	
15		30	35	25	32	26	32	34	33	54	72	69	60	66	49	71	69	49	33	18	16	10	25	39	20	24	
16		46	41	36	48	23	22	50	44	25	28	27	28	26	24	21	25	22	24	25	25	23	22	23	22	24	
17		21	23	27	24	21	22	25	23	19	29	73	52	73	60	73	65	60	45	33	30	36	34	62	21	24	
18		38	20	22	16	11	17	39	36	41	52	48	46	64	72	65	45	38	26	27	21	29	23	18	20	24	
19		37	43	28	26	28	17	20	14	18	24	24	24	24	24	21	25	22	20	21	22	22	21	20	22	24	
20		20	18	21	20	21	22	25	23	25	27	31	27	37	31	27	30	23	15	16	37	36	49	21	18	24	
21		20	17	19	15	18	21	24	26	48	41	47	52	57	35	52	59	35	35	43	26	42	49	16	17	24	
22		17	16	15	18	14	15	23	21	21	22	20	19	17	17	18	19	20	19	17	19	16	17	17	15	24	
23		13	14	16	16	14	20	17	19	19	22	23	18	19	22	21	16	16	19	20	20	22	28	25	28	24	
24		35	64	62	38	33	27	24	36	27	50	41	52	54	43	67	57	40	39	37	28	17	14	18	22	24	
25		23	20	18	24	23	34	20	28	48	38	38	46	47	56	37	36	37	29	30	22	13	24	57	16	24	
26		16	20	31	41	37	75	39	39	61	35	47	45	30	25	29	30	34	21	50	22	18	18	26	36	24	
27		76	61	30	26	23	27	36	43	38	41	37	38	48	64	37	36	34	33	24	42	29	38	38	44	24	
28		34	53	53	36	31	34	34	37	28	33	35	40	58	66	41	53	44	24	30	44	38	47	52	63	24	
29		26	64	71	61	29	47	42	35	28	43	40	27	43	53	41	40	43	34	30	31	26	37	37	53	24	
30		53	33	28	22	21	26	16	19	26	33	71	45	43	40	41	45	35	46	43	43	44	44	42	43	24	
31		42	43	47	46	47	37	34	26	27	37	33	33	40	48	58	51	50	42	34	21	16	15	26	15	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: 1043 HRS

STDWD[Deg] Station: LICA MASKWA Monthly: 05/2016 Type: AVG 1 Hr. [1 Hr.]



— STDWD[Deg]

***RELATIVE HUMIDITY***

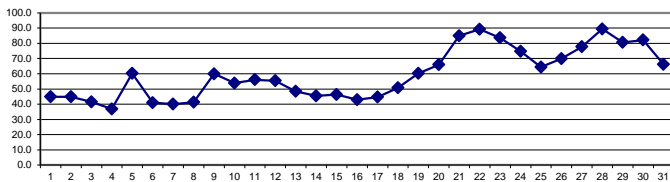
RELATIVE HUMIDITY (RH) hourly averages in %

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	
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		60	65	71	73	76	76	66	55	46	36	30	24	19	16	17	19	21	23	26	34	47	55	59	64	16	76	44.9	24
2		72	76	79	82	83	82	67	45	33	25	20	20	20	19	20	22	21	23	30	39	49	60	68	19	83	44.8	24	
3		73	77	82	85	87	86	69	48	35	29	25	22	20	18	17	16	15	16	18	24	29	30	34	39	15	87	41.4	24
4		43	46	54	67	74	73	62	46	39	33	27	24	11	<b>10</b>	12	14	16	16	19	28	40	43	42	45	<b>10</b>	74	36.8	24
5		44	42	41	36	42	47	49	55	55	59	68	72	82	78	72	66	59	56	58	65	73	74	73	78	36	82	60.2	24
6		76	74	75	65	72	75	60	46	35	26	21	18	16	17	17	17	18	20	23	31	45	49	46	42	16	76	41.0	24
7		45	54	53	66	71	72	67	53	41	39	35	28	24	23	17	17	18	20	26	38	40	36	37	39	17	72	40.0	24
8		40	41	47	53	63	66	55	46	42	38	34	32	31	32	30	24	20	18	22	34	45	53	60	65	18	66	41.3	24
9		71	74	75	73	75	75	72	67	62	55	53	50	49	51	47	47	46	45	48	53	58	62	65	65	45	75	59.9	24
10		71	70	70	72	73	72	69	57	55	53	45	41	38	35	34	31	32	33	36	41	56	65	68	74	31	74	53.8	24
11		82	87	89	90	90	89	76	62	55	45	39	36	33	30	30	28	29	33	36	39	47	55	67	79	28	90	56.1	24
12		86	88	86	87	88	86	66	51	47	43	39	34	34	33	30	27	29	29	32	41	57	67	73	77	27	88	55.4	24
13		80	82	83	85	85	81	67	47	32	26	25	23	21	21	21	20	20	21	24	36	50	64	72	77	20	85	48.5	24
14		80	81	84	85	83	83	65	41	29	22	20	19	18	20	21	20	20	20	22	30	40	54	64	70	18	85	45.5	24
15		74	80	83	87	89	88	77	49	31	24	21	19	18	18	17	18	18	19	21	28	44	55	64	68	17	89	46.3	24
16		75	83	87	90	91	89	71	53	37	33	25	22	19	18	17	17	17	18	23	29	31	33	36	17	91	43.0	24	
17		36	40	45	46	49	49	49	51	49	47	40	36	33	32	31	30	31	30	35	42	57	68	72	74	30	74	44.7	24
18		76	84	86	88	83	77	66	47	32	27	25	25	24	23	23	29	29	37	39	47	61	64	63	63	23	88	50.8	24
19		66	71	80	78	78	71	68	63	57	53	53	52	47	43	43	42	47	51	56	59	62	66	68	70	42	80	60.2	24
20		72	74	76	79	80	79	74	73	70	63	57	52	50	47	46	45	47	49	50	55	77	89	91	88	45	91	66.0	24
21		90	90	91	92	92	91	88	83	73	65	62	61	73	87	87	88	91	88	86	90	92	<b>93</b>	<b>93</b>	<b>93</b>	61	<b>93</b>	85.0	24
22		<b>93</b>	92	91	91	91	89	88	86	84	81	82	82	87	89	90	91	91	91	92	92	92	92	92	92	81	<b>93</b>	89.2	24
23		90	90	91	90	90	91	90	90	87	87	82	80	77	75	76	74	77	78	80	80	81	81	82	87	74	91	83.6	24
24		91	92	91	91	92	91	88	86	84	79	73	63	56	56	53	52	56	55	58	64	74	81	83	83	52	92	74.7	24
25		86	88	89	90	91	89	80	74	66	59	53	47	43	38	40	40	39	39	39	50	62	74	84	84	38	91	64.3	24
26		83	85	91	92	92	92	79	64	56	49	44	48	52	54	76	60	60	56	66	74	74	77	77	78	44	92	70.0	24
27		83	90	90	90	89	86	75	67	63	61	53	49	52	75	69	69	82	79	87	90	92	92	91	92	49	92	77.8	24
28		92	<b>93</b>	<b>93</b>	<b>93</b>	<b>93</b>	91	90	89	90	91	89	89	90	89	88	76	77	84	89	91	91	92	92	<b>93</b>	76	<b>93</b>	<b>89.4</b>	24
29		<b>93</b>	<b>93</b>	<b>93</b>	<b>93</b>	<b>93</b>	92	88	85	80	82	80	69	66	68	61	58	60	61	70	84	91	92	92	88	58	<b>93</b>	80.5	24
30		89	90	92	92	<b>93</b>	91	86	79	76	79	70	80	84	76	67	68	77	74	78	82	85	87	88	89	67	<b>93</b>	82.2	24
31		90	90	90	90	90	88	85	81	73	66	59	54	49	39	41	39	40	50	41	55	56	63	77	81	39	90	66.1	24
HOURLY MAX		93	93	93	93	93	93	92	90	90	91	89	89	90	89	90	91	91	91	92	92	92	93	93	93				
HOURLY AVG		74.3	76.8	79.0	80.4	81.9	80.9	72.8	62.6	55.5	50.7	46.8	44.6	43.2	42.9	42.5	40.8	42.0	42.8	45.5	52.1	60.6	66.2	69.7	72.3				

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

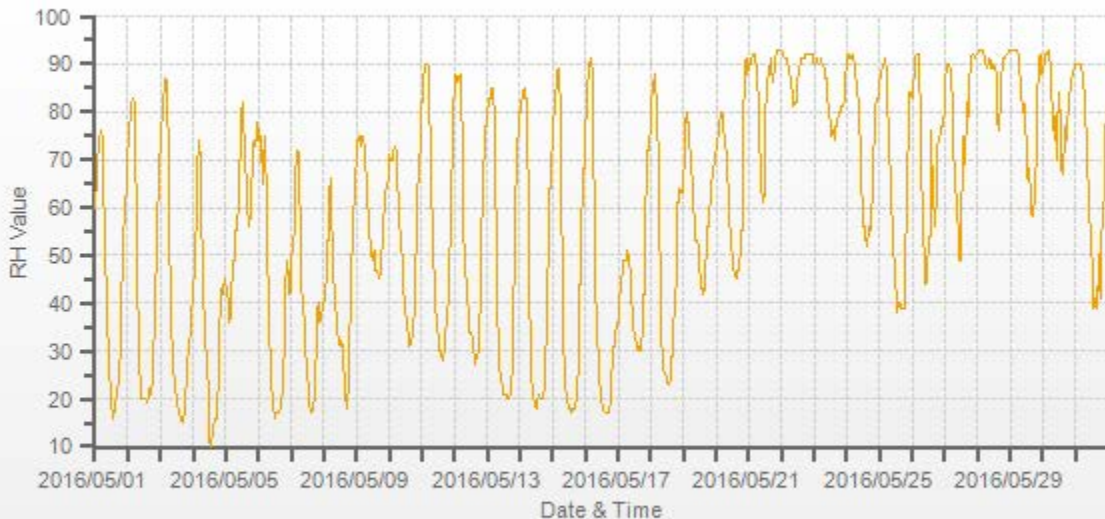
24 HOUR AVERAGES FOR May 2016



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	10	%	@ HOUR(S)	13	ON DAY(S)	4
MAXIMUM 1-HR AVERAGE:	93	%	@ HOUR(S)	VAR	ON DAY(S)	VAR
MAXIMUM 24-HR AVERAGE:	89.4	%			ON DAY(S)	28
					VAR-VARIOUS	
OPERATIONAL TIME:						744 HRS
AMD OPERATION UPTIME:						100.0 %
STANDARD DEVIATION:	24.47					
MONTHLY AVERAGE:						59 %

RH[%RH] Station: LICA MASKWA Monthly: 05/2016 Type: AVG 1 Hr. [1 Hr.]



— RH[%RH]



***BAROMETRIC PRESSURE***

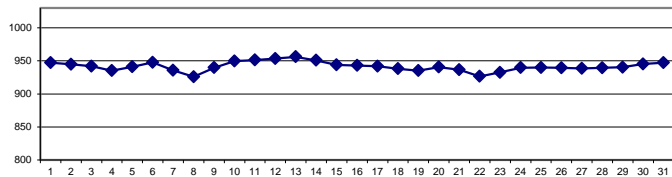
BAROMETRIC PRESSURE (BP) hourly averages in millibar

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 MIN.	DAILY MAX.	24-HOUR AVG.	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.	RDGS.		
1	1	949	949	949	949	949	949	949	949	949	949	949	948	947	947	946	946	946	945	945	945	944	944	944	944	944	944	949	947	24	
2	2	944	944	944	944	944	944	945	946	947	947	947	946	946	945	945	944	944	944	944	943	943	943	942	942	942	942	947	945	24	
3	3	942	942	942	942	942	942	943	944	944	944	944	944	943	943	942	941	941	940	940	939	939	939	939	938	938	938	944	942	24	
4	4	938	938	937	936	935	935	935	936	936	936	935	935	935	935	934	934	934	934	934	934	934	934	935	935	934	938	935	24		
5	5	936	937	937	937	938	938	939	940	941	941	942	942	942	943	943	943	943	943	943	943	943	944	944	944	944	936	944	941	24	
6	6	945	945	945	946	947	947	949	950	951	951	951	950	950	950	949	948	948	947	947	946	945	944	944	944	944	944	951	947	24	
7	7	943	943	942	941	940	939	939	939	939	938	937	937	937	936	935	934	933	932	931	930	929	928	927	926	926	926	943	936	24	
8	8	925	924	922	922	921	921	922	923	924	925	926	926	926	927	927	927	927	927	928	928	929	929	930	930	930	921	930	926	24	
9	9	931	932	933	934	935	936	936	937	938	938	939	940	940	941	942	942	943	943	944	944	945	946	946	946	946	931	946	940	24	
10	10	947	947	948	948	949	949	950	950	950	950	951	951	950	950	950	950	950	950	950	950	949	949	950	950	947	951	950	24		
11	11	950	950	950	950	951	951	952	952	952	952	951	951	951	951	951	951	951	951	951	951	952	952	952	951	950	952	951	24		
12	12	951	951	951	951	951	952	952	953	954	954	954	954	954	954	954	954	955	955	955	955	955	955	955	955	955	951	955	954	24	
13	13	955	955	956	956	956	956	957	958	958	959	958	958	958	957	957	956	956	956	955	955	954	954	953	953	953	953	959	956	24	
14	14	953	953	953	953	952	952	953	954	954	954	953	953	952	951	950	950	949	949	948	947	947	946	946	945	945	945	954	951	24	
15	15	945	945	945	944	944	944	944	945	946	946	946	945	945	944	944	944	943	943	943	943	942	942	942	942	942	942	946	944	24	
16	16	942	942	942	942	942	943	943	944	945	945	945	945	944	944	944	943	943	942	942	942	942	942	942	942	942	942	945	943	24	
17	17	942	942	942	942	942	942	942	942	943	943	943	943	943	942	942	941	941	941	941	941	941	940	940	940	940	940	940	943	942	24
18	18	939	939	939	939	939	939	939	940	940	940	940	939	939	938	938	937	937	937	936	936	935	935	935	935	935	935	940	938	24	
19	19	935	935	934	933	934	933	934	934	935	935	935	935	935	935	935	935	936	936	937	937	937	937	938	938	933	938	935	24		
20	20	938	939	939	939	939	939	939	939	940	940	941	942	942	942	942	942	942	941	942	942	942	941	940	940	940	938	942	941	24	
21	21	940	939	939	939	939	939	938	938	938	938	938	937	937	936	936	936	935	935	934	934	933	933	932	931	931	940	936	24		
22	22	930	930	928	927	926	926	926	926	925	925	925	925	925	925	925	926	926	926	927	927	928	928	927	927	925	930	927	24		
23	23	927	928	928	928	928	929	929	929	930	930	931	932	933	933	934	935	935	936	936	937	938	938	938	938	927	938	933	24		
24	24	938	938	938	939	939	939	940	940	940	940	941	941	941	941	941	940	940	940	940	939	939	939	939	939	938	941	940	24		
25	25	939	939	939	939	939	940	940	940	941	941	941	941	941	940	940	940	940	940	940	940	940	940	939	939	939	941	940	24		
26	26	939	939	939	939	939	939	940	940	940	941	941	940	940	940	939	939	939	939	939	939	938	938	938	938	938	938	941	939	24	
27	27	938	938	938	938	938	938	939	939	940	940	940	939	939	938	938	938	937	938	939	939	939	939	939	939	937	940	939	24		
28	28	939	939	938	938	938	939	939	939	939	939	939	940	940	940	940	940	940	940	940	940	940	940	940	939	938	940	939	24		
29	29	939	939	939	939	939	939	940	940	940	940	941	940	941	941	941	941	941	941	941	941	941	941	941	942	939	942	940	24		
30	30	942	942	942	942	942	943	943	944	945	945	945	945	945	946	947	947	947	947	947	947	947	948	948	948	942	948	945	24		
31	31	948	948	948	948	948	949	949	949	949	949	949	948	948	948	947	947	946	946	945	945	945	945	944	943	943	949	947	24		
HOURLY MAX		955	955	956	956	956	957	958	958	958	958	958	958	958	957	957	956	956	955	955	955	955	955	955	955	955	955	955	955	955	
HOURLY AVG		941	941	941	941	941	941	942	942	942	943	942	942	942	942	942	942	941	941	941	941	941	941	941	941	941	941	941	941	941	

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

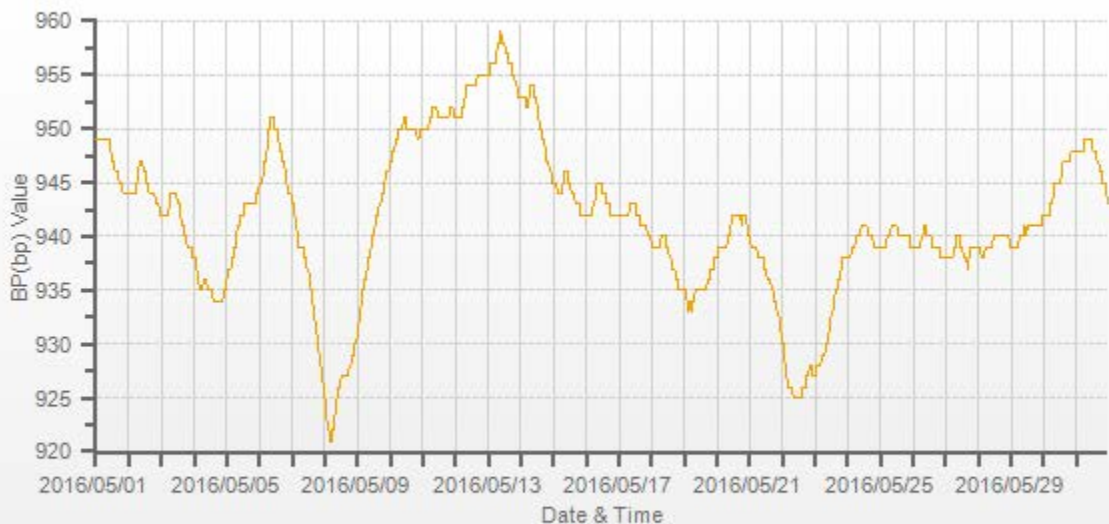
24 HOUR AVERAGES FOR May 2016



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	921	MB	@ HOUR(S)	4 , 5	ON DAY(S)	8 , 8
MAXIMUM 1-HR AVERAGE:	959	MB	@ HOUR(S)	9	ON DAY(S)	13
MAXIMUM 24-HR AVERAGE:	956	MB			ON DAY(S)	13
					VAR-VARIOUS	
				OPERATIONAL TIME:	744	HRS
				AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	7.19			MONTHLY AVERAGE:	941	MB

BP(bp)[mb] Station: LICA MASKWA Monthly: 05/2016 Type: AVG 1 Hr. [1 Hr.]



BP(bp)[mb]

***AMBIENT TEMPERATURE***

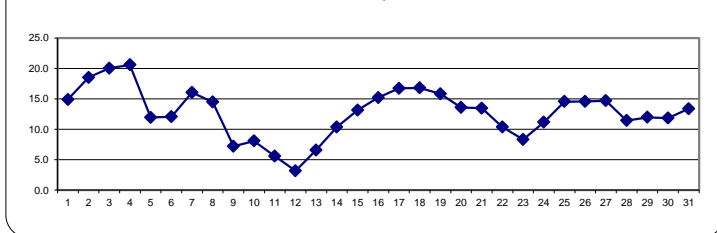
**AMBIENT TEMPERATURE (AmbTPX) hourly averages in Degrees Celsius**

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	MIN.	MAX.	AVG.	MIN.	MAX.	AVG.	MIN.	MAX.	AVG.	MIN.	MAX.	AVG.	MIN.	MAX.	AVG.	MIN.	MAX.	AVG.	MIN.	MAX.	AVG.	MIN.	MAX.	AVG.	MIN.	MAX.	AVG.	MIN.	MAX.	AVG.	RDGS.
1	8.1	6.7	5.2	4.7	4.0	4.3	7.8	11.4	15.0	18.6	20.4	22.0	23.3	23.9	24.1	24.2	23.7	23.1	22.2	19.0	14.3	11.6	10.4	9.1	4.0	24.2	14.9	24			
2	7.4	6.4	6.0	5.3	5.0	5.5	11.3	18.3	23.3	26.2	27.8	28.0	28.6	28.9	29.1	28.0	26.9	27.7	26.3	22.7	18.3	15.2	12.0	10.1	5.0	29.1	18.5	24			
3	8.8	7.6	6.3	5.6	4.6	5.5	10.7	18.5	22.3	24.6	27.1	28.5	29.2	29.7	29.9	29.7	29.3	29.2	28.1	24.6	22.3	21.4	19.6	17.6	4.6	29.9	20.0	24			
4	16.6	15.7	13.5	9.5	7.4	7.9	12.0	18.3	20.8	23.8	26.8	28.1	<b>30.6</b>	<b>30.6</b>	30.0	29.5	28.5	27.5	26.3	22.4	17.6	16.7	17.3	16.4	7.4	<b>30.6</b>	<b>20.6</b>	24			
5	16.3	15.5	15.0	14.5	13.5	12.6	12.3	12.2	12.3	11.9	10.6	9.1	8.2	9.5	11.0	13.0	14.2	14.7	14.0	12.3	10.1	9.2	8.5	6.2	6.2	16.3	11.9	24			
6	5.0	4.6	4.0	5.4	2.6	2.0	6.4	11.1	13.9	16.0	17.1	18.2	18.5	19.1	19.6	19.8	19.7	18.7	17.3	14.3	9.5	7.7	8.7	10.1	2.0	19.8	12.1	24			
7	9.5	6.6	6.7	3.8	2.4	3.2	5.9	10.6	14.9	16.8	19.1	22.7	23.9	23.7	26.6	26.1	26.0	25.3	23.7	19.5	17.2	17.3	17.1	16.2	2.4	26.6	16.0	24			
8	15.4	15.7	15.3	14.1	11.7	11.4	14.0	16.3	17.3	18.2	17.6	16.7	16.3	14.7	15.3	17.8	18.2	17.8	16.4	13.3	10.8	8.7	7.0	7.1	7.0	18.2	14.5	24			
9	6.4	6.3	5.0	4.4	3.8	4.1	5.2	6.0	7.4	7.8	7.9	8.7	9.4	8.8	9.9	9.7	9.5	9.5	8.8	8.0	7.5	6.7	6.1	5.8	3.8	9.9	7.2	24			
10	4.2	5.0	5.0	4.8	4.7	4.9	5.8	8.2	8.1	8.9	11.2	12.1	12.6	13.0	12.9	14.1	12.8	12.4	11.1	9.9	5.4	3.0	2.1	1.4	1.4	14.1	8.1	24			
11	-0.1	-1.4	-2.3	-2.8	-3.1	-1.7	2.0	5.1	6.8	8.5	10.0	11.0	11.8	12.5	11.9	12.3	12.0	11.3	9.5	8.2	7.0	5.1	1.7	-1.2	-3.1	12.5	5.6	24			
12	-2.5	-3.4	-4.1	-4.9	-5.1	-3.8	1.6	5.0	6.2	7.3	7.1	8.1	8.6	8.8	9.4	10.0	9.4	9.6	8.6	5.6	1.3	-1.0	-2.4	-3.3	-5.1	10.0	3.2	24			
13	-3.4	-4.1	-4.8	-5.3	<b>-5.8</b>	-3.9	0.8	6.9	10.6	12.1	13.3	14.1	15.4	15.9	15.5	16.0	15.8	15.3	13.7	10.2	6.0	3.0	0.8	-0.3	<b>-5.8</b>	16.0	6.6	24			
14	-0.7	-1.7	-2.3	-2.8	-2.6	-1.2	4.0	11.0	15.0	17.3	18.9	20.2	20.6	19.3	18.5	19.0	18.8	19.0	17.8	15.0	11.1	6.9	4.5	3.3	-2.8	20.6	10.4	24			
15	2.1	1.3	0.6	-0.1	-0.6	0.6	4.1	11.8	17.6	20.3	21.1	22.4	23.2	23.5	23.8	23.8	23.7	22.5	21.2	18.1	12.7	9.1	6.8	6.0	-0.6	23.8	13.2	24			
16	4.5	2.9	1.6	0.6	0.1	1.8	6.8	13.4	16.8	19.2	21.6	22.5	23.5	23.7	24.0	24.4	23.9	23.6	22.8	20.6	18.1	17.1	16.1	15.1	0.1	24.4	15.2	24			
17	14.7	13.5	11.8	11.7	11.4	12.0	12.4	13.2	14.4	15.9	19.1	20.9	21.8	22.8	23.9	24.2	23.5	23.9	22.1	19.5	15.6	12.3	10.8	9.9	9.9	24.2	16.7	24			
18	9.0	6.9	5.8	5.0	5.7	8.2	11.9	17.8	21.7	23.5	24.1	23.8	24.7	25.7	26.3	23.5	24.0	21.7	21.6	18.9	14.2	12.7	13.1	13.3	5.0	26.3	16.8	24			
19	13.0	12.0	9.9	10.3	10.5	11.9	12.8	14.0	15.6	17.9	18.5	19.7	21.5	23.0	22.9	23.3	20.9	19.4	17.4	15.8	14.1	12.8	11.9	10.8	9.9	23.3	15.8	24			
20	9.6	8.7	7.7	7.0	6.6	6.9	8.0	8.6	9.9	12.7	15.0	17.1	18.3	19.9	20.1	21.0	20.0	19.4	19.2	18.2	15.2	13.2	12.5	11.3	6.6	21.0	13.6	24			
21	10.1	10.0	9.1	8.7	9.0	9.7	11.3	13.4	15.7	17.8	18.6	19.0	16.9	14.5	14.5	14.2	13.8	14.7	15.0	14.2	13.6	13.3	13.2	12.8	8.7	19.0	13.5	24			
22	12.7	12.7	12.6	11.7	11.3	11.5	11.4	11.6	12.5	13.4	12.8	12.2	10.9	10.4	9.7	9.1	8.9	8.6	8.0	7.7	7.4	7.2	7.2	7.2	7.2	13.4	10.4	24			
23	7.2	7.1	6.9	6.8	6.6	6.5	6.7	7.1	7.8	8.1	9.1	9.1	10.0	10.2	10.0	10.1	9.5	9.8	9.0	9.1	9.0	8.8	8.2	6.7	6.5	10.2	8.3	24			
24	4.9	4.8	5.5	5.1	4.5	5.9	6.9	7.8	8.4	10.0	12.0	14.9	16.6	16.1	17.3	17.7	17.5	17.7	16.8	14.4	12.1	10.6	10.1	10.1	4.5	17.7	11.2	24			
25	9.3	8.6	7.7	7.0	5.3	7.4	10.3	12.4	15.5	17.1	18.5	19.9	20.7	22.6	20.8	20.8	21.7	21.3	21.3	18.1	14.0	11.0	8.8	8.9	5.3	22.6	14.5	24			
26	9.0	8.2	6.8	5.5	5.1	7.9	12.7	17.1	19.6	20.8	22.7	20.9	19.7	18.1	14.7	19.1	19.4	19.2	17.2	14.7	13.4	12.2	12.8	12.9	5.1	22.7	14.6	24			
27	12.3	11.3	11.0	11.0	10.7	10.8	13.8	16.2	18.0	18.6	21.5	22.7	22.0	17.6	17.7	18.5	13.7	14.4	12.7	12.0	11.7	11.6	11.6	11.3	10.7	22.7	14.7	24			
28	11.3	11.2	11.1	11.1	10.7	11.3	11.1	11.6	10.9	11.2	11.8	11.6	11.4	11.3	11.7	14.7	14.2	13.0	12.0	11.3	10.6	10.2	9.9	9.5	9.5	14.7	11.4	24			
29	9.1	8.8	8.5	8.5	8.5	8.9	9.8	10.8	11.4	12.4	11.7	12.5	15.6	16.1	15.5	17.1	17.4	16.6	16.0	13.9	10.3	8.3	9.3	9.9	8.3	17.4	12.0	24			
30	9.4	8.9	8.1	7.5	8.3	9.9	11.4	12.9	13.8	13.4	14.8	12.2	13.0	14.7	16.3	16.2	13.6	13.8	12.8	12.0	11.0	10.4	10.1	9.7	7.5	16.3	11.8	24			
31	9.0	9.1	9.1	8.9	8.5	9.4	10.1	10.9	12.6	14.5	15.8	16.5	17.4	19.5	18.7	19.0	19.2	17.2	19.3	14.5	13.2	11.4	8.3	8.3	8.3	8.3	19.5	13.4	24		
HOURLY MAX	16.6	15.7	15.3	14.5	13.5	12.6	14.0	18.5	23.3	26.2	27.8	28.5	30.6	30.6	30.0	29.7	29.3	29.2	28.1	24.6	22.3	21.4	19.6	17.6							
HOURLY AVG	8.0	7.3	6.5	5.9	5.3	6.2	8.8	11.9	14.1	15.6	16.9	17.6	18.2	18.3	18.4	18.9	18.4	18.0	17.0	14.8	12.1	10.4	9.5	8.8							

**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

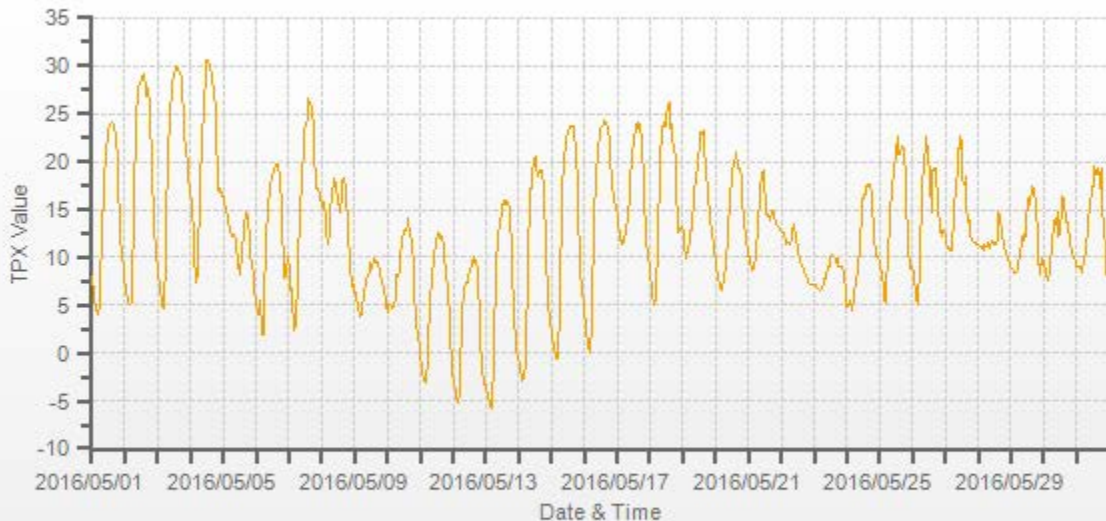
**24 HOUR AVERAGES FOR May 2016**



**MONTHLY SUMMARY**

MINIMUM 1-HR AVERAGE:	-5.8 °C	@ HOUR(S)	4	ON DAY(S)	13
MAXIMUM 1-HR AVERAGE:	30.6 °C	@ HOUR(S)	12 , 13	ON DAY(S)	4 , 4
MAXIMUM 24-HR AVERAGE:	20.6 °C			ON DAY(S)	4
				VAR-VARIOUS	
OPERATIONAL TIME:				744	HRS
AMD OPERATION UPTIME:				100.0	%
STANDARD DEVIATION:	7.05	MONTHLY AVERAGE:		12.8	°C

TPX[C°] Station: LICA MASKWA Monthly: 05/2016 Type: AVG 1 Hr. [1 Hr.]



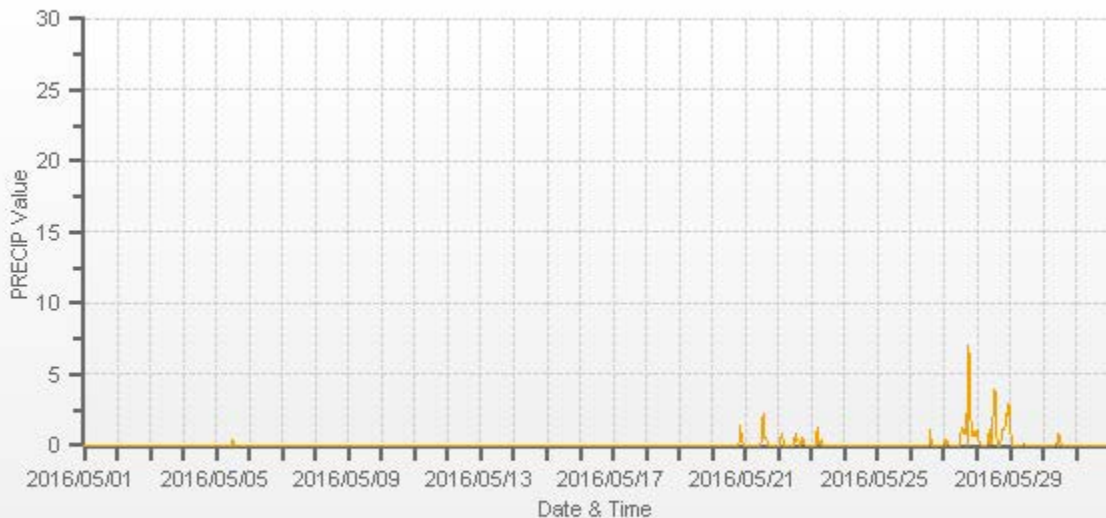
— TPX[C°]

## ***PRECIPITATION***





PRECIP[mm] Station: LICA MASKWA Monthly: 05/2016 Type: AVG 1 Hr. [1 Hr.]



***APPENDIX II***  
***EQUIPMENT CALIBRATION RESULTS***

***SULPHUR DIOXIDE***



## API 101E Sulphur Dioxide Analyzer Calibration

<b>Date:</b> May 10, 2016	<b>Barometric Pressure:</b> 0.936 atm
<b>Company/Airshed:</b> LICA	<b>Station Temperature °C:</b> 22
<b>Location/Station Name:</b> Maskwa	<b>Weather Conditions:</b> A few clouds
<b>Parameter:</b> Sulphur Dioxide	<b>Calibration Purpose:</b> routine monthly
<b>Start Time 24 hr. (mst):</b> 9:04	<b>Performed By/Reviewer:</b> Alex Yakupov   not yet reviewed
<b>End Time 24 hr. (mst):</b> 12:30	<b>Cal Gas Expiry Date:</b> December 2, 2023
<b>Calibration Method:</b> Gas Dilution	<b>Converter Model &amp; s/n (if applicable):</b> n/a

<b>Analyzer:</b>	
<b>Serial Number:</b> 508	<b>Range ppb:</b> 1000
<b>Last Calibration Date:</b> April 14, 2016	<b>As Found C.F.:</b> 1.010
<b>Previous C.F.:</b> 1.000	<b>New C.F.:</b> 0.996

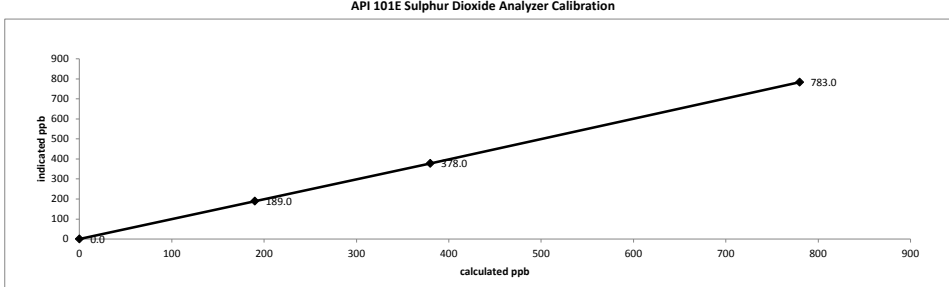
<b>Calibrator:</b>	<b>Standard Calibration Points for Ranges</b>								
<b>Flow Meter ID's:</b> n/a	<table border="1" style="margin: auto;"> <thead> <tr> <th>Point</th> <th>Sulphur Dioxide Standard Calibration Points</th> </tr> </thead> <tbody> <tr> <td>High</td> <td>780</td> </tr> <tr> <td>Mid</td> <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								
<b>Make &amp; Model:</b> SABIO 2010 D									
<b>Serial #:</b> 11900613									
<b>Cal Gas Cylinder I.D. #:</b> LL119346									
<b>Cal Gas Conc. (ppm):</b> 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	4999	0.00	4999	0.0	1.0	N/A
as found high	4922	78.00	5000	780.0	773.0	1.010
adjusted zero	4999	0.00	4999	0.0	0.0	n/a
adjusted high	4922	78.00	5000	780.0	783.0	0.996
mid	4962	38.00	5000	380.0	378.0	1.005
low	4981	19.00	5000	190.0	189.0	1.005
calibrator zero	4999	0.00	4999	0.0	0.0	n/a
<b>Average C.F.=</b>						<b>1.002</b>

**Linear Regression/Calibration Results:**

Correlation Coefficient = <u>1.000</u>	<b>LIMITS</b>
Slope = <u>0.996</u>	> or = 0.995
b (Intercept as % of full scale) = <u>0.14%</u>	.95-1.05
% change in C.F. from last cal = <u>-1.04%</u>	± 3% F.S.
	± 10%

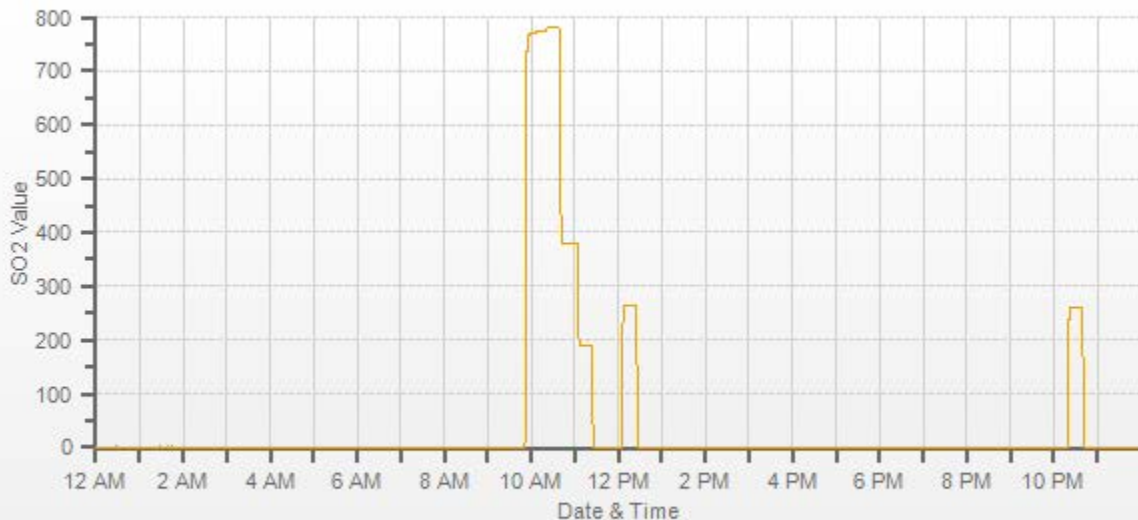


<b>As found:</b>	<b>As left:</b>
SLOPE: <u>1.022</u>	SLOPE: <u>1.032</u>
OFFSET: <u>94.9</u>	OFFSET: <u>95.8</u>
HVPS: <u>479</u>	HVPS: <u>479</u>
RCELL TEMP: <u>50.0</u>	RCELL TEMP: <u>50.0</u>
BOX TEMP: <u>31.0</u>	BOX TEMP: <u>32.4</u>
PMT TEMP: <u>7.7</u>	PMT TEMP: <u>7.7</u>
IZS TEMP: <u>45.0</u>	IZS TEMP: <u>45.0</u>
Converter Temp: <u>n/a</u>	Converter Temp: <u>n/a</u>
PRES: <u>25.0</u>	PRES: <u>25.0</u>
SAMP FL: <u>596</u>	SAMP FL: <u>596</u>
UV LAMP: <u>3395.8</u>	UV LAMP: <u>3399.1</u>
LAMP RATIO: <u>97.0</u>	LAMP RATIO: <u>97.0</u>
STR. LGT: <u>48.5</u>	STR. LGT: <u>49.4</u>
DRK PMT: <u>9.8</u>	DRK PMT: <u>10.6</u>
DRK LMP: <u>-0.8</u>	DRK LMP: <u>-0.8</u>
Internal Span: <u>264.7</u>	Internal Span: <u>263.7</u>

**Comments:**

Sample inlet filter changed.

SO2[ppb] Station: LICA MASKWA Daily: 2016/05/10 Type: AVG 1 Min. [1 Min.]



— SO2[ppb]

***HYDROGEN SULPHIDE***



## API 101E Hydrogen Sulphide Analyzer Calibration

<b>Date:</b> May 10, 2016	<b>Barometric Pressure:</b> 0.936 atm
<b>Company/Airshed:</b> LICA	<b>Station Temperature °C:</b> 22
<b>Location/Station Name:</b> Maskwa	<b>Weather Conditions:</b> A few clouds
<b>Parameter:</b> Hydrogen Sulphide	<b>Calibration Purpose:</b> routine monthly
<b>Start Time 24 hr. (mst):</b> 11:46	<b>Performed By/Reviewer:</b> Alex Yakupov   not yet reviewed
<b>End Time 24 hr. (mst):</b> 16:00	<b>Cal Gas Expiry Date:</b> July 15, 2017
<b>Calibration Method:</b> Gas Dilution	<b>Converter Model &amp; s/n (if applicable):</b> n/a

<b>Analyzer:</b>	
<b>Serial Number:</b> 511	<b>Range ppb:</b> 100
<b>Last Calibration Date:</b> April 15, 2016	<b>As Found C.F.:</b> 0.975
<b>Previous C.F.:</b> 1.000	<b>New C.F.:</b> 1.008

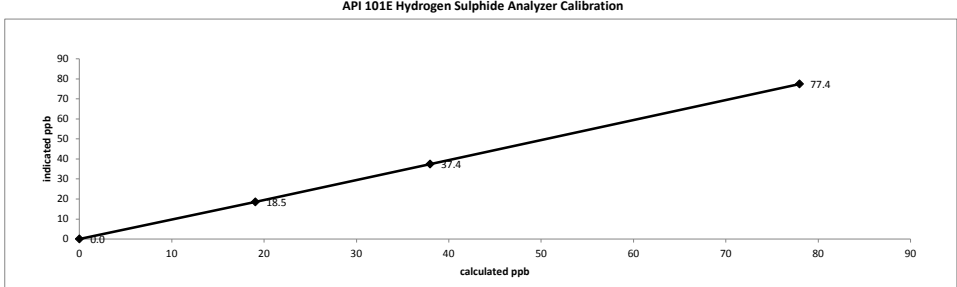
<b>Calibrator:</b>	<b>Standard Calibration Points for Ranges</b>								
<b>Flow Meter ID's:</b> n/a	<table border="1" style="margin: auto;"> <thead> <tr> <th>Point</th> <th>Hydrogen Sulphide Standard Calibration Points</th> </tr> </thead> <tbody> <tr> <td>High</td> <td>78</td> </tr> <tr> <td>Mid</td> <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								
<b>Make &amp; Model:</b> API 700									
<b>Serial #:</b> 627									
<b>Cal Gas Cylinder I.D. #:</b> LL36837									
<b>Cal Gas Conc. (ppm):</b> 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	7500	0.00	7500	0.0	0.5	N/A
as found high	7443	58.50	7502	78.0	80.5	0.975
adjusted zero	7500	0.00	7500	0.0	0.0	n/a
adjusted high	7443	58.50	7502	78.0	77.4	1.008
mid	7475	28.50	7504	38.0	37.4	1.016
low	7490	14.30	7504	19.1	18.5	1.030
calibrator zero	7500	0.00	7500	0.0	0.0	n/a
<b>Average C.F.=</b>						<b>1.018</b>

**Linear Regression/Calibration Results:**

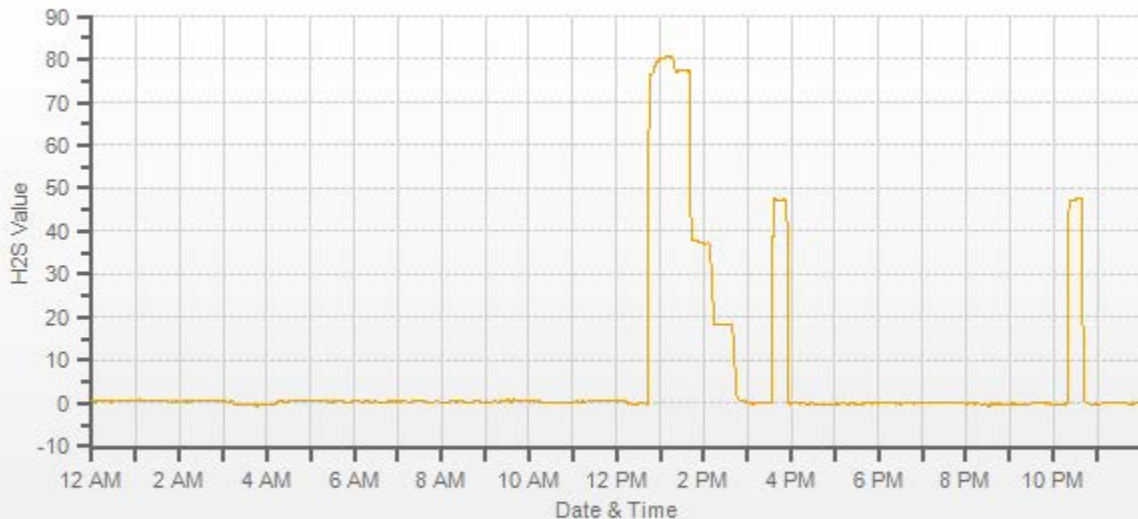
Correlation Coefficient = <u>1.000</u>	<b>LIMITS</b>
Slope = <u>1.006</u>	> or = 0.995
b (Intercept as % of full scale) = <u>0.23%</u>	.95-1.05
% change in C.F. from last cal = <u>2.52%</u>	± 3% F.S.
	± 10%



<b>As found:</b>	<b>As left:</b>
SLOPE: <u>0.946</u>	SLOPE: <u>0.936</u>
OFFSET: <u>47.7</u>	OFFSET: <u>48.8</u>
HVPS: <u>616</u>	HVPS: <u>616</u>
RCELL TEMP: <u>50.0</u>	RCELL TEMP: <u>50.0</u>
BOX TEMP: <u>32.7</u>	BOX TEMP: <u>32.4</u>
PMT TEMP: <u>7.9</u>	PMT TEMP: <u>7.9</u>
IZS TEMP: <u>45.0</u>	IZS TEMP: <u>45.0</u>
Converter Temp: <u>315.1</u>	Converter Temp: <u>315.2</u>
PRES: <u>27.6</u>	PRES: <u>27.6</u>
SAMP FL: <u>649</u>	SAMP FL: <u>649</u>
UV LAMP: <u>3124.6</u>	UV LAMP: <u>3124.1</u>
LAMP RATIO: <u>97.6</u>	LAMP RATIO: <u>97.6</u>
STR. LGT: <u>23.0</u>	STR. LGT: <u>22.8</u>
DRK PMT: <u>32.7</u>	DRK PMT: <u>33.4</u>
DRK LMP: <u>7.1</u>	DRK LMP: <u>7.1</u>
Internal Span: <u>50.5</u>	Internal Span: <u>47.3</u>

**Comments:**

Sample inlet filter changed. ZERO air charcoal filter renewed.



— H2S[ppb]



***TOTAL HYDROCARBON***



# Thermo 51C Total Hydrocarbon Analyzer Calibration

Date:	May 10, 2016	Barometric Pressure:	0.936 atm
Company/Airshed:	LICA	Station Temperature °C:	22
Location/Station Name:	Maskwa	Weather Conditions:	A few clouds
Parameter:	Total Hydrocarbon	Calibration Purpose:	routine monthly
Start/End Time 24 hr. (mst):	9:04 / 12:30	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: April 14, 2016	As Found C.F.: 0.953
	Previous Cal High Point C.F.: 1.000	New C.F.: 1.002

Calibrator:	Flow Meter ID's: n/a	Standard Calibration Points for a Range of 50 ppm								
	Make & Model: API 700									
	Serial #: 627									
	Cal Gas Cylinder I.D. #: LL165372									
	CH <sub>4</sub> /C <sub>3</sub> H <sub>8</sub> Cylinder Conc. (ppm): 606.0 / 212.0	<table border="1"> <tr><th>Point</th><th>Target ppm</th></tr> <tr><td>High</td><td>38</td></tr> <tr><td>Mid</td><td>18</td></tr> <tr><td>Low</td><td>9</td></tr> </table>	Point	Target ppm	High	38	Mid	18	Low	9
Point	Target ppm									
High	38									
Mid	18									
Low	9									
	CH <sub>4</sub> as propane/total CH <sub>4</sub> equivalents (ppm): 583.0 / 1189.0									

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	2000	0.00	2000	0.0	0.03	n/a
as found high	1938	65.00	2003	38.58	40.50	0.953
adjusted zero	1999	0.00	1999	0.00	0.00	n/a
adjusted high	1938	65.00	2003	38.58	38.50	1.002
mid	1970	31.00	2001	18.42	18.08	1.019
low	1986	16.10	2002	9.56	9.30	1.028
calibrator zero	2000	0.00	2000	0.0	0.00	n/a
Average C.F. =						1.016

Linear Regression/Calibration Results:

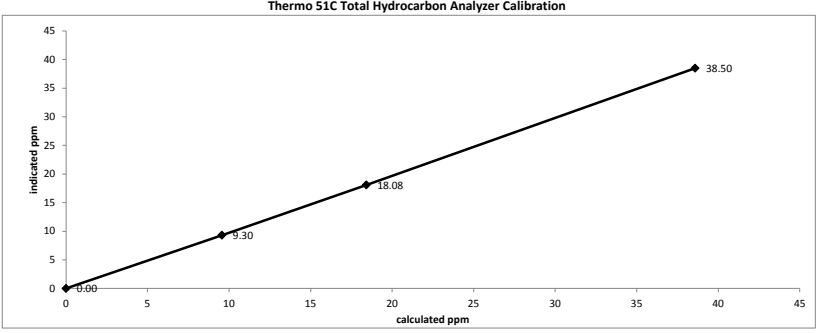
Correlation Coefficient = 1.000 > or = 0.995

Slope = 1.001 .95-1.05

b (Intercept as % of full scale) = 0.32% ± 3% F.S.

% change in C.F. from last cal = 4.66% ± 10%

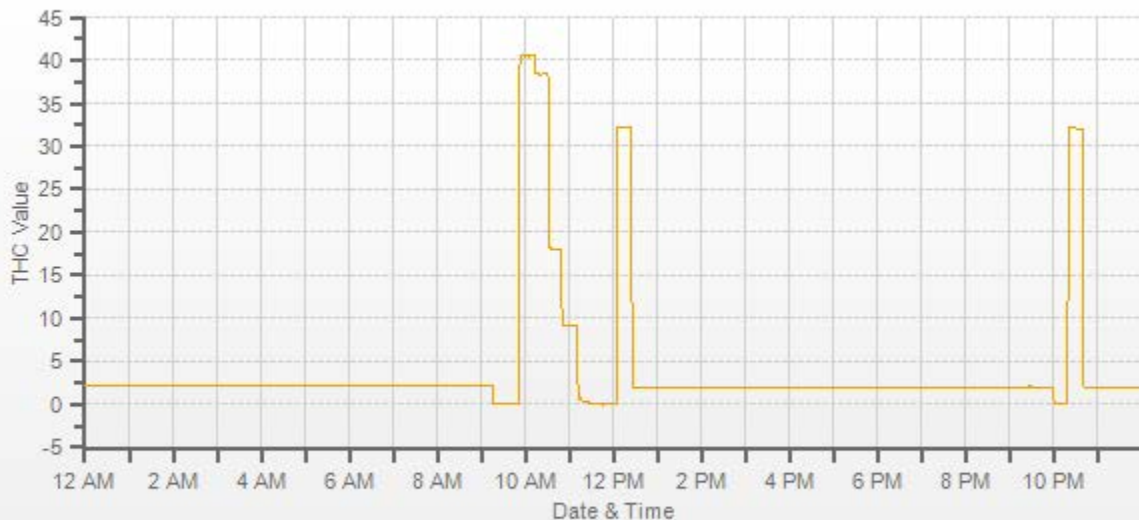
LIMITS



<b>As found:</b>	<b>As left:</b>
H2 cylinder (psi): 700	H2 cylinder (psi): 700
H2 cylinder reg set (psi): 22	H2 cylinder reg set (psi): 22
Span Cylinder (psi): 700	Span Cylinder (psi): 700
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: 1109	cnt: 1304
rng: 1	rng: 1
try: 0	try: 0
flm: 187.8	flm: 187.3
det: 125.2	det: 125.4
Flame: 187	Flame: 187
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: 33.45	Internal Span: 32.16

Comments:

Sample inlet filter changed.



— THC[ppm]

***NITROGEN DIOXIDE***



## API 200A NO-NO2-NOx Analyzer Calibration

<b>Date:</b> May 10, 2016	<b>Barometric Pressure:</b> 0.936 atm
<b>Company/Airshed:</b> LICA	<b>Station Temperature °C:</b> 22
<b>Location/Station Name:</b> Maskwa	<b>Weather Conditions:</b> A few clouds
<b>Start/End Time 24 hr. (mst):</b> 9:04 / 15:01	<b>Calibration Purpose:</b> routine monthly
<b>G.P.T. to be used for Ozone?</b> No	<b>Performed By/Reviewer:</b> Alex Yakupov   Trina Whitsitt
<b>Calibration Method:</b> Gas Dilution & Varying UV Lamp Power	<b>Cal Gas Expiry Date:</b> December 2, 2023

<b>Analyzer:</b>	<b>Correction Factors:</b>
<b>Serial Number:</b> 1899	<b>Previous C.F.:</b> As Found C.F.: New C.F.:
<b>Last Calibration Date:</b> April 15, 2016	<b>NO =</b> 0.999 0.971 1.000
<b>Range ppb:</b> 1000	<b>NO<sub>2</sub> =</b> 1.000 1.000 1.000
	<b>NOx =</b> 0.999 0.973 1.000

<b>Calibrator:</b>	<b>Standard Calibration Points for a Range of: 1000 ppb</b>																								
<b>Flow Meter ID's:</b> n/a	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Point</th> <th>Target NO (ppb)</th> <th>Target NO<sub>2</sub> (ppb)</th> <th>Cc Ozone ?</th> </tr> <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> </table>	Point	Target NO (ppb)	Target NO <sub>2</sub> (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 <sub>2</sub> (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																						
<b>Make &amp; Model:</b> SABIO 2010 D																									
<b>Serial #:</b> 11900613																									
<b>Cal Gas Cylinder I.D. #:</b> LL119346																									
<b>NO/NOx Gas Conc. (ppm):</b> 50.0   50.0																									

**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	4999	0.0	4999	0	0	0.0	1.0	n/a	n/a
as found high	4922	78.0	5000	780.0	780.0	803.0	803.0	0.971	0.973
adjusted zero	4999	0.00	4999	0.0	0.0	0.0	0.0	n/a	n/a
adjusted high	4922	78.00	5000	780.0	780.0	780.0	780.0	1.000	1.000
mid	4962	38.00	5000	380.0	380.0	374.0	374.0	1.016	1.016
low	4981	19.00	5000	190.0	190.0	184.0	184.0	1.033	1.033
calibrator zero	4999	0.00	4999	0	0	0.0	0.0	n/a	n/a
<b>Average C.F.=</b>								1.016	1.016

**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 <sub>2</sub>	NO drop	NO <sub>2</sub> gain	NO <sub>2</sub> 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	781.0	1.0	0.0	1.0	
as found high NO <sub>2</sub>	4922	78.00	5000	485.0	282.0	781.0	499.0	498.0	498.0	1.000
adjusted high NO <sub>2</sub>	4922	78.00	5000	485.0	282.0	781.0	499.0	498.0	498.0	1.000
gpt mid	4922	78.00	5000	261.0	504.0	781.0	277.0	276.0	276.0	1.000
gpt low	4922	78.00	5000	92.0	676.0	781.0	105.0	104.0	104.0	1.000
<b>Average NO<sub>2</sub> C.F.=</b>									1.000	

**Linear Regression/Calibration Results:**

	NO	NOx	NO <sub>2</sub>	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)=	-0.36%	-0.36%	0.06%	± 3% F.S.
% change in C.F. from last cal=	2.77%	2.65%	0.00%	± 10%
NO <sub>2</sub> converter efficiency			1.00	0.96 to 1.04

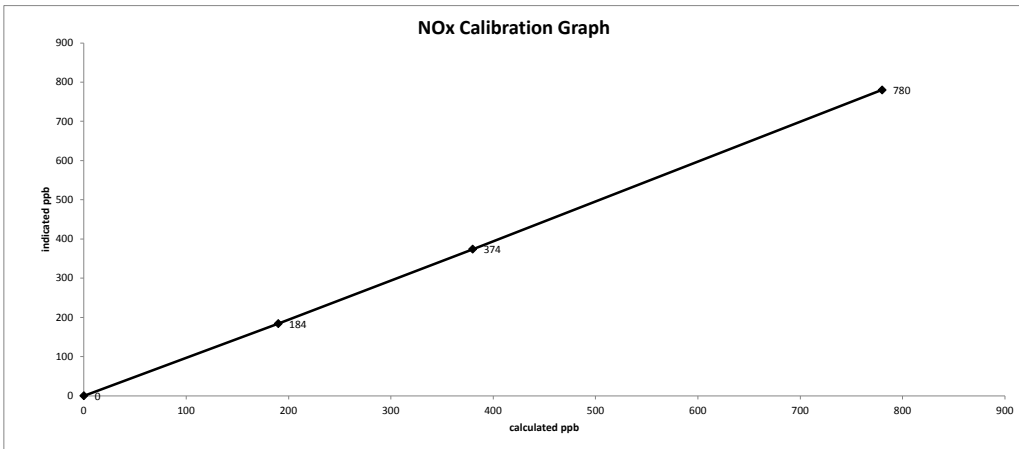
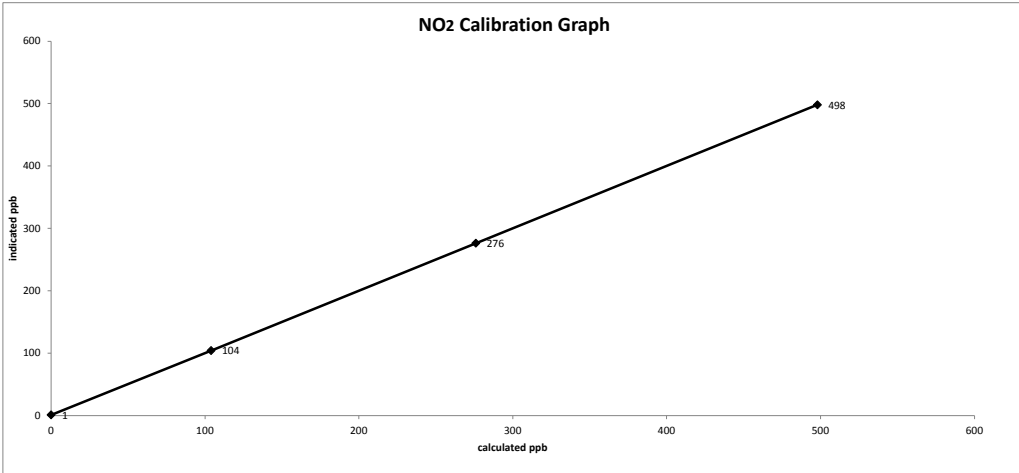
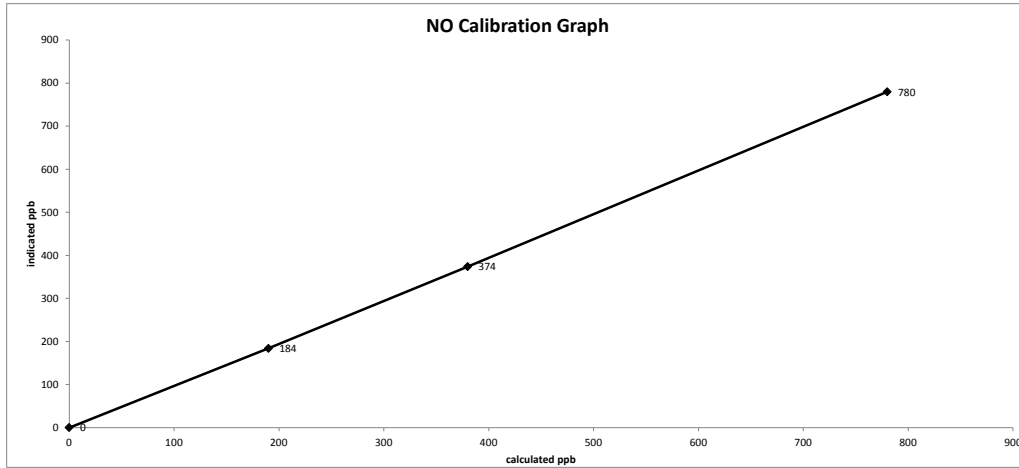
<b>As found:</b>	<b>As left:</b>
NOx SLOPE: 0.936	NOx SLOPE: 0.909
NOx OFFS: -1.2	NOx OFFS: -0.1
NO SLOPE: 0.946	NO SLOPE: 0.916
NO OFFS: -2.3	NO OFFS: -2.5
SAMP FLW: 556	SAMP FLW: 555
OZONE FL: 78	OZONE FL: 78
NORM PMT: -2.4	NORM PMT: -1.2
AZERO: 23.4	AZERO: 23.6
HVPS: 682	HVPS: 681
DCPS: 2580	DCPS: 2571
RCCELL: 50.2	RCCELL: 50.7
BOX TEMP: 31.0	BOX TEMP: 32.5
IZS TEMP: 40.2	IZS TEMP: 40.3
MOLY TEMP: 315.0	MOLY TEMP: 316.3
RCELL: 5.4	RCELL: 5.6
SAMP: 26.1	SAMP: 26.0
Internal Span NO: 3.2	Internal Span NO: 3.3
Internal Span NO <sub>2</sub> : 352.8	Internal Span NO <sub>2</sub> : 325.9
Internal Span NOx: 355.8	Internal Span NOx: 329.6

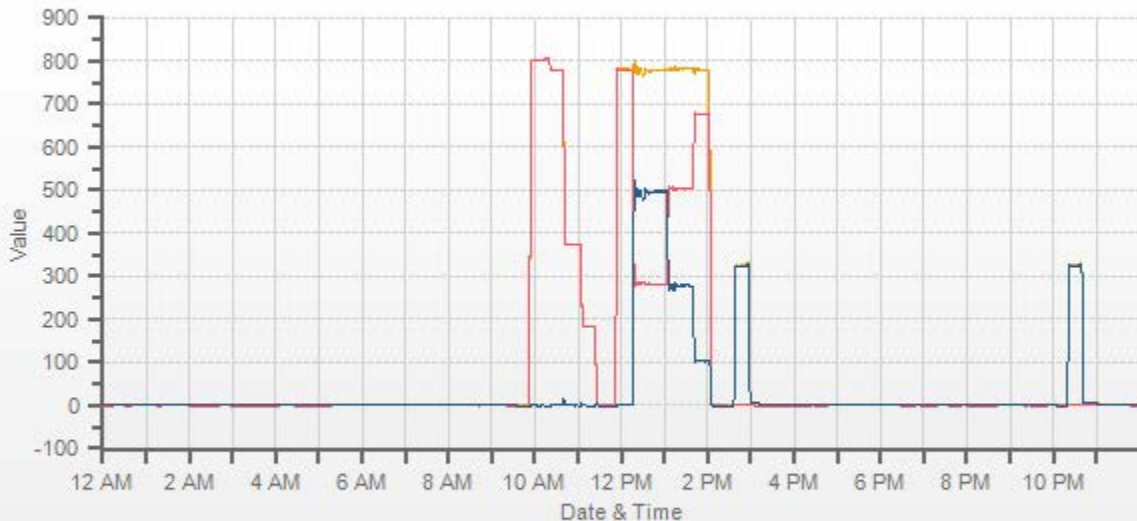
**Comments:**

Sample inlet filter changed. No NO<sub>2</sub> adjustment made.

Date: May 10, 2016  
Company/Airshed: LICA  
Location/Station Name: Maskwa

Start/End Time 24 hr. (mst): 9:04 / 15:01  
Calibration Purpose: routine monthly  
Calibration Method: Gas Dilution & Varying UV Lamp Power





— NOX[ppb] — NO[ppb] — NO2[ppb]

## ***WIND SYSTEM***





***METEOROLOGICAL SYSTEM CHECK***

# Meteorological System Checklist

Date: **17-May-16**  
 Performed by: Alex Yakupov  
 Station: **Maskwa**  
 Start: 16:24 End: 16:48

## PRECIPITATION SENSOR CHECK

	YES	NO
Is the sensor Level?	YES	
Is the heater operating properly?	YES	
Are the bucket drain holes clean?	YES	
Is the inner screen on the housing? (screen should be on between July and September)		NO
Is the upper screen on the housing? (screen should be on between July and September)		NO
Is the housing clean?	YES	
Is the area around the housing clean and free from obstacle?	YES	
Is the tipping sensor working properly?	YES	
Test with water (16:32 - test: 2.0 mm)	PASS	

Comments: the rain gauge has been tested with water. Responce is timely and accurate.  
 No issues.

Field Technician: Alexander Yakupov May 17, 2016

## ***CALIBRATORS***



# Calibrator Performance Audit

## OZONE

File No. 2015-163

Company: MaxxamOperator: 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>O<sub>3</sub></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.

<b>AENV Standards</b>		<b>Ozone Analyzer</b>	
<b>Audit Calibrator</b>		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

Company Maxxam Operator: Limin Li

Calibrator:		Flow Measurement Device:	
Make/Model	<u>API 700</u>	Make/Model	<u>N/A</u>
Serial Number	<u>627</u>	Serial Number	<u>N/A</u>
Last Verification Date	<u>April 2014</u>	Temperature (°C)	<u>N/A</u>
NO Cylinder S/N	<u>BLM003914</u>	Barometric Pressure	<u>N/A</u>
NO/NOX Concentration	<u>50.8/50.8</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>80</u>	Pt. #2	<u>40</u>
Pt. #3	<u>20</u>		

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO <sub>2</sub>	NOx	NO	NOx
5000	0.0	0.000	0.000	0.000	0.001	0.001	Limit ± 10%	
4999	78.7	0.800	0.800	0.851	-0.016	0.835	6%	4%
5000	39.4	0.400	0.400	0.423	-0.008	0.416	6%	4%
5001	19.7	0.200	0.200	0.211	-0.003	0.208	5%	3%
Absolute Average Percent Difference							6%	4%

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

NO	LIMITS	NOx
Correlation= 1.0000	≥ 0.990	Correlation= 1.0000
m (Slope)= 1.0641	0.90-1.10	m (Slope)= 1.0429
b (Intercept % of FS)= -0.1200	± 3% F.S.	b (Intercept % of FS)= 0.0000

Flow	O <sub>3</sub> Conc	NO Decrease	NO	NO <sub>2</sub>	NOX	% Diff. Vs Audit gas	
4999	0.000	0.000	0.841	-0.015	0.831	NO <sub>2</sub>	% Diff. Limit
4999	0.520	0.562	0.279	0.518	0.797	-5%	± 10%
4999	0.280	0.308	0.533	0.286	0.818	-2%	± 10%
4999	0.100	0.108	0.733	0.095	0.828	2%	± 10%
Absolute Average Percent Difference						2%	± 10%

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

NO <sub>2</sub>	LIMITS
Correlation= 0.9998	≥ 0.995
m (Slope)= 0.9458	0.90-1.10
b (Intercept % of FS)= -1.0258	± 3% F.S.

AENV Standards	NO <sub>x</sub> Analyzer
<b>Audit Calibrator</b>	Make/Model <u>Teco 42i</u>
Make/Model <u>Teco 146i</u>	Serial/AMU Number <u>AMU 1868</u>
Serial/AMU Number <u>AMU 1809</u>	Last Calibration Date <u>April 1, 2015</u>
	Full Scale (ppm) <u>1.0</u>

COMMENTS: Cylinder contains 49.7 ppm SO<sub>2</sub>. System shows NOx drop when O<sub>3</sub> added. Also noisy during GPT phase for NO<sub>2</sub> and NOx.

Auditor: Al Clark Date: April 1, 2015  
 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	<del>0.00000</del>	<del>0.00000</del>	<del>0.000</del>
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:					<b>49.4</b>

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:**

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 (sccm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.0000	<del>0.0000</del>	<del>132.442</del>	<del>10.0</del>
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:					<b>9.9</b>

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

## 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:						<b>50.5</b>	<b>50.4</b>

<b>NO</b>	<b>NOx</b>
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



# 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	<del>0.02140</del>	<del>46.722</del>	<del>607</del>	<del>214</del>
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:						<b>608</b>	<b>215</b>

<b>CH4</b>	<b>C3H8</b>
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

***APPENDIX III  
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
Bim Adeniji	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.



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

17-06-2016



\_\_\_\_\_  
Report Issued Date (dd-mm-yyyy)

***APPENDIX IV  
DATA VALIDATION CERTIFICATION FORM***



### Validation Certificate Form

<b>Client:</b> <u>Lakeland Industry &amp; Community Association</u>	<b>Project #:</b> <u>2833-2016-05-30- C</u>
<b>Site:</b> <u>Maskwa Site</u>	<b>Contact:</b> <u>Mike Bisaga</u>

Level 0 Preliminary Verification	<u></u>	Date <u>15-June-16</u>
Level 1 Primary Validation	<u></u>	Date <u>15-June-16</u>
Level 2 Final Validation	<u>usclmba</u>	Date <u>17-June-16</u>
Level 3 Independent Data Review	<u>for Tom Boungue</u> <u>usclmba</u>	Date <u>20-June-16</u>
Post-Final Validation	<u>NA</u>	Date <u>NA</u>

<b>Notes</b>
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 #:2833-2016-05-31- C**

**May 2016**

Prepared for:

**LAKELAND INDUSTRY & COMMUNITY ASSOCIATION**  
BOX 8237, 5107W - 50 STREET  
BONNYVILLE, ALBERTA  
T9N 2J5


**Attention: MIKE BISAGA**

DATE: **June 22, 2016**

Prepared by:

  
\_\_\_\_\_  
Bim Adeniji,  
Project Manager Assistant, Customer Service, Air Services

Reviewed by:

  
\_\_\_\_\_  
*for* Tom Bourque, C.Tech.  
Technical Specialist, Air Services



## SUMMARY

In May 2016, the Air Services Group of Maxxam Analytics conducted an ambient air monitoring program on the St. Lina Site at Lakeland Industry & Community Association, near St. Paul. 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 90% requirement.

All Parameters: A total of eighteen hours of data are missing this month due to power failures on May 11 and May 19. Five hours of maximum instantaneous data collected between May 21 and May 23 were invalidated as the analyzer was recovering from short power outages.

PM 2.5: One 1-hr exceedence was recorded on May 15 at hour 21 with a concentration of 99 ug/m<sup>3</sup>. Eighteen hours of data were invalidated as the data was below -3 ug/m<sup>3</sup> this month.

Precipitation: Two hours of data collected on May 5 from hour 10 to 11 were invalidated as the rain gauge system was recovering from a short power outage.

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	1.5	1	8	11.8	SSW	0.2	1	97.4
H2S (PPB)	10	3	0	0	0.0	0.6	9, 29	3, 5	14 3.5	NW SW	0.1	VAR	97.6
THC (PPM)	-	-	-	-	1.91	2.31	11	5	5.5	NNE	2.15	11	97.6
NO2 (PPB)	159	-	0	-	1.0	7.8	11	5	5.5	NNE	3.4	11	97.6
NO (PPB)	-	-	-	-	0.1	1.6	21	11	5.9	NE	0.3	VAR	97.6
NOX (PPB)	-	-	-	-	1.0	8.2	11	5	5.5	NNE	3.5	11	97.6
O3 (PPB)	82	-	0	-	34.3	61.8	15	3	9.4	WSW	50.5	16	97.4
PM2.5 (UG/M3)	80	30	1	0	9.5	99.0	15	21	7.8	S	25.5	13	95.2
RELATIVE HUMIDITY (%)	-	-	-	-	55.5	92	21, 22	VAR	VAR	VAR	91.5	22	97.6
BAROMETRIC PRESSURE (MILIBAR)	-	-	-	-	931	947	13	VAR	VAR	VAR	945	13	97.6
AMBIENT TEMPERATURE (DEG C)	-	-	-	-	13.5	30.4	3	16	14.3	SSW	22.3	3	97.6
PRECIPITATION (MM)	-	-	-	-	0.1	5.0	27	18	14.5	E	0.7	22	97.3
VECTOR WS (KPH)	-	-	-	-	8.7	41.3	7	19	-	SSE	17.9	8	97.6
VECTOR WD (DEG)	-	-	-	-	-	-	-	-	-	-	-	-	97.6

NA-NOT AVAILABLE VAR-VARIOUS

**SOUR GAS PROCESSING INDUSTRY  
MONTHLY REPORT SUMMARY**

**St. Lina Site**  
Plant Name / Location

**Lakeland Industry & Community Association**  
Company

Licence Number	Report Date	
	YEAR	MONTH
N/A	2016	May

CONTINUOUS AMBIENT MONITORING						
PARAMETER	STN NO.	% TIME OPERATIONAL	ONE - HOUR AVERAGE		24 - HOUR AVERAGE	
			MAXIMUM CONC. (PPM)	NO. READINGS > REGULATION	MAXIMUM CONC. (PPM)	NO. READINGS > REGULATION
SO2	1	97.4	0.002	0	0.0002	0
H2S	1	97.6	0.001	0	0.0001	0
THC	1	97.6	2.31	-	2.15	-
NOX	1	97.6	0.0082	-	0.0035	-
NO	1	97.6	0.0016	-	0.0003	-
NO2	1	97.6	0.0078	0	0.0034	-
O3	1	97.4	0.062	0	0.0505	-
PM2.5	1	95.2	99.0 ug/m3	1	24.4 ug/m3	0
RH	1	97.6	92 %	-	91.5 %	-
BP	1	97.6	947 MB	-	945 MB	-
Ambient TPX	1	97.6	30.4 Deg C	-	22.3 Deg C	-
PRECIPITATION	1	97.3	5.0 MM	-	0.7 MM	-
Wind Speed	1	97.6	41.3 KPH	-	17.9 KPH	-
Wind Direction	1	97.6	-	-	-	-

SIGNATURE OF COMPANY REPRESENTATIVE

FOR ALBERTA ENVIRONMENT USE ONLY

## Exceedence Summary Report

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**SO<sub>2</sub> 1- Hour Exceedences**

No Exceedences Recorded During the Month

**SO<sub>2</sub> 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

**NO<sub>2</sub> 1- Hour Exceedences**

No Exceedences Recorded During the Month

**PM<sub>2.5</sub> 1- Hour Exceedences**

DATE	HOUR	READING (ug/m3)	WS (kph)	WD
May 15	21	99	7.8	S

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## 1.0 Discussion

This monthly report consists of data for parameters Sulphur Dioxide (SO<sub>2</sub>), Hydrogen Sulphide (H<sub>2</sub>S), Total Hydrocarbon (THC), Oxides of Nitrogen (NO<sub>x</sub>), Nitric Oxides (NO), Nitrogen Dioxide (NO<sub>2</sub>), Ozone (O<sub>3</sub>), Particulate Matter 2.5 (PM<sub>2.5</sub>), 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%).

#### **SULPHUR DIOXIDE (SO<sub>2</sub>)**

The analyzer was working well throughout the month. The routine monthly calibration was performed on May 12. A total of eighteen hours of data are missing this month due to power failures on May 11 from hour 7 to 16 and May 19 from hour 7 to 14.

Five hours of maximum instantaneous data collected on May 5 hour 9, May 21 hour 12 and May 23 hours 10, 18 and 20 were invalidated as the analyzer was recovering from short power outages.

#### **HYDROGEN SULPHIDE (H<sub>2</sub>S)**

The analyzer was working well throughout the month. The routine monthly calibration was performed on May 12. A total of eighteen hours of data are missing this month due to power failures on May 11 from hour 7 to 16 and May 19 from hour 7 to 14.

Five hours of maximum instantaneous data collected on May 5 hour 9, May 21 hour 12 and May 23 hours 10, 18 and 20 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 May 12. A total of 18 hours of data are missing this month due to power failure on May 11 and May 19.

Five hours of maximum instantaneous data collected on May 5 hour 9, May 21 hour 12 and May 23 hours 10, 18 and 20 were invalidated as the analyzer was recovering from short power outages.

#### **NITROGEN DIOXIDE (NO<sub>2</sub>)**

The analyzer was working well throughout the month. The routine monthly calibration was performed on May 12. A total of eighteen hours of data are missing this month due to power failures on May 11 from hour 7 to 16 and May 19 from hour 7 to 14.

Five hours of maximum instantaneous data collected on May 5 hour 9, May 21 hour 12 and May 23 hours 10, 18 and 20 were invalidated as the analyzer was recovering from short power outages.

#### **OZONE (O<sub>3</sub>)**

The analyzer was working well throughout the month. The routine monthly calibration was performed on May 12. A total of eighteen hours of data are missing this month due to power failures on May 11 from hour 7 to 16 and May 19 from hour 7 to 14.

Five hours of maximum instantaneous data collected on May 5 hour 9, May 21 hour 12 and May 23 hours 10, 18 and 20 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 May 13, and the other audit was performed on May 24. Both the inlet filter and the FDMS filter were replaced on May 13. One 1-hr exceedence was recorded on May 15 at hour 21 with a concentration of 99 ug/m<sup>3</sup>.

Data was corrected using Alberta air quality guideline. Data between 0 and -3 ug/m<sup>3</sup>, was corrected to 0 ug/m<sup>3</sup>. Data below -3 ug/m<sup>3</sup> was invalidated. Eighteen hours of data were invalidated this month as the data was below -3 ug/m<sup>3</sup>. A total of eighteen hours of data are missing this month due to power failures on May 11 from hour 7 to 16 and May 19 from hour 7 to 14.

### **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. A total of eighteen hours of data are missing this month due to power failures on May 11 from hour 7 to 16 and May 19 from hour 7 to 14.

Five hours of maximum instantaneous data collected on May 5 hour 9, May 21 hour 12 and May 23 hours 10, 18 and 20 were invalidated as the analyzer was recovering from short power outages. Two hours of maximum instantaneous data collected on May 7 from hour 19 to 20 were invalidated due to a spike; reason unknown.

### **RELATIVE HUMIDITY (RH)**

The humidity sensor was working well throughout the month. A total of eighteen hours of data are missing this month due to power failures on May 11 from hour 7 to 16 and May 19 from hour 7 to 14.

### **BAROMETRIC PRESSURE (BP)**

The pressure sensor was working well throughout the month. A total of eighteen hours of data are missing this month due to power failures on May 11 from hour 7 to 16 and May 19 from hour 7 to 14.

### **PRECIPITATION**

The rain gauge system was working well throughout the month. A routine check was conducted on the precipitation sensor on May 12. Two hours of data collected on May 5 from hour 10 to 11 were invalidated as the rain gauge system was recovering from a short power outage.

A total of eighteen hours of data are missing this month due to power failures on May 11 from hour 7 to 16 and May 19 from hour 7 to 14.

### **AMBIENT TEMPERATURE (TPX)**

The temperature sensor was working well throughout the month. A total of eighteen hours of data are missing this month due to power failures on May 11 from hour 7 to 16 and May 19 from hour 7 to 14.

## **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.

One 1-hr exceedence was recorded for PM 2.5 on May 15 at hour 21 with a concentration of 99 ug/m<sup>3</sup>.

The operational uptime for all analyzers and meteorological system were above the 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-00209: Ambient H<sub>2</sub>S Monitoring
- Maxxam AIR SOP-00211: Ambient SO<sub>2</sub> Monitoring
- Maxxam AIR SOP-00212: Ambient O<sub>3</sub> Monitoring
- Maxxam AIR SOP-00213: Ambient NO/NO<sub>2</sub>/NO<sub>x</sub> 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 100E UV Fluorescent Analyzer
- 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<sub>2.5</sub>) - 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
- 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

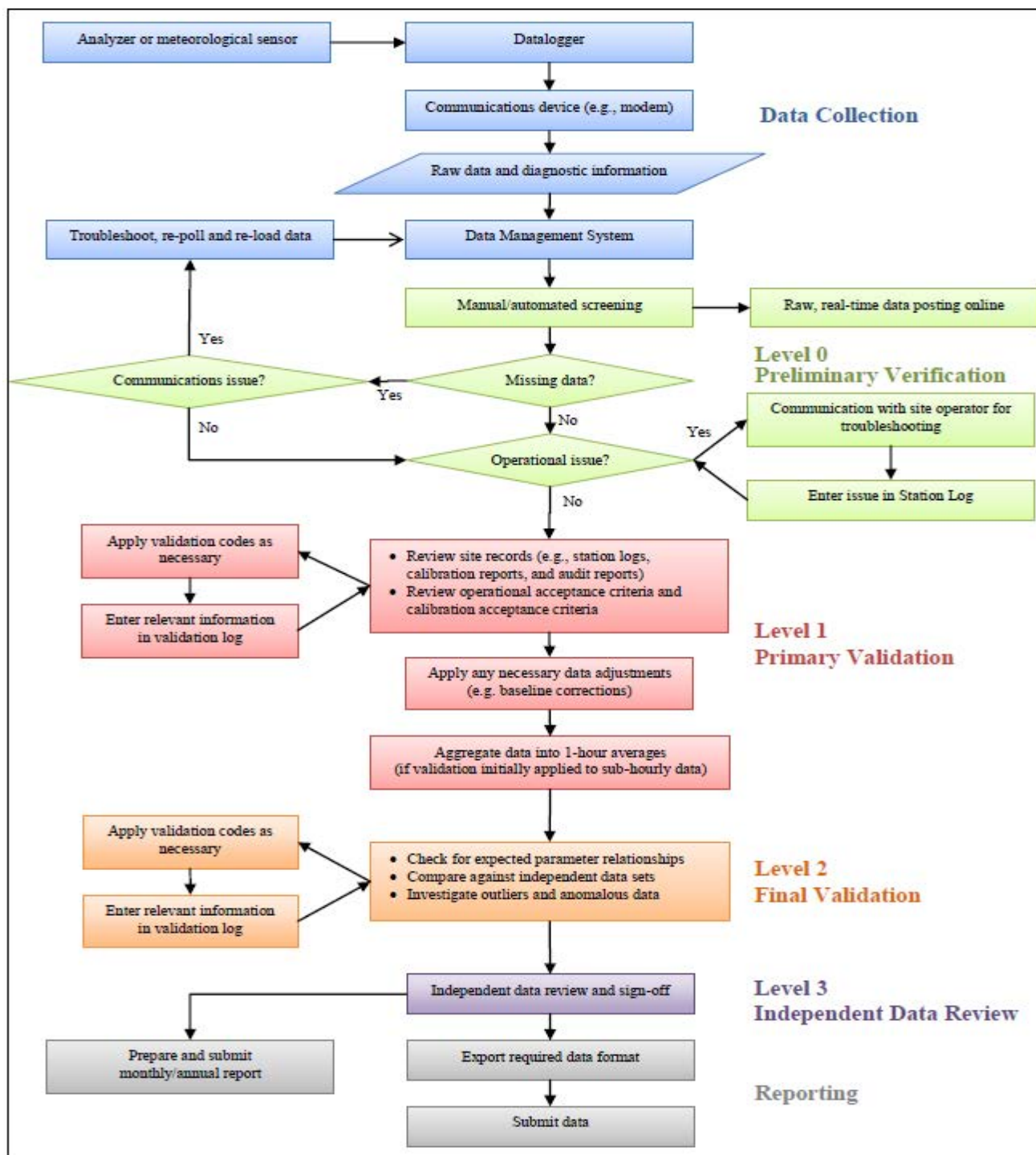
The purpose of Level 2 validation is to verify that there are no inconsistencies among related data, or among regional data measured at nearby sites.

#### 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	0.0	0.0	0.9	1.5	1.0	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	0.0	0.0	0.0	0.0	1.5	0.2	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	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	
3	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	
4	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	24	
5	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	
6	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	
7	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.2	0.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.0	0.0	0.6	0.1	24			
8	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	24	
9	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	
10	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	24	
11	0.0	0.0	S	0.0	0.0	0.0	0.0	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	14	
12	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	C	C	C	C	0.0	0.0	0.0	0.0	S1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23	
13	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	S	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	0.0	0.0	0.0	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		
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	S	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	S	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	S	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	S	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	P	P	P	P	P	P	P	P	P	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	16		
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	S	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	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	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	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		
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	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		
25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.7	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	0.7	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	0.0	24		
27	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	24		
28	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	24		
29	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		
30	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		
31	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	24		
HOURLY MAX	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	1.5	1.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.0								
HOURLY AVG	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	0.0	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

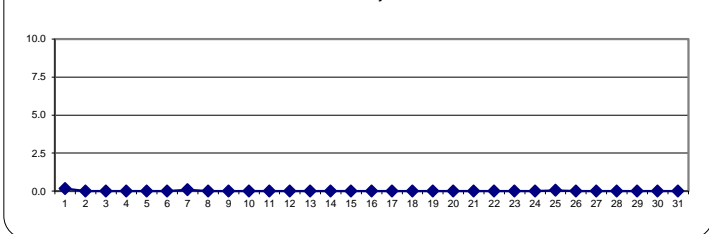
**OBJECTIVE LIMIT:**

<b>ALBERTA ENVIRONMENT:</b>	1-HR	172	PPB	24-HR	48	PPB
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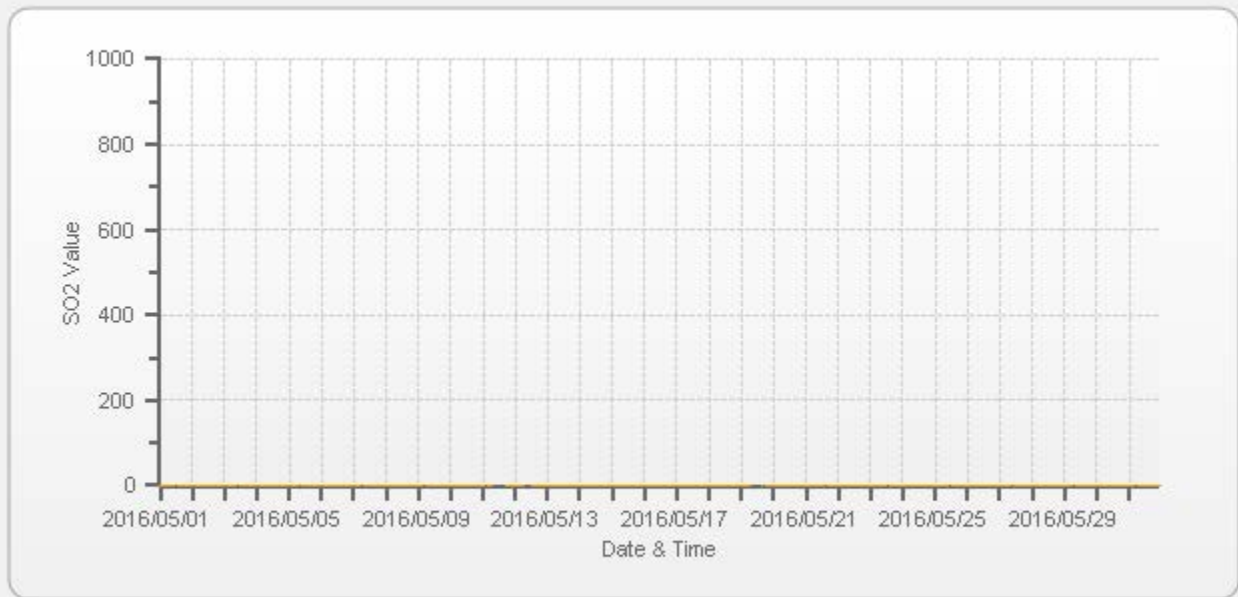
**MONTHLY SUMMARY**

NUMBER OF 1-HR EXCEEDENCES:	0			
NUMBER OF 24-HR EXCEEDENCES:	0			
NUMBER OF NON-ZERO READINGS:	11			
MINIMUM 1-HR AVERAGE:	0.0 PPB @ HOUR(S)	VAR	ON DAY(S)	ALL
MAXIMUM 1-HR AVERAGE:	1.5 PPB @ HOUR(S)	8	ON DAY(S)	1
MAXIMUM 24-HR AVERAGE:	0.2 PPB		ON DAY(S)	1
			VAR-VARIOUS	
IZS CALIBRATION TIME:	32 HRS	OPERATIONAL TIME:	725 HRS	
MONTHLY CALIBRATION TIME:	4 HRS	AMD OPERATION UPTIME:	97.4 %	
STANDARD DEVIATION:	0.09	MONTHLY AVERAGE:	0.0 PPB	

**24 HOUR AVERAGES FOR May 2016**







— SO2[ppb]



SULPHUR DIOXIDE MAX instantaneous maximum in ppb

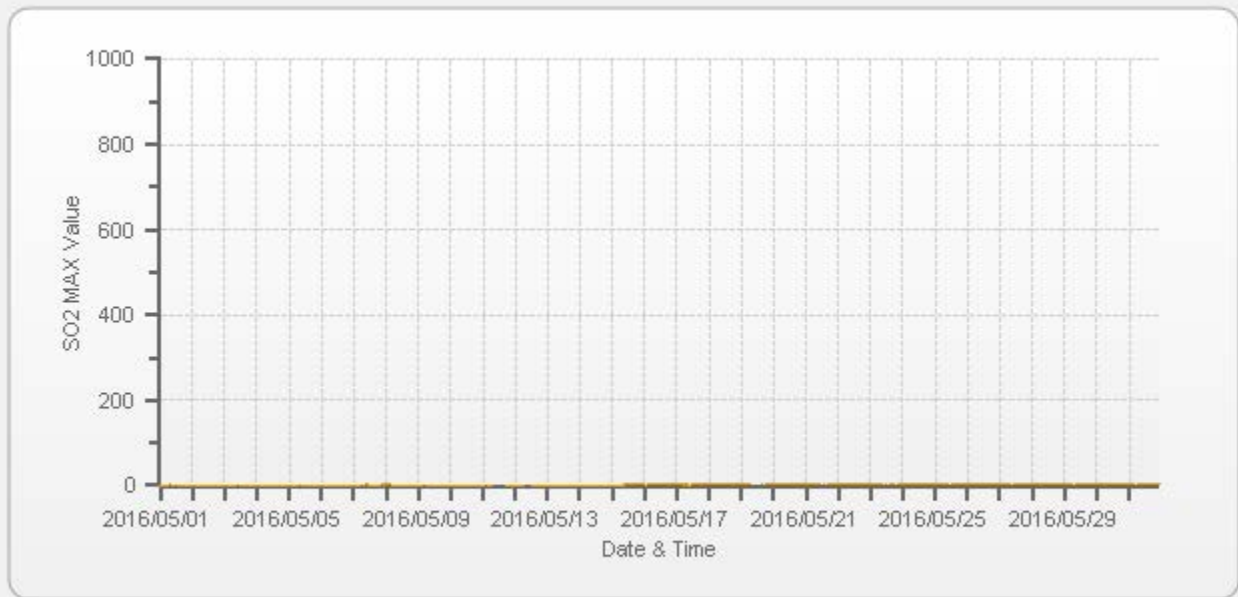
MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR								
DAY	MIN.	MAX.	AVG.	RDGS.																									MIN.	MAX.	AVG.	RDGS.				
1	0.0	0.0	0.0	0.0	0.0	0.1	0.7	2.5	2.7	2.1	1.3	0.7	S	0.2	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.6	0.4	0.4	0.8	0.0	2.7	0.6	24							
2	0.6	0.4	0.4	0.4	0.3	0.4	0.4	0.6	0.4	0.3	0.4	S	0.4	0.4	0.4	0.3	0.4	0.6	0.5	0.7	0.7	0.6	0.7	0.6	0.3	0.7	0.5	24								
3	0.8	0.7	0.6	0.7	0.7	0.9	1.0	1.1	0.9	1.2	S	0.8	0.6	0.9	0.9	1.0	1.3	1.3	1.2	1.2	1.2	1.5	1.3	1.5	0.6	1.5	1.0	24								
4	1.6	1.5	1.5	1.3	1.3	1.2	1.5	1.5	1.6	S	1.2	1.3	1.3	1.2	1.1	1.3	1.4	1.3	1.2	1.3	1.6	1.2	1.1	1.2	1.1	1.6	1.3	24								
5	1.0	1.0	1.0	1.0	1.0	0.8	0.9	0.7	S	R	1.0	0.8	0.8	0.8	0.8	0.6	0.7	0.7	1.0	0.8	0.8	1.0	0.6	0.6	1.0	0.8	23									
6	0.4	0.5	0.4	0.5	0.4	0.6	0.2	S	0.2	0.2	0.4	0.3	0.4	0.5	0.5	0.6	0.6	0.8	0.8	0.9	1.1	1.0	0.8	0.8	0.2	1.1	0.6	24								
7	0.8	1.0	1.0	1.1	1.2	1.2	S	1.6	2.3	2.6	2.4	2.0	1.9	1.9	1.8	2.0	2.2	2.2	2.2	2.0	1.9	4.1	3.8	2.2	0.8	4.1	2.0	24								
8	2.4	2.8	2.7	2.7	2.3	S	2.1	2.2	2.1	2.1	1.8	2.1	2.0	1.8	1.8	2.0	2.1	2.0	2.0	1.9	2.0	2.0	1.6	1.6	2.8	2.1	24									
9	1.4	1.6	1.7	1.5	S	1.3	1.5	1.3	1.1	1.2	1.1	1.0	1.0	0.9	1.0	0.9	1.1	1.1	0.7	0.8	0.7	0.7	0.6	0.6	0.6	1.7	1.1	24								
10	0.7	0.7	0.6	S	0.5	0.6	0.5	0.3	0.5	0.5	0.4	0.6	0.6	0.6	0.5	0.4	0.4	0.4	0.6	0.5	0.5	0.4	0.5	0.5	0.3	0.7	0.5	24								
11	0.5	0.5	S	0.7	0.9	0.6	0.8	P	P	P	P	P	P	P	P	P	P	P	0.5	0.6	0.6	0.5	0.4	0.5	0.5	0.4	0.9	0.6	14							
12	0.5	S	0.4	0.4	0.5	0.4	0.3	C	C	C	C	C	C	C	1.4	1.6	1.3	1.4	S1	1.3	1.3	1.4	1.5	1.4	1.2	1.1	0.3	1.6	1.0	23						
13	S	1.2	1.1	1.1	1.3	1.2	1.0	1.1	1.2	1.3	1.5	1.5	1.6	1.4	1.4	1.7	1.4	1.3	1.6	1.6	1.6	1.6	1.6	S	1.0	1.7	1.4	24								
14	1.4	1.4	1.5	1.5	1.6	1.5	1.6	1.5	1.7	1.5	1.5	1.5	1.9	1.7	1.8	1.9	1.9	1.9	1.9	1.9	2.1	S	1.9	1.4	2.1	1.7	24									
15	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.3	2.9	2.9	2.5	2.4	2.4	2.5	2.4	2.5	2.5	2.5	2.4	S	2.4	2.7	2.0	2.9	2.4	24									
16	2.4	2.3	2.4	2.4	2.4	2.6	2.6	2.6	2.6	3.4	3.1	2.7	2.7	3.1	3.3	2.7	2.5	2.6	2.7	2.7	S	2.5	2.6	2.5	2.3	3.4	2.7	24								
17	2.7	2.7	2.5	2.7	2.5	2.3	2.5	2.5	2.4	2.3	2.3	2.5	2.5	2.5	2.4	2.6	2.7	2.5	2.7	S	2.5	2.5	2.5	2.7	2.3	2.7	2.5	24								
18	2.5	2.8	2.5	2.6	2.4	2.7	2.7	2.7	3.0	3.1	2.7	2.7	2.6	2.8	3.1	3.0	3.2	3.0	S	3.1	3.2	3.2	3.1	2.9	2.4	3.2	2.9	24								
19	3.0	3.3	3.2	3.2	3.2	3.1	3.5	P	P	P	P	P	P	P	P	P	P	3.3	3.6	S	3.3	3.4	3.3	3.2	3.0	3.0	3.6	3.2	16							
20	3.1	3.3	3.3	3.1	3.4	2.9	3.0	3.1	2.9	2.9	2.9	2.8	2.7	2.9	2.7	2.7	S	2.7	2.9	2.7	2.7	2.6	2.6	2.7	2.6	3.4	2.9	24								
21	2.6	2.9	2.9	2.9	2.8	2.9	3.0	2.9	3.0	3.0	3.1	3.4	R	3.3	2.9	S	3.3	3.3	3.1	3.1	3.1	3.1	3.3	3.2	2.6	3.4	3.1	23								
22	3.3	3.5	3.5	3.6	3.6	3.6	3.7	3.8	3.9	3.9	3.9	3.7	3.9	3.9	S	3.8	3.6	3.8	3.5	3.8	3.5	3.8	3.6	3.5	3.3	3.9	3.7	24								
23	3.7	3.5	3.5	3.6	3.5	3.5	3.5	3.5	3.4	3.4	R	3.3	3.3	S	3.3	3.1	3.1	3.2	R	3.1	R	2.9	3.1	3.0	2.9	3.7	3.3	21								
24	2.9	2.8	2.8	2.9	2.7	2.7	2.9	2.8	2.8	2.9	2.9	3.0	S	2.9	2.9	2.7	3.1	2.8	3.0	3.1	3.1	3.0	3.0	3.0	2.7	3.1	2.9	24								
25	2.8	2.9	3.0	3.0	2.9	3.1	3.0	3.7	4.1	4.4	3.3	S	3.1	3.1	2.9	3.2	2.9	3.2	3.0	2.9	2.9	2.9	3.2	2.9	2.8	4.4	3.1	24								
26	2.9	3.0	3.0	3.0	3.1	3.1	3.1	3.0	3.0	3.3	S	3.3	3.4	3.5	3.4	3.3	3.5	3.5	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.3	2.9	3.5	3.2	24						
27	3.1	3.1	3.1	3.2	3.1	3.2	3.1	3.1	3.2	S	3.3	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.1	3.2	3.3	3.1	3.3	3.2	24								
28	3.1	3.2	3.3	3.1	3.0	3.0	3.3	3.5	S	3.7	3.8	3.8	3.3	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.0	3.2	3.0	2.9	3.1	2.9	3.8	3.2	24							
29	3.1	3.0	3.0	3.0	3.1	3.0	2.9	S	2.9	3.1	3.2	3.1	2.9	3.2	2.9	3.1	3.2	3.0	3.0	3.0	3.0	3.0	2.9	3.0	2.9	3.2	3.0	24								
30	3.1	3.0	2.9	2.9	2.9	2.8	S	3.0	2.8	3.0	2.8	2.8	2.7	2.9	2.7	2.6	2.8	2.7	2.5	2.7	2.4	2.4	2.5	2.4	3.1	2.8	24									
31	2.5	2.4	2.5	2.4	2.5	S	2.4	2.7	2.5	2.5	2.5	2.6	2.5	2.6	2.8	2.7	2.7	2.8	2.9	2.8	3.0	3.0	2.9	2.9	2.4	3.0	2.7	24								
HOURLY MAX	3.7	3.5	3.5	3.6	3.6	3.7	3.8	4.1	4.4	3.9	3.8	3.9	3.9	3.4	3.8	3.6	3.8	3.5	3.8	3.5	4.1	3.8	3.5													
HOURLY AVG	2.0	2.1	2.1	2.1	2.0	2.1	2.3	2.3	2.4	2.2	2.2	2.1	2.1	2.1	2.1	2.2	2.1	2.1	2.2	2.1	2.2	2.1	2.2	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

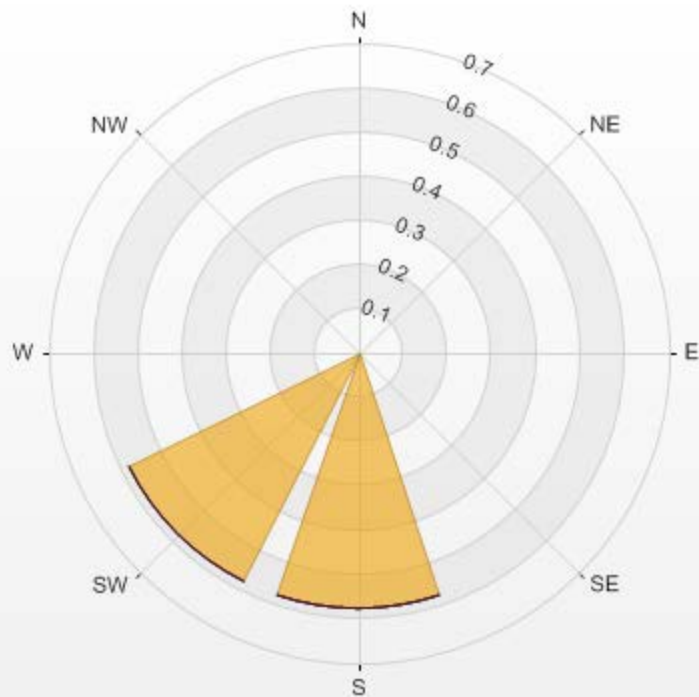
NUMBER OF NON-ZERO READINGS:	678
MAXIMUM INSTANTANEOUS VALUE:	4.4 PPB @ HOUR(S) 9 ON DAY(S) 25
	VAR-VARIOUS
IZS CALIBRATION TIME:	32 HRS
MONTHLY CALIBRATION TIME:	5 HRS
OPERATIONAL TIME:	720 HRS
STANDARD DEVIATION:	1.06

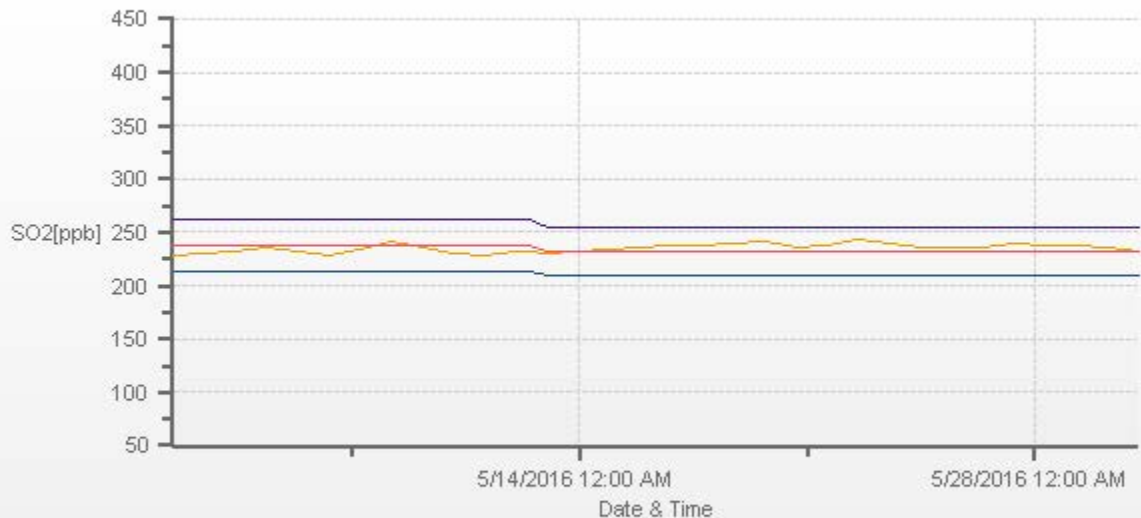


— SO2 MAX[ppb]

Wind: LICA ST. LINA Monitor: SO2 [ppb] Monthly: 05/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 98.84% Valid Data: 93.36% 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	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
S	0.58	0	0	0	0	0	0.58
SW	0.58	0	0	0	0	0	0.58
W	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
Summary	1.16	0	0	0	0	0	1.16





***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 MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.		
DAY	DAY																														
1	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	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
2	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	0.0	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	3	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	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	0.2	0.0	24	
4	4	0.0	0.0	0.1	0.0	0.0	0.2	0.3	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	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	24	
5	5	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	
6	6	0.0	0.0	0.0	0.1	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	0.0	0.0	0.0	0.0	0.0	0.1	0.0	24	
7	7	0.0	0.0	0.0	0.0	0.0	0.0	S	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	0.0	0.0	0.3	0.0	24	
8	8	0.0	0.0	0.1	0.2	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	0.1	0.1	0.0	0.2	0.0	24	
9	9	0.1	0.2	0.5	0.6	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	0.6	0.1	24	
10	10	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	
11	11	0.0	0.0	S	0.0	0.3	0.0	0.0	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	0.3	0.0	14	
12	12	0.0	S	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
13	13	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		
14	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	S	0.0	0.0	0.0	24		
15	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	S	0.0	0.0	0.0	0.0	24		
16	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	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
17	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	0.0	0.1	0.0	24	
18	18	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	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	24	
19	19	0.0	0.0	0.0	0.0	0.0	0.0	0.1	P	P	P	P	P	P	P	P	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	16	
20	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	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
21	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	0.2	0.2	0.3	S	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	
22	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	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	
23	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	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	
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	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	
25	25	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	
26	26	0.0	0.0	0.2	0.1	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	0.0	0.0	0.0	0.0	0.0	0.2	0.0	24	
27	27	0.0	0.2	0.0	0.0	0.1	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	0.2	0.0	24	
28	28	0.0	0.0	0.1	0.2	0.4	0.3	0.2	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	0.1	0.0	0.4	0.1	24	
29	29	0.3	0.1	0.3	0.4	0.5	0.6	0.4	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	0.6	0.1	24	
30	30	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	
31	31	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	
HOURLY MAX		0.3	0.2	0.5	0.6	0.5	0.6	0.4	0.2	0.3	0.1	0.0	0.1	0.2	0.2	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1					
HOURLY AVG		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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	

**STATUS FLAG CODES**

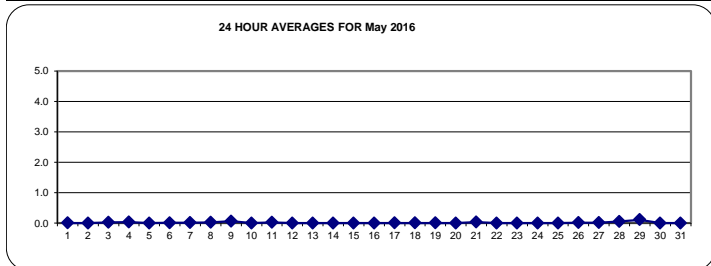
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

OBJECTIVE LIMIT:

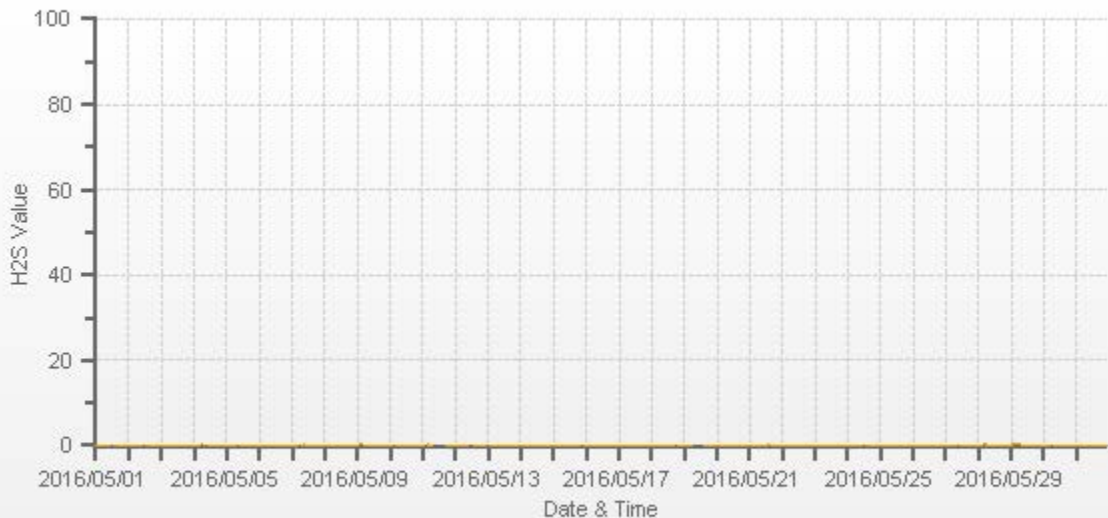
ALBERTA ENVIRONMENT:	1-HR	10	PPB	24-HR	3	PPB
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**MONTHLY SUMMARY**

NUMBER OF 1-HR EXCEEDENCES:	0					
NUMBER OF 24-HR EXCEEDENCES:	0					
NUMBER OF NON-ZERO READINGS:	47					
MINIMUM 1-HR AVERAGE:	0.0	PPB	@ HOUR(S)	VAR	ON DAY(S)	ALL
MAXIMUM 1-HR AVERAGE:	0.6	PPB	@ HOUR(S)	3 , 5	ON DAY(S)	9 , 29
MAXIMUM 24-HR AVERAGE:	0.1	PPB			ON DAY(S)	VAR
					VAR-VARIOUS	
IZS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	726	HRS	
MONTHLY CALIBRATION TIME:	4	HRS	AMD OPERATION UPTIME:	97.6	%	
STANDARD DEVIATION:	0.06		MONTHLY AVERAGE:	0.0	PPB	







— H2S[ppb]



HYDROGEN SULPHIDE MAX instantaneous maximum in ppb

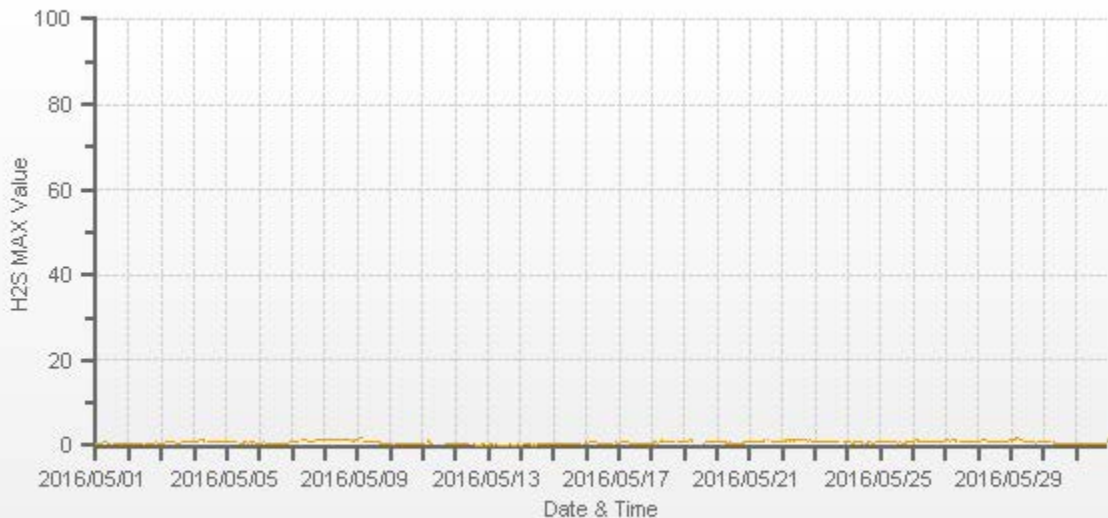
MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR		
DAY	MIN.	MAX.	AVG.	RDGS.																										
1	0.5	0.5	0.5	0.6	0.6	0.7	0.8	0.9	0.8	0.6	0.7	0.5	S	0.5	0.6	0.5	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.6	0.5	0.9	0.6	24	
2	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.6	0.6	S	0.6	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.7	0.6	0.7	0.5	0.8	0.6	24	
3	0.7	0.7	0.7	0.8	0.8	0.9	1.0	1.1	1.0	0.9	S	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.7	1.1	0.8	24	
4	0.9	1.0	1.1	1.1	1.2	1.4	1.5	1.3	1.1	S	1.0	0.9	1.0	1.0	1.1	1.0	0.9	1.0	1.0	1.0	1.0	1.1	1.0	0.9	0.9	0.9	1.5	1.1	24	
5	0.9	0.9	0.9	1.0	0.9	0.8	0.9	0.8	S	R	0.7	0.7	0.7	0.8	0.8	0.7	0.7	0.8	0.7	0.8	0.8	0.7	0.7	0.7	0.7	0.7	1.0	0.8	23	
6	0.7	0.6	0.6	1.0	0.8	0.7	0.7	S	0.7	0.6	0.5	0.5	0.6	0.6	0.5	0.6	0.5	0.6	0.6	0.7	0.7	0.7	0.7	0.8	0.8	0.5	1.0	0.7	24	
7	0.8	0.8	0.9	0.9	1.0	1.1	S	1.4	1.5	1.4	1.3	1.1	1.1	1.1	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	0.8	1.5	1.1	24	
8	1.4	1.4	1.5	1.6	1.5	S	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.2	1.2	1.1	1.1	1.1	1.2	1.2	1.1	1.6	1.3	24		
9	1.2	1.2	1.8	1.7	S	1.0	0.9	0.9	0.9	0.8	0.9	0.8	0.8	0.8	0.8	0.7	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	1.8	0.9	24	
10	0.7	0.6	0.6	S	0.6	0.6	0.6	0.5	0.5	0.5	0.6	0.6	0.5	0.6	0.6	0.5	0.6	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.5	0.7	0.6	24	
11	0.6	0.7	S	0.9	1.3	0.7	0.7	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	0.4	1.3	0.6	14	
12	0.5	S	0.5	0.5	0.4	0.5	0.4	0.5	0.4	0.5	0.5	C	C	C	C	0.3	0.2	0.2	0.2	0.1	0.1	0.3	0.4	0.1	0.1	0.1	0.5	0.3	24	
13	S	0.2	0.3	0.3	0.2	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.3	S	0.1	0.3	0.2	24	
14	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.5	S	0.5	0.2	0.5	0.3	24		
15	0.6	0.6	0.5	0.6	0.6	0.5	0.5	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.5	0.5	0.6	0.6	0.7	S	0.7	0.7	0.5	0.7	0.6	24	
16	0.8	0.7	0.8	0.9	0.9	0.9	1.0	1.0	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.6	S	0.7	0.8	0.7	0.6	1.0	0.7	24	
17	0.7	0.7	0.9	1.0	0.9	1.0	1.0	1.1	0.7	0.7	0.6	0.6	0.6	0.7	0.7	0.6	0.6	0.7	0.7	S	0.7	0.7	0.7	0.7	0.7	0.6	1.1	0.8	24	
18	0.7	0.7	0.9	0.9	0.7	0.7	1.0	1.2	1.1	1.0	0.8	0.9	0.8	0.8	0.8	0.8	0.8	0.9	S	0.8	0.9	1.0	1.0	1.0	1.0	0.7	1.2	0.9	24	
19	1.0	1.0	1.0	1.0	1.3	1.1	1.3	P	P	P	P	P	P	P	P	P	0.7	0.8	S	0.9	0.8	0.9	0.9	0.9	0.9	0.7	1.3	1.0	16	
20	0.9	0.8	0.9	1.0	1.1	0.9	0.8	0.7	0.7	0.7	0.8	0.6	0.6	0.7	0.6	0.6	S	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.9	0.6	1.1	0.8	24	
21	0.8	0.8	0.9	1.0	1.0	0.9	1.0	0.9	1.0	1.1	1.1	1.2	R	1.2	1.3	S	1.1	1.0	0.9	1.0	0.9	1.0	1.0	1.0	0.8	1.3	1.0	23		
22	1.1	1.0	1.1	1.2	1.2	1.2	1.1	1.4	1.1	1.2	1.2	1.2	1.2	1.3	S	1.3	1.2	1.2	1.3	1.1	1.2	1.1	1.1	1.1	1.0	1.4	1.2	24		
23	1.0	1.0	1.0	0.9	1.0	1.0	1.0	0.9	1.0	R	0.9	0.9	S	0.9	0.9	0.9	0.8	R	0.9	R	0.8	0.7	0.8	0.7	0.8	0.7	1.0	0.9	21	
24	0.8	0.9	0.8	0.7	0.7	0.8	0.8	0.9	0.8	0.8	0.7	0.8	S	0.6	0.7	0.8	0.8	0.7	0.7	0.6	0.8	0.9	1.0	1.1	0.6	1.1	0.8	24		
25	1.0	0.9	1.0	0.9	1.0	1.1	1.1	1.0	0.9	0.8	0.8	S	0.8	0.7	0.8	0.8	0.7	0.7	0.7	0.8	0.9	0.8	0.9	0.8	0.7	1.1	0.9	24		
26	0.7	1.1	1.4	1.2	1.1	1.0	1.1	1.1	1.0	0.9	S	1.1	1.0	0.8	0.8	0.8	0.9	0.9	0.8	0.8	0.8	1.0	1.1	1.1	0.7	1.4	1.0	24		
27	1.2	1.4	1.2	1.1	1.5	1.3	1.3	1.3	1.1	S	0.9	1.0	0.9	0.9	0.8	0.8	0.9	0.8	0.9	1.0	1.0	0.9	1.0	1.0	0.8	1.5	1.1	24		
28	0.9	1.1	1.3	1.2	1.5	1.3	1.3	1.1	S	0.8	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9	1.4	0.8	1.5	1.0	24	
29	1.4	1.1	1.5	1.3	1.8	1.8	1.6	S	1.3	0.8	0.8	0.8	0.8	0.8	0.9	0.8	0.8	0.8	0.8	0.7	0.8	0.8	0.8	0.8	0.7	1.8	1.0	24		
30	0.9	0.9	0.8	0.8	0.8	0.8	S	0.7	0.8	0.7	0.6	0.7	0.7	0.6	0.7	0.6	0.6	0.6	0.6	0.5	0.5	0.6	0.6	0.5	0.5	0.9	0.7	24		
31	0.6	0.6	0.5	0.7	0.6	S	0.6	0.5	0.5	0.6	0.5	0.5	0.5	0.6	0.5	0.7	0.6	0.6	0.6	0.7	0.6	0.6	0.7	1.3	0.5	1.3	0.6	24		
HOURLY MAX	1.4	1.4	1.8	1.7	1.8	1.8	1.6	1.4	1.5	1.4	1.3	1.2	1.2	1.3	1.3	1.3	1.2	1.3	1.3	1.3	1.2	1.2	1.2	1.4						
HOURLY AVG	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.7	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	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:	685
MAXIMUM INSTANTANEOUS VALUE:	1.8 PPB @ HOUR(S) VAR ON DAY(S) 9, 29
	VAR-VARIOUS
IZS CALIBRATION TIME:	32 HRS
MONTHLY CALIBRATION TIME:	4 HRS
OPERATIONAL TIME:	721 HRS
STANDARD DEVIATION:	0.29



— H2S MAX[ppb]

Wind: LICA ST. LINA Monitor: H2S [ppb] Monthly: 05/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 99.57% Valid Data: 93.50% Calm Avg: 0.00

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	0	0	0	0
SW	0.29	0	0	0	0.29
W	0	0	0	0	0
NW	0.14	0	0	0	0.14
Summary	0.43	0	0	0	0.43





***TOTAL HYDROCARBON***

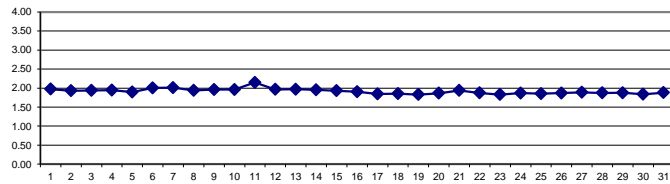
**TOTAL HYDROCARBONS (THC) hourly averages in ppm**

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 MIN.	DAILY MAX.	24-HOUR AVG.	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.	RDGS.	
1	1	1.97	1.98	1.99	2.00	2.00	2.01	2.03	2.05	2.02	2.05	2.01	S	1.92	1.90	1.92	1.92	1.92	1.93	1.92	1.94	1.93	1.93	1.95	1.91	1.90	2.05	1.97	24	
2	2	1.93	1.93	1.92	1.93	1.92	1.90	1.92	1.96	1.96	1.94	1.92	S	1.90	1.90	1.92	1.91	1.92	1.91	1.90	1.94	1.96	1.96	1.94	1.93	1.90	1.96	1.93	24	
3	3	1.90	1.93	1.94	1.92	1.94	1.97	1.98	1.99	2.00	1.95	S	1.88	1.90	1.91	1.91	1.92	1.95	1.93	1.91	1.91	1.91	1.93	1.94	1.95	1.88	2.00	1.93	24	
4	4	1.97	1.94	1.93	1.92	1.94	1.96	2.00	2.06	2.04	S	1.92	1.93	1.92	1.92	1.92	1.91	1.90	1.90	2.00	1.93	1.93	1.91	1.90	1.92	1.90	2.06	1.94	24	
5	5	1.88	1.86	1.88	1.86	1.86	1.88	1.89	1.89	S	1.94	1.92	1.89	1.93	1.87	1.90	1.87	1.96	1.91	1.92	1.87	1.87	1.87	1.90	1.92	1.86	1.96	1.89	24	
6	6	1.90	1.91	1.95	2.00	2.09	2.13	2.13	S	1.98	1.95	1.98	2.00	2.00	2.00	2.00	2.02	1.99	2.01	2.01	1.96	1.99	2.02	2.00	1.99	1.90	2.13	2.00	24	
7	7	2.00	2.03	2.03	2.03	2.04	2.05	S	2.05	2.06	2.09	2.07	2.02	2.00	1.97	1.98	1.97	1.97	1.96	2.00	1.99	1.98	1.99	1.98	1.96	1.96	2.09	2.01	24	
8	8	1.95	1.94	1.91	1.94	1.94	S	1.93	1.93	1.95	1.96	1.94	1.94	1.93	1.93	1.97	1.98	1.97	1.96	1.91	1.91	1.91	1.92	1.93	1.94	1.91	1.98	1.94	24	
9	9	1.96	1.94	1.97	1.95	S	1.98	1.97	1.97	1.97	1.98	1.97	1.96	1.97	1.95	1.97	1.97	1.97	1.95	1.94	1.95	1.96	1.95	1.95	1.94	1.94	1.98	1.96	24	
10	10	1.94	1.94	1.94	S	1.94	2.03	1.98	1.95	1.96	1.95	1.94	1.94	1.95	1.96	1.94	1.94	1.93	1.92	1.93	1.95	1.95	1.98	2.02	2.11	1.92	2.11	1.96	24	
11	11	2.22	2.15	S	2.26	2.19	<b>2.31</b>	2.14	P	P	P	P	P	P	P	P	P	P	2.12	2.07	2.08	2.06	2.03	2.09	2.20	2.03	<b>2.31</b>	<b>2.15</b>	14	
12	12	2.14	S	2.20	2.27	2.07	2.03	2.05	2.11	C	C	C	1.85	1.86	1.88	1.88	1.90	1.90	1.88	1.87	1.88	1.90	1.87	1.88	1.89	1.85	2.27	1.97	24	
13	13	S	1.89	2.03	1.97	1.96	1.98	1.99	2.01	1.98	2.00	1.99	1.99	1.98	1.96	1.97	1.97	1.97	1.96	1.94	1.94	1.94	1.93	1.92	S	1.89	2.03	1.97	24	
14	14	1.93	1.94	1.95	1.96	1.96	1.96	1.96	1.94	1.95	1.95	1.95	1.95	1.95	1.93	1.94	1.95	1.95	1.94	1.93	2.17	1.97	1.90	S	1.90	1.90	2.17	1.95	24	
15	15	1.95	1.95	1.95	1.93	1.92	1.91	1.92	1.92	1.94	1.98	1.94	1.93	1.92	1.92	1.93	1.94	1.93	1.93	1.94	1.93	1.90	S	1.92	1.93	1.90	1.98	1.93	24	
16	16	1.92	1.94	1.95	1.95	1.95	1.95	1.96	1.97	1.94	1.93	1.92	1.90	1.90	1.88	1.88	1.89	1.89	1.86	1.86	1.86	S	1.85	1.82	1.82	1.82	1.82	1.97	1.90	24
17	17	1.83	1.84	1.84	1.84	1.87	1.87	1.87	1.88	1.88	1.85	1.85	1.84	1.84	1.83	1.82	1.84	1.85	1.85	1.87	S	1.85	1.83	1.81	1.79	1.79	1.88	1.85	24	
18	18	1.82	1.82	1.83	1.85	1.85	1.84	1.88	1.95	1.93	1.91	1.86	1.85	1.81	1.80	1.79	1.83	1.82	1.82	S	1.86	1.84	1.90	1.83	1.86	1.79	1.95	1.85	24	
19	19	1.77	1.74	1.73	<b>1.72</b>	<b>1.72</b>	1.80	1.87	P	P	P	P	P	P	P	P	1.91	1.88	S	1.90	1.89	1.89	1.89	1.89	1.86	<b>1.72</b>	1.91	1.83	16	
20	20	1.84	1.85	1.85	1.82	1.83	1.83	1.83	1.82	1.84	1.84	1.89	1.87	P	1.88	1.88	1.88	1.89	S	1.90	1.92	1.89	1.89	1.85	1.87	1.88	1.82	1.92	1.86	24
21	21	1.87	1.88	1.88	1.89	1.88	1.91	1.88	1.92	1.98	2.04	2.06	2.13	2.06	2.02	2.00	S	1.94	1.90	1.87	1.92	1.92	1.89	1.87	1.86	1.86	2.13	1.94	24	
22	22	1.88	1.87	1.88	1.89	1.89	1.84	1.84	1.85	1.87	1.87	1.88	1.90	1.89	1.86	S	1.81	1.84	1.91	1.91	1.87	1.86	1.89	1.88	1.90	1.81	1.91	1.87	24	
23	23	1.83	1.83	1.83	1.82	1.82	1.81	1.81	1.82	1.82	1.81	1.84	1.82	1.82	S	1.81	1.83	1.83	1.84	1.83	1.88	1.85	1.87	1.84	1.84	1.81	1.88	1.83	24	
24	24	1.82	1.83	1.84	1.86	1.89	1.91	1.90	1.87	1.84	1.83	1.85	1.85	S	1.84	1.86	1.89	1.90	1.89	1.90	1.86	1.87	1.89	1.90	1.89	1.82	1.91	1.87	24	
25	25	1.87	1.86	1.85	1.85	1.85	1.86	1.86	1.84	1.87	1.88	1.85	S	1.84	1.84	1.85	1.85	1.85	1.85	1.84	1.85	1.87	1.84	1.84	1.84	1.84	1.88	1.85	24	
26	26	1.86	1.83	1.83	1.79	1.87	1.88	1.89	1.86	1.84	1.81	S	1.84	1.84	1.81	1.81	1.82	1.82	1.80	1.95	1.97	1.99	2.01	1.93	1.79	2.01	1.87	24		
27	27	1.88	1.96	1.93	1.91	1.93	1.97	2.00	2.15	2.22	S	1.84	1.81	1.80	1.80	1.82	1.82	1.81	1.80	1.82	1.84	1.86	1.77	1.84	1.79	1.77	2.22	1.89	24	
28	28	1.83	1.89	1.93	1.98	1.94	1.94	1.86	1.87	S	1.85	1.88	1.88	1.83	1.83	1.84	1.84	1.84	1.83	1.83	1.87	1.88	1.90	1.87	1.87	1.83	1.98	1.87	24	
29	29	1.88	1.92	1.88	1.88	1.92	1.89	1.91	S	1.95	1.93	1.91	1.87	1.86	1.85	1.86	1.87	1.87	1.87	1.83	1.90	1.84	1.81	1.83	1.80	1.81	1.80	1.95	1.87	24
30	30	1.84	1.82	1.81	1.82	1.81	1.81	S	1.80	1.84	1.84	1.82	1.83	1.86	1.89	1.88	1.84	1.86	1.87	1.87	1.83	1.82	1.82	1.81	1.82	1.80	1.89	1.84	24	
31	31	1.84	1.85	1.83	1.85	1.86	S	1.84	1.85	1.88	1.87	1.87	1.88	1.89	1.91	1.91	1.91	1.92	1.90	1.92	1.91	1.88	1.87	1.87	1.91	1.83	1.92	1.88	24	
HOURLY MAX		2.22	2.15	2.20	2.27	2.19	2.31	2.14	2.15	2.22	2.09	2.07	2.13	2.06	2.02	2.00	2.02	1.99	2.12	2.07	2.17	2.06	2.03	2.09	2.20					
HOURLY AVG		1.91	1.90	1.91	1.92	1.92	1.94	1.93	1.94	1.94	1.92	1.92	1.91	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.91	1.92	1.91	1.90	1.90	1.91				

**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

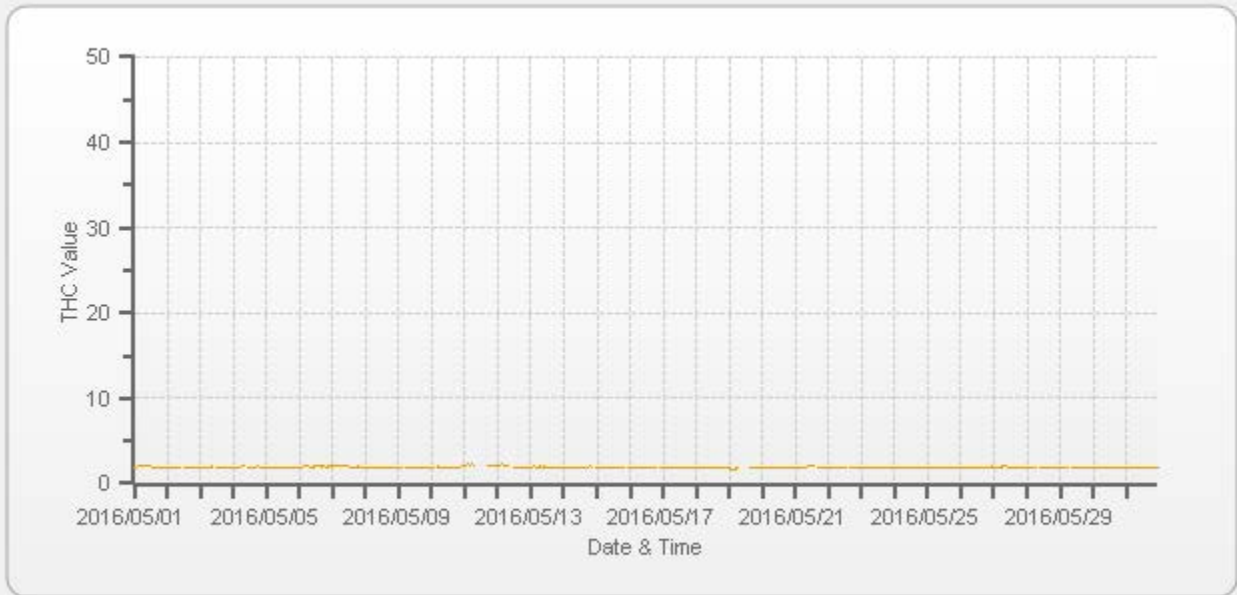
24 HOUR AVERAGES FOR May 2016



**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS:	691		
MINIMUM 1-HR AVERAGE:	1.72 PPM	@ HOUR(S)	3 , 4 ON DAY(S) 19 , 19
MAXIMUM 1-HR AVERAGE:	2.31 PPM	@ HOUR(S)	5 ON DAY(S) 11
MAXIMUM 24-HR AVERAGE:	2.15 PPM		ON DAY(S) 11
			VAR-VARIOUS
IZS CALIBRATION TIME:	32 HRS	OPERATIONAL TIME:	726 HRS
MONTHLY CALIBRATION TIME:	3 HRS	AMD OPERATION UPTIME:	97.6 %
STANDARD DEVIATION:	0.08	MONTHLY AVERAGE:	1.91 PPM





— 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 MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.	
DAY	HOUR START HOUR END	0:00 0:59	1:00 1:59	2:00 2:59	3:00 3:59	4:00 4:59	5:00 5:59	6:00 6:59	7:00 7:59	8:00 8:59	9:00 9:59	10:00 10:59	11:00 11:59	12:00 12:59	13:00 13:59	14:00 14:59	15:00 15:59	16:00 16:59	17:00 17:59	18:00 18:59	19:00 19:59	20:00 20:59	21:00 21:59	22:00 22:59	23:00 23:59					
1		2.20	2.20	2.23	2.23	2.23	2.26	2.26	2.27	2.26	2.29	2.65	2.51	S	2.27	2.21	2.23	2.22	2.26	2.23	2.44	2.14	2.14	2.14	2.14	2.14	2.14	2.65	2.26	24
2		2.12	2.12	2.44	2.53	2.32	2.11	2.11	2.20	2.23	2.20	2.54	S	2.57	2.08	2.11	2.29	2.29	2.50	2.08	2.15	2.14	2.14	2.12	2.12	2.08	2.57	2.24	24	
3		2.08	2.12	2.12	2.09	2.11	2.14	2.14	2.17	2.15	2.14	S	2.05	2.08	2.08	2.08	2.08	2.11	2.08	2.08	2.07	2.05	2.08	2.08	2.08	2.05	2.17	2.10	24	
4		2.09	2.08	2.04	2.04	2.05	2.08	2.12	2.18	2.23	S	2.17	2.26	2.17	2.23	2.11	2.22	2.25	2.20	3.51	2.23	2.36	2.27	2.04	2.11	2.04	3.51	2.22	24	
5		2.05	2.20	2.17	2.04	2.02	2.08	2.17	2.17	S	R	2.63	2.21	3.01	2.05	2.09	2.08	2.51	2.32	2.13	2.08	2.09	2.08	2.14	2.22	2.02	3.01	2.21	23	
6		2.12	2.14	2.61	2.66	4.02	3.39	4.05	S	2.57	2.32	2.38	2.44	2.39	2.32	2.50	2.41	2.35	2.58	2.20	2.14	2.17	2.18	2.17	2.14	2.12	4.05	2.53	24	
7		2.14	2.17	2.14	2.15	2.15	2.15	S	2.13	2.14	2.17	2.14	2.11	2.06	2.02	2.17	2.01	1.99	1.98	2.89	2.01	1.98	1.95	1.95	1.92	1.92	2.89	2.11	24	
8		1.89	1.89	1.86	1.99	2.04	S	2.01	1.95	1.98	2.01	1.99	1.98	1.98	2.03	2.24	2.02	2.06	2.04	1.98	2.05	1.99	2.08	2.11	2.18	1.86	2.24	2.02	24	
9		2.23	2.14	2.15	2.23	S	2.35	2.53	2.29	2.30	2.29	2.23	2.29	2.54	2.26	2.35	2.27	2.21	2.29	2.28	2.20	2.29	2.18	2.35	2.18	2.14	2.54	2.28	24	
10		2.11	2.14	2.14	S	2.18	2.70	2.53	2.15	2.48	2.29	2.20	2.21	2.30	2.28	2.27	2.17	2.26	2.14	2.14	2.15	2.17	2.20	2.25	2.35	2.11	2.70	2.25	24	
11		2.45	2.44	S	2.54	2.48	2.66	2.39	P	P	P	P	P	P	P	P	P	P	2.39	2.35	2.35	2.35	2.30	2.48	2.51	2.30	2.66	2.44	14	
12		2.45	S	2.54	2.69	2.35	2.29	2.29	C	C	C	C	C	2.08	2.09	2.11	2.11	2.11	2.11	2.08	2.09	2.11	2.08	2.09	2.11	2.08	2.69	2.21	24	
13		S	2.14	2.85	2.26	2.17	2.17	2.18	2.20	2.17	2.60	2.29	2.32	2.29	2.17	2.17	2.47	2.18	2.40	2.12	2.08	2.08	2.06	2.05	S	2.05	2.85	2.25	24	
14		2.05	2.06	2.07	2.08	2.08	2.06	2.05	2.04	2.24	2.40	2.11	2.17	2.14	2.09	2.11	2.77	2.15	2.21	2.60	3.11	2.54	2.05	S	1.96	1.96	3.11	2.22	24	
15		2.02	2.01	1.98	1.96	1.96	1.95	1.96	1.95	1.98	1.17	2.11	2.15	2.02	2.02	2.05	2.23	1.98	1.97	1.95	1.97	1.92	S	1.94	1.95	1.92	2.23	2.01	24	
16		1.94	1.96	1.98	1.98	1.98	1.98	1.99	1.99	1.96	1.96	1.95	1.92	1.92	1.92	1.91	1.92	1.92	1.89	1.89	1.89	S	1.89	1.86	1.86	1.86	1.99	1.93	24	
17		1.88	1.88	1.88	1.89	1.92	1.92	1.92	2.01	2.18	1.98	2.11	1.98	2.14	2.14	1.97	2.02	2.12	2.18	2.21	S	2.01	2.11	2.11	1.83	1.83	2.21	2.02	24	
18		2.00	1.89	1.88	2.37	2.23	3.17	2.08	2.04	2.38	2.30	2.08	2.26	1.83	1.83	1.94	2.09	1.85	1.86	S	1.97	1.95	1.98	1.93	3.93	1.83	3.93	2.17	24	
19		1.95	1.80	1.82	1.80	1.80	1.80	1.95	1.98	P	P	P	P	P	P	P	2.08	2.06	S	2.08	2.05	2.05	2.05	2.04	1.80	2.08	1.97	16		
20		2.01	2.01	2.01	1.98	1.98	2.00	1.98	1.98	2.00	2.01	2.04	2.03	2.03	2.04	2.04	2.04	S	2.26	2.26	2.20	2.20	2.00	2.01	2.20	1.98	2.26	2.06	24	
21		1.98	2.11	2.08	2.08	2.01	2.35	2.04	2.06	2.11	2.15	2.19	2.25	R	2.11	2.11	S	2.38	2.15	2.11	2.25	2.12	2.12	2.14	1.95	1.95	2.38	2.13	23	
22		1.97	1.97	1.93	1.91	1.92	1.86	1.83	1.85	1.86	1.85	1.86	1.88	1.88	1.83	S	1.79	1.83	1.89	1.92	1.86	1.85	1.89	1.89	1.92	1.79	1.97	1.88	24	
23		1.83	1.86	1.85	1.85	1.83	1.83	1.83	1.85	1.86	1.86	R	1.88	1.88	S	1.89	1.92	1.91	1.91	R	2.09	R	2.09	1.92	1.92	1.83	2.09	1.89	21	
24		1.92	1.94	1.95	1.98	2.00	2.04	2.03	2.02	1.97	1.95	2.00	1.98	S	2.00	2.01	2.04	2.05	2.04	2.04	2.01	2.01	2.02	2.04	2.02	1.92	2.05	2.00	24	
25		2.01	1.99	1.98	1.98	1.98	1.99	2.00	1.98	2.03	2.01	1.98	S	1.98	2.00	2.01	2.04	2.01	2.01	2.01	2.01	2.04	2.01	2.01	2.01	2.54	1.98	2.54	2.03	24
26		3.44	<b>10.44</b>	6.73	2.14	2.61	2.09	2.08	2.05	2.39	2.72	S	2.02	2.01	1.98	1.96	1.95	1.98	1.98	2.08	2.18	2.18	2.26	2.29	2.06	1.95	<b>10.44</b>	2.77	24	
27		2.23	2.17	2.14	2.08	2.06	2.20	2.20	2.32	2.35	S	1.98	1.89	1.88	1.91	1.91	2.38	1.94	1.91	1.96	1.95	1.95	1.95	2.01	2.00	1.88	2.38	2.06	24	
28		2.02	2.08	2.06	2.09	2.08	2.05	2.03	2.21	S	1.99	2.06	2.14	1.95	1.95	1.95	1.95	2.01	1.93	1.95	1.98	2.01	2.05	2.02	1.98	1.93	2.21	2.02	24	
29		2.14	2.15	2.50	2.08	2.88	2.03	2.03	S	2.09	2.08	2.05	2.03	1.98	1.98	2.03	2.01	2.01	2.01	3.18	2.08	1.95	2.17	1.94	2.17	1.94	3.18	2.16	24	
30		2.20	2.11	2.08	2.11	2.21	2.03	S	2.00	2.04	2.03	2.01	2.11	2.08	2.29	2.20	2.06	2.07	2.18	2.29	2.29	2.14	2.11	2.01	2.05	2.00	2.29	2.12	24	
31		2.29	2.33	2.18	2.39	2.39	S	2.17	2.08	2.11	2.11	2.08	2.11	2.14	2.18	2.17	2.12	2.26	2.12	2.19	2.15	2.05	2.03	2.01	2.07	2.01	2.39	2.16	24	
HOURLY MAX		3.44	10.44	6.73	2.69	4.02	3.39	4.05	2.32	2.57	2.72	2.65	2.51	3.01	2.32	2.50	2.77	2.51	2.58	3.51	3.11	2.54	2.30	2.48	3.93					
HOURLY AVG		2.13	2.35	2.28	2.14	2.20	2.20	2.17	2.08	2.16	2.16	2.15	2.12	2.13	2.08	2.10	2.13	2.11	2.13	2.23	2.14	2.10	2.08	2.07	2.15					

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

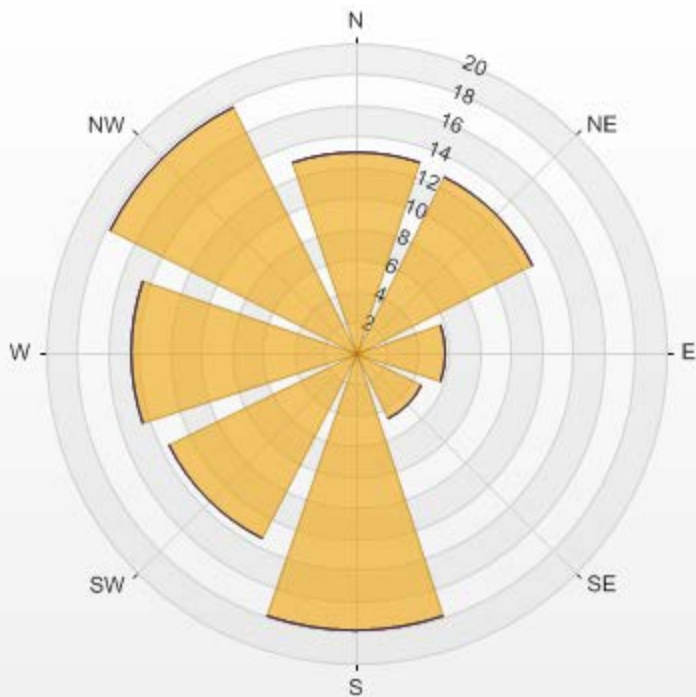
NUMBER OF NON-ZERO READINGS:	684
MAXIMUM INSTANTANEOUS VALUE:	10.44 PPM @ HOUR(S) 1 ON DAY(S) 26
	VAR-VARIOUS
IZS CALIBRATION TIME:	32 HRS
MONTHLY CALIBRATION TIME:	5 HRS
OPERATIONAL TIME:	721 HRS
STANDARD DEVIATION:	0.44



— THC MAX[ppm]

Wind: LICA ST. LINA Monitor: THC [ppm] Monthly: 05/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 93.63% Calm Avg: 0.00

Direction	0.5-3.0	3.0-10.0	10.0-50.0	>50.0	Total
N	13.02	0	0	0	13.02
NE	12.74	0	0	0	12.74
E	5.79	0	0	0	5.79
SE	4.78	0	0	0	4.78
S	17.95	0	0	0	17.95
SW	13.46	0	0	0	13.46
W	14.47	0	0	0	14.47
NW	17.8	0	0	0	17.8
Summary	100	0	0	0	100



% Icon Classes (ppm)

100

0.5-3.0

0

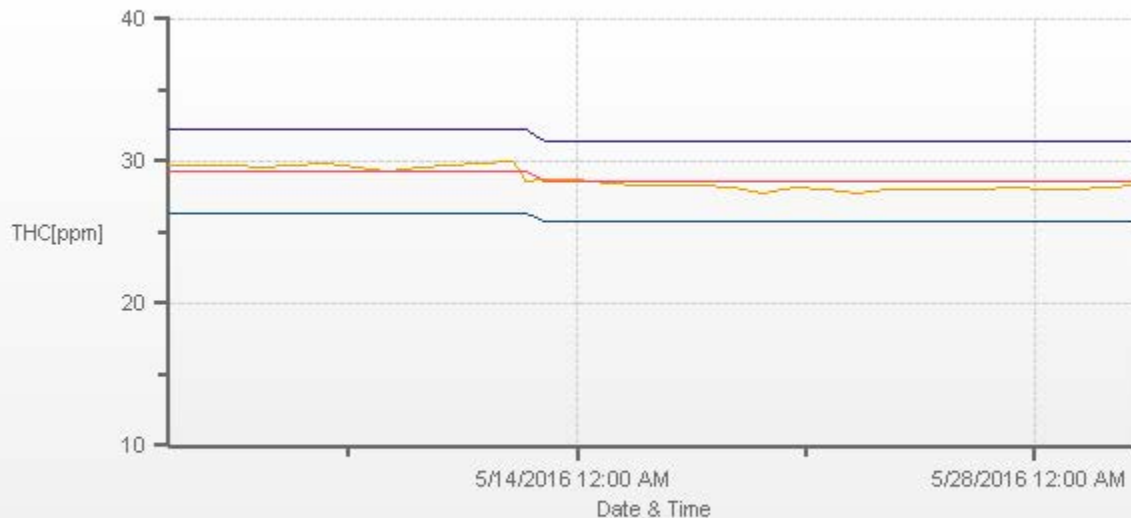
3.0-10.0

0

10.0-50.0

0

>50.0



## ***OXIDES OF NITROGEN***

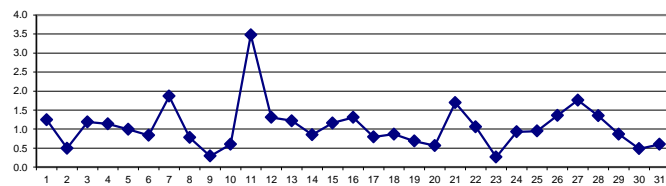
**OXIDES OF NITROGEN (NOx) hourly averages in ppb**

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	1.4	1.4	1.0	1.2	1.4	2.1	2.2	3.8	4.0	3.2	2.6	1.4	S	0.4	0.1	0.1	0.1	0.2	0.3	0.1	0.3	0.3	0.3	0.7	0.1	4.0	1.2	24		
2	0.4	0.7	0.6	0.2	0.7	0.1	0.5	0.6	0.2	0.4	0.2	S	0.6	0.1	0.2	0.0	0.3	0.0	0.0	1.6	2.4	0.5	0.6	0.5	0.0	2.4	0.5	24		
3	1.0	1.0	0.8	1.0	1.5	2.1	3.0	3.7	2.3	1.6	S	0.7	0.6	0.5	0.4	0.6	0.4	0.5	0.5	1.0	0.7	1.2	1.1	1.1	0.4	3.7	1.2	24		
4	1.2	1.7	1.7	1.6	1.8	2.9	2.5	2.3	1.9	S	0.7	0.5	0.3	0.4	0.4	0.6	0.5	0.6	0.5	1.0	0.6	1.1	0.7	0.6	0.3	2.9	1.1	24		
5	0.6	0.6	0.6	0.5	0.4	0.7	0.7	0.6	S	1.0	1.0	0.8	0.9	0.8	1.3	1.5	1.0	1.0	1.0	1.6	2.0	1.9	1.6	0.7	0.4	2.0	1.0	24		
6	0.5	0.6	0.5	0.7	0.9	0.8	1.0	S	0.7	0.5	0.0	0.3	0.1	0.4	0.7	0.7	0.4	1.1	1.7	1.4	1.6	2.0	1.4	1.3	0.0	2.0	0.8	24		
7	1.3	1.5	1.8	1.7	1.8	2.6	S	3.7	4.2	4.4	3.2	1.8	1.4	1.1	1.2	1.6	1.2	1.4	1.2	1.4	1.2	1.4	1.1	0.9	0.9	4.4	1.9	24		
8	1.1	1.5	1.7	1.9	1.3	S	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.7	0.8	0.5	0.7	0.5	0.5	0.5	0.7	0.4	0.3	0.3	0.3	1.9	0.8	24		
9	0.3	0.4	0.3	0.2	S	0.3	0.3	0.3	0.6	0.1	0.1	0.4	0.3	0.1	0.5	0.2	0.1	0.4	0.3	0.4	0.0	0.5	0.3	0.3	0.0	0.6	0.3	24		
10	0.5	0.3	0.2	S	0.5	1.1	0.5	0.3	0.3	0.0	0.1	0.3	0.1	0.2	0.3	0.1	0.1	0.3	0.0	0.0	0.2	1.0	3.2	4.2	0.0	4.2	0.6	24		
11	5.9	4.2	S	7.0	5.4	8.2	5.1	P	P	P	P	P	P	P	P	P	P	P	P	0.5	0.5	1.0	0.7	0.4	1.8	4.5	0.4	8.2	3.5	14
12	3.8	S	4.1	6.4	1.5	1.0	1.2	2.2	C	C	C	C	C	C	C	C	0.1	0.2	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	6.4	1.3	24	
13	S	0.6	1.0	0.9	1.0	1.4	1.6	1.8	1.0	1.7	1.9	1.9	1.6	1.6	1.6	0.9	0.7	0.9	0.7	0.9	1.1	1.0	1.0	S	0.6	1.9	1.2	24		
14	1.6	2.2	1.8	1.3	1.2	1.1	1.4	1.6	1.0	0.6	0.4	0.3	0.0	0.3	0.2	0.4	0.2	0.1	0.5	1.0	0.4	1.1	S	0.9	0.0	2.2	0.9	24		
15	0.9	1.1	1.0	0.9	1.9	1.9	1.3	1.4	1.9	1.5	1.1	0.5	0.7	0.5	0.7	0.8	0.9	0.8	0.8	0.9	0.9	S	2.0	2.3	0.5	2.3	1.2	24		
16	2.0	1.6	1.6	1.8	1.8	2.1	2.1	2.7	2.2	1.4	1.2	0.9	0.6	1.0	0.6	0.6	0.9	0.7	0.6	0.7	S	1.0	0.9	1.1	0.6	2.7	1.3	24		
17	1.1	1.2	1.3	1.6	1.9	2.0	2.5	2.3	0.5	0.1	0.4	0.3	0.5	0.2	0.2	0.2	0.1	0.1	S	1.0	0.3	0.1	0.1	0.1	0.1	2.5	0.8	24		
18	0.1	1.7	1.5	0.5	0.7	0.9	1.9	2.2	1.2	0.8	0.5	0.2	0.3	0.3	0.2	0.1	0.1	0.3	S	0.7	1.3	2.1	1.3	1.0	0.1	2.2	0.9	24		
19	1.0	1.2	0.7	0.7	0.7	1.6	3.4	P	P	P	P	P	P	P	P	0.0	0.0	S	0.4	0.0	0.1	0.1	0.1	0.3	0.0	3.4	0.7	16		
20	0.3	0.6	0.7	0.3	0.4	0.0	0.0	0.0	0.0	0.2	0.2	0.3	0.4	0.4	0.6	0.8	S	2.1	1.3	0.9	0.6	0.9	1.1	0.9	0.0	2.1	0.6	24		
21	0.7	0.9	0.7	0.9	0.7	0.9	0.9	1.7	2.5	3.7	4.0	5.0	3.7	3.7	3.1	S	1.5	1.0	0.7	0.7	0.4	0.5	0.6	0.5	0.4	5.0	1.7	24		
22	0.5	0.8	0.7	0.7	0.5	0.4	0.4	1.2	1.6	1.7	1.9	1.6	1.2	0.8	S	0.8	1.3	1.6	1.3	0.9	0.7	1.1	1.0	1.7	0.4	1.9	1.1	24		
23	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.3	S	0.3	0.2	0.4	0.6	0.2	0.6	0.7	0.9	0.7	0.4	0.0	0.9	0.3	24		
24	0.3	0.3	0.8	1.6	1.4	1.7	1.6	1.5	0.9	0.6	0.3	0.2	S	0.4	0.7	1.0	0.7	0.8	0.7	0.8	1.1	1.2	1.3	1.5	0.2	1.7	0.9	24		
25	1.5	1.4	1.2	0.9	1.7	1.0	1.4	1.6	1.6	1.3	0.7	S	0.8	0.6	0.5	0.5	0.4	0.3	0.5	0.5	0.8	1.1	1.1	0.4	0.3	1.7	0.9	24		
26	0.4	0.4	0.8	0.7	0.7	1.4	2.0	1.5	1.1	1.3	S	2.0	2.4	1.7	1.0	1.0	1.2	0.9	1.2	1.3	1.4	1.9	2.1	2.8	0.4	2.8	1.4	24		
27	2.3	2.1	2.5	2.6	2.1	2.3	2.5	4.2	5.4	S	1.6	0.7	0.8	0.9	1.0	1.1	0.7	0.8	1.1	1.2	1.5	1.2	1.0	0.9	0.7	5.4	1.8	24		
28	0.9	1.1	1.7	2.1	2.0	1.6	1.9	3.7	S	3.0	2.6	1.1	0.8	0.6	0.6	0.9	0.6	0.7	0.6	0.8	0.9	0.8	1.2	0.9	0.6	3.7	1.4	24		
29	0.8	0.9	0.6	0.8	0.8	0.9	1.1	S	2.7	2.1	1.1	0.8	0.5	0.8	0.7	0.7	0.6	0.7	0.8	0.8	0.5	0.5	0.4	0.3	0.3	2.7	0.9	24		
30	0.2	0.3	0.2	0.2	0.5	0.4	S	0.6	0.8	0.6	0.6	0.6	0.4	0.7	0.5	0.6	0.5	0.8	0.5	0.3	0.3	0.6	0.6	0.3	0.2	0.8	0.5	24		
31	0.5	0.8	0.4	0.7	0.8	S	1.1	0.9	0.8	0.6	0.6	0.4	0.3	0.4	0.4	0.6	0.7	0.9	0.4	0.4	0.6	0.2	0.5	0.8	0.2	1.1	0.6	24		
HOURLY MAX	5.9	4.2	4.1	7.0	5.4	8.2	5.1	4.2	5.4	4.4	4.0	5.0	3.7	3.7	3.1	1.6	1.5	2.1	1.7	1.6	2.4	2.1	3.2	4.5						
HOURLY AVG	1.1	1.1	1.1	1.4	1.3	1.5	1.5	1.7	1.5	1.3	1.1	0.9	0.8	0.7	0.7	0.6	0.6	0.7	0.6	0.8	0.8	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

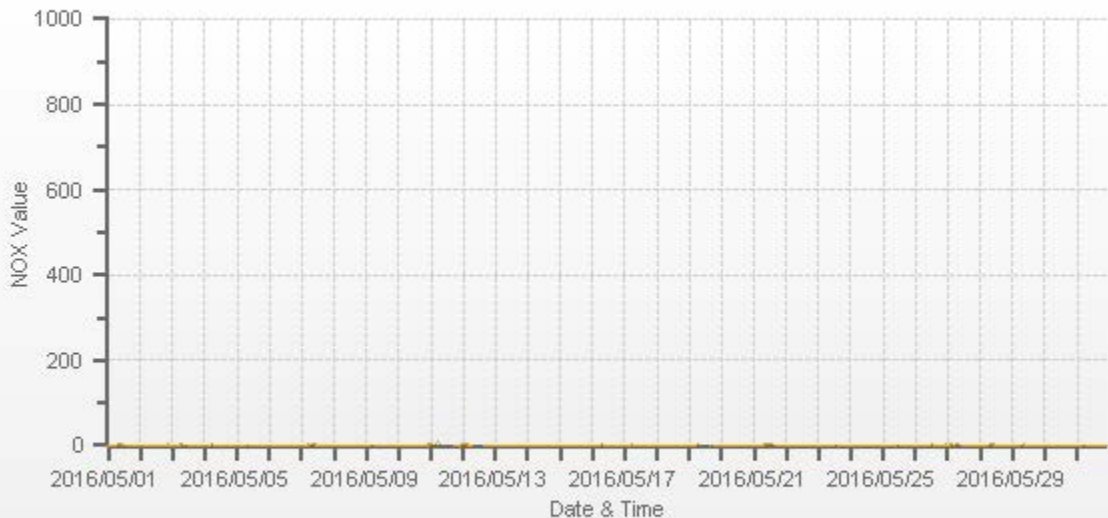
**24 HOUR AVERAGES FOR May 2016**



**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS:	660			
MINIMUM 1-HR AVERAGE:	0.0	PPB @ HOUR(S)	VAR	ON DAY(S)
MAXIMUM 1-HR AVERAGE:	8.2	PPB @ HOUR(S)	5	11
MAXIMUM 24-HR AVERAGE:	3.5	PPB		11
				VAR-VARIOUS
IZS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	726
MONTHLY CALIBRATION TIME:	7	HRS	AMD OPERATION UPTIME:	97.6
STANDARD DEVIATION:	0.98		MONTHLY AVERAGE:	1.0
				PPB





— NOX[ppb]



OXIDES OF NITROGEN MAX instantaneous maximum in ppb

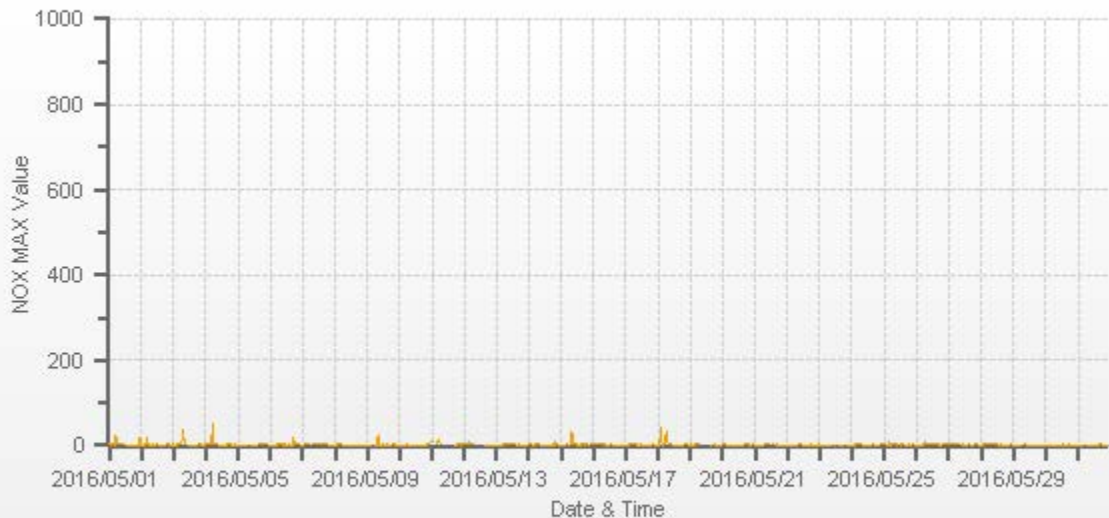
MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
DAY	MIN.	MAX.	AVG.	RDGS.																									
1	3.3	2.8	1.9	2.7	2.2	24.8	3.2	5.9	5.1	4.8	4.2	2.6	S	1.5	1.1	1.5	0.9	1.3	1.3	1.0	1.3	1.2	1.3	16.6	0.9	24.8	4.0	24	
2	1.7	1.9	1.9	1.4	17.7	1.3	2.8	2.3	1.6	2.5	1.3	S	4.7	1.3	1.5	1.5	2.0	1.3	1.3	5.4	4.6	1.8	2.1	1.8	1.3	17.7	2.9	24	
3	2.5	2.3	2.0	2.4	2.7	3.9	4.7	39.2	6.4	2.7	S	2.1	1.7	2.0	1.9	1.8	1.6	2.1	2.1	4.0	2.1	2.4	2.3	2.3	1.6	39.2	4.2	24	
4	2.4	3.0	3.0	2.9	3.3	50.6	4.2	3.4	3.3	S	2.0	1.8	1.6	1.3	1.5	2.3	2.6	2.8	1.7	3.1	1.5	3.3	1.5	1.4	1.3	50.6	4.5	24	
5	1.5	1.2	1.5	1.1	1.3	1.4	1.9	1.3	S	R	1.6	1.7	1.8	1.7	2.3	3.1	2.7	2.4	2.4	2.7	3.7	2.6	2.7	1.8	1.1	3.7	2.0	23	
6	1.3	1.5	1.7	1.6	1.6	2.6	4.5	S	2.4	2.6	1.1	2.4	2.0	2.8	2.0	2.2	1.3	16.9	4.8	2.4	3.0	2.9	2.3	2.2	1.1	16.9	3.0	24	
7	2.2	2.4	3.3	2.7	2.6	4.0	S	4.6	5.0	5.3	5.5	2.9	2.5	2.4	2.5	2.6	2.9	3.5	2.9	1.8	2.1	2.0	2.0	1.7	1.7	5.5	3.0	24	
8	2.2	2.0	2.4	2.7	2.5	S	1.3	1.5	1.5	1.1	1.6	1.1	1.9	1.6	1.1	1.3	1.0	1.3	1.3	1.2	1.4	1.4	1.1	1.1	1.0	2.7	1.5	24	
9	1.2	1.1	0.9	1.0	S	1.2	1.1	1.0	24.9	1.1	1.1	2.5	1.7	0.9	2.8	1.5	1.1	1.6	1.2	5.0	1.2	2.7	1.2	1.2	0.9	24.9	2.6	24	
10	2.0	1.3	1.3	S	1.5	4.8	1.5	1.6	1.5	0.9	1.2	1.5	1.1	1.2	1.6	1.5	1.6	1.4	1.0	0.9	1.4	3.0	5.1	7.1	0.9	7.1	2.0	24	
11	7.2	7.3	S	8.5	7.0	12.3	6.6	P	P	P	P	P	P	P	P	P	P	1.7	1.7	3.0	2.8	1.5	4.9	6.1	1.5	12.3	5.4	14	
12	5.5	S	6.2	10.9	3.7	2.6	2.6	C	C	C	C	C	C	C	C	C	1.5	1.5	1.2	0.8	1.1	1.2	1.1	1.0	1.2	0.8	10.9	2.8	24
13	S	1.7	2.0	1.8	2.0	5.0	6.4	4.7	2.6	2.8	2.9	2.9	2.6	2.6	2.9	2.0	1.8	2.5	1.7	2.0	2.2	2.3	2.1	S	1.7	6.4	2.7	24	
14	2.8	4.1	4.3	2.2	2.4	1.9	2.5	3.2	2.4	1.7	1.4	1.3	0.9	1.5	1.0	1.7	1.3	1.1	1.4	7.2	1.3	3.5	S	2.0	0.9	7.2	2.3	24	
15	1.9	1.7	1.7	1.9	2.8	2.5	2.0	2.5	35.1	3.5	3.3	1.6	2.7	2.2	1.7	3.0	4.8	4.9	1.9	2.9	1.9	S	3.0	3.8	1.6	35.1	4.1	24	
16	2.8	2.6	2.7	2.7	2.7	3.3	3.1	5.0	3.7	2.2	2.2	1.7	1.3	3.7	2.1	2.0	2.0	1.8	1.7	1.9	S	1.8	1.8	2.2	1.3	5.0	2.5	24	
17	2.2	2.2	2.2	2.6	3.3	3.9	5.6	7.0	3.6	1.6	1.6	2.4	1.7	1.2	1.6	1.2	1.3	1.5	1.2	S	5.4	1.2	1.1	1.1	1.1	7.0	2.5	24	
18	1.1	3.0	44.0	1.5	4.8	6.9	30.6	9.7	5.0	2.5	2.4	1.2	1.1	1.8	1.8	1.1	0.9	1.4	S	1.7	2.8	3.1	2.9	2.3	0.9	44.0	5.8	24	
19	2.2	2.8	2.2	2.0	2.4	4.5	5.5	P	P	P	P	P	P	P	P	P	1.9	1.9	S	2.6	2.2	2.2	2.2	2.2	2.2	1.9	5.5	2.6	16
20	2.7	2.4	2.4	2.0	2.1	1.8	1.3	1.6	1.4	1.8	1.4	1.7	1.7	1.7	1.9	1.9	S	6.8	4.0	2.4	1.6	2.1	2.4	2.4	1.3	6.8	2.2	24	
21	1.9	2.0	1.8	2.1	1.9	2.2	2.3	3.2	3.7	4.8	5.1	6.4	R	4.6	4.4	S	3.7	2.1	1.8	1.8	1.3	1.5	1.8	1.5	1.3	6.4	2.8	23	
22	1.6	1.8	1.7	1.7	1.8	1.4	1.6	2.1	2.7	2.7	2.8	2.3	2.0	2.0	S	1.8	2.3	2.4	2.3	2.0	1.7	2.2	2.0	3.1	1.4	3.1	2.1	24	
23	1.5	1.1	0.6	0.8	0.7	0.7	1.2	0.6	0.9	0.8	R	1.4	1.4	S	1.3	1.2	1.3	1.6	R	1.7	R	2.1	1.8	1.3	0.6	2.1	1.2	21	
24	1.5	1.4	1.9	2.8	2.4	2.8	2.7	3.0	2.2	1.7	1.3	1.3	S	1.5	1.8	3.1	2.4	2.1	1.6	1.7	2.2	2.4	2.5	2.7	1.3	3.1	2.1	24	
25	2.6	2.5	2.2	2.0	7.8	2.2	2.9	3.0	3.0	2.4	1.8	S	1.9	2.8	2.7	2.2	2.0	1.4	2.7	1.7	2.1	2.4	2.6	1.8	1.4	7.8	2.6	24	
26	1.8	1.8	2.0	1.8	2.2	3.3	8.2	5.7	3.5	3.0	S	5.4	4.7	4.0	2.6	2.8	4.4	2.1	2.3	2.7	2.5	3.0	3.4	3.9	1.8	8.2	3.4	24	
27	3.2	3.3	3.6	3.6	3.0	3.0	3.5	5.2	6.4	S	3.4	1.6	1.7	1.9	2.1	2.7	1.8	1.8	2.2	2.4	2.7	3.3	2.2	1.9	1.6	6.4	2.9	24	
28	1.8	2.3	2.8	3.4	3.1	3.0	4.4	5.8	S	4.3	5.4	3.5	3.5	1.6	1.8	2.9	2.1	1.8	1.6	1.9	2.0	1.8	3.0	2.1	1.6	5.8	2.9	24	
29	1.7	1.8	1.7	1.6	1.7	1.8	2.1	S	4.1	3.2	2.2	1.8	1.4	1.6	1.5	1.7	1.5	1.6	1.9	1.7	1.4	1.6	1.6	1.1	1.1	4.1	1.8	24	
30	1.2	1.3	1.0	1.2	1.9	1.3	S	1.6	1.8	1.5	1.8	1.5	1.4	2.4	1.4	1.5	1.3	3.5	1.3	1.0	1.0	1.3	1.3	1.3	1.0	3.5	1.5	24	
31	1.2	1.3	1.0	1.4	1.3	S	2.2	1.9	1.5	1.2	1.3	1.1	1.1	1.1	1.0	2.7	2.0	3.0	1.4	1.4	1.3	1.1	1.4	1.5	1.0	3.0	1.5	24	
HOURLY MAX	7.2	7.3	44.0	10.9	17.7	50.6	30.6	39.2	35.1	5.3	5.5	6.4	4.7	4.6	4.4	3.1	4.8	16.9	4.8	7.2	5.4	3.5	5.1	16.6					
HOURLY AVG	2.3	2.3	3.6	2.6	3.2	5.6	4.2	4.9	5.2	2.5	2.4	2.2	2.0	2.0	1.9	2.0	2.0	2.7	1.9	2.4	2.1	2.2	2.2	2.8					

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

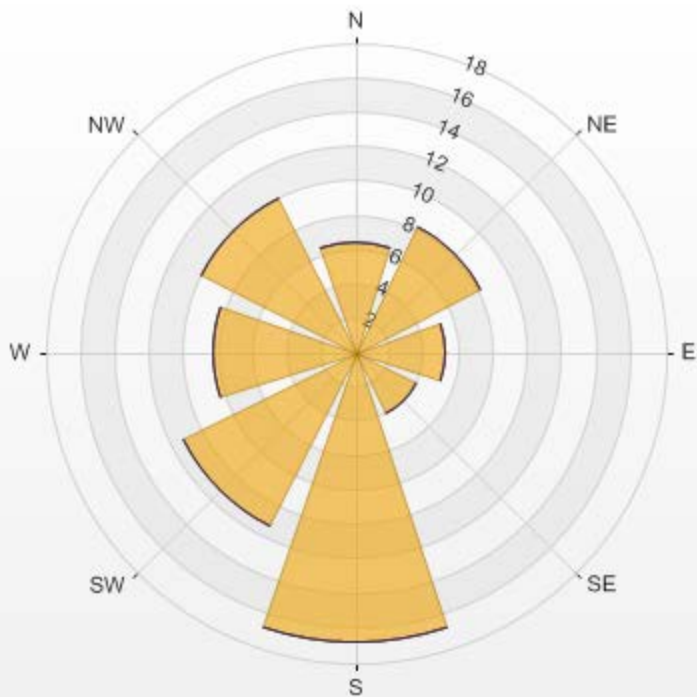
NUMBER OF NON-ZERO READINGS:	681
MAXIMUM INSTANTANEOUS VALUE:	50.6 PPB @ HOUR(S) 5 ON DAY(S) 4
	VAR-VARIOUS
IZS CALIBRATION TIME:	32 HRS
MONTHLY CALIBRATION TIME:	8 HRS
OPERATIONAL TIME:	721 HRS
STANDARD DEVIATION:	3.86



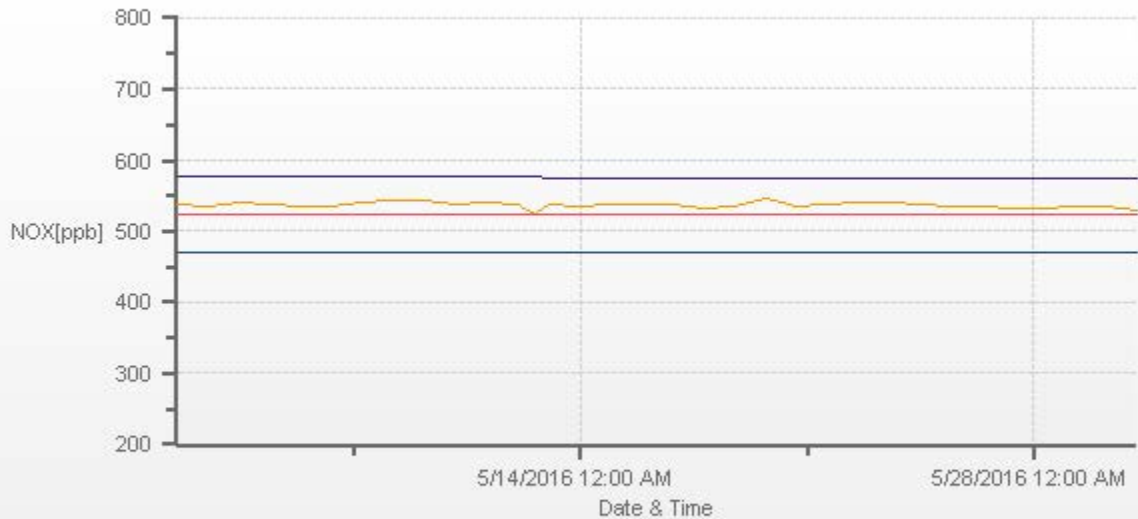
— NOX MAX[ppb]

Wind: LICA ST. LINA Monitor: NOX [ppb] Monthly: 05/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 29.84% Valid Data: 93.09% Calm Avg: 0.00

Direction	0.5-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	6.4	0	0	0	6.4
NE	8.15	0	0	0	8.15
E	5.24	0	0	0	5.24
SE	3.93	0	0	0	3.93
S	16.89	0	0	0	16.89
SW	11.21	0	0	0	11.21
W	8.3	0	0	0	8.3
NW	10.04	0	0	0	10.04
Summary	70.16	0	0	0	70.16



% Icon Classes (ppb) 70 0.5-50.0 0 50.0-110.0 0 110.0-210.0 0 >210.0



## ***NITRIC OXIDES***

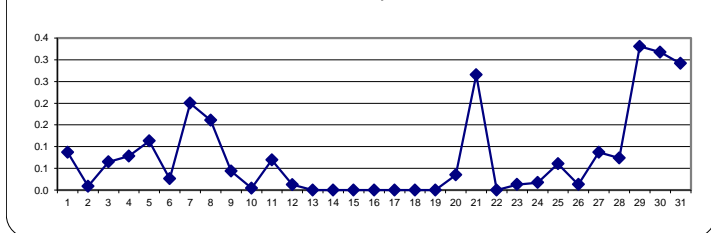
NITRIC OXIDE (NO) hourly averages in ppb

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 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	0.0	0.0	0.0	0.0	0.0	0.1	0.7	0.6	0.3	0.3	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	0.7	0.1	24
2	0.0	0.0	0.0	0.0	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	0.0	0.0	0.2	0.0	24
3	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.9	0.2	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	0.1	0.0	0.0	0.9	0.1	24
4	0.0	0.0	0.1	0.0	0.0	0.6	0.2	0.1	0.1	S	0.2	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.6	0.1	24
5	0.0	0.2	0.2	0.2	0.0	0.2	0.1	0.0	S	0.3	0.4	0.2	0.2	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.4	0.1	24
6	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	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.0	0.1	0.0	0.0	0.2	0.0	24
7	0.1	0.2	0.1	0.2	0.2	0.4	S	0.6	0.8	0.9	0.3	0.0	0.1	0.0	0.1	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.2	24
8	0.0	0.1	0.2	0.3	0.3	S	0.3	0.2	0.2	0.1	0.1	0.1	0.3	0.3	0.0	0.0	0.1	0.2	0.1	0.2	0.2	0.3	0.1	0.0	0.0	0.0	0.3	0.2	24
9	0.0	0.0	0.0	0.0	S	0.1	0.0	0.1	0.2	0.0	0.0	0.1	0.0	0.0	0.2	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.0	24
10	0.0	0.0	0.0	S	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	0.0	0.1	0.0	24
11	0.0	0.0	S	0.0	0.0	0.4	0.5	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	0.5	0.1	14
12	0.0	S	0.0	0.0	0.0	0.0	0.0	C	C	C	C	C	C	C	C	C	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	24
13	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	
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	S	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	S	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	S	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	S	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	S	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	P	P	P	P	P	P	P	P	P	0.0	0.0	S	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16	
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	S	0.5	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.5	0.0	24
21	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.3	0.6	1.0	1.6	0.4	0.3	0.2	S	0.5	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.6	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	0.0	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	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	0.1	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	0.2	0.0	24
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	S	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	24
25	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.2	0.2	0.1	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	0.0	0.0	0.4	0.1	24
26	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	S	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	0.2	0.0	24
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	1.2	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	1.2	0.1	24
28	0.0	0.0	0.0	0.0	0.0	0.0	0.2	S	0.5	0.5	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.5	0.1	24
29	0.1	0.4	0.1	0.3	0.1	0.4	0.4	S	1.0	0.8	0.4	0.3	0.2	0.3	0.3	0.3	0.1	0.3	0.4	0.5	0.3	0.3	0.2	0.1	0.1	0.1	1.0	0.3	24
30	0.1	0.3	0.1	0.2	0.2	0.4	S	0.4	0.4	0.4	0.4	0.5	0.3	0.5	0.4	0.5	0.4	0.5	0.4	0.2	0.1	0.2	0.2	0.2	0.1	0.5	0.3	24	
31	0.1	0.4	0.2	0.3	0.4	S	0.6	0.5	0.5	0.4	0.3	0.2	0.1	0.1	0.1	0.4	0.3	0.6	0.2	0.1	0.4	0.0	0.3	0.2	0.0	0.6	0.3	24	
HOURLY MAX	0.1	0.4	0.2	0.3	0.4	0.6	0.6	0.9	1.2	0.9	1.0	1.6	0.4	0.5	0.4	0.5	0.5	0.6	0.4	0.5	0.4	0.3	0.3	0.2					
HOURLY AVG	0.0	0.1	0.0	0.1	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	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 May 2016

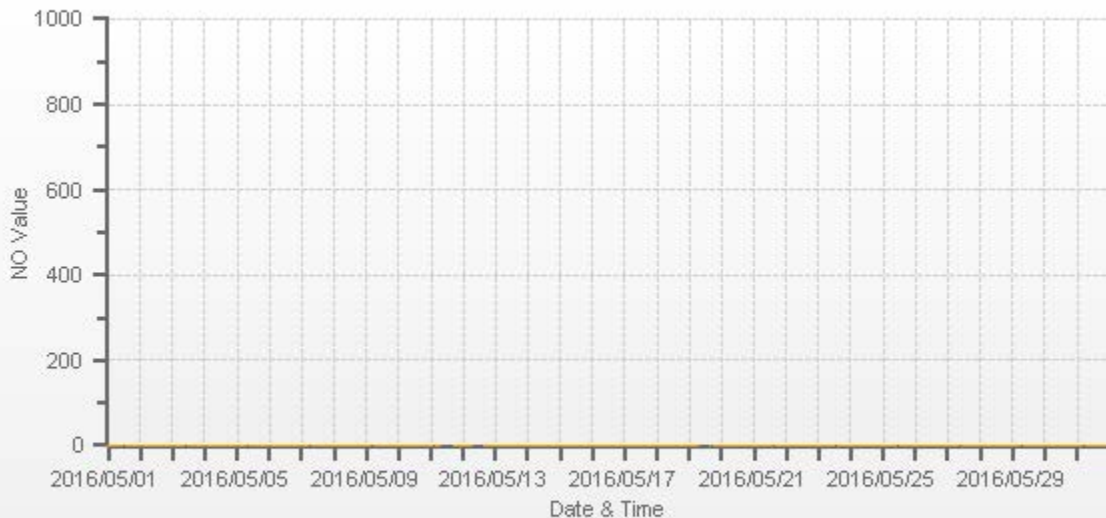


MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	191			
MINIMUM 1-HR AVERAGE:	0.0 PPB	@ HOUR(S)	VAR	ON DAY(S) VAR
MAXIMUM 1-HR AVERAGE:	1.6 PPB	@ HOUR(S)	11	ON DAY(S) 21
MAXIMUM 24-HR AVERAGE:	0.3 PPB			ON DAY(S) VAR
				VAR-VARIOUS
IZS CALIBRATION TIME:	32 HRS	OPERATIONAL TIME:	726 HRS	
MONTHLY CALIBRATION TIME:	7 HRS	AMD OPERATION UPTIME:	97.6 %	
STANDARD DEVIATION:	0.17	MONTHLY AVERAGE:	0.1	PPB



NO[ppb] Station: LICA ST. LINA Monthly: 05/2016 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	10.4	0.0	1.0	0.5	0.4	0.3	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	7.2	0.0	10.4	0.9	24
2	0.0	0.0	0.0	0.0	7.0	0.0	0.2	0.0	0.0	0.0	0.0	S	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	7.0	0.4	24
3	0.0	0.0	0.0	0.0	0.0	0.0	0.2	24.6	0.8	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	24.6	1.1	24
4	0.0	0.0	0.0	0.0	0.0	28.9	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	0.0	0.0	0.0	0.0	0.0	28.9	1.3	24
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	R	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	0.4	0.0	23
6	0.0	0.0	0.0	0.0	0.0	0.5	S	0.2	0.0	0.0	0.2	0.0	0.3	0.0	0.1	0.0	5.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.6	0.3	24
7	0.0	0.0	0.0	0.0	0.0	0.0	S	0.7	0.3	0.5	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	0.7	0.1	24
8	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	24
9	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	15.9	0.0	0.0	1.0	0.5	0.0	0.5	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.6	0.0	0.0	0.0	0.0	15.9	0.9	24
10	0.0	0.0	0.0	S	0.0	1.5	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	0.0	0.0	0.0	0.0	1.5	0.1	24
11	0.0	0.0	S	0.3	0.1	0.5	0.6	P	P	P	P	P	P	P	P	P	P	P	P	P	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.1	14
12	0.0	S	0.1	0.0	0.0	0.2	0.3	C	C	C	C	C	C	C	C	C	0.6	0.6	0.6	0.4	0.3	0.1	0.0	0.3	0.0	0.0	0.6	0.2	24	
13	S	0.6	0.4	0.1	0.2	1.3	2.4	1.6	0.7	0.3	0.3	0.4	0.0	0.4	0.4	0.0	0.2	0.4	0.0	0.0	0.2	0.6	0.2	S	0.0	0.0	2.4	0.5	24	
14	0.2	0.6	0.3	0.0	0.0	0.0	0.2	0.6	0.3	0.1	0.3	0.3	0.0	0.2	0.0	0.1	0.1	0.3	0.3	1.4	0.5	0.4	S	0.2	0.0	1.4	0.3	24		
15	0.2	0.2	0.0	0.0	0.3	0.3	0.0	0.2	16.1	0.5	1.0	0.4	0.2	0.1	0.2	0.2	1.0	0.9	0.0	0.2	0.2	S	0.0	0.2	0.0	0.0	16.1	1.0	24	
16	0.3	0.0	0.1	0.2	0.1	0.4	0.3	0.8	0.4	0.0	0.0	0.0	0.0	1.1	0.3	0.1	0.0	0.0	0.0	0.0	S	0.2	0.2	0.4	0.0	0.0	1.1	0.2	24	
17	0.5	0.0	0.0	0.3	0.2	0.4	1.5	2.6	0.9	0.5	0.2	0.7	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	1.6	0.2	0.1	0.0	0.0	2.6	0.4	24	
18	0.1	0.0	33.4	0.0	1.0	1.5	11.1	3.6	1.1	0.5	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	S	0.5	0.0	0.2	0.0	0.2	0.0	0.0	33.4	2.3	24	
19	0.0	0.3	0.0	0.0	0.4	0.0	0.2	P	P	P	P	P	P	P	P	0.3	0.4	S	0.5	0.0	0.0	0.2	0.3	0.0	0.0	0.0	0.5	0.2	16	
20	0.0	0.0	0.4	0.0	0.5	0.3	0.1	0.2	0.3	0.2	0.1	0.0	0.5	0.3	0.2	0.3	S	2.6	1.5	0.2	0.0	0.5	0.3	0.3	0.0	2.6	0.4	24		
21	0.1	0.3	0.0	0.4	0.4	0.3	0.4	0.4	0.6	1.3	1.5	2.3	R	0.4	0.5	S	1.4	0.5	0.5	0.3	0.2	0.2	0.1	0.0	0.0	0.0	2.3	0.6	23	
22	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.2	0.2	0.1	0.0	S	0.4	0.1	0.2	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.4	0.1	24	
23	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.0	R	0.4	0.6	S	0.4	0.0	0.0	0.3	R	0.0	R	0.0	R	0.2	0.2	0.0	0.0	0.6	0.1	21
24	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.5	0.2	0.4	0.3	0.0	S	0.2	0.3	1.4	0.4	0.4	0.6	0.2	0.0	0.1	0.0	0.0	0.0	0.0	1.4	0.2	24	
25	0.0	0.0	0.2	0.0	2.5	0.0	0.7	0.7	0.5	0.8	0.5	S	0.6	0.6	0.5	0.5	0.4	0.3	0.4	0.1	0.0	0.1	0.2	0.1	0.0	0.0	2.5	0.4	24	
26	0.0	0.0	0.2	0.1	0.0	0.4	2.0	1.3	0.5	0.3	S	0.6	0.7	0.5	0.3	0.3	0.8	0.0	0.0	0.2	0.1	0.0	0.0	0.3	0.0	0.0	2.0	0.4	24	
27	0.0	0.0	0.0	0.0	0.0	0.2	0.5	1.3	1.7	S	0.4	0.0	0.1	0.1	0.0	0.5	0.3	0.2	0.2	0.2	0.2	0.2	0.6	0.1	0.0	0.0	1.7	0.3	24	
28	0.0	0.2	0.0	0.0	0.0	0.2	0.8	1.1	S	0.8	1.7	0.5	0.7	0.2	0.2	0.5	0.3	0.2	0.2	0.0	0.3	0.0	0.4	0.0	0.0	0.0	1.7	0.4	24	
29	0.0	0.5	0.0	0.0	0.4	0.3	0.3	S	0.9	0.8	0.3	0.2	0.0	0.2	0.2	0.2	0.0	0.2	0.3	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.9	0.2	24	
30	0.0	0.3	0.0	0.1	0.4	0.2	S	0.2	0.4	0.3	0.2	0.6	0.1	1.0	0.5	0.3	0.3	1.3	0.3	0.1	0.0	0.0	0.0	0.5	0.0	0.0	1.3	0.3	24	
31	0.2	0.4	0.0	0.3	0.2	S	0.9	0.6	0.3	0.4	0.2	0.3	0.1	0.0	0.2	1.7	0.4	1.0	0.2	0.2	0.5	0.1	0.3	0.3	0.0	0.0	1.7	0.4	24	
HOURLY MAX	0.5	0.6	33.4	0.4	7.0	28.9	11.1	24.6	16.1	1.3	1.7	2.3	1.3	1.1	0.5	1.7	1.4	5.6	1.5	1.9	1.6	0.6	0.4	7.2						
HOURLY AVG	0.1	0.1	1.2	0.1	0.5	1.6	0.8	1.6	1.7	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.2	0.5	0.2	0.2	0.1	0.1	0.1	0.3						

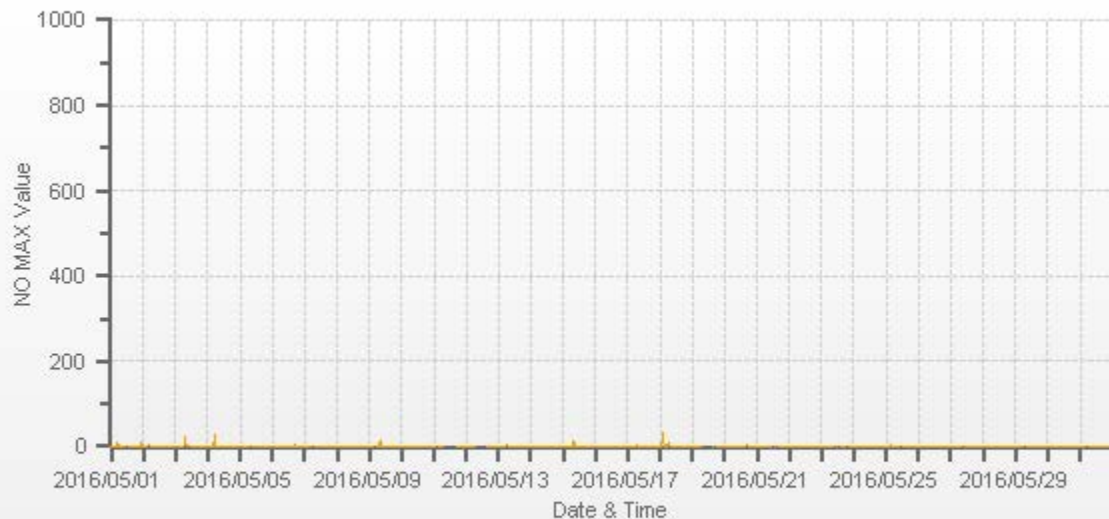
STATUS FLAG CODES

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:	339
MAXIMUM INSTANTANEOUS VALUE:	33.4 PPB @ HOUR(S) 2 ON DAY(S) 18
	VAR-VARIOUS
IZS CALIBRATION TIME:	32 HRS
MONTHLY CALIBRATION TIME:	8 HRS
STANDARD DEVIATION:	2.24
OPERATIONAL TIME:	721 HRS

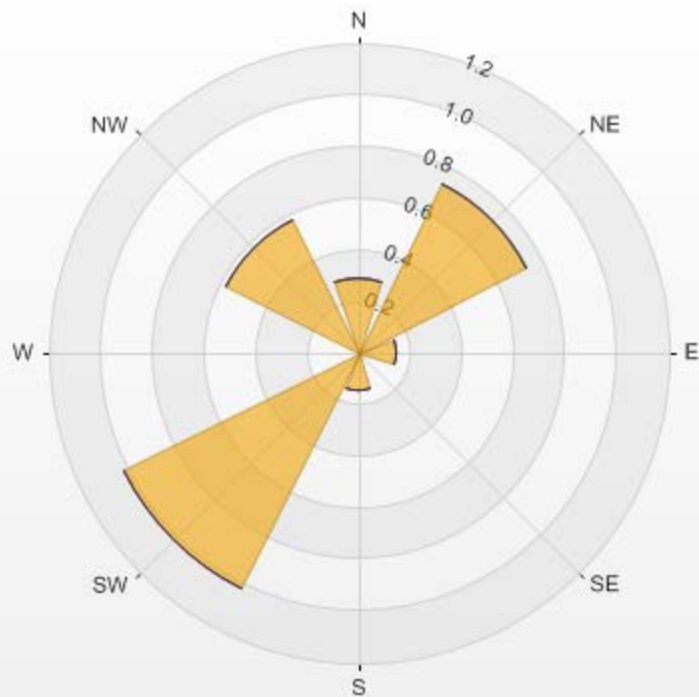
NO MAX[ppb] Station: LICA ST. LINA Monthly: 05/2016 Type: AVG 1 Hr. [1 Hr.]



— NO MAX[ppb]

Wind: LICA ST. LINA Monitor: NO [ppb] Monthly: 05/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 97.09% Valid Data: 93.09% Calm Avg: 0.00

Direction	0.5-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	0.29	0	0	0	0.29
NE	0.73	0	0	0	0.73
E	0.15	0	0	0	0.15
SE	0	0	0	0	0
S	0.15	0	0	0	0.15
SW	1.02	0	0	0	1.02
W	0	0	0	0	0
NW	0.58	0	0	0	0.58
Summary	2.92	0	0	0	2.92



***NITROGEN DIOXIDE***

**NITROGEN DIOXIDE (NO2) 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 MIN.	DAILY MAX.	24-HOUR AVG.	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						
1	1	1.4	1.3	1.0	1.2	1.4	2.1	2.1	3.0	3.4	2.9	2.4	1.4	S	0.4	0.1	0.1	0.1	0.2	0.3	0.1	0.3	0.3	0.3	0.7	0.1	3.4	1.2	24		
2	2	0.4	0.7	0.6	0.2	0.7	0.1	0.5	0.6	0.2	0.4	0.2	S	0.4	0.1	0.2	0.0	0.3	0.0	0.0	1.6	2.4	0.5	0.6	0.5	0.0	2.4	0.5	24		
3	3	1.0	1.0	0.8	1.0	1.4	2.1	2.9	2.8	2.1	1.5	S	0.7	0.6	0.5	0.4	0.6	0.4	0.5	0.5	1.0	0.7	1.1	1.1	1.0	0.4	2.9	1.1	24		
4	4	1.2	1.7	1.6	1.6	1.8	2.3	2.3	2.1	1.8	S	0.5	0.4	0.3	0.3	0.4	0.6	0.5	0.6	0.5	1.0	0.6	0.9	0.7	0.6	0.3	2.3	1.1	24		
5	5	0.6	0.4	0.5	0.3	0.4	0.6	0.6	0.6	S	0.7	0.5	0.6	0.7	0.8	1.3	1.4	0.9	1.0	1.0	1.6	1.9	1.8	1.6	0.7	0.3	1.9	0.9	24		
6	6	0.5	0.6	0.5	0.7	0.9	0.8	1.0	S	0.6	0.5	0.0	0.3	0.1	0.4	0.6	0.7	0.4	1.0	1.7	1.4	1.6	1.9	1.4	1.2	0.0	1.9	0.8	24		
7	7	1.2	1.2	1.6	1.6	1.6	2.2	S	3.1	3.3	3.5	2.9	1.7	1.4	1.1	1.2	1.4	1.1	1.2	1.3	1.2	1.1	1.3	1.1	0.9	0.9	3.5	1.7	24		
8	8	1.1	1.3	1.4	1.6	1.0	S	0.4	0.5	0.4	0.4	0.5	0.5	0.4	0.5	0.5	0.6	0.4	0.4	0.4	0.3	0.3	0.4	0.3	0.3	0.3	1.6	0.6	24		
9	9	0.3	0.4	0.3	0.2	S	0.3	0.3	0.2	0.4	0.1	0.1	0.3	0.3	0.1	0.3	0.2	0.1	0.4	0.3	0.4	0.0	0.4	0.3	0.3	0.0	0.4	0.3	24		
10	10	0.5	0.3	0.2	S	0.5	1.0	0.5	0.3	0.3	0.0	0.1	0.3	0.1	0.2	0.3	0.1	0.1	0.3	0.0	0.0	0.2	1.0	3.2	4.2	0.0	4.2	0.6	24		
11	11	5.9	4.2	S	7.0	5.4	7.8	4.6	P	P	P	P	P	P	P	P	P	P	P	P	0.5	0.5	1.0	0.7	0.4	1.8	4.5	0.4	7.8	3.4	14
12	12	3.8	S	4.1	6.4	1.5	1.0	1.2	2.2	C	C	C	C	C	C	C	C	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	6.4	1.3	24	
13	13	S	0.6	1.0	0.9	1.0	1.4	1.6	1.8	1.0	1.7	1.9	1.9	1.6	1.6	1.6	0.9	0.7	0.9	0.7	0.9	1.1	1.0	1.0	S	0.6	1.9	1.2	24		
14	14	1.6	2.2	1.8	1.3	1.2	1.1	1.4	1.6	1.0	0.6	0.4	0.3	0.0	0.3	0.2	0.4	0.2	0.1	0.5	1.0	0.4	1.1	S	0.9	0.0	2.2	0.9	24		
15	15	0.9	1.1	1.0	0.9	1.9	1.9	1.3	1.4	1.9	1.5	1.1	0.5	0.7	0.5	0.7	0.8	0.9	0.8	0.8	0.9	0.9	S	2.0	2.3	0.5	2.3	1.2	24		
16	16	2.0	1.6	1.6	1.8	1.8	2.1	2.1	2.7	2.2	1.4	1.2	0.9	0.6	1.0	0.6	0.6	0.9	0.7	0.6	0.7	S	1.0	0.9	1.1	0.6	2.7	1.3	24		
17	17	1.1	1.2	1.3	1.6	1.9	2.0	2.5	2.3	0.5	0.1	0.4	0.3	0.5	0.2	0.2	0.2	0.1	0.1	S	1.0	0.3	0.1	0.1	0.1	0.1	2.5	0.8	24		
18	18	0.1	1.7	1.5	0.5	0.7	0.9	1.9	2.1	1.2	0.8	0.5	0.2	0.3	0.3	0.2	0.1	0.1	0.3	S	0.7	1.3	2.1	1.3	1.0	0.1	2.1	0.9	24		
19	19	1.0	1.2	0.7	0.7	0.7	1.6	3.4	P	P	P	P	P	P	P	P	0.0	0.0	S	0.4	0.0	0.1	0.1	0.1	0.3	0.0	3.4	0.7	16		
20	20	0.3	0.6	0.7	0.3	0.4	0.0	0.0	0.0	0.0	0.2	0.2	0.3	0.4	0.4	0.6	0.8	S	1.5	1.1	0.9	0.6	0.9	1.0	0.9	0.0	1.5	0.5	24		
21	21	0.7	0.9	0.7	0.9	0.7	0.9	0.8	1.4	2.2	3.1	3.0	3.4	3.4	3.4	2.8	S	1.1	0.7	0.6	0.6	0.4	0.5	0.6	0.5	0.4	3.4	1.4	24		
22	22	0.5	0.8	0.7	0.7	0.5	0.4	0.4	1.2	1.6	1.7	1.9	1.6	1.2	0.8	S	0.8	1.3	1.6	1.3	0.9	0.7	1.1	1.0	1.7	0.4	1.9	1.1	24		
23	23	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.3	S	0.2	0.2	0.4	0.6	0.2	0.6	0.7	0.9	0.7	0.4	0.0	0.9	0.3	24		
24	24	0.3	0.3	0.8	1.6	1.4	1.7	1.6	1.4	0.9	0.6	0.3	0.2	S	0.4	0.6	0.8	0.7	0.7	0.7	0.8	1.1	1.2	1.3	1.5	0.2	1.7	0.9	24		
25	25	1.5	1.4	1.2	0.9	1.7	1.0	1.1	1.2	1.4	1.0	0.6	S	0.5	0.6	0.5	0.5	0.4	0.3	0.5	0.5	0.8	1.1	1.1	0.4	0.3	1.7	0.9	24		
26	26	0.4	0.4	0.8	0.7	0.7	1.4	1.9	1.5	1.1	1.3	S	2.0	2.2	1.6	1.0	1.0	1.2	0.9	1.2	1.3	1.4	1.9	2.1	2.8	0.4	2.8	1.3	24		
27	27	2.3	2.1	2.5	2.6	2.1	2.3	2.5	3.4	4.3	S	1.6	0.7	0.8	0.9	1.0	1.1	0.7	0.8	1.1	1.2	1.5	1.2	1.0	0.9	0.7	4.3	1.7	24		
28	28	0.9	1.1	1.7	2.1	2.0	1.6	1.9	3.5	S	2.6	2.0	1.1	0.8	0.6	0.6	0.7	0.6	0.7	0.6	0.8	0.9	0.8	0.9	0.9	0.6	3.5	1.3	24		
29	29	0.7	0.5	0.5	0.5	0.6	0.5	0.7	S	1.7	1.2	0.8	0.4	0.3	0.5	0.4	0.4	0.5	0.4	0.5	0.3	0.2	0.2	0.2	0.2	0.2	0.2	1.7	0.5	24	
30	30	0.1	0.1	0.1	0.1	0.2	0.0	S	0.3	0.3	0.2	0.2	0.1	0.1	0.2	0.1	0.2	0.1	0.4	0.2	0.2	0.2	0.4	0.4	0.2	0.0	0.4	0.2	24		
31	31	0.4	0.4	0.2	0.4	0.4	S	0.4	0.4	0.3	0.2	0.3	0.2	0.2	0.3	0.2	0.2	0.4	0.4	0.2	0.2	0.2	0.3	0.6	0.6	0.2	0.6	0.3	24		
HOURLY MAX		5.9	4.2	4.1	7.0	5.4	7.8	4.6	3.5	4.3	3.5	3.0	3.4	3.4	3.4	2.8	1.4	1.3	1.6	1.7	1.6	2.4	2.1	3.2	4.5						
HOURLY AVG		1.1	1.0	1.0	1.3	1.2	1.4	1.4	1.5	1.3	1.1	0.9	0.8	0.7	0.7	0.6	0.5	0.5	0.6	0.6	0.7	0.8	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

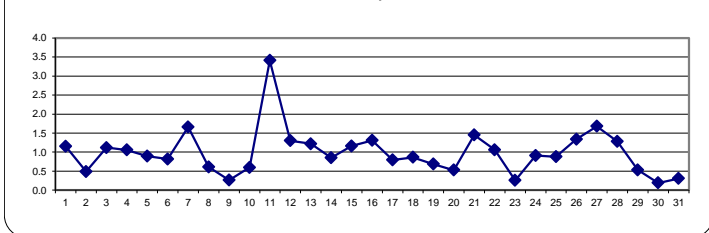
OBJECTIVE LIMIT:

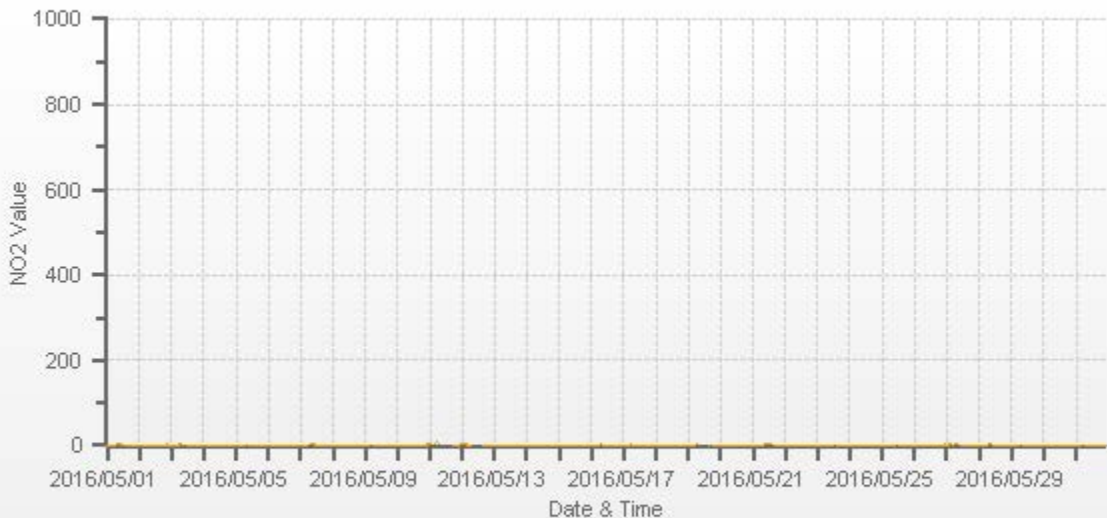
ALBERTA ENVIRONMENT: 1-HR 159 PPB

**MONTHLY SUMMARY**

NUMBER OF 1-HR EXCEEDENCES:	0			
NUMBER OF NON-ZERO READINGS:	659			
MINIMUM 1-HR AVERAGE:	0.0 PPB	@ HOUR(S)	VAR	ON DAY(S)
MAXIMUM 1-HR AVERAGE:	7.8 PPB	@ HOUR(S)	5	11
MAXIMUM 24-HR AVERAGE:	3.4 PPB			11
				VAR-VARIOUS
IZS CALIBRATION TIME:	32 HRS	OPERATIONAL TIME:	726 HRS	
MONTHLY CALIBRATION TIME:	7 HRS	AMD OPERATION UPTIME:	97.6 %	
STANDARD DEVIATION:	0.92	MONTHLY AVERAGE:	1.0 PPB	

24 HOUR AVERAGES FOR May 2016





— 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	DAILY	24-HOUR				
DAY	MIN.	MAX.	AVG.	RDGS.																												
1	3.4	2.5	2.5	2.6	2.7	14.9	3.1	4.6	4.4	4.1	3.4	2.5	S	1.6	1.3	1.4	1.3	1.2	1.4	1.5	1.7	1.7	1.7	9.0	1.2	14.9	3.2	24				
2	1.9	2.3	1.9	1.4	9.7	1.6	2.1	2.0	1.9	2.2	1.3	S	2.7	1.2	1.4	1.5	1.9	1.4	1.3	5.7	4.7	2.1	2.2	2.0	1.2	9.7	2.5	24				
3	3.0	2.5	2.5	2.6	2.7	3.8	4.5	16.4	5.0	2.6	S	1.9	2.0	1.9	1.6	1.6	1.7	1.9	2.1	3.8	2.5	2.7	2.5	2.5	1.6	16.4	3.2	24				
4	3.0	3.1	3.2	3.2	3.4	24.5	4.2	3.5	3.3	S	1.9	1.7	1.5	1.4	1.7	2.0	1.5	2.9	2.1	3.5	1.8	3.0	1.9	1.8	1.4	24.5	3.5	24				
5	2.0	1.6	1.7	1.6	1.6	1.6	1.8	1.6	S	R	1.6	1.7	2.0	2.1	2.2	3.0	2.5	2.0	2.2	3.0	3.6	3.1	3.0	2.1	1.6	3.6	2.2	23				
6	1.7	1.6	1.8	1.8	1.9	2.4	3.8	S	2.1	2.1	1.4	1.9	1.6	2.2	1.6	1.9	1.7	11.0	4.2	2.6	3.2	3.6	2.7	2.4	1.4	11.0	2.7	24				
7	2.4	2.6	3.3	2.8	3.1	3.8	S	4.4	4.7	4.7	5.0	2.7	2.5	2.3	2.3	2.5	2.4	3.3	2.8	2.3	2.3	2.3	2.2	1.9	1.9	5.0	3.0	24				
8	2.2	2.2	2.5	2.7	2.5	S	1.6	1.5	1.5	1.4	1.5	1.6	1.6	1.4	1.2	1.7	1.5	1.4	1.7	1.4	1.4	1.4	1.1	1.4	1.1	2.7	1.7	24				
9	1.3	1.3	1.4	1.4	S	1.3	1.2	1.3	11.8	1.2	1.4	1.3	1.2	1.3	2.2	1.3	1.3	1.4	1.4	2.9	1.1	1.9	1.3	1.6	1.1	11.8	1.9	24				
10	2.1	1.6	1.4	S	1.7	3.1	1.7	1.9	1.4	1.3	1.2	1.7	1.4	1.4	1.5	1.6	1.6	1.2	1.1	1.2	1.3	3.0	5.0	7.6	1.1	7.6	2.0	24				
11	7.4	7.4	S	8.3	7.0	11.4	5.7	P	P	P	P	P	P	P	P	P	P	1.8	1.6	3.1	3.0	1.9	4.8	6.1	1.6	11.4	5.3	14				
12	5.7	S	6.3	10.9	3.8	2.2	2.5	C	C	C	C	C	C	C	C	1.0	0.8	0.6	0.6	0.8	1.0	1.0	1.0	1.1	0.6	10.9	2.6	24				
13	S	1.2	1.6	1.7	1.7	3.4	3.6	2.8	1.7	2.7	2.7	2.6	2.5	2.2	2.6	2.0	1.6	1.9	1.6	1.9	2.0	1.8	2.2	S	1.2	3.6	2.2	24				
14	3.2	3.2	3.4	2.3	2.0	1.9	1.9	2.3	1.8	1.3	1.4	1.1	0.8	0.9	1.0	1.3	1.0	1.1	1.0	5.6	0.8	3.1	S	1.5	0.8	5.6	1.9	24				
15	1.8	1.8	1.8	2.0	2.7	2.4	2.2	2.0	20.4	2.7	2.1	1.2	2.2	1.9	1.4	2.5	3.4	3.5	1.8	2.3	1.8	S	2.9	3.4	1.2	20.4	3.1	24				
16	2.7	2.5	2.8	2.6	2.5	2.7	2.8	3.7	3.3	2.2	2.2	1.7	1.5	2.5	1.5	1.9	1.5	1.4	1.6	1.6	S	1.5	1.5	1.7	1.4	3.7	2.2	24				
17	1.8	2.0	2.0	2.3	2.7	3.2	4.0	4.5	2.3	1.1	1.2	1.3	1.4	1.3	1.4	1.2	1.2	1.3	1.1	S	3.4	0.8	0.9	1.3	0.8	4.5	1.9	24				
18	1.0	3.0	15.1	1.4	3.6	5.2	19.7	5.6	3.5	1.8	1.9	1.1	1.1	1.3	1.5	1.3	1.0	1.3	S	1.6	3.0	3.0	3.0	2.6	1.0	19.7	3.6	24				
19	2.5	2.6	2.4	2.4	2.1	4.7	5.2	P	P	P	P	P	P	P	P	P	P	1.7	1.8	S	2.6	2.1	2.1	2.1	1.9	2.3	1.7	5.2	2.6	16		
20	2.4	2.3	2.1	1.9	1.9	1.2	1.2	1.2	1.3	1.5	1.3	1.6	1.4	1.6	1.8	1.7	S	3.9	2.3	2.1	1.7	1.8	2.0	1.9	1.2	3.9	1.8	24				
21	1.6	1.8	1.8	1.8	1.7	1.9	1.9	2.4	3.4	4.0	4.0	4.5	R	4.2	4.0	S	2.4	1.5	1.5	1.4	1.6	1.4	1.5	1.4	1.4	4.5	2.4	23				
22	1.4	1.6	1.5	1.5	1.7	1.3	1.5	2.2	2.5	2.8	2.6	2.2	2.0	1.8	S	1.4	2.0	2.3	2.1	2.0	1.8	2.1	2.0	3.2	1.3	3.2	2.0	24				
23	1.8	1.2	0.8	0.9	0.7	0.9	0.8	0.6	0.8	0.8	R	1.1	1.0	S	0.9	1.1	1.3	1.4	R	1.7	R	1.8	1.5	1.3	0.6	1.8	1.1	21				
24	1.2	1.2	1.9	2.6	2.4	2.7	2.5	2.5	1.8	1.3	1.3	1.2	S	1.3	1.5	2.1	1.8	1.8	1.5	1.7	2.1	2.1	2.3	2.4	1.2	2.7	1.9	24				
25	2.6	2.5	2.4	2.1	5.1	2.1	1.9	2.1	2.1	1.9	1.6	S	1.5	1.9	1.9	1.8	1.6	1.3	2.1	1.9	2.2	2.4	2.3	1.8	1.3	5.1	2.1	24				
26	1.9	1.6	1.8	1.8	2.0	2.8	5.7	3.9	2.9	2.8	S	4.6	4.0	3.2	2.6	2.3	3.4	2.0	2.0	2.3	2.6	2.9	3.4	3.8	1.6	5.7	2.9	24				
27	3.4	2.9	3.7	3.7	3.1	2.8	2.8	3.8	4.6	S	2.5	1.7	1.3	1.5	1.7	2.3	1.5	1.9	2.1	2.3	2.5	2.5	1.7	1.7	1.3	4.6	2.5	24				
28	2.1	2.3	2.8	3.3	3.1	2.7	3.2	4.5	S	3.6	4.0	2.6	2.6	1.7	1.6	2.3	2.0	1.7	1.5	1.7	1.8	1.8	2.7	2.1	1.5	4.5	2.5	24				
29	1.6	1.5	1.5	1.6	1.8	1.7	1.7	S	2.9	2.6	1.9	1.5	1.2	1.3	1.2	1.3	1.3	1.5	1.3	1.5	1.3	1.5	1.4	1.3	1.3	1.2	2.9	1.6	24			
30	1.1	1.0	1.2	1.1	1.5	1.2	S	1.2	1.2	1.3	1.3	1.4	1.2	1.5	1.1	1.3	1.2	2.2	1.0	1.0	1.0	1.2	1.3	1.1	1.0	2.2	1.2	24				
31	1.2	1.2	1.1	1.2	1.2	S	1.2	1.2	1.1	0.8	1.1	0.8	1.0	0.8	1.0	1.0	1.3	1.7	0.8	0.8	1.0	1.0	1.1	1.5	0.8	1.7	1.1	24				
HOURLY MAX	7.4	7.4	15.1	10.9	9.7	24.5	19.7	16.4	20.4	4.7	5.0	4.6	4.0	4.2	4.0	3.0	3.4	11.0	4.2	5.7	4.7	3.6	5.0	9.0								
HOURLY AVG	2.4	2.2	2.7	2.6	2.8	4.0	3.3	3.2	3.6	2.2	2.1	1.9	1.7	1.8	1.7	1.7	2.1	1.7	2.2	2.1	2.1	2.2	2.5									

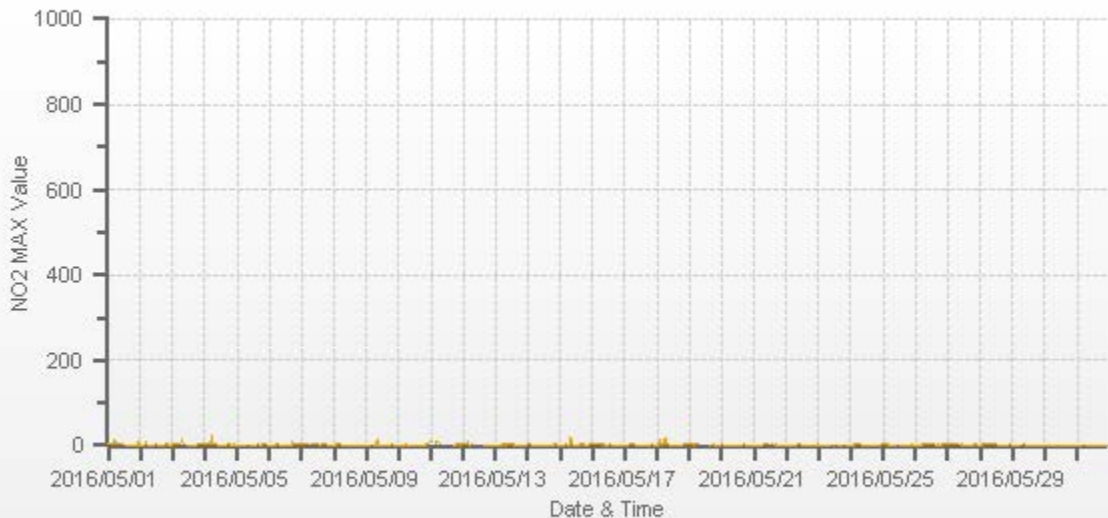
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	681
MAXIMUM INSTANTANEOUS VALUE:	24.5 PPB @ HOUR(S) 5 ON DAY(S) 4
	VAR-VARIOUS
IZS CALIBRATION TIME:	32 HRS
MONTHLY CALIBRATION TIME:	8 HRS
OPERATIONAL TIME:	721 HRS
STANDARD DEVIATION:	2.05

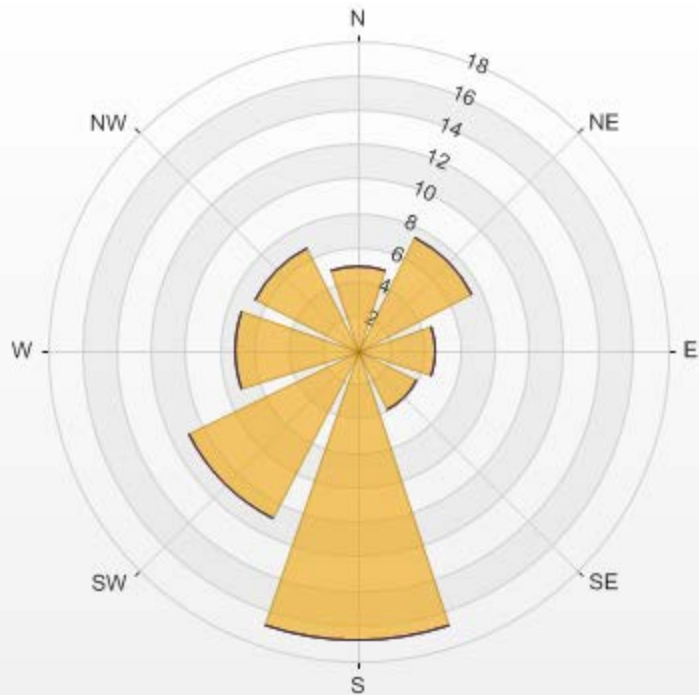
NO2 MAX[ppb] Station: LICA ST. LINA Monthly: 05/2016 Type: AVG 1 Hr. [1 Hr.]

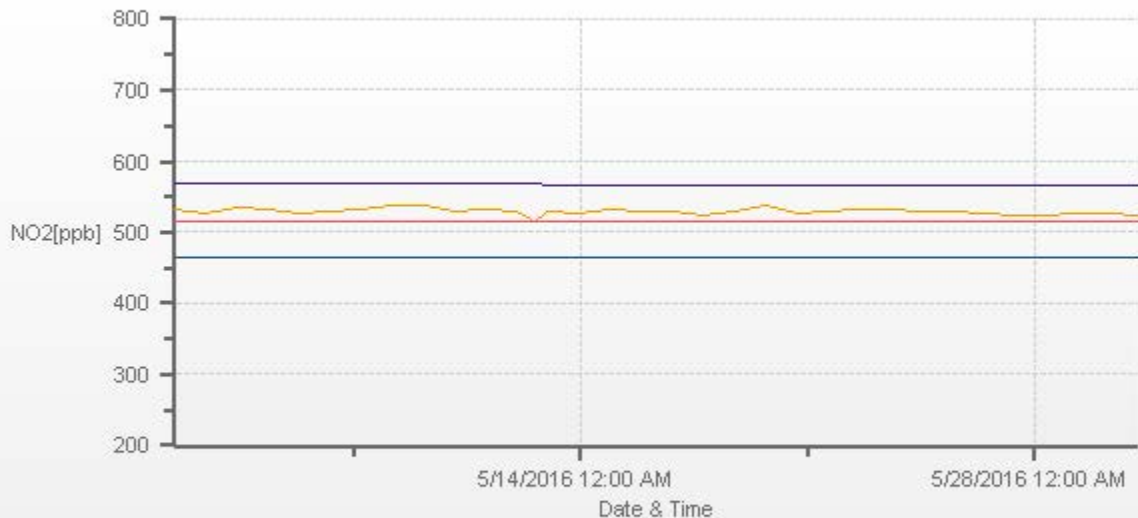


— NO2 MAX[ppb]

Wind: LICA ST. LINA Monitor: NO2 [ppb] Monthly: 05/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 37.70% Valid Data: 93.09% Calm Avg: 0.00

Direction	0.5-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	4.95	0	0	0	4.95
NE	7.42	0	0	0	7.42
E	4.51	0	0	0	4.51
SE	3.78	0	0	0	3.78
S	16.89	0	0	0	16.89
SW	10.92	0	0	0	10.92
W	7.13	0	0	0	7.13
NW	6.7	0	0	0	6.7
Summary	62.3	0	0	0	62.3





## ***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 MIN.	DAILY MAX.	24-HOUR AVG.	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.	RDGS.	
1	1	37.2	37.5	37.5	36.7	35.7	33.6	30.5	30.5	34.2	38.9	45.3	49.2	S	41.2	39.3	38.8	38.5	35.7	33.8	33.4	33.4	34.7	35.0	34.0	30.5	49.2	36.7	24	
2	2	33.5	32.3	31.5	31.4	30.8	30.0	28.0	28.9	29.7	31.5	33.3	S	35.6	38.6	40.2	42.7	44.7	45.9	45.4	41.6	39.7	41.4	40.3	39.3	28.0	45.9	36.4	24	
3	3	37.3	37.0	35.9	34.4	34.2	33.3	33.2	35.2	43.1	48.2	S	54.7	57.3	59.0	60.5	61.8	59.1	57.9	57.5	56.3	54.6	51.9	50.0	46.4	33.2	61.8	47.8	24	
4	4	45.2	43.9	43.2	42.6	40.1	33.4	30.8	35.0	41.1	S	48.1	50.5	52.5	53.5	54.1	54.0	54.2	54.5	52.0	49.1	46.3	44.6	45.0	43.6	30.8	54.5	46.0	24	
5	5	41.4	43.1	44.1	45.1	50.9	49.8	45.2	41.5	S	34.0	39.0	39.6	35.2	35.5	34.2	35.7	43.5	44.7	42.8	41.4	39.6	38.1	37.7	43.2	34.0	50.9	41.1	24	
6	6	43.0	43.2	42.4	38.6	37.7	36.9	36.7	S	35.6	38.2	42.4	43.2	44.0	46.8	48.2	47.7	47.7	49.1	48.5	50.0	51.7	49.4	46.2	43.8	35.6	51.7	44.0	24	
7	7	41.5	40.3	39.6	38.4	37.9	36.6	S	33.9	33.3	38.9	45.6	49.8	52.1	49.1	50.6	56.3	52.8	53.9	54.3	49.7	48.9	54.4	55.2	52.7	33.3	56.3	46.3	24	
8	8	49.8	45.3	40.4	36.9	38.4	S	50.2	48.8	47.9	53.2	58.0	54.9	51.4	47.8	49.0	49.7	47.3	43.3	38.6	37.2	35.1	32.4	31.4	29.8	29.8	58.0	44.2	24	
9	9	27.8	25.3	24.5	25.3	S	26.4	25.7	27.0	28.7	28.6	27.9	28.0	28.4	30.5	30.4	30.1	29.9	29.7	29.9	29.6	27.8	26.7	26.0	25.5	24.5	30.5	27.8	24	
10	10	25.3	25.9	25.5	S	25.2	23.1	25.6	33.7	36.2	37.0	37.3	37.1	37.3	37.9	38.0	39.3	39.2	39.7	40.2	39.1	36.8	35.5	33.1	30.3	23.1	40.2	33.8	24	
11	11	27.5	29.2	S	24.8	26.3	24.1	28.7	P	P	P	P	P	P	P	P	P	P	P	46.8	46.4	43.9	42.1	41.2	39.2	34.3	24.1	46.8	35.0	14
12	12	34.9	S	34.9	31.4	36.6	36.7	37.6	37.1	42.3	45.3	45.9	S1	42.9	C	C	C	C	38.3	38.4	36.9	35.5	37.0	38.5	37.8	31.4	45.9	38.2	23	
13	13	S	36.3	29.1	29.2	30.5	30.0	27.0	28.7	32.7	41.3	43.0	43.4	44.0	44.3	44.4	44.3	44.5	44.1	44.6	43.5	41.4	43.1	43.2	S	27.0	44.6	38.8	24	
14	14	39.1	38.3	38.4	38.1	40.5	42.7	41.5	40.7	43.9	43.8	44.5	43.7	44.6	45.0	45.6	46.4	46.4	45.5	44.6	43.1	42.9	41.7	S	41.5	38.1	46.4	42.7	24	
15	15	39.9	40.4	40.0	44.6	46.4	48.0	46.9	47.8	47.1	51.2	52.3	49.0	48.7	50.0	51.6	51.9	52.9	53.9	50.6	47.8	47.1	S	45.9	46.5	39.9	53.9	47.8	24	
16	16	48.2	48.1	46.6	45.6	45.5	45.6	42.5	43.1	48.1	54.8	55.6	55.1	53.2	55.8	57.7	55.2	55.8	54.6	54.4	52.2	S	50.4	48.1	46.4	42.5	57.7	50.5	24	
17	17	44.7	42.1	40.0	37.6	35.2	32.1	29.3	31.2	45.5	52.6	52.0	52.4	52.0	51.9	51.8	51.6	51.2	49.9	47.2	S	41.7	40.8	39.5	38.3	29.3	52.6	43.9	24	
18	18	38.4	34.1	34.9	36.2	37.6	38.1	28.5	24.1	33.9	38.5	41.9	40.5	41.9	41.6	38.9	38.8	38.5	37.1	S	36.1	34.4	33.9	31.8	28.6	24.1	41.9	36.0	24	
19	19	26.4	23.9	24.2	22.7	19.8	17.3	18.9	P	P	P	P	P	P	P	P	56.4	55.2	S	32.0	25.8	22.2	20.9	20.0	18.5	17.3	56.4	26.9	16	
20	20	18.8	19.3	19.6	20.7	20.2	20.8	21.2	21.1	20.8	21.8	23.5	23.1	23.5	23.2	22.8	23.1	S	22.8	17.7	14.3	10.8	9.5	8.1	7.1	7.1	23.5	18.9	24	
21	21	6.3	6.0	5.4	5.5	6.1	5.5	5.3	5.2	5.6	6.6	5.8	7.2	17.7	20.6	20.4	S	4.4	3.1	4.3	3.8	3.7	3.8	4.3	4.6	3.1	20.6	7.0	24	
22	22	4.4	4.3	4.4	4.8	9.5	13.2	14.6	16.6	17.0	16.4	16.0	16.8	18.5	19.9	S	16.9	15.3	12.1	12.8	13.5	14.4	13.8	13.3	12.6	4.3	19.9	13.1	24	
23	23	13.3	13.4	14.0	14.6	15.4	16.1	16.9	18.7	20.5	21.1	22.5	25.2	24.0	S	22.4	21.4	21.1	22.6	22.6	23.3	25.7	30.3	30.2	29.9	13.3	30.3	21.1	24	
24	24	30.2	28.6	25.3	23.0	24.4	23.2	23.2	23.8	26.0	29.5	31.9	32.6	S	32.5	33.1	34.8	36.9	37.6	38.0	35.1	31.2	29.3	27.7	25.3	23.0	38.0	29.7	24	
25	25	22.0	19.8	19.0	18.8	17.4	16.4	16.4	18.3	20.9	24.6	30.5	S	42.1	43.5	43.8	44.4	44.3	46.1	44.6	44.4	41.1	39.2	35.6	37.2	16.4	46.1	31.8	24	
26	26	40.9	38.5	36.4	36.6	32.0	26.1	23.8	28.3	27.6	28.8	S	22.6	26.0	34.8	37.1	43.5	44.8	47.3	43.5	40.2	37.4	35.6	34.4	32.2	22.6	47.3	34.7	24	
27	27	31.9	26.6	28.2	30.3	27.6	27.5	28.0	25.8	26.3	S	41.7	46.2	46.4	41.9	43.0	40.3	37.7	43.2	39.1	37.6	35.8	37.7	34.6	35.3	25.8	46.4	35.3	24	
28	28	31.7	27.2	24.7	22.7	22.7	24.0	24.5	18.2	S	21.1	25.3	30.1	28.9	29.4	29.2	29.3	26.8	26.9	25.0	20.1	21.5	21.4	27.3	28.8	18.2	31.7	25.5	24	
29	29	32.5	27.6	36.2	36.2	34.6	31.2	27.0	S	33.7	39.8	43.6	43.3	43.3	42.8	43.3	43.0	43.8	44.1	40.8	34.5	35.4	34.0	31.1	26.4	26.4	44.1	36.9	24	
30	30	27.0	25.0	23.8	23.9	24.3	24.4	S	20.7	19.3	17.8	19.8	20.3	23.0	25.0	23.1	29.1	29.4	27.1	21.3	19.5	20.8	19.8	21.6	18.1	17.8	29.4	22.8	24	
31	31	13.9	12.7	11.7	10.9	10.6	S	11.8	19.5	23.9	23.3	21.5	23.3	24.1	25.3	26.6	27.2	26.5	25.7	25.8	25.8	25.3	25.5	25.6	23.4	10.6	27.2	21.3	24	
HOURLY MAX		49.8	48.1	46.6	45.6	50.9	49.8	50.2	48.8	48.1	54.8	58.0	55.1	57.3	59.0	60.5	61.8	59.1	57.9	57.5	56.3	54.6	54.4	55.2	52.7					
HOURLY AVG		31.8	30.5	30.0	29.6	29.8	29.2	28.3	29.0	32.0	34.3	36.8	37.8	38.5	39.5	40.0	41.2	40.4	39.4	37.9	35.6	34.1	33.9	33.3	32.0					

**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

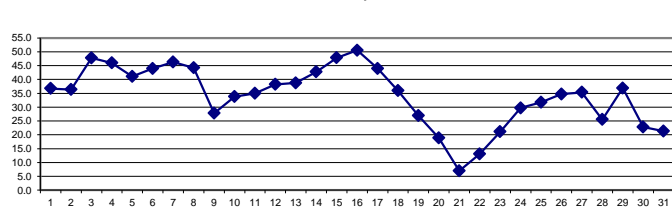
**OBJECTIVE LIMIT:**

**ALBERTA ENVIRONMENT:** 1-HR 82 PPB

**MONTHLY SUMMARY**

NUMBER OF 1-HR EXCEEDENCES:	0					
NUMBER OF NON-ZERO READINGS:	689					
MINIMUM 1-HR AVERAGE:	3.1	PPB	@ HOUR(S)	17	ON DAY(S)	21
MAXIMUM 1-HR AVERAGE:	61.8	PPB	@ HOUR(S)	3	ON DAY(S)	15
MAXIMUM 24-HR AVERAGE:	50.5	PPB			ON DAY(S)	16
					VAR-VARIOUS	
IZS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	725	HRS	
MONTHLY CALIBRATION TIME:	4	HRS	AMD OPERATION UPTIME:	97.4	%	
STANDARD DEVIATION:	12.37		MONTHLY AVERAGE:	34.3	PPB	

**24 HOUR AVERAGES FOR May 2016**



O3[ppb] Station: LICA ST. LINA Monthly: 05/2016 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	DAILY	24-HOUR				
DAY	MIN.	MAX.	AVG.	RDGS.																												
1	39.3	39.5	39.0	38.1	37.7	35.7	33.1	33.9	37.9	43.6	49.7	51.3	S	43.9	41.9	40.6	40.6	38.3	35.6	35.1	35.6	36.1	36.3	35.8	33.1	51.3	39.1	24				
2	35.2	33.9	33.0	33.1	32.7	31.5	30.9	31.4	31.4	34.2	35.8	S	38.5	41.8	42.5	45.4	46.8	48.2	47.2	46.4	41.7	43.4	43.6	40.8	30.9	48.2	38.7	24				
3	39.7	38.8	37.9	36.0	35.6	37.0	35.7	40.7	46.7	51.7	S	58.4	60.0	61.2	62.8	63.8	62.8	61.1	60.2	59.1	56.6	54.1	52.1	48.9	35.6	63.8	50.5	24				
4	46.8	45.5	44.7	43.9	43.2	37.9	34.2	39.2	45.1	S	50.3	53.0	54.4	55.2	56.6	56.0	56.5	57.1	54.8	54.8	51.1	46.4	47.0	45.9	34.2	57.1	48.7	24				
5	43.5	45.5	46.3	49.3	52.6	51.3	50.0	43.9	S	R	47.2	45.5	40.3	37.9	37.1	42.3	46.8	47.2	45.6	43.7	41.9	40.6	42.6	45.5	37.1	52.6	44.8	23				
6	44.7	45.1	44.6	42.0	41.1	39.0	39.2	S	38.2	42.5	44.9	45.5	46.4	49.7	50.0	49.5	50.6	52.0	51.8	52.1	54.0	52.2	48.0	45.9	38.2	54.0	46.5	24				
7	43.1	41.8	41.3	40.1	39.8	38.4	S	35.8	36.1	44.2	49.3	54.8	54.9	53.4	57.3	61.5	57.9	58.8	59.3	54.5	52.4	57.5	56.5	54.9	35.8	61.5	49.7	24				
8	54.3	50.0	44.3	39.9	40.8	S	52.2	53.1	50.8	59.4	60.6	58.6	54.3	50.0	52.0	52.2	49.3	48.0	40.5	38.7	37.5	34.4	32.9	31.7	31.7	60.6	47.2	24				
9	29.8	27.2	26.1	27.3	S	28.4	27.4	29.3	32.1	32.1	29.7	29.7	30.1	32.2	32.1	31.7	32.1	31.4	31.8	32.1	29.8	28.1	27.6	26.8	26.1	32.2	29.8	24				
10	26.6	27.7	27.3	S	27.6	27.0	30.4	36.9	38.6	39.2	39.0	38.7	39.2	40.1	39.9	41.7	41.3	41.9	42.0	41.5	39.6	37.2	34.8	32.4	26.6	42.0	36.1	24				
11	30.8	32.2	S	27.2	28.8	28.6	30.8	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	27.2	48.9	37.6	14		
12	36.6	S	37.2	36.3	39.0	38.7	39.8	39.4	45.7	47.9	48.1	S1	45.6	C	C	C	C	C	C	C	48.9	48.6	45.9	44.9	43.1	42.3	36.5	27.2	48.9	37.6	14	
13	S	38.4	31.4	31.8	32.4	31.3	30.8	31.5	37.3	43.7	45.2	45.2	45.8	45.8	46.2	46.0	46.1	46.0	46.9	46.4	43.5	45.0	44.9	S	30.8	46.9	41.0	24				
14	40.7	39.7	40.0	40.2	43.4	44.2	43.9	43.2	46.4	46.3	46.7	45.5	46.3	47.2	47.1	48.4	48.4	47.3	47.3	45.5	45.4	43.4	S	43.2	39.7	48.4	44.8	24				
15	41.4	42.4	43.0	46.9	48.7	49.5	49.8	50.3	51.8	54.4	55.7	53.9	50.8	52.4	53.5	54.1	55.2	55.6	53.9	49.8	49.7	S	48.1	48.4	41.4	55.7	50.4	24				
16	49.9	49.7	48.7	47.0	46.8	47.2	45.8	46.8	52.4	57.7	57.4	57.3	55.3	59.0	59.3	57.7	57.7	56.4	56.0	54.7	S	52.1	50.3	48.1	45.8	59.3	52.8	24				
17	46.8	44.6	41.8	39.7	37.6	34.8	31.7	41.4	52.8	55.0	54.1	53.9	53.7	53.8	53.9	53.3	52.8	52.5	50.2	S	43.5	42.6	41.0	39.7	31.7	55.0	46.6	24				
18	39.9	37.9	37.6	38.0	40.2	40.2	39.0	29.8	39.7	44.9	44.7	42.8	43.6	44.6	41.3	40.9	40.8	40.4	S	38.1	37.7	35.6	35.2	32.5	29.8	44.9	39.4	24				
19	29.5	29.1	27.7	26.4	21.4	20.4	23.9	P	P	P	P	P	P	P	P	P	P	P	S	59.0	58.9	S	36.5	29.1	25.0	22.5	21.5	20.0	20.0	59.0	30.1	16
20	20.6	20.4	21.0	21.9	21.5	22.1	22.3	22.5	21.9	24.2	24.9	24.7	25.0	25.0	25.5	26.0	S	25.2	22.6	16.1	12.6	11.4	9.3	8.4	8.4	26.0	20.7	24				
21	7.4	7.4	6.2	6.7	7.2	6.7	6.2	6.2	7.0	8.9	7.3	10.0	R	22.6	22.1	S	10.4	4.2	5.2	4.6	4.5	4.6	5.1	5.7	4.2	22.6	8.0	23				
22	6.2	5.1	5.7	6.8	13.8	14.6	16.1	18.7	19.0	18.1	17.7	17.9	21.5	21.5	S	18.9	16.9	14.1	15.1	15.0	15.9	15.6	14.7	13.7	5.1	21.5	14.9	24				
23	14.6	14.7	15.0	16.0	16.5	17.8	18.3	20.2	22.1	23.1	R	28.1	25.8	S	23.9	23.1	23.8	25.1	R	26.1	R	32.9	32.5	33.9	14.6	33.9	22.7	21				
24	33.9	30.4	29.7	26.2	26.5	25.4	25.2	26.4	28.6	32.7	34.6	34.6	S	34.6	34.6	37.2	39.0	39.8	39.8	37.0	32.9	30.8	29.2	27.2	25.2	39.8	32.0	24				
25	24.4	21.1	19.9	19.7	19.2	17.7	17.8	20.0	23.8	28.2	35.7	S	44.7	45.6	45.9	46.7	47.1	48.4	47.5	45.9	44.4	40.6	39.7	40.9	17.7	48.4	34.1	24				
26	43.2	42.3	38.4	39.7	36.9	34.8	27.2	33.9	31.7	32.8	S	27.7	33.5	38.9	40.8	47.2	48.4	49.7	46.7	42.6	41.1	37.4	36.8	35.6	27.2	49.7	38.6	24				
27	34.6	29.1	32.4	33.0	30.1	31.6	33.0	28.6	29.7	S	45.2	48.0	47.7	47.9	46.3	45.0	43.2	46.2	42.2	40.2	37.0	41.4	37.6	37.6	28.6	48.0	38.6	24				
28	35.4	30.1	27.3	24.8	25.6	27.3	28.1	20.6	S	23.1	33.1	33.2	33.9	34.8	36.0	34.7	29.7	30.5	29.7	23.5	24.7	28.2	32.2	36.0	20.6	36.0	29.7	24				
29	41.5	36.8	42.3	40.5	39.6	39.7	34.6	S	39.1	43.9	46.7	45.9	46.2	45.8	46.0	47.0	47.0	47.6	44.2	40.0	37.7	36.0	35.1	29.6	29.6	47.6	41.4	24				
30	29.2	26.2	25.0	25.0	25.4	26.0	S	22.2	20.5	19.6	22.6	22.2	27.3	28.4	28.9	32.1	32.9	30.1	23.8	21.4	22.3	22.1	23.7	21.3	19.6	32.9	25.1	24				
31	16.1	13.7	12.9	11.9	12.3	S	16.8	23.5	26.4	26.2	23.0	26.2	26.5	28.0	28.5	29.2	28.0	27.6	27.4	27.7	26.6	27.1	26.6	25.8	11.9	29.2	23.4	24				
HOURLY MAX	54.3	50.0	48.7	49.3	52.6	51.3	52.2	53.1	52.8	59.4	60.6	58.6	60.0	61.2	62.8	63.8	62.8	61.1	60.2	59.1	56.6	57.5	56.5	54.9								
HOURLY AVG	34.2	32.9	32.3	31.8	32.1	31.9	31.5	32.2	35.3	37.6	40.4	40.5	42.0	42.3	42.7	44.0	43.3	42.0	41.1	38.2	36.8	36.1	35.6	34.4								

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:	684					
MAXIMUM INSTANTANEOUS VALUE:	63.8	PPB	@ HOUR(S)	15	ON DAY(S)	3
	VAR-VARIOUS					
IZS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:	720	HRS	
MONTHLY CALIBRATION TIME:	4	HRS				
STANDARD DEVIATION:	12.63					

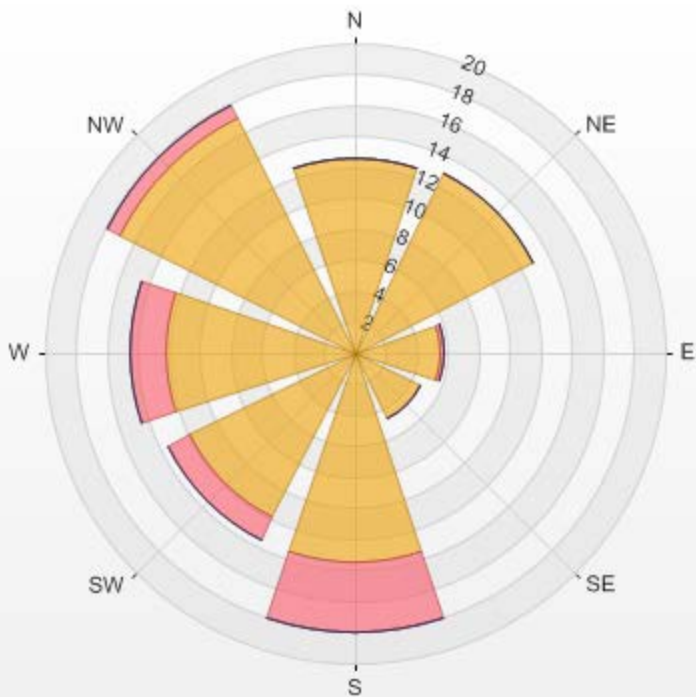
O3 MAX[ppb] Station: LICA ST. LINA Monthly: 05/2016 Type: AVG 1 Hr. [1 Hr.]



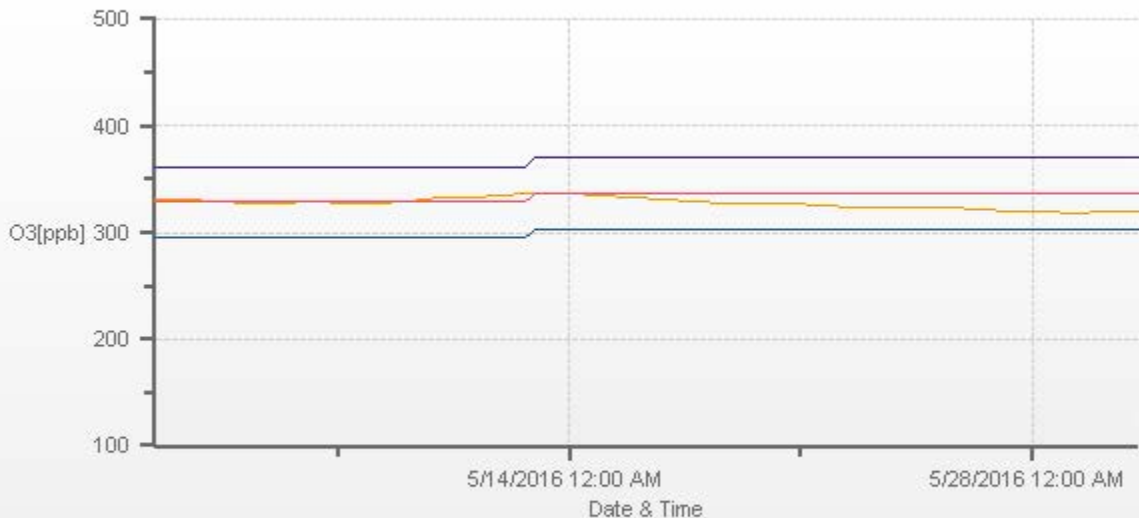
— O3 MAX[ppb]

Wind: LICA ST. LINA Monitor: O3 [ppb] Monthly: 05/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 93.36% Calm Avg: 0.00

Direction	0.5-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	12.63	0	0	0	12.63
NE	12.92	0	0	0	12.92
E	5.52	0.29	0	0	5.81
SE	4.79	0	0	0	4.79
S	13.5	4.5	0	0	18
SW	11.9	1.6	0	0	13.5
W	12.19	2.32	0	0	14.51
NW	16.98	0.87	0	0	17.85
Summary	90.43	9.58	0	0	100



% Icon Classes (ppb)	90	0.5-50.0	10	50.0-110.0	0	110.0-210.0	0	>210.0
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***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 MIN.	DAILY MAX.	24-HOUR AVG.	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					
1	1	16.4	14.9	11.9	10.9	9.9	15.5	15.5	14.5	10.9	9.5	12.4	7.9	0.4	0.9	6.9	7.9	7.5	7.5	10.4	6.9	10.4	6.9	6.9	7.9	0.4	16.4	9.6	24	
2	2	6.9	6.4	6.9	8.4	8.4	9.9	8.4	9.0	9.5	9.0	6.9	5.0	2.9	10.9	5.4	2.9	10.9	10.4	9.5	14.9	20.5	19.5	13.0	15.5	2.9	20.5	9.6	24	
3	3	10.9	10.9	17.4	14.0	14.5	13.4	14.5	9.5	14.0	18.4	14.5	14.0	12.9	12.9	12.9	14.5	13.5	14.9	13.0	17.4	14.5	18.9	17.9	12.5	9.5	18.9	14.2	24	
4	4	14.0	15.5	11.4	10.4	14.9	17.4	16.9	25.0	20.5	22.4	17.9	2.9	2.9	10.9	12.5	2.9	9.9	12.9	16.9	19.5	16.9	9.0	8.5	8.5	2.9	25.0	13.4	24	
5	5	7.5	12.5	13.4	9.0	8.5	5.4	8.4	6.9	7.5	0.0	8.4	6.9	5.9	5.9	5.4	4.0	8.4	16.9	12.4	14.0	9.5	9.9	9.4	13.5	0.0	16.9	8.7	24	
6	6	10.4	12.0	9.0	12.4	9.9	9.9	7.5	7.9	7.5	6.9	7.9	0.4	0.0	0.0	0.0	9.0	4.0	9.5	22.9	24.9	27.4	31.4	30.4	23.9	0.0	31.4	11.9	24	
7	7	24.9	22.9	26.4	28.5	27.4	24.9	24.9	19.9	21.9	24.9	16.9	12.9	14.0	12.4	10.9	12.4	1.4	12.5	9.0	16.4	20.5	17.9	20.5	14.0	1.4	28.5	18.3	24	
8	8	13.4	17.4	16.4	19.9	17.4	8.5	5.0	8.4	6.4	5.9	1.9	2.4	1.4	5.0	7.9	11.5	17.4	21.0	24.9	24.4	5.0	3.4	2.4	3.9	1.4	24.9	10.5	24	
9	9	0.0	0.0	0.9	2.4	0.0	1.4	0.0	P	P	P	P	P	P	P	P	P	P	P	5.0	1.9	0.0	2.4	5.4	0.0	2.4	0.0	5.4	1.6	14
10	10	2.4	2.4	2.4	0.9	1.9	2.9	5.4	5.9	0.0	9.0	5.9	17.9	3.4	X	10.4	X	5.4	0.0	1.9	0.0	3.5	2.4	7.5	7.9	0.0	17.9	4.5	22	
11	11	13.4	11.9	9.9	16.9	13.4	9.9	9.9	9.5	X	X	9.5	0.0	0.0	X	X	0.0	X	12.4	29.9	33.4	24.9	1.9	3.9	2.4	0.0	33.4	11.2	19	
12	12	5.4	0.4	5.4	9.9	19.4	19.4	11.9	9.4	47.4	0.0	0.0	9.4	0.0	9.5	14.9	22.4	18.9	6.4	2.9	1.4	0.4	1.4	0.4	4.4	0.0	47.4	9.2	24	
13	13	1.4	0.9	3.4	0.9	0.9	3.4	1.4	4.9	0.4	64.0	68.4	64.5	62.9	59.0	C	24.4	29.4	26.4	18.4	21.0	32.5	33.4	33.4	31.0	0.4	68.4	25.5	24	
14	14	29.9	31.0	34.4	34.9	32.4	31.5	24.9	19.5	14.9	11.4	12.4	9.4	5.9	3.5	4.0	0.0	2.4	3.9	5.4	2.9	4.9	5.0	5.0	5.9	0.0	34.9	14.0	24	
15	15	6.4	5.9	9.5	11.4	12.4	13.4	16.4	17.4	15.4	10.9	9.5	5.0	6.4	15.9	16.9	16.4	16.9	17.4	19.5	22.4	22.9	99.0	23.9	29.9	5.0	99.0	18.4	24	
16	16	27.9	33.9	30.0	30.0	28.5	22.9	29.9	25.9	18.9	17.9	22.9	12.9	16.9	23.9	15.4	12.4	7.5	5.0	6.9	3.4	11.4	4.4	5.4	6.4	3.4	33.9	17.5	24	
17	17	2.4	2.9	3.9	5.0	5.9	7.5	5.9	6.4	5.4	2.4	1.4	6.9	X	5.9	7.9	6.4	5.0	4.4	6.9	5.4	6.4	6.4	1.9	1.4	1.4	7.9	5.0	23	
18	18	4.4	21.4	1.4	6.4	5.9	0.0	5.0	6.9	10.9	9.0	3.5	4.4	0.4	6.9	2.4	4.4	1.9	5.0	9.4	5.9	7.5	9.5	10.4	7.5	0.0	21.4	6.3	24	
19	19	6.9	10.4	5.0	5.9	8.4	8.4	37.5	P	P	P	P	P	P	P	P	10.4	9.9	23.9	49.5	33.9	28.5	24.5	15.5	10.9	5.0	49.5	18.1	16	
20	20	11.4	10.9	4.5	2.4	1.5	1.4	2.4	4.5	X	5.9	0.4	9.0	10.4	7.5	10.4	7.5	10.9	9.0	14.9	7.9	12.5	7.5	12.5	13.5	0.4	14.9	7.8	23	
21	21	13.5	13.5	16.0	16.0	14.0	14.5	12.4	16.0	15.5	14.9	16.9	22.4	21.5	12.5	11.4	3.5	4.5	4.5	1.9	2.9	0.4	0.0	2.9	2.4	0.0	22.4	10.6	24	
22	22	7.5	5.4	6.9	14.5	19.5	16.4	10.9	7.9	6.4	6.4	5.9	11.5	11.4	10.4	5.4	2.4	1.9	4.0	4.5	2.4	0.0	2.4	2.4	1.9	0.0	19.5	7.0	24	
23	23	2.4	0.4	2.9	0.0	3.0	1.0	0.0	0.0	X	0.9	0.0	2.4	0.0	2.4	2.4	0.4	1.5	0.9	0.0	0.0	0.0	0.0	1.9	1.4	0.0	3.0	1.0	23	
24	24	3.5	0.9	1.9	2.4	2.4	5.9	1.4	5.9	0.9	1.4	9.0	3.0	10.9	2.4	5.4	C	1.9	1.9	7.5	0.0	4.0	4.5	8.4	5.4	0.0	10.9	4.0	24	
25	25	3.0	3.0	3.4	5.4	3.0	7.5	0.4	3.5	2.4	5.0	3.5	8.0	X	6.4	1.9	7.5	X	3.5	8.5	6.9	9.5	5.9	5.9	10.5	0.4	10.5	5.2	22	
26	26	5.4	6.4	3.4	6.4	5.0	7.5	5.4	6.4	9.0	7.9	7.9	9.9	10.5	10.5	4.0	4.5	5.0	9.5	0.9	6.4	5.9	5.0	5.9	11.9	0.9	11.9	6.7	24	
27	27	9.5	8.4	10.4	5.9	10.9	9.9	14.0	7.9	9.0	5.0	9.5	5.0	5.4	0.0	0.0	2.9	5.0	5.0	2.4	6.9	4.0	0.0	X	1.9	0.0	14.0	6.0	23	
28	28	4.5	4.5	6.4	6.9	10.4	9.0	10.4	15.0	19.9	12.5	5.4	4.5	4.5	3.5	5.9	2.9	3.0	5.0	4.5	5.9	6.9	6.9	7.5	2.9	19.9	7.3	24		
29	29	7.9	6.9	6.4	4.0	2.9	2.4	2.4	0.4	2.4	7.5	0.0	6.4	6.4	X	X	2.4	0.0	0.0	4.5	1.9	0.9	2.9	0.0	4.0	0.0	7.9	3.3	22	
30	30	0.9	1.9	0.0	0.0	0.0	0.0	1.9	0.0	X	0.4	0.9	5.0	6.4	6.4	5.0	4.0	1.9	4.0	1.9	4.5	1.9	0.0	1.9	1.0	0.0	6.4	2.2	23	
31	31	3.4	3.0	5.0	1.5	3.0	1.5	4.5	5.0	2.5	5.0	0.0	0.9	2.4	0.4	8.5	X	X	0.0	2.9	0.0	0.0	1.9	0.0	0.4	0.0	8.5	2.4	22	
HOURLY MAX		29.9	33.9	34.4	34.9	32.4	31.5	37.5	25.9	47.4	64.0	68.4	64.5	62.9	59.0	16.9	24.4	29.4	26.4	49.5	33.9	32.5	99.0	33.4	31.0					
HOURLY AVG		9.0	9.6	9.2	9.8	10.2	9.8	10.1	9.5	11.0	10.8	9.9	9.4	8.4	9.5	7.4	7.5	7.6	8.4	10.5	10.1	10.2	11.2	8.8	8.8					

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

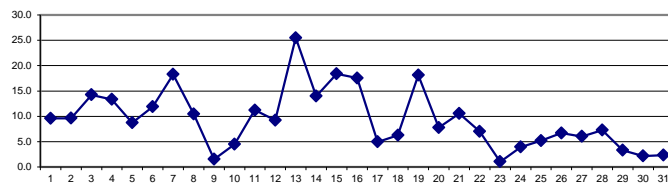
OBJECTIVE LIMIT:

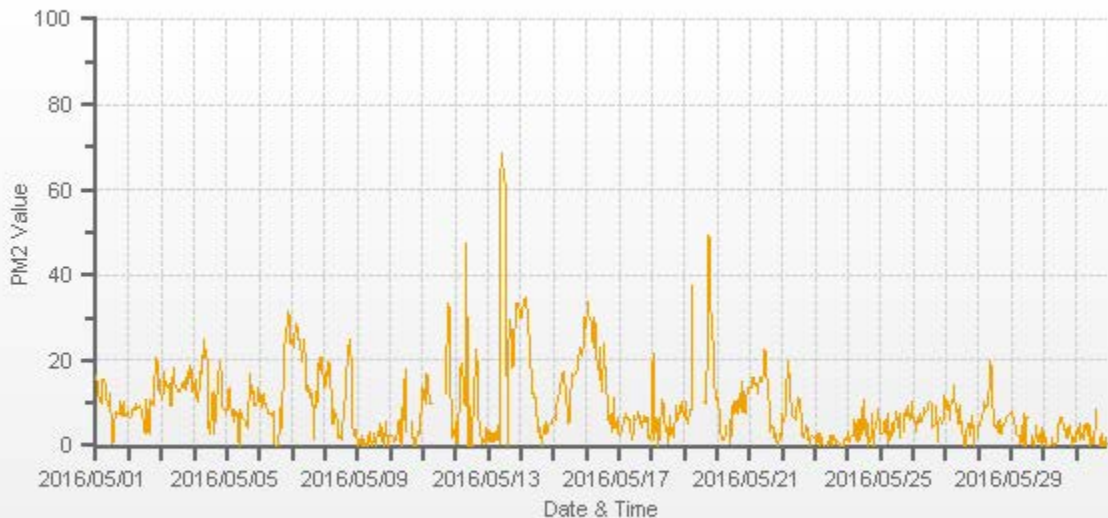
ALBERTA ENVIRONMENT:	1-HR	80 ug/m3	24-HR	30 ug/m3
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MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	1			
NUMBER OF 24-HR EXCEEDENCES:	0			
NUMBER OF NON-ZERO READINGS:	655			
MINIMUM 1-HR AVERAGE	0.0 ug/m3 @ HOUR(S)	VAR	ON DAY(S)	VAR
MAXIMUM 1-HR AVERAGE:	99.0 ug/m3 @ HOUR(S)	21	ON DAY(S)	15
MAXIMUM 24-HR AVERAGE:	25.5 ug/m3		ON DAY(S)	13
			VAR-VARIOUS	
MONTHLY CALIBRATION TIME:	2 HRS	OPERATIONAL TIME:	708 HRS	
		AMD OPERATION UPTIME:	95.2 %	
STANDARD DEVIATION:	9.75	MONTHLY AVERAGE:	9.5 ug/m3	

24 HOUR AVERAGES FOR May 2016



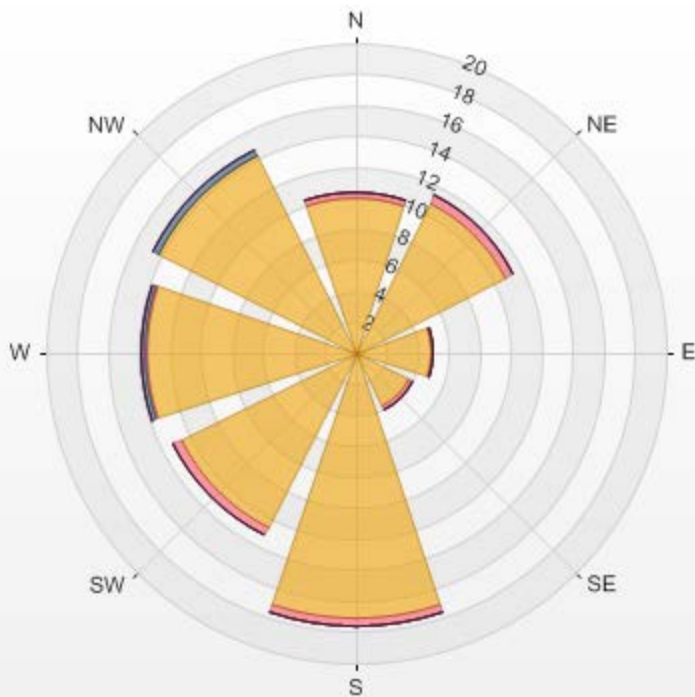




— PM2[ug/m3(L)]



Wind: LICA ST. LINA Monitor: PM2 [ug/m3(L)] Monthly: 05/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 9.82% Valid Data: 96.61% 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	9.96	0.42	0	0	0	0	10.38
NE	10.8	0.56	0	0	0	0	11.36
E	4.91	0.14	0	0	0	0	5.05
SE	3.93	0.14	0	0	0	0	4.07
S	17.11	0.56	0	0	0	0	17.67
SW	12.62	0.56	0	0	0	0	13.18
W	13.46	0.14	0.28	0	0	0	13.88
NW	14.31	0	0.28	0	0	0	14.59
Summary	87.1	2.52	0.56	0	0	0	90.18



% Icon	Classes (ug/m3(L))	87		0.5-30.0	3		30.0-60.0	1		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	
DAY	MIN.	MAX.	AVG.	RDGS.																									
1	8.7	10.6	9.2	9.0	8.0	8.1	6.2	9.4	11.8	14.9	13.4	13.5	12.8	12.6	14.3	15.0	12.9	9.3	11.7	6.4	7.4	8.4	8.1	8.2	6.2	15.0	10.4	24	
2	7.1	8.0	8.5	10.7	9.5	7.9	7.8	5.8	3.5	5.2	5.6	1.8	7.4	7.3	7.5	5.0	8.2	4.4	5.2	6.5	8.4	9.7	10.1	10.7	1.8	10.7	7.2	24	
3	9.9	9.7	9.1	7.5	7.5	7.9	7.3	8.1	10.4	9.3	13.0	14.7	17.2	13.8	15.7	17.0	14.3	12.4	7.4	6.8	6.7	8.9	9.5	11.1	6.7	17.2	10.6	24	
4	11.1	10.7	10.4	9.6	10.1	7.3	7.8	13.0	12.4	14.1	11.9	14.1	16.6	16.7	19.1	14.5	14.4	12.3	5.3	5.8	9.2	11.5	14.3	13.5	5.3	19.1	11.9	24	
5	13.7	14.4	13.6	14.5	15.4	12.5	14.3	15.0	11.2	12.3	10.4	2.5	3.1	5.3	7.1	5.2	7.1	7.8	6.3	7.6	6.1	5.7	5.9	8.6	2.5	15.4	9.4	24	
6	8.7	9.8	9.9	9.5	6.2	5.8	7.1	4.3	5.9	5.4	6.9	12.0	10.9	12.1	8.1	7.0	10.5	7.2	4.7	6.2	8.0	9.9	11.3	11.4	4.3	12.1	8.3	24	
7	12.1	10.9	9.2	9.8	10.1	8.9	8.6	11.0	12.7	11.0	9.3	10.6	13.8	13.5	11.7	3.7	4.6	6.0	3.4	<b>41.3</b>	28.6	16.6	17.7	15.5	3.4	<b>41.3</b>	12.5	24	
8	15.3	14.8	13.5	11.0	16.8	16.4	19.0	21.6	23.2	22.9	18.3	17.5	19.3	15.4	17.2	22.9	21.6	24.1	23.2	20.1	13.6	13.4	14.6	13.7	11.0	24.1	<b>17.9</b>	24	
9	13.3	12.6	14.7	14.0	12.8	11.1	11.8	13.4	14.5	12.5	15.2	15.8	12.9	15.3	13.8	13.8	13.8	12.4	11.1	12.6	12.2	9.3	8.4	8.6	8.4	15.8	12.7	24	
10	8.6	6.1	6.7	5.4	5.4	7.3	8.2	8.3	8.4	11.3	10.5	10.3	8.6	10.2	10.2	10.7	8.5	9.1	8.5	5.9	5.4	6.9	6.6	7.4	5.4	11.3	8.1	24	
11	8.6	9.8	7.0	5.8	5.1	5.5	6.6	P	P	P	P	P	P	P	P	P	P	11.4	12.1	9.2	8.8	7.4	7.1	6.7	5.1	12.1	7.9	14	
12	5.9	5.7	5.6	6.6	6.7	6.7	8.5	7.9	9.1	9.2	9.6	9.8	11.0	11.2	10.2	9.5	10.8	9.4	9.3	6.5	6.2	7.6	6.3	5.1	5.1	11.2	8.1	24	
13	5.0	5.6	5.5	5.7	9.1	6.5	4.8	3.7	3.3	2.5	2.8	1.7	1.6	3.0	2.8	3.8	4.4	5.5	6.0	4.1	5.4	4.4	6.0	6.1	1.6	9.1	4.6	24	
14	6.6	6.8	7.3	7.1	8.0	7.5	7.2	5.5	4.0	4.6	1.9	4.4	4.3	2.0	5.1	2.7	4.8	3.7	3.9	3.0	5.7	6.1	6.5	6.5	1.9	8.0	5.2	24	
15	7.3	7.9	8.1	9.4	9.7	9.4	9.8	10.2	8.6	6.2	4.4	3.5	2.9	4.0	1.8	2.4	4.2	3.2	3.6	4.3	5.5	7.8	8.4	8.6	1.8	10.2	6.3	24	
16	8.3	9.0	9.6	9.9	9.8	10.2	9.0	7.7	9.1	17.0	19.4	20.3	17.5	19.9	20.9	19.9	18.8	16.9	15.9	14.3	15.5	14.6	13.6	12.3	7.7	20.9	14.1	24	
17	11.3	10.7	10.8	11.0	7.9	6.5	6.1	6.6	14.0	18.8	16.4	14.1	9.8	8.0	7.8	10.5	9.6	9.9	8.1	6.0	6.8	6.8	6.8	6.9	6.0	18.8	9.6	24	
18	7.7	8.2	9.9	6.9	6.3	3.7	3.5	3.0	4.4	3.5	3.2	2.3	3.3	0.5	2.9	2.5	3.1	3.8	4.8	5.4	5.1	6.4	10.7	5.5	0.5	10.7	4.9	24	
19	5.8	5.3	7.7	9.4	12.4	11.7	12.4	P	P	P	P	P	P	P	P	13.6	12.6	8.8	11.3	16.9	15.9	12.5	10.9	11.8	5.3	16.9	11.2	16	
20	15.6	15.1	18.0	19.5	17.1	19.4	19.5	19.0	12.3	12.2	11.9	9.7	8.7	4.1	3.6	5.7	7.6	6.7	8.6	9.4	8.2	10.3	9.5	9.3	3.6	19.5	11.7	24	
21	9.4	8.6	8.7	8.7	6.7	4.8	6.7	5.4	4.1	1.9	4.1	5.9	7.8	5.2	4.7	0.6	6.5	8.1	8.6	7.9	8.2	9.5	10.4	5.4	0.6	10.4	6.6	24	
22	10.8	9.7	10.2	11.8	11.0	13.5	13.1	12.7	11.3	12.8	11.7	12.4	13.7	14.7	13.0	12.4	9.7	4.7	5.4	9.0	11.0	10.6	10.3	10.3	4.7	14.7	11.1	24	
23	8.7	9.2	9.4	11.5	10.8	10.9	10.8	12.4	12.8	12.1	13.0	13.0	12.0	12.3	11.3	9.8	7.9	10.6	8.6	6.0	7.5	7.1	6.5	6.2	6.0	13.0	10.0	24	
24	6.0	4.8	3.1	4.2	4.8	4.6	3.7	4.1	2.9	2.3	4.7	5.6	3.6	3.3	3.5	6.5	6.3	5.1	6.1	6.5	7.1	7.3	8.7	9.3	2.3	9.3	5.2	24	
25	9.7	10.2	11.0	10.2	9.7	10.7	9.8	8.0	8.4	8.4	9.1	7.4	6.2	4.9	4.3	2.9	3.6	2.2	2.7	3.8	6.2	6.8	8.1	7.0	2.2	11.0	7.1	24	
26	4.2	3.9	3.1	2.4	3.5	3.6	2.4	2.2	1.8	3.0	2.5	1.8	2.3	3.0	3.3	3.4	3.6	6.4	7.0	4.9	6.4	7.4	6.5	5.2	1.8	7.4	3.9	24	
27	1.9	5.1	7.9	2.8	1.0	2.6	3.2	6.4	9.6	13.7	17.8	19.7	15.9	10.2	6.3	4.2	7.2	7.1	14.5	14.1	14.7	10.0	8.9	9.8	1.0	19.7	8.9	24	
28	7.4	5.5	5.5	5.5	5.7	4.1	6.1	9.0	8.0	7.3	7.0	5.4	2.8	4.5	3.6	2.7	2.1	2.3	3.4	4.1	4.1	1.3	3.9	1.3	9.0	4.8	24		
29	3.1	6.5	4.4	1.4	3.0	3.5	<b>0.4</b>	4.1	3.5	5.3	6.2	5.2	5.4	6.8	5.7	5.3	6.4	6.3	6.6	14.4	12.7	7.1	8.7	5.9	<b>0.4</b>	14.4	5.7	24	
30	7.0	8.2	8.3	9.1	8.6	11.4	7.8	8.5	8.8	7.5	7.4	6.5	5.2	7.3	11.8	10.3	9.0	8.4	8.9	9.0	10.3	11.1	9.1	9.8	5.2	11.8	8.7	24	
31	8.8	8.3	8.4	7.3	7.9	6.9	7.9	9.3	8.8	8.6	8.7	7.9	9.5	7.3	6.1	6.1	5.9	4.3	3.4	1.8	3.7	5.9	6.9	7.5	1.8	9.5	7.0	24	
HOURLY MAX	15.6	15.1	18.0	19.5	17.1	19.4	19.5	21.6	23.2	22.9	19.4	20.3	19.3	19.9	20.9	22.9	21.6	24.1	23.2	41.3	28.6	16.6	17.7	15.5					
HOURLY AVG	8.6	8.8	8.8	8.6	8.6	8.3	8.3	8.8	8.9	9.5	9.5	9.3	9.2	8.8	8.7	8.3	8.7	8.1	7.9	9.0	9.1	8.7	9.0	8.6					

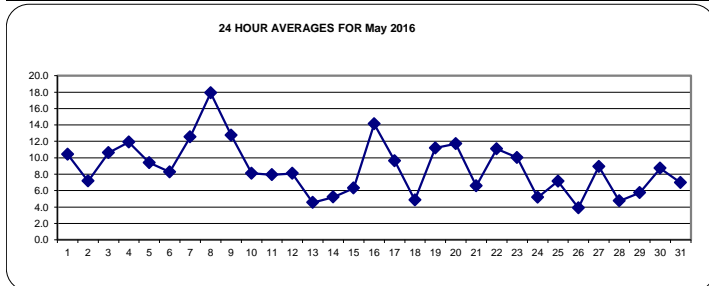
**STATUS FLAG CODES**

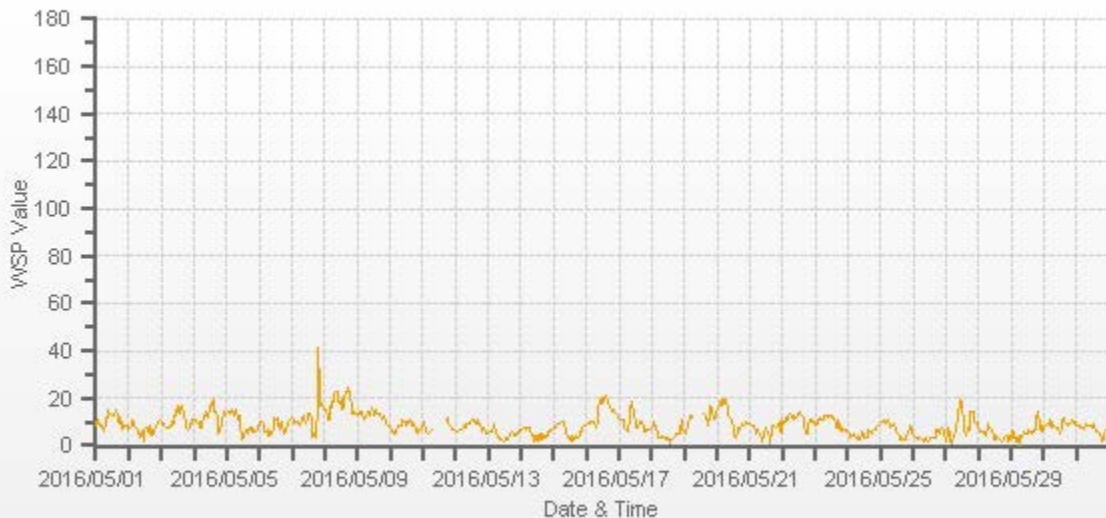
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

LAST CALIBRATION:	August 28, 2014
DECLINATION :	MAGNETIC DECLINATION 19 DEGREE EAST

**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS:	726
MINIMUM 1-HR AVERAGE:	0.4 KPH @ HOUR(S) 6 ON DAY(S) 29
MAXIMUM 1-HR AVERAGE:	41.3 KPH @ HOUR(S) 19 ON DAY(S) 7
MAXIMUM 24-HR AVERAGE:	17.9 KPH ON DAY(S) 8
	VAR-VARIOUS
MONTHLY CALIBRATION TIME:	0 HRS
OPERATIONAL TIME:	726 HRS
AMD OPERATION UPTIME:	97.6 %
STANDARD DEVIATION:	4.48
MONTHLY AVERAGE:	8.7 KPH





— 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	
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		20.3	27.7	16.0	12.6	11.3	11.3	10.0	18.5	23.0	27.0	30.7	33.9	45.5	35.5	32.4	39.6	33.1	29.5	28.0	16.2	11.8	12.4	12.2	10.9	10.0	45.5	22.9	24
2		10.0	11.9	16.3	19.4	16.5	13.7	14.2	12.4	12.1	15.4	18.4	21.4	22.5	28.1	23.2	20.2	20.2	16.4	13.0	14.7	12.7	16.4	15.8	16.8	10.0	28.1	16.7	24
3		16.2	16.3	17.0	12.6	11.5	13.1	15.1	17.1	22.3	27.6	35.7	39.2	39.7	41.1	41.6	42.7	36.2	36.2	20.6	23.4	15.0	16.6	15.9	18.8	11.5	42.7	24.6	24
4		24.0	18.5	17.7	17.7	19.2	16.6	16.6	22.6	24.8	33.8	30.9	44.3	40.9	37.0	43.5	35.7	33.7	33.7	14.8	13.1	25.7	30.6	40.7	42.2	13.1	44.3	28.3	24
5		34.3	36.9	38.2	41.7	46.5	31.7	37.3	41.4	31.1	R	29.4	10.5	9.3	14.2	17.0	15.7	19.2	19.6	15.1	19.4	13.2	13.2	13.3	17.4	9.3	46.5	24.6	23
6		15.0	17.2	25.2	23.9	14.9	13.7	16.5	11.3	14.6	21.5	27.3	29.4	32.2	36.5	40.1	31.9	32.6	25.1	14.8	10.0	14.0	17.2	18.5	27.0	10.0	40.1	22.1	24
7		28.1	21.3	18.0	17.6	25.1	16.5	20.0	23.7	27.0	23.5	22.6	27.4	34.2	31.1	26.1	21.7	20.2	23.7	9.0	X	X	41.4	44.6	39.4	9.0	44.6	25.6	22
8		42.7	37.2	35.4	32.8	45.7	46.4	53.1	53.3	65.3	62.9	50.9	53.3	49.4	49.6	47.4	58.6	65.8	60.7	61.6	57.5	35.3	43.9	39.1	32.8	32.8	65.8	49.2	24
9		34.5	39.5	44.5	43.8	34.2	32.0	35.1	37.5	36.6	40.8	44.5	39.7	36.2	39.9	39.9	35.8	41.0	36.2	33.1	34.2	32.7	26.1	24.4	18.8	18.8	44.5	35.9	24
10		20.0	17.2	15.8	13.9	13.6	16.5	19.2	27.0	26.2	34.2	33.6	33.4	38.2	33.2	33.6	36.3	33.2	28.8	30.8	17.6	11.3	11.7	12.0	15.2	11.3	38.2	23.9	24
11		17.6	20.4	18.5	12.6	12.6	14.1	18.4	P	P	P	P	P	P	P	P	P	P	37.0	30.9	28.2	28.0	18.1	15.3	15.1	12.6	37.0	20.5	14
12		12.6	8.5	13.1	11.3	16.8	17.2	25.1	20.1	28.9	37.0	36.0	30.0	33.8	37.6	32.6	26.4	28.0	35.5	28.1	22.0	14.4	12.4	12.0	7.6	7.6	37.6	22.8	24
13		7.9	10.7	9.0	8.5	12.9	9.6	7.2	9.0	10.3	13.2	20.4	19.8	20.8	20.6	21.1	18.4	21.3	23.7	15.6	17.1	9.9	7.9	7.7	8.8	7.2	23.7	13.8	24
14		10.1	10.9	10.5	12.7	11.0	10.3	12.9	10.3	12.2	14.9	18.5	24.0	24.3	22.2	21.1	18.0	19.8	15.6	16.7	6.2	9.6	8.2	9.9	11.4	6.2	24.3	14.2	24
15		10.7	14.2	10.4	17.3	15.7	14.7	14.9	18.1	18.3	19.0	17.8	30.4	17.9	16.5	22.9	18.3	16.8	12.8	11.7	10.6	9.2	13.6	14.3	11.8	9.2	30.4	15.7	24
16		14.0	13.8	16.2	14.6	15.1	16.3	18.3	20.6	33.8	45.2	49.3	58.1	49.1	51.5	57.0	49.5	47.6	45.4	44.3	41.3	40.7	37.0	34.9	31.6	13.8	58.1	35.2	24
17		31.4	21.7	21.9	29.8	19.5	16.4	13.3	26.9	46.2	45.9	44.0	41.2	40.7	32.4	28.9	28.7	26.0	27.8	23.0	13.3	11.1	10.9	11.8	10.5	10.5	46.2	26.0	24
18		12.9	13.8	15.5	11.5	9.0	6.4	7.0	7.5	11.6	11.7	11.0	12.6	14.3	15.8	19.8	14.5	11.7	10.8	14.7	13.6	12.5	23.4	30.6	19.4	6.4	30.6	13.8	24
19		14.9	12.2	27.1	26.4	29.8	29.5	32.8	P	P	P	P	P	P	P	P	48.8	48.4	30.5	35.7	51.2	48.4	38.8	33.1	29.8	12.2	51.2	33.6	16
20		35.9	38.5	47.0	53.1	53.6	53.3	51.1	49.9	41.9	38.0	33.3	40.9	28.2	14.8	10.5	17.3	27.0	17.2	22.7	21.4	20.4	24.2	27.9	22.0	10.5	53.6	32.9	24
21		23.6	27.7	19.8	27.1	23.3	17.0	16.3	15.1	11.3	7.8	12.0	17.0	R	16.8	13.7	10.2	15.2	20.7	21.5	27.2	23.5	27.6	27.7	26.6	7.8	27.7	19.5	23
22		25.7	26.2	27.7	37.3	33.2	34.1	39.1	38.8	32.9	38.2	37.1	31.9	42.6	43.9	33.6	40.1	31.0	19.4	20.6	29.0	34.9	31.2	28.6	29.9	19.4	43.9	32.8	24
23		31.5	29.0	27.3	30.3	30.3	29.4	34.2	35.5	34.2	38.8	R	39.0	35.5	41.4	32.6	35.1	23.3	30.5	R	19.0	R	22.5	18.3	18.5	18.3	41.4	30.3	21
24		18.4	14.2	9.2	12.2	12.5	13.5	10.5	13.1	13.3	12.2	20.3	17.3	12.9	12.5	14.2	21.0	20.4	16.8	17.7	15.5	14.6	15.0	15.3	16.8	9.2	21.0	15.0	24
25		16.8	20.3	18.1	17.7	18.1	26.0	26.6	25.1	26.0	30.0	29.6	28.1	26.1	19.3	22.8	14.7	11.6	11.6	9.0	7.4	11.3	14.2	21.2	14.6	7.4	30.0	19.4	24
26		9.4	8.7	8.2	6.3	8.3	9.4	7.4	7.8	6.3	7.8	6.8	5.9	8.5	9.2	12.0	17.1	25.5	23.8	23.2	9.6	14.5	16.2	12.9	13.1	5.9	25.5	11.6	24
27		9.2	11.3	20.6	22.9	17.2	7.0	15.3	19.3	30.4	36.7	42.3	50.3	42.4	36.8	34.7	16.3	29.9	28.2	61.0	37.6	46.1	47.2	23.3	29.2	7.0	61.0	29.8	24
28		19.2	12.2	11.8	12.4	13.5	9.5	17.2	17.6	18.7	15.6	15.6	14.7	11.7	10.8	9.5	10.2	12.6	6.2	6.9	10.6	10.2	10.2	7.8	6.7	6.2	19.2	12.1	24
29		6.2	10.9	6.7	5.8	6.9	7.2	7.6	12.6	12.6	18.2	19.5	22.1	20.8	22.7	23.4	17.3	24.1	19.5	47.6	41.5	38.3	21.9	26.3	22.6	5.8	47.6	19.3	24
30		19.0	22.4	24.8	21.8	22.2	39.2	23.5	28.1	29.8	21.3	25.6	23.3	15.0	19.2	46.5	41.4	29.5	22.8	26.3	22.0	28.3	25.9	27.7	25.0	15.0	46.5	26.3	24
31		21.9	22.4	22.4	20.7	19.8	15.9	20.7	30.6	26.6	29.1	30.6	25.1	26.0	21.9	31.0	23.8	18.6	16.2	14.9	7.9	5.4	9.4	11.3	12.9	5.4	31.0	20.2	24
HOURLY MAX		42.7	39.5	47.0	53.1	53.6	53.3	53.1	53.3	65.3	62.9	50.9	58.1	49.4	51.5	57.0	58.6	65.8	60.7	61.6	57.5	48.4	47.2	44.6	42.2				
HOURLY AVG		19.8	19.8	20.3	20.9	20.6	19.6	21.2	23.1	25.1	27.4	28.3	29.8	29.2	28.0	28.7	27.5	27.5	25.2	24.4	21.9	20.8	21.5	21.1	20.1				

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:	65.8	KPH	@ HOUR(S)	16	ON DAY(S)	8
					VAR-VARIOUS	
OPERATIONAL TIME:				719	HRS	

WS MAX[kph] Station: LICA ST. LINA Monthly: 05/2016 Type: AVG 1 Hr. [1 Hr.]

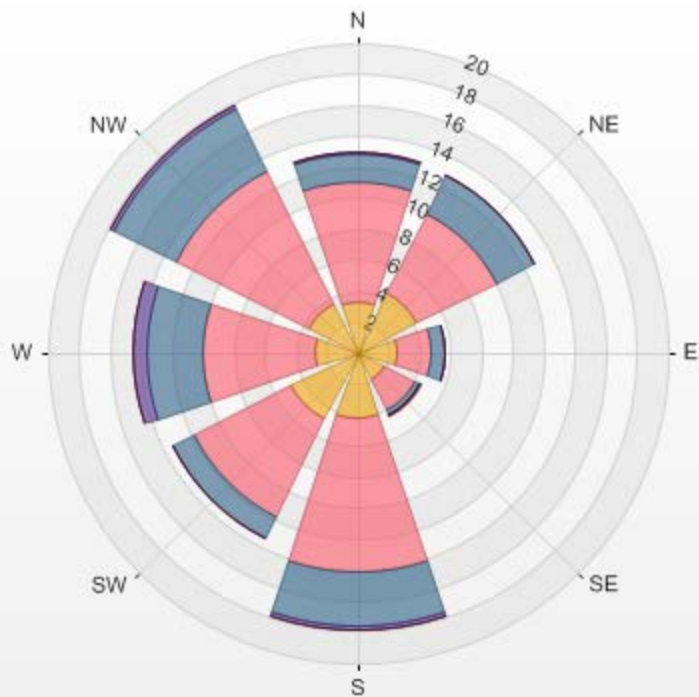


— WS MAX[kph]

Wind: LICA ST. LINA Monitor: WSP [kph] Monthly: 05/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.28% Valid Data: 98.37% 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	3.31	7.71	1.79	0.14	0	0	12.95
NE	4.27	5.79	2.75	0	0	0	12.81
E	2.62	2.2	0.83	0	0	0	5.65
SE	1.93	2.07	0.55	0	0	0.14	4.69
S	4.27	9.92	3.44	0.28	0	0	17.91
SW	4.82	7.02	1.52	0	0	0	13.36
W	2.75	7.3	3.58	0.83	0	0	14.46
NW	3.58	9.5	4.55	0.28	0	0	17.91
Summary	27.55	51.51	19.01	1.53	0	0.14	100





%	Icon	Classes (kph)	28	0.5-6.0	52	6.0-12.0	19	12.0-20.0	2	20.0-29.0	0	29.0-39.0	0	>39.0

***WIND DIRECTION***



WIND DIRECTION (WD) hourly averages

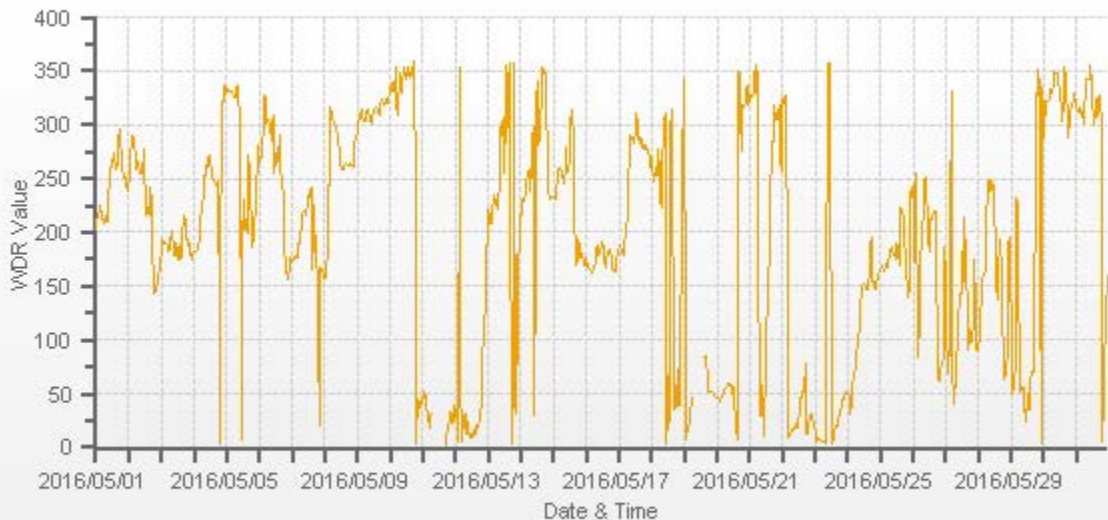
MST																										24-HOUR AVG		
HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	QUADRANT	RDGS.		
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
DAY																												
1	SSW	SW	SW	SW	SW	SSW	SSW	SSW	SSW	SW	WSW	W	W	W	W	WSW	W	WNW	W	W	WSW	WSW	WSW	SW	WSW	WSW	24	
2	WSW	WSW	WNW	WNW	WNW	W	WSW	W	WSW	WSW	WSW	W	WSW	SSW	SW	SW	WSW	SW	SSE	SE	SSE	SSE	SSE	SSE	SW	SW	24	
3	S	SSW	S	S	S	S	S	S	SSW	SSW	S	S	S	S	S	S	S	SSW	SSW	SSW	S	SSW	S	S	S	S	24	
4	S	S	S	S	SSW	SSW	SW	SW	WSW	W	W	W	W	W	WSW	WSW	WSW	WSW	WSW	N	NW	NW	NNW	NNW	WSW	WSW	24	
5	NNW	NNW	NNW	NNW	NNW	NNW	NW	NNW	NNW	NW	NW	N	SW	SSW	SSW	SSW	W	WSW	SSW	S	SSW	SW	WSW	W	W	WSW	24	
6	W	W	W	WNW	NW	WNW	NW	WNW	NW	WNW	WNW	NW	WSW	W	W	W	WNW	WSW	WSW	SSW	SSE	SSE	SSE	S	W	W	24	
7	S	S	S	S	S	S	S	SW	SW	SW	SSW	SW	SW	SW	WSW	SSE	SW	S	SSE	SSE	NNE	SSE	SSE	SSE	S	WSW	24	
8	SSE	SSE	S	WSW	NW	NW	WNW	WNW	WNW	WNW	WNW	W	WSW	WSW	WSW	W	W	W	W	W	W	W	W	WNW	WNW	W	24	
9	WNW	WNW	NW	NW	WNW	WNW	NW	WNW	WNW	NW	WNW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	24	
10	NNW	NNW	NNW	NNW	N	NW	NW	NNW	NNW	NNW	N	NNW	NNW	N	NNW	NNW	NNW	N	N	N	NE	NE	NE	NE	N	WSW	24	
11	NE	NE	NE	NE	NNE	NNE	NNE	P	P	P	P	P	P	P	P	P	P	N	NNE	NNE	NNE	NNE	NNE	NE	NNE	NNE	14	
12	NNE	NNE	N	N	NNE	NNE	NNE	NNE	NNE	NNE	N	NNE	N	NNE	NNE	NNE	NNE	NNE	NNE	NE	E	ESE	SE	S	NNE	NNE	24	
13	SW	SW	SSW	SW	SW	SW	SW	SW	WSW	WNW	WNW	NW	WSW	N	WNW	NNW	N	NNE	N	N	NNE	ENE	S	S	W	WSW	24	
14	SSW	SW	SW	SW	WSW	WSW	WSW	W	WNW	NNE	NW	NNW	W	WNW	NNW	N	NNW	NNW	WNW	WSW	SW	SW	SW	SW	W	WSW	24	
15	SW	SW	SW	WSW	W	WSW	WSW	WSW	WSW	W	WSW	WSW	WNW	NW	NW	SW	S	SSE	SSW	S	S	S	S	SSE	SW	WSW	24	
16	S	SSE	SSE	SSE	SSE	SSE	SSE	S	S	S	S	S	S	S	SSE	S	S	S	S	SSE	SSE	SSE	S	S	S	WSW	24	
17	S	S	S	S	SSW	SSW	SSW	WSW	WNW	WNW	WNW	W	WNW	NW	WNW	W	WNW	W	W	W	W	W	W	WSW	WSW	WSW	24	
18	W	WSW	WSW	WSW	WSW	W	WSW	SW	W	WNW	NW	N	ENE	NNE	WNW	NW	ENE	NE	ENE	NE	ENE	ENE	SW	WNW	NW	WSW	24	
19	NNW	N	NNE	NNE	NNE	NE	NE	P	P	P	P	P	P	P	P	E	E	ENE	NE	NE	NE	NE	NE	NE	NE	NE	16	
20	NE	NE	NE	NE	NE	NE	NE	ENE	ENE	ENE	NE	NE	NE	NNE	N	NNW	NW	W	NW	NW	NW	NW	NW	NW	NNE	WSW	24	
21	NNW	NW	NW	NNW	N	NNW	NNW	NNE	ENE	ENE	NNE	NE	ESE	SE	SSE	SW	W	WNW	NW	WNW	WNW	NW	NW	WSW	NNW	WSW	24	
22	NW	NW	NW	NNW	N	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NE	NE	NE	NE	ENE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	NNE	WSW	24
23	NNE	N	N	N	N	N	N	N	N	N	NNW	N	N	N	NNE	NNE	NNE	NNE	NE	NE	NE	NE	NE	NE	NNE	WSW	24	
24	NE	NE	NNE	NE	ENE	ENE	ENE	E	E	SE	SE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SSE	SE	WSW	24
25	SSE	SSE	SSE	SSE	S	SSE	S	S	S	S	S	S	S	S	SSE	SW	SW	SW	S	SSE	SE	SE	WSW	SW	S	WSW	24	
26	WSW	S	WSW	SE	E	S	S	SSW	WSW	WSW	SW	S	S	SSW	SSW	SW	SW	SSE	E	ENE	ENE	ENE	E	S	WSW	WSW	24	
27	SE	ENE	E	E	NNW	ENE	NE	ENE	E	ESE	SE	SE	SSE	SSW	SSE	SSW	E	ESE	E	E	ESE	S	E	E	ESE	WSW	24	
28	E	E	SE	SSE	SSE	SSE	SW	WSW	WSW	WSW	WSW	WSW	SSW	SSE	SE	S	S	SE	E	ENE	ENE	E	S	SSW	WSW	WSW	24	
29	ESE	NE	ENE	ENE	SW	SW	ENE	NE	NE	NE	NNE	NNE	NE	NE	ENE	ENE	ENE	E	NNW	NW	N	NW	N	NNW	NE	WSW	24	
30	WNW	NW	NW	NW	NW	NNW	NNW	NW	NNW	NNW	NNW	NNW	NNW	WNW	NW	N	NNW	NW	WNW	NW	NW	NW	NNW	NW	NW	NE	WSW	24
31	NW	NW	NW	NW	WNW	NW	NNW	NNW	NNW	NNW	N	NNW	NW	WNW	NW	NW	NW	NNW	NW	N	ENE	ESE	SE	SSE	NNW	NE	WSW	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:	726	HRS
STANDARD DEVIATION:	106.28		AMD OPERATION UPTIME:	97.6	%



— WDR[Deg]

***STANDARD DEVIATION WIND DIRECTION***



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

St. Lina Site - May 2016  
JOB # 2833-2016-05-31- 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		11	8	7	6	5	5	9	10	12	14	18	21	26	28	22	19	18	21	17	14	6	3	4	5	24	
2		4	5	11	10	10	9	8	19	25	34	36	53	42	42	50	48	24	39	16	9	6	6	8	6	24	
3		9	9	10	9	9	10	15	15	15	22	20	22	19	21	23	20	17	17	15	11	9	8	10	24		
4		10	9	10	11	12	9	8	10	13	19	20	21	24	24	20	23	18	16	10	14	16	15	17	17	24	
5		19	17	17	17	17	17	17	23	21	16	18	53	23	20	23	34	25	28	18	17	16	10	10	13	24	
6		8	10	12	15	12	11	13	22	22	38	41	24	31	25	42	42	34	26	18	7	6	10	9	10	24	
7		12	11	11	11	13	13	16	14	12	15	19	20	19	15	17	52	45	25	18	10	48	15	16	16	24	
8		15	15	17	16	18	18	19	18	18	19	20	21	17	22	21	21	21	17	16	15	14	15	18	18	24	
9		18	18	18	18	18	18	18	20	19	20	20	19	19	20	21	20	21	22	20	17	18	17	15	18	24	
10		16	19	18	18	21	14	16	22	26	26	26	30	32	25	25	29	24	21	23	22	12	9	9	11	24	
11		14	14	14	12	15	17	21	P	P	P	P	P	P	P	P	P	P	26	18	16	15	13	12	12	14	
12		10	6	7	9	12	18	20	22	27	30	30	30	27	29	26	22	24	23	20	17	11	8	7	9	24	
13		4	7	10	7	4	4	8	17	34	57	59	58	71	47	57	48	57	35	23	21	9	22	3	7	24	
14		7	5	3	4	3	4	9	13	26	45	60	49	59	62	50	63	37	49	34	16	5	4	4	7	24	
15		5	4	4	8	8	8	7	11	16	32	50	70	69	51	59	61	50	40	27	18	9	9	6	6	24	
16		7	7	7	6	7	9	14	20	25	21	22	21	26	21	21	21	20	19	18	16	15	16	16	15	24	
17		15	15	13	15	21	16	15	21	19	19	19	28	34	37	36	28	25	23	18	13	8	8	8	5	24	
18		9	7	4	8	5	9	10	17	21	33	46	52	53	83	48	54	38	24	17	14	18	18	28	20	24	
19		17	19	15	18	17	18	19	P	P	P	P	P	P	P	P	22	22	29	24	20	20	21	20	18	16	
20		18	18	18	18	19	18	18	18	23	23	22	23	24	30	27	22	19	19	20	17	19	17	19	16	24	
21		16	22	18	22	21	21	17	18	23	41	19	22	22	18	28	69	17	18	17	21	20	23	19	34	24	
22		24	31	17	18	21	20	19	19	19	21	20	21	24	21	20	21	24	25	20	28	21	20	20	20	24	
23		38	30	36	17	19	18	21	23	19	21	27	20	20	20	24	24	24	24	23	23	23	21	20	21	24	
24		19	23	20	23	19	20	26	29	45	57	32	32	41	43	36	27	28	34	20	12	9	10	9	10	24	
25		9	11	10	10	11	13	16	23	26	27	29	33	47	46	53	61	31	60	41	13	15	11	20	8	24	
26		20	18	16	18	27	21	21	27	42	16	19	22	32	32	26	54	39	27	21	10	12	14	14	18	24	
27		20	13	16	23	38	18	33	25	25	21	20	21	23	29	31	46	21	25	22	18	17	26	18	20	24	
28		18	16	15	16	16	18	20	15	16	16	17	24	27	21	20	32	29	28	21	19	16	15	29	10	24	
29		13	7	16	31	38	10	40	25	32	34	29	43	38	26	36	28	27	23	29	20	25	25	19	26	24	
30		18	19	21	18	21	20	22	22	21	25	21	21	24	22	21	21	25	18	17	19	17	18	19	19	24	
31		18	19	17	18	17	16	20	21	24	27	31	28	26	33	39	33	33	41	31	28	8	6	7	6	24	

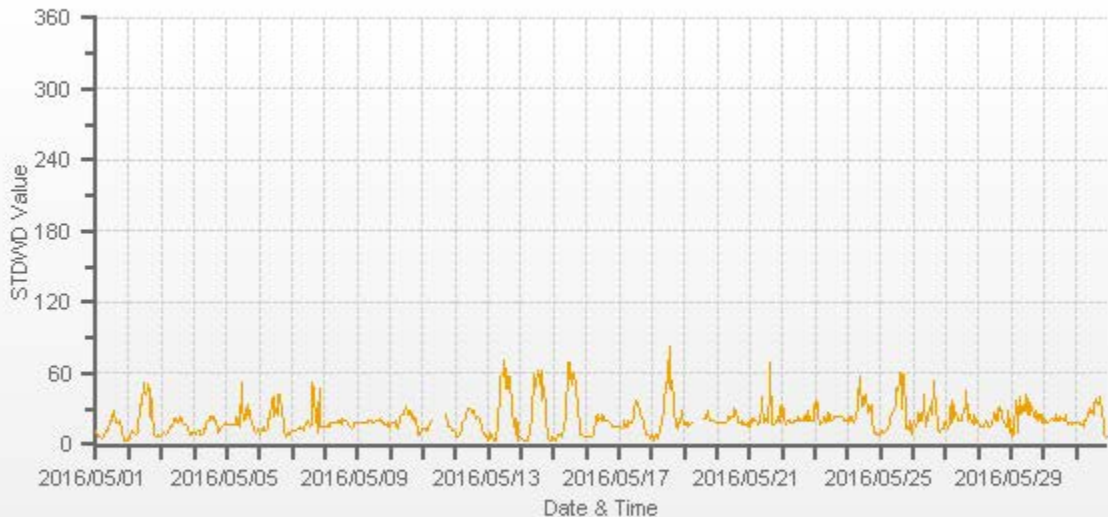
STATUS FLAG CODES

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: 726 HRS

STDWD[Deg] Station: LICA ST. LINA Monthly: 05/2016 Type: AVG 1 Hr. [1 Hr.]



— STDWD[Deg]

***RELATIVE HUMIDITY***

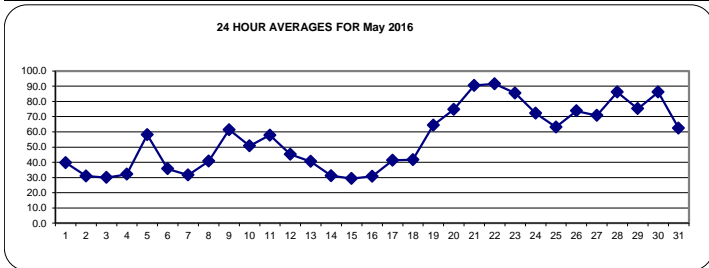


RELATIVE HUMIDITY (RH) hourly averages in %

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		
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		58	59	61	64	67	66	61	54	44	36	30	20	19	21	20	21	22	23	25	31	36	38	38	40	19	67	39.8	24	
2		44	47	46	44	44	48	43	37	31	27	24	22	21	19	19	17	17	18	20	25	29	31	33	36	17	48	30.9	24	
3		39	42	44	48	51	51	47	43	34	28	23	19	16	15	14	13	11	12	15	21	28	32	35	38	11	51	30.0	24	
4		40	43	45	48	52	60	54	41	31	25	19	16	13	13	13	14	17	23	29	34	41	42	44	13	60	32.1	24		
5		45	40	41	47	46	52	55	64	69	68	73	83	80	77	69	60	40	37	42	56	63	67	68	52	37	83	58.1	24	
6		51	48	48	55	57	59	51	44	42	35	25	23	22	19	18	19	18	20	24	29	32	36	40	41	18	59	35.7	24	
7		42	45	47	50	50	53	51	48	46	34	27	21	17	17	16	15	14	13	17	22	26	28	29	32	13	53	31.7	24	
8		38	44	52	60	54	54	47	46	44	35	34	31	32	29	21	18	18	21	30	39	50	54	58	67	18	67	40.7	24	
9		73	81	76	74	75	75	70	63	59	59	59	53	51	47	46	44	45	48	49	53	62	65	71	75	44	81	61.4	24	
10		74	74	74	75	76	79	67	54	48	46	45	40	38	35	34	31	32	31	31	35	45	48	50	54	31	79	50.7	24	
11		60	67	73	76	78	77	66	P	P	P	P	P	P	P	P	P	P	28	32	38	45	52	56	61	28	78	57.8	14	
12		64	66	67	69	72	70	58	53	42	36	32	31	30	29	28	31	30	30	31	36	44	45	44	47	28	72	45.2	24	
13		55	55	76	76	70	68	62	53	39	27	26	24	24	23	22	22	23	25	26	31	38	35	34	38	22	76	40.5	24	
14		49	50	50	51	48	42	37	32	24	20	20	20	19	18	18	18	19	19	22	24	32	37	39	40	18	51	31.2	24	
15		45	44	46	41	39	36	34	31	27	22	18	17	17	17	17	18	19	19	23	28	34	37	37	39	17	46	29.4	24	
16		40	43	46	48	49	48	47	42	34	26	23	22	22	20	18	16	16	16	18	23	25	28	32	35	16	49	30.7	24	
17		37	39	43	46	49	53	55	50	46	46	45	38	35	34	33	33	32	33	35	37	40	42	41	48	32	55	41.3	24	
18		46	54	55	54	51	43	44	46	37	35	28	30	27	25	24	27	27	33	39	40	45	47	62	80	24	80	41.6	24	
19		82	84	84	82	83	82	77	P	P	P	P	P	P	P	P	30	30	42	49	54	58	61	64	67	30	84	64.3	16	
20		68	70	71	72	75	75	74	74	73	67	65	68	70	66	66	67	69	70	82	89	90	90	91	91	65	91	74.7	24	
21		91	91	91	91	92	92	92	92	92	91	91	90	89	88	89	84	89	90	91	91	91	91	91	91	91	84	92	90.5	24
22		92	92	92	92	92	92	92	92	92	92	92	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	92	91.5	24
23		91	91	91	91	91	91	90	90	89	87	85	84	87	85	77	76	77	77	80	82	83	84	85	86	76	91	85.4	24	
24		86	87	87	88	88	87	86	82	76	68	61	62	62	62	62	59	57	53	58	63	69	72	76	80	53	88	72.1	24	
25		85	87	88	89	89	87	81	75	69	63	57	49	44	42	42	40	42	39	44	49	55	56	66	77	39	89	63.1	24	
26		78	79	85	86	87	83	83	76	80	80	84	83	79	66	60	52	54	53	56	66	73	76	75	76	52	87	73.8	24	
27		80	85	83	82	83	83	70	68	65	60	51	42	42	48	59	61	67	58	75	86	84	86	90	91	42	91	70.8	24	
28		91	91	91	91	91	91	90	89	87	82	79	75	76	81	85	83	84	82	81	86	89	91	91	91	75	91	86.2	24	
29		91	91	91	91	91	91	89	89	87	73	63	58	54	52	50	51	50	52	61	78	85	88	89	89	50	91	75.2	24	
30		90	90	90	90	90	90	90	89	89	88	86	84	81	76	80	83	79	80	82	86	87	87	88	87	76	90	86.1	24	
31		88	87	88	88	89	89	82	71	68	61	57	54	53	47	43	38	41	42	42	44	50	54	56	63	38	89	62.3	24	
HOURLY MAX		92	92	92	92	92	92	92	92	92	92	92	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	91	
HOURLY AVG		64.9	66.6	68.5	69.6	70.0	69.9	66.0	61.7	57.4	52.3	49.0	46.6	45.2	43.5	42.6	41.0	40.9	41.0	45.1	50.4	55.3	57.7	60.1	62.8					

STATUS FLAG CODES

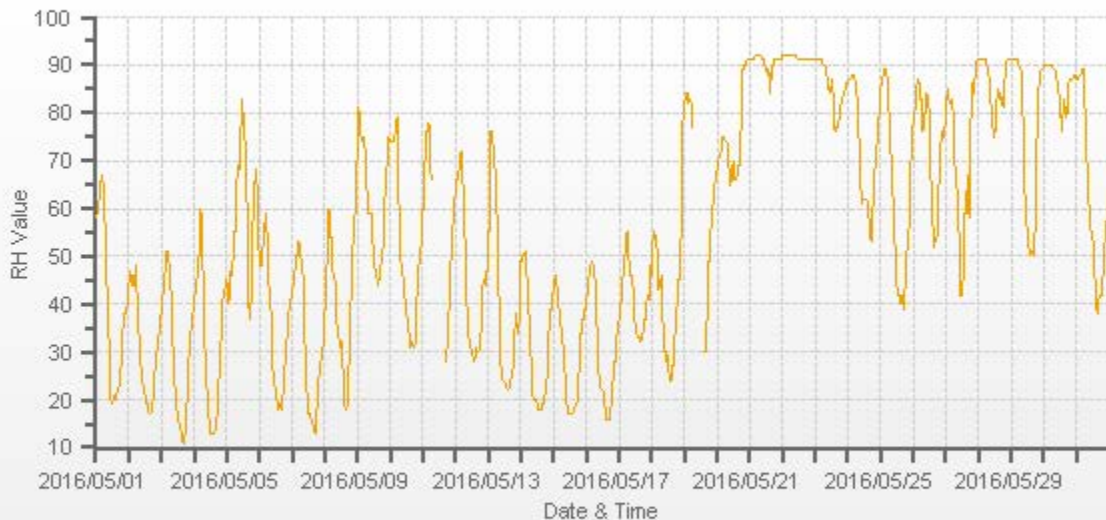
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	11	%	@ HOUR(S)	16	ON DAY(S)	3
MAXIMUM 1-HR AVERAGE:	92	%	@ HOUR(S)	VAR	ON DAY(S)	21, 22
MAXIMUM 24-HR AVERAGE:	91.5	%			ON DAY(S)	22
					VAR-VARIOUS	
OPERATIONAL TIME:						726 HRS
AMD OPERATION UPTIME:						97.6 %
STANDARD DEVIATION:	24.42					
MONTHLY AVERAGE:						55 %

Hour of th  
744



— RH[%RH]

## ***BAROMETRIC PRESSURE***

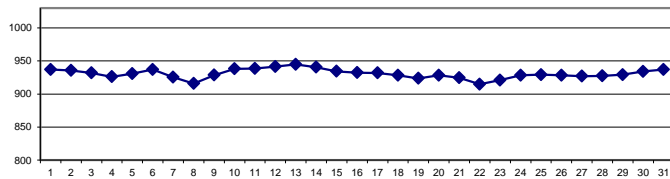
**BAROMETRIC PRESSURE (BP) hourly averages in millibar**

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 MIN.	DAILY MAX.	24-HOUR AVG.	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					
1	1	938	938	938	937	937	937	937	938	938	938	939	938	938	938	937	937	937	937	936	936	935	935	935	934	934	934	939	937	24
2	2	934	934	934	934	935	935	935	936	937	937	938	938	937	937	937	937	936	936	936	935	934	934	933	933	933	933	938	936	24
3	3	933	933	932	932	932	932	932	933	933	934	934	934	934	933	933	932	932	932	931	930	929	929	928	928	928	928	934	932	24
4	4	928	927	926	926	925	925	925	926	926	927	927	927	927	927	927	927	927	927	926	925	925	925	925	926	925	925	928	926	24
5	5	926	927	927	927	927	928	929	929	930	931	931	931	931	932	933	933	933	934	934	933	933	933	933	934	926	934	931	24	
6	6	934	934	935	935	936	936	937	939	940	940	940	940	940	940	939	939	939	938	937	936	935	934	933	932	932	940	937	24	
7	7	932	931	930	929	929	928	928	928	928	928	928	928	928	927	926	925	924	923	922	920	919	918	917	915	915	932	925	24	
8	8	914	912	911	911	911	912	913	914	915	916	916	917	917	917	917	918	918	919	919	918	919	919	919	920	911	920	916	24	
9	9	921	922	922	923	924	924	925	926	927	927	928	929	929	930	930	931	932	932	933	933	933	934	934	934	921	934	928	24	
10	10	935	935	936	936	937	937	937	938	939	939	940	940	940	940	940	939	939	939	939	940	938	938	937	937	935	940	938	24	
11	11	937	937	937	937	938	938	P	P	P	P	P	P	P	P	P	P	P	P	941	940	939	939	939	939	937	941	939	14	
12	12	938	938	938	939	939	939	940	941	942	942	943	943	943	943	943	943	943	943	943	943	943	943	943	943	938	943	942	24	
13	13	943	943	943	943	943	944	945	946	947	947	947	947	947	947	947	947	946	946	946	945	943	942	942	942	942	947	945	24	
14	14	942	941	941	941	941	941	942	942	943	943	943	943	942	942	942	941	941	940	940	939	937	936	935	935	935	943	941	24	
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16	16	932	932	931	931	931	931	932	932	933	934	934	934	934	933	933	933	933	933	932	932	931	931	931	931	931	934	932	24	
17	17	931	931	931	930	931	931	931	931	932	933	933	933	933	933	933	933	933	933	933	932	931	931	930	930	930	930	933	932	24
18	18	929	929	929	929	928	929	929	930	931	930	930	930	930	930	929	928	928	926	925	925	925	925	924	924	924	931	928	24	
19	19	924	923	923	922	921	921	P	P	P	P	P	P	P	P	P	924	924	924	924	924	925	926	926	926	921	926	924	16	
20	20	926	926	926	925	925	925	926	927	928	929	930	931	931	931	931	931	931	931	931	930	930	930	929	929	925	931	928	24	
21	21	928	927	927	927	926	926	926	925	926	925	925	925	925	925	924	924	924	924	923	922	922	921	920	919	919	928	924	24	
22	22	919	917	916	915	915	915	914	913	913	913	913	913	913	913	913	914	915	915	915	915	916	916	916	916	913	919	915	24	
23	23	916	916	916	916	916	917	917	918	918	919	920	920	921	921	923	924	924	924	925	925	926	926	926	926	916	926	921	24	
24	24	926	926	927	927	927	927	928	928	929	929	929	929	929	930	930	930	930	930	930	929	928	928	927	927	926	930	928	24	
25	25	927	927	927	927	927	927	928	928	929	930	930	930	930	931	931	931	931	931	931	930	929	929	929	929	927	931	929	24	
26	26	928	929	928	928	928	928	929	929	929	929	929	929	929	929	929	929	929	929	929	929	928	927	927	927	927	927	929	928	24
27	27	926	926	926	926	926	926	927	927	928	928	928	928	928	927	927	927	927	927	927	927	926	926	926	926	926	926	928	927	24
28	28	926	926	926	926	926	926	927	927	927	928	928	928	928	929	928	928	928	928	928	928	928	928	928	927	926	929	927	24	
29	29	927	927	927	927	927	927	928	928	929	929	930	930	930	931	931	930	930	930	930	930	930	930	930	930	927	931	929	24	
30	30	930	930	930	931	931	931	931	932	932	933	934	934	935	935	936	936	936	936	936	937	937	937	937	937	930	937	934	24	
31	31	937	937	937	937	937	937	937	938	939	939	939	938	938	938	938	938	938	938	937	937	937	935	934	933	932	932	939	937	24
HOURLY MAX		943	943	943	943	943	943	944	945	946	947	947	947	947	947	947	947	946	946	946	945	943	943	943	943	943	943	943	943	
HOURLY AVG		930	930	929	929	929	929	930	930	931	931	932	932	932	932	932	932	931	932	931	931	930	930	930	930	932	932	939	937	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

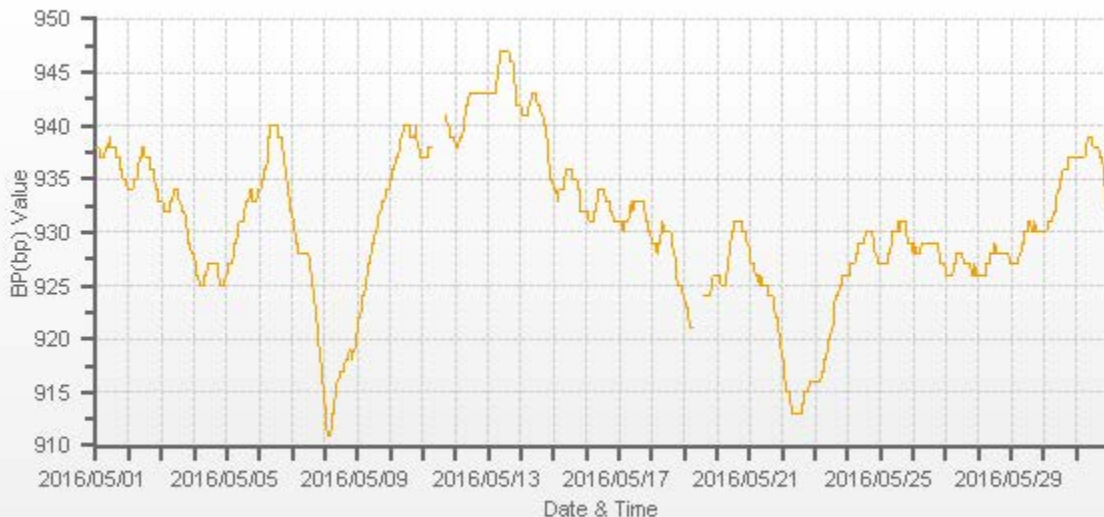
24 HOUR AVERAGES FOR May 2016



**MONTHLY SUMMARY**

MINIMUM 1-HR AVERAGE:	911	MB	@ HOUR(S)	VAR	ON DAY(S)	8
MAXIMUM 1-HR AVERAGE:	947	MB	@ HOUR(S)	VAR	ON DAY(S)	13
MAXIMUM 24-HR AVERAGE:	945	MB			ON DAY(S)	13
					VAR-VARIOUS	
				OPERATIONAL TIME:	726	HRS
				AMD OPERATION UPTIME:	97.6	%
STANDARD DEVIATION:	7.19			MONTHLY AVERAGE:	931	MB

BP(bp)[mb] Station: LICA ST. LINA Monthly: 05/2016 Type: AVG 1 Hr. [1 Hr.]



BP(bp)[mb]

***AMBIENT TEMPERATURE***

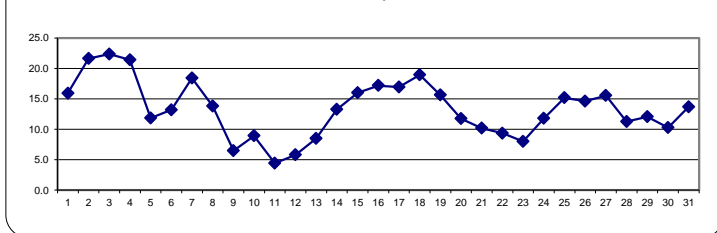
**AMBIENT TEMPERATURE (AmbTPX) hourly averages in Degrees Celsius**

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 MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.		
DAY	1	8.3	8.2	7.5	6.8	6.2	6.4	8.2	11.4	14.9	17.1	18.8	20.8	21.7	22.7	23.2	23.3	23.6	23.1	22.5	20.4	18.0	17.0	16.4	15.7	6.2	23.6	15.9	24		
2	2	14.5	13.7	14.3	14.9	14.8	13.6	16.4	19.0	22.9	24.9	26.4	27.0	27.3	27.9	28.2	28.3	28.1	27.2	25.5	23.9	21.8	20.5	19.6	18.6	13.6	28.3	21.6	24		
3	3	17.4	16.3	15.5	14.3	13.4	13.4	15.4	18.2	21.8	24.6	26.3	28.0	28.4	28.8	29.5	29.8	<b>30.4</b>	29.6	28.3	25.7	22.5	21.0	19.5	18.0	13.4	<b>30.4</b>	<b>22.3</b>	24		
4	4	17.6	16.5	15.5	14.7	13.6	12.2	14.6	17.8	21.2	23.9	26.8	28.2	28.7	29.1	28.9	29.2	28.3	26.9	24.6	22.2	20.3	18.5	17.8	16.7	12.2	29.2	21.4	24		
5	5	15.5	15.2	14.4	12.8	12.3	11.2	11.0	10.1	9.5	9.6	8.6	7.7	9.3	10.3	13.4	15.0	16.6	16.4	15.4	13.0	10.7	9.2	8.0	8.7	7.7	16.6	11.8	24		
6	6	8.0	7.7	7.5	6.2	5.2	4.9	8.0	12.1	13.9	15.7	16.6	17.1	17.6	18.5	18.8	19.5	19.8	18.4	18.0	15.6	13.7	12.3	11.2	10.5	4.9	19.8	13.2	24		
7	7	9.9	9.2	8.6	8.2	8.0	9.8	12.0	13.7	19.3	22.6	24.8	26.1	25.5	26.9	27.1	27.8	26.7	25.1	23.1	21.2	20.4	19.4	18.8	8.0	27.8	18.4	24			
8	8	18.1	17.0	15.4	13.2	13.2	13.3	14.6	14.8	13.9	14.2	14.1	14.6	13.9	15.3	17.5	17.4	17.3	15.9	13.8	11.6	9.2	8.6	7.4	6.6	6.6	18.1	13.8	24		
9	9	6.1	5.0	4.2	4.3	4.0	4.0	5.8	7.0	6.0	6.2	6.8	7.5	8.1	8.5	8.6	9.4	9.4	8.5	8.4	7.6	6.5	5.7	4.1	3.3	3.3	9.4	6.5	24		
10	10	3.8	4.3	4.4	4.3	4.1	3.4	6.4	8.8	10.4	11.0	11.6	13.2	13.6	13.7	13.9	13.6	12.9	12.9	12.3	10.9	7.5	6.6	5.8	4.8	3.4	13.9	8.9	24		
11	11	3.7	2.9	2.0	0.9	0.2	0.8	4.3	<b>P</b>	<b>P</b>	<b>P</b>	<b>P</b>	<b>P</b>	<b>P</b>	<b>P</b>	<b>P</b>	<b>P</b>	<b>P</b>	<b>P</b>	<b>P</b>	12.5	10.4	8.3	6.1	4.4	3.1	2.1	0.2	12.5	4.4	14
12	12	1.3	0.8	0.6	0.2	-0.5	0.4	3.4	5.5	7.9	8.8	9.8	10.1	10.3	10.7	10.7	10.1	10.1	9.5	8.7	6.7	4.4	3.5	3.2	3.1	-0.5	10.7	5.8	24		
13	13	1.6	1.3	-0.3	<b>-0.9</b>	-0.7	-0.4	3.0	6.5	10.3	12.0	12.7	13.7	13.8	14.3	15.1	15.6	15.2	14.4	13.1	11.3	7.8	7.7	8.6	7.9	<b>-0.9</b>	15.6	8.5	24		
14	14	5.5	5.0	4.7	4.5	4.6	6.5	9.8	13.4	16.5	17.7	18.1	18.3	18.8	19.9	20.0	19.7	19.3	18.8	17.2	16.2	12.8	11.0	10.5	9.8	4.5	20.0	13.3	24		
15	15	8.8	8.5	7.8	7.9	8.2	9.1	12.0	14.9	18.2	19.9	21.5	21.9	22.3	22.2	22.4	22.7	21.4	20.7	19.7	17.9	15.8	14.6	13.3	12.1	7.8	22.7	16.0	24		
16	16	11.8	10.5	9.4	8.8	8.3	8.8	10.3	13.7	17.6	19.6	20.8	21.5	22.6	22.9	22.9	23.3	23.6	23.5	22.6	21.0	19.1	17.7	16.6	15.4	8.3	23.6	17.2	24		
17	17	14.6	14.0	13.0	12.4	12.1	11.3	11.8	14.4	16.7	16.4	17.2	20.4	21.3	21.9	21.9	22.3	22.4	21.6	20.4	18.9	16.9	15.9	15.6	13.5	11.3	22.4	17.0	24		
18	18	13.7	11.9	11.3	11.2	11.7	14.9	18.1	19.4	21.4	21.3	23.1	23.2	24.0	24.9	25.9	24.8	24.9	23.1	21.2	19.8	18.0	17.5	15.7	13.2	11.2	25.9	18.9	24		
19	19	12.8	12.4	12.2	12.3	12.1	12.0	12.8	<b>P</b>	<b>P</b>	<b>P</b>	<b>P</b>	<b>P</b>	<b>P</b>	<b>P</b>	<b>P</b>	23.9	23.5	21.8	19.9	17.9	16.1	14.7	13.5	12.4	12.0	23.9	15.6	16		
20	20	11.8	11.0	10.0	9.1	8.5	8.5	8.8	9.1	9.9	12.5	13.3	13.3	13.5	15.1	15.4	15.8	15.6	15.4	13.5	11.9	11.3	10.1	9.5	9.3	8.5	15.8	11.8	24		
21	21	9.0	8.9	8.6	8.3	8.5	8.6	9.2	10.0	10.5	11.5	12.3	13.3	13.2	12.8	12.9	14.1	12.1	10.4	9.5	9.1	8.4	8.1	7.8	7.4	7.4	14.1	10.2	24		
22	22	7.5	7.6	8.1	8.8	9.8	9.7	10.1	10.5	10.4	10.6	10.9	11.0	10.9	10.6	10.4	10.0	9.5	9.5	8.8	8.0	7.6	7.3	7.1	7.1	11.0	9.4	24			
23	23	6.8	6.5	6.4	6.3	6.3	6.5	6.9	6.9	6.9	7.9	8.6	8.3	7.8	8.2	10.4	10.3	10.2	10.0	9.3	8.8	8.6	8.3	8.2	7.9	6.3	10.4	8.0	24		
24	24	7.7	7.5	7.4	7.2	7.2	7.5	8.1	9.3	10.8	12.4	14.7	14.5	14.4	15.0	14.9	16.0	16.1	17.4	15.8	14.5	12.9	11.6	10.5	9.4	7.2	17.4	11.8	24		
25	25	8.6	8.1	7.6	7.2	7.0	7.9	10.2	12.9	15.0	16.7	17.9	19.3	20.4	21.1	21.1	22.3	21.7	22.1	20.3	18.1	16.3	15.7	14.3	12.5	7.0	22.3	15.2	24		
26	26	12.2	12.1	11.0	10.9	10.5	11.6	12.0	14.2	13.9	13.9	13.7	14.0	14.8	17.3	19.0	20.4	20.1	19.7	18.4	15.8	14.1	13.8	13.7	13.4	10.5	20.4	14.6	24		
27	27	12.4	11.7	11.8	12.0	11.8	12.1	16.2	17.8	18.6	19.3	20.2	21.5	21.5	21.3	17.3	17.7	17.1	18.3	15.1	12.7	12.6	11.9	11.1	10.8	10.8	21.5	15.5	24		
28	28	11.0	11.0	11.2	11.1	11.1	11.1	11.4	10.8	11.1	12.6	12.7	13.0	12.8	11.5	11.1	11.6	11.8	12.2	12.2	11.3	10.3	9.7	8.9	8.6	8.6	13.0	11.3	24		
29	29	8.5	7.3	7.1	6.7	6.6	7.6	9.1	9.5	10.3	14.3	16.0	17.1	17.7	18.1	18.7	17.8	17.9	17.2	14.7	10.5	9.5	9.1	9.0	8.9	6.6	18.7	12.1	24		
30	30	8.7	8.6	8.6	8.5	8.4	8.3	8.4	8.9	9.2	9.9	10.9	11.7	12.6	13.7	13.2	11.6	12.1	11.8	11.3	10.8	10.4	10.0	9.6	9.6	8.3	13.7	10.3	24		
31	31	9.4	9.0	8.6	8.2	8.1	8.2	10.4	13.1	13.9	15.6	16.7	16.5	16.6	17.9	18.3	18.6	18.2	18.0	17.4	16.1	14.2	12.6	11.7	11.2	8.1	18.6	13.7	24		
HOURLY MAX		18.1	17.0	15.5	14.9	14.8	14.9	18.1	19.4	22.9	24.9	26.8	28.2	28.7	29.1	29.5	29.8	30.4	29.6	28.3	25.7	22.5	21.0	19.6	18.8						
HOURLY AVG		9.9	9.3	8.9	8.4	8.2	8.4	10.2	12.1	13.7	15.1	16.2	16.9	17.4	17.9	18.3	18.7	18.6	17.9	16.6	14.9	13.1	12.1	11.3	10.6						

**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

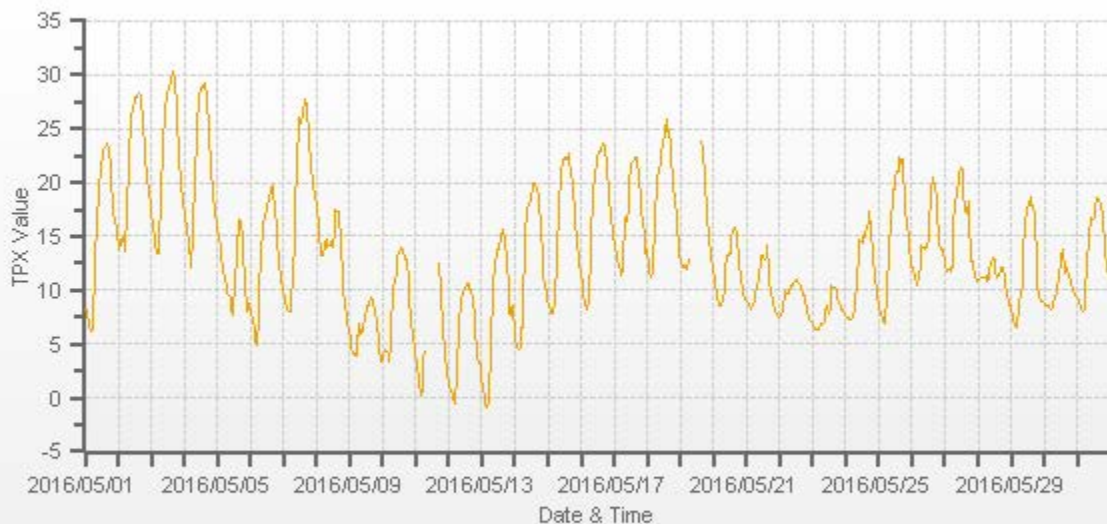
**24 HOUR AVERAGES FOR May 2016**



**MONTHLY SUMMARY**

MINIMUM 1-HR AVERAGE:	-0.9	°C	@ HOUR(S)	3	ON DAY(S)	13
MAXIMUM 1-HR AVERAGE:	30.4	°C	@ HOUR(S)	16	ON DAY(S)	3
MAXIMUM 24-HR AVERAGE:	22.3	°C			ON DAY(S)	3
					VAR-VARIOUS	
OPERATIONAL TIME:					726	HRS
AMD OPERATION UPTIME:					97.6	%
STANDARD DEVIATION:	6.17				MONTHLY AVERAGE:	13.5 °C

TPX[C°] Station: LICA ST. LINA Monthly: 05/2016 Type: AVG 1 Hr. [1 Hr.]



— TPX[C°]



## ***PRECIPITATION***

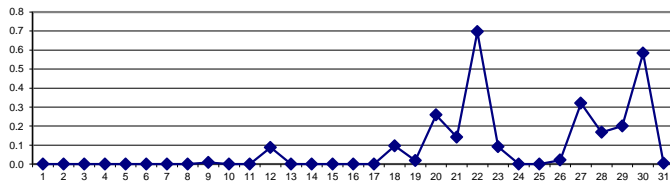
**PRECIPITATION hourly averages (mm)**

<b>MST</b>		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		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	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	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	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22	
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	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	0.2	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	0.2	0.0	0.0	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	P	P	P	P	P	P	P	P	P	P	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14	
12		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	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	2.1	0.1	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	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	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	1.7	0.6	0.0	1.7	0.1	0.0	16
19		0.0	0.1	0.2	0.0	0.0	0.0	0.0	P	P	P	P	P	P	P	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	24	
20		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.9	1.7	0.2	0.0	0.6	1.7	0.0	1.9	0.3	0.0	24	
21		0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.4	0.7	0.8	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.1	0.1	0.0	0.8	0.1	0.0	24	
22		0.0	0.6	0.2	0.6	0.7	1.4	0.6	0.0	0.0	0.2	0.3	1.3	1.6	0.7	1.5	1.7	3.5	1.2	0.1	0.2	0.2	0.1	0.0	0.0	0.0	3.5	0.7	0.0	24	
23		0.3	0.5	0.2	0.3	0.3	0.0	0.1	0.2	0.2	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	0.5	0.1	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	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	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	0.1	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	0.2	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	0.7	0.6	0.0	0.0	5.0	0.1	0.0	0.7	0.5	0.1	0.0	5.0	0.3	0.0	24	
28		0.0	0.0	0.0	0.0	0.0	0.2	0.9	1.5	0.0	0.0	0.0	0.0	0.1	0.6	0.4	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.2	0.0	24	
29		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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.1	1.0	2.8	0.0	2.8	0.2	0.0	24	
30		1.6	0.1	0.0	0.2	4.0	3.2	2.8	0.2	0.1	0.0	0.2	0.0	0.0	0.1	0.2	0.4	0.0	0.1	0.3	0.2	0.0	0.3	0.0	0.0	0.0	4.0	0.6	0.0	24	
31		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	0.0	0.0	0.0	0.1	0.0	0.0	24	
HOURLY MAX		1.6	0.6	0.2	0.6	4.0	3.2	2.8	1.5	0.2	2.1	0.4	1.3	1.6	0.7	1.5	1.7	3.5	1.2	5.0	1.7	0.7	0.7	1.7	2.8	0.0	0.1	0.0	0.0	24	
HOURLY AVG		0.1	0.0	0.0	0.0	0.2	0.2	0.1	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.2	0.1	0.0	0.0	0.1	0.2	0.0	0.1	0.0	0.0	24	

**STATUS FLAG CODES**

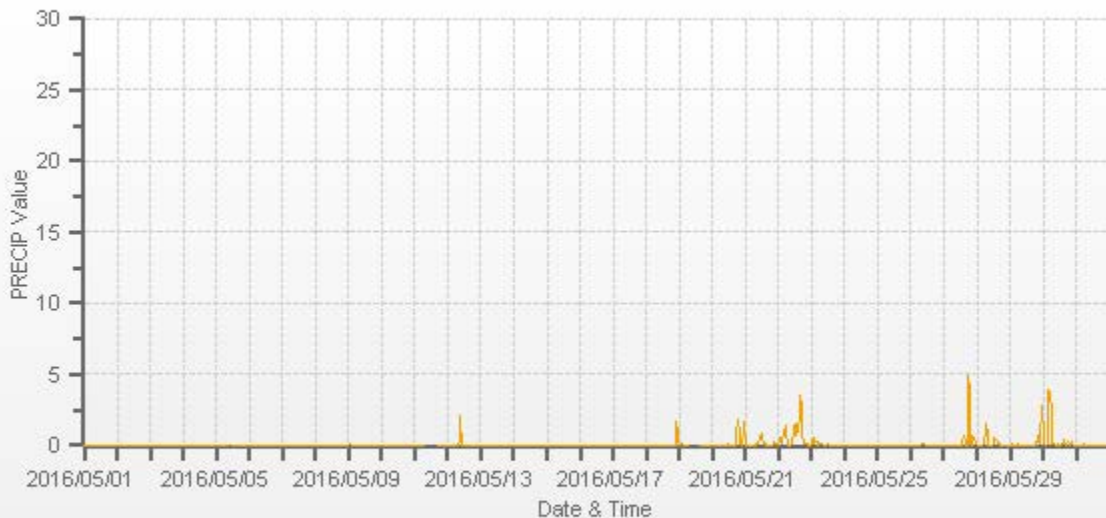
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

24 HOUR AVERAGES FOR May 2016



**MONTHLY SUMMARY**

MINIMUM 1-HR AVERAGE:	0.0	MM	@ HOUR(S)	VAR	ON DAY(S)	ALL
MAXIMUM 1-HR AVERAGE:	5.0	MM	@ HOUR(S)	18	ON DAY(S)	27
MAXIMUM 24-HR AVERAGE:	0.7	MM			ON DAY(S)	22
MONTHLY TOTAL	64.5	MM			VAR-VARIOUS	
OPERATIONAL TIME:					724	HRS
AMD OPERATION UPTIME:					97.3	%
STANDARD DEVIATION:	0.40				MONTHLY AVERAGE:	0.1 MM



— PRECIP[mm]

***APPENDIX II***  
***EQUIPMENT CALIBRATION RESULTS***

***SULPHUR DIOXIDE***



## API 100E Sulphur Dioxide Analyzer Calibration

Date: <u>May 12, 2016</u>	Barometric Pressure: <u>0.932 atm</u>
Company/Airshed: <u>LICA</u>	Station Temperature °C: <u>22</u>
Location/Station Name: <u>St. Lina</u>	Weather Conditions: <u>Mainly clear</u>
Parameter: <u>Sulphur Dioxide</u>	Calibration Purpose: <u>routine monthly</u>
Start Time 24 hr. (mst): <u>7:48</u>	Performed By/Reviewer: <u>Alex Yakupov</u>   <u>Trina Whitsitt</u>
End Time 24 hr. (mst): <u>11:56</u>	Cal Gas Expiry Date: <u>December 2, 2023</u>
Calibration Method: <u>Gas Dilution</u>	Converter Model & s/n (if applicable): <u>n/a</u>

Analyzer: Serial Number: <u>468</u>	Range ppb: <u>1000</u>
Last Calibration Date: <u>April 13, 2016</u>	As Found C.F.: <u>1.008</u>
Previous C.F.: <u>1.000</u>	New C.F.: <u>1.000</u>

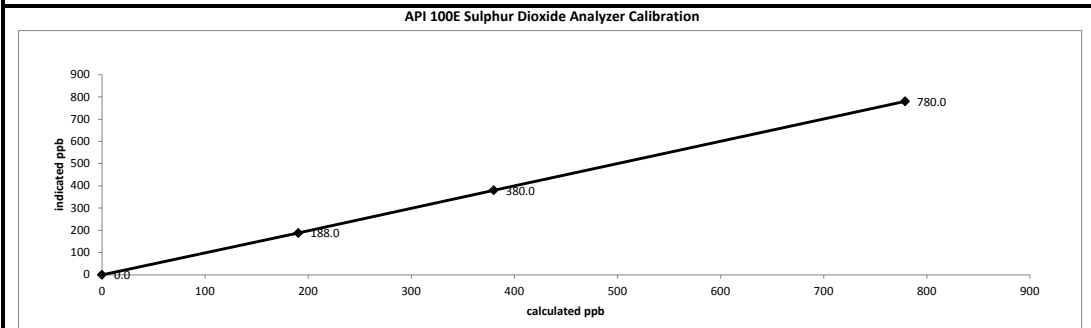
Calibrator: Flow Meter ID's: <u>n/a</u>	<b>Standard Calibration Points for Ranges</b>								
Make & Model: <u>SABIO D 2010</u>	<table border="1" style="margin: auto;"> <thead> <tr> <th>Point</th> <th>Sulphur Dioxide Standard Calibration Points</th> </tr> </thead> <tbody> <tr> <td>High</td> <td style="text-align: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

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	4999	0.00	4999	0.0	-1.0	N/A
as found high	4922	78.00	5000	780.0	773.0	1.008
adjusted zero	4999	0.00	4999	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	380.0	1.000
low	4981	19.00	5000	190.0	188.0	1.011
calibrator zero	4999	0.00	4999	0.0	0.0	n/a
<b>Average C.F.=</b>						<b>1.004</b>

**Linear Regression/Calibration Results:**

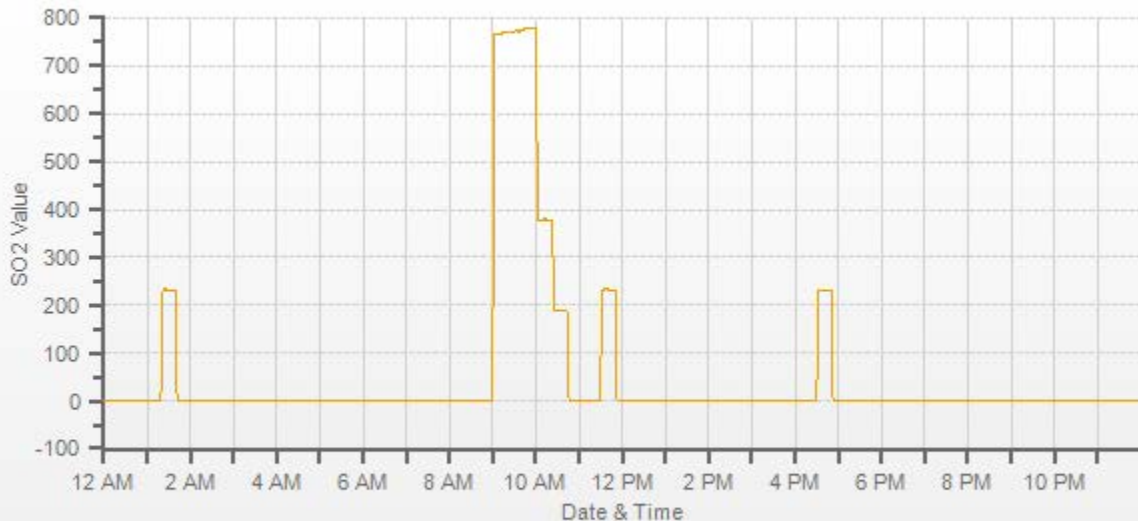
Correlation Coefficient = <u>1.000</u>	<b>LIMITS</b>
Slope = <u>0.999</u>	> or = 0.995
b (Intercept as % of full scale) = <u>0.08%</u>	.95-1.05
% change in C.F. from last cal = <u>-0.78%</u>	± 3% F.S.
	± 10%



<p style="text-align: center; font-weight: bold; font-size: small;">As found:</p> SLOPE: <u>1.011</u> OFFSET: <u>101.1</u> HVPS: <u>647</u> RCELL TEMP: <u>50.0</u> BOX TEMP: <u>31.2</u> PMT TEMP: <u>7.8</u> IZS TEMP: <u>40.0</u> PRES: <u>24.4</u> SAMP FL: <u>580</u> NORM PMT: <u>98.8</u> UV LAMP: <u>3297.2</u> LAMP RATIO: <u>94.2</u> STR. LGT: <u>51.1</u> DRK PMT: <u>4.6</u> DRK LMP: <u>6.7</u> Internal Span: <u>237.6</u>	<p style="text-align: center; font-weight: bold; font-size: small;">As left:</p> SLOPE: <u>1.018</u> OFFSET: <u>99.2</u> HVPS: <u>647</u> RCELL TEMP: <u>50.0</u> BOX TEMP: <u>30.7</u> PMT TEMP: <u>7.8</u> IZS TEMP: <u>40.0</u> PRES: <u>24.4</u> SAMP FL: <u>581</u> NORM PMT: <u>99.9</u> UV LAMP: <u>3295.4</u> LAMP RATIO: <u>94.3</u> STR. LGT: <u>50.5</u> DRK PMT: <u>6.5</u> DRK LMP: <u>6.8</u> Internal Span: <u>232</u>
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**Comments:**

May 11, 2016: No power in the station until 12:15. 13:00 - no power again. Calibration completed next day. Sample inlet filter changed.



— SO2[ppb]

***HYDROGEN SULPHIDE***





## API 101E Hydrogen Sulphide Analyzer Calibration

Date: May 12, 2016	Barometric Pressure: 0.932 atm
Company/Airshed: LICA	Station Temperature °C: 22
Location/Station Name: St. Lina	Weather Conditions: Mainly clear
Parameter: Hydrogen Sulphide	Calibration Purpose: routine monthly
Start Time 24 hr. (mst): 10:21	Performed By/Reviewer: Alex Yakupov   Trina Whitsitt
End Time 24 hr. (mst): 13:55	Cal Gas Expiry Date: July 15, 2017
Calibration Method: Gas Dilution	Converter Model & s/n (if applicable): n/a

Analyzer: Serial Number: 509	Range ppb: 100
Last Calibration Date: April 13, 2016	As Found C.F.: 0.980
Previous C.F.: 0.999	New C.F.: 1.000

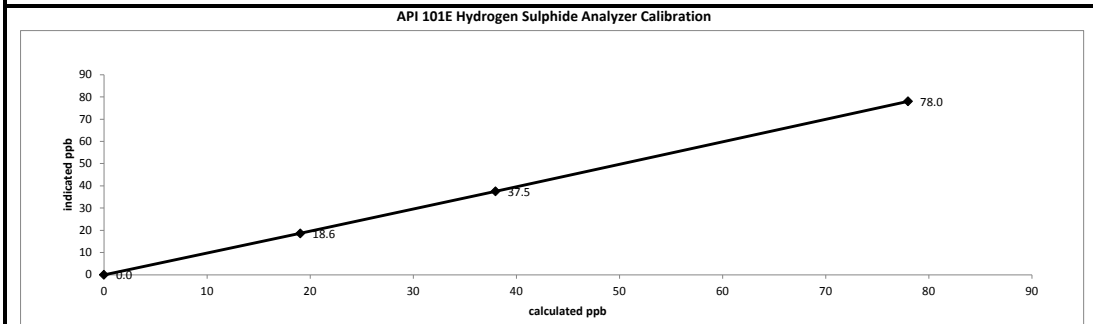
Calibrator: Flow Meter ID's: n/a Make & Model: API 700 Serial #: 627 Cal Gas Cylinder I.D. #: LL36837 Cal Gas Conc. (ppm): 10.0	<b>Standard Calibration Points for Ranges</b> <table border="1" style="margin: auto;"> <thead> <tr> <th>Point</th> <th>Hydrogen Sulphide Standard Calibration Points</th> </tr> </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	0.3	N/A
as found high	7443	58.50	7502	78.0	79.9	0.980
adjusted zero	7498	0.00	7498	0.0	0.0	n/a
adjusted high	7443	58.50	7502	78.0	78.0	1.000
mid	7475	28.50	7504	38.0	37.5	1.013
low	7490	14.30	7504	19.1	18.6	1.025
calibrator zero	7498	0.00	7498	0.0	0.0	n/a
<b>Average C.F.=</b>						<b>1.012</b>

**Linear Regression/Calibration Results:**

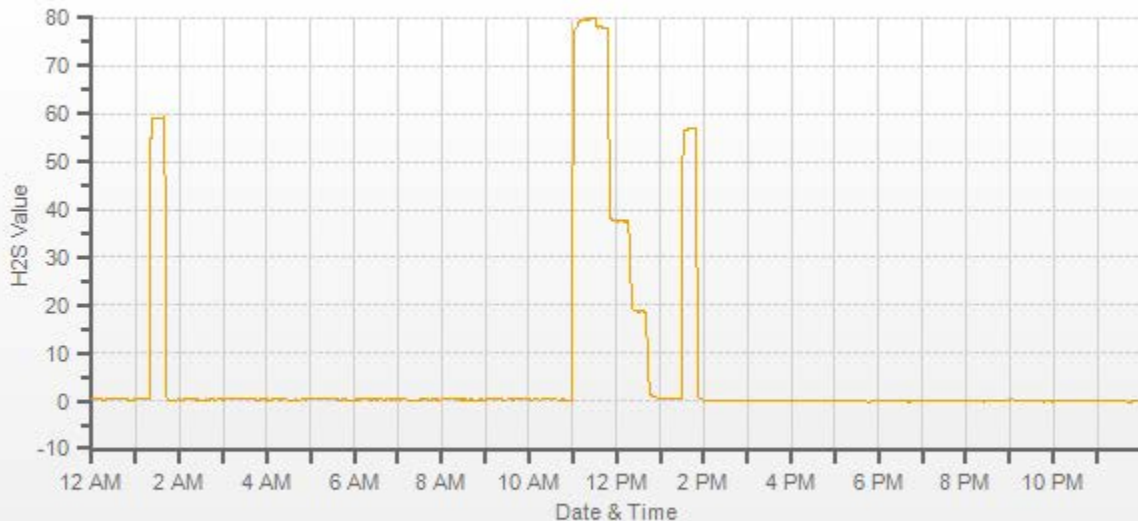
Correlation Coefficient = <u>1.000</u>	<b>LIMITS</b>
Slope = <u>0.998</u>	> or = 0.995
b (Intercept as % of full scale) = <u>0.29%</u>	.95-1.05
% change in C.F. from last cal = <u>1.93%</u>	± 3% F.S.
	± 10%



<b>As found:</b> SLOPE: <u>1.118</u> OFFSET: <u>36.2</u> HVPS: <u>651</u> RCELL TEMP: <u>50.0</u> BOX TEMP: <u>31.1</u> PMT TEMP: <u>7.9</u> IZS TEMP: <u>48.0</u> Converter Temp: <u>314.0</u> PRES: <u>20.8</u> SAMP FL: <u>523</u> UV LAMP: <u>3219.8</u> LAMP RATIO: <u>92.0</u> STR. LGT: <u>20.3</u> DRK PMT: <u>0.4</u> DRK LMP: <u>0.4</u> Internal Span: <u>58.4</u>	<b>As left:</b> SLOPE: <u>1.094</u> OFFSET: <u>36.4</u> HVPS: <u>651</u> RCELL TEMP: <u>50.0</u> BOX TEMP: <u>31.8</u> PMT TEMP: <u>8.0</u> IZS TEMP: <u>48.0</u> Converter Temp: <u>315.6</u> PRES: <u>20.3</u> SAMP FL: <u>523</u> UV LAMP: <u>3219.0</u> LAMP RATIO: <u>92</u> STR. LGT: <u>19.9</u> DRK PMT: <u>0.4</u> DRK LMP: <u>0.3</u> Internal Span: <u>56.8</u>
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**Comments:**

May 11, 2016: No power in the station until 12:15. 13:00 - no power again. Calibration completed next day. Sample inlet filter changed.



— H2S[ppb]

***TOTAL HYDROCARBON***



# Thermo 51C Total Hydrocarbon Analyzer Calibration

**Date:** May 12, 2016  
**Company/Airshed:** LICA  
**Location/Station Name:** St. Lina  
**Parameter:** Total Hydrocarbon  
**Start/End Time 24 hr. (mst):** 7:48 / 11:06  
**Calibration Method:** Gas Dilution  
**Barometric Pressure:** 0.932 atm  
**Station Temperature °C:** 22  
**Weather Conditions:** Mainly clear  
**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:** April 12, 2016  
**Previous Cal High Point C.F.:** 1.001  
**Range ppm:** 50  
**As Found C.F.:** 0.953  
**New C.F.:** 1.000

**Calibrator:**  
**Flow Meter ID's:** n/a  
**Make & Model:** API 700  
**Serial #:** 627  
**Cal Gas Cylinder I.D. #:** LL165372  
**CH<sub>4</sub>/C<sub>2</sub>H<sub>6</sub> Cylinder Conc. (ppm):** 606.0 / 212.0  
**CH<sub>4</sub> as propane/total CH<sub>4</sub> equivalents (ppm):** 583.0 / 1189.0  
**Standard Calibration Points for a Range of 50 ppm**

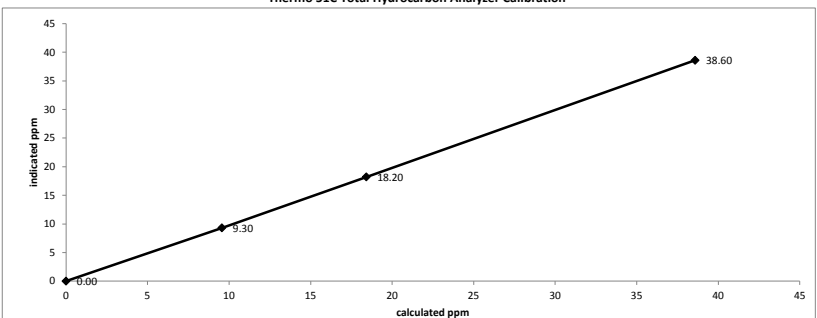
Point	Target ppm
High	38
Mid	18
Low	9

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

Point	Calibrator Flow Rates (cc/min)			Calculated Concentration:	Indicated Concentration:	Correction Factors:
	Diluent	Cal Gas	Total	(ppm)	(ppm)	
as found zero	2000	0.00	2000	0.0	0.10	n/a
as found high	1938	65.00	2003	38.58	40.60	0.953
adjusted zero	1999	0.00	1999	0.00	0.00	n/a
adjusted high	1938	65.00	2003	38.58	38.60	1.000
mid	1970	31.00	2001	18.42	18.20	1.012
low	1986	16.10	2002	9.56	9.30	1.028
calibrator zero	2000	0.00	2000	0.0	0.00	n/a

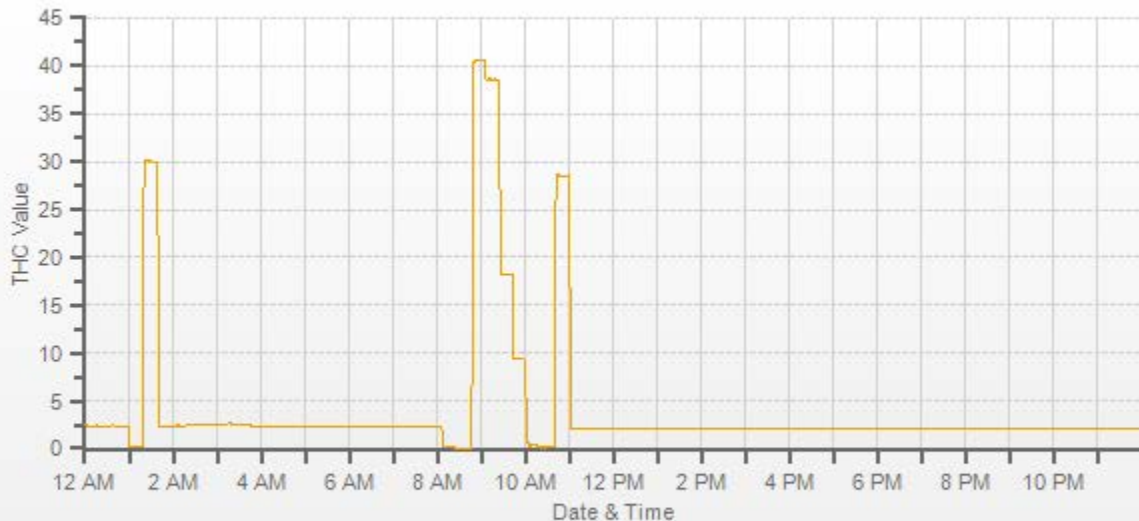
Average C.F.= 1.013

**Linear Regression/Calibration Results:**  
**Correlation Coefficient =** 1.000 **> or = 0.995**  
**Slope =** 0.998 **.95-1.05**  
**b (Intercept as % of full scale)=** 0.31% **± 3% F.S.**  
**% change in C.F. from last cal=** 4.82% **± 10%**



<b>As found:</b>	<b>As left:</b>
H2 cylinder (psi): 800	H2 cylinder (psi): 800
H2 cylinder reg set (psi): 22	H2 cylinder reg set (psi): 22
Span Cylinder (psi): 800	Span Cylinder (psi): 800
Span Cylinder Reg Set (psi): 22	Span Cylinder Reg Set (psi): 22
Zero Air Gen Pressure: 44	Zero Air Gen Pressure: 44
measurement alarms: None	measurement alarms: None
service alarms: None	service alarms: None
cnt: 1643	cnt: 1910
rng: 1	rng: 1
try: 1	try: 1
flm: 188.2	flm: 188.5
det: 125.1	det: 125.8
Flame: 188	Flame: 188
Filter: 125	Filter: 125
Base: 125	Base: 125
Sample psi: 06.90	Sample psi: 06.90
Internal Air Pressure: 19	Internal Air Pressure: 19
Internal Fuel Pressure: 13	Internal Fuel Pressure: 13
Intenal Pressure Gauge psi: 27	Intenal Pressure Gauge psi: 27
Internal Span: 29.32	Internal Span: 28.57

**Comments:**  
May 11, 2016: No power in the station until 12:15. 13:00 - no power again. Calibration competed next day. Sample inlet filter changed.



— THC[ppm]

***NITROGEN DIOXIDE***



## API 200E NO-NO2-NOx Analyzer Calibration

Date: May 12, 2016	Barometric Pressure: 0.932 atm
Company/Airshed: LICA	Station Temperature °C: 22
Location/Station Name: St. Lina	Weather Conditions: Mainly clear
Start/End Time 24 hr. (mst): 7:48 / 14:16	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

<b>Analyzer:</b>  Serial Number: 594 Last Calibration Date: April 12, 2016 Range ppb: 1000	<b>Correction Factors:</b> <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>0.992</td> <td>0.997</td> </tr> <tr> <td>NO<sub>2</sub> =</td> <td>1.010</td> <td>1.004</td> <td>1.004</td> </tr> <tr> <td>NOx =</td> <td>1.000</td> <td>0.996</td> <td>0.997</td> </tr> </tbody> </table>		Previous C.F.:	As Found C.F.:	New C.F.:	NO =	1.000	0.992	0.997	NO <sub>2</sub> =	1.010	1.004	1.004	NOx =	1.000	0.996	0.997
	Previous C.F.:	As Found C.F.:	New C.F.:														
NO =	1.000	0.992	0.997														
NO <sub>2</sub> =	1.010	1.004	1.004														
NOx =	1.000	0.996	0.997														

<b>Calibrator:</b> 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	<b>Standard Calibration Points for a Range of: 1000 ppb</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Point</th> <th>Target NO (ppb)</th> <th>Target NO<sub>2</sub> (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 <sub>2</sub> (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 <sub>2</sub> (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	4999	0.0	4999	0	0	-1.0	2.0	n/a	n/a
as found high	4922	78.0	5000	780.0	780.0	785.0	785.0	0.992	0.996
adjusted zero	4999	0.00	4999	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	380.0	380.0	1.000	1.000
low	4981	19.00	5000	190.0	190.0	189.0	189.0	1.005	1.005
calibrator zero	4999	0.00	4999	0	0	0.0	0.0	n/a	n/a
<b>Average C.F.=</b>								1.001	1.001

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 <sub>2</sub>	NO drop	NO <sub>2</sub> gain	NO <sub>2</sub> 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	781.0	782.0	0.0	0.0	0.0	
as found high NO2	4922	78.00	5000	510.0	266.0	780.0	513.0	515.0	513.0	1.004
adjusted high NO2	4922	78.00	5000	510.0	266.0	780.0	513.0	515.0	513.0	1.004
gpt mid	4922	78.00	5000	270.0	504.0	780.0	275.0	277.0	275.0	1.007
gpt low	4922	78.00	5000	100.0	675.0	780.0	104.0	106.0	104.0	1.019
<b>Average NO<sub>2</sub> C.F.=</b>										1.010

Linear Regression/Calibration Results:

	NO	NOx	NO <sub>2</sub>	LIMITS
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995
Slope =	0.997	0.997	1.003	.95-1.05
b (Intercept as % of full scale) =	-0.08%	-0.08%	-0.08%	± 3% F.S.
% change in C.F. from last cal =	0.76%	0.38%	0.60%	± 10%
NO2 converter efficiency			1.01	0.96 to 1.04

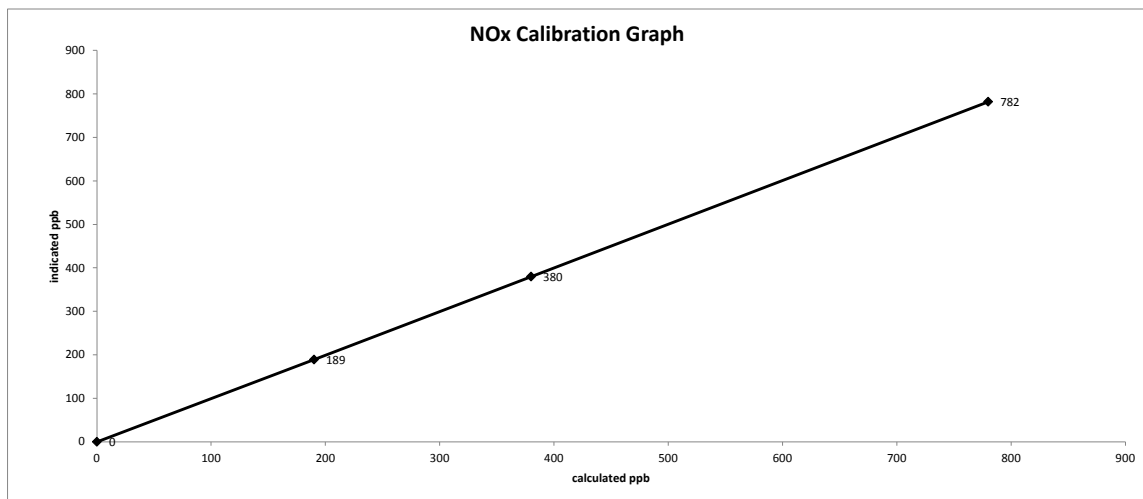
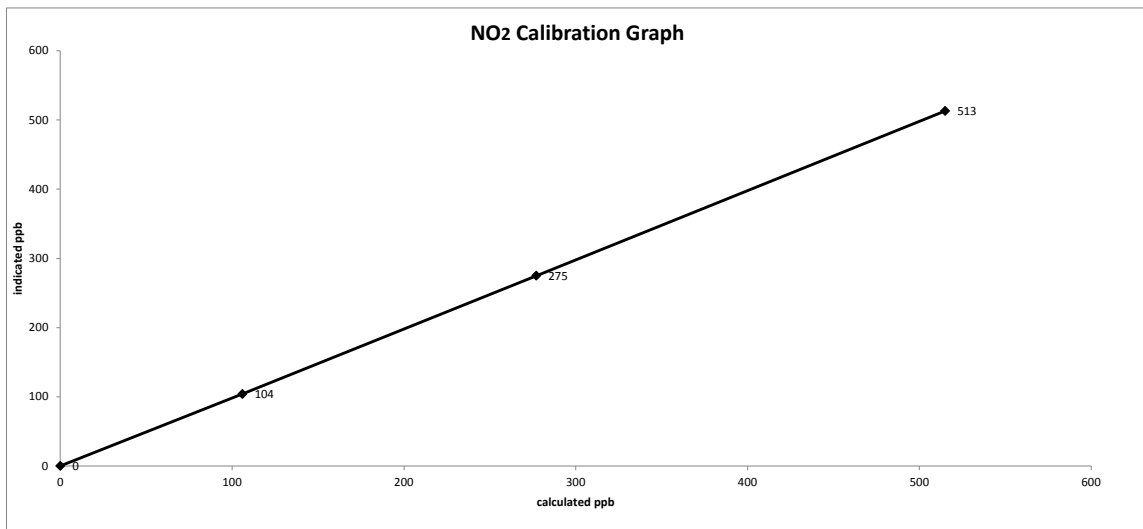
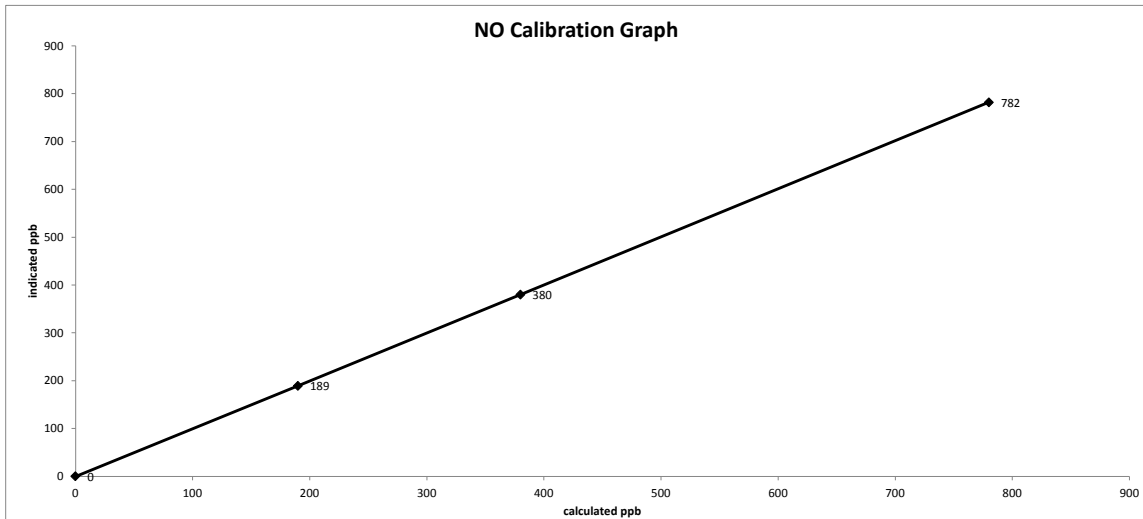
As found:	As left:
NOx SLOPE: 0.984	NOx SLOPE: 0.980
NOx OFFS: 0.9	NOx OFFS: 1.0
NO SLOPE: 0.992	NO SLOPE: 0.985
NO OFFS: 0.7	NO OFFS: 0.0
SAMP FLW: 460	SAMP FLW: 460
OZONE FL: 78	OZONE FL: 78
PMT: 18.3	PMT: 21.3
NORM PMT: -3.3	NORM PMT: 1.6
AZERO: 20.2	AZERO: 19.7
HVPS: 771	HVPS: 771
RCELL TEMP: 50.0	RCELL TEMP: 50.0
BOX TEMP: 38.4	BOX TEMP: 38.0
PMT TEMP: 6.9	PMT TEMP: 6.8
IZS TEMP: 45.1	IZS TEMP: 45.1
MOLY TEMP: 315.0	MOLY TEMP: 315.0
RCEL: 6.8	RCEL: 6.8
SAMP: 27.2	SAMP: 27.2
Internal Span NO: 7.1	Internal Span NO: 8.3
Internal Span NO2: 516.4	Internal Span NO2: 515.3
Internal Span NOx: 523.7	Internal Span NOx: 523.6

**Comments:**

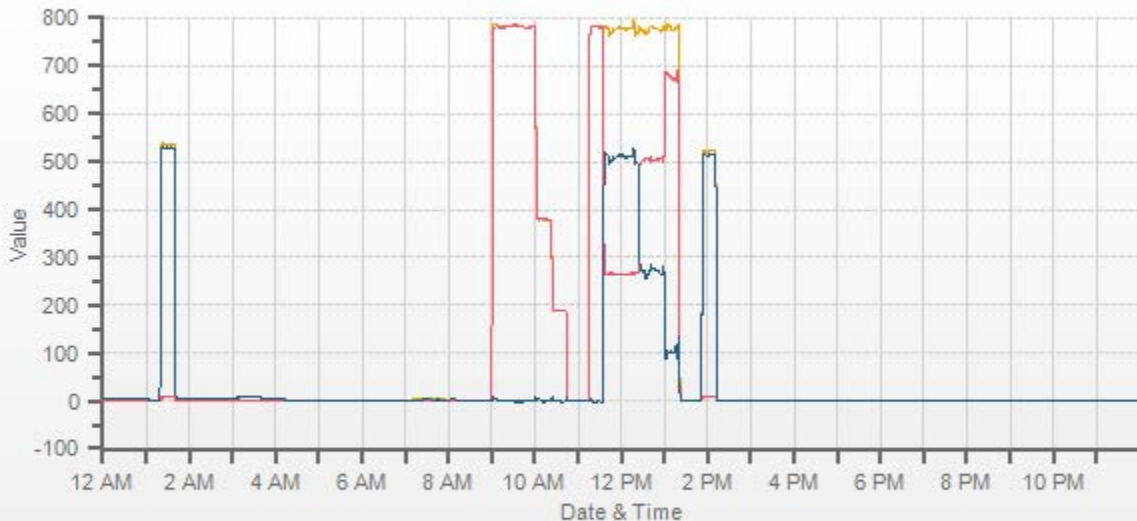
May 11, 2016: No power in the station until 12:15. 13:00 - no power again. Calibration competed next day. Sample inlet filter changed. No NO2 adjustment made.

Date: May 12, 2016  
Company/Airshed: LICA  
Location/Station Name: St. Lina

Start/End Time 24 hr. (mst): 7:48 / 14:16  
Calibration Purpose: routine monthly  
Calibration Method: Gas Dilution & Varying UV Lamp Power







— NOX[ppb] — NO[ppb] — NO2[ppb]

## ***OZONE***



# Thermo 49i Ozone Analyzer Calibration

Date:	May 12, 2016	Barometric Pressure:	0.932 atm
Company/Airshed:	LICA	Station Temperature °C:	22
Location/Station Name:	St. Lina	Weather Conditions:	Mainly clear
Start/End Time 24 hr. (mst):	13:32 / 16:55	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:	1002240371	Ozone Range ppb:	500
	Last Calibration Date:	April 13, 2016	As Found C.F.:	0.995
	Previous Cal High Point C.F.:	1.000	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

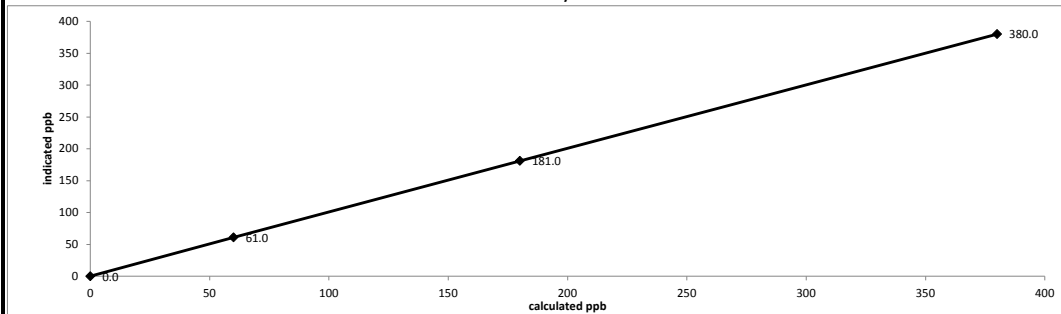
Point	Calibrator Flow Rate (cc/min)		Calculated Concentration:	Corrected Calculated Concentration:	Indicated Concentration:	Correction Factors:
	Total Flow @ Point Start	Total Flow @ Point Finish	(ppb)	(ppb)	(ppb)	
as found zero	5000	5000	0.0	n/a	0.0	n/a
as found high	5000	5000	380.0	380.0	382.0	0.995
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	61.0	0.984
calibrator zero	5000	5000	0.0	n/a	0.0	n/a

Average C.F. = 0.993

Linear Regression/Calibration Results:

Correlation Coefficient =	1.000	LIMITS	> or = 0.995
Slope =	1.001		.95-1.05
b (Intercept as % of full scale) =	-0.13%		± 3% F.S.
% change in C.F. from last cal =	0.52%		± 10%

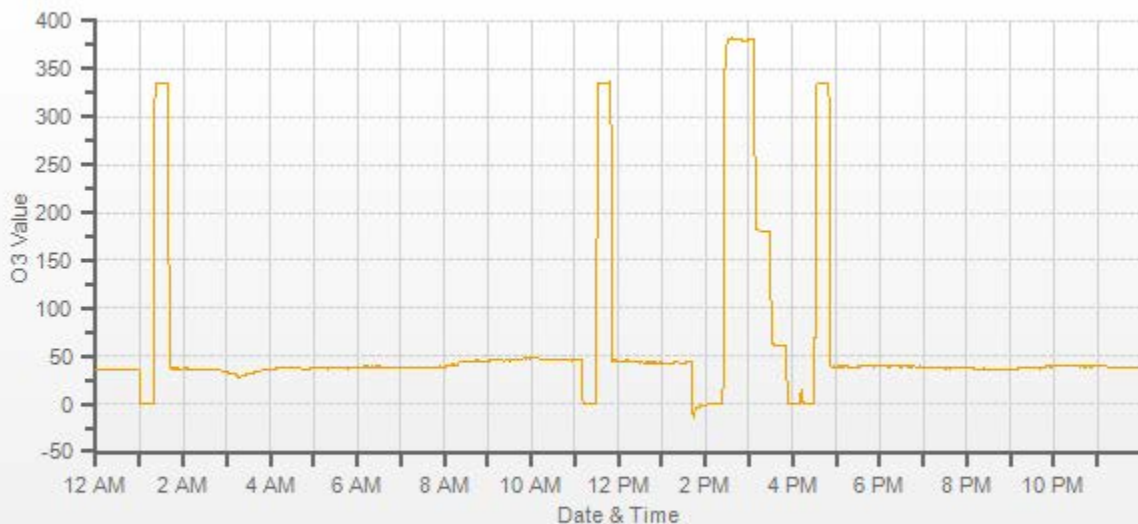
Thermo 49i Ozone Analyzer Calibration



<b>As found:</b>	O3 Bkg:	-0.9	<b>As left:</b>	O3 Bkg:	-0.9
	O3 Coef:	0.976		O3 Coef:	0.971
	Photo Lamp:	9.4		Photo Lamp:	9.4
	O3 Lamp:	7.8		O3 Lamp:	7.8
	Bench:	28.2		Bench:	28.0
	Bench Lamp:	53.6		Bench Lamp:	53.6
	O3 Lamp:	67.8		O3 Lamp:	67.8
	Pressure:	684.4		Pressure:	684.7
	Cell A lpm:	0.731		Cell A lpm:	0.731
	Cell B lpm:	0.726		Cell B lpm:	0.726
	O3 ppb:	0.0		O3 ppb:	1.3
	Cell A ppb:	-1.9		Cell A ppb:	-0.2
	Cell B ppb:	1.8		Cell B ppb:	2.8
	Cell A int:	59180		Cell A int:	59182
	Cell B int:	74172		Cell B int:	74172
	Internal Span:	328.5		Internal Span:	336

Comments:

May 11, 2016: No power in the station until 12:15. 13:00 - no power again. Calibration completed next day. Sample inlet filter changed. No ZERO adjustment made.



— O3[ppb]

***PARTICULATE MATTER***



# R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date: May 13, 2016  
 Company: LICA  
 Station Name/Location: St. Lina  
 Previous Audit Date: April 29, 2016  
 Parameter: PM 2.5

Performed By/Reviewer: Alex Yakupov | Trina Whatsitt  
 Start Time (mst): 14:10  
 End Time (mst): 14:55  
 Calibration Purpose: Bi-monthly #1  
 Weather Conditions: Mix of sun and clouds

### 1400A Information and Status:

Serial Number: 1405A208301003 As Found Filter Loading %: 38.91  
 Ko Factor: 13125.0 As Left Filter Loading %: 21.43  
 Ambient Temperature °C: 13.84 As Found Noise: 0.008  
 Ambient Pressure atm: 0.934 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	-0.16	0.00	-0.16
	limit	0.15	<del>0.15</del>	0.15	<del>0.15</del>
Bypass Flow	actual	0.00	-1.65	0.00	-1.65
	limit	0.60	<del>0.60</del>	0.60	<del>0.60</del>

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

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	0.00	-0.16	0.00	-0.16
	limit	0.15	<del>0.15</del>	0.15	<del>0.15</del>
Bypass Flow	actual	0.00	-1.65	0.00	-1.65
	limit	0.60	<del>0.60</del>	0.60	<del>0.60</del>

### As found temperature and pressure:

tolerance +/- 2.0°C	tolerance +/- 0.01 atm
1405F temperature °C: <u>13.8</u>	1405F pressure atm: <u>0.934</u>
reference temperature °C: <u>14.5</u>	reference pressure: <u>0.935</u>
difference °C: <u>0.7</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>14.5</u>	1405F pressure atm: <u>0.935</u>
reference temperature °C: <u>14.5</u>	reference pressure: <u>0.935</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>2.98</u>	reference total/aux flow lpm: <u>16.43</u>
difference lpm: <u>-0.02</u>	difference lpm: <u>-0.24</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>2.98</u>	reference total/aux flow lpm: <u>16.43</u>
difference lpm: <u>-0.02</u>	difference lpm: <u>-0.24</u>

### K<sub>o</sub> Audit:

Last K<sub>o</sub> audit date: May 13, 2016  
 1405F K<sub>o</sub> factor: 13125.0  
 Measured K<sub>o</sub> factor: 13229.8000  
 % difference: 0.80

### Comments:

47 mm FDMS filter changed and TEOM sample filter changd. PM 10/2.5 sample inlet hea cleaned. Ko audited.



## R & P 1405F TEOM PM 2.5 Analyzer Calibration

**Date:** May 24, 2016  
**Company:** LICA  
**Station Name/Location:** St. Lina  
**Previous Audit Date:** May 13, 2016  
**Parameter:** PM 2.5

**Performed By/Reviewer:** Alex Yakupov | Trina Whitsitt  
**Start Time (mst):** 15:02  
**End Time (mst):** 15:38  
**Calibration Purpose:** Bi-monthly #2  
**Weather Conditions:** Mix of sun and clouds

### 1400A Information and Status:

<b>Serial Number:</b> <u>1405A208301003</u>	<b>As Found Filter Loading %:</b> <u>32.47</u>
<b>Ko Factor:</b> <u>13125.0</u>	<b>As Left Filter Loading %:</b> <u>35.53</u>
<b>Ambient Temperature °C:</b> <u>16.43</u>	<b>As Found Noise:</b> <u>0.013</u>
<b>Ambient Pressure atm:</b> <u>0.932</u>	<b>As Left Noise:</b> <u>0.000</u>
<b>Main Flow Reading lpm:</b> <u>3.00</u>	<b>Pump Vacuum:</b> <u>0.26</u>
<b>Aux Flow Reading lpm:</b> <u>13.67</u>	<b>Warnings:</b> <u>None</u>

### Reference Standards:

	Flow:	Pressure:	Temperature:
<b>Make:</b>	<u>Dwyer</u>	<u>Fisher</u>	<u>Fisher</u>
<b>Model:</b>	<u>475 Mark III</u>	<u>FB 1291</u>	<u>FB 1291</u>
<b>Serial Number:</b>	<u>#2</u>	<u>130168457</u>	<u>130168457</u>
<b>Calibration Date:</b>	<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	-0.16	0.00	-0.16
	limit	0.15	<del>0.15</del>	0.15	<del>0.15</del>
Bypass Flow	actual	0.00	-1.65	0.00	-1.65
	limit	0.60	<del>0.60</del>	0.60	<del>0.60</del>

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

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	0.00	-0.16	0.00	-0.16
	limit	0.15	<del>0.15</del>	0.15	<del>0.15</del>
Bypass Flow	actual	0.00	-1.65	0.00	-1.65
	limit	0.60	<del>0.60</del>	0.60	<del>0.60</del>

### As found temperature and pressure:

<b>tolerance +/- 2.0°C</b>	<b>tolerance +/- 0.01 atm</b>
<b>1405F temperature °C:</b> <u>16.4</u>	<b>1405F pressure atm:</b> <u>0.932</u>
<b>reference temperature °C:</b> <u>16.0</u>	<b>reference pressure:</b> <u>0.936</u>
<b>difference °C:</b> <u>-0.4</u>	<b>difference :</b> <u>-0.004</u>

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

<b>tolerance +/- 2.0°C</b>	<b>tolerance +/- 0.01 atm</b>
<b>1405F temperature °C:</b> <u>16.0</u>	<b>1405F pressure atm:</b> <u>0.936</u>
<b>reference temperature °C:</b> <u>16.0</u>	<b>reference pressure:</b> <u>0.936</u>
<b>difference °C:</b> <u>0.0</u>	<b>difference :</b> <u>0.000</u>

### As found flows:

<b>main flow tolerance 3.00 lpm +/- 0.20 lpm</b> <b>1405F main flow lpm:</b> <u>3.00</u> <b>reference main flow lpm:</b> <u>3.04</u> <b>difference lpm:</b> <u>0.04</u>	<b>total/aux flow tolerance 16.67/13.67 lpm +/- 1.00 lpm +/- 7%</b> <b>1400A total/aux flow lpm:</b> <u>16.67</u> <b>reference total/aux flow lpm:</b> <u>16.87</u> <b>difference lpm:</b> <u>0.20</u>
--	---

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

<b>main flow tolerance 3.00 lpm +/- 0.20 lpm</b> <b>1405F main flow lpm:</b> <u>3.00</u> <b>reference main flow lpm:</b> <u>3.04</u> <b>difference lpm:</b> <u>0.04</u>	<b>total/aux flow tolerance 16.67/13.67 lpm +/- 1.00 lpm +/- 7%</b> <b>1400A total/aux flow lpm:</b> <u>16.67</u> <b>reference total/aux flow lpm:</b> <u>16.87</u> <b>difference lpm:</b> <u>0.20</u>
--	---

### K<sub>o</sub> Audit:

**Last K<sub>o</sub> audit date:** May 13, 2016  
**1405F K<sub>o</sub> factor:** 13125.0  
**Measured K<sub>o</sub> factor:** 13229.8000  
**% difference:** 0.80

### 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

***METEOROLOGICAL SYSTEM CHECK***

# Meteorological System Checklist

Date: **12-May-16**  
 Performed by: Alex Yakupov  
 Station: **St. Lina**  
 Start: 09:13 End: 09:24

## PRECIPITATION SENSOR CHECK

	YES	NO
Is the sensor Level?	YES	
Is the heater operating properly?	YES	
Are the bucket drain holes clean?	YES	
Is the inner screen on the housing? (screen should be on between July and September		NO
Is the upper screen on the housing? (screen should be on between July and September)		NO
Is the housing clean?	YES	
Is the area around the housing clean and free from obstacle?	YES	
Is the tipping sensor working properly?	YES	
(test sequence 2.1 mm at 09:17)	PASS	

Comments: Rain gauge was tested with water.  
 Responce is timely and accurate. No issues.

Field Technician: Alexander Yakupov May 12, 2016

## ***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)*

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

AENV Standards	Ozone Analyzer
<b>Audit Calibrator</b>	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 Date: March 30, 2016  
 Operator Signature: [Signature] Location: McIntyre Center Edmonton



# Calibrator Performance Audit

## Oxides Of Nitrogen

File No. 2015-119

Company <u>Maxxam</u>		Operator: <u>Chris Wesson</u>	
<b>Calibrator:</b>		<b>Flow Measurement Device:</b>	
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 <sub>2</sub>	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%

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

Flow	O <sub>2</sub> Conc	NO Decrease	NO	NO <sub>2</sub>	NOX	% Diff. Vs Audit gas	
5003	0	0.000	0.787	0.001	0.788	NO <sub>2</sub>	% 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%

<b>LINEAR REGRESSION ANALYSIS</b>				<i>y=mx+b (where x=calculated concentration, y=indicated concentration)</i>			
<b>NO<sub>2</sub></b>		<b>LIMITS</b>					
Correlation=	1.0000	≥ 0.995					
m (Slope)=	1.0089	<b>0.90-1.10</b>					
b (Intercept % of FS)=	0.1591	± 3% F.S.					

<b>AENV Standards</b>	<b>NO<sub>x</sub> Analyzer</b>
<b>Audit Calibrator</b>	
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. 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	<del>0.00000</del>	<del>0.00000</del>	<del>0.000</del>
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:					<b>49.4</b>

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:**

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 (sccm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.0000	<del>0.0000</del>	<del>132.442</del>	<del>10.0</del>
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:					<b>9.9</b>

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 Bios 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	<del>0.02140</del>	<del>46.722</del>	<del>607</del>	<del>214</del>
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:						<b>608</b>	<b>215</b>

<b>CH4</b>	<b>C3H8</b>
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				
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:						<b>50.5</b>	<b>50.4</b>

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

**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  
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
Bim Adeniji	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.



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

22-06-2016





\_\_\_\_\_  
Report Issued Date (dd-mm-yyyy)

***APPENDIX IV  
DATA VALIDATION CERTIFICATION FORM***



### Validation Certificate Form

<b>Client:</b> Lakeland Industry & Community Association	<b>Project #:</b> 2833-2016-05-31- C
<b>Site:</b> St. Lina Site	<b>Contact:</b> Mike Bisaga

Level 0 Preliminary Verification	 _____	Date <u>17-June-16</u>
Level 1 Primary Validation	 _____	Date <u>17-June-16</u>
Level 2 Final Validation	 _____	Date <u>23-June-16</u>
Level 3 Independent Data Review	 _____	Date <u>24<sup>updates</sup>-June-16</u>
Post-Final Validation	NA _____	Date NA _____

<b>Notes</b>
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 #:2833-2016-05-35- C**

**May 2016**

Prepared for:

**LAKELAND INDUSTRY & COMMUNITY ASSOCIATION**  
BOX 8237, 5107W - 50 STREET  
BONNYVILLE, ALBERTA  
T9N 2J5

**Attention: MIKE BISAGA**

DATE: **July 5, 2016**

Prepared by:



\_\_\_\_\_  
Bim Adeniji,  
Project Manager Assistant, Customer Service, Air Services

Reviewed by:



\_\_\_\_\_  
Cheri Sinclair, B.Sc.  
Supervisor, Customer service, Air Services



## **SUMMARY**

In May 2016, the Air Services Group of Maxxam Analytics conducted an ambient air monitoring program on the Elk Point Airport Site at Lakeland Industry & Community Association, near Elk Point. Sampling was carried out to determine the concentrations of compliance parameters as required in the plant License to Operate.

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 less than the 90% requirement this month as the AQM program was completed at the Elk Point site on May 16.

The AQM program at the Elk Point Site was completed after a removal calibration on May 16. The AQM trailer was removed from the site and will be installed at the Bonnyville site in June.

PM 2.5: One 1-HR exceedence was recorded on May 15 hour 21 with a concentration of 99ug/m<sup>3</sup>. Ref#: 313403

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 Elk Point Airport 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	0.0	1.0	15	4	7	WNW	0.2	4	50.0
H2S (PPB)	10	3	0	0	0.2	2.4	6	13	R	#N/A	1.2	2	50.0
THC (PPM)	-	-	-	-	2.45	6.13	3	4	5.6	ESE	3.63	16	50.1
CH4 (PPM)	-	-	-	-	2.44	6.03	3	4	5.6	ESE	3.59	16	50.1
NMHC (PPM)	-	-	-	-	0.01	0.36	3	0	0.2	W	0.05	3	50.1
NO2 (PPB)	159	-	0	-	6.6	31.1	13	22	4.6	WNW	14.4	16	50.0
NO (PPB)	-	-	-	-	2.9	97.2	15	4	7	WNW	13.3	14	50.0
NOX (PPB)	-	-	-	-	9.5	123.3	15	4	7	WNW	25.7	14	50.0
O3 (PPB)	82	-	0	-	31.5	58.9	3	16	15.8	S	42.2	8	50.5
PM2.5 (UG/M3)	80	30	1	0	9.1	99.0	15	21	4.2	WSW	27.2	16	49.5
VECTOR WS (KPH)	-	-	-	-	11.0	38.1	8	9	-	NW	24.4	8	49.7
VECTOR WD (DEG)	-	-	-	-	-	-	-	-	-	-	-	-	49.9

NA-NOT AVAILABLE VAR-VARIOUS

## Exceedence Summary Report

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**SO<sub>2</sub> 1- Hour Exceedences**

No Exceedences Recorded During the Month

**SO<sub>2</sub> 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

**NO<sub>2</sub> 1- Hour Exceedences**

No Exceedences Recorded During the Month

**PM<sub>2.5</sub> 1- Hour Exceedences**

DATE	HOUR	READING (ug/m3)	WS (kph)	WD (deg)
May 15	21	99	4.2	WSW

### Volatile Organics (VOCs) Data Summary

---

Sample Collected Date	Maximum reading (PPB)	Volatile Organic Compound
May 6, 2016	0.90	Ethanol
May 12, 2016	4.10	Ethanol

Note: The AQM Trailer was removed from the site on May 17. As a result, no sample was collected after the trailer was removed.

### Polycyclic Aromatic Hydrocarbons (PAHs) Data Summary

---

Sample Collected Date	Maximum reading (ug)	Semi-Volatile Organic
May 6, 2016	0.35	2-Methylnaphthalene
May 12, 2016	0.13	2-Methylnaphthalene

Note: The AQM Trailer was removed from the site on May 17. As a result, no sample was collected after the trailer was removed.

### Volatile Organics (VOCs) Data Summary - NMHC Canister System

---

Sample Collected Date	Maximum reading (PPB)	Volatile Organic Compound
May 2, 2016	11.20	Methylene chloride
May 6, 2016	3.61	Isopentane
May 12, 2016	2.30	Acetone
May 14, 2016	5.10	Acetone

Note: NA

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## 1.0 Discussion

This monthly report consists of data for parameters Sulphur Dioxide (SO<sub>2</sub>), Hydrogen Sulphide (H<sub>2</sub>S), Total Hydrocarbon (THC), Methane (CH<sub>4</sub>), Non-Methane Hydrocarbon (NMHC), Oxides of Nitrogen (NO<sub>x</sub>), Nitric Oxides (NO), Nitrogen Dioxide (NO<sub>2</sub>), Ozone (O<sub>3</sub>), Particulate Matter 2.5 (PM<sub>2.5</sub>), Wind Speed (WS), Wind Direction (WD) and Standard Deviation Wind Direction (STDWD). The results for non-continuous 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%).

#### **SULPHUR DIOXIDE (SO<sub>2</sub>)**

The analyzer was working well throughout the month. The routine monthly calibration was performed on May 4. A removal calibration was performed on May 16 as the AQM program was completed at this site. Hourly maximum data collected on May 6 hour 13 was discarded due to a small power outage.

#### **HYDROGEN SULPHIDE (H<sub>2</sub>S)**

The analyzer was working well throughout the month. The routine monthly calibration was performed on May 4. A removal calibration was performed on May 16 as the AQM program was completed at this site. Hourly maximum data collected on May 6 hour 13 was discarded due to a small power outage.

#### **TOTAL HYDROCARBONS (THC), METHANE (CH<sub>4</sub>), and NON-METHANE HYDROCARBONS (NMHC)**

A removal calibration was performed on May 16 as the AQM program was completed at this site. Hourly maximum data collected on May 6 hour 13 was discarded due to a small power outage. Hourly maximum data collected on May 6 hour 14 and hour 15 were also discarded as the data quality was affected after the power outage.

#### **NITROGEN DIOXIDE (NO<sub>2</sub>)**

The analyzer was working well throughout the month. The routine monthly calibration was performed on May 4. A removal calibration was performed on May 16 as the AQM program was completed at this site. Hourly maximum data collected on May 6 hour 13 was discarded due to a small power outage.

#### **OZONE (O<sub>3</sub>)**

The analyzer was working well throughout the month. A removal calibration was performed on May 16 as the AQM program was completed at this site. Hourly maximum data collected on May 6 hour 13 was discarded due to a small power outage.

#### **PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM<sub>2.5</sub>)**

The Teom unit was working well throughout the month. The Teom unit was audited on May 6. A removal audit was performed on May 16 as the AQM program was completed at this site. One 1-HR exceedence was recorded on May 15 hour 21 with a concentration of 99ug/m<sup>3</sup> (Ref#: 313403).

Data was corrected using Alberta air quality guideline. Data between 0 and -3 ug/m<sup>3</sup>, was corrected to 0 ug/m<sup>3</sup>. Data was below -3ug/m<sup>3</sup> was invalidated. 3 hours of data were invalidated as the data was below -3 ug/m<sup>3</sup> this month.

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

The wind system was working well throughout the month. Hourly data collected on May 6 hour 13 was discarded as the data quality was affected after a small power outage.

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.

### **VOC SAMPLES**

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

Samples were collected on May 6 and May 12. They were sent to the lab for analysis. Analytical results are included in this report. The values for the VOC's are reported in the unit of ppb.

### **PAH SAMPLES**

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

Samples were collected on May 6 and May 12. They were sent to the lab for analysis. Analytical results are included in this report. The values for the PAH's are reported in the unit of µg.

### **NMHC CANISTER SAMPLES**

The NMHC canister sampler is triggered when the 5-minute average concentration of NMHC is above 0.30ppm. An hour of sample is collected when the canister is triggered.

A total of 4 Canister(s) was collected this month. Analytical results are included in this report. The values for the NMHC canister samples are reported in the unit ppb. No canister event was recorded this month as the 5-minute average concentration of NMHC were all below 0.30ppm.

## **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 less than the 90% requirement this month as the AQM program was completed at the Elk Point site on May 16.

## **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-00001 - Methane, Non-Methane Hydrocarbon Analyzer Monitoring
- Maxxam AIR SOP-00208: RM Young Monitor Calibration
- Maxxam AIR SOP-00209: Ambient H<sub>2</sub>S Monitoring
- Maxxam AIR SOP-00211: Ambient SO<sub>2</sub> Monitoring
- Maxxam AIR SOP-00212: Ambient O<sub>3</sub> Monitoring
- Maxxam AIR SOP-00213: Ambient NO/NO<sub>2</sub>/NO<sub>x</sub> 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 - API 100E UV Fluorescent Analyzer
- Hydrogen Sulphide - API 101E UV Fluorescent Analyzer
- Total Hydrocarbons - Thermo 55i FID Analyzer
- Methane, Non-Methane Hydrocarbon - Thermo 55i FID Analyzer
- Oxides of Nitrogen - API 200E Chemiluminescent Analyzer
- Ozone - Thermo 49i Photometric Analyzer
- Particulate Matter (PM<sub>2.5</sub>) - R&P 1405F Teom 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

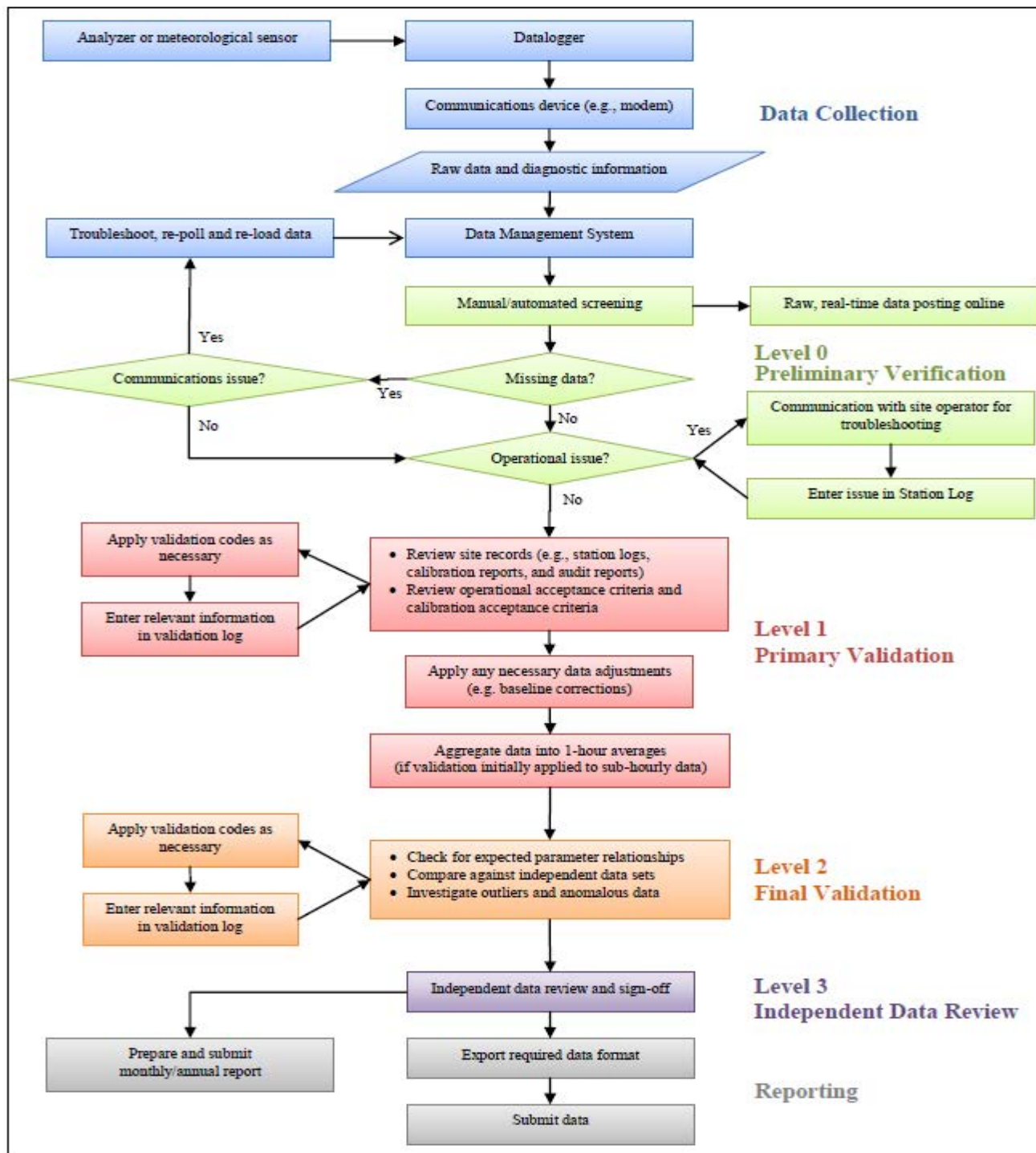
The purpose of Level 2 validation is to verify that there are no inconsistencies among related data, or among regional data measured at nearby sites.

#### 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**

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	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	
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	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	
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	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	
4	0.0	0.0	0.0	0.2	0.2	0.4	0.4	0.5	0.5	0.6	0.6	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	0.0	0.0	0.6	0.2	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	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	
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	0.2	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	0.2	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	0.6	0.3	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	0.6	0.0	0.0	0.0	24	
8	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	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	24	
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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	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	
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	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
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	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
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	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
14	0.4	0.9	0.4	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	0.9	0.1	0.0	0.0	24	
15	0.0	0.0	0.0	0.0	1.0	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	1.0	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	S	C1	C1	C1	C1																		12
17																																		
18																																		
19																																		
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29																																		
30																																		
31																																		
HOURLY MAX	0.4	0.9	0.4	0.2	1.0	0.4	0.4	0.5	0.5	0.6	0.6	0.3	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	0.0	
HOURLY AVG	0.0	0.1	0.0	0.0	0.1	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	0.0	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

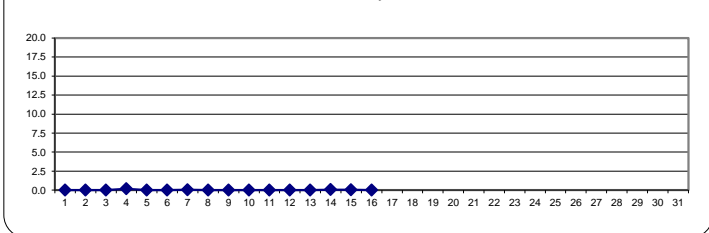
**OBJECTIVE LIMIT:**

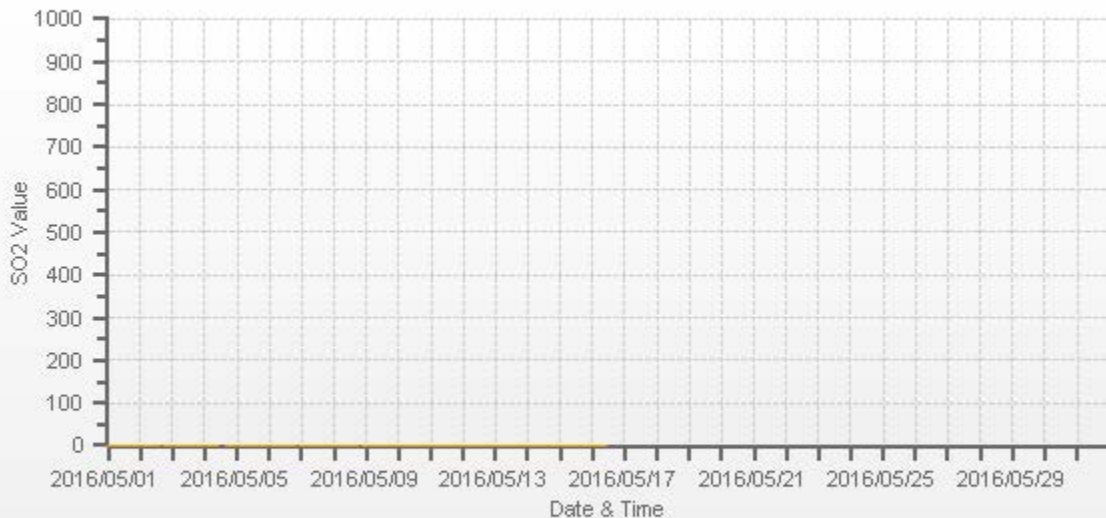
<b>ALBERTA ENVIRONMENT:</b>	1-HR	172	PPB	24-HR	48	PPB
-----------------------------	------	-----	-----	-------	----	-----

**MONTHLY SUMMARY**

NUMBER OF 1-HR EXCEEDENCES:	0				
NUMBER OF 24-HR EXCEEDENCES:	0				
NUMBER OF NON-ZERO READINGS:	16				
MINIMUM 1-HR AVERAGE:	0.0	PPB	@ HOUR(S)	VAR	ON DAY(S) ALL
MAXIMUM 1-HR AVERAGE:	1.0	PPB	@ HOUR(S)	4	ON DAY(S) 15
MAXIMUM 24-HR AVERAGE:	0.2	PPB			ON DAY(S) 4
					VAR-VARIOUS
IZS CALIBRATION TIME:	15	HRS	OPERATIONAL TIME:	372	HRS
MONTHLY CALIBRATION TIME:	5	HRS	AMD OPERATION UPTIME:	50.0	%
STANDARD DEVIATION:	0.11		MONTHLY AVERAGE:	0.0	PPB

**24 HOUR AVERAGES FOR May 2016**





— SO2[ppb]



SULPHUR DIOXIDE MAX instantaneous maximum in ppb

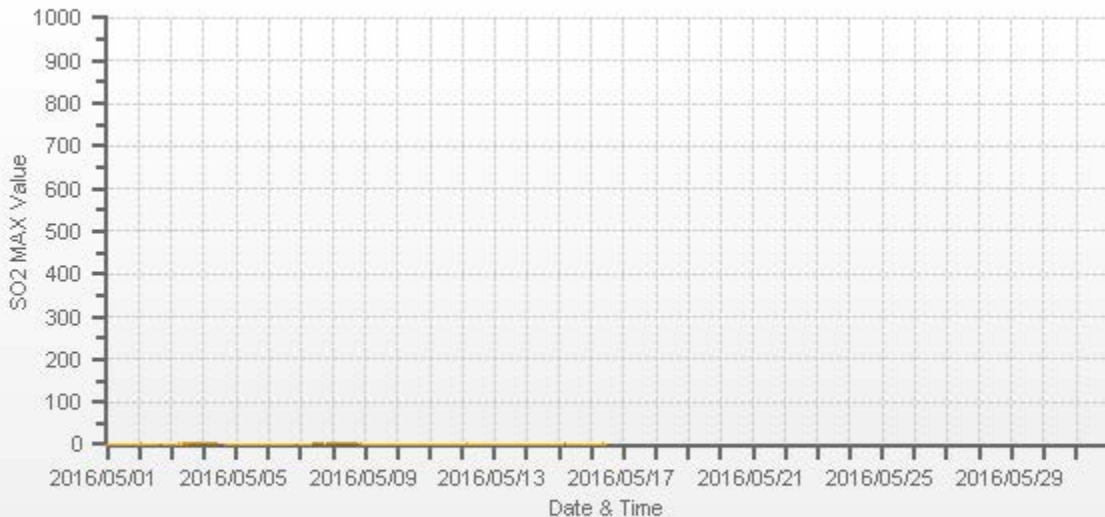
MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
DAY	MIN.	MAX.	AVG.	RDGS.																									
1	1.1	1.1	1.0	1.1	1.2	1.2	1.3	1.3	1.6	1.5	1.3	1.8	1.7	1.5	1.3	1.4	1.5	S	1.6	1.6	1.9	2.1	1.7	1.7	1.0	2.1	1.5	24	
2	1.7	2.9	1.8	1.8	1.9	1.6	1.5	1.5	1.5	1.5	1.6	1.5	1.5	1.5	1.6	1.4	S	1.6	1.6	1.6	1.7	1.7	1.9	2.1	1.4	2.9	1.7	24	
3	1.9	2.0	2.1	2.2	2.2	2.5	2.3	2.3	2.4	2.2	2.9	2.9	2.2	2.5	2.7	S	2.7	2.7	2.8	2.6	2.5	2.6	2.8	2.9	1.9	2.9	2.5	24	
4	2.6	2.8	2.7	2.8	3.0	3.0	3.0	3.0	2.8	2.9	2.9	C	C	C	C	C	1.0	1.4	1.5	1.4	1.9	1.5	1.8	1.7	1.0	3.0	2.3	24	
5	1.5	1.5	1.3	1.3	1.3	1.1	1.0	0.9	1.1	0.8	1.0	0.9	0.9	0.8	1.2	1.2	1.1	0.8	0.8	0.7	0.6	0.5	S	0.6	0.5	1.5	1.0	24	
6	0.4	0.5	0.5	0.4	0.5	0.3	0.2	0.2	0.1	0.1	0.1	0.0	0.2	R	0.4	0.5	0.6	0.6	0.6	1.0	1.2	S	0.6	0.8	0.0	1.2	0.4	23	
7	0.9	1.0	1.1	1.2	1.0	1.2	1.3	1.5	1.7	2.4	3.3	3.1	2.8	2.4	2.5	2.5	2.8	2.4	2.3	3.1	S	2.5	2.7	2.9	0.9	3.3	2.1	24	
8	2.9	3.1	3.2	3.3	3.3	3.3	3.2	2.9	2.9	3.0	2.7	2.6	2.8	2.6	2.5	2.6	2.6	2.7	S	2.3	2.4	2.3	2.2	2.2	3.3	2.8	24		
9	2.2	2.3	2.0	2.0	2.1	1.7	1.7	1.7	1.7	1.7	1.7	1.6	1.6	1.5	1.4	1.3	1.2	1.3	S	1.0	0.9	0.9	0.7	0.8	0.7	2.3	1.5	24	
10	0.9	0.8	0.7	0.8	0.9	0.8	0.6	0.7	0.4	0.6	0.6	0.6	0.6	0.8	0.7	0.5	0.7	S	0.6	0.8	0.6	0.6	0.6	0.7	0.4	0.9	0.7	24	
11	0.6	0.5	0.9	0.6	0.4	0.5	0.8	0.6	0.6	0.6	0.6	0.8	0.8	0.9	0.8	0.8	S	0.6	0.6	0.7	0.5	0.6	0.9	0.8	0.4	0.9	0.7	24	
12	0.6	0.8	1.0	2.4	2.0	0.8	0.6	0.6	0.4	0.5	0.6	0.4	0.6	0.7	0.6	S	0.4	0.4	0.4	0.4	0.4	0.2	0.2	0.3	0.2	2.4	0.7	24	
13	0.0	1.1	1.1	1.1	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	S	0.2	0.4	0.4	0.3	0.6	0.3	0.3	1.0	1.2	0.0	1.2	0.4	24	
14	1.9	2.3	1.9	1.5	0.8	0.6	0.9	0.4	0.5	0.6	0.5	0.6	0.6	S	0.5	0.8	0.8	0.7	0.9	0.8	0.8	1.1	0.8	1.0	0.4	2.3	0.9	24	
15	1.2	1.9	1.1	1.3	4.5	2.7	1.5	1.5	1.2	1.3	1.1	1.4	S	1.0	1.2	1.3	1.3	1.6	1.5	1.3	1.6	1.5	1.5	1.1	1.0	4.5	1.5	24	
16	1.2	1.3	1.0	1.2	1.2	1.5	1.5	1.3	1.3	2.4	1.5	S	C1	C1	C1	C1	C1								1.0	2.4	1.4	12	
17																													
18																													
19																													
20																													
21																													
22																													
23																													
24																													
25																													
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27																													
28																													
29																													
30																													
31																													
HOURLY MAX	2.9	3.1	3.2	3.3	4.5	3.3	3.2	3.0	2.9	3.0	3.3	3.1	2.8	2.6	2.7	2.5	2.8	2.7	2.8	3.1	2.5	2.6	2.8	2.9					
HOURLY AVG	1.4	1.6	1.5	1.6	1.6	1.4	1.3	1.3	1.3	1.4	1.4	1.3	1.3	1.4	1.3	1.2	1.3	1.3	1.3	1.3	1.3	1.2	1.3	1.4					

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

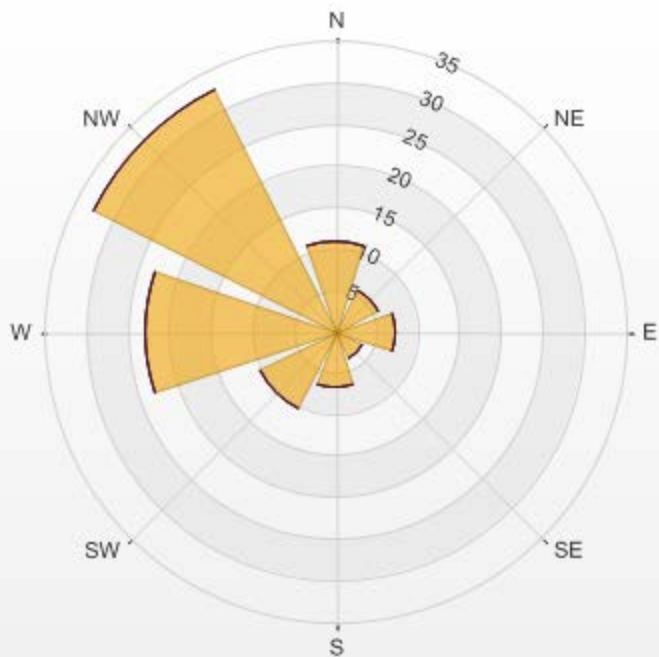
NUMBER OF NON-ZERO READINGS:	342
MAXIMUM INSTANTANEOUS VALUE:	4.5 PPB @ HOUR(S) 4 ON DAY(S) 15
	VAR-VARIOUS
IZS CALIBRATION TIME:	15 HRS
MONTHLY CALIBRATION TIME:	5 HRS
OPERATIONAL TIME:	371 HRS
STANDARD DEVIATION:	0.86



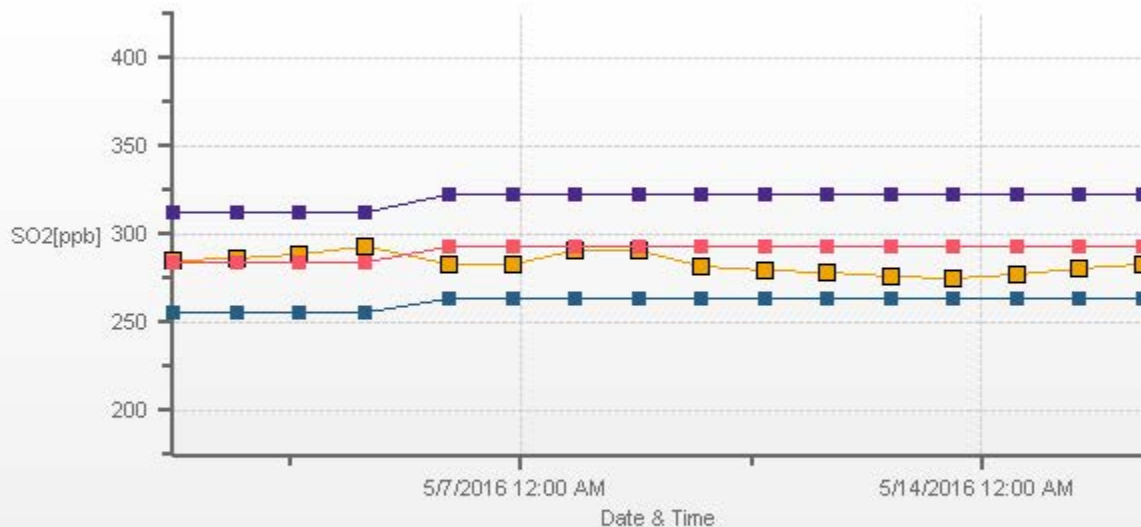
— SO2 MAX[ppb]

Wind: LICA ELK POINT AIRPORT Monitor: SO2 [ppb] Monthly: 05/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 89.54% 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	10.83	0	0	0	0	0	10.83
NE	5.7	0	0	0	0	0	5.7
E	7.12	0	0	0	0	0	7.12
SE	3.7	0	0	0	0	0	3.7
S	6.84	0	0	0	0	0	6.84
SW	10.26	0	0	0	0	0	10.26
W	23.08	0	0	0	0	0	23.08
NW	32.48	0	0	0	0	0	32.48
Summary	100	0	0	0	0	0	100



% Icon Classes (ppb)	0	20.0-60.0	0	60.0-110.0	0	110.0-170.0	0	170.0-340.0	0	>340.0
100										
	0.0-20.0									





***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 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	0.0	0.0	0.0	0.3	0.4	0.8	1.2	0.0	0.0	0.0	0.0	0.3	0.4	0.1	0.0	0.0	S	0.3	0.5	0.2	1.2	0.7	0.6	0.0	1.2	0.3	24	
2	0.9	1.4	1.5	1.0	1.5	1.5	1.5	1.0	1.2	1.4	0.9	1.6	2.2	1.0	0.7	1.4	S	1.2	0.9	0.7	0.6	1.0	1.0	0.6	0.6	2.2	1.2	24	
3	0.9	0.4	0.4	0.2	0.0	0.2	0.4	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.8	0.0	0.9	0.2	24	
4	0.2	0.1	0.0	0.3	0.4	0.4	0.8	0.6	0.4	0.4	0.5	C	C	C	C	C	0.1	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.1	0.0	0.8	0.3	24
5	0.4	0.0	0.1	0.1	0.0	0.2	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	S	0.0	0.0	0.4	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	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	2.4	0.1	24
7	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.3	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	0.3	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	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
9	0.0	0.0	0.0	0.5	0.6	0.4	0.2	0.2	0.2	0.2	0.1	0.4	0.5	0.5	0.4	0.5	0.7	0.5	S	0.9	1.0	0.7	0.6	0.8	0.0	1.0	0.4	24	
10	0.5	0.7	0.6	0.3	0.3	0.4	0.1	0.1	0.4	0.4	0.4	0.6	0.2	0.3	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.2	24	
11	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	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	24	
12	0.0	0.0	0.0	0.7	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	0.0	0.7	0.0	24	
13	0.0	0.5	1.1	0.5	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	0.5	0.0	1.1	0.1	24
14	1.1	1.4	1.1	0.8	0.4	0.3	0.5	0.3	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	0.2	0.1	0.2	0.0	1.4	0.3	24
15	0.3	0.8	0.4	0.4	1.9	0.5	0.2	0.4	0.2	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	0.0	0.0	0.0	1.9	0.2	24
16	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.0	0.0	S	C1	C1	C1	C1	C1									0.0	0.2	0.1	12
17																													
18																													
19																													
20																													
21																													
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23																													
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25																													
26																													
27																													
28																													
29																													
30																													
31																													
HOURLY MAX	1.1	1.4	1.5	1.0	1.9	1.5	1.5	1.2	1.2	1.4	0.9	1.6	2.2	2.4	0.7	1.4	0.7	1.2	0.9	0.9	1.0	1.2	1.0	0.8					
HOURLY AVG	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.1	0.2	0.2	0.4	0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.3	0.2	0.2				

**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

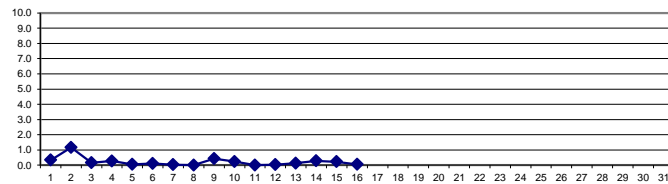
OBJECTIVE LIMIT:

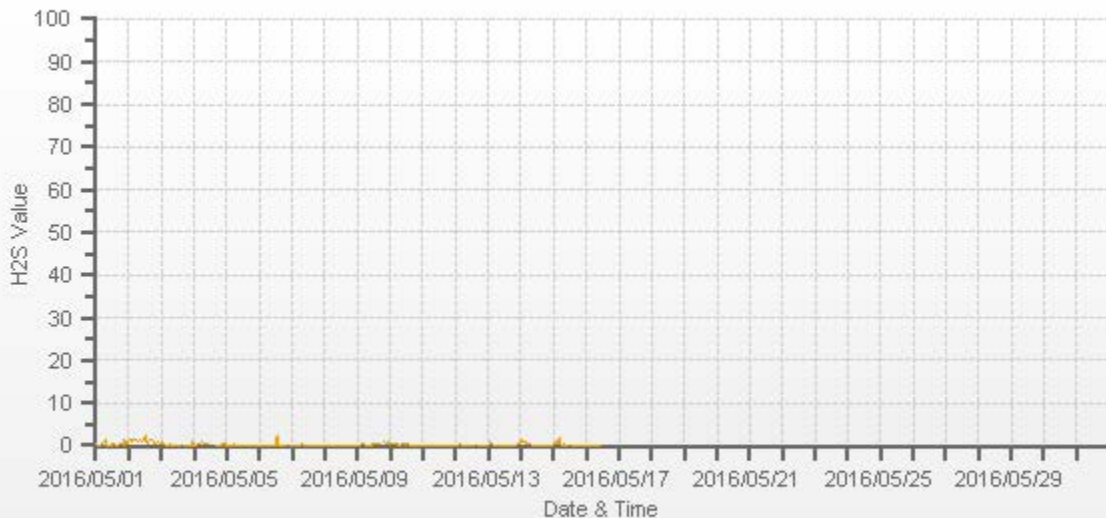
ALBERTA ENVIRONMENT:	1-HR	10	PPB	24-HR	3	PPB
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**MONTHLY SUMMARY**

NUMBER OF 1-HR EXCEEDENCES:	0		
NUMBER OF 24-HR EXCEEDENCES:	0		
NUMBER OF NON-ZERO READINGS:	138		
MINIMUM 1-HR AVERAGE:	0.0 PPB @ HOUR(S) VAR ON DAY(S) VAR		
MAXIMUM 1-HR AVERAGE:	2.4 PPB @ HOUR(S) 13 ON DAY(S) 6		
MAXIMUM 24-HR AVERAGE:	1.2 PPB ON DAY(S) 2		
	VAR-VARIOUS		
IZS CALIBRATION TIME:	15 HRS	OPERATIONAL TIME:	372 HRS
MONTHLY CALIBRATION TIME:	5 HRS	AMD OPERATION UPTIME:	50.0 %
STANDARD DEVIATION:	0.40	MONTHLY AVERAGE:	0.2 PPB

24 HOUR AVERAGES FOR May 2016





— 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	DAILY	24-HOUR	
DAY	MIN.	MAX.	AVG.	RDGS.																									
1	1.0	0.5	0.4	0.1	0.9	2.0	2.6	2.7	1.5	0.3	0.3	0.2	0.8	0.8	0.9	0.2	0.1	S	0.9	0.9	0.8	1.6	0.9	1.1	0.1	2.7	0.9	24	
2	1.5	1.7	2.3	2.0	1.5	1.3	1.4	0.8	0.7	1.3	1.0	2.8	2.8	1.0	0.0	0.8	S	0.6	0.7	0.6	0.7	1.0	0.9	0.7	0.0	2.8	1.2	24	
3	1.2	0.9	0.8	0.8	0.3	0.9	1.0	1.0	0.9	0.8	0.7	1.0	1.0	0.6	0.8	S	1.3	0.8	0.9	0.8	1.8	1.2	1.3	2.1	0.3	2.1	1.0	24	
4	1.9	1.2	1.0	1.0	1.4	1.3	2.0	1.7	0.9	0.9	0.9	C	C	C	C	C	0.9	0.0	0.3	0.1	0.6	0.6	0.7	0.5	0.0	2.0	0.9	24	
5	0.8	0.4	0.5	0.6	0.2	0.9	0.8	0.3	0.2	0.1	0.0	0.0	0.0	0.2	0.1	0.3	0.2	0.5	0.4	0.2	0.3	0.4	S	1.0	0.0	1.0	0.4	24	
6	1.1	0.0	0.3	0.4	0.5	0.2	0.2	0.3	0.3	0.0	0.0	0.0	0.0	R	0.9	0.7	0.6	0.0	0.1	0.1	0.4	S	0.5	0.3	0.0	1.1	0.3	23	
7	0.3	0.4	0.4	1.1	0.6	0.8	0.7	0.9	0.8	0.9	0.6	0.5	0.3	0.8	0.7	0.5	0.5	0.5	0.4	1.0	S	1.1	0.9	0.9	0.3	1.1	0.7	24	
8	0.7	0.7	0.8	1.0	0.9	0.8	0.6	0.7	0.7	0.4	0.4	0.4	0.6	0.5	0.6	0.5	0.5	0.4	0.6	S	0.8	0.6	0.3	0.5	0.3	1.0	0.6	24	
9	0.4	0.3	0.7	1.0	1.0	0.8	0.6	0.3	0.3	0.2	0.2	0.4	0.3	0.2	0.0	0.3	0.2	0.0	S	0.6	0.6	0.5	0.2	0.4	0.0	1.0	0.4	24	
10	0.3	0.4	0.2	0.2	0.0	0.1	0.1	0.0	0.3	0.3	0.7	1.0	0.2	0.2	0.0	0.0	0.1	S	0.0	0.1	0.2	0.0	0.2	0.1	0.0	1.0	0.2	24	
11	0.1	0.1	0.0	0.0	0.3	0.6	0.5	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.6	0.6	S	0.5	0.0	0.0	0.0	0.3	0.1	0.0	0.0	0.6	0.2	24	
12	0.0	0.1	0.4	1.8	1.4	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	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.2	24	
13	0.0	1.0	1.1	1.2	0.0	0.2	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	3.0	0.0	0.1	0.8	1.0	0.0	3.0	0.4	24	
14	1.5	1.7	1.8	1.3	0.8	0.5	0.7	0.7	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.3	0.3	0.2	0.4	0.0	1.8	0.5	24
15	0.6	1.2	0.7	0.7	3.4	1.6	0.5	0.6	0.5	0.3	0.1	0.2	S	0.1	0.1	0.2	0.3	0.2	0.1	0.2	0.6	0.2	0.4	0.5	0.1	3.4	0.6	24	
16	0.6	0.2	0.3	0.5	0.4	0.5	0.6	0.7	0.7	0.3	0.1	S	C1	C1	C1	C1	C1									0.1	0.7	0.4	12
17																													
18																													
19																													
20																													
21																													
22																													
23																													
24																													
25																													
26																													
27																													
28																													
29																													
30																													
31																													
HOURLY MAX	1.9	1.7	2.3	2.0	3.4	2.0	2.6	2.7	1.5	1.3	1.0	2.8	2.8	1.0	0.9	0.8	1.3	0.8	0.9	3.0	1.8	1.6	1.3	2.1					
HOURLY AVG	0.8	0.7	0.7	0.9	0.9	0.8	0.8	0.7	0.5	0.4	0.3	0.5	0.5	0.4	0.4	0.3	0.4	0.3	0.3	0.6	0.5	0.6	0.5	0.6					

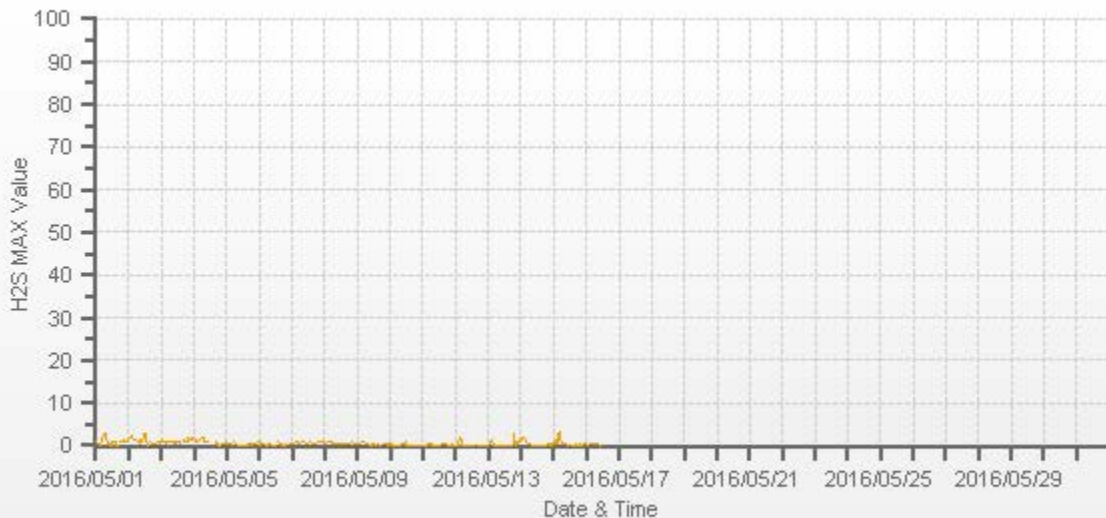
STATUS FLAG CODES

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:	280
MAXIMUM INSTANTANEOUS VALUE:	3.4 PPB @ HOUR(S) 4 ON DAY(S) 15
	VAR-VARIOUS
IZS CALIBRATION TIME:	15 HRS
MONTHLY CALIBRATION TIME:	5 HRS
OPERATIONAL TIME:	371 HRS
STANDARD DEVIATION:	0.56

H2S MAX[ppb] Station: LICA ELK POINT AIRPORT Monthly: 05/2016 Type: AVG 1 Hr. [1 Hr.]

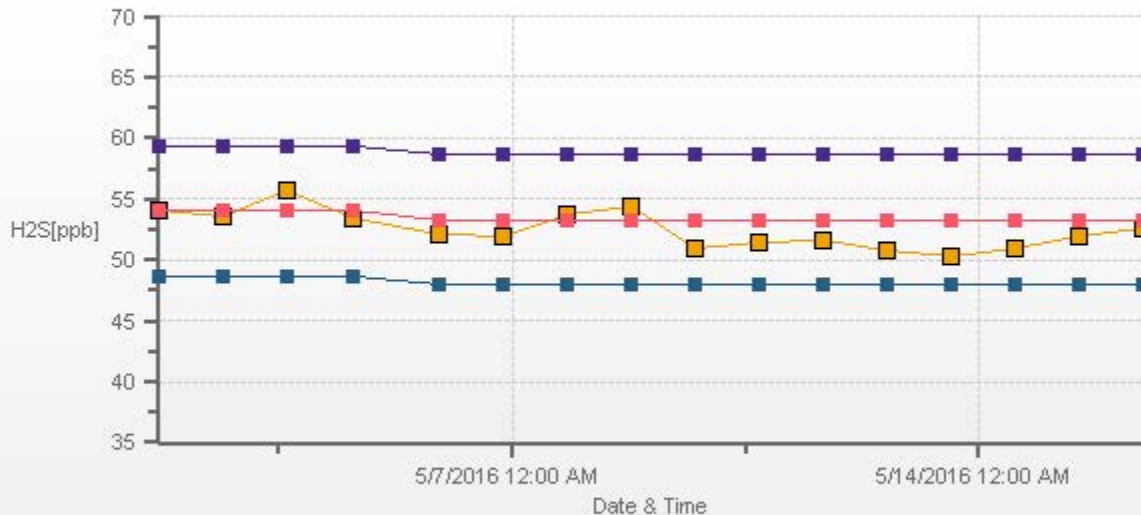


— H2S MAX[ppb]

Wind: LICA ELK POINT AIRPORT Monitor: H2S [ppb] Monthly: 05/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 89.54% Calm Avg: 0.00

Direction	0.0-3.0	3.0-10.0	10.0-50.0	>50.0	Total
N	10.83	0	0	0	10.83
NE	5.7	0	0	0	5.7
E	7.12	0	0	0	7.12
SE	3.7	0	0	0	3.7
S	6.84	0	0	0	6.84
SW	10.26	0	0	0	10.26
W	23.08	0	0	0	23.08
NW	32.48	0	0	0	32.48
Summary	100	0	0	0	100

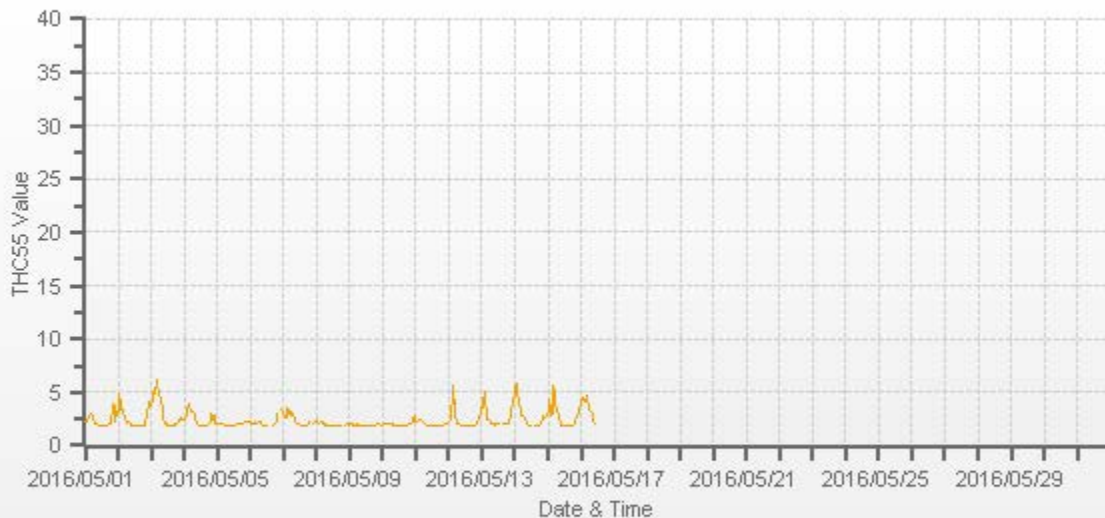






***TOTAL HYDROCARBON***





— THC55[ppm]



TOTAL HYDROCARBONS MAX instantaneous maximum in ppm

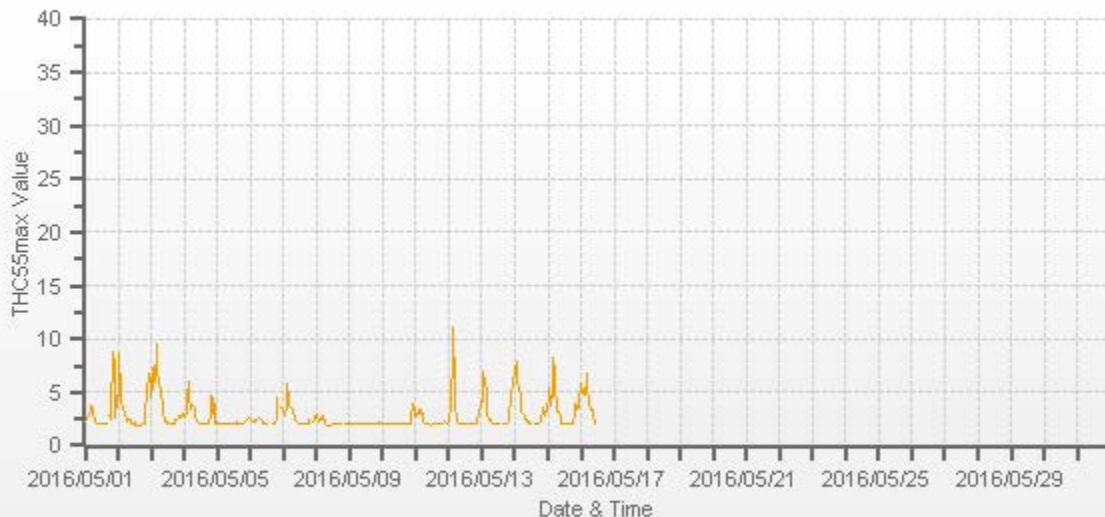
MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.	
DAY																														
1		2.29	2.44	2.68	2.92	3.17	3.69	2.85	2.36	2.14	2.08	2.00	2.00	2.02	2.00	2.12	2.05	2.09	S	2.91	2.45	8.85	8.29	2.56	4.61	2.00	8.85	3.07	24	
2		4.62	8.56	3.98	3.69	3.55	2.89	2.56	2.29	2.45	2.35	2.03	2.10	2.16	1.96	1.96	1.95	S	1.96	2.03	2.15	4.02	4.80	6.49	6.68	1.95	8.56	3.36	24	
3		4.58	5.72	7.31	5.98	9.62	6.28	5.79	4.92	4.35	2.91	2.21	2.19	2.06	2.00	1.99	S	2.02	2.01	2.36	2.35	2.81	2.57	2.84	3.02	1.99	9.62	3.82	24	
4		2.64	2.85	3.47	6.05	4.09	3.47	3.77	3.67	2.81	2.27	2.00	1.99	2.01	1.99	S	2.02	1.98	2.05	2.11	2.89	4.73	2.95	3.99	2.08	1.98	6.05	2.95	24	
5		2.16	2.08	2.07	2.01	2.03	1.98	2.00	1.98	1.98	2.00	1.98	1.99	1.99	2.00	2.01	2.19	2.02	2.03	2.12	2.10	2.32	2.37	S	2.65	1.98	2.65	2.09	24	
6		2.41	2.48	2.31	2.30	2.41	2.43	2.55	2.41	2.45	2.00	2.00	2.01	2.01	R	R	R	1.99	2.00	2.02	2.60	4.42	S	3.64	3.37	1.99	4.42	2.49	21	
7		3.18	2.90	3.44	5.89	3.69	3.52	3.55	3.15	2.82	2.37	2.16	2.03	2.02	2.00	2.01	1.99	2.00	2.00	2.15	2.39	S	2.18	2.17	2.73	1.99	5.89	2.71	24	
8		2.92	2.59	2.31	2.64	2.41	2.73	1.99	1.95	1.95	1.97	1.94	1.95	2.00	2.01	2.08	2.00	1.98	2.05	2.06	S	2.09	2.01	2.03	2.23	1.94	2.92	2.17	24	
9		2.01	2.11	2.03	2.06	2.02	2.08	2.02	1.99	1.99	1.99	1.99	1.99	2.02	1.98	1.99	1.99	1.99	1.99	S	2.00	2.02	2.25	2.03	2.01	1.98	2.25	2.02	24	
10		2.03	2.06	2.07	2.10	2.10	2.11	2.09	2.04	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.98	S	1.99	2.03	2.04	3.10	3.86	3.43	1.98	3.86	2.22	24	
11		2.63	2.83	3.36	2.92	3.34	2.90	2.11	2.02	2.00	1.99	1.99	1.97	1.98	1.98	1.98	1.98	S	1.98	1.99	1.99	2.00	2.18	2.14	2.13	1.97	3.36	2.28	24	
12		2.49	3.17	4.56	11.04	7.34	3.28	2.31	2.04	2.01	1.99	1.99	1.99	1.98	1.99	1.99	S	2.00	1.99	2.00	1.99	2.02	2.58	3.38	3.55	1.98	11.04	3.03	24	
13		4.21	6.92	5.86	5.39	2.89	2.51	2.41	2.20	2.12	2.02	2.01	2.01	2.02	2.03	S	2.02	2.05	2.03	2.01	2.27	3.38	4.09	5.55	6.44	2.01	6.92	3.24	24	
14		6.78	7.89	5.73	5.45	4.65	3.25	2.98	2.83	2.32	2.37	2.04	2.00	2.00	S	2.00	2.00	2.01	2.00	2.01	2.20	3.49	3.40	2.88	3.43	2.00	7.89	3.29	24	
15		4.22	5.39	3.84	4.54	8.29	5.63	4.08	3.27	3.17	2.57	2.07	2.00	S	2.00	1.99	1.99	2.00	1.99	2.02	2.70	4.00	3.43	3.65	4.90	1.99	8.29	3.47	24	
16		5.77	4.90	4.89	4.67	6.70	4.67	3.97	3.43	3.34	2.79	2.10	S	C	C	C	C									2.10	6.70	4.29	16	
17																														
18																														
19																														
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HOURLY MAX		6.78	8.56	7.31	11.04	9.62	6.28	5.79	4.92	4.35	2.91	2.21	2.19	2.16	2.03	2.12	2.19	2.09	2.05	2.91	2.89	8.85	8.29	6.49	6.68					
HOURLY AVG		3.43	4.06	3.74	4.35	4.27	3.34	2.94	2.66	2.49	2.23	2.03	2.01	2.02	1.99	2.01	2.01	2.01	2.01	2.13	2.29	3.44	3.30	3.37	3.55					

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

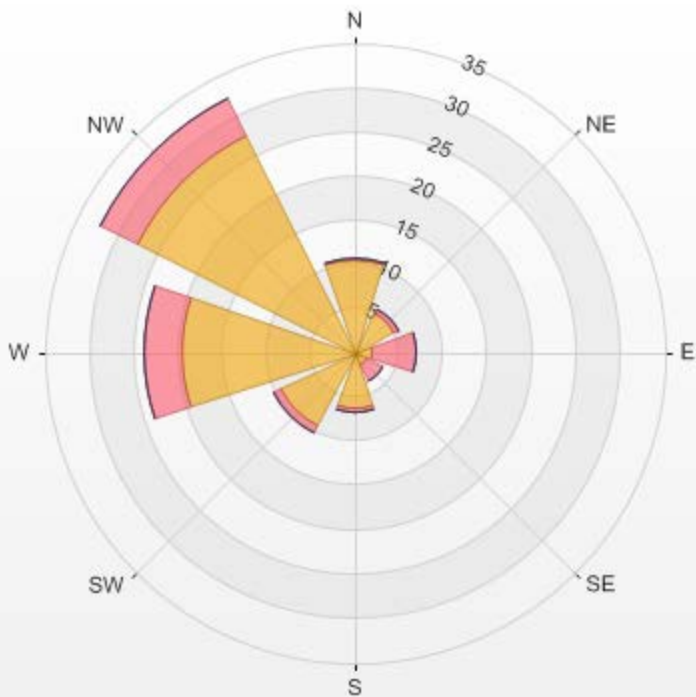
NUMBER OF NON-ZERO READINGS:	353
MAXIMUM INSTANTANEOUS VALUE:	11.04 PPM @ HOUR(S) 3 ON DAY(S) 12
	VAR-VARIOUS
IZS CALIBRATION TIME:	16 HRS
MONTHLY CALIBRATION TIME:	4 HRS
OPERATIONAL TIME:	373 HRS
STANDARD DEVIATION:	1.44



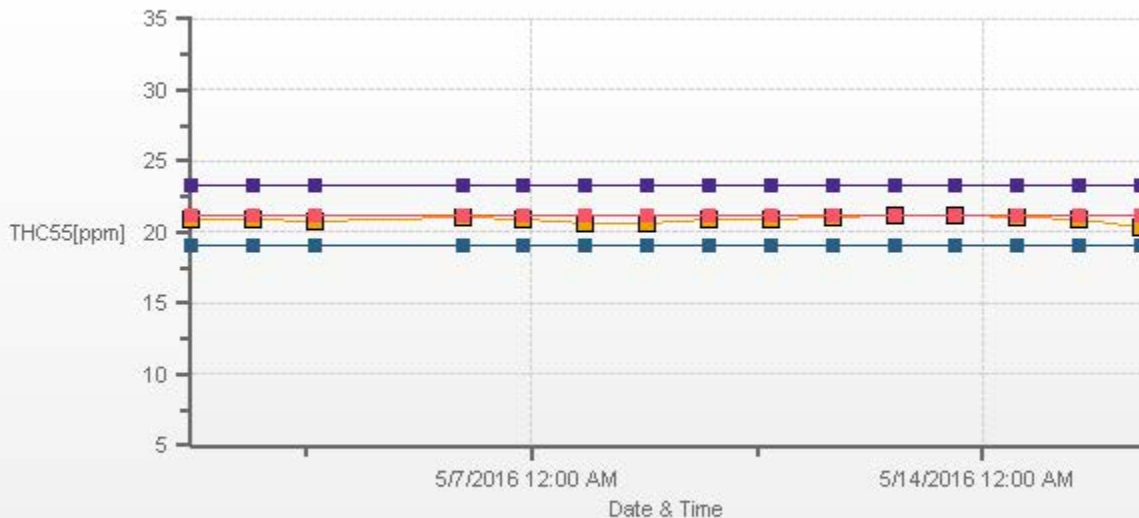
— THC55max[ppm]

Wind: LICA ELK POINT AIRPORT Monitor: THC55 [ppm] Monthly: 05/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr  
 Calm: 0.00% Valid Data: 90.31% Calm Avg: 0.00

Direction	0.0-3.0	3.0-10.0	10.0-50.0	>50.0	Total
N	10.45	0.28	0	0	10.73
NE	5.08	0.56	0	0	5.64
E	1.98	5.08	0	0	7.06
SE	1.69	1.98	0	0	3.67
S	6.21	0.56	0	0	6.77
SW	9.32	0.85	0	0	10.17
W	19.49	4.24	0	0	23.73
NW	27.4	4.8	0	0	32.2
Summary	81.62	18.35	0	0	100



% Icon Classes (ppm)	82	0.0-3.0	18	3.0-10.0	0	10.0-50.0	0	>50.0
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***METHANE***

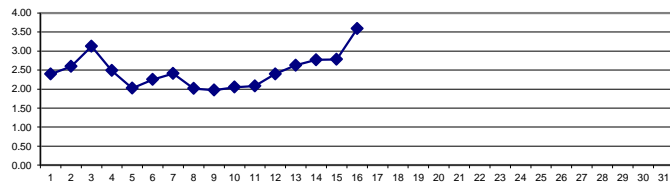
METHANE (CH4) hourly averages in ppm

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	2.18	2.19	2.46	2.55	2.92	3.01	2.57	2.15	2.07	2.02	1.97	1.97	1.97	1.96	1.95	1.96	1.95	S	2.11	2.09	3.72	3.91	2.32	3.09	1.95	3.91	2.40	24	
2	3.23	4.83	3.34	3.34	2.98	2.58	2.32	2.13	2.34	2.10	1.95	1.92	1.93	1.93	1.93	1.92	S	1.92	1.93	1.97	2.41	3.06	3.65	3.90	1.92	4.83	2.59	24	
3	3.33	4.09	4.93	4.78	6.03	5.27	4.73	4.54	3.67	2.42	2.09	2.01	1.97	1.96	1.94	S	1.94	1.96	2.06	2.13	2.52	2.41	2.59	2.42	1.94	6.03	3.12	24	
4	2.48	2.66	2.98	4.00	3.54	3.12	3.21	3.19	2.40	2.11	1.97	1.94	1.94	1.95	1.93	1.94	1.93	1.96	1.98	2.23	3.01	2.36	2.77	2.03	1.93	4.00	2.48	24	
5	2.05	2.05	2.02	1.98	1.99	1.96	1.97	1.97	1.95	1.96	1.96	1.96	1.95	1.96	1.97	2.01	1.99	1.99	2.01	2.06	2.25	2.21	S	2.23	1.95	2.25	2.02	24	
6	2.07	2.18	2.15	2.14	2.26	2.12	2.33	2.22	2.11	1.97	1.97	1.96	1.97	R	R	R	1.97	1.97	1.98	2.16	2.88	S	3.37	3.24	1.96	3.37	2.25	21	
7	3.05	2.69	2.68	3.59	3.21	2.91	3.17	2.87	2.60	2.19	2.05	1.99	1.98	1.97	1.96	1.97	1.97	1.94	2.02	2.20	S	2.12	2.13	2.20	1.94	3.59	2.41	24	
8	2.48	2.19	2.10	2.20	2.13	2.25	1.95	1.91	1.91	1.91	1.92	1.92	1.92	1.94	1.93	1.93	1.95	1.95	1.95	S	1.96	1.94	1.99	2.00	1.91	2.48	2.01	24	
9	1.97	2.02	1.96	2.00	1.97	2.01	1.97	1.96	1.95	1.94	1.95	1.94	1.96	1.96	1.95	1.96	1.96	1.97	S	1.96	1.99	2.06	1.99	1.97	1.94	2.06	1.97	24	
10	1.99	2.03	2.04	2.06	2.06	2.08	2.05	1.99	1.95	1.95	1.96	1.97	1.96	1.95	1.93	1.96	1.95	S	1.96	1.98	1.98	2.12	2.36	2.88	1.93	2.88	2.05	24	
11	2.27	2.24	2.49	2.41	2.41	2.22	2.04	1.98	1.97	1.95	1.95	1.94	1.95	1.95	1.96	1.95	S	1.96	1.95	1.95	1.97	2.09	2.10	2.07	1.94	2.49	2.08	24	
12	2.14	2.38	3.26	5.52	3.94	2.65	2.13	2.01	1.98	1.95	1.92	1.94	1.96	1.96	1.95	S	1.97	1.97	1.97	1.96	1.98	2.03	2.57	3.00	1.92	5.52	2.40	24	
13	3.50	4.17	4.95	3.57	2.45	2.36	2.25	2.09	2.07	1.97	1.99	1.99	2.00	1.99	S	1.99	1.99	1.98	1.99	1.99	2.35	2.82	3.72	4.15	1.97	4.95	2.62	24	
14	5.11	5.70	4.64	4.32	3.21	2.76	2.72	2.37	2.20	2.15	1.96	1.96	1.94	S	1.94	1.96	1.97	1.95	1.96	2.06	2.35	2.81	2.57	3.06	1.94	5.70	2.77	24	
15	3.24	4.23	2.90	3.04	5.64	4.44	3.43	3.10	2.69	2.19	1.96	1.93	S	1.95	1.96	1.93	1.95	1.95	1.97	2.05	2.41	2.59	2.97	3.42	1.93	5.64	2.78	24	
16	4.06	4.27	4.42	4.16	4.74	3.97	3.37	3.28	2.98	2.22	2.00	S	C	C	C	C									2.00	4.74	3.59	16	
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HOURLY MAX	5.11	5.70	4.95	5.52	6.03	5.27	4.73	4.54	3.67	2.42	2.09	2.01	2.00	1.99	1.97	2.01	1.99	1.99	2.11	2.23	3.72	3.91	3.72	4.15					
HOURLY AVG	2.82	3.12	3.08	3.23	3.22	2.86	2.64	2.49	2.30	2.06	1.97	1.96	1.96	1.96	1.95	1.96	1.96	1.96	1.99	2.06	2.41	2.47	2.65	2.78					

STATUS FLAG CODES

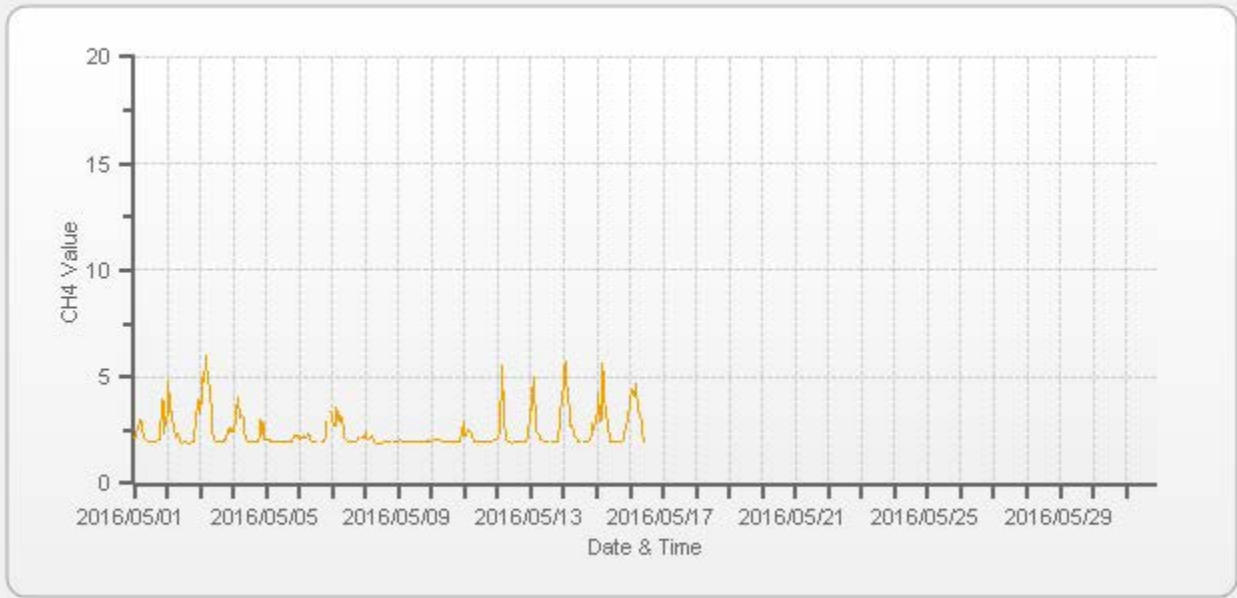
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

24 HOUR AVERAGES FOR May 2016



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	354			
MINIMUM 1-HR AVERAGE:	1.91	PPM @ HOUR(S)	14	ON DAY(S) 6
MAXIMUM 1-HR AVERAGE:	6.03	PPM @ HOUR(S)	4	ON DAY(S) 3
MAXIMUM 24-HR AVERAGE:	3.59	PPM		ON DAY(S) 16
				VAR-VARIOUS
IZS CALIBRATION TIME:	15	HRS	OPERATIONAL TIME:	373
MONTHLY CALIBRATION TIME:	4	HRS	AMD OPERATION UPTIME:	50.1
STANDARD DEVIATION:	0.79		MONTHLY AVERAGE:	2.44
				PPM



— CH4[ppm]



METHANE MAX instantaneous maximum in ppm

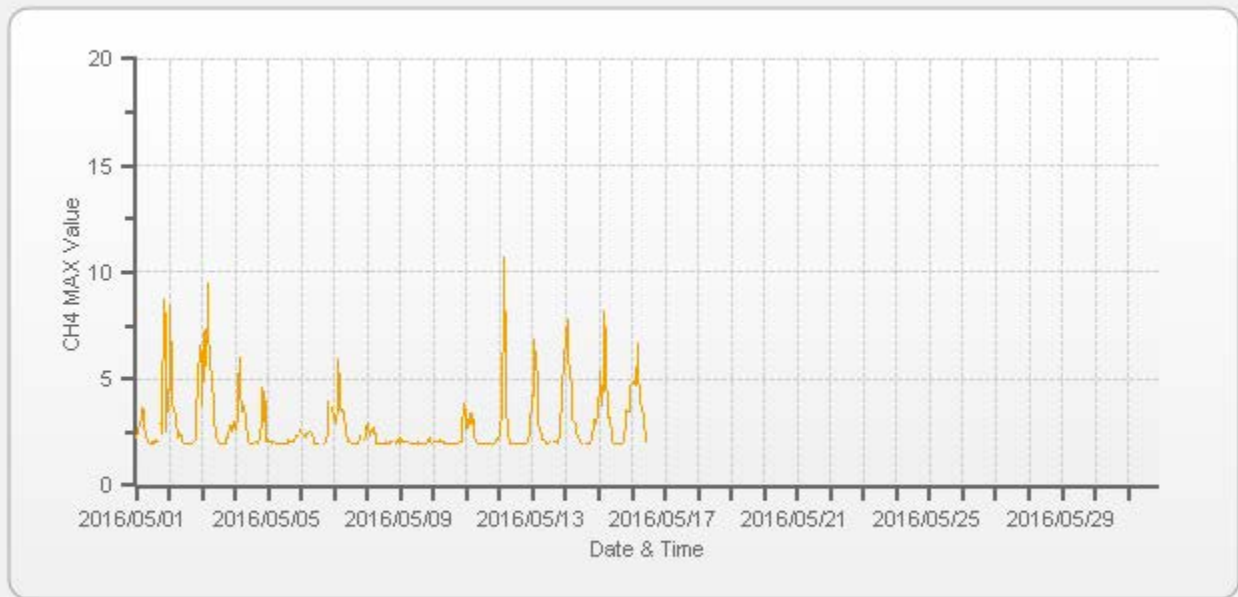
MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
DAY	MIN.	MAX.	AVG.	RDGS.																									
1	2.30	2.45	2.69	2.92	3.17	3.68	2.84	2.36	2.14	2.08	2.00	2.00	2.02	2.00	2.12	2.06	2.10	S	2.91	2.45	8.70	8.15	2.52	4.52	2.00	8.70	3.05	24	
2	4.53	8.44	3.90	3.68	3.55	2.89	2.56	2.29	2.45	2.35	2.03	1.95	1.95	1.95	1.94	S	1.95	2.03	2.16	3.96	4.58	6.43	6.53	1.94	8.44	3.31	24		
3	3.80	5.73	7.25	5.68	9.53	6.30	5.75	4.86	4.25	2.91	2.21	2.20	2.06	2.00	1.99	S	2.00	2.01	2.21	2.36	2.81	2.56	2.84	3.03	1.99	9.53	3.75	24	
4	2.65	2.86	3.47	6.05	4.09	3.47	3.76	3.51	2.81	2.27	2.00	1.98	2.01	1.99	S	2.02	1.98	2.05	2.12	2.89	4.64	2.96	3.99	2.08	1.98	6.05	2.94	24	
5	2.17	2.09	2.07	2.01	2.03	1.99	2.00	1.98	1.98	2.00	1.98	1.99	1.99	2.00	2.01	2.20	2.02	2.03	2.12	2.11	2.32	2.37	S	2.65	1.98	2.65	2.09	24	
6	2.41	2.47	2.32	2.30	2.42	2.43	2.54	2.41	2.45	2.00	2.00	2.01	2.01	R	R	R	1.99	2.01	2.02	2.49	3.93	S	3.62	3.37	1.99	3.93	2.46	21	
7	3.18	2.91	3.44	5.90	3.68	3.52	3.55	3.15	2.81	2.37	2.11	2.03	2.02	2.00	2.01	1.99	2.00	2.00	2.15	2.39	S	2.19	2.18	2.74	1.99	5.90	2.71	24	
8	2.92	2.59	2.32	2.64	2.41	2.74	1.99	1.94	1.94	1.97	1.94	1.95	2.00	2.01	2.09	2.00	1.98	2.05	2.07	S	2.10	2.01	2.04	2.22	1.94	2.92	2.17	24	
9	2.01	2.12	2.03	2.07	2.02	2.08	2.02	1.98	1.99	1.99	1.99	1.98	2.02	1.98	1.99	1.99	1.99	1.99	S	2.00	2.02	2.25	2.03	2.01	1.98	2.25	2.02	24	
10	2.03	2.06	2.07	2.10	2.11	2.12	2.09	2.05	1.99	1.99	2.00	1.99	1.98	1.99	1.99	1.99	1.99	S	1.99	2.04	2.04	3.10	3.82	3.44	1.98	3.82	2.22	24	
11	2.63	2.83	3.36	2.92	3.34	2.90	2.12	2.02	2.00	1.99	1.99	1.97	1.98	1.98	1.98	1.98	S	1.98	1.99	1.99	2.00	2.18	2.15	2.13	1.97	3.36	2.28	24	
12	2.48	3.17	4.56	10.73	7.19	3.27	2.32	2.04	2.01	1.99	1.99	1.99	1.99	1.99	1.99	S	2.00	2.00	2.00	1.99	2.02	2.22	3.30	3.54	1.99	10.73	2.99	24	
13	4.20	6.81	5.77	5.32	2.89	2.51	2.42	2.20	2.13	2.02	2.01	2.01	2.02	2.03	S	2.02	2.05	2.03	2.01	2.27	3.01	4.09	5.46	6.28	2.01	6.81	3.20	24	
14	6.68	7.79	5.74	5.37	4.64	3.09	2.98	2.83	2.32	2.37	2.04	2.00	2.00	S	2.00	2.00	2.01	2.00	2.02	2.21	2.94	3.10	2.88	3.44	2.00	7.79	3.24	24	
15	4.21	5.39	3.77	4.54	8.19	5.64	4.08	3.21	3.18	2.57	2.07	2.00	S	2.00	1.99	1.99	2.00	1.99	2.02	2.69	3.55	3.44	3.49	4.65	1.99	8.19	3.42	24	
16	4.76	4.77	4.88	4.66	6.71	4.54	3.96	3.43	3.34	2.79	2.11	S	C	C	C	C									2.11	6.71	4.18	16	
17																													0
18																													0
19																													0
20																													0
21																													0
22																													0
23																													0
24																													0
25																													0
26																													0
27																													0
28																													0
29																													0
30																													0
31																													0
HOURLY MAX	6.68	8.44	7.25	10.73	9.53	6.30	5.75	4.86	4.25	2.91	2.21	2.20	2.06	2.03	2.12	2.20	2.10	2.05	2.91	2.89	8.70	8.15	6.43	6.53					
HOURLY AVG	3.31	4.03	3.73	4.31	4.25	3.32	2.94	2.64	2.49	2.23	2.03	2.00	2.00	1.99	2.01	2.02	2.01	2.01	2.12	2.29	3.29	3.23	3.34	3.51					

STATUS FLAG CODES

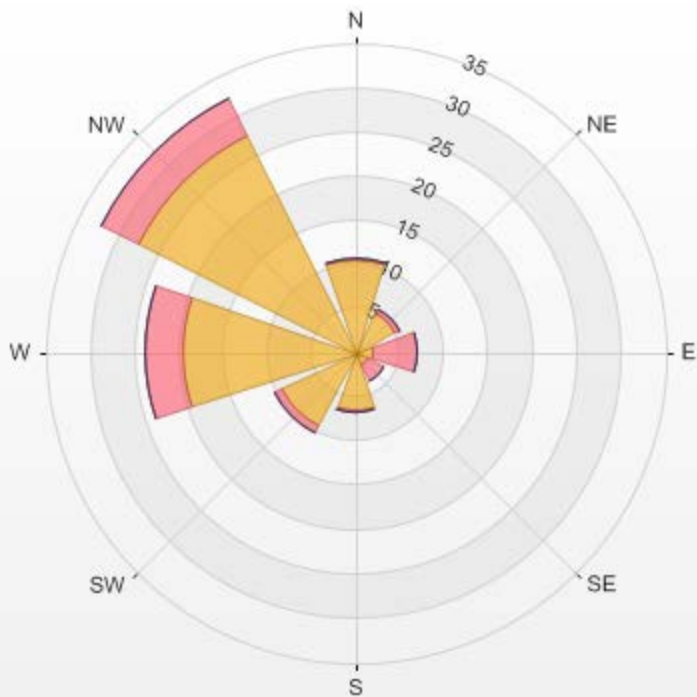
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	353
MAXIMUM INSTANTANEOUS VALUE:	10.73 PPM @ HOUR(S) 3 ON DAY(S) 12
	VAR-VARIOUS
IZS CALIBRATION TIME:	16 HRS
MONTHLY CALIBRATION TIME:	4 HRS
OPERATIONAL TIME:	373 HRS
STANDARD DEVIATION:	1.40



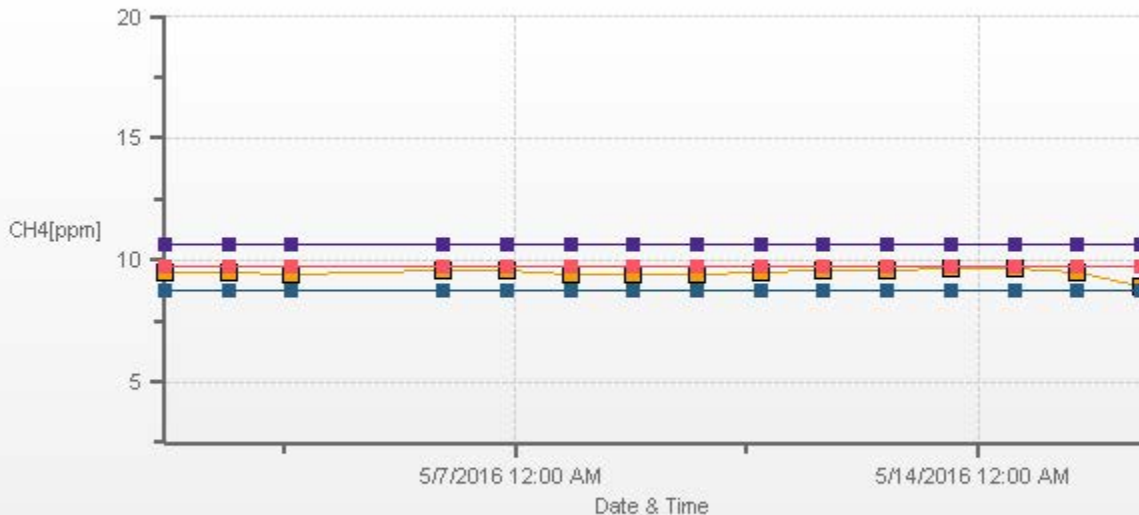
— CH4 MAX[%]



% Icon Classes (ppm)	82	0.0-3.0	18	3.0-10.0	0	10.0-50.0	0	>50.0
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Wind: LICA ELK POINT AIRPORT Monitor: CH4 [ppm] Monthly: 05/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 90.31% Calm Avg: 0.00

Direction	0.0-3.0	3.0-10.0	10.0-50.0	>50.0	Total
N	10.45	0.28	0	0	10.73
NE	5.08	0.56	0	0	5.64
E	1.98	5.08	0	0	7.06
SE	1.69	1.98	0	0	3.67
S	6.5	0.28	0	0	6.78
SW	9.32	0.85	0	0	10.17
W	19.49	4.24	0	0	23.73
NW	27.4	4.8	0	0	32.2
Summary	81.91	18.07	0	0	100





***NON-METHANE HYDROCARBON***

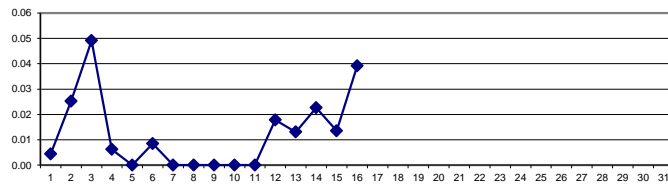
NON-METHANE HYDROCARBONS (NMHC) hourly averages in ppm

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	0.00	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	0.04	0.04	0.00	0.02	0.00	0.04	0.00	24
2	0.02	0.05	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	S	0.00	0.00	0.00	0.02	0.11	0.06	0.31	0.00	0.31	0.03	24
3	0.36	0.24	0.11	0.20	0.10	0.03	0.02	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.36	0.05	24
4	0.00	0.00	0.01	0.01	0.00	0.00	0.03	0.01	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	0.03	0.00	0.00	0.00	0.06	0.01	24
5	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	0.00	0.00	24
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	R	R	R	0.00	0.00	0.00	0.01	0.16	S	0.00	0.00	0.00	0.00	0.16	0.01	21
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	0.00	S	0.00	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	0.00	S	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	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	0.00	0.00	0.00	S	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	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
12	0.06	0.00	0.00	0.11	0.03	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	0.16	0.04	0.01	0.00	0.16	0.02	24
13	0.00	0.02	0.04	0.01	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	0.07	0.03	0.05	0.08	0.00	0.08	0.01	24
14	0.05	0.06	0.03	0.02	0.00	0.14	0.02	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	0.13	0.07	0.00	0.00	0.00	0.00	0.14	0.02	24
15	0.00	0.03	0.01	0.00	0.08	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	0.01	0.02	0.00	0.01	0.15	0.00	0.15	0.01	24	
16	0.27	0.07	0.07	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	S	C	C	C	C	0.00	0.00	0.00	0.01	0.02	0.00	0.01	0.15	0.00	0.15	0.01	24	
17																													16
18																													
19																													
20																													
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31																													
HOURLY MAX	0.36	0.24	0.11	0.20	0.10	0.14	0.03	0.03	0.02	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.16	0.16	0.06	0.31				
HOURLY AVG	0.05	0.03	0.02	0.02	0.01	0.01	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	0.04	0.03	0.01	0.04				

STATUS FLAG CODES

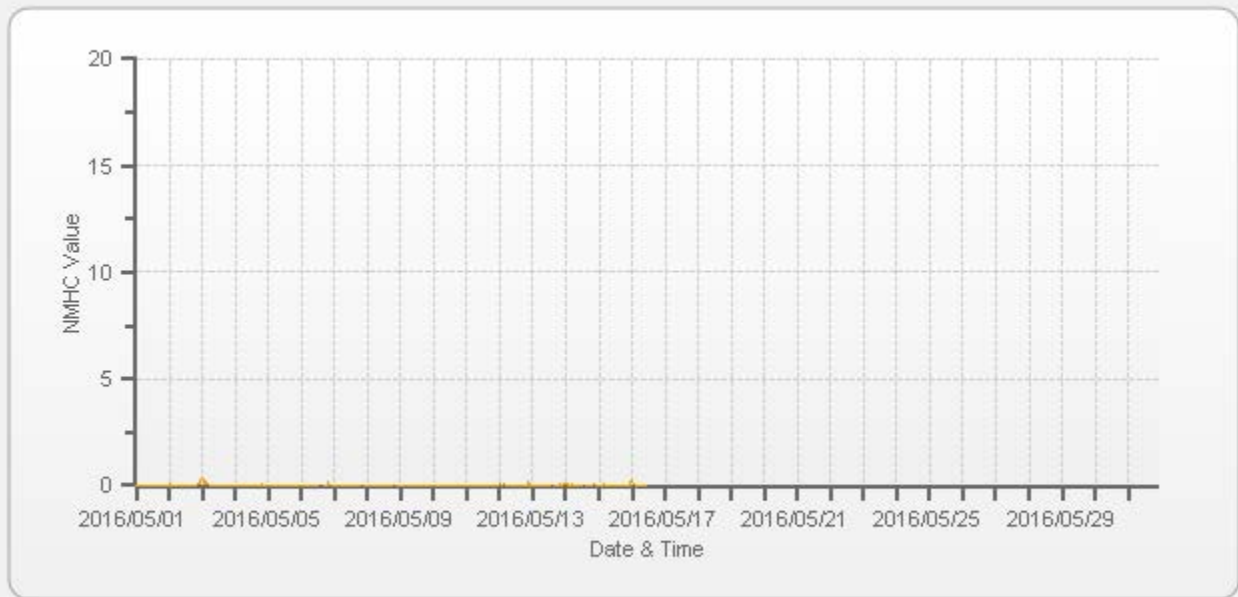
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

24 HOUR AVERAGES FOR May 2016



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	61				
MINIMUM 1-HR AVERAGE:	0.00	PPM @ HOUR(S)	VAR	ON DAY(S)	ALL
MAXIMUM 1-HR AVERAGE:	0.36	PPM @ HOUR(S)	0	ON DAY(S)	3
MAXIMUM 24-HR AVERAGE:	0.05	PPM		ON DAY(S)	3
				VAR-VARIOUS	
IZS CALIBRATION TIME:	15	HRS	OPERATIONAL TIME:	373	HRS
MONTHLY CALIBRATION TIME:	4	HRS	AMD OPERATION UPTIME:	50.1	%
STANDARD DEVIATION:	0.04		MONTHLY AVERAGE:	0.01	PPM



— NMHC[ppm]



NON-METHANE HYDROCARBONS MAX instantaneous maximum in ppm

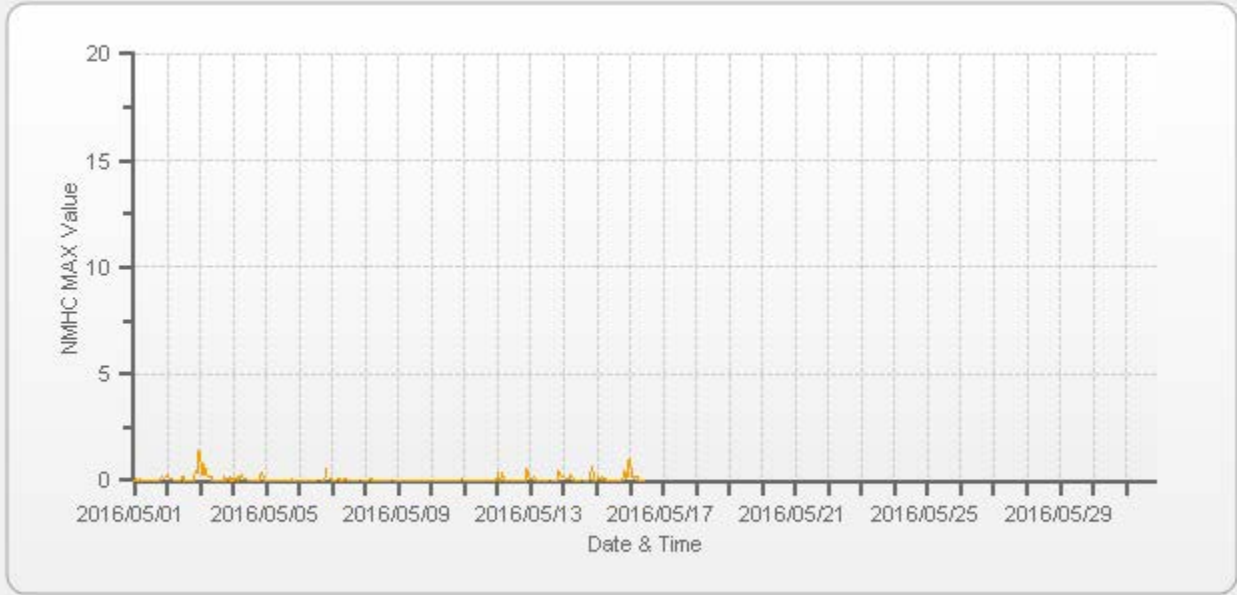
MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
DAY	MIN.	MAX.	AVG.	RDGS.																									
1	0.00	0.00	0.12	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.17	0.16	0.08	0.16	0.00	0.17	0.03	24
2	0.30	0.16	0.13	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.23	0.00	0.00	0.00	S	0.00	0.00	0.00	0.27	0.51	0.35	1.40	0.00	1.40	0.16	24	
3	1.16	0.69	0.32	0.71	0.41	0.18	0.17	0.19	0.18	0.00	0.00	0.00	0.00	0.00	0.00	S	0.03	0.00	0.16	0.00	0.10	0.00	0.16	0.00	0.00	1.16	0.19	24	
4	0.05	0.00	0.12	0.16	0.00	0.09	0.24	0.15	0.13	0.12	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.32	0.38	0.10	0.00	0.00	0.38	0.08	24
5	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	0.06	0.00	0.00	S	0.00	0.00	0.00	0.00	0.06	0.00	24
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	R	R	R	0.00	0.00	0.00	0.15	0.57	S	0.05	0.12	0.00	0.57	0.04	21
7	0.00	0.00	0.00	0.00	0.06	0.00	0.09	0.00	0.12	0.00	0.11	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	0.12	0.02	24
8	0.00	0.00	0.00	0.07	0.07	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	0.07	0.01	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	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	0.00	S	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.05	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	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	24
12	0.33	0.00	0.06	0.33	0.18	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	0.54	0.30	0.13	0.00	0.54	0.08	24	
13	0.11	0.14	0.21	0.07	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	0.46	0.31	0.23	0.22	0.00	0.46	0.08	24
14	0.20	0.13	0.13	0.11	0.06	0.32	0.15	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	0.23	0.66	0.45	0.00	0.00	0.66	0.11	24	
15	0.05	0.18	0.09	0.04	0.17	0.06	0.00	0.06	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.45	0.07	0.22	0.95	0.00	0.95	0.11	24
16	1.03	0.22	0.29	0.13	0.18	0.15	0.00	0.00	0.00	0.00	0.00	S	C	C	C	C										0.00	1.03	0.18	16
17																													0
18																													0
19																													0
20																													0
21																													0
22																													0
23																													0
24																													0
25																													0
26																													0
27																													0
28																													0
29																													0
30																													0
31																													0
HOURLY MAX	1.16	0.69	0.32	0.71	0.41	0.32	0.24	0.19	0.18	0.12	0.11	0.19	0.23	0.00	0.00	0.00	0.03	0.00	0.16	0.23	0.66	0.54	0.35	1.40					
HOURLY AVG	0.20	0.10	0.09	0.11	0.08	0.05	0.04	0.03	0.03	0.01	0.01	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.02	0.04	0.21	0.17	0.11	0.20					

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:	96
MAXIMUM INSTANTANEOUS VALUE:	1.40 PPM @ HOUR(S) 23 ON DAY(S) 2
	VAR-VARIOUS
IZS CALIBRATION TIME:	16 HRS
MONTHLY CALIBRATION TIME:	4 HRS
STANDARD DEVIATION:	0.16
OPERATIONAL TIME:	373 HRS

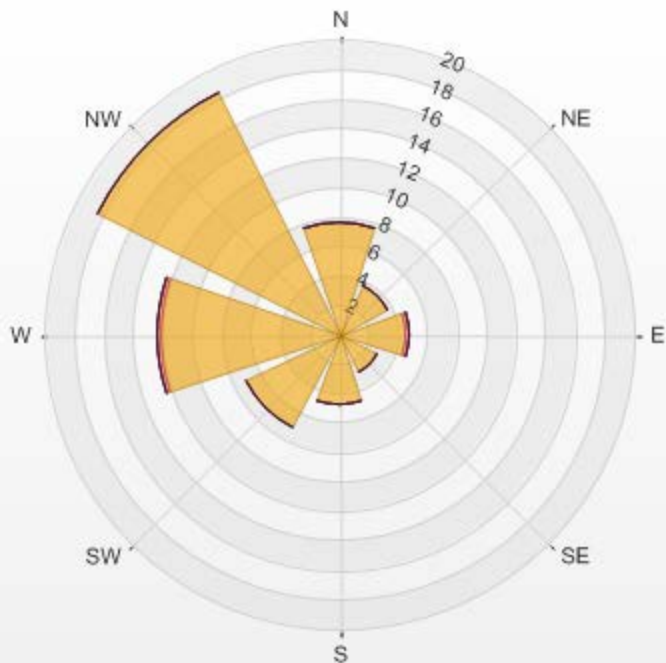


— NMHC MAX[ppm]

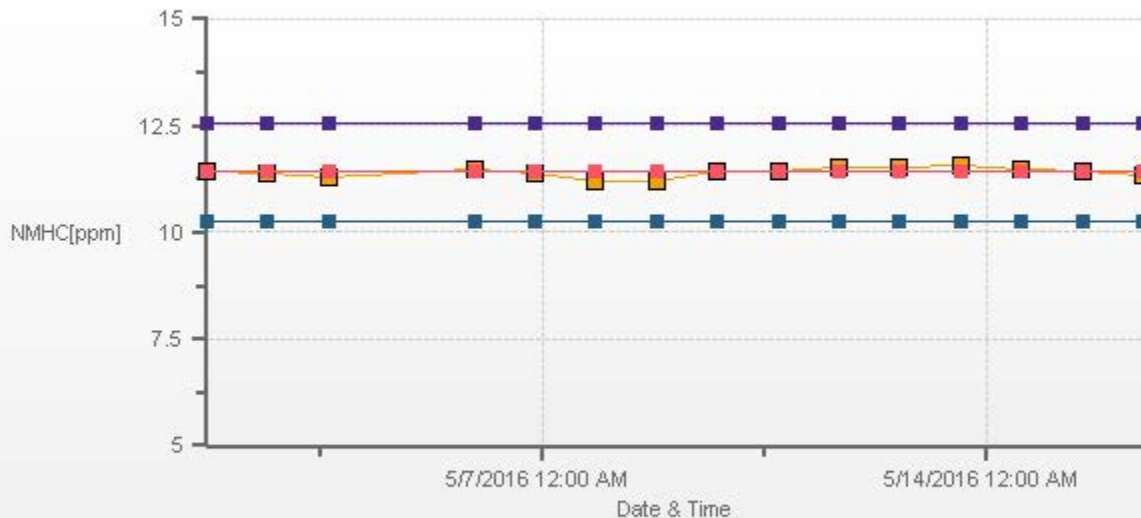
Wind: LICA ELK POINT AIRPORT Monitor: NMHC [ppm] Monthly: 05/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 38.42% Valid Data: 90.31% Calm Avg: 0.00

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	7.63	0	0	0	0	0	7.63
NE	3.67	0	0	0	0	0	3.67
E	4.52	0.28	0	0	0	0	4.8
SE	2.82	0	0	0	0	0	2.82
S	4.8	0	0	0	0	0	4.8
SW	7.06	0	0	0	0	0	7.06
W	12.15	0.28	0	0	0	0	12.43
NW	18.36	0	0	0	0	0	18.36
Summary	61.01	0.56	0	0	0	0	61.57

LICA ELK POINT AIRPORT 2016/05/01 12:00 AM - 2016/05/31 11:00 PM Calm: 38.42% Calm Wind Avg Speed: 0.00(ppm)



% Icon Classes (ppm)	61	0.0-0.3	1	0.3-0.5	0	0.5-1.0	0	1.0-2.0	0	2.0-4.0	0	>4.0
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## ***OXIDES OF NITROGEN***

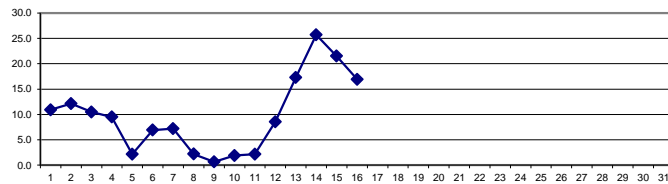
**OXIDES OF NITROGEN (NOx) hourly averages in ppb**

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 MIN.	DAILY MAX.	24-HOUR AVG.	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					
1	1	6.3	6.0	16.1	18.6	29.2	25.8	19.2	6.0	3.1	2.0	0.9	1.0	0.7	0.5	0.4	0.4	0.4	S	4.4	5.7	31.1	36.2	13.4	23.4	0.4	36.2	10.9	24	
2	2	22.8	54.2	31.0	27.2	26.7	18.6	10.5	8.2	12.6	7.2	1.0	0.3	0.1	0.3	0.3	0.2	S	1.2	0.8	4.0	4.9	13.9	16.6	15.8	0.1	54.2	12.1	24	
3	3	12.2	15.8	16.5	19.8	25.5	28.0	23.3	25.7	18.1	6.6	2.6	2.1	1.2	1.4	1.2	S	1.9	1.8	6.7	5.7	7.9	5.5	6.9	4.5	1.2	28.0	10.5	24	
4	4	5.2	6.8	8.6	19.4	16.6	17.6	13.7	16.0	6.7	3.2	1.1	C	C	C	C	C	C	C	2.0	5.6	18.7	11.2	8.1	1.0	1.0	19.4	9.5	24	
5	5	1.6	1.5	0.9	0.3	0.5	0.0	0.2	0.5	0.3	0.2	0.2	0.4	0.1	0.6	0.7	2.7	2.5	1.8	3.1	6.3	7.4	9.4	S	8.1	0.0	9.4	2.1	24	
6	6	5.8	8.5	7.7	8.6	7.2	4.4	17.9	11.0	5.1	0.4	0.4	0.4	0.7	1.0	0.4	0.6	0.8	0.9	2.1	6.8	30.2	S	22.9	15.4	0.4	30.2	6.9	24	
7	7	14.0	9.6	10.3	16.3	16.0	12.6	15.5	11.8	10.3	5.7	4.8	3.1	2.0	1.6	1.6	1.5	1.5	1.0	3.8	8.2	S	6.7	4.1	3.6	1.0	16.3	7.2	24	
8	8	6.1	4.1	3.5	5.2	6.0	6.7	1.0	0.2	0.4	0.5	0.4	0.4	0.5	0.9	1.1	0.6	0.9	1.0	1.2	S	2.2	1.8	3.1	2.3	0.2	6.7	2.2	24	
9	9	0.7	2.9	0.8	0.8	0.2	1.0	0.2	0.2	0.2	0.3	0.1	0.0	0.3	0.0	0.0	0.0	0.2	0.1	S	1.1	0.9	2.3	1.2	0.8	0.0	2.9	0.6	24	
10	10	0.8	1.3	2.3	2.7	2.3	2.7	2.0	0.9	0.2	0.2	0.3	0.3	0.1	0.1	0.0	0.0	0.0	S	1.0	0.9	0.7	4.1	7.5	13.1	0.0	13.1	1.9	24	
11	11	4.2	4.1	11.3	7.7	7.7	4.8	1.6	0.3	0.1	0.0	0.1	0.1	0.2	0.2	0.1	0.2	S	0.9	0.2	0.1	0.0	1.2	2.9	1.4	0.0	11.3	2.1	24	
12	12	2.4	7.2	24.1	76.8	33.4	6.9	2.5	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	S	0.8	0.3	0.0	0.0	0.2	4.7	8.6	27.4	0.0	76.8	8.5	24	
13	13	21.0	56.5	83.7	48.6	16.7	14.0	10.6	5.2	4.1	0.1	0.3	0.6	0.7	0.7	S	1.9	1.6	1.5	1.2	2.5	8.0	14.1	46.0	57.4	0.1	83.7	17.3	24	
14	14	87.5	106.5	88.2	69.9	42.7	37.3	37.6	11.2	7.0	5.9	0.6	0.2	0.1	S	1.0	0.7	0.6	0.4	0.7	5.4	12.1	22.2	21.0	31.9	0.1	106.5	25.7	24	
15	15	32.2	54.5	25.5	22.8	123.3	45.6	29.1	33.2	18.4	9.2	1.3	0.4	S	1.6	1.4	1.4	1.3	1.3	1.8	7.9	19.4	13.1	20.6	28.8	0.4	123.3	21.5	24	
16	16	31.5	19.9	22.6	19.3	21.1	18.9	15.9	15.6	12.4	5.8	2.9	S	C1	C1	C1	C1										2.9	31.5	16.9	12
17	17																													
18	18																													
19	19																													
20	20																													
21	21																													
22	22																													
23	23																													
24	24																													
25	25																													
26	26																													
27	27																													
28	28																													
29	29																													
30	30																													
31	31																													
HOURLY MAX		87.5	106.5	88.2	76.8	123.3	45.6	37.6	33.2	18.4	9.2	4.8	3.1	2.0	1.6	1.6	2.7	2.5	1.8	6.7	8.2	31.1	36.2	46.0	57.4					
HOURLY AVG		15.9	22.5	22.1	22.8	23.4	15.3	12.6	9.2	6.2	3.0	1.1	0.7	0.5	0.7	0.6	0.9	1.0	1.0	2.1	4.3	10.3	10.5	13.1	15.7					

**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

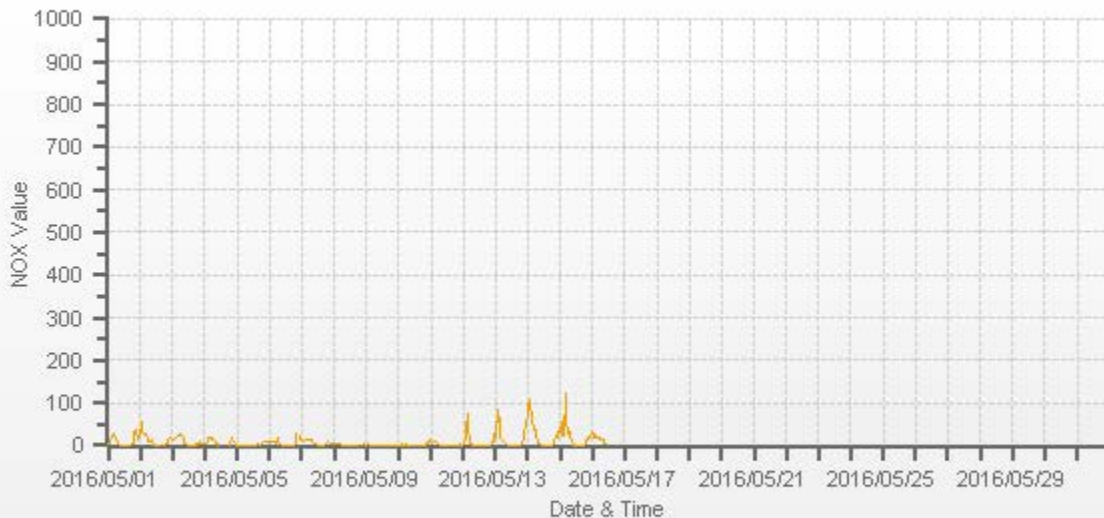
**24 HOUR AVERAGES FOR May 2016**



**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS:	332				
MINIMUM 1-HR AVERAGE:	0.0	PPB @ HOUR(S)	VAR	ON DAY(S)	VAR
MAXIMUM 1-HR AVERAGE:	123.3	PPB @ HOUR(S)	4	ON DAY(S)	15
MAXIMUM 24-HR AVERAGE:	25.7	PPB		ON DAY(S)	14
				VAR-VARIOUS	
IZS CALIBRATION TIME:	15	HRS	OPERATIONAL TIME:	372	HRS
MONTHLY CALIBRATION TIME:	7	HRS	AMD OPERATION UPTIME:	50.0	%
STANDARD DEVIATION:	16.07		MONTHLY AVERAGE:	9.5	PPB

NOX[ppb] Station: LICA ELK POINT AIRPORT Monthly: 05/2016 Type: AVG 1 Hr. [1 Hr.]



— NOX[ppb]



OXIDES OF NITROGEN MAX instantaneous maximum in ppb

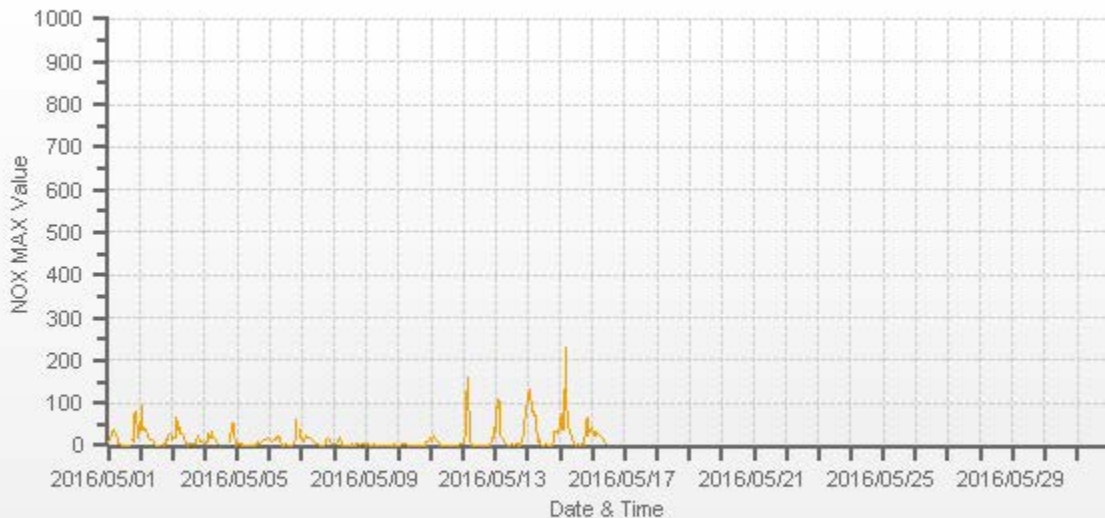
MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
DAY	MIN.	MAX.	AVG.	RDGS.																									
1	10.6	13.5	20.7	28.2	35.8	32.1	26.3	13.7	4.2	3.7	1.9	2.0	1.9	1.3	1.3	1.3	1.5	S	15.5	11.2	74.6	80.1	19.1	35.5	1.3	80.1	19.0	24	
2	30.7	94.6	39.2	40.9	31.5	27.7	16.6	12.9	15.3	13.4	2.8	1.1	1.0	1.5	1.1	0.8	S	2.6	1.7	12.4	14.9	25.4	26.4	23.5	0.8	94.6	19.0	24	
3	14.5	21.0	19.8	64.5	37.8	42.4	29.0	27.7	24.4	13.7	3.5	4.7	2.1	2.9	2.7	S	4.1	4.9	13.8	22.5	13.2	7.6	9.1	7.0	2.1	64.5	17.1	24	
4	6.7	8.6	11.2	28.4	20.7	32.0	18.1	19.0	11.9	5.4	2.9	C	C	C	C	C	C	C	7.2	16.7	51.6	50.4	23.9	2.1	2.1	51.6	18.6	24	
5	4.7	2.7	2.4	1.2	2.9	1.0	1.3	1.4	1.2	1.3	1.1	1.3	0.9	1.5	1.3	8.2	4.9	3.4	7.6	9.8	13.4	14.3	S	20.6	0.9	20.6	4.7	24	
6	12.7	14.1	9.7	14.4	16.1	15.5	22.5	17.7	16.5	1.0	0.8	0.9	2.4	R	1.1	1.1	1.4	1.5	4.0	15.3	59.2	S	38.5	19.0	0.8	59.2	13.0	23	
7	16.8	11.0	14.2	23.9	21.0	19.4	20.6	13.2	12.7	8.4	5.4	4.5	3.4	1.9	1.9	2.1	2.3	1.8	9.7	18.6	S	14.6	6.3	6.7	1.8	23.9	10.5	24	
8	6.8	5.6	5.8	9.0	16.5	15.0	1.9	0.8	1.0	1.2	1.0	1.0	1.3	2.1	3.1	1.2	2.0	2.6	3.1	S	4.1	2.7	4.9	6.1	0.8	16.5	4.3	24	
9	1.5	5.5	2.0	1.7	0.7	2.4	0.6	0.8	0.8	1.2	0.5	0.5	1.0	0.5	0.4	0.5	0.6	0.6	S	2.1	1.3	4.8	1.7	1.7	0.4	5.5	1.5	24	
10	1.5	2.2	3.1	3.3	3.0	3.4	3.1	1.9	0.8	0.8	0.9	0.9	0.8	0.8	0.6	0.6	0.8	S	2.2	1.9	2.1	7.7	10.1	19.4	0.6	19.4	3.1	24	
11	11.1	14.4	22.0	15.7	15.6	10.9	3.8	1.1	0.9	0.7	0.7	1.0	1.0	0.9	0.8	0.9	S	2.3	1.2	0.8	0.7	3.4	5.2	3.2	0.7	22.0	5.1	24	
12	5.9	12.9	65.5	159.0	99.1	10.4	3.8	1.8	1.0	0.9	0.6	0.6	0.6	0.8	0.9	S	2.2	1.2	0.9	0.6	2.3	10.0	20.0	42.3	0.6	159.0	19.3	24	
13	32.2	91.5	110.1	98.7	22.9	19.2	14.2	7.0	6.4	1.0	1.1	1.7	3.9	1.5	S	3.0	2.3	2.5	1.8	8.7	18.4	29.7	76.7	91.5	1.0	110.1	28.1	24	
14	112.3	129.2	109.7	94.2	69.3	77.6	55.7	23.7	10.1	12.6	1.7	1.0	0.8	S	2.5	1.5	1.2	1.3	2.1	11.7	31.3	31.4	28.7	36.4	0.8	129.2	36.8	24	
15	57.7	76.7	35.3	44.3	230.8	83.5	43.6	38.1	30.5	14.8	3.6	1.3	S	2.7	2.0	2.1	2.5	1.9	5.4	57.1	67.8	24.3	37.6	37.3	1.3	230.8	39.2	24	
16	41.0	23.5	30.7	25.6	26.7	22.6	22.0	16.7	13.9	10.8	4.1	S	C1	C1	C1	C1									4.1	41.0	21.6	12	
17																													0
18																													0
19																													0
20																													0
21																													0
22																													0
23																													0
24																													0
25																													0
26																													0
27																													0
28																													0
29																													0
30																													0
31																													0
HOURLY MAX	112.3	129.2	110.1	159.0	230.8	83.5	55.7	38.1	30.5	14.8	5.4	4.7	3.9	2.9	3.1	8.2	4.9	4.9	15.5	57.1	74.6	80.1	76.7	91.5					
HOURLY AVG	22.9	32.9	31.3	40.8	40.7	25.9	17.7	12.3	9.5	5.7	2.0	1.6	1.6	1.5	1.5	1.9	2.2	2.2	5.4	13.5	25.4	21.9	22.0	23.5					

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

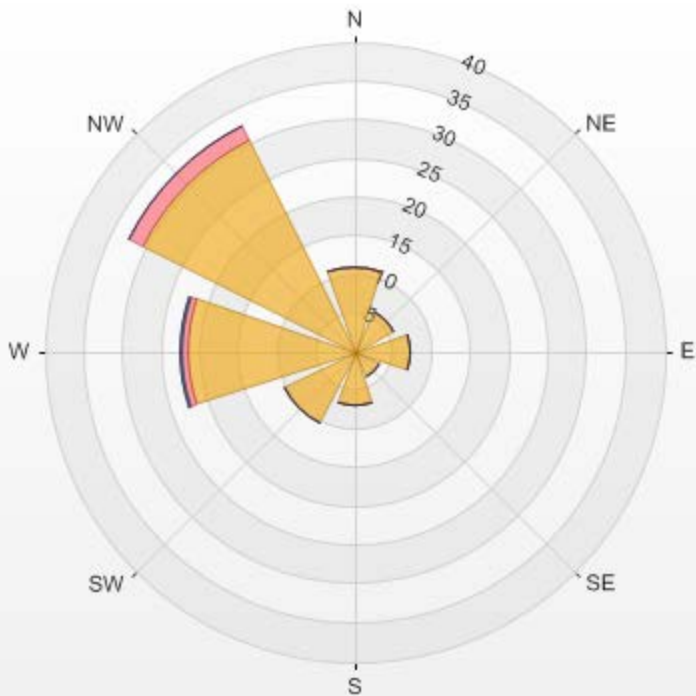
NUMBER OF NON-ZERO READINGS:	349
MAXIMUM INSTANTANEOUS VALUE:	230.8 PPB @ HOUR(S) 4 ON DAY(S) 15
	VAR-VARIOUS
IZS CALIBRATION TIME:	15 HRS
MONTHLY CALIBRATION TIME:	7 HRS
OPERATIONAL TIME:	371 HRS
STANDARD DEVIATION:	26.09



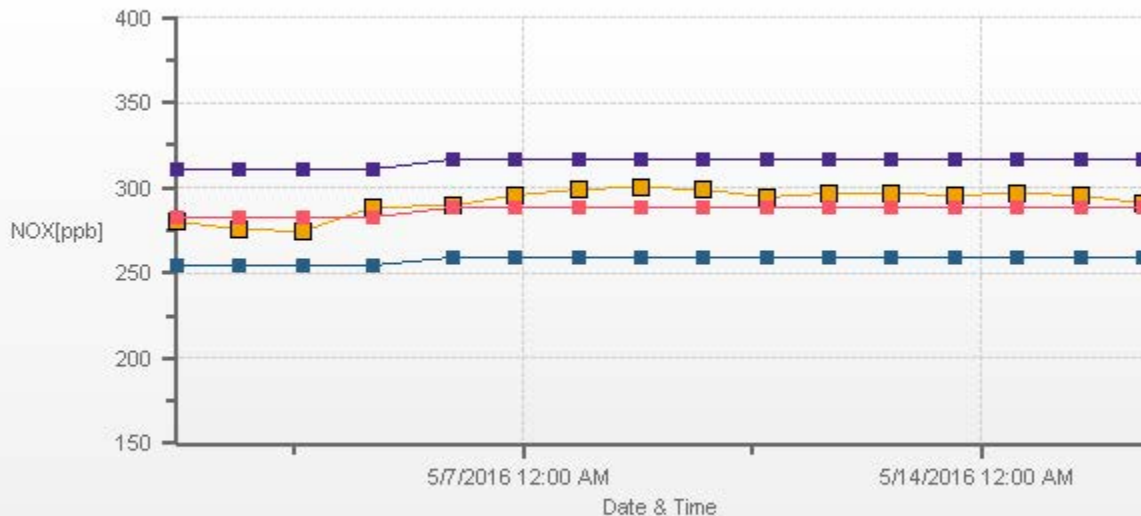
— NOX MAX[ppb]

Wind: LICA ELK POINT AIRPORT Monitor: NOX [ppb] Monthly: 05/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 89.03% Calm Avg: 0.00

Direction	0.0-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	10.89	0	0	0	10.89
NE	5.73	0	0	0	5.73
E	7.16	0	0	0	7.16
SE	3.72	0	0	0	3.72
S	6.88	0	0	0	6.88
SW	10.32	0	0	0	10.32
W	21.49	0.86	0.29	0	22.64
NW	30.66	2.01	0	0	32.67
Summary	96.85	2.87	0.29	0	100



<b>% Icon Classes (ppb)</b>	97	 0.0-50.0	3	 50.0-110.0	0	 110.0-210.0	0	 >210.0
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***NITRIC OXIDES***

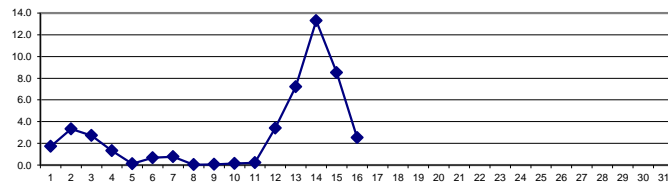
NITRIC OXIDE (NO) hourly averages in ppb

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	0.5	3.3	5.7	6.0	1.1	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.5	0.0	6.9	11.1	0.1	3.7	0.0	11.1	1.7	24
2	2.3	30.0	8.5	6.9	7.3	5.4	3.6	2.8	5.2	2.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.1	0.0	0.4	0.9	0.2	0.0	30.0	3.3	24
3	0.0	0.6	0.1	2.9	6.5	13.9	12.0	13.9	7.7	1.6	0.5	0.4	0.2	0.2	0.2	S	0.3	0.0	0.6	0.3	0.3	0.1	0.2	0.0	0.0	0.0	13.9	2.7	24
4	0.0	0.1	0.0	1.7	0.9	3.3	4.0	5.6	2.0	0.8	0.2	C	C	C	C	C	C	C	0.4	0.4	1.8	0.7	0.6	0.0	0.0	0.0	5.6	1.3	24
5	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	0.1	0.0	0.3	0.4	0.3	0.4	0.4	0.2	0.2	S	0.4	0.0	0.4	0.1	24	
6	0.1	0.5	0.2	0.2	0.3	0.6	3.0	3.2	1.6	0.0	0.0	0.1	0.2	0.5	0.0	0.0	0.0	0.0	0.0	0.2	3.7	S	1.2	0.1	0.0	0.0	3.7	0.7	24
7	0.2	0.0	0.2	0.7	1.0	1.2	3.8	3.9	3.0	1.1	0.9	0.3	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.2	0.3	S	0.2	0.0	0.0	0.0	3.9	0.8	24
8	0.0	0.0	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	0.1	0.1	S	0.2	0.0	0.0	0.0	0.1	0.0	0.3	0.0	24
9	0.0	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	S	0.4	0.3	0.1	0.1	0.1	0.1	0.0	0.4	0.1	24
10	0.1	0.0	0.1	0.1	0.1	0.2	0.3	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	S	0.3	0.1	0.0	0.0	0.7	1.2	0.0	1.2	0.1	24	
11	0.1	0.2	1.2	0.5	1.5	1.0	0.4	0.0	0.0	0.0	0.1	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	1.5	0.2	24	
12	0.1	0.4	7.2	46.8	16.0	1.1	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.3	0.1	0.0	0.0	0.0	0.3	0.9	4.7	0.0	46.8	3.4	24	
13	2.1	28.7	56.0	23.0	1.9	3.0	3.0	1.7	1.4	0.0	0.1	0.1	0.0	0.0	S	0.3	0.2	0.1	0.0	0.0	0.3	0.6	14.9	28.5	0.0	56.0	7.2	24	
14	59.9	80.1	60.6	43.1	18.2	15.6	17.8	2.4	1.7	1.7	0.0	0.0	S	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.6	0.5	0.5	2.7	0.0	80.1	13.3	24	
15	6.6	26.3	2.9	2.1	97.2	23.8	10.0	14.6	6.0	2.4	0.0	0.0	S	0.1	0.0	0.0	0.0	0.0	0.0	0.6	2.0	0.1	0.3	0.7	0.0	97.2	8.5	24	
16	1.8	0.4	1.5	1.2	3.7	4.5	4.3	5.0	3.8	1.3	0.2	S	C1	C1	C1	C1										0.2	5.0	2.5	12
17																													
18																													
19																													
20																													
21																													
22																													
23																													
24																													
25																													
26																													
27																													
28																													
29																													
30																													
31																													
HOURLY MAX	59.9	80.1	60.6	46.8	97.2	23.8	17.8	14.6	7.7	2.7	0.9	0.4	0.2	0.5	0.2	0.3	0.4	0.3	0.6	0.6	6.9	11.1	14.9	28.5					
HOURLY AVG	4.6	10.5	8.7	8.1	9.9	5.0	4.3	3.4	2.1	0.7	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.2	0.2	1.2	1.0	1.5	2.8					

STATUS FLAG CODES

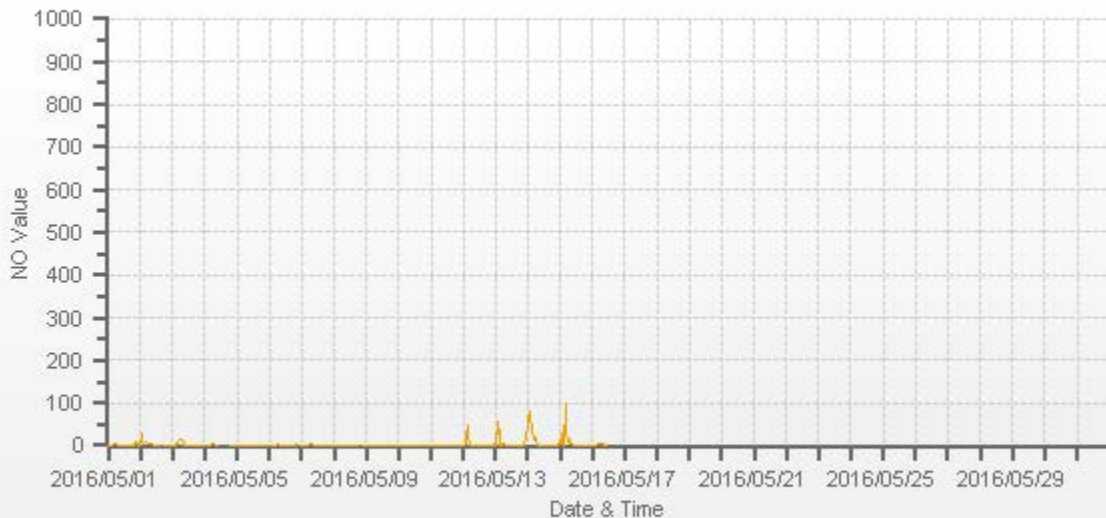
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

24 HOUR AVERAGES FOR May 2016



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	212				
MINIMUM 1-HR AVERAGE:	0.0	PPB @ HOUR(S)	VAR	ON DAY(S)	ALL
MAXIMUM 1-HR AVERAGE:	97.2	PPB @ HOUR(S)	4	ON DAY(S)	15
MAXIMUM 24-HR AVERAGE:	13.3	PPB		ON DAY(S)	14
				VAR-VARIOUS	
IZS CALIBRATION TIME:	15	HRS	OPERATIONAL TIME:	372	HRS
MONTHLY CALIBRATION TIME:	7	HRS	AMD OPERATION UPTIME:	50.0	%
STANDARD DEVIATION:	10.00		MONTHLY AVERAGE:	2.9	PPB



— NO[ppb]



NITRIC OXIDE MAX instantaneous maximum in ppb

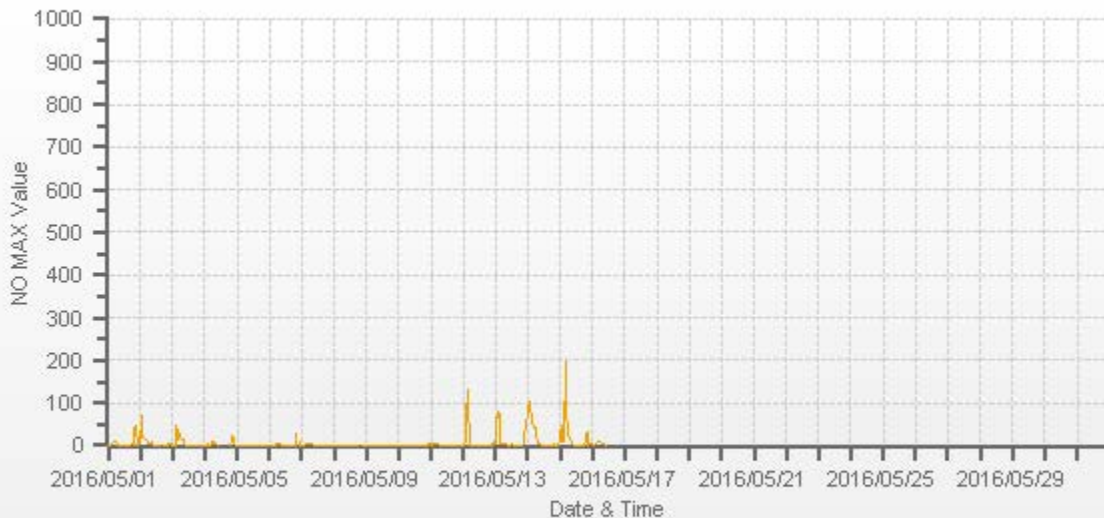
MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOURLY MAX	HOURLY AVG	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																													
1		1.0	0.7	1.2	3.2	8.1	9.5	9.2	4.4	1.5	1.3	0.9	0.8	1.0	0.7	0.7	1.0	0.9	S	3.4	1.1	41.9	48.5	1.0	12.7	0.7	48.5	6.7	24
2		5.4	72.2	18.5	20.0	12.2	10.3	6.9	5.2	7.1	6.3	1.3	0.8	0.7	0.6	0.7	0.9	S	0.7	0.6	1.3	0.9	3.0	7.0	3.2	0.6	72.2	8.1	24
3		0.6	2.0	1.0	45.2	14.2	29.1	16.7	15.6	12.2	4.6	1.0	1.7	1.0	1.2	1.1	S	1.2	0.9	1.5	2.2	1.0	0.9	0.8	0.6	0.6	45.2	6.8	24
4		0.6	0.9	0.7	5.2	2.3	10.4	5.5	7.3	3.7	1.7	1.2	C	C	C	C	C	C	C	1.3	1.3	23.1	18.4	4.7	0.7	0.6	23.1	5.2	24
5		0.8	0.6	0.7	0.6	0.6	0.4	0.7	0.8	0.8	0.6	0.7	0.6	0.8	0.8	0.7	1.4	1.2	1.0	1.6	1.3	2.0	1.0	S	1.5	0.4	2.0	0.9	24
6		1.5	1.8	1.0	1.5	1.7	3.4	5.3	6.1	6.6	0.7	0.7	0.8	1.2	R	0.8	0.7	0.7	0.6	0.7	1.1	28.2	S	7.2	0.8	0.6	28.2	3.3	23
7		1.1	0.6	0.9	4.1	3.5	3.1	6.2	4.9	4.1	2.3	1.7	1.3	1.0	1.0	0.8	0.7	0.6	0.9	1.5	1.8	S	1.3	0.6	0.6	0.6	6.2	1.9	24
8		0.6	0.6	0.6	0.7	1.0	1.7	0.6	0.5	0.6	0.6	0.6	0.6	0.8	0.7	0.8	0.6	0.7	0.9	0.9	S	1.1	0.8	0.8	0.9	0.5	1.7	0.8	24
9		0.7	1.3	0.7	0.6	0.6	0.9	0.4	0.9	0.6	0.8	0.6	0.7	0.9	0.6	0.6	0.6	0.7	0.7	S	1.2	0.9	0.8	0.8	0.8	0.4	1.3	0.8	24
10		0.8	0.6	0.8	0.7	0.8	1.3	1.0	1.0	0.7	0.8	0.8	0.9	0.7	0.8	0.7	0.8	0.8	S	1.3	0.9	0.7	1.2	2.4	3.3	0.6	3.3	1.0	24
11		1.5	3.1	4.7	2.5	3.8	3.5	2.1	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.9	0.8	S	1.3	0.8	1.0	0.8	1.0	1.0	1.0	0.7	4.7	1.5	24
12		1.3	2.3	31.3	133.8	64.2	2.1	1.3	0.9	0.9	0.8	0.7	0.8	0.7	0.6	0.7	S	1.2	0.8	0.8	0.8	0.6	1.7	3.6	11.4	0.6	133.8	11.4	24
13		7.0	64.2	81.2	70.2	4.9	6.2	4.4	2.7	2.9	0.8	0.9	0.8	4.0	0.7	S	1.1	1.0	1.0	0.8	1.0	2.1	2.9	40.1	56.3	0.7	81.2	15.5	24
14		84.7	102.8	84.2	66.6	42.7	48.6	34.4	7.8	3.3	4.5	0.9	0.7	0.8	S	1.2	1.1	0.8	0.7	0.9	1.3	4.0	1.8	1.8	5.7	0.7	102.8	21.8	24
15		31.3	48.2	8.5	18.9	196.7	58.7	21.8	18.7	12.4	5.0	1.3	0.9	S	1.3	1.1	1.0	1.0	0.7	0.9	17.5	31.2	1.6	2.5	2.6	0.7	196.7	21.0	24
16		5.8	1.7	5.6	3.1	7.7	8.0	9.4	6.1	5.2	3.7	1.6	S	C1	C1	C1	C1									1.6	9.4	5.3	12
17																													
18																													
19																													
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31																													
HOURLY MAX		84.7	102.8	84.2	133.8	196.7	58.7	34.4	18.7	12.4	6.3	1.7	1.7	4.0	1.3	1.2	1.4	1.2	1.3	3.4	17.5	41.9	48.5	40.1	56.3				
HOURLY AVG		9.0	19.0	15.1	23.6	22.8	12.3	7.9	5.2	4.0	2.2	1.0	0.9	1.1	0.8	0.8	0.9	0.9	0.9	1.2	2.4	9.9	6.1	5.3	6.8				

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

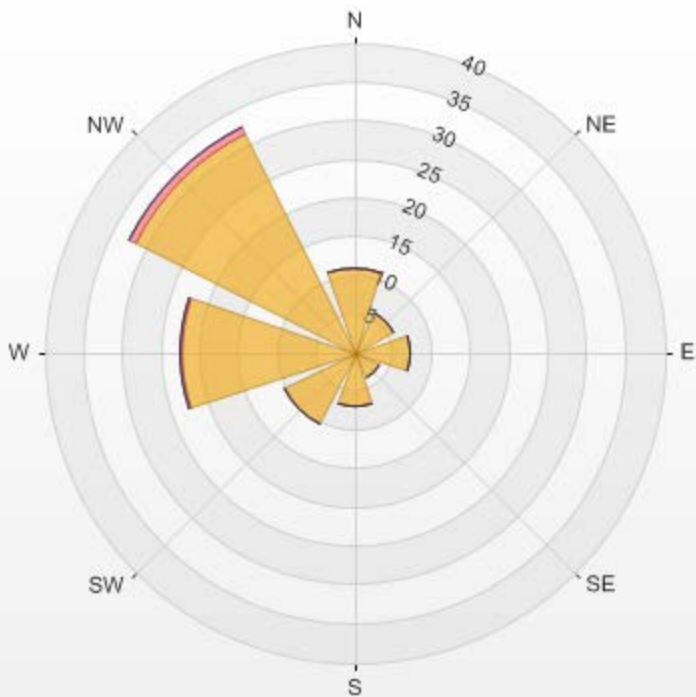
NUMBER OF NON-ZERO READINGS:	349
MAXIMUM INSTANTANEOUS VALUE:	196.7 PPB @ HOUR(S) 4 ON DAY(S) 15
	VAR-VARIOUS
IZS CALIBRATION TIME:	15 HRS
MONTHLY CALIBRATION TIME:	7 HRS
STANDARD DEVIATION:	19.06
OPERATIONAL TIME:	371 HRS



— NO MAX[ppb]

Wind: LICA ELK POINT AIRPORT Monitor: NO [ppb] Monthly: 05/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 89.03% Calm Avg: 0.00

Direction	0.0-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	10.89	0	0	0	10.89
NE	5.73	0	0	0	5.73
E	7.16	0	0	0	7.16
SE	3.72	0	0	0	3.72
S	6.88	0	0	0	6.88
SW	10.32	0	0	0	10.32
W	22.35	0.29	0	0	22.64
NW	31.52	1.15	0	0	32.67
Summary	98.57	1.44	0	0	100



% Icon Classes (ppb) 99 0.0-50.0 1 50.0-110.0 0 110.0-210.0 0 >210.0

***NITROGEN DIOXIDE***



**NITROGEN DIOXIDE (NO2) 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 MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.	
DAY	DAY																													
1	1	6.1	5.9	15.7	17.7	25.3	19.5	12.7	4.4	2.2	1.5	0.6	0.8	0.7	0.4	0.3	0.2	0.4	S	3.9	5.7	24.2	25.0	13.2	19.7	0.2	25.3	9.0	24	
2	2	20.6	24.2	22.5	20.3	19.4	13.2	6.9	5.4	7.3	4.6	0.9	0.3	0.1	0.3	0.3	0.2	S	1.2	0.8	3.9	4.9	13.4	15.7	15.6	0.1	24.2	8.8	24	
3	3	12.2	15.2	16.4	16.8	19.0	14.1	11.2	11.8	10.4	5.0	2.1	1.7	1.0	1.1	1.0	S	1.6	1.8	6.1	5.3	7.6	5.4	6.8	4.5	1.0	19.0	7.7	24	
4	4	5.2	6.8	8.5	17.7	15.7	14.4	9.7	10.4	4.6	2.3	0.8	C	C	C	C	C	C	C	1.6	5.3	16.9	10.4	7.5	1.0	0.8	17.7	8.2	24	
5	5	1.6	1.5	0.9	0.3	0.5	0.0	0.2	0.3	0.2	0.2	0.2	0.4	0.1	0.5	0.7	2.5	2.2	1.6	2.6	6.0	7.2	9.2	S	7.7	0.0	9.2	2.0	24	
6	6	5.7	8.0	7.5	8.4	6.9	3.9	14.9	7.7	3.5	0.4	0.3	0.3	0.5	0.5	0.4	0.6	0.8	0.9	2.1	6.5	26.6	S	21.7	15.3	0.3	26.6	6.2	24	
7	7	13.8	9.6	10.1	15.7	15.0	11.3	11.7	7.9	7.3	4.6	3.8	2.8	1.8	1.4	1.5	1.5	1.5	1.0	3.6	8.0	S	6.5	4.1	3.6	1.0	15.7	6.4	24	
8	8	6.1	4.1	3.5	5.2	6.0	6.4	1.0	0.2	0.4	0.5	0.4	0.4	0.5	0.9	1.1	0.6	0.9	0.9	1.1	S	2.1	1.8	3.1	2.2	0.2	6.4	2.1	24	
9	9	0.7	2.7	0.8	0.8	0.2	0.9	0.2	0.2	0.1	0.2	0.1	0.0	0.2	0.0	0.0	0.0	0.1	0.1	S	0.8	0.6	2.2	1.1	0.7	0.0	2.7	0.6	24	
10	10	0.8	1.3	2.2	2.6	2.2	2.5	1.7	0.8	0.2	0.2	0.3	0.3	0.1	0.1	0.0	0.0	0.0	S	0.7	0.9	0.7	4.0	6.8	11.9	0.0	11.9	1.8	24	
11	11	4.1	3.8	10.1	7.2	6.3	3.8	1.3	0.3	0.1	0.0	0.0	0.1	0.2	0.2	0.1	0.2	S	0.7	0.2	0.1	0.0	1.1	2.9	1.4	0.0	10.1	1.9	24	
12	12	2.2	6.8	16.9	30.0	17.4	5.9	2.0	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	S	0.5	0.2	0.0	0.0	0.2	4.5	7.7	22.7	0.0	30.0	5.1	24	
13	13	18.9	27.8	27.8	25.6	14.8	11.0	7.7	3.5	2.7	0.1	0.2	0.5	0.6	0.7	S	1.6	1.4	1.4	1.2	2.5	7.7	13.5	31.1	28.9	0.1	31.1	10.1	24	
14	14	27.6	26.4	27.5	26.7	24.5	21.7	19.7	8.7	5.2	4.2	0.6	0.2	0.1	S	0.8	0.5	0.6	0.4	0.7	5.3	11.5	21.7	20.5	29.2	0.1	29.2	12.4	24	
15	15	25.6	28.1	22.6	20.7	26.0	21.8	19.1	18.6	12.4	6.8	1.3	0.4	S	1.5	1.4	1.4	1.3	1.3	1.8	7.3	17.4	13.0	20.3	28.0	0.4	28.1	13.0	24	
16	16	29.7	19.5	21.1	18.1	17.4	14.3	11.6	10.6	8.6	4.5	2.7	S	C1	C1	C1	C1									2.7	29.7	14.4	12	
17	17																													
18	18																													
19	19																													
20	20																													
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25	25																													
26	26																													
27	27																													
28	28																													
29	29																													
30	30																													
31	31																													
HOURLY MAX		29.7	28.1	27.8	30.0	26.0	21.8	19.7	18.6	12.4	6.8	3.8	2.8	1.8	1.5	1.5	2.5	2.2	1.8	6.1	8.0	26.6	25.0	31.1	29.2					
HOURLY AVG		11.3	12.0	13.4	14.6	13.5	10.3	8.2	5.7	4.1	2.2	0.9	0.6	0.5	0.6	0.6	0.8	0.9	1.0	1.9	4.1	9.1	9.4	11.6	12.8					

**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

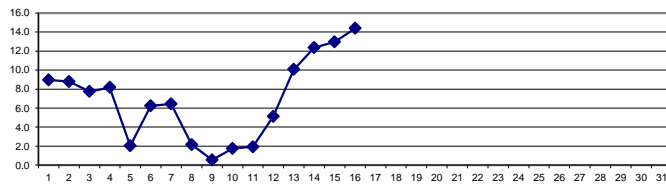
OBJECTIVE LIMIT:

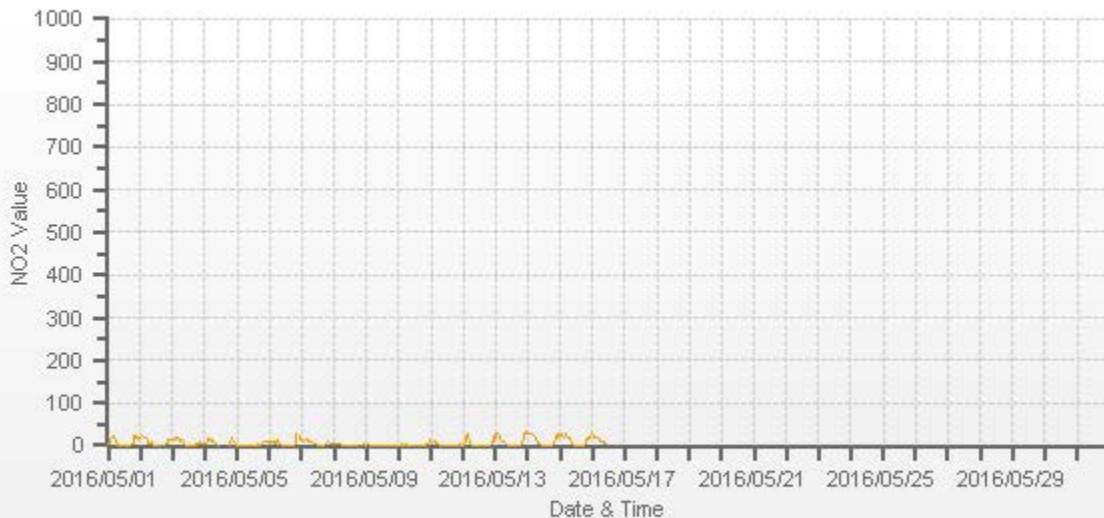
ALBERTA ENVIRONMENT: 1-HR 159 PPB

**MONTHLY SUMMARY**

NUMBER OF 1-HR EXCEEDENCES:	0				
NUMBER OF NON-ZERO READINGS:	331				
MINIMUM 1-HR AVERAGE:	0.0	PPB	@ HOUR(S)	VAR	ON DAY(S)
MAXIMUM 1-HR AVERAGE:	31.1	PPB	@ HOUR(S)	22	ON DAY(S)
MAXIMUM 24-HR AVERAGE:	14.4	PPB			ON DAY(S)
					VAR-VARIOUS
IZS CALIBRATION TIME:	15	HRS	OPERATIONAL TIME:	372	HRS
MONTHLY CALIBRATION TIME:	7	HRS	AMD OPERATION UPTIME:	50.0	%
STANDARD DEVIATION:	8.07		MONTHLY AVERAGE:	6.6	PPB

24 HOUR AVERAGES FOR May 2016





— NO2[ppb]



NITROGEN DIOXIDE MAX instantaneous maximum in ppb

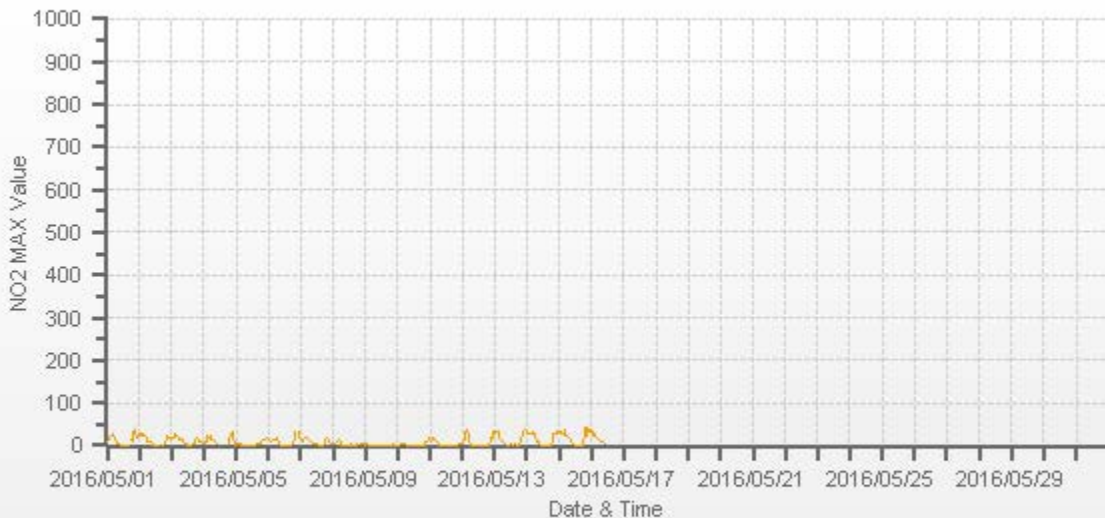
MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
DAY	MIN.	MAX.	AVG.	RDGS.																									
1	10.1	13.6	20.2	25.1	28.6	23.0	17.6	9.8	3.2	2.9	1.6	1.7	1.4	1.1	1.2	1.3	1.2	S	12.5	11.0	34.0	36.7	18.8	23.2	1.1	36.7	13.0	24	
2	25.9	26.5	25.5	30.2	21.6	17.7	10.1	8.5	8.8	7.6	2.3	1.0	0.9	1.3	1.1	0.9	S	2.1	1.5	11.5	14.7	22.7	20.8	21.0	0.9	30.2	12.4	24	
3	14.5	19.4	19.8	28.0	23.8	18.6	12.2	13.1	12.6	9.9	3.0	3.5	1.9	2.2	2.3	S	3.3	4.5	12.4	20.4	13.2	7.5	9.3	7.0	1.9	28.0	11.4	24	
4	6.7	8.5	11.2	25.0	19.4	22.0	13.0	12.6	8.7	4.3	2.5	C	C	C	C	C	C	C	6.5	15.9	29.6	33.1	19.7	2.1	2.1	33.1	14.2	24	
5	5.0	2.9	2.4	1.3	2.9	1.2	1.2	1.2	1.3	1.4	1.2	1.3	1.0	1.5	1.6	7.0	4.2	2.9	6.4	9.2	12.5	14.4	S	19.8	1.0	19.8	4.5	24	
6	12.0	12.9	9.7	13.9	15.0	12.8	18.8	13.7	10.3	0.9	0.8	0.7	1.7	R	1.0	1.0	1.2	1.3	3.9	14.9	34.6	S	31.4	18.6	0.7	34.6	10.5	23	
7	15.9	10.9	14.1	19.9	18.6	16.5	15.0	9.4	9.0	6.6	4.4	3.6	3.0	1.9	2.0	1.9	2.2	1.7	8.8	17.3	S	13.7	6.1	6.6	1.7	19.9	9.1	24	
8	6.6	5.7	6.0	9.0	15.6	13.7	1.7	1.0	0.9	1.0	1.1	1.0	1.1	1.7	3.1	1.2	1.7	2.1	2.8	S	3.8	2.4	4.9	5.7	0.9	15.6	4.1	24	
9	1.6	4.9	1.9	1.8	0.9	2.2	1.0	1.3	0.6	0.8	0.6	0.7	0.9	0.7	0.5	0.6	0.6	0.8	S	1.8	1.2	5.0	1.8	1.6	0.5	5.0	1.5	24	
10	1.9	2.3	3.0	3.2	2.9	3.3	2.6	1.7	1.0	0.9	1.0	0.8	0.8	0.9	0.7	0.6	0.8	S	1.7	1.6	2.1	7.6	9.1	17.1	0.6	17.1	2.9	24	
11	10.1	11.7	18.0	13.7	12.6	8.3	2.5	1.2	0.9	0.8	0.7	1.1	1.0	1.0	0.8	0.9	S	1.7	1.2	0.8	0.9	3.5	5.4	3.1	0.7	18.0	4.4	24	
12	5.8	11.0	35.1	35.6	35.4	9.0	3.2	1.4	0.7	0.7	0.9	0.7	0.7	0.9	0.9	S	1.7	1.1	0.8	0.5	2.4	9.9	17.2	31.5	0.5	35.6	9.0	24	
13	26.1	30.6	33.4	34.8	19.7	15.3	10.4	5.0	4.3	0.9	1.1	1.3	2.4	1.5	S	2.7	2.1	2.3	1.9	8.1	16.7	27.4	38.2	38.6	0.9	38.6	14.1	24	
14	30.4	30.5	29.9	29.4	28.6	31.1	23.0	16.1	7.3	8.5	1.5	1.0	0.9	S	1.6	1.1	1.2	1.2	1.8	11.0	29.7	30.3	27.4	32.6	0.9	32.6	16.4	24	
15	31.6	33.1	30.4	26.6	38.2	25.4	22.7	20.5	18.4	10.5	3.1	1.2	S	1.9	1.8	2.0	2.1	2.0	5.2	40.0	40.2	24.3	35.8	35.2	1.2	40.2	19.7	24	
16	35.8	22.4	26.8	23.2	19.6	15.9	13.1	11.3	9.7	7.8	3.7	S	C1	C1	C1	C1										3.7	35.8	17.2	12
17																													
18																													
19																													
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30																													
31																													
HOURLY MAX	35.8	33.1	35.1	35.6	38.2	31.1	23.0	20.5	18.4	10.5	4.4	3.6	3.0	2.2	3.1	7.0	4.2	4.5	12.5	40.0	40.2	36.7	38.2	38.6					
HOURLY AVG	15.0	15.4	18.0	20.0	19.0	14.8	10.5	8.0	6.1	4.1	1.8	1.4	1.4	1.4	1.4	1.8	1.9	2.0	4.8	11.7	16.8	17.0	17.6	17.6					

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

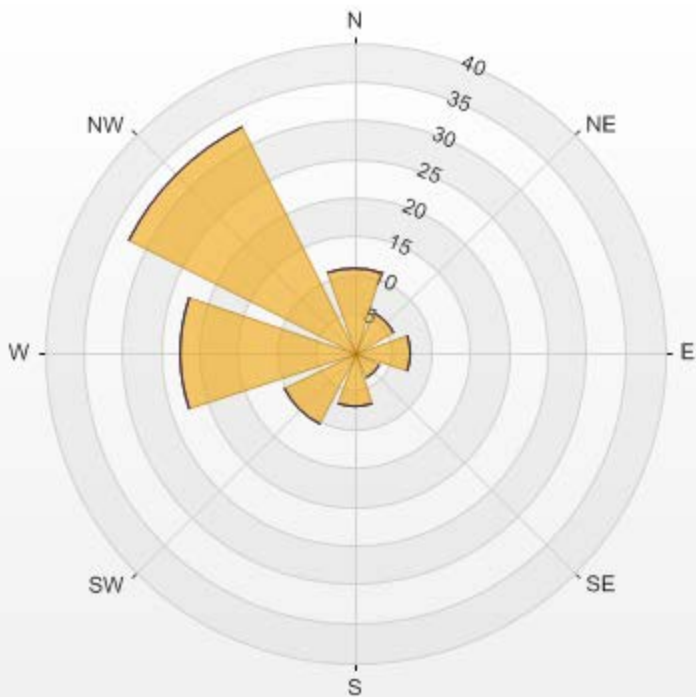
NUMBER OF NON-ZERO READINGS:	349
MAXIMUM INSTANTANEOUS VALUE:	40.2 PPB @ HOUR(S) 20 ON DAY(S) 15
	VAR-VARIOUS
IZS CALIBRATION TIME:	15 HRS
MONTHLY CALIBRATION TIME:	7 HRS
STANDARD DEVIATION:	10.64
OPERATIONAL TIME:	371 HRS



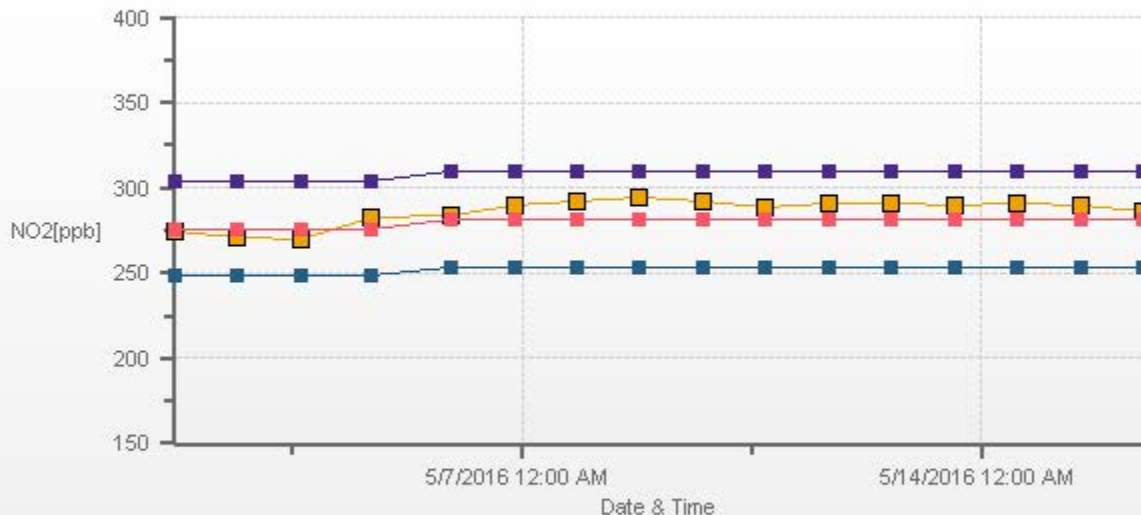
— NO2 MAX[ppb]

Wind: LICA ELK POINT AIRPORT Monitor: NO2 [ppb] Monthly: 05/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 89.03% Calm Avg: 0.00

Direction	0.0-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	10.89	0	0	0	10.89
NE	5.73	0	0	0	5.73
E	7.16	0	0	0	7.16
SE	3.72	0	0	0	3.72
S	6.88	0	0	0	6.88
SW	10.32	0	0	0	10.32
W	22.64	0	0	0	22.64
NW	32.66	0	0	0	32.66
Summary	100	0	0	0	100



% Icon Classes (ppb) 100 0.0-50.0 0 50.0-110.0 0 110.0-210.0 0 >210.0



***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 MIN.	DAILY MAX.	24-HOUR AVG.	RDGS.	
DAY	DAY																													
1	1	29.5	28.5	14.7	8.8	2.8	7.4	17.8	31.9	35.8	40.9	46.0	48.8	51.0	49.1	42.0	39.5	38.5	S	33.7	30.6	7.8	8.3	15.7	5.1	2.8	51.0	27.6	24	
2	2	5.8	1.4	1.7	2.3	1.3	5.5	14.4	20.5	19.1	26.0	33.6	34.3	35.6	36.6	37.4	37.6	S	40.4	40.6	33.3	29.5	18.1	10.3	11.4	1.3	40.6	21.6	24	
3	3	12.1	7.7	4.6	2.4	1.6	2.6	6.4	9.6	20.8	43.6	52.1	53.6	55.4	57.0	57.8	S	58.9	57.8	50.8	49.1	43.1	44.2	34.8	39.8	1.6	58.9	33.3	24	
4	4	32.6	28.5	22.8	12.1	12.7	12.6	16.8	20.9	32.2	40.7	49.5	51.6	52.0	52.2	52.9	53.6	53.8	53.1	50.6	41.4	26.7	27.6	29.2	41.0	12.1	53.8	36.1	24	
5	5	39.7	39.2	39.2	41.5	40.4	44.0	47.1	47.2	43.6	43.3	44.5	41.0	36.5	34.8	41.4	41.0	41.7	41.3	38.5	34.4	31.6	28.9	S	26.7	26.7	47.2	39.5	24	
6	6	24.0	20.9	21.7	21.6	26.8	29.1	19.0	26.0	35.2	41.3	43.0	44.5	43.8	43.0	44.9	46.1	47.9	47.7	47.4	39.3	13.3	S	15.8	17.6	13.3	47.9	33.0	24	
7	7	16.6	22.3	21.8	13.4	14.4	14.9	14.3	20.1	25.7	37.8	44.3	49.5	52.7	53.9	56.5	58.7	58.1	55.1	50.5	44.1	S	46.7	49.3	46.9	13.4	58.7	37.7	24	
8	8	39.3	37.0	36.0	32.8	28.8	28.2	42.4	49.2	49.4	50.2	51.5	56.6	57.2	55.3	47.1	49.9	49.0	46.2	42.1	S	34.3	32.1	28.0	27.6	27.6	57.2	42.2	24	
9	9	27.6	24.6	25.5	23.9	24.6	24.1	26.7	27.0	28.8	29.5	29.6	29.4	28.9	29.8	30.7	30.3	29.9	28.6	S	26.9	26.2	24.4	25.8	24.4	23.9	30.7	27.3	24	
10	10	23.2	21.2	20.4	20.6	20.5	19.6	22.1	29.4	36.4	37.7	38.2	37.8	38.4	38.6	38.5	39.1	40.5	S	39.7	37.5	34.2	27.0	22.5	15.0	15.0	40.5	30.4	24	
11	11	27.5	28.5	19.5	19.3	14.8	18.7	27.6	35.6	38.8	42.1	44.0	45.0	46.8	48.8	48.1	47.6	S	45.4	44.7	43.1	41.0	38.8	35.0	35.7	14.8	48.8	36.4	24	
12	12	30.1	28.3	14.0	0.4	9.8	22.5	30.1	39.1	42.1	44.9	45.7	46.4	46.1	45.5	44.6	S	39.1	38.5	39.1	39.3	36.4	25.8	21.0	8.3	0.4	46.4	32.0	24	
13	13	7.1	0.6	0.4	3.3	12.9	16.9	23.6	29.5	32.9	41.2	41.4	42.2	42.8	43.3	S	44.6	45.0	45.4	44.8	39.3	30.4	19.9	3.2	0.9	0.4	45.4	26.6	24	
14	14	0.7	0.7	0.7	0.7	2.1	3.8	6.3	26.4	31.2	37.2	45.2	47.8	47.4	S	48.4	49.1	49.7	48.4	46.2	39.6	29.7	16.9	12.0	6.1	0.7	49.7	25.9	24	
15	15	6.3	3.0	10.4	9.0	0.5	1.8	8.1	11.0	27.5	39.0	51.0	49.5	S	50.4	51.9	52.8	54.0	54.1	52.8	39.6	29.5	30.2	18.3	8.4	0.5	54.1	28.7	24	
16	16	6.1	10.5	7.2	5.0	3.5	7.7	15.9	19.7	26.1	48.4	53.5	S	C	C	C	C									3.5	53.5	18.5	16	
17	17																													
18	18																													
19	19																													
20	20																													
21	21																													
22	22																													
23	23																													
24	24																													
25	25																													
26	26																													
27	27																													
28	28																													
29	29																													
30	30																													
31	31																													
HOURLY MAX		39.7	39.2	39.2	41.5	40.4	44.0	47.1	49.2	49.4	50.2	53.5	56.6	57.2	57.0	57.8	58.7	58.9	57.8	52.8	49.1	43.1	46.7	49.3	46.9					
HOURLY AVG		20.5	18.9	16.3	13.6	13.6	16.2	21.2	27.7	32.9	40.2	44.6	45.2	45.3	45.6	45.9	45.4	46.6	46.3	44.4	38.4	29.6	27.8	22.9	21.0					

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

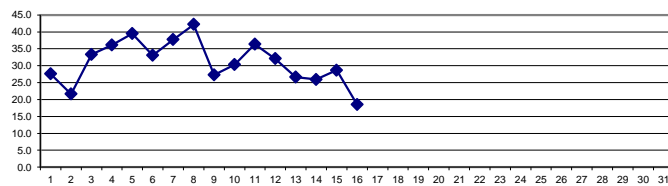
OBJECTIVE LIMIT:

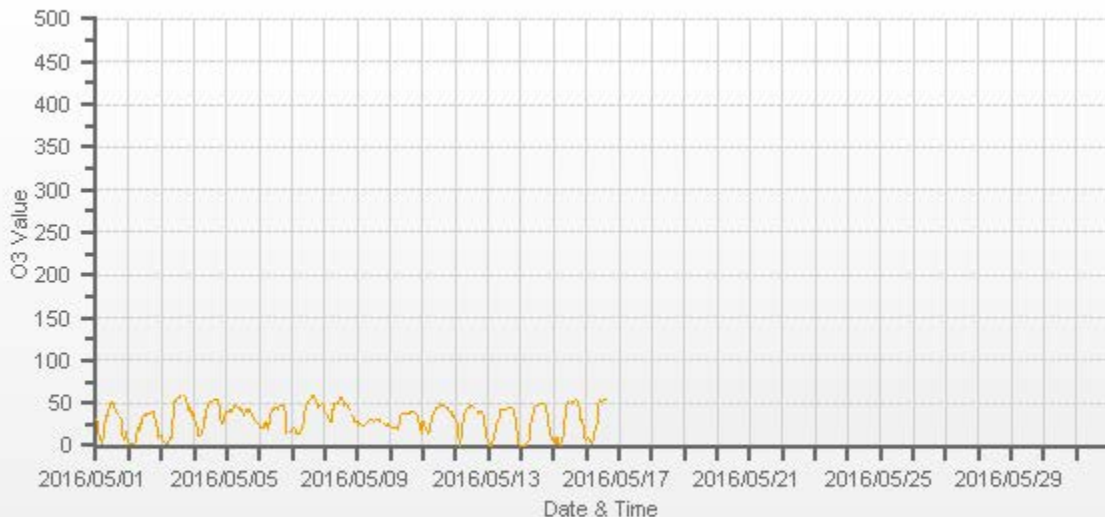
ALBERTA ENVIRONMENT: 1-HR 82 PPB

MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0					
NUMBER OF NON-ZERO READINGS:	357					
MINIMUM 1-HR AVERAGE:	0.4	PPB	@ HOUR(S)	3 , 2	ON DAY(S)	12 , 13
MAXIMUM 1-HR AVERAGE:	58.9	PPB	@ HOUR(S)	16	ON DAY(S)	3
MAXIMUM 24-HR AVERAGE:	42.2	PPB			ON DAY(S)	8
					VAR-VARIOUS	
IZS CALIBRATION TIME:	15	HRS	OPERATIONAL TIME:	376	HRS	
MONTHLY CALIBRATION TIME:	4	HRS	AMD OPERATION UPTIME:	50.5	%	
STANDARD DEVIATION:	15.63		MONTHLY AVERAGE:	31.5	PPB	

24 HOUR AVERAGES FOR May 2016





— O3[ppb]



OZONE MAX instantaneous maximum in ppb

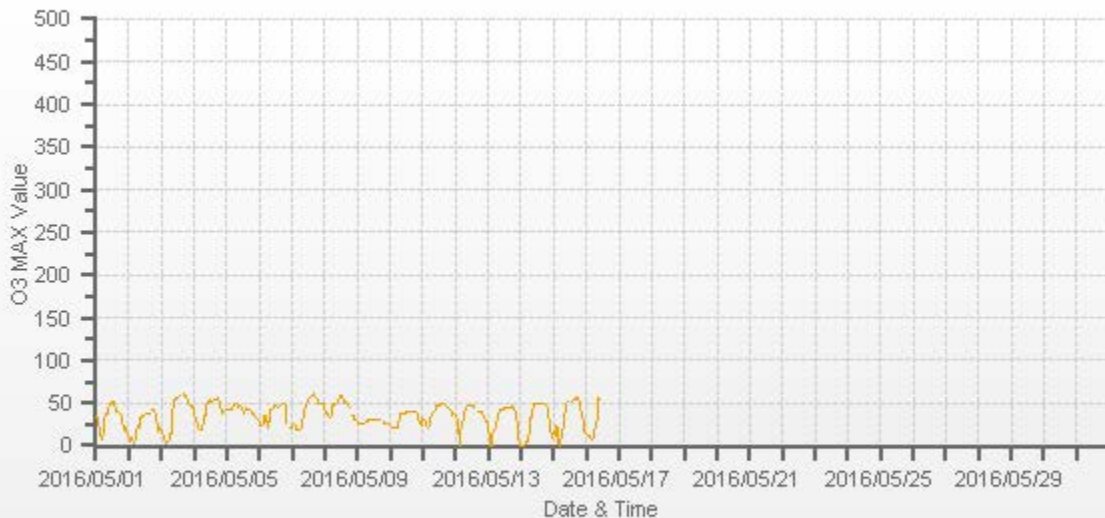
MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
DAY	MIN.	MAX.	AVG.	RDGS.																									
1	32.0	31.8	23.3	14.5	7.3	10.9	30.6	35.6	38.0	45.0	48.0	50.1	51.8	50.9	45.5	41.0	39.9	S	37.2	34.4	24.0	18.5	20.8	11.8	7.3	51.8	32.3	24	
2	11.5	5.2	9.7	6.1	3.4	8.8	18.6	22.8	21.7	32.1	34.3	34.9	37.2	37.4	38.0	38.6	S	41.4	41.9	39.3	35.9	22.9	17.1	21.0	3.4	41.9	25.2	24	
3	18.0	14.1	6.4	5.2	2.6	4.5	7.6	13.8	38.7	52.5	53.7	55.9	56.8	59.4	59.3	S	60.8	59.7	57.9	53.0	49.2	45.9	43.7	46.2	2.6	60.8	37.6	24	
4	38.4	32.8	28.0	20.7	17.7	17.7	17.7	30.0	34.7	47.8	50.9	52.8	53.2	52.8	S	54.7	54.7	55.8	55.5	45.8	41.8	38.3	39.2	43.2	17.7	55.8	40.2	24	
5	42.3	41.4	41.4	42.3	42.0	46.0	48.2	48.3	45.4	45.9	47.3	44.5	39.6	37.6	43.6	43.0	42.9	42.6	41.0	37.5	37.5	33.1	S	30.0	30.0	48.3	41.9	24	
6	27.5	23.3	23.7	25.3	35.0	34.1	21.8	27.5	41.2	42.3	44.1	46.2	45.9	R	45.6	47.1	48.3	49.2	49.2	46.0	24.8	S	21.8	22.2	21.8	49.2	36.0	23	
7	20.1	26.9	26.9	19.7	19.4	18.6	19.1	21.4	32.5	41.9	46.0	52.7	53.7	55.3	58.3	59.8	60.3	56.4	55.6	50.4	S	49.4	50.3	49.4	18.6	60.3	41.0	24	
8	41.6	38.3	37.5	36.3	31.8	38.1	48.0	50.0	50.0	51.0	54.9	57.7	59.1	59.1	49.4	51.5	51.0	48.0	44.6	S	35.4	34.3	30.4	29.7	29.7	59.1	44.7	24	
9	29.1	26.7	26.0	25.3	25.3	26.3	27.7	27.8	29.9	30.0	30.0	30.3	29.7	30.4	31.0	30.6	30.7	29.6	S	27.5	26.4	26.6	24.9	24.9	31.0	28.2	24		
10	23.8	21.7	20.7	21.1	21.0	20.5	24.4	37.1	38.4	38.1	38.6	38.3	39.0	39.3	38.8	39.6	41.0	S	40.8	38.8	36.9	30.7	25.7	23.2	20.5	41.0	32.1	24	
11	32.5	31.5	28.8	24.1	20.1	22.5	34.6	37.1	40.8	43.2	45.8	46.1	48.1	49.5	49.5	48.2	S	47.0	45.4	44.4	42.3	40.1	36.3	38.1	20.1	49.5	39.0	24	
12	35.6	33.2	25.1	0.6	21.0	26.9	36.6	41.9	43.6	46.7	46.7	47.0	46.5	46.5	45.5	S	39.6	39.0	39.6	40.1	38.7	33.4	29.9	28.0	0.6	47.0	36.2	24	
13	29.0	1.5	0.5	10.9	18.3	20.1	28.7	30.6	41.0	41.9	41.7	42.7	43.5	43.8	S	45.3	45.6	46.2	45.6	44.8	39.0	29.6	9.7	3.4	0.5	46.2	30.6	24	
14	0.7	0.9	0.7	1.2	5.1	5.5	13.5	32.9	32.6	43.6	48.3	48.8	48.9	S	49.2	49.7	50.4	49.8	47.4	46.1	40.0	22.5	17.3	10.3	0.7	50.4	28.9	24	
15	17.3	12.3	22.6	18.8	0.7	3.9	13.1	21.3	34.3	47.9	51.8	51.7	S	51.8	52.7	53.8	54.7	55.3	55.2	49.2	42.3	39.0	25.8	16.2	0.7	55.3	34.4	24	
16	13.4	12.7	12.9	8.4	7.5	10.2	19.2	24.3	31.5	56.8	55.0	S	C	C	C	C									7.5	56.8	22.9	16	
17																													
18																													
19																													
20																													
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29																													
30																													
31																													
HOURLY MAX	42.3	41.4	41.4	42.3	42.0	46.0	48.2	50.0	50.0	56.8	55.0	57.7	59.1	59.4	59.3	59.8	60.8	59.7	57.9	53.0	49.2	49.4	50.3	49.4					
HOURLY AVG	25.8	22.1	20.9	17.5	17.4	19.7	25.6	31.4	37.1	44.2	46.1	46.6	46.6	47.2	46.6	46.4	47.7	47.7	46.9	42.7	36.7	33.2	28.2	26.5					

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

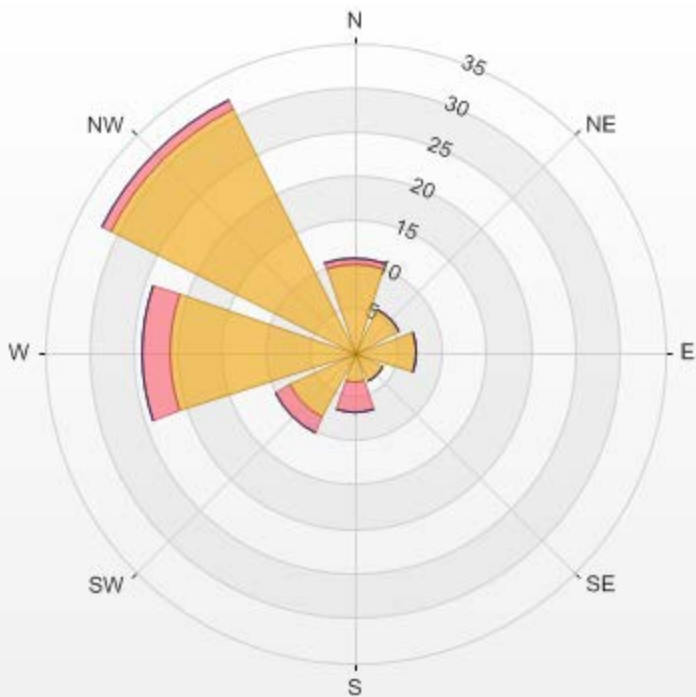
NUMBER OF NON-ZERO READINGS:	355
MAXIMUM INSTANTANEOUS VALUE:	60.8 PPB @ HOUR(S) 16 ON DAY(S) 3
	VAR-VARIOUS
IZS CALIBRATION TIME:	16 HRS
MONTHLY CALIBRATION TIME:	4 HRS
STANDARD DEVIATION:	14.64
OPERATIONAL TIME:	375 HRS



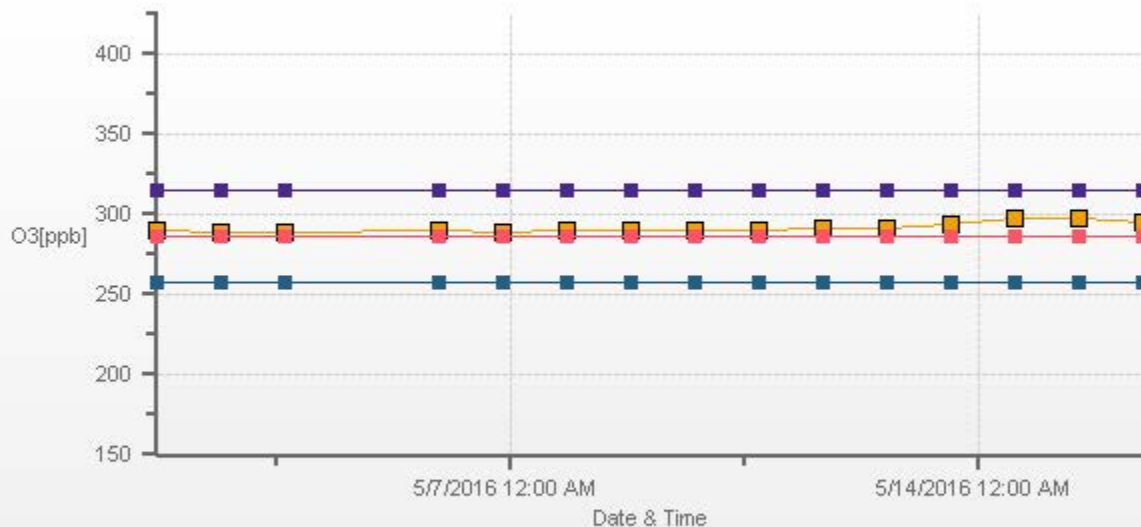
— O3 MAX[ppb]

Wind: LICA ELK POINT AIRPORT Monitor: O3 [ppb] Monthly: 05/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 90.82% Calm Avg: 0.00

Direction	0.0-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	10.11	0.56	0	0	10.67
NE	5.62	0	0	0	5.62
E	7.02	0	0	0	7.02
SE	3.65	0	0	0	3.65
S	3.37	3.37	0	0	6.74
SW	8.15	1.97	0	0	10.12
W	20.79	3.37	0	0	24.16
NW	30.9	1.12	0	0	32.02
Summary	89.61	10.39	0	0	100



% Icon Classes (ppb)	90	0.0-50.0	10	50.0-110.0	0	110.0-210.0	0	>210.0
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***PARTICULATE MATTER 2.5***



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

<b>MST</b>		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		3.7	6.7	3.7	3.7	3.7	3.2	5.2	9.2	5.7	7.7	1.7	2.2	4.2	4.7	1.2	2.7	0.0	0.2	2.7	3.2	6.2	5.2	5.1	5.1	0.0	9.2	4.0	24	
2		6.7	1.7	4.7	6.2	4.2	4.7	3.2	7.2	8.7	10.6	2.7	6.2	1.1	8.7	2.2	1.7	5.7	1.7	0.0	2.2	5.6	5.7	4.2	4.7	0.0	10.6	4.6	24	
3		6.2	3.7	4.7	11.2	7.7	11.7	10.7	8.7	6.7	10.1	7.2	7.2	3.7	0.7	3.2	0.0	4.7	4.7	4.7	5.1	2.7	9.6	4.7	11.2	0.0	11.7	6.3	24	
4		10.1	6.7	7.2	6.7	5.2	6.7	7.2	7.7	7.7	7.7	7.7	4.2	6.7	10.2	2.7	1.7	7.7	3.7	8.2	7.7	7.7	11.2	8.7	10.1	1.7	11.2	7.1	24	
5		7.2	6.6	2.6	0.0	3.2	3.2	0.7	6.2	4.1	8.2	14.7	10.6	1.1	6.2	6.7	5.6	3.7	4.7	10.6	14.7	9.6	12.1	7.2	4.7	0.0	14.7	6.4	24	
6		5.1	3.2	4.7	4.1	7.7	6.7	7.7	7.2	5.1	0.0	2.2	4.7	0.0	0.0	3.2	5.1	C	C	8.2	9.2	13.2	10.1	12.2	13.7	0.0	13.7	6.1	24	
7		11.2	15.2	16.1	18.6	17.7	21.7	20.7	19.2	11.7	8.2	5.7	3.7	0.7	1.7	5.6	5.1	8.2	2.2	4.7	9.2	11.7	6.7	5.1	6.7	0.7	21.7	9.9	24	
8		12.1	9.2	14.7	7.2	8.7	12.7	4.2	3.2	3.2	0.0	2.2	3.2	1.7	0.0	1.7	2.7	12.1	13.2	0.2	3.7	7.2	3.7	8.7	X	0.0	14.7	5.9	23	
9		1.7	0.7	2.2	0.0	0.0	1.2	1.2	0.0	0.0	2.2	1.7	1.2	3.7	1.2	0.0	0.0	0.0	0.1	0.7	0.7	0.0	1.6	0.0	5.6	0.0	5.6	1.1	24	
10		0.7	3.7	3.7	0.0	3.2	0.7	3.2	0.0	3.1	4.7	0.1	5.6	5.6	0.0	6.2	4.1	0.0	8.7	4.1	1.6	9.7	14.1	13.1	17.7	0.0	17.7	4.7	24	
11		16.7	8.2	8.2	6.6	8.7	6.6	5.1	3.7	4.7	0.7	5.1	X	1.1	4.7	10.1	5.1	X	0.1	7.7	0.1	0.0	0.7	1.6	3.7	0.0	16.7	5.0	22	
12		0.2	3.2	3.7	3.1	2.2	0.7	0.1	3.2	2.2	0.0	0.1	2.2	0.2	4.7	2.2	4.7	3.6	0.7	3.2	3.7	0.2	0.0	2.2	1.6	0.0	4.7	2.0	24	
13		0.2	3.7	0.1	0.1	5.6	0.1	7.2	4.1	2.2	9.2	13.1	18.2	29.1	27.6	32.6	39.1	41.1	44.6	42.6	47.2	41.6	43.1	42.1	42.1	0.1	47.2	22.4	24	
14		45.7	47.7	45.7	41.1	42.1	38.1	41.7	40.7	36.2	29.7	19.2	16.7	8.7	9.2	10.1	10.6	7.7	8.2	8.7	7.7	16.7	12.1	9.2	8.2	7.7	47.7	23.4	24	
15		9.2	8.2	8.2	14.2	11.2	8.2	10.1	13.7	13.7	13.1	13.1	11.2	6.6	8.7	19.2	26.1	20.6	20.2	24.7	29.7	27.1	99.0	22.6	25.1	6.6	99.0	19.3	24	
16		27.1	25.7	22.6	22.6	28.6	33.6	29.7	31.6	28.2	21.1	28.2	C1	C1													21.1	33.6	27.2	11
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HOURLY MAX		45.7	47.7	45.7	41.1	42.1	38.1	41.7	40.7	36.2	29.7	28.2	18.2	29.1	27.6	32.6	39.1	41.1	44.6	42.6	47.2	41.6	99.0	42.1	42.1					
HOURLY AVG		10.2	9.6	9.6	9.1	10.0	10.0	9.9	10.4	9.0	8.3	7.8	6.9	4.9	5.9	7.1	7.6	8.9	8.1	8.7	9.7	10.6	15.7	9.8	11.4					

**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

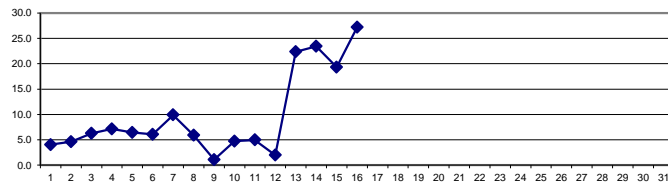
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR 80 ug/m3 24-HR 30 ug/m3

**MONTHLY SUMMARY**

NUMBER OF 1-HR EXCEEDENCES:	1
NUMBER OF 24-HR EXCEEDENCES:	0
NUMBER OF NON-ZERO READINGS:	341
MINIMUM 1-HR AVERAGE:	0.0 ug/m3 @ HOUR(S) VAR ON DAY(S) VAR
MAXIMUM 1-HR AVERAGE:	99.0 ug/m3 @ HOUR(S) 21 ON DAY(S) 15
MAXIMUM 24-HR AVERAGE:	27.2 ug/m3 VAR-VARIOUS ON DAY(S) 16
MONTHLY CALIBRATION TIME:	2 HRS
OPERATIONAL TIME:	368 HRS
AMSD OPERATION UPTIME:	49.5 %
STANDARD DEVIATION:	11.21
MONTHLY AVERAGE:	9.1 ug/m3

24 HOUR AVERAGES FOR May 2016

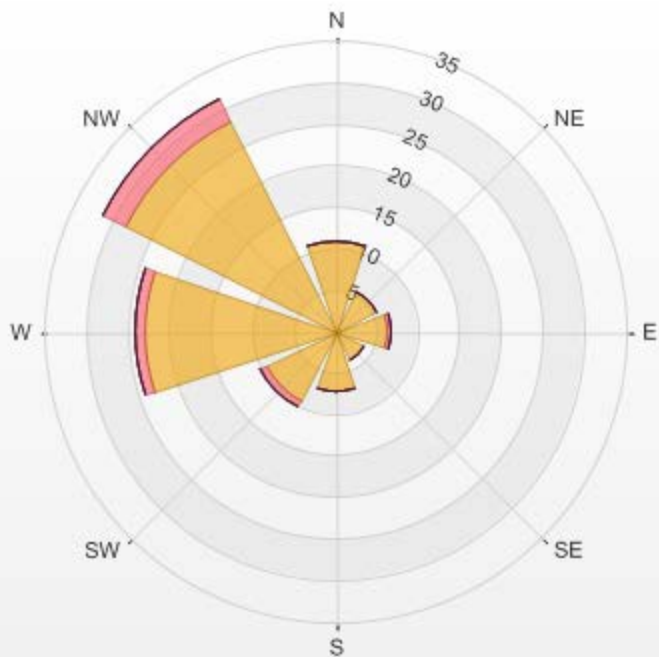




— PM2[ug/m3(L)]

Wind: LICA ELK POINT AIRPORT Monitor: PM2 [ug/m3(L)] Monthly: 05/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 93.11% 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	10.96	0	0	0	0	0	10.96
NE	5.48	0	0	0	0	0	5.48
E	6.3	0.55	0	0	0	0	6.85
SE	3.84	0	0	0	0	0	3.84
S	7.12	0	0	0	0	0	7.12
SW	9.32	0.82	0	0	0	0	10.14
W	23.01	1.1	0	0	0	0	24.11
NW	28.22	3.29	0	0	0	0	31.51
Summary	94.25	5.76	0	0	0	0	100



% Icon Classes (ug/m3(L))

6 30.0-60.0 0 60.0-80.0 0 80.0-120.0 0 120.0-240.0 0 >240.0

94 0.0-30.0

***WIND SPEED***

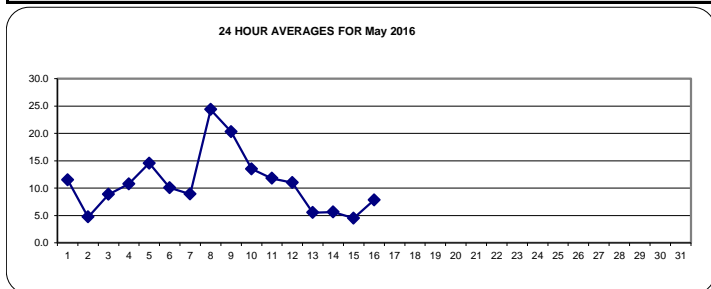
**WIND SPEED (WS) hourly averages in km/hr**

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 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	12.2	9.5	4.3	3.7	3.9	4.2	3.5	8.2	8.9	13.9	18.9	21.4	22.5	22.5	22.0	19.7	20.1	19.9	11.7	7.9	5.0	5.0	5.1	2.7	2.7	22.5	11.5	24
2	8.0	9.6	7.2	5.0	5.1	2.2	4.0	5.7	6.5	5.8	5.2	5.4	6.5	3.9	7.8	8.0	3.3	5.0	1.7	0.3	2.5	1.2	2.9	0.7	0.3	9.6	4.7	24	
3	0.2	1.1	1.7	2.7	5.6	4.8	4.0	4.2	3.7	7.5	11.8	18.5	17.6	17.3	17.6	15.3	15.8	13.6	13.8	8.9	9.6	9.5	2.4	5.8	0.2	18.5	8.9	24	
4	0.9	3.5	4.6	7.4	7.7	6.2	2.6	2.2	8.7	11.4	18.3	23.8	21.0	20.5	19.3	20.4	20.8	11.0	11.8	4.3	1.4	2.7	12.8	15.4	0.9	23.8	10.8	24	
5	17.7	16.3	15.4	17.5	10.8	15.0	17.8	20.8	23.2	23.1	23.8	23.6	18.7	13.7	5.6	4.6	8.0	9.1	9.5	12.0	11.1	9.0	13.1	9.9	4.6	23.8	14.6	24	
6	8.0	10.6	14.5	12.8	12.7	9.8	8.3	6.8	8.3	15.8	14.5	14.8	15.7	R	17.8	14.0	12.3	8.6	8.4	4.3	5.9	3.5	2.6	1.7	1.7	17.8	10.1	23	
7	2.2	2.4	3.4	6.7	7.6	7.1	5.4	5.6	2.1	7.7	10.7	11.3	13.7	10.6	6.5	0.9	3.4	12.1	13.6	14.3	16.8	17.5	16.7	15.7	0.9	17.5	8.9	24	
8	14.4	11.9	14.8	9.3	8.5	16.2	30.6	31.7	36.0	38.1	34.9	34.4	30.2	28.8	20.4	24.5	28.7	28.3	31.4	30.0	22.7	21.4	17.5	20.0	8.5	38.1	24.4	24	
9	18.8	16.6	26.5	23.0	22.1	19.2	21.1	21.5	25.3	26.8	24.5	23.0	22.7	24.9	24.6	22.5	21.0	17.9	18.4	15.1	11.9	12.0	15.1	13.0	11.9	26.8	20.3	24	
10	11.2	10.3	10.8	13.3	10.8	11.7	13.1	14.3	16.2	16.9	18.9	18.6	20.2	18.9	18.1	20.5	19.8	18.3	12.3	9.1	5.0	4.3	7.0	4.6	4.3	20.5	13.5	24	
11	7.1	4.3	8.3	6.1	6.0	6.1	5.4	13.5	13.4	18.4	18.2	17.0	18.1	19.2	17.4	17.4	16.6	16.4	14.0	15.2	10.0	6.1	4.8	3.9	3.9	19.2	11.8	24	
12	3.4	6.8	6.9	7.4	7.6	7.9	6.4	12.4	13.2	15.4	14.2	17.1	16.4	17.9	18.9	19.9	18.9	16.3	15.2	12.0	4.1	0.7	2.5	3.3	0.7	19.9	11.0	24	
13	3.7	6.4	3.5	5.1	4.2	4.6	7.6	9.9	7.5	11.3	8.2	7.9	6.9	2.7	5.4	3.7	6.0	6.9	6.8	1.3	0.6	3.3	4.6	4.6	0.6	11.3	5.5	24	
14	4.7	5.4	4.6	4.4	4.1	4.2	3.2	6.8	3.5	6.0	5.5	5.4	6.6	5.9	5.2	9.2	7.0	9.0	7.9	5.0	7.6	7.8	2.6	4.2	2.6	9.2	5.7	24	
15	3.9	6.3	7.1	5.6	7.0	5.4	1.5	1.8	4.6	5.7	8.0	6.1	3.2	5.2	3.8	4.9	2.6	3.2	3.8	3.9	7.0	4.2	1.9	1.6	1.5	8.0	4.5	24	
16	2.3	1.1	2.9	3.2	3.1	5.0	7.3	7.7	7.0	18.6	28.0															1.1	28.0	7.8	11
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HOURLY MAX		18.8	16.6	26.5	23.0	22.1	19.2	30.6	31.7	36.0	38.1	34.9	34.4	30.2	28.8	24.6	24.5	28.7	28.3	31.4	30.0	22.7	21.4	17.5	20.0				
HOURLY AVG		7.4	7.6	8.5	8.3	7.9	8.1	8.9	10.8	11.8	15.2	16.5	16.6	16.0	15.1	14.0	13.7	13.6	13.0	12.0	9.6	8.1	7.2	7.4	7.1				

**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

LAST CALIBRATION:	January 26, 2016
DECLINATION :	MAGNETIC DECLINATION 19 DEGREE EAST



**MONTHLY SUMMARY**

NUMBER OF NON-ZERO READINGS:	370
MINIMUM 1-HR AVERAGE:	0.2 KPH @ HOUR(S) 0 ON DAY(S) 3
MAXIMUM 1-HR AVERAGE:	38.1 KPH @ HOUR(S) 9 ON DAY(S) 8
MAXIMUM 24-HR AVERAGE:	24.4 KPH ON DAY(S) 8
	VAR-VARIOUS
MONTHLY CALIBRATION TIME:	0 HRS
OPERATIONAL TIME:	370 HRS
AMD OPERATION UPTIME:	49.7 %
STANDARD DEVIATION:	7.59
MONTHLY AVERAGE:	11.0 KPH



— 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	
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		21.0	18.2	13.1	5.7	6.2	7.6	14.2	16.3	18.0	33.9	36.5	39.6	44.0	41.8	41.2	35.9	36.7	32.2	24.4	11.6	10.1	9.0	10.9	7.5	5.7	44.0	22.3	24
2		14.3	14.4	13.1	12.6	11.2	7.4	10.3	10.6	12.2	14.0	17.6	18.7	21.4	19.3	22.8	24.4	15.5	15.4	8.0	5.3	6.8	8.0	8.5	5.3	5.3	24.4	13.2	24
3		2.3	5.3	5.3	5.2	7.4	6.4	6.7	9.1	11.1	18.9	28.4	33.8	43.2	37.8	38.4	32.7	29.9	27.5	23.0	15.6	16.2	15.9	11.8	22.7	2.3	43.2	18.9	24
4		13.0	10.7	8.0	9.1	9.8	9.1	6.5	14.7	19.3	25.9	33.9	41.4	38.2	45.2	40.1	44.0	38.2	22.1	22.5	8.5	4.9	10.7	27.4	27.8	4.9	45.2	22.1	24
5		34.4	29.9	31.0	33.6	23.2	27.2	31.7	38.3	43.4	45.0	43.3	43.6	35.3	23.7	14.0	15.0	14.9	21.1	18.4	20.0	17.7	16.9	22.6	17.8	14.0	45.0	27.6	24
6		13.1	17.7	19.9	20.8	22.9	19.2	12.9	11.1	24.0	27.5	29.5	40.5	36.1	R	36.1	28.8	28.0	28.6	21.0	8.5	8.3	8.3	6.3	5.8	5.8	40.5	20.6	23
7		7.3	8.8	9.5	8.8	10.1	9.1	9.4	10.6	10.3	18.6	25.1	25.2	24.4	24.1	16.3	8.7	18.4	28.4	25.5	27.7	29.9	34.0	31.2	30.2	7.3	34.0	18.8	24
8		27.4	29.2	23.9	21.8	17.1	41.8	53.6	60.5	64.0	67.1	58.3	53.6	56.6	43.0	36.1	49.8	55.4	48.9	48.9	52.5	40.1	31.5	28.6	38.5	17.1	67.1	43.7	24
9		33.7	31.5	49.5	40.9	41.9	34.3	36.7	38.4	44.7	45.4	40.2	41.1	38.0	44.3	48.8	41.2	34.4	32.0	28.7	25.4	21.4	30.5	27.1	23.9	21.4	49.5	36.4	24
10		19.5	15.9	15.1	21.3	16.8	17.8	22.2	30.2	30.0	32.2	35.6	39.9	39.4	33.8	37.9	34.7	36.2	33.7	26.6	19.7	12.4	7.6	9.5	8.6	7.6	39.9	24.9	24
11		19.8	13.7	9.9	9.8	8.8	9.7	20.8	24.8	29.7	32.5	36.2	33.5	44.5	49.0	40.5	35.6	33.7	33.9	29.6	29.3	26.6	11.9	9.6	9.3	8.8	49.0	25.1	24
12		9.4	10.8	10.1	10.5	10.1	12.4	19.9	23.7	25.3	32.2	26.6	32.1	35.1	42.9	40.6	44.3	33.9	34.7	30.4	27.4	9.1	5.3	17.0	7.2	5.3	44.3	23.0	24
13		7.1	8.9	7.2	9.0	8.9	8.1	15.2	18.0	18.5	22.5	23.0	26.8	23.1	19.4	20.0	22.5	27.7	19.2	17.2	5.2	5.9	9.0	8.8	6.7	5.2	27.7	14.9	24
14		7.0	7.7	7.0	6.0	7.0	9.5	8.1	11.1	9.0	19.1	18.9	21.4	22.4	29.4	26.8	25.7	21.7	20.7	17.2	8.0	10.4	12.0	8.4	8.1	6.0	29.4	14.3	24
15		8.1	9.7	12.8	9.6	10.3	7.9	3.9	5.8	9.8	15.2	21.6	19.9	37.7	24.6	15.7	20.8	15.5	9.6	9.7	6.0	18.1	10.4	4.7	3.7	3.7	37.7	13.0	24
16		3.9	4.2	5.5	5.8	5.9	8.1	12.7	13.3	13.4	42.5	51.6														3.9	51.6	15.2	11
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HOURLY MAX		34.4	31.5	49.5	40.9	41.9	41.8	53.6	60.5	64.0	67.1	58.3	53.6	56.6	49.0	48.8	49.8	55.4	48.9	48.9	52.5	40.1	34.0	31.2	38.5				
HOURLY AVG		15.1	14.8	15.1	14.4	13.6	14.7	17.8	21.0	23.9	30.8	32.9	34.1	36.0	34.2	31.7	30.9	29.3	27.2	23.4	18.0	15.9	14.7	15.5	14.9				

STATUS FLAG CODES

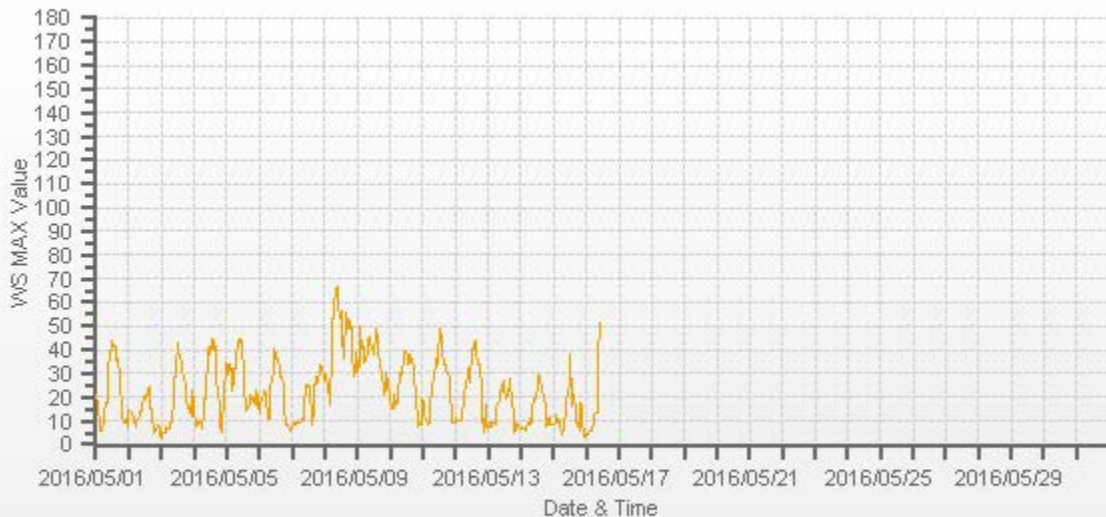
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

MAXIMUM INSTANTANEOUS VALUE:	67.1	KPH	@ HOUR(S)	9	ON DAY(S)	8
					VAR-VARIOUS	
OPERATIONAL TIME:					370	HRS



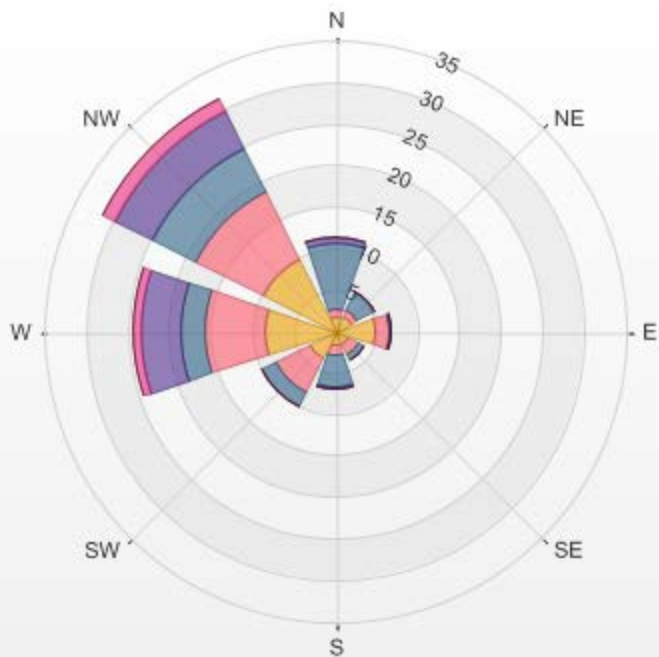
WS MAX[kph] Station: LICA ELK POINT AIRPORT Monthly: 05/2016 Type: AVG 1 Hr. [1 Hr.]



— WS MAX[kph]

Wind: LICA ELK POINT AIRPORT Monitor: WSP [kph] Monthly: 05/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.  
 Calm: 0.00% Valid Data: 94.39% 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	1.89	0.81	8.11	0.54	0	0	11.35
NE	2.16	0.81	2.43	0	0	0	5.4
E	4.86	1.62	0.27	0	0	0	6.75
SE	1.62	1.62	0.54	0	0	0	3.78
S	1.62	1.35	3.78	0.27	0	0	7.02
SW	3.51	4.59	1.89	0	0	0	9.99
W	8.65	7.03	2.97	4.86	0.81	0	24.32
NW	9.73	9.19	5.68	5.14	1.62	0	31.36
Summary	34.04	27.02	25.67	10.81	2.43	0	100



% Icon	Classes (kph)	27		6.0-12.0	26		12.0-20.0	11		20.0-29.0	2		29.0-39.0	0		>39.0
34		0.0-6.0														

***WIND DIRECTION***



WIND DIRECTION (WD) hourly averages

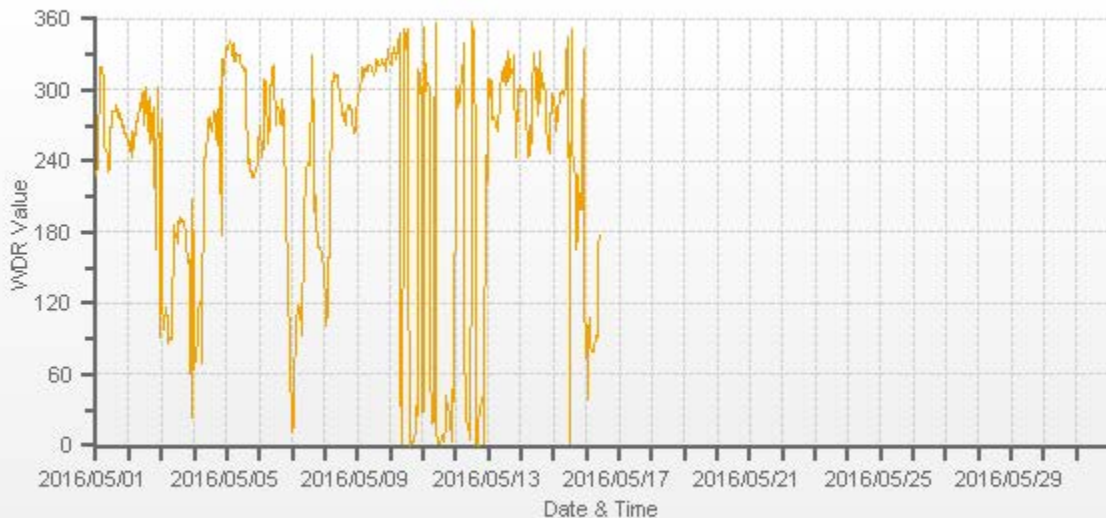
MST		0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	24-HOUR AVG	RDGS.	
HOUR START	HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	QUADRANT		
DAY																												
1		SW	SW	W	NW	NW	NW	WSW	WSW	WSW	SW	SW	W	W	W	W	WNW	W	W	W	W	W	W	W	W	WSW	W	24
2		WSW	WSW	WSW	W	WSW	W	W	W	WNW	WNW	WNW	W	WNW	WNW	W	WNW	WSW	W	WNW	SW	SSE	WNW	WNW	E	W	24	
3		W	ESE	E	ESE	ESE	E	E	E	ESE	S	S	S	S	S	S	S	S	S	S	SSE	SSE	SSE	NNE	SSW	SSE	W	24
4		ENE	ENE	E	ESE	ESE	ESE	ENE	WSW	WSW	WSW	W	W	W	W	W	W	WSW	W	WNW	S	NW	NW	NNW	W	24		
5		NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NNW	NW	NW	NW	NW	NW	NW	WSW	SW	WSW	SW	SW	SW	SW	SW	WSW	WNW	24	
6		W	WSW	WSW	WSW	NW	WNW	WSW	W	WNW	WNW	NW	WNW	W	#N/A	WNW	W	W	WNW	W	SW	S	SE	E	NE	W	24	
7		NNE	NNE	ENE	ESE	ESE	ESE	ESE	E	SE	SSW	SW	WSW	WSW	SW	W	NNW	SSW	SSW	S	SSE	SSE	SSE	SSE	SSE	SSE	24	
8		SE	E	ESE	SSE	SSW	WNW	NW	NW	NW	NW	WNW	WNW	WNW	W	W	W	W	WNW	WNW	WNW	W	W	W	W	W	24	
9		WNW	WNW	WNW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NW	NNW	NW	NW	24
10		NW	NW	NNW	NNW	NW	NNW	NNW	NNW	N	N	N	NNW	NNW	N	N	N	N	N	N	N	NE	NNE	NW	WNW	WNW	NNW	24
11		NNE	N	WNW	NW	NW	WNW	NNE	NE	NNE	N	N	N	N	N	N	N	N	NE	NE	NNE	NNE	N	NE	NE	N	24	
12		W	WNW	WNW	WNW	NW	NW	NNW	NNE	NNE	NNE	NNE	N	N	NNW	N	N	NNE	NNE	NE	NE	N	WSW	SW	WNW	NNW	24	
13		NW	WNW	NW	W	W	W	W	W	WNW	WNW	NW	NW	NW	WNW	NNW	NW	NW	NW	NW	NNW	WSW	W	WNW	WNW	WNW	24	
14		WNW	WNW	WNW	WNW	W	WSW	W	WSW	W	NW	NNW	WNW	NW	W	NNW	WNW	WNW	NW	WNW	W	WSW	WSW	W	WNW	WNW	24	
15		WNW	WNW	W	W	WNW	WNW	WNW	WNW	WNW	NW	NNW	WNW	N	N	WSW	SW	SW	SSE	SW	SSW	SSW	WSW	NNW	ESE	W	24	
16		E	NE	ESE	E	ENE	E	E	E	E	S	S														E	11	
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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:	371	HRS
STANDARD DEVIATION:	103.79		AMD OPERATION UPTIME:	49.9	%



— WDR[Deg]

***STANDARD DEVIATION WIND DIRECTION***



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Elk Point Airport Site - May 2016

JOB # 2833-2016-05-35- 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		8	10	15	8	6	11	31	17	19	17	18	15	15	12	14	13	12	11	5	6	11	7	11	13	24		
2		11	6	13	8	17	10	12	11	14	20	40	37	47	50	24	19	33	23	22	12	36	30	27	32	24		
3		9	25	6	7	4	3	9	18	26	29	25	17	19	17	19	19	14	15	8	9	7	9	22	34	24		
4		54	40	10	3	3	3	23	26	17	19	17	13	19	18	17	18	12	19	7	7	17	24	8	10	24		
5		10	10	11	9	19	12	11	10	11	12	12	11	10	10	17	30	16	23	12	6	6	7	8	11	24		
6		15	11	5	9	10	13	9	13	18	14	20	20	21	R	17	20	22	27	10	7	3	19	30	20	23		
7		20	47	37	6	4	4	8	16	34	25	21	23	17	20	27	60	54	18	11	10	10	11	11	12	24		
8		10	11	10	17	11	14	10	12	11	11	12	10	14	9	11	14	10	9	7	7	7	8	9	9	24		
9		5	6	8	11	11	9	11	11	13	12	12	12	12	11	14	13	12	12	9	9	9	9	8	8	24		
10		8	7	6	7	8	8	9	13	15	18	19	23	18	21	18	15	15	13	18	10	8	9	2	23	24		
11		21	22	5	5	5	7	23	17	22	19	17	22	23	19	25	17	19	15	17	11	10	14	17	35	24		
12		41	6	5	5	7	6	15	18	20	17	20	20	22	20	18	18	16	16	15	10	20	25	42	10	24		
13		15	6	5	8	6	6	11	16	24	16	39	54	54	67	42	63	40	27	14	3	26	21	6	5	24		
14		8	8	5	4	6	7	14	11	26	33	32	46	44	43	65	37	28	17	10	8	4	14	28	13	24		
15		12	8	8	8	8	6	9	18	20	23	33	42	63	62	63	44	46	31	15	8	14	28	20	0	24		
16		13	0	24	9	22	12	8	12	16	16	13														11		
17																												
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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: 266 HRS





— STDWD[Deg]

***APPENDIX II***  
***NON-CONTINUOUS MONITORING DATA RESULTS***

## ***VOC RESULTS***

Sample ID: 16050079-003

Customer ID: LICA

Cust Samp ID: LICA/VOC/ELK/May 6, 2016

Maxxam Analytics

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

Client: LICA Sampler S/N: 6200  
 Location: ELK POINT AIRPORT Canister ID: H3282  
 Station ID: LICA 35 Installation Date/Time (mst): May 4, 2016 @ 17:46  
 Sample ID: LICA/VOC/ELK/May 6, 2016 Removal Date/Time (mst): May 9, 2016 @ 14:21

Date and Time Information

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
<u>May 6, 2016</u>	<u>00:00</u>	<u>00:00</u> <u>May 7, 2016</u>	<u>24.0</u>

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
<u>-28.0</u>	<u>+16.9</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: April 5, 2016 (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

\* Because of power outage event, The total sampling time is 23.85 hours

Deployment Technician Signature: Alex Yakupov

Collection Technician Signature: Alex Yakupov Date: May 9, 2016



## Volatile Organics Data Results

Date: May 6, 2016  
Canister ID: 16050079-003

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	0.03
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	0.05
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	0.04
2,3-Dimethylpentane	0.04
2,4-Dimethylpentane	0.02
2-Methylheptane	0.01
2-Methylhexane	0.05
2-Methylpentane	0.07
3-Methylheptane	< 0.02
3-Methylhexane	0.04
3-Methylpentane	0.05
Acetone	3.2
Acrolein	< 0.3
Benzene	0.08
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	0.02
Carbon disulfide	0.03
Carbon tetrachloride	0.12
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.03
Chloromethane	0.88
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	< 0.02
cis-2-Pentene	< 0.02
Cyclohexane	0.04
Cyclopentane	0.01
Dibromochloromethane	< 0.01
Ethanol	0.9
Ethyl acetate	< 0.4
Ethylbenzene	0.01
Freon-11	0.35

## Volatile Organics Data Results

Date: May 6, 2016  
Canister ID: 16050079-003

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.09
Freon-114	0.03
Freon-12	0.79
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.47
Isopentane	0.43
Isoprene	0.04
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	0.04
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	0.05
Methylene chloride	< 0.3
n-Butane	0.45
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	0.03
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	< 0.5
o-Ethyltoluene	< 0.01
o-Xylene	0.02
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

Customer ID: LICA

Cust Samp ID: LICA/VOC/ELK/May 12, 2016

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: 1523  
 Station ID: LICA 35 Installation Date/Time (mst): May 9, 2016 @ 14:22  
 Sample ID: LICA/VOC/ELK/May 12, 2016 Removal Date/Time (mst): May 13, 2016 @ 11:57

Date and Time Information

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
<u>May 12, 2016</u>	<u>00:00</u>	<u>00:00</u> <u>May 13, 2016</u>	<u>24.0</u>

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
<u>- 28.0</u>	<u>+ 18.4</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

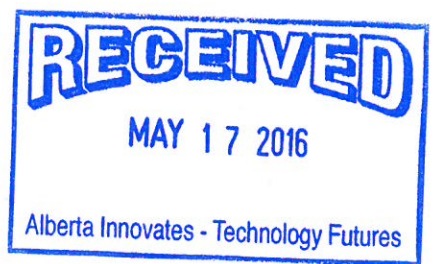
Initial leak check deployment vacuum (in. Hg) = — @ — mst  
 Final leak check deployment vacuum (in. Hg) = — @ — mst  
 Total leak rate = — psi over — minutes  
 Timer reset to zero prior to sampling? YES (yes/no)  
 Date of last flow calibration: April 5, 2016 (due every 3 months)  
 Last date of sample 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 13, 2016



## Volatile Organics Data Results

Date: May 12, 2016  
Canister ID: 16050120-005

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	0.03
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	0.44
1-Hexene	0.27
1-Pentene	0.02
2,2,4-Trimethylpentane	< 0.01
2,2-Dimethylbutane	0.03
2,3,4-Trimethylpentane	< 0.01
2,3-Dimethylbutane	0.09
2,3-Dimethylpentane	0.20
2,4-Dimethylpentane	0.03
2-Methylheptane	0.03
2-Methylhexane	1.06
2-Methylpentane	2.60
3-Methylheptane	0.03
3-Methylhexane	1.37
3-Methylpentane	0.24
Acetone	3.0
Acrolein	< 0.3
Benzene	0.10
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	0.01
Carbon disulfide	0.02
Carbon tetrachloride	0.08
Chlorobenzene	< 0.02
Chloroethane	0.02
Chloroform	0.07
Chloromethane	0.60
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	0.07
cis-2-Pentene	< 0.02
Cyclohexane	0.10
Cyclopentane	0.05
Dibromochloromethane	< 0.01
Ethanol	4.1
Ethyl acetate	0.7
Ethylbenzene	0.03
Freon-11	0.26



## Volatile Organics Data Results

Date: May 12, 2016  
Canister ID: 16050120-005

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.04
Freon-114	< 0.02
Freon-12	0.57
Hexachloro-1,3-butadiene	< 0.50
Isobutane	3.00
Isopentane	3.06
Isoprene	0.04
Isopropyl alcohol	0.4
Isopropylbenzene	< 0.01
m,p-Xylene	0.12
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	1.04
Methylcyclopentane	0.29
Methylene chloride	4.9
n-Butane	2.80
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	2.45
n-Hexane	0.69
n-Nonane	0.01
n-Octane	0.02
n-Pentane	0.7
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	< 0.01
o-Xylene	0.05
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	0.07
Tetrahydrofuran	< 0.4
Toluene	0.36
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	0.10
trans-2-Pentene	0.04
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02

***PAH RESULTS***

Sample ID: 16050079-004

Customer ID: LICA

Cust Samp ID: LICA/PUF/ELK/May 6, 2016

Priority: Normal

### TISCH PUF PLUS Sample Collection Data Sheet

Client:	<u>LICA</u>	Puf+ S/N:	<u>TE-11</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>May 4, 2016 / 18:06</u>
Field Sample ID:	<u>LICA/PUF/ELK/APP A.X.</u>	Removal Date/Time:	<u>May 9, 2016 / 14:00</u>

### Sample Data Collection Information

Sample Date:	<u>May 6, 2016</u>	Average Pressure (mmHg)	<u>703</u>
Start Time (mst):	<u>00:00</u>	Average Flow (Q <sub>std</sub> )	<u>229</u>
End Time (mst):	<u>00:00 May 7, 2016</u>	Average Temperature (°C)	<u>11.0°</u>
Elapsed Time (Hours):	<u>24.0</u>	Volume (V <sub>std</sub> m <sup>3</sup> )	<u>328.28</u> ⊕

### Sample Recovery Checklist

(circle one)

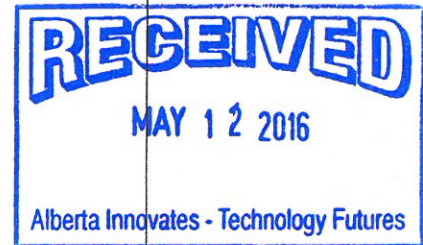
Flow Rate 230 slpm +/- 0.2 slpm ?	<input checked="" type="radio"/> YES	NO
Average temperature appears correct?	<input checked="" type="radio"/> YES	NO
Average pressure appears correct?	<input checked="" type="radio"/> YES	NO
Any error messages? (if yes list below)	YES	<input checked="" type="radio"/> NO
Sample duration 24 hours?	<input checked="" type="radio"/> YES *	NO

Date of last calibration/audit: April 5, 2016

Other observations? ⊕ Because of power outage event, the total sampling time is 23.85 hours

Deployed By: Alex Yakupov

Collected By: Alex Yakupov Date: May 9, 2016



## Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: May 6 , 2016  
PUF S/N: 16050079-004

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.20
2-Methylnaphthalene	0.35
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	0.02
Acenaphthylene	0.02
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	0.07
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.11
Perylene	< 0.01
Phenanthrene	0.11
Pyrene	0.01
Retene	0.05

Sample ID: 16050120-002

Customer ID: LICA

Cust Samp ID: LICA/PUF/ELK/May 12, 2016

### TISCH PUF PLUS Sample Collection Data Sheet

Client:	<u>LICA</u>	Puff S/N:	<u>TE-01</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>May 9, 2016/14:01</u>
Field Sample ID:	<u>LICA/PUF/ELK/May 12, 2016</u>	Removal Date/Time:	<u>May 13, 2016/12:06</u>

### Sample Data Collection Information

Sample Date:	<u>May 12, 2016</u>	Average Pressure (mmHg)	<u>708</u>
Start Time (mst):	<u>00:00</u>	Average Flow (Q <sub>std</sub> )	<u>229</u>
End Time (mst):	<u>00:00 May 13, 2016</u>	Average Temperature (°C)	<u>3.9°</u>
Elapsed Time (Hours):	<u>24:0</u>	Volume (Vstd m <sup>3</sup> )	<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?		

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Deployed By:	<u>Alex Yakupov</u>	
Collected By:	<u>Alex Yakupov</u>	<u>Date: May 13, 2016</u>

## Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: May 12, 2016  
PUF S/N: 16050120-002

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.07
2-Methylnaphthalene	0.13
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	0.04
Perylene	< 0.01
Phenanthrene	0.04
Pyrene	< 0.01
Retene	< 0.01

***NMHC CANISTER RESULTS***

Sample ID: 16050026-005

AIR FCD-01320/2

Customer ID: LICA

Cust Samp ID: LICA/VOC/ELK/May 2, 2016

# Maxxam

## VOC Sample Collection Data Sheet

Client: LICA  
 Location: ELK POINT AIRPORT  
 Station ID: LICA 35  
 Field Sample ID: LICA/VOC/ELK/May 2, 2016

Sampler S/N: n/a  
 Canister ID: 15756  
 Canister Installation Date/Time: April 29, 2016 / 17:49  
 Canister Removal Date/Time: May 4, 2016 / 17:24

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
<u>May 2, 2016</u>	<u>21:25</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>0.0</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: May 4, 2016



## Volatile Organics Data Results (NMHC Canister System)

Date: May 2, 2016  
Canister ID: 16050026-005

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	0.11
1-Hexene	0.04
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	0.03
2,4-Dimethylpentane	< 0.01
2-Methylheptane	< 0.01
2-Methylhexane	0.12
2-Methylpentane	0.09
3-Methylheptane	< 0.02
3-Methylhexane	0.11
3-Methylpentane	0.15
Acetone	4.2
Acrolein	< 0.3
Benzene	0.06
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	0.01
Carbon disulfide	0.04
Carbon tetrachloride	0.11
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.04
Chloromethane	0.85
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	0.02
Dibromochloromethane	< 0.01
Ethanol	2.7
Ethyl acetate	< 0.4
Ethylbenzene	< 0.01
Freon-11	0.37

## Volatile Organics Data Results (NMHC Canister System)

Date: May 2, 2016  
Canister ID: 16050026-005

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.10
Freon-114	0.03
Freon-12	0.73
Hexachloro-1,3-butadiene	< 0.52
Isobutane	0.40
Isopentane	0.35
Isoprene	0.07
Isopropyl alcohol	0.8
Isopropylbenzene	< 0.01
m,p-Xylene	< 0.03
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.52
Methyl ethyl ketone	< 0.3
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.12
Methylcyclopentane	0.16
Methylene chloride	11.2
n-Butane	0.38
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	0.19
n-Hexane	0.93
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	0.05
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: 16050079-005

Customer ID: LICA  
Cust Samp ID: LICA/VOC/ELK/May 6, 2016

# Maxxam

## VOC Sample Collection Data Sheet

Client: LICA  
Location: ELK POINT AIRPORT  
Station ID: LICA 35  
Field Sample ID: LICA/VOC/ELK/May 6, 2016

Sampler S/N: n/a  
Canister ID: S 5612  
Canister Installation Date/Time: May 4, 2016 / 17:25  
Canister Removal Date/Time: May 9, 2016 / 13:43

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
<u>May 6, 2016</u>	<u>20:45</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>- 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: May 9, 2016

## Volatile Organics Data Results (NMHC Canister System)

Date: May 6, 2016  
Canister ID: 16050079-005

PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	0.07
1,1,2,2-Tetrachloroethane	0.06
1,1,2-Trichloroethane	0.05
1,1-Dichloroethane	0.05
1,1-Dichloroethylene	< 0.05
1,2,3-Trimethylbenzene	0.06
1,2,4-Trichlorobenzene	< 1.0
1,2,4-Trimethylbenzene	0.31
1,2-Dibromoethane	0.04
1,2-Dichlorobenzene	< 0.04
1,2-Dichloroethane	0.08
1,2-Dichloropropane	0.07
1,3,5-Trimethylbenzene	0.12
1,3-Butadiene	0.08
1,3-Dichlorobenzene	< 0.4
1,4-Dichlorobenzene	< 0.5
1,4-Dioxane	< 0.5
1-Butene	0.68
1-Hexene	0.41
1-Pentene	0.08
2,2,4-Trimethylpentane	< 0.01
2,2-Dimethylbutane	0.30
2,3,4-Trimethylpentane	0.04
2,3-Dimethylbutane	0.29
2,3-Dimethylpentane	0.37
2,4-Dimethylpentane	0.11
2-Methylheptane	0.17
2-Methylhexane	1.47
2-Methylpentane	1.35
3-Methylheptane	0.16
3-Methylhexane	1.48
3-Methylpentane	0.56
Acetone	6.1
Acrolein	< 0.4
Benzene	0.37
Benzyl chloride	< 0.5
Bromodichloromethane	0.07
Bromoform	0.04
Bromomethane	0.05
Carbon disulfide	0.07
Carbon tetrachloride	0.15
Chlorobenzene	0.09
Chloroethane	0.07
Chloroform	0.08
Chloromethane	0.65
cis-1,2-Dichloroethene	0.05
cis-1,3-Dichloropropene	< 0.05
cis-2-Butene	0.12
cis-2-Pentene	0.07
Cyclohexane	0.35
Cyclopentane	0.16
Dibromochloromethane	0.04
Ethanol	5.7
Ethyl acetate	< 0.5
Ethylbenzene	0.22
Freon-11	0.33

## Volatile Organics Data Results (NMHC Canister System)

Date: May 6, 2016  
Canister ID: 16050079-005

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.12
Freon-114	0.07
Freon-12	0.64
Hexachloro-1,3-butadiene	< 0.61
Isobutane	1.60
Isopentane	3.61
Isoprene	0.10
Isopropyl alcohol	0.7
Isopropylbenzene	0.02
m,p-Xylene	0.81
m-Diethylbenzene	< 0.05
m-Ethyltoluene	0.17
Methyl butyl ketone	< 0.61
Methyl ethyl ketone	0.6
Methyl isobutyl ketone	< 0.5
Methyl methacrylate	< 0.09
Methyl tert butyl ether	0.06
Methylcyclohexane	1.74
Methylcyclopentane	0.59
Methylene chloride	0.6
n-Butane	2.36
n-Decane	< 0.07
n-Dodecane	< 0.5
n-Heptane	2.83
n-Hexane	0.44
n-Nonane	0.04
n-Octane	0.09
n-Pentane	1.4
n-Propylbenzene	< 0.06
n-Undecane	< 0.6
Naphthalene	< 0.6
o-Ethyltoluene	0.07
o-Xylene	0.29
p-Diethylbenzene	< 0.05
p-Ethyltoluene	0.10
Styrene	< 0.05
Tetrachloroethylene	0.07
Tetrahydrofuran	< 0.5
Toluene	1.05
trans-1,2-Dichloroethylene	0.06
trans-1,3-Dichloropropylene	< 0.05
trans-2-Butene	0.13
trans-2-Pentene	0.16
Trichloroethylene	0.10
Vinyl acetate	< 0.5
Vinyl chloride	0.05

Sample ID: 16050120-005

AIR FCD-01320/2

Customer ID: LICA  
Cust Samp ID: LICA/VOC/ELK/May 12, 2016

# Maxxam

## VOC Sample Collection Data Sheet

Client: LICA  
Location: ELK POINT AIRPORT  
Station ID: LICA 35  
Field Sample ID: LICA/VOC/ELK/May 12, 2016

Sampler S/N: n/a  
Canister ID: 14719  
Canister Installation Date/Time: May 9, 2016 / 13:44  
Canister Removal Date/Time: May 13, 2016 / 12:42

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
<u>May 12, 2016</u>	<u>21:40</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>-1.0</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: May 13, 2016

## Volatile Organics Data Results (NMHC Canister System)

Date: May 12, 2016  
Canister ID: 16050120-001

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	0.08
1-Hexene	< 0.02
1-Pentene	< 0.01
2,2,4-Trimethylpentane	0.05
2,2-Dimethylbutane	0.02
2,3,4-Trimethylpentane	< 0.01
2,3-Dimethylbutane	0.06
2,3-Dimethylpentane	0.08
2,4-Dimethylpentane	0.03
2-Methylheptane	< 0.01
2-Methylhexane	< 0.01
2-Methylpentane	0.04
3-Methylheptane	< 0.02
3-Methylhexane	0.02
3-Methylpentane	0.03
Acetone	2.3
Acrolein	< 0.3
Benzene	0.03
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	0.01
Carbon disulfide	0.24
Carbon tetrachloride	0.11
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.02
Chloromethane	0.94
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	< 0.02
cis-2-Pentene	< 0.02
Cyclohexane	0.04
Cyclopentane	0.02
Dibromochloromethane	< 0.01
Ethanol	0.6
Ethyl acetate	< 0.4
Ethylbenzene	< 0.01
Freon-11	0.34

## Volatile Organics Data Results (NMHC Canister System)

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Date: May 12, 2016  
Canister ID: 16050120-001

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.07
Freon-114	0.03
Freon-12	0.81
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.75
Isopentane	0.39
Isoprene	0.02
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	0.54
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	0.1
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	0.04
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	0.03
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02





Sample ID: 16050193-001

Customer ID: LICA

Cust Samp ID: LICA/VOC/ELK/May 14, 2016

# Maxxam

## VOC Sample Collection Data Sheet

Client: LICA  
Location: ELK Point Airport  
Station ID: LICA 35  
Field Sample ID: LICA/VOC/ELK/May 14, 2016

Sampler S/N: n/a  
Canister ID: H 2800  
Canister Installation Date/Time: May 13, 2016 / 12:42  
Canister Removal Date/Time: May 16, 2016 / 12:35

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
<u>May 14, 2016</u>	<u>17:20</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>-0.4</u>

Canister valve open prior to sampling?: YES / NO

Canister valve closed prior to disconnection?: YES / NO

**Comments:**

NMHC sampling canister

Sample in - by Alex Yakupov

Technician Signature:

Sample out - by Alex Yakupov

Date:

May 14, 2016

## Volatile Organics Data Results (NMHC Canister System)

Date: May 14, 2016  
Canister ID: 16050193-001

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	< 0.9
1,2,4-Trimethylbenzene	< 0.03
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.01
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	0.02
2,2,4-Trimethylpentane	0.07
2,2-Dimethylbutane	0.05
2,3,4-Trimethylpentane	0.02
2,3-Dimethylbutane	0.14
2,3-Dimethylpentane	0.14
2,4-Dimethylpentane	0.05
2-Methylheptane	0.02
2-Methylhexane	< 0.01
2-Methylpentane	0.12
3-Methylheptane	< 0.02
3-Methylhexane	0.06
3-Methylpentane	0.08
Acetone	5.1
Acrolein	< 0.3
Benzene	0.19
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	0.01
Carbon disulfide	0.04
Carbon tetrachloride	0.08
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	< 0.02
Chloromethane	0.71
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	< 0.02
cis-2-Pentene	< 0.02
Cyclohexane	0.12
Cyclopentane	0.05
Dibromochloromethane	< 0.01
Ethanol	1.5
Ethyl acetate	< 0.4
Ethylbenzene	< 0.01
Freon-11	0.26

## Volatile Organics Data Results (NMHC Canister System)

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Date: May 14, 2016  
Canister ID: 16050193-001

PARAMETERS	CONCENTRATION (PPB)
Freon-113	0.07
Freon-114	0.02
Freon-12	0.54
Hexachloro-1,3-butadiene	< 0.54
Isobutane	1.60
Isopentane	0.72
Isoprene	0.17
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	< 0.03
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.09
Methyl butyl ketone	< 0.54
Methyl ethyl ketone	< 0.3
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.21
Methylcyclopentane	0.14
Methylene chloride	< 0.3
n-Butane	1.05
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	0.05
n-Hexane	0.11
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane	0.3
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	0.20
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

***APPENDIX III***  
***EQUIPMENT CALIBRATION RESULTS***

***SULPHUR DIOXIDE***



## API 100E Sulphur Dioxide Analyzer Calibration

Date: <u>May 4, 2016</u>	Barometric Pressure: <u>0.923 atm</u>
Company/Airshed: <u>LICA</u>	Station Temperature °C: <u>22</u>
Location/Station Name: <u>Elk Point</u>	Weather Conditions: <u>Mainly clear</u>
Parameter: <u>Sulphur Dioxide</u>	Calibration Purpose: <u>routine monthly</u>
Start Time 24 hr. (mst): <u>11:40</u>	Performed By/Reviewer: <u>Alex Yakupov</u>   <u>Trina Whitsitt</u>
End Time 24 hr. (mst): <u>15:49</u>	Cal Gas Expiry Date: <u>December 2, 2023</u>
Calibration Method: <u>Gas Dilution</u>	Converter Model & s/n (if applicable): <u>n/a</u>

Analyzer:	
Serial Number: <u>467</u>	Range ppb: <u>1000</u>
Last Calibration Date: <u>April 5, 2016</u>	As Found C.F.: <u>0.996</u>
Previous C.F.: <u>0.997</u>	New C.F.: <u>0.999</u>

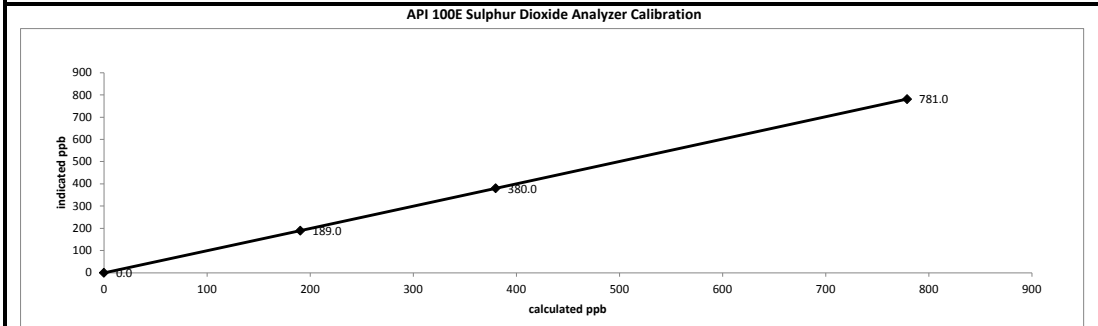
Calibrator: Flow Meter ID's: <u>n/a</u> Make & Model: <u>SABIO 2010 D</u> Serial #: <u>11900613</u> Cal Gas Cylinder I.D. #: <u>LL119346</u> Cal Gas Conc. (ppm): <u>50.0</u>	<b>Standard Calibration Points for Ranges</b> <table border="1" style="margin: auto;"> <thead> <tr> <th>Point</th> <th>Sulphur Dioxide Standard Calibration Points</th> </tr> </thead> <tbody> <tr> <td>High</td> <td style="text-align: center;">780</td> </tr> <tr> <td>Mid</td> <td style="text-align: center;">380</td> </tr> <tr> <td>Low</td> <td style="text-align: center;">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	784.0	0.996
adjusted zero	5000	0.00	5000	0.0	0.0	n/a
adjusted high	4922	78.00	5000	780.0	781.0	0.999
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
<b>Average C.F.=</b>						<b>1.001</b>

Linear Regression/Calibration Results:

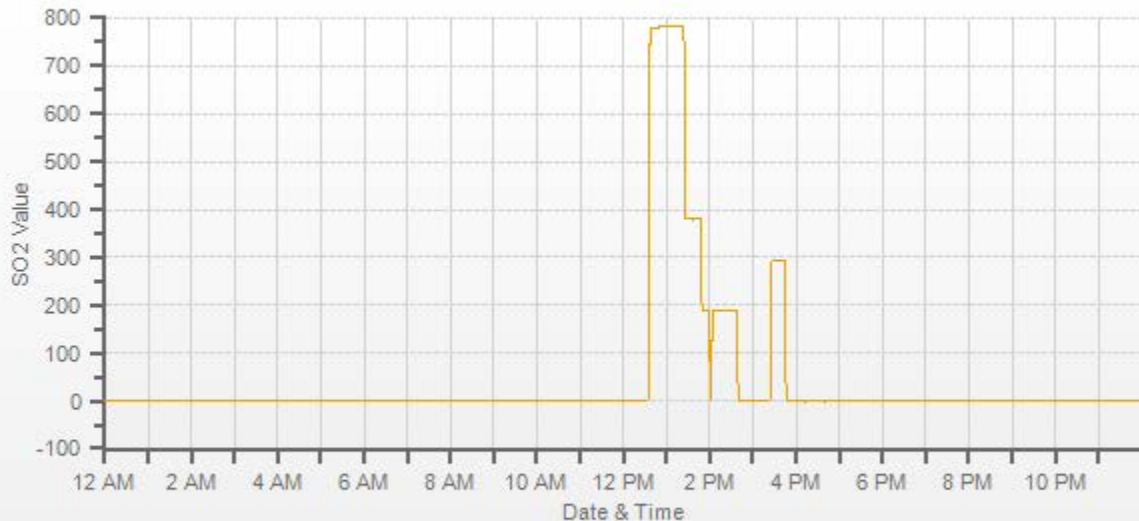
Correlation Coefficient = <u>1.000</u>	<b>LIMITS</b>
Slope = <u>0.998</u>	> or = 0.995
b (Intercept as % of full scale) = <u>0.06%</u>	.95-1.05
% change in C.F. from last cal = <u>0.08%</u>	± 3% F.S.
	± 10%



As found:	As left:
SLOPE: <u>1.108</u>	SLOPE: <u>1.105</u>
OFFSET: <u>116.5</u>	OFFSET: <u>119.0</u>
HVPS: <u>512</u>	HVPS: <u>512</u>
RCELL TEMP: <u>50.0</u>	RCELL TEMP: <u>50.0</u>
BOX TEMP: <u>33.3</u>	BOX TEMP: <u>35.0</u>
PMT TEMP: <u>8.1</u>	PMT TEMP: <u>8.2</u>
IZS TEMP: <u>45.0</u>	IZS TEMP: <u>45.0</u>
PRES: <u>24.4</u>	PRES: <u>24.3</u>
SAMP FL: <u>612</u>	SAMP FL: <u>610</u>
NORM PMT: <u>118.8</u>	NORM PMT: <u>119.1</u>
UV LAMP: <u>2872.6</u>	UV LAMP: <u>2872.9</u>
LAMP RATIO: <u>95.6</u>	LAMP RATIO: <u>95.6</u>
STR. LGT: <u>64.6</u>	STR. LGT: <u>65.7</u>
DRK PMT: <u>15.6</u>	DRK PMT: <u>16.0</u>
DRK LMP: <u>2.6</u>	DRK LMP: <u>2.8</u>
Internal Span: <u>284.1</u>	Internal Span: <u>293</u>

Comments:

Sample filter changed. Low Point Starts at 14:09.



— SO2[ppb]



## API 100E Sulphur Dioxide Analyzer Calibration

Date: <u>May 16, 2016</u>	Barometric Pressure: <u>0.931 atm</u>
Company/Airshed: <u>LICA</u>	Station Temperature °C: <u>22</u>
Location/Station Name: <u>Elk Point</u>	Weather Conditions: <u>Mainly sunny</u>
Parameter: <u>Sulphur Dioxide</u>	Calibration Purpose: <u>shut down</u>
Start Time 24 hr. (mst): <u>12:00</u>	Performed By/Reviewer: <u>Alex Yakupov</u> / <u>Trina Whitsitt</u>
End Time 24 hr. (mst): <u>13:49</u>	Cal Gas Expiry Date: <u>December 2, 2023</u>
Calibration Method: <u>Gas Dilution</u>	Converter Model & s/n (if applicable): <u>n/a</u>

Analyzer:	
Serial Number: <u>467</u>	Range ppb: <u>1000</u>
Last Calibration Date: <u>May 4, 2016</u>	As Found C.F.: <u>1.005</u>
Previous C.F.: <u>0.999</u>	New C.F.: <u>n/a</u>

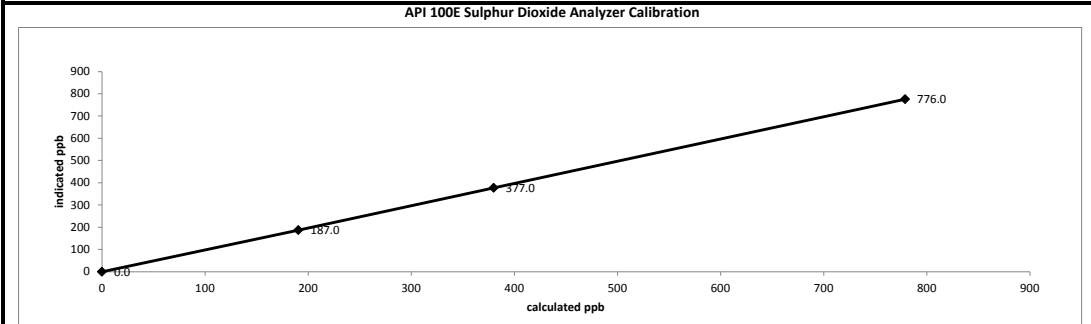
Calibrator: Flow Meter ID's: <u>n/a</u> Make & Model: <u>SABIO 2010 D</u> Serial #: <u>11900613</u> Cal Gas Cylinder I.D. #: <u>LL119346</u> Cal Gas Conc. (ppm): <u>50.0</u>	<b>Standard Calibration Points for Ranges</b> <table border="1" style="margin: auto;"> <thead> <tr> <th>Point</th> <th>Sulphur Dioxide Standard Calibration Points</th> </tr> </thead> <tbody> <tr> <td>High</td> <td style="text-align: center;">780</td> </tr> <tr> <td>Mid</td> <td style="text-align: center;">380</td> </tr> <tr> <td>Low</td> <td style="text-align: center;">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	0.0	N/A
as found high	4922	78.00	5000	780.0	776.0	1.005
mid	4962	38.00	5000	380.0	377.0	1.008
low	4981	19.00	5000	190.0	187.0	1.016
Average C.F.=						1.010

Linear Regression/Calibration Results:

Correlation Coefficient = <u>1.000</u>	LIMITS
Slope = <u>1.004</u>	> or = 0.995
b (Intercept as % of full scale) = <u>0.10%</u>	0.90-1.10
% change in C.F. from last cal = <u>-0.62%</u>	± 3% F.S.
	± 10%

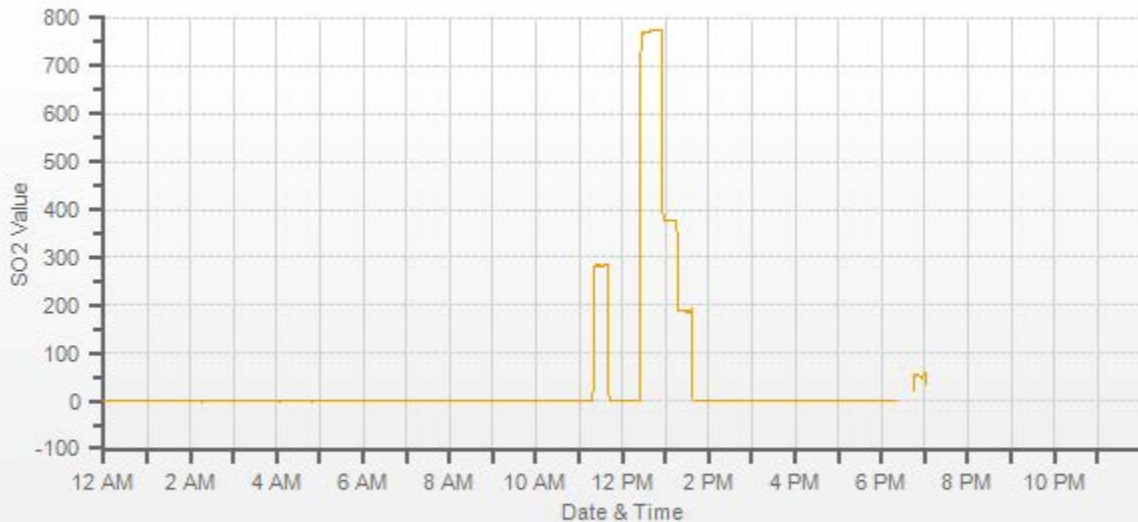


<b>As found:</b> SLOPE: <u>1.105</u> OFFSET: <u>119.0</u> HVPS: <u>512</u> RCELL TEMP: <u>50.0</u> BOX TEMP: <u>32.4</u> PMT TEMP: <u>8.1</u> IZS TEMP: <u>45.0</u> PRES: <u>24.7</u> SAMP FL: <u>617</u> NORM PMT: <u>117.9</u> UV LAMP: <u>2734.4</u> LAMP RATIO: <u>91.0</u> STR. LGT: <u>65.7</u> DRK PMT: <u>15.7</u> DRK LMP: <u>2.7</u> Internal Span: <u>293</u>	<b>As left:</b> SLOPE: <u>n/a</u> OFFSET: <u>n/a</u> HVPS: <u>n/a</u> RCELL TEMP: <u>n/a</u> BOX TEMP: <u>n/a</u> PMT TEMP: <u>n/a</u> IZS TEMP: <u>n/a</u> PRES: <u>n/a</u> SAMP FL: <u>n/a</u> NORM PMT: <u>n/a</u> UV LAMP: <u>n/a</u> LAMP RATIO: <u>n/a</u> STR. LGT: <u>n/a</u> DRK PMT: <u>n/a</u> DRK LMP: <u>n/a</u> Internal Span: <u>n/a</u>
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Comments:

Shutdown calibration completed to relocate the station. No ZERO adjustment made. No High Point adjustment made.





— SO2[ppb]

***HYDROGEN SULPHIDE***



## API 101E Hydrogen Sulphide Analyzer Calibration

Date: May 4, 2016	Barometric Pressure: 0.923 atm
Company/Airshed: LICA	Station Temperature °C: 22
Location/Station Name: Elk Point	Weather Conditions: Mainly clear
Parameter: Hydrogen Sulphide	Calibration Purpose: routine monthly
Start Time 24 hr. (mst): 11:40	Performed By/Reviewer: Alex Yakupov   Trina Whitsitt
End Time 24 hr. (mst): 15:49	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.: 0.963
Last Calibration Date: April 4, 2016	New C.F.: 1.000
Previous C.F.: 1.000	

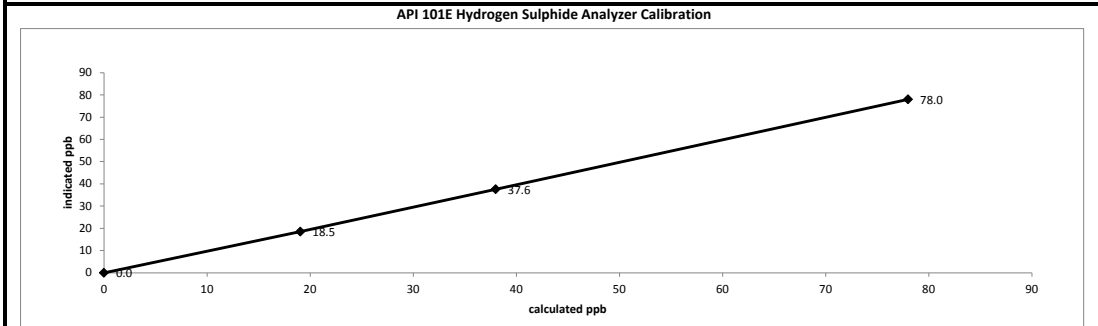
Calibrator:	Standard Calibration Points for Ranges								
Flow Meter ID's: n/a	<table border="1" style="margin: auto;"> <thead> <tr> <th>Point</th> <th>Hydrogen Sulphide Standard Calibration Points</th> </tr> </thead> <tbody> <tr> <td>High</td> <td>78</td> </tr> <tr> <td>Mid</td> <td>38</td> </tr> <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 #: 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)	
as found zero	7498	0.00	7498	0.0	1.0	N/A
as found high	7442	58.50	7501	78.0	82.0	0.963
adjusted zero	7498	0.00	7498	0.0	0.0	n/a
adjusted high	7442	58.50	7501	78.0	78.0	1.000
mid	7471	28.50	7500	38.0	37.6	1.011
low	7491	14.30	7505	19.1	18.5	1.030
calibrator zero	7498	0.00	7498	0.0	0.0	n/a
Average C.F.=						1.014

Linear Regression/Calibration Results:

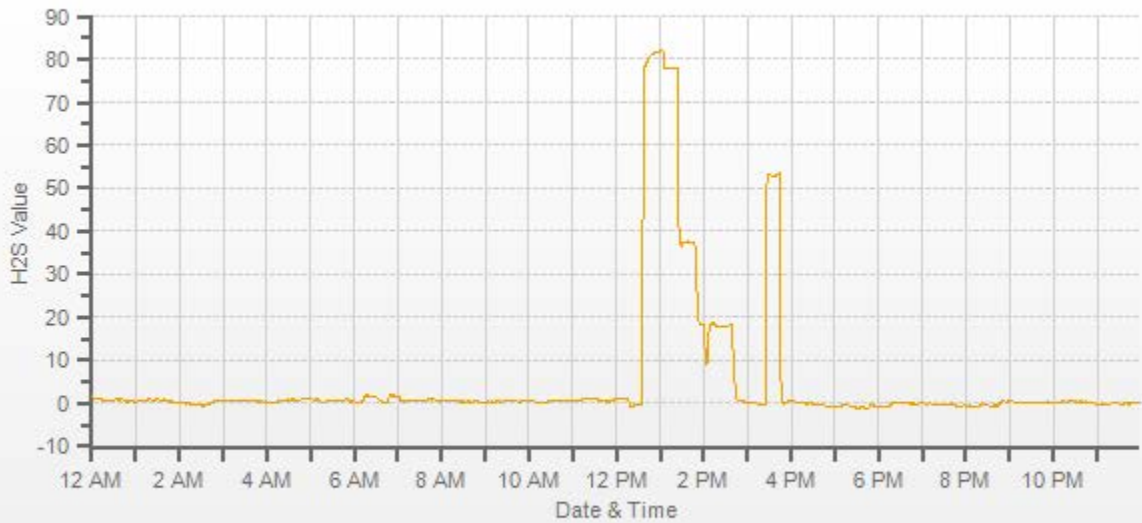
Correlation Coefficient = 1.000	LIMITS
Slope = 0.998	> or = 0.995
b (Intercept as % of full scale) = 0.31%	.95-1.05
% change in C.F. from last cal = 3.71%	± 3% F.S.
	± 10%



As found:	As left:
SLOPE: 1.170	SLOPE: 1.123
OFFSET: 30.1	OFFSET: 30.9
HVPS: 526	HVPS: 526
RCELL TEMP: 50.0	RCELL TEMP: 50.0
BOX TEMP: 36.4	BOX TEMP: 38.3
PMT TEMP: 8.4	PMT TEMP: 8.4
IZS TEMP: 45.0	IZS TEMP: 45.0
Converter Temp: 315.3	Converter Temp: 315.0
PRES: 21.2	PRES: 21.2
SAMP FL: 553	SAMP FL: 551
UV LAMP: 2608.5	UV LAMP: 2604.9
LAMP RATIO: 82.2	LAMP RATIO: 82.0
STR. LGT: 17.6	STR. LGT: 18.0
DRK PMT: 36.1	DRK PMT: 37.0
DRK LMP: -2.1	DRK LMP: -1.8
Internal Span: 54	Internal Span: 53.3

Comments:

Sample filter changed. Low point starts at 14:09.



— H2S[ppb]



## API 101E Hydrogen Sulphide Analyzer Calibration

Date: May 2016	Barometric Pressure: 0.931atm
Company/Airshed: LICA	Station Temperature °C: 22
Location/Station Name: Elk Point	Weather Conditions: Mainly sunny
Parameter: Hydrogen Sulphide	Calibration Purpose: shut down
Start Time 24 hr. (mst): 13:59	Performed By/Reviewer: Alex Yakupov Trina Whitsitt
End Time 24 hr. (mst): 15:39	Cal Gas Expiry Date: July 15, 2017
Calibration Method: Gas Dilution	Converter Model & s/n (if applicable): n/a

<b>Analyzer:</b>	
Serial Number: 510	Range ppb: 100
Last Calibration Date: May 4, 2016	As Found C.F.: 1.002
Previous C.F.: 1.000	New C.F.: n/a

<b>Calibrator:</b>	<b>Standard Calibration Points for Ranges</b>								
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 #: 627									
Cal Gas Cylinder I.D. #: LL36837									
Cal Gas Conc. (ppm): 10.0									

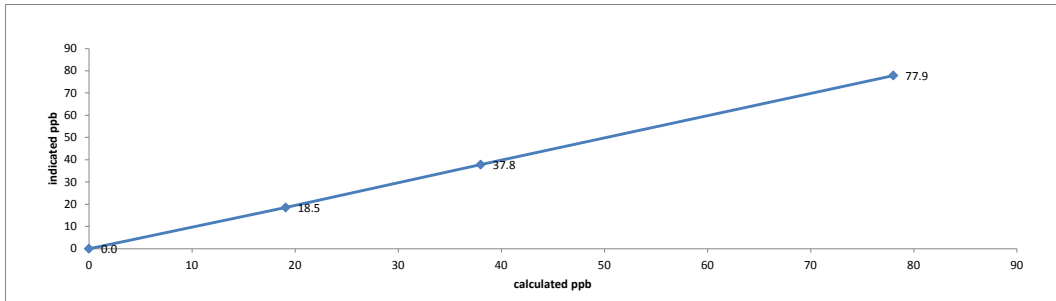
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
as found zero	7498	0.00	7498	0.0	0.0	N/A
as found high	7439	58.50	7498	78.0	77.9	1.002
mid	7471	28.50	7500	38.0	37.8	1.005
low	7482	14.30	7496	19.1	18.5	1.031
Average C.F. =						1.013

**Linear Regression/Calibration Results:**

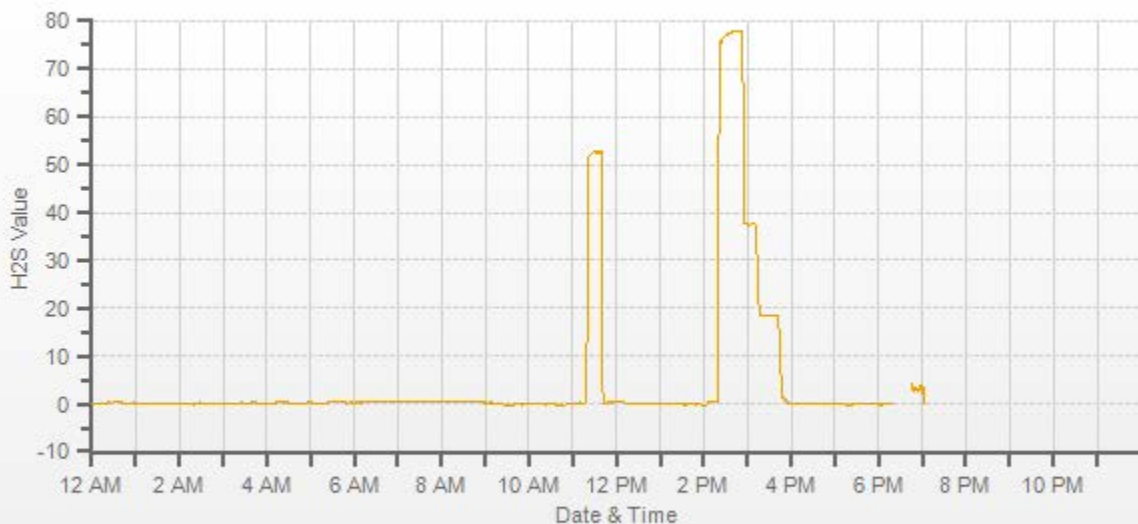
Correlation Coefficient =	1.000	<b>LIMITS</b>
Slope =	0.999	> or = 0.995
b (Intercept as % of full scale) =	0.25%	0.90-1.10
% change in C.F. from last cal =	-0.16%	± 3% F.S.
		± 10%

API 101E Hydrogen Sulphide Analyzer Calibration



<b>As found:</b>	<b>As left:</b>
SLOPE: 1.123	SLOPE: n/a
OFFSET: 30.9	OFFSET: n/a
HVPS: 526	HVPS: n/a
RCELL TEMP: 50.0	RCELL TEMP: n/a
BOX TEMP: 34.3	BOX TEMP: n/a
PMT TEMP: 8.4	PMT TEMP: n/a
IZS TEMP: 45.0	IZS TEMP: n/a
Converter Temp: 314.4	Converter Temp: n/a
PRES: 21.4	PRES: n/a
SAMP FL: 557	SAMP FL: n/a
UV LAMP: 2596.1	UV LAMP: n/a
LAMP RATIO: 81.9	LAMP RATIO: n/a
STR. LGT: 17.4	STR. LGT: n/a
DRK PMT: 34.9	DRK PMT: n/a
DRK LMP: -2.1	DRK LMP: n/a
Internal Span: 53.3	Internal Span: n/a

**Comments:**  
 Shutdown calibration completed to relocate the station. No ZERO adjustment made. No High Point adjustment made.



— H2S[ppb]

***TOTAL HYDROCARBON***



## Thermo 55i Methane/Non-Methane Analyzer Calibration

Date: May 16, 2016	Barometric Pressure: 0.931atm
Company/Airshed: LICA	Station Temperature °C: 22
Location/Station Name: Elk Point	Weather Conditions: Mainly sunny
Parameter: CH <sub>4</sub> / NMHC / THC	Calibration Purpose: shut down
Start/End Time 24 hr. (mst): 12:00 / 13:48	Performed By/Reviewer: Alex Yakupov   Trina Whitsitt
Calibration Method: Gas Dilution	Cal Gas Expiry Date: November 25, 2023

<b>Analyzer:</b> Serial Number: 1433563261 Last Calibration Date: April 5, 2016 Range ppm: 20 CH <sub>4</sub> /20 NMHC/40 THC	<b>Correction Factors:</b> <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>CH<sub>4</sub> =</td> <td>0.998</td> <td>1.019</td> <td>n/a</td> </tr> <tr> <td>NMHC =</td> <td>0.999</td> <td>0.983</td> <td>n/a</td> </tr> <tr> <td>THC =</td> <td>0.998</td> <td>1.000</td> <td>n/a</td> </tr> </tbody> </table>		Previous C.F.:	As Found C.F.:	New C.F.:	CH <sub>4</sub> =	0.998	1.019	n/a	NMHC =	0.999	0.983	n/a	THC =	0.998	1.000	n/a
	Previous C.F.:	As Found C.F.:	New C.F.:														
CH <sub>4</sub> =	0.998	1.019	n/a														
NMHC =	0.999	0.983	n/a														
THC =	0.998	1.000	n/a														

<b>Calibrator:</b> Flow Meter ID's: n/a Make & Model: API 700 Serial #: 627 Cal Gas Cylinder I.D. #: LL165372 CH <sub>4</sub> Cylinder Conc.: 606.0    212.0 =C <sub>3</sub> H <sub>8</sub> Cylinder Conc. CH <sub>4</sub> as C <sub>3</sub> H <sub>8</sub> : 583.0    1189.0 =total CH <sub>4</sub> equivalent	<b>Standard Calibration Points for Analyzer Range of 20/20/40 ppm</b> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Point</th> <th>CH<sub>4</sub></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 <sub>4</sub>	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 <sub>4</sub>	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 <sub>4</sub> (ppm)	Calculated NMHC (ppm)	Calculated THC (ppm)	Indicated CH <sub>4</sub> (ppm)	Indicated NMHC (ppm)	Indicated THC (ppm)	Correction Factors:		
	Diluent	Cal Gas	Total Flow							CH <sub>4</sub>	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	13.37	13.34	26.74	1.019	0.983	1.000
mid	2000	24.00	2024	7.19	6.91	14.10	7.07	7.00	14.07	1.016	0.988	1.002
low	2000	11.00	2011	3.31	3.19	6.50	3.26	3.29	6.50	1.017	0.969	1.001
<b>Average C.F.=</b>										1.017	0.980	1.001

**Linear Regression/Calibration Results:**

	CH <sub>4</sub>	NMHC	THC	
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995
Slope =	0.981	1.016	1.000	0.90-1.10
b (Intercept as % of full scale)=	0.03%	0.06%	-0.02%	± 3% F.S.
% change in C.F. from last cal=	-2.11%	1.64%	-0.17%	± 10%

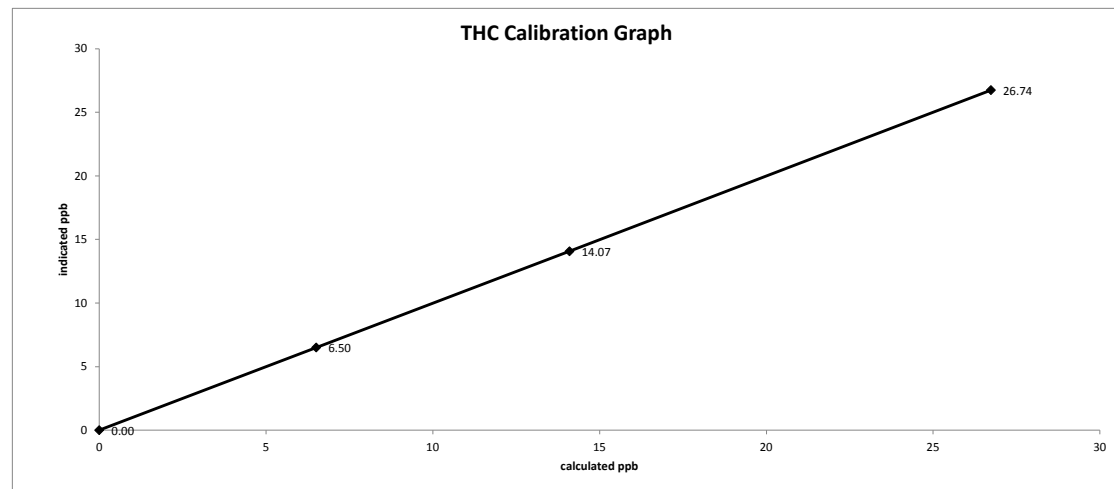
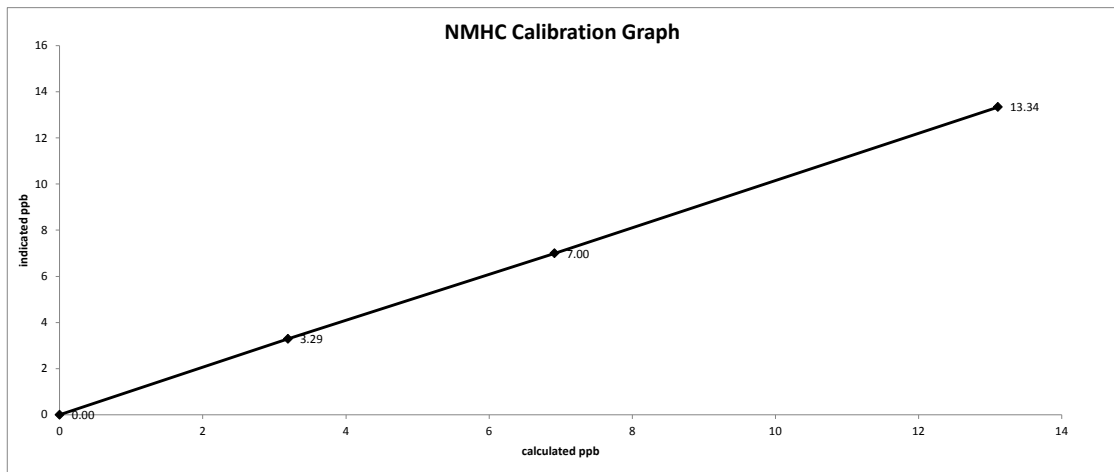
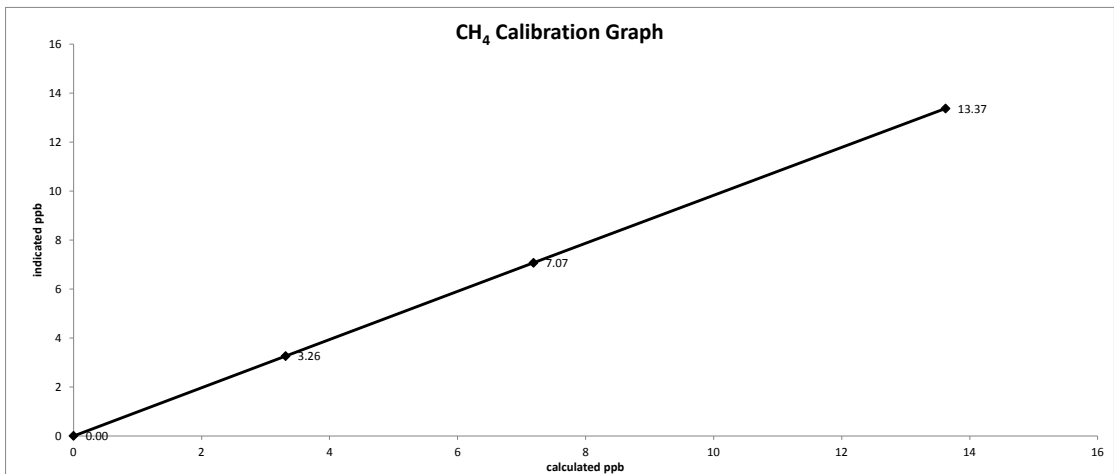
<b>As found:</b> Interface Board Voltages: Bias Supply: -293.0 Temperatures: Detector Oven: 175.0 Filter: 175.0 Column Oven: 75.1 Internal: 33.3 Cylinder Pressures/reg.: Carrier: 400   50 Fuel: 1000   50 Span Gas: 1500   22 Zero Air Generator: 45 Internal Pressures: Carrier: 31.1 Fuel: 40.3 Air: 32.4 FID Status: Status: LIT Counts: 23742 Flame: 368.0 Det Base: 175.0 Flame and Power Stats: Last Power On: May 06, 2016 Flameouts: 164 Det Oven at Start: 154.4 Col Oven at Start: 71.2 Calibration History: Time: Jan 01, 1970 Type: ERROR Status: ERROR Check/Adjust: ADJUST CH <sub>4</sub> Span Conc: 0.00 CH <sub>4</sub> SP Ratio: 0 CH <sub>4</sub> RT: 0.0 CH <sub>4</sub> PK IDX: 0 CH <sub>4</sub> PK HT: 0 NM Span Conc: 0.00 NM SP Ratio: 0	<b>As left:</b> Calibration History cnt'd: NM Peak Area: 0 Crucial Settings: Methane Start: n/a Methane End: n/a Backflush: n/a NMHV Start: n/a NMHC End: n/a Run History>1: Date: May 16, 2016 Time: 12:01 CH <sub>4</sub> PK HT: 0 CH <sub>4</sub> RT: 8.0 CH <sub>4</sub> Baseline: 2029 CH <sub>4</sub> LOD: 65 CH <sub>4</sub> SD: 21 CH <sub>4</sub> CONC: 0.00 NM PK HT: 0 NM Peak Area: 0 NM CONC: 0.0 NM Base Start: 1935 NM Base End: 1956 NM LOD: 7 NM Start IDX: 32 NM End IDX: 54 NM Max Slope: 9.2e-00 NM Min Slope: -5.2e-01 NM PT Count: 0 Daily Zero/Span Values: Previous CH <sub>4</sub> : 9.7 Previous NMHC: 11.41 Previous THC: 21.19 New CH <sub>4</sub> : n/a New NMHC: n/a New THC: n/a
--	--

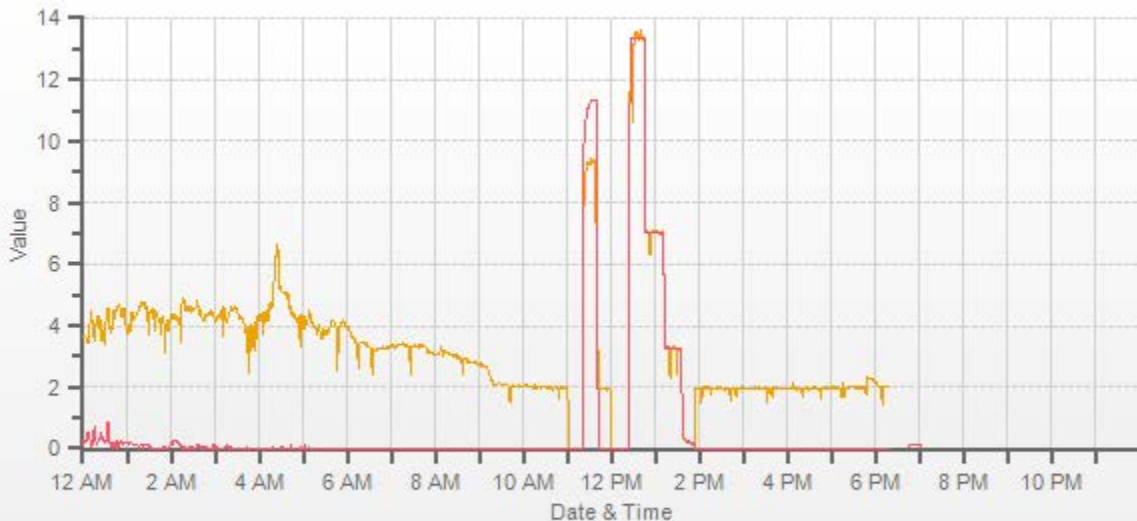
**Comments:**  
 Shutdown calibration completed to relocate the station. No ZERO adjustment made. No High Point adjustment made.



Date: May 16, 2016  
Company/Airshed: LICA  
Location/Station Name: Eik Point

Start/End Time 24 hr. (mst): 12:00 / 13:48  
Calibration Purpose: shut down  
Calibration Method: Gas Dilution





— CH4[ppm] — NMHC[ppm]

***NITROGEN DIOXIDE***



## API 200E NO-NO2-NOx Analyzer Calibration

Date: May 4, 2016	Barometric Pressure: 0.923 atm
Company/Airshed: LICA	Station Temperature °C: 22
Location/Station Name: Elk Point	Weather Conditions: Mainly clear
Start/End Time 24 hr. (mst): 11:40 / 17:43	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

<b>Analyzer:</b>  Serial Number: 593 Last Calibration Date: April 5, 2016 Range ppb: 1000	<b>Correction Factors:</b> <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>0.997</td> <td>1.047</td> <td>1.000</td> </tr> <tr> <td>NO<sub>2</sub> =</td> <td>1.002</td> <td>1.002</td> <td>1.002</td> </tr> <tr> <td>NOx =</td> <td>0.997</td> <td>1.047</td> <td>1.000</td> </tr> </tbody> </table>		Previous C.F.:	As Found C.F.:	New C.F.:	NO =	0.997	1.047	1.000	NO <sub>2</sub> =	1.002	1.002	1.002	NOx =	0.997	1.047	1.000
	Previous C.F.:	As Found C.F.:	New C.F.:														
NO =	0.997	1.047	1.000														
NO <sub>2</sub> =	1.002	1.002	1.002														
NOx =	0.997	1.047	1.000														

<b>Calibrator:</b> 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	<b>Standard Calibration Points for a Range of: 1000 ppb</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Point</th> <th>Target NO (ppb)</th> <th>Target NO<sub>2</sub> (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 <sub>2</sub> (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 <sub>2</sub> (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	745.0	745.0	1.047	1.047
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	780.0	780.0	1.000	1.000
mid	4962	38.00	5000	380.0	380.0	382.0	382.0	0.995	0.995
low	4981	19.00	5000	190.0	190.0	190.0	190.0	1.000	1.000
calibrator zero	5000	0.00	5000	0	0	0.0	0.0	n/a	n/a
Average C.F.=								0.998	0.998

**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 <sub>2</sub>	NO drop	NO <sub>2</sub> gain	NO <sub>2</sub> 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	272.0	779.0	507.0	508.0	507.0	1.002
adjusted high NO2	4922	78.00	5000	520.0	272.0	779.0	507.0	508.0	507.0	1.002
gpt mid	4922	78.00	5000	277.0	504.0	780.0	275.0	276.0	275.0	1.004
gpt low	4922	78.00	5000	97.0	685.0	780.0	95.0	95.0	95.0	1.000
Average NO <sub>2</sub> C.F.=										1.002

**Linear Regression/Calibration Results:**

	NO	NOx	NO <sub>2</sub>	LIMITS
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995
Slope =	1.000	1.000	1.002	.95-1.05
b (Intercept as % of full scale) =	0.04%	0.04%	0.00%	± 3% F.S.
% change in C.F. from last cal =	-5.01%	-5.01%	0.00%	± 10%
NO2 converter efficiency			1.00	0.96 to 1.04

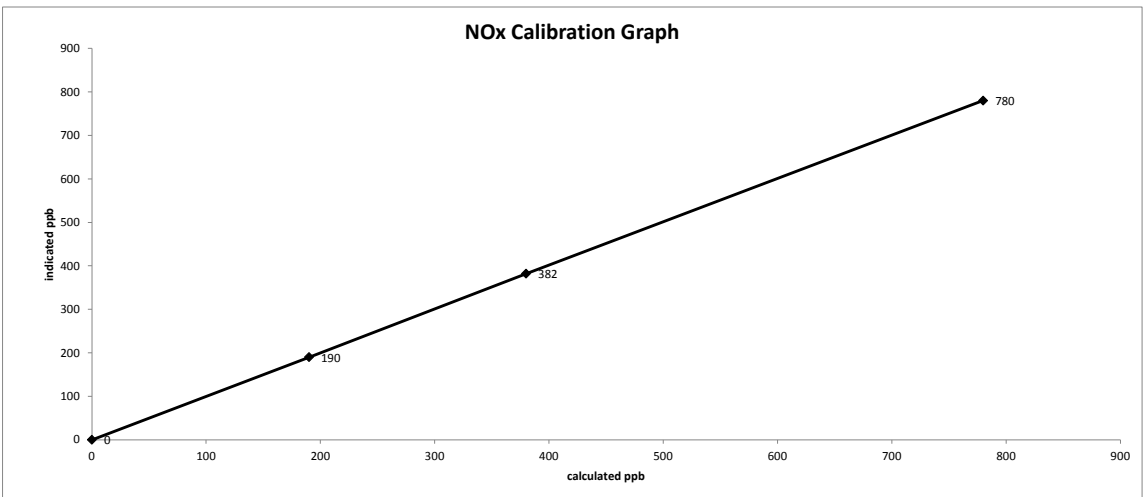
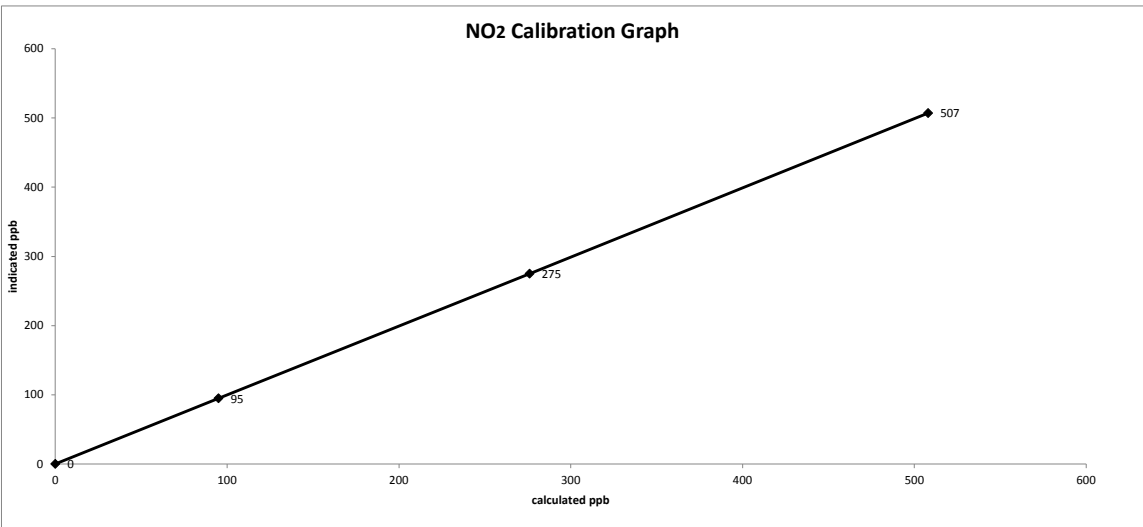
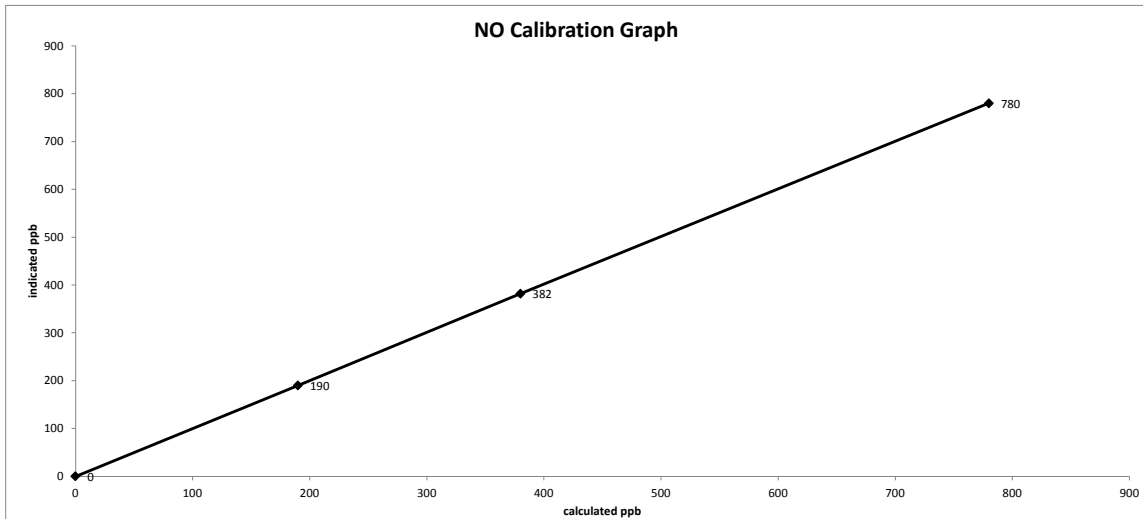
As found:	As left:
NOx SLOPE: 0.957	NOx SLOPE: 1.003
NOx OFFS: 1.5	NOx OFFS: 1.5
NO SLOPE: 0.957	NO SLOPE: 1.002
NO OFFS: -0.2	NO OFFS: -0.2
SAMP FLW: 476	SAMP FLW: 476
OZONE FL: 77	OZONE FL: 76
PMT: 8.0	PMT: 13.0
NORM PMT: 1.2	NORM PMT: 4.2
AZERO: 7.4	AZERO: 7.5
HVPS: 662	HVPS: 662
RCELL TEMP: 50.0	RCELL TEMP: 50.0
BOX TEMP: 32.8	BOX TEMP: 34.5
PMT TEMP: 6.7	PMT TEMP: 6.8
IZS TEMP: 45.3	IZS TEMP: 45.0
MOLY TEMP: 314.3	MOLY TEMP: 314.3
RCEL: 7.1	RCEL: 7.1
SAMP: 27.2	SAMP: 26.9
Internal Span NO: 6.7	Internal Span NO: 5.6
Internal Span NO2: 276	Internal Span NO2: 282
Internal Span NOx: 283	Internal Span NOx: 288

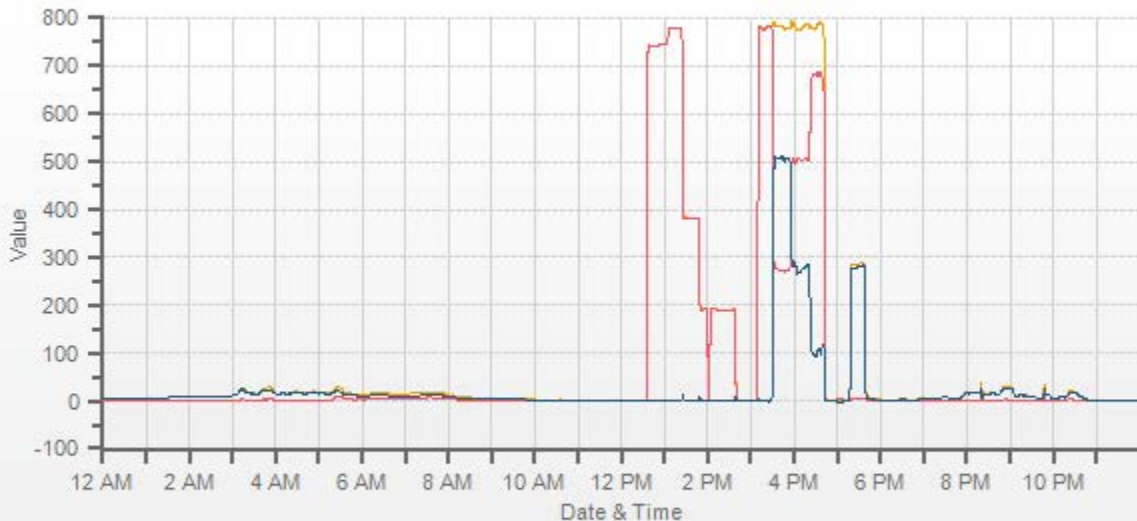
**Comments:**

Sample filter changed. No ZERO adjustment made. No NO2 adjustment made. Low Point starts at 14:09.

Date: May 4, 2016  
Company/Airshed: LICA  
Location/Station Name: Elk Point

Start/End Time 24 hr. (mst): 11:40 / 17:43  
Calibration Purpose: routine monthly  
Calibration Method: Gas Dilution & Varying UV Lamp Power





— NOX[ppb] — NO[ppb] — NO2[ppb]



## API 200E NO-NO2-NOx Analyzer Calibration

<b>Date:</b> May 16, 2016	<b>Barometric Pressure:</b> 0.931atm
<b>Company/Airshed:</b> LICA	<b>Station Temperature °C:</b> 22
<b>Location/Station Name:</b> Elk Point	<b>Weather Conditions:</b> Mainly sunny
<b>Start/End Time 24 hr. (mst):</b> 12:00 / 15:39	<b>Calibration Purpose:</b> shut down
<b>G.P.T. to be used for Ozone?</b> No	<b>Performed By/Reviewer:</b> Alex Yakupov   Trina Whitsitt
<b>Calibration Method:</b> Gas Dilution & Varying UV Lamp Power	<b>Cal Gas Expiry Date:</b> December 2, 2023

<b>Analyzer:</b>	<b>Correction Factors:</b>												
<b>Serial Number:</b> 593	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 33%;">Previous C.F.:</th> <th style="width: 33%;">As Found C.F.:</th> <th style="width: 33%;">New C.F.:</th> </tr> <tr> <td>NO = 1.000</td> <td>1.025</td> <td>n/a</td> </tr> <tr> <td>NO<sub>2</sub> = 1.002</td> <td>1.000</td> <td>n/a</td> </tr> <tr> <td>NOx = 1.000</td> <td>1.022</td> <td>n/a</td> </tr> </table>	Previous C.F.:	As Found C.F.:	New C.F.:	NO = 1.000	1.025	n/a	NO <sub>2</sub> = 1.002	1.000	n/a	NOx = 1.000	1.022	n/a
Previous C.F.:	As Found C.F.:	New C.F.:											
NO = 1.000	1.025	n/a											
NO <sub>2</sub> = 1.002	1.000	n/a											
NOx = 1.000	1.022	n/a											
<b>Last Calibration Date:</b> May 4, 2016													
<b>Range ppb:</b> 1000													

<b>Calibrator:</b>	<b>Standard Calibration Points for a Range of: 1000 ppb</b>																								
<b>Flow Meter ID's:</b> n/a																									
<b>Make &amp; Model:</b> SABIO 2010 D																									
<b>Serial #:</b> 11900613																									
<b>Cal Gas Cylinder I.D. #:</b> LL119346																									
<b>NO/NOx Gas Conc. (ppm):</b> 50.0   50.0																									
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Point</th> <th>Target NO (ppb)</th> <th>Target NO<sub>2</sub> (ppb)</th> <th>Cc Ozone ?</th> </tr> <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> </table>	Point	Target NO (ppb)	Target NO <sub>2</sub> (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 <sub>2</sub> (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	761.0	763.0	1.025	1.022
mid	4962	38.00	5000	380.0	380.0	370.0	371.0	1.027	1.024
low	4981	19.00	5000	190.0	190.0	185.0	185.0	1.027	1.027
<b>Average C.F.=</b>								1.026	1.025

**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 <sub>2</sub>	NO drop	NO <sub>2</sub> gain	NO <sub>2</sub> 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	762.0	762.0	0.0	0.0	0.0	
as found high NO2	4922	78.00	5000	520.0	267.0	762.0	495.0	495.0	495.0	1.000
gpt mid	4922	78.00	5000	277.0	485.0	761.0	276.0	277.0	276.0	1.004
gpt low	4922	78.00	5000	97.0	662.0	761.0	100.0	100.0	100.0	1.000
<b>Average NO<sub>2</sub> C.F.=</b>									1.001	

**Linear Regression/Calibration Results:**

	NO	NOx	NO <sub>2</sub>	LIMITS
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995
Slope =	1.025	1.022	1.000	0.90-1.10
b (Intercept as % of full scale)=	-0.03%	-0.05%	-0.02%	± 3% F.S.
% change in C.F. from last cal=	-2.50%	0.20%	-2.23%	± 10%
NO <sub>2</sub> converter efficiency			1.00	0.96 to 1.04

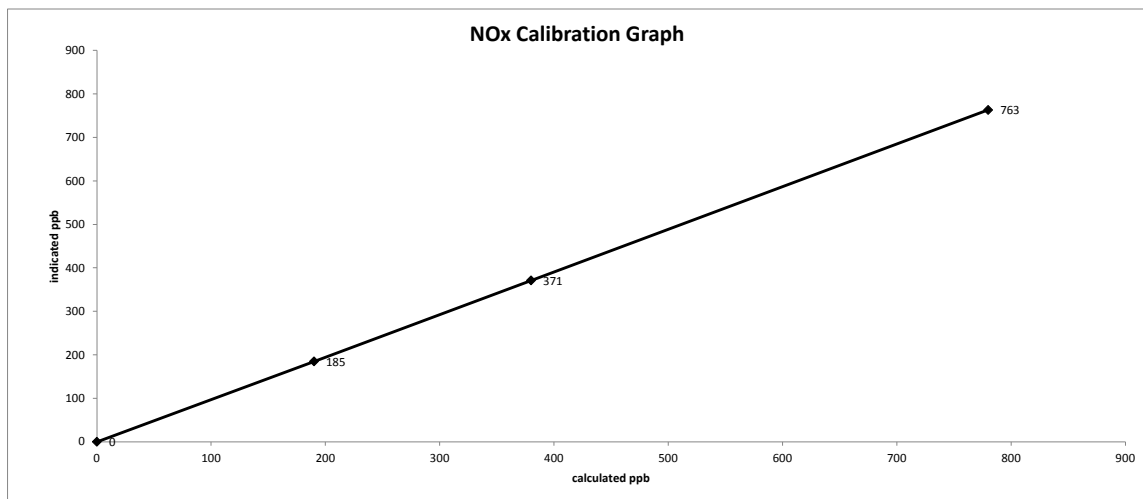
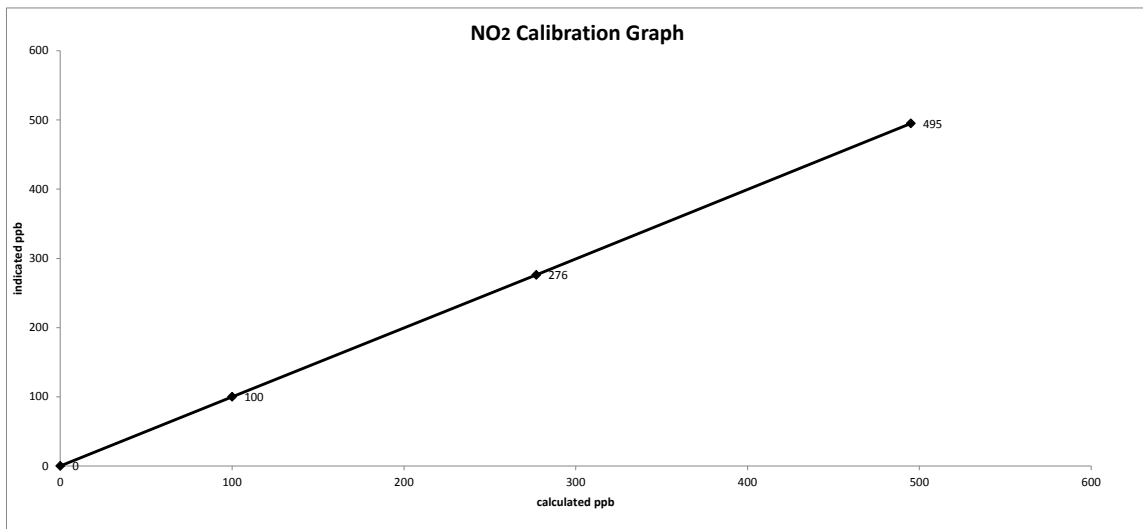
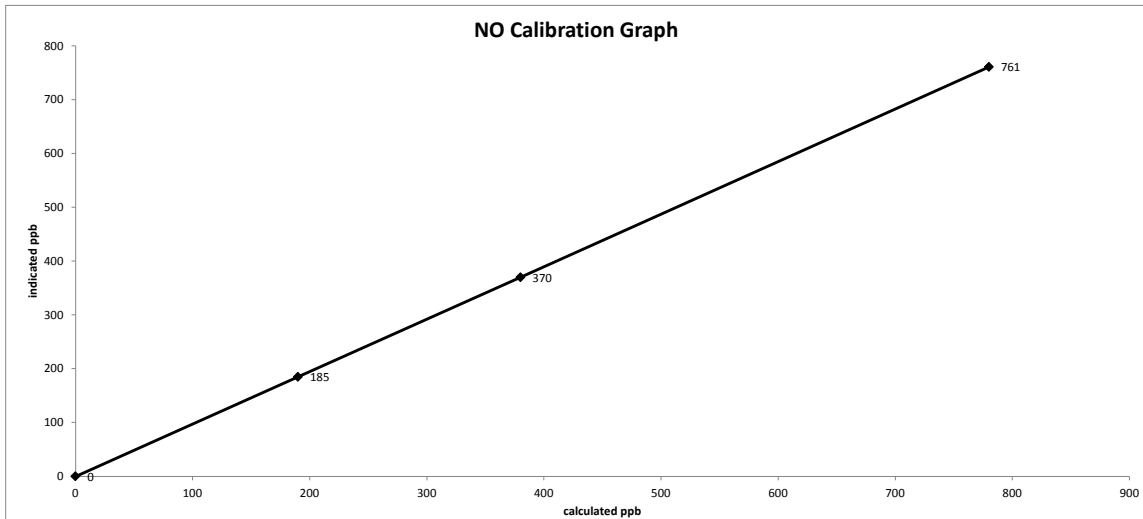
<b>As found:</b>	<b>As left:</b>
NOx SLOPE: 1.003	NOx SLOPE: n/a
NOx OFFS: 1.5	NOx OFFS: n/a
NO SLOPE: 1.002	NO SLOPE: n/a
NO OFFS: -0.2	NO OFFS: n/a
SAMP FLW: 481	SAMP FLW: n/a
OZONE FL: 77	OZONE FL: n/a
PMT: 4.9	PMT: n/a
NORM PMT: 0.4	NORM PMT: n/a
AZERO: 7.1	AZERO: n/a
HVPS: 662	HVPS: n/a
RCELL TEMP: 50.0	RCELL TEMP: n/a
BOX TEMP: 31.7	BOX TEMP: n/a
PMT TEMP: 6.7	PMT TEMP: n/a
IZS TEMP: 45.2	IZS TEMP: n/a
MOLY TEMP: 315.2	MOLY TEMP: n/a
RCEL: 7.1	RCEL: n/a
SAMP: 27.4	SAMP: n/a
Internal Span NO: 5.6	Internal Span NO: n/a
Internal Span NO <sub>2</sub> : 282	Internal Span NO <sub>2</sub> : n/a
Internal Span NOx: 288	Internal Span NOx: n/a

**Comments:**

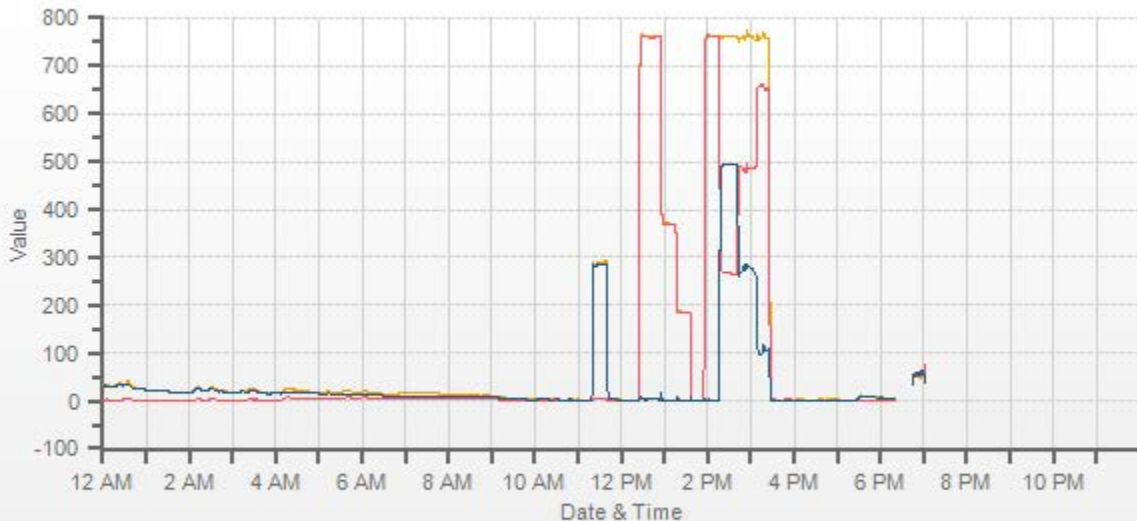
Shutdown calibration completed to relocate the station. No ZERO adjustment made. No High Point adjustment made. No NO2 adjustment made.

Date: May 16, 2016  
Company/Airshed: LICA  
Location/Station Name: Elk Point

Start/End Time 24 hr. (mst): 12:00 / 15:39  
Calibration Purpose: shut down  
Calibration Method: Gas Dilution & Varying UV Lamp Power







— NOX[ppb] — NO[ppb] — NO2[ppb]

## ***OZONE***



## Thermo 49i Ozone Analyzer Calibration

Date:	May 16, 2016	Barometric Pressure:	0.931 atm
Company/Airshed:	LICA	Station Temperature °C:	22
Location/Station Name:	Elk Point	Weather Conditions:	Mainly sunny
Start/End Time 24 hr. (mst):	15:49 / 17:46	Calibration Purpose:	shut down
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:	April 4, 2016	As Found C.F.:	0.995
	Previous Cal High Point C.F.:	1.000	New C.F.:	n/a

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

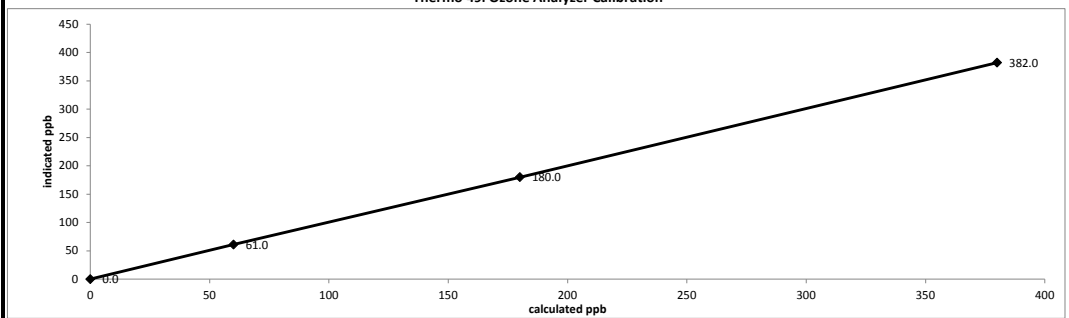
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

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	0.0	n/a
as found high	5000	5000	380.0	380.0	382.0	0.995
mid	5000	5000	180.0	180.0	180.0	1.000
low	5000	5000	60.0	60.0	61.0	0.984
Average C.F. =						0.993

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) =	-0.02%		± 3% F.S.
% change in C.F. from last cal =	0.52%		± 10%

Thermo 49i Ozone Analyzer Calibration



**As found:**

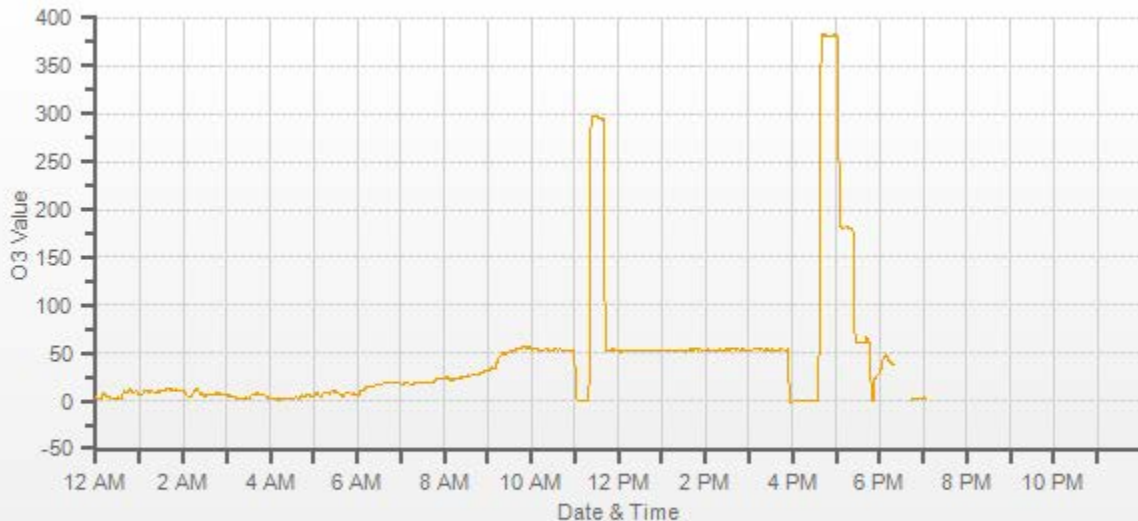
- O3 Bkg: 0.1
- O3 Coef: 0.994
- Photo Lamp: 14.2
- O3 Lamp: 5.8
- Bench: 30.3
- Bench Lamp: 54.1
- O3 Lamp: 68.2
- Pressure: 694.7
- Cell A lpm: 0.736
- Cell B lpm: 0.746
- O3 ppb: -1.4
- Cell A ppb: -0.4
- Cell B ppb: -2.3
- Cell A int: 93699
- Cell B int: 91424
- Internal Span: 286.3

**As left:**

- O3 Bkg: n/a
- O3 Coef: n/a
- Photo Lamp: n/a
- O3 Lamp: n/a
- Bench: n/a
- Bench Lamp: n/a
- O3 Lamp: n/a
- Pressure: n/a
- Cell A lpm: n/a
- Cell B lpm: n/a
- O3 ppb: n/a
- Cell A ppb: n/a
- Cell B ppb: n/a
- Cell A int: n/a
- Cell B int: n/a
- Internal Span: n/a

Comments:

Shutdown calibration completed to relocate the station. No ZERO adjustment made. No High Point adjustment made.



— O3[ppb]

***PARTICULATE MATTER***



# R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date: May 6, 2016  
 Company: LICA  
 Station Name/Location: Elk Point  
 Previous Audit Date: April 27, 2016  
 Parameter: PM 2.5

Performed By/Reviewer: Alex Yakupov | Trina Whitsitt  
 Start Time (mst): 16:51  
 End Time (mst): 17:47  
 Calibration Purpose: Bi-monthly #1  
 Weather Conditions: Mainly clear

### 1400A Information and Status:

Serial Number: 1405A207691003      As Found Filter Loading %: 21.85  
 Ko Factor: 15635      As Left Filter Loading %: 22.46  
 Ambient Temperature °C: 18.51      As Found Noise: 0.004  
 Ambient Pressure atm: 0.934      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>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	0.07	0.05	0.12	0.05
	limit	0.15	<del>0.15</del>	0.15	<del>0.15</del>
Bypass Flow	actual	0.37	-0.23	0.39	-0.23
	limit	0.60	<del>0.60</del>	0.60	<del>0.60</del>

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

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	0.07	0.05	0.12	0.05
	limit	0.15	<del>0.15</del>	0.15	<del>0.15</del>
Bypass Flow	actual	0.37	-0.23	0.39	-0.23
	limit	0.60	<del>0.60</del>	0.60	<del>0.60</del>

### As found temperature and pressure:

tolerance +/- 2.0°C	tolerance +/- 0.01 atm
1405F temperature °C: <u>18.5</u>	1405F pressure atm: <u>0.934</u>
reference temperature °C: <u>18.3</u>	reference pressure: <u>0.934</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>18.5</u>	1405F pressure atm: <u>0.934</u>
reference temperature °C: <u>18.3</u>	reference pressure: <u>0.934</u>
difference °C: <u>-0.2</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>3.02</u>	reference total/aux flow lpm: <u>16.69</u>
difference lpm: <u>0.02</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>3.02</u>	reference total/aux flow lpm: <u>16.69</u>
difference lpm: <u>0.02</u>	difference lpm: <u>0.02</u>

### K<sub>o</sub> Audit:

Last K<sub>o</sub> audit date: May 6, 2016  
 1405F K<sub>o</sub> factor: 15635  
 Measured K<sub>o</sub> factor: 15833.6000  
 % difference: 1.28

### Comments:

47 mm FDMS filter changed, Ko audited, PM 10/2.5 sample inlet head cleaned.



# R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date: May 16, 2016  
 Company: LICA  
 Station Name/Location: Elk Point  
 Previous Audit Date: May 6, 2016  
 Parameter: PM 2.5

Performed By/Reviewer: Alex Yakupov | Trina Whatsitt  
 Start Time (mst): 11:17  
 End Time (mst): 11:43  
 Calibration Purpose: shut down  
 Weather Conditions: Mainly sunny

### 1400A Information and Status:

Serial Number: 1405A207691003 As Found Filter Loading %: 32.93  
 Ko Factor: 15635 As Left Filter Loading %: n/a  
 Ambient Temperature °C: 20.89 As Found Noise: 0.003  
 Ambient Pressure atm: 0.931 As Left Noise: n/a  
 Main Flow Reading lpm: 3.00 Pump Vacuum: 0.31  
 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	0.07	0.05	0.12	0.05
	limit	0.15	<del>0.15</del>	0.15	<del>0.15</del>
Bypass Flow	actual	0.38	-0.24	0.41	-0.21
	limit	0.60	<del>0.60</del>	0.60	<del>0.60</del>

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

		Base	Zero	Reference	Zero
PM 2.5 Flow	actual	n/a	n/a	n/a	n/a
	limit	0.15	<del>0.15</del>	0.15	<del>0.15</del>
Bypass Flow	actual	n/a	n/a	n/a	n/a
	limit	0.60	<del>0.60</del>	0.60	<del>0.60</del>

### As found temperature and pressure:

tolerance +/- 2.0°C	tolerance +/- 0.01 atm
1405F temperature °C: <u>20.9</u>	1405F pressure atm: <u>0.931</u>
reference temperature °C: <u>20.4</u>	reference pressure: <u>0.931</u>
difference °C: <u>-0.5</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>n/a</u>	1405F pressure atm: <u>n/a</u>
reference temperature °C: <u>n/a</u>	reference pressure: <u>n/a</u>
difference °C: <u>#VALUE!</u>	difference: <u>#VALUE!</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>16.72</u>
difference lpm: <u>0.03</u>	difference lpm: <u>0.05</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>n/a</u>	1400A total/aux flow lpm: <u>n/a</u>
reference main flow lpm: <u>n/a</u>	reference total/aux flow lpm: <u>n/a</u>
difference lpm: <u>#VALUE!</u>	difference lpm: <u>#VALUE!</u>

### K<sub>o</sub> Audit:

Last K<sub>o</sub> audit date: May 6, 2016  
 1405F K<sub>o</sub> factor: 15635  
 Measured K<sub>o</sub> factor: 15719.6000  
 % difference: 0.55

### Comments:

Shutdown calibration completed because of relocation of the station.

## ***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

## Oxides Of Nitrogen

File No. 2015-119

Company <u>Maxxam</u>		Operator: <u>Chris Wesson</u>	
<b>Calibrator:</b>		<b>Flow Measurement Device:</b>	
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 <sub>2</sub>	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%

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

Flow	O <sub>2</sub> Conc	NO Decrease	NO	NO <sub>2</sub>	NOX	% Diff. Vs Audit gas	
5003	0	0.000	0.787	0.001	0.788	NO <sub>2</sub>	% 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%

<b>LINEAR REGRESSION ANALYSIS</b>				<i>y=mx+b (where x=calculated concentration, y=indicated concentration)</i>			
<b>NO<sub>2</sub></b>		<b>LIMITS</b>					
Correlation=	1.0000	≥ 0.995					
m (Slope)=	1.0089	<b>0.90-1.10</b>					
b (Intercept % of FS)=	0.1591	<b>± 3% F.S.</b>					

<b>AENV Standards</b>		<b>NO<sub>x</sub> Analyzer</b>	
<b>Audit Calibrator</b>		Make/Model	<u>Thermo 42i</u>
Make/Model	<u>Thermo 146i</u>	Serial/AMU Number	<u>1868</u>
Serial/AMU Number	<u>1809</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



# 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)*

<u>O<sub>3</sub></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
<b>Audit Calibrator</b>	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

***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	<del>0.01608</del>	<del>62.183</del>	<del>49.3</del>
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:					<b>49.4</b>

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:**

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 (sccm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.0000	<del>0.0000</del>	<del>132.442</del>	<del>10.0</del>
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:					<b>9.9</b>

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

## 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				
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:						<b>50.5</b>	<b>50.4</b>

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

**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





# 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	<del>0.02140</del>	<del>46.722</del>	<del>607</del>	<del>214</del>
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:						<b>608</b>	<b>215</b>

<b>CH4</b>	<b>C3H8</b>
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

***APPENDIX IV***  
***ANALYTICAL RESULTS***

***VOCS SAMPLES***

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/ELK/May 6, 2016	H3282	Ambient Air	06-May-16	0:00
<b>DESCRIPTION:</b>	Elk Point Airport			
<b>REPORT NUMBER:</b>	16050079	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050079-003	Isoprene	I	0.04	ppbv	0.01	AC-058	13-May-16
16050079-005	Isopropyl alcohol		0.7	ppbv	0.5	AC-058	13-May-16
16050079-003	Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	13-May-16
16050079-005	Isopropylbenzene	I	0.02	ppbv	0.01	AC-058	13-May-16
16050079-003	Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	13-May-16
16050079-005	m,p-Xylene		0.81	ppbv	0.04	AC-058	13-May-16
16050079-003	m,p-Xylene	I	0.04	ppbv	0.03	AC-058	13-May-16
16050079-005	m-Diethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	13-May-16
16050079-003	m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-May-16
16050079-005	m-Ethyltoluene	I	0.17	ppbv	0.10	AC-058	13-May-16
16050079-003	m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	13-May-16
16050079-005	Methyl butyl ketone	K, T, U	< 0.61	ppbv	0.61	AC-058	13-May-16
16050079-003	Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.50	AC-058	13-May-16
16050079-005	Methyl ethyl ketone		0.6	ppbv	0.4	AC-058	13-May-16
16050079-003	Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	13-May-16
16050079-005	Methyl isobutyl ketone	K, T, U	< 0.5	ppbv	0.5	AC-058	13-May-16
16050079-003	Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	13-May-16
16050079-005	Methyl methacrylate	K, T, U	< 0.09	ppbv	0.09	AC-058	13-May-16
16050079-003	Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	13-May-16
16050079-005	Methyl tert butyl ether	I	0.06	ppbv	0.04	AC-058	13-May-16
16050079-003	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	13-May-16
16050079-005	Methylcyclohexane		1.74	ppbv	0.01	AC-058	13-May-16
16050079-003	Methylcyclohexane	I	0.06	ppbv	0.01	AC-058	13-May-16
16050079-005	Methylcyclopentane		0.59	ppbv	0.02	AC-058	13-May-16
16050079-003	Methylcyclopentane	I	0.05	ppbv	0.02	AC-058	13-May-16

Report certified by: Graham Knox, Team Lead

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

Date: June 17, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/ELK/May 6, 2016	H3282	Ambient Air	06-May-16	0:00
<b>DESCRIPTION:</b>	Elk Point Airport			
<b>REPORT NUMBER:</b>	16050079	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050079-003	o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	13-May-16
16050079-003	o-Xylene	I	0.02	ppbv	0.01	AC-058	13-May-16
16050079-005	o-Xylene	I	0.29	ppbv	0.01	AC-058	13-May-16
16050079-005	p-Diethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	13-May-16
16050079-003	p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-May-16
16050079-005	p-Ethyltoluene	I	0.10	ppbv	0.09	AC-058	13-May-16
16050079-003	p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	13-May-16
16050079-005	Styrene	K, T, U	< 0.05	ppbv	0.05	AC-058	13-May-16
16050079-003	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-May-16
16050079-005	Tetrachloroethylene	I	0.07	ppbv	0.05	AC-058	13-May-16
16050079-003	Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-May-16
16050079-005	Tetrahydrofuran	K, T, U	< 0.5	ppbv	0.5	AC-058	13-May-16
16050079-003	Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	13-May-16
16050079-005	Toluene		1.05	ppbv	0.01	AC-058	13-May-16
16050079-003	Toluene	I	0.08	ppbv	0.01	AC-058	13-May-16
16050079-005	trans-1,2-Dichloroethylene	I	0.06	ppbv	0.01	AC-058	13-May-16
16050079-003	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	13-May-16
16050079-003	trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-May-16
16050079-005	trans-1,3-Dichloropropylene	K, T, U	< 0.05	ppbv	0.05	AC-058	13-May-16
16050079-003	trans-2-Butene	K, T, U	< 0.01	ppbv	0.01	AC-058	13-May-16
16050079-005	trans-2-Butene	I	0.13	ppbv	0.01	AC-058	13-May-16
16050079-003	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16
16050079-005	trans-2-Pentene	I	0.16	ppbv	0.02	AC-058	13-May-16
16050079-003	Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-May-16
16050079-005	Trichloroethylene	I	0.10	ppbv	0.05	AC-058	13-May-16

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<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/ELK/May 6, 2016	H3282	Ambient Air	06-May-16	0:00
<b>DESCRIPTION:</b>	Elk Point Airport			
<b>REPORT NUMBER:</b>	16050079	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050079-003	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16
16050079-005	Bromomethane	I	0.05	ppbv	0.01	AC-058	13-May-16
16050079-003	Bromomethane	I	0.02	ppbv	0.01	AC-058	13-May-16
16050079-003	Carbon disulfide	I	0.03	ppbv	0.01	AC-058	13-May-16
16050079-005	Carbon disulfide	I	0.07	ppbv	0.01	AC-058	13-May-16
16050079-005	Carbon tetrachloride	I	0.15	ppbv	0.01	AC-058	13-May-16
16050079-003	Carbon tetrachloride	I	0.12	ppbv	0.01	AC-058	13-May-16
16050079-003	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16
16050079-005	Chlorobenzene	I	0.09	ppbv	0.02	AC-058	13-May-16
16050079-005	Chloroethane	I	0.07	ppbv	0.02	AC-058	13-May-16
16050079-003	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16
16050079-005	Chloroform	I	0.08	ppbv	0.02	AC-058	13-May-16
16050079-003	Chloroform	I	0.03	ppbv	0.02	AC-058	13-May-16
16050079-003	Chloromethane		0.88	ppbv	0.02	AC-058	13-May-16
16050079-005	Chloromethane		0.65	ppbv	0.02	AC-058	13-May-16
16050079-003	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	13-May-16
16050079-005	cis-1,2-Dichloroethene	I	0.05	ppbv	0.01	AC-058	13-May-16
16050079-003	cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-May-16
16050079-005	cis-1,3-Dichloropropene	K, T, U	< 0.05	ppbv	0.05	AC-058	13-May-16
16050079-003	cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16
16050079-005	cis-2-Butene	I	0.12	ppbv	0.02	AC-058	13-May-16
16050079-003	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16
16050079-005	cis-2-Pentene	I	0.07	ppbv	0.02	AC-058	13-May-16
16050079-003	Cyclohexane	I	0.04	ppbv	0.02	AC-058	13-May-16
16050079-005	Cyclohexane	I	0.35	ppbv	0.02	AC-058	13-May-16

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<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/ELK/May 6, 2016	H3282	Ambient Air	06-May-16	0:00
<b>DESCRIPTION:</b>	Elk Point Airport			
<b>REPORT NUMBER:</b>	16050079	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050079-003	Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	13-May-16
16050079-005	Vinyl acetate	K, T, U	< 0.5	ppbv	0.5	AC-058	13-May-16
16050079-005	Vinyl chloride	I	0.05	ppbv	0.02	AC-058	13-May-16
16050079-003	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16

<b>Report certified by:</b> Graham Knox, Team Lead	<b>On behalf of:</b> PJ Pretorius, Manager, Analysis and Testing Services
<b>Date:</b> June 17, 2016	<b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/ELK/May 12, 2016	1523	Ambient Air	12-May-16	0:00
<b>DESCRIPTION:</b>	Elk Point Airport			
<b>REPORT NUMBER:</b>	16050120	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050120-001	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-005	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-001	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-005	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-005	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-001	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-001	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-005	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-001	1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	19-May-16
16050120-005	1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	19-May-16
16050120-005	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	19-May-16
16050120-001	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	19-May-16
16050120-001	1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	19-May-16
16050120-005	1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	19-May-16
16050120-001	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	19-May-16
16050120-005	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	19-May-16
16050120-001	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-005	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-001	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	19-May-16
16050120-005	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	19-May-16
16050120-001	1,2-Dichloroethane	I	0.02	ppbv	0.01	AC-058	19-May-16
16050120-005	1,2-Dichloroethane	I	0.02	ppbv	0.01	AC-058	19-May-16
16050120-005	1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-001	1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-005	1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16

**Report certified by:** Graham Knox, Team Lead

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

**Date:** June 17, 2016

**Inquiries:** (780) 632 8455

**E-mail:** EAS.Results@albertainnovates.ca



<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/ELK/May 12, 2016	1523	Ambient Air	12-May-16	0:00
<b>DESCRIPTION:</b>	Elk Point Airport			
<b>REPORT NUMBER:</b>	16050120	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050120-001	1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-005	1,3-Butadiene	I	0.03	ppbv	0.02	AC-058	19-May-16
16050120-001	1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-005	1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	19-May-16
16050120-001	1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	19-May-16
16050120-001	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	19-May-16
16050120-005	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	19-May-16
16050120-001	1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	19-May-16
16050120-005	1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	19-May-16
16050120-001	1-Butene	I	0.08	ppbv	0.02	AC-058	19-May-16
16050120-005	1-Butene		0.44	ppbv	0.02	AC-058	19-May-16
16050120-005	1-Hexene	I	0.27	ppbv	0.02	AC-058	19-May-16
16050120-001	1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-001	1-Pentene	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-005	1-Pentene	I	0.02	ppbv	0.01	AC-058	19-May-16
16050120-005	2,2,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-001	2,2,4-Trimethylpentane	I	0.05	ppbv	0.01	AC-058	19-May-16
16050120-005	2,2-Dimethylbutane	I	0.03	ppbv	0.01	AC-058	19-May-16
16050120-001	2,2-Dimethylbutane	I	0.02	ppbv	0.01	AC-058	19-May-16
16050120-005	2,3,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-001	2,3,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-005	2,3-Dimethylbutane	I	0.09	ppbv	0.02	AC-058	19-May-16
16050120-001	2,3-Dimethylbutane	I	0.06	ppbv	0.02	AC-058	19-May-16
16050120-005	2,3-Dimethylpentane	I	0.20	ppbv	0.02	AC-058	19-May-16
16050120-001	2,3-Dimethylpentane	I	0.08	ppbv	0.02	AC-058	19-May-16

<b>Report certified by:</b> Graham Knox, Team Lead	<b>On behalf of:</b> PJ Pretorius, Manager, Analysis and Testing Services
<b>Date:</b> June 17, 2016	<b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/ELK/May 12, 2016	1523	Ambient Air	12-May-16	0:00
<b>DESCRIPTION:</b>	Elk Point Airport			
<b>REPORT NUMBER:</b>	16050120	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050120-001	Cyclopentane	I	0.02	ppbv	0.01	AC-058	19-May-16
16050120-005	Cyclopentane	I	0.05	ppbv	0.01	AC-058	19-May-16
16050120-001	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-005	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-001	Ethanol		0.6	ppbv	0.3	AC-058	19-May-16
16050120-005	Ethanol		4.1	ppbv	0.3	AC-058	19-May-16
16050120-001	Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	19-May-16
16050120-005	Ethyl acetate		0.7	ppbv	0.4	AC-058	19-May-16
16050120-005	Ethylbenzene	I	0.03	ppbv	0.01	AC-058	19-May-16
16050120-001	Ethylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-005	Freon-11	I	0.26	ppbv	0.02	AC-058	19-May-16
16050120-001	Freon-11		0.34	ppbv	0.02	AC-058	19-May-16
16050120-001	Freon-113	I	0.07	ppbv	0.01	AC-058	19-May-16
16050120-005	Freon-113	I	0.04	ppbv	0.01	AC-058	19-May-16
16050120-005	Freon-114	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-001	Freon-114	I	0.03	ppbv	0.02	AC-058	19-May-16
16050120-001	Freon-12		0.81	ppbv	0.02	AC-058	19-May-16
16050120-005	Freon-12		0.57	ppbv	0.02	AC-058	19-May-16
16050120-001	Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.50	AC-058	19-May-16
16050120-005	Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.50	AC-058	19-May-16
16050120-001	Isobutane		0.75	ppbv	0.02	AC-058	19-May-16
16050120-005	Isobutane		3.00	ppbv	0.02	AC-058	19-May-16
16050120-001	Isopentane		0.39	ppbv	0.03	AC-058	19-May-16
16050120-005	Isopentane		3.06	ppbv	0.03	AC-058	19-May-16
16050120-005	Isoprene	I	0.04	ppbv	0.01	AC-058	19-May-16

**Report certified by:** Graham Knox, Team Lead

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LICA/VOC/ELK/May 12, 2016	1523	Ambient Air	12-May-16	0:00
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Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050120-001	Isoprene	I	0.02	ppbv	0.01	AC-058	19-May-16
16050120-005	Isopropyl alcohol		0.4	ppbv	0.4	AC-058	19-May-16
16050120-001	Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	19-May-16
16050120-001	Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-005	Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-001	m,p-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	19-May-16
16050120-005	m,p-Xylene	I	0.12	ppbv	0.03	AC-058	19-May-16
16050120-001	m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	19-May-16
16050120-005	m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	19-May-16
16050120-001	m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	19-May-16
16050120-005	m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	19-May-16
16050120-001	Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.50	AC-058	19-May-16
16050120-005	Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.50	AC-058	19-May-16
16050120-001	Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	19-May-16
16050120-005	Methyl ethyl ketone		0.3	ppbv	0.3	AC-058	19-May-16
16050120-001	Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	19-May-16
16050120-005	Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	19-May-16
16050120-001	Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	19-May-16
16050120-005	Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	19-May-16
16050120-001	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	19-May-16
16050120-005	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	19-May-16
16050120-001	Methylcyclohexane	I	0.07	ppbv	0.01	AC-058	19-May-16
16050120-005	Methylcyclohexane		1.04	ppbv	0.01	AC-058	19-May-16
16050120-005	Methylcyclopentane	I	0.29	ppbv	0.02	AC-058	19-May-16
16050120-001	Methylcyclopentane	I	0.05	ppbv	0.02	AC-058	19-May-16

<b>Report certified by:</b> Graham Knox, Team Lead	<b>On behalf of:</b> PJ Pretorius, Manager, Analysis and Testing Services
<b>Date:</b> June 17, 2016	<b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca

***PAHS SAMPLES***

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/PUF/ELK/May 6, 2016	TE-11	Air Filter	06-May-16	0:00
<b>DESCRIPTION:</b>	Elk Point Airport			
<b>REPORT NUMBER:</b>	16050079	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050079-004	1-Methylnaphthalene		0.20	ug/puf	0.01	NA-017	02-Jun-16
16050079-004	2-Methylnaphthalene		0.35	ug/puf	0.01	NA-017	02-Jun-16
16050079-004	3-Methylcholanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050079-004	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050079-004	Acenaphthene		0.02	ug/puf	0.01	NA-017	02-Jun-16
16050079-004	Acenaphthylene		0.02	ug/puf	0.01	NA-017	02-Jun-16
16050079-004	Acridine	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050079-004	Anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050079-004	Benzo(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050079-004	Benzo(a)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050079-004	Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050079-004	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050079-004	Benzo(e)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050079-004	Benzo(ghi)perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050079-004	Chrysene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050079-004	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050079-004	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050079-004	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050079-004	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050079-004	Fluoranthene		0.03	ug/puf	0.01	NA-017	02-Jun-16
16050079-004	Fluorene		0.07	ug/puf	0.01	NA-017	02-Jun-16
16050079-004	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050079-004	Naphthalene		0.11	ug/puf	0.01	NA-017	02-Jun-16
16050079-004	Perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050079-004	Phenanthrene		0.11	ug/puf	0.01	NA-017	02-Jun-16

<b>Report certified by:</b> Graham Knox, Team Lead	<b>On behalf of:</b> PJ Pretorius, Manager, Analysis and Testing Services
<b>Date:</b> June 17, 2016	<b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/PUF/ELK/May 6, 2016	TE-11	Air Filter	06-May-16	0:00
<b>DESCRIPTION:</b>	Elk Point Airport			
<b>REPORT NUMBER:</b>	16050079	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050079-004	Pyrene		0.01	ug/puf	0.01	NA-017	02-Jun-16
16050079-004	Retene		0.05	ug/puf	0.01	NA-017	02-Jun-16

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<b>Date:</b> June 17, 2016	<b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/PUF/ELK/May 12, 2016	TE-01	Air Filter	12-May-16	0:00
<b>DESCRIPTION:</b>	Elk Point Airport			
<b>REPORT NUMBER:</b>	16050120	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050120-002	1-Methylnaphthalene		0.07	ug/puf	0.01	NA-017	02-Jun-16
16050120-002	2-Methylnaphthalene		0.13	ug/puf	0.01	NA-017	02-Jun-16
16050120-002	3-Methylcholanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-002	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-002	Acenaphthene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-002	Acenaphthylene		0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-002	Acridine	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-002	Anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-002	Benzo(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-002	Benzo(a)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-002	Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-002	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-002	Benzo(e)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-002	Benzo(ghi)perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-002	Chrysene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-002	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-002	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-002	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-002	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-002	Fluoranthene		0.03	ug/puf	0.01	NA-017	02-Jun-16
16050120-002	Fluorene		0.02	ug/puf	0.01	NA-017	02-Jun-16
16050120-002	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-002	Naphthalene		0.04	ug/puf	0.01	NA-017	02-Jun-16
16050120-002	Perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-002	Phenanthrene		0.04	ug/puf	0.01	NA-017	02-Jun-16

**Report certified by:** Graham Knox, Team Lead

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

**Date:** June 17, 2016

**Inquiries:** (780) 632 8455

**E-mail:** EAS.Results@albertainnovates.ca

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/PUF/ELK/May 12, 2016	TE-01	Air Filter	12-May-16	0:00
<b>DESCRIPTION:</b>	Elk Point Airport			
<b>REPORT NUMBER:</b>	16050120	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050120-002	Pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16
16050120-002	Retene	K, T, U	< 0.01	ug/puf	0.01	NA-017	02-Jun-16

<b>Report certified by:</b> Graham Knox, Team Lead	<b>On behalf of:</b> PJ Pretorius, Manager, Analysis and Testing Services
<b>Date:</b> June 17, 2016	<b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca



***NMHC CANISTER SAMPLES***

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/ELK/May 2, 2016	15756	Ambient Air	02-May-16	21:25
<b>DESCRIPTION:</b>	ELK POINT AIRPORT			
<b>REPORT NUMBER:</b>	16050026	<b>REPORT CREATED:</b>	20-May-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050026-005	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-005	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-005	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-005	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-005	1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	12-May-16
16050026-005	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	12-May-16
16050026-005	1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	12-May-16
16050026-005	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	12-May-16
16050026-005	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-005	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	12-May-16
16050026-005	1,2-Dichloroethane	I	0.02	ppbv	0.01	AC-058	12-May-16
16050026-005	1,2-Dichloropropane	I	0.01	ppbv	0.01	AC-058	12-May-16
16050026-005	1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-005	1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-005	1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	12-May-16
16050026-005	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	12-May-16
16050026-005	1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	12-May-16
16050026-005	1-Butene	I	0.11	ppbv	0.02	AC-058	12-May-16
16050026-005	1-Hexene	I	0.04	ppbv	0.02	AC-058	12-May-16
16050026-005	1-Pentene	I	0.01	ppbv	0.01	AC-058	12-May-16
16050026-005	2,2,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	12-May-16
16050026-005	2,2-Dimethylbutane	K, T, U	< 0.01	ppbv	0.01	AC-058	12-May-16
16050026-005	2,3,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	12-May-16
16050026-005	2,3-Dimethylbutane	I	0.02	ppbv	0.02	AC-058	12-May-16
16050026-005	2,3-Dimethylpentane	I	0.03	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

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/ELK/May 2, 2016	15756	Ambient Air	02-May-16	21:25
<b>DESCRIPTION:</b>	ELK POINT AIRPORT			
<b>REPORT NUMBER:</b>	16050026	<b>REPORT CREATED:</b>	20-May-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050026-005	2,4-Dimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	12-May-16
16050026-005	2-Methylheptane	K, T, U	< 0.01	ppbv	0.01	AC-058	12-May-16
16050026-005	2-Methylhexane	I	0.12	ppbv	0.01	AC-058	12-May-16
16050026-005	2-Methylpentane	I	0.09	ppbv	0.01	AC-058	12-May-16
16050026-005	3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-005	3-Methylhexane	I	0.11	ppbv	0.02	AC-058	12-May-16
16050026-005	3-Methylpentane	I	0.15	ppbv	0.01	AC-058	12-May-16
16050026-005	Acetone		4.2	ppbv	0.4	AC-058	12-May-16
16050026-005	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	12-May-16
16050026-005	Benzene	I	0.06	ppbv	0.01	AC-058	12-May-16
16050026-005	Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	12-May-16
16050026-005	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-005	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-005	Bromomethane	I	0.01	ppbv	0.01	AC-058	12-May-16
16050026-005	Carbon disulfide	I	0.04	ppbv	0.01	AC-058	12-May-16
16050026-005	Carbon tetrachloride	I	0.11	ppbv	0.01	AC-058	12-May-16
16050026-005	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-005	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-005	Chloroform	I	0.04	ppbv	0.02	AC-058	12-May-16
16050026-005	Chloromethane		0.85	ppbv	0.02	AC-058	12-May-16
16050026-005	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	12-May-16
16050026-005	cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	12-May-16
16050026-005	cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-005	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-005	Cyclohexane	I	0.03	ppbv	0.02	AC-058	12-May-16

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

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/ELK/May 2, 2016	15756	Ambient Air	02-May-16	21:25
<b>DESCRIPTION:</b>	ELK POINT AIRPORT			
<b>REPORT NUMBER:</b>	16050026	<b>REPORT CREATED:</b>	20-May-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050026-005	Cyclopentane	I	0.02	ppbv	0.01	AC-058	12-May-16
16050026-005	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	12-May-16
16050026-005	Ethanol		2.7	ppbv	0.3	AC-058	12-May-16
16050026-005	Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	12-May-16
16050026-005	Ethylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	12-May-16
16050026-005	Freon-11		0.37	ppbv	0.02	AC-058	12-May-16
16050026-005	Freon-113	I	0.10	ppbv	0.01	AC-058	12-May-16
16050026-005	Freon-114	I	0.03	ppbv	0.02	AC-058	12-May-16
16050026-005	Freon-12		0.73	ppbv	0.02	AC-058	12-May-16
16050026-005	Hexachloro-1,3-butadiene	K, T, U	< 0.52	ppbv	0.52	AC-058	12-May-16
16050026-005	Isobutane		0.40	ppbv	0.02	AC-058	12-May-16
16050026-005	Isopentane		0.35	ppbv	0.03	AC-058	12-May-16
16050026-005	Isoprene	I	0.07	ppbv	0.01	AC-058	12-May-16
16050026-005	Isopropyl alcohol		0.8	ppbv	0.4	AC-058	12-May-16
16050026-005	Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	12-May-16
16050026-005	m,p-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	12-May-16
16050026-005	m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	12-May-16
16050026-005	m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	12-May-16
16050026-005	Methyl butyl ketone	K, T, U	< 0.52	ppbv	0.52	AC-058	12-May-16
16050026-005	Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	12-May-16
16050026-005	Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	12-May-16
16050026-005	Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	12-May-16
16050026-005	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	12-May-16
16050026-005	Methylcyclohexane	I	0.12	ppbv	0.01	AC-058	12-May-16
16050026-005	Methylcyclopentane	I	0.16	ppbv	0.02	AC-058	12-May-16

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

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/ELK/May 2, 2016	15756	Ambient Air	02-May-16	21:25
<b>DESCRIPTION:</b>	ELK POINT AIRPORT			
<b>REPORT NUMBER:</b>	16050026	<b>REPORT CREATED:</b>	20-May-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050026-005	Methylene chloride		11.2	ppbv	0.3	AC-058	12-May-16
16050026-005	n-Butane		0.38	ppbv	0.03	AC-058	12-May-16
16050026-005	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	12-May-16
16050026-005	n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	12-May-16
16050026-005	n-Heptane	I	0.19	ppbv	0.01	AC-058	12-May-16
16050026-005	n-Hexane		0.93	ppbv	0.01	AC-058	12-May-16
16050026-005	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-005	n-Pentane	I	0.1	ppbv	0.1	AC-058	12-May-16
16050026-005	n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	12-May-16
16050026-005	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	12-May-16
16050026-005	Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	12-May-16
16050026-005	n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	12-May-16
16050026-005	o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	12-May-16
16050026-005	o-Xylene	I	0.01	ppbv	0.01	AC-058	12-May-16
16050026-005	p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	12-May-16
16050026-005	p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	12-May-16
16050026-005	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	12-May-16
16050026-005	Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	12-May-16
16050026-005	Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	12-May-16
16050026-005	Toluene	I	0.05	ppbv	0.01	AC-058	12-May-16
16050026-005	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	12-May-16
16050026-005	trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	12-May-16
16050026-005	trans-2-Butene	K, T, U	< 0.01	ppbv	0.01	AC-058	12-May-16
16050026-005	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	12-May-16
16050026-005	Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	12-May-16

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

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/ELK/May 2, 2016	15756	Ambient Air	02-May-16	21:25
<b>DESCRIPTION:</b>	ELK POINT AIRPORT			
<b>REPORT NUMBER:</b>	16050026	<b>REPORT CREATED:</b>	20-May-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
16050026-005	Vinyl acetate	K, T, U	< 0.4 ppbv	0.4	AC-058	12-May-16
16050026-005	Vinyl chloride	K, T, U	< 0.02 ppbv	0.02	AC-058	12-May-16

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

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/ELK/May 6, 2016	S5612	Ambient Air	06-May-16	20:45
<b>DESCRIPTION:</b>	Elk Point Airport			
<b>REPORT NUMBER:</b>	16050079	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050079-005	1,1,1-Trichloroethane	I	0.07	ppbv	0.02	AC-058	13-May-16
16050079-003	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16
16050079-003	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16
16050079-005	1,1,2,2-Tetrachloroethane	I	0.06	ppbv	0.02	AC-058	13-May-16
16050079-003	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16
16050079-005	1,1,2-Trichloroethane	I	0.05	ppbv	0.02	AC-058	13-May-16
16050079-003	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16
16050079-005	1,1-Dichloroethane	I	0.05	ppbv	0.02	AC-058	13-May-16
16050079-003	1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-May-16
16050079-005	1,1-Dichloroethylene	K, T, U	< 0.05	ppbv	0.05	AC-058	13-May-16
16050079-005	1,2,3-Trimethylbenzene	I	0.06	ppbv	0.06	AC-058	13-May-16
16050079-003	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	13-May-16
16050079-005	1,2,4-Trichlorobenzene	K, T, U	< 1.0	ppbv	1.0	AC-058	13-May-16
16050079-003	1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	13-May-16
16050079-003	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-May-16
16050079-005	1,2,4-Trimethylbenzene	I	0.31	ppbv	0.04	AC-058	13-May-16
16050079-003	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16
16050079-005	1,2-Dibromoethane	I	0.04	ppbv	0.02	AC-058	13-May-16
16050079-003	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	13-May-16
16050079-005	1,2-Dichlorobenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	13-May-16
16050079-003	1,2-Dichloroethane	I	0.03	ppbv	0.01	AC-058	13-May-16
16050079-005	1,2-Dichloroethane	I	0.08	ppbv	0.01	AC-058	13-May-16
16050079-003	1,2-Dichloropropane	I	0.02	ppbv	0.01	AC-058	13-May-16
16050079-005	1,2-Dichloropropane	I	0.07	ppbv	0.01	AC-058	13-May-16
16050079-003	1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16

**Report certified by:** Graham Knox, Team Lead

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

**Date:** June 17, 2016

**Inquiries:** (780) 632 8455

**E-mail:** EAS.Results@albertainnovates.ca

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/ELK/May 6, 2016	H3282	Ambient Air	06-May-16	0:00
<b>DESCRIPTION:</b>	Elk Point Airport			
<b>REPORT NUMBER:</b>	16050079	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050079-003	2,4-Dimethylpentane	I	0.02	ppbv	0.01	AC-058	13-May-16
16050079-005	2,4-Dimethylpentane	I	0.11	ppbv	0.01	AC-058	13-May-16
16050079-003	2-Methylheptane	I	0.01	ppbv	0.01	AC-058	13-May-16
16050079-005	2-Methylheptane	I	0.17	ppbv	0.01	AC-058	13-May-16
16050079-005	2-Methylhexane		1.47	ppbv	0.01	AC-058	13-May-16
16050079-003	2-Methylhexane	I	0.05	ppbv	0.01	AC-058	13-May-16
16050079-005	2-Methylpentane		1.35	ppbv	0.01	AC-058	13-May-16
16050079-003	2-Methylpentane	I	0.07	ppbv	0.01	AC-058	13-May-16
16050079-005	3-Methylheptane	I	0.16	ppbv	0.02	AC-058	13-May-16
16050079-003	3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16
16050079-005	3-Methylhexane		1.48	ppbv	0.02	AC-058	13-May-16
16050079-003	3-Methylhexane	I	0.04	ppbv	0.02	AC-058	13-May-16
16050079-005	3-Methylpentane		0.56	ppbv	0.01	AC-058	13-May-16
16050079-003	3-Methylpentane	I	0.05	ppbv	0.01	AC-058	13-May-16
16050079-003	Acetone		3.2	ppbv	0.4	AC-058	13-May-16
16050079-005	Acetone		6.1	ppbv	0.5	AC-058	13-May-16
16050079-005	Acrolein	K, T, U	< 0.4	ppbv	0.4	AC-058	13-May-16
16050079-003	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	13-May-16
16050079-005	Benzene		0.37	ppbv	0.01	AC-058	13-May-16
16050079-003	Benzene	I	0.08	ppbv	0.01	AC-058	13-May-16
16050079-005	Benzyl chloride	K, T, U	< 0.5	ppbv	0.5	AC-058	13-May-16
16050079-003	Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	13-May-16
16050079-005	Bromodichloromethane		0.07	ppbv	0.02	AC-058	13-May-16
16050079-003	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16
16050079-005	Bromoform	I	0.04	ppbv	0.02	AC-058	13-May-16

Report certified by: Graham Knox, Team Lead

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

Date: June 17, 2016

Inquiries: (780) 632 8455

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<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/ELK/May 6, 2016	S5612	Ambient Air	06-May-16	20:45
<b>DESCRIPTION:</b>	Elk Point Airport			
<b>REPORT NUMBER:</b>	16050079	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050079-005	1,3,5-Trimethylbenzene	I	0.12	ppbv	0.02	AC-058	13-May-16
16050079-003	1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16
16050079-005	1,3-Butadiene	I	0.08	ppbv	0.02	AC-058	13-May-16
16050079-003	1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	13-May-16
16050079-005	1,3-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	13-May-16
16050079-003	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	13-May-16
16050079-005	1,4-Dichlorobenzene	K, T, U	< 0.5	ppbv	0.5	AC-058	13-May-16
16050079-003	1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	13-May-16
16050079-005	1,4-Dioxane	K, T, U	< 0.5	ppbv	0.5	AC-058	13-May-16
16050079-005	1-Butene		0.68	ppbv	0.02	AC-058	13-May-16
16050079-003	1-Butene	I	0.05	ppbv	0.02	AC-058	13-May-16
16050079-005	1-Hexene		0.41	ppbv	0.02	AC-058	13-May-16
16050079-003	1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16
16050079-005	1-Pentene	I	0.08	ppbv	0.01	AC-058	13-May-16
16050079-003	1-Pentene	K, T, U	< 0.01	ppbv	0.01	AC-058	13-May-16
16050079-005	2,2,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	13-May-16
16050079-003	2,2,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	13-May-16
16050079-005	2,2-Dimethylbutane	I	0.30	ppbv	0.01	AC-058	13-May-16
16050079-003	2,2-Dimethylbutane	I	0.03	ppbv	0.01	AC-058	13-May-16
16050079-005	2,3,4-Trimethylpentane	I	0.04	ppbv	0.01	AC-058	13-May-16
16050079-003	2,3,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	13-May-16
16050079-005	2,3-Dimethylbutane	I	0.29	ppbv	0.02	AC-058	13-May-16
16050079-003	2,3-Dimethylbutane	I	0.04	ppbv	0.02	AC-058	13-May-16
16050079-003	2,3-Dimethylpentane	I	0.04	ppbv	0.02	AC-058	13-May-16
16050079-005	2,3-Dimethylpentane		0.37	ppbv	0.02	AC-058	13-May-16

Report certified by: Graham Knox, Team Lead

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

Date: June 17, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/ELK/May 6, 2016	S5612	Ambient Air	06-May-16	20:45
<b>DESCRIPTION:</b>	Elk Point Airport			
<b>REPORT NUMBER:</b>	16050079	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050079-005	Cyclopentane	I	0.16	ppbv	0.01	AC-058	13-May-16
16050079-003	Cyclopentane	I	0.01	ppbv	0.01	AC-058	13-May-16
16050079-003	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	13-May-16
16050079-005	Dibromochloromethane	I	0.04	ppbv	0.01	AC-058	13-May-16
16050079-005	Ethanol		5.7	ppbv	0.4	AC-058	13-May-16
16050079-003	Ethanol		0.9	ppbv	0.3	AC-058	13-May-16
16050079-005	Ethyl acetate	K, T, U	< 0.5	ppbv	0.5	AC-058	13-May-16
16050079-003	Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	13-May-16
16050079-005	Ethylbenzene	I	0.22	ppbv	0.01	AC-058	13-May-16
16050079-003	Ethylbenzene	I	0.01	ppbv	0.01	AC-058	13-May-16
16050079-005	Freon-11	I	0.33	ppbv	0.02	AC-058	13-May-16
16050079-003	Freon-11		0.35	ppbv	0.02	AC-058	13-May-16
16050079-005	Freon-113	I	0.12	ppbv	0.01	AC-058	13-May-16
16050079-003	Freon-113	I	0.09	ppbv	0.01	AC-058	13-May-16
16050079-005	Freon-114	I	0.07	ppbv	0.02	AC-058	13-May-16
16050079-003	Freon-114	I	0.03	ppbv	0.02	AC-058	13-May-16
16050079-005	Freon-12		0.64	ppbv	0.02	AC-058	13-May-16
16050079-003	Freon-12		0.79	ppbv	0.02	AC-058	13-May-16
16050079-005	Hexachloro-1,3-butadiene	K, T, U	< 0.61	ppbv	0.61	AC-058	13-May-16
16050079-003	Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.50	AC-058	13-May-16
16050079-005	Isobutane		1.60	ppbv	0.02	AC-058	13-May-16
16050079-003	Isobutane		0.47	ppbv	0.02	AC-058	13-May-16
16050079-005	Isopentane		3.61	ppbv	0.04	AC-058	13-May-16
16050079-003	Isopentane		0.43	ppbv	0.03	AC-058	13-May-16
16050079-005	Isoprene	I	0.10	ppbv	0.01	AC-058	13-May-16

<b>Report certified by:</b> Graham Knox, Team Lead	<b>On behalf of:</b> PJ Pretorius, Manager, Analysis and Testing Services
<b>Date:</b> June 17, 2016	<b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/ELK/May 6, 2016	S5612	Ambient Air	06-May-16	20:45
<b>DESCRIPTION:</b>	Elk Point Airport			
<b>REPORT NUMBER:</b>	16050079	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050079-005	Methylene chloride		0.6	ppbv	0.4	AC-058	13-May-16
16050079-003	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	13-May-16
16050079-005	n-Butane		2.36	ppbv	0.04	AC-058	13-May-16
16050079-003	n-Butane		0.45	ppbv	0.03	AC-058	13-May-16
16050079-005	n-Decane	K, T, U	< 0.07	ppbv	0.07	AC-058	13-May-16
16050079-003	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	13-May-16
16050079-005	n-Dodecane	K, T, U	< 0.5	ppbv	0.5	AC-058	13-May-16
16050079-003	n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	13-May-16
16050079-005	n-Heptane		2.83	ppbv	0.01	AC-058	13-May-16
16050079-003	n-Heptane	I	0.03	ppbv	0.01	AC-058	13-May-16
16050079-005	n-Hexane		0.44	ppbv	0.01	AC-058	13-May-16
16050079-003	n-Hexane	I	0.04	ppbv	0.01	AC-058	13-May-16
16050079-005	n-Octane	I	0.09	ppbv	0.02	AC-058	13-May-16
16050079-003	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	13-May-16
16050079-005	n-Pentane		1.4	ppbv	0.1	AC-058	13-May-16
16050079-003	n-Pentane	I	0.1	ppbv	0.1	AC-058	13-May-16
16050079-005	n-Propylbenzene	K, T, U	< 0.06	ppbv	0.06	AC-058	13-May-16
16050079-003	n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	13-May-16
16050079-005	n-Undecane	K, T, U	< 0.6	ppbv	0.6	AC-058	13-May-16
16050079-003	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	13-May-16
16050079-005	Naphthalene	K, T, U	< 0.6	ppbv	0.6	AC-058	13-May-16
16050079-003	Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	13-May-16
16050079-005	n-Nonane	I	0.04	ppbv	0.01	AC-058	13-May-16
16050079-003	n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	13-May-16
16050079-005	o-Ethyltoluene	I	0.07	ppbv	0.01	AC-058	13-May-16

**Report certified by:** Graham Knox, Team Lead

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

**Date:** June 17, 2016

**Inquiries:** (780) 632 8455

**E-mail:** EAS.Results@albertainnovates.ca

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/ELK/May 12, 2016	14719	Ambient Air	12-May-16	21:40
<b>DESCRIPTION:</b>	Elk Point Airport			
<b>REPORT NUMBER:</b>	16050120	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050120-005	2,4-Dimethylpentane	I	0.03	ppbv	0.01	AC-058	19-May-16
16050120-001	2,4-Dimethylpentane	I	0.03	ppbv	0.01	AC-058	19-May-16
16050120-001	2-Methylheptane	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-005	2-Methylheptane	I	0.03	ppbv	0.01	AC-058	19-May-16
16050120-001	2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-005	2-Methylhexane	I	1.06	ppbv	0.01	AC-058	19-May-16
16050120-001	2-Methylpentane	I	0.04	ppbv	0.01	AC-058	19-May-16
16050120-005	2-Methylpentane	I	0.60	ppbv	0.01	AC-058	19-May-16
16050120-001	3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-005	3-Methylheptane	I	0.03	ppbv	0.02	AC-058	19-May-16
16050120-005	3-Methylhexane	I	1.37	ppbv	0.02	AC-058	19-May-16
16050120-001	3-Methylhexane	I	0.02	ppbv	0.02	AC-058	19-May-16
16050120-005	3-Methylpentane	I	0.24	ppbv	0.01	AC-058	19-May-16
16050120-001	3-Methylpentane	I	0.03	ppbv	0.01	AC-058	19-May-16
16050120-005	Acetone	I	3.0	ppbv	0.4	AC-058	19-May-16
16050120-001	Acetone	I	2.3	ppbv	0.4	AC-058	19-May-16
16050120-001	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	19-May-16
16050120-005	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	19-May-16
16050120-001	Benzene	I	0.03	ppbv	0.01	AC-058	19-May-16
16050120-005	Benzene	I	0.10	ppbv	0.01	AC-058	19-May-16
16050120-005	Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	19-May-16
16050120-001	Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	19-May-16
16050120-001	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-005	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-001	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16

Report certified by: Graham Knox, Team Lead

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

Date: June 17, 2016

Inquiries: (780) 632 8455

E-mail: EAS.Results@albertainnovates.ca

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/ELK/May 12, 2016	14719	Ambient Air	12-May-16	21:40
<b>DESCRIPTION:</b>	Elk Point Airport			
<b>REPORT NUMBER:</b>	16050120	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050120-005	Methylene chloride		4.9	ppbv	0.3	AC-058	19-May-16
16050120-001	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	19-May-16
16050120-001	n-Butane		0.54	ppbv	0.03	AC-058	19-May-16
16050120-005	n-Butane		2.80	ppbv	0.03	AC-058	19-May-16
16050120-005	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	19-May-16
16050120-001	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	19-May-16
16050120-005	n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	19-May-16
16050120-001	n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	19-May-16
16050120-001	n-Heptane	I	0.01	ppbv	0.01	AC-058	19-May-16
16050120-005	n-Heptane		2.45	ppbv	0.01	AC-058	19-May-16
16050120-001	n-Hexane	I	0.05	ppbv	0.01	AC-058	19-May-16
16050120-005	n-Hexane		0.69	ppbv	0.01	AC-058	19-May-16
16050120-001	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-005	n-Octane	I	0.02	ppbv	0.02	AC-058	19-May-16
16050120-005	n-Pentane		0.7	ppbv	0.1	AC-058	19-May-16
16050120-001	n-Pentane	I	0.1	ppbv	0.1	AC-058	19-May-16
16050120-005	n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	19-May-16
16050120-001	n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	19-May-16
16050120-005	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	19-May-16
16050120-001	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	19-May-16
16050120-005	Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	19-May-16
16050120-001	Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	19-May-16
16050120-001	n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-005	n-Nonane	I	0.01	ppbv	0.01	AC-058	19-May-16
16050120-001	o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16

Report certified by: Graham Knox, Team Lead

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

Date: June 17, 2016

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<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/ELK/May 12, 2016	14719	Ambient Air	12-May-16	21:40
<b>DESCRIPTION:</b>	Elk Point Airport			
<b>REPORT NUMBER:</b>	16050120	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050120-005	o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-001	o-Xylene	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-005	o-Xylene	I	0.05	ppbv	0.01	AC-058	19-May-16
16050120-001	p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	19-May-16
16050120-005	p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	19-May-16
16050120-001	p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	19-May-16
16050120-005	p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	19-May-16
16050120-005	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	19-May-16
16050120-001	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	19-May-16
16050120-005	Tetrachloroethylene	I	0.07	ppbv	0.04	AC-058	19-May-16
16050120-001	Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	19-May-16
16050120-001	Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	19-May-16
16050120-005	Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	19-May-16
16050120-005	Toluene		0.36	ppbv	0.01	AC-058	19-May-16
16050120-001	Toluene	I	0.04	ppbv	0.01	AC-058	19-May-16
16050120-005	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-001	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-005	trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	19-May-16
16050120-001	trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	19-May-16
16050120-001	trans-2-Butene	I	0.03	ppbv	0.01	AC-058	19-May-16
16050120-005	trans-2-Butene	I	0.10	ppbv	0.01	AC-058	19-May-16
16050120-005	trans-2-Pentene	I	0.04	ppbv	0.02	AC-058	19-May-16
16050120-001	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-005	Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	19-May-16
16050120-001	Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	19-May-16

<b>Report certified by:</b> Graham Knox, Team Lead	<b>On behalf of:</b> PJ Pretorius, Manager, Analysis and Testing Services
<b>Date:</b> June 17, 2016	<b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/ELK/May 12, 2016	14719	Ambient Air	12-May-16	21:40
<b>DESCRIPTION:</b>	Elk Point Airport			
<b>REPORT NUMBER:</b>	16050120	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050120-005	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-005	Bromomethane	I	0.01	ppbv	0.01	AC-058	19-May-16
16050120-001	Bromomethane	I	0.01	ppbv	0.01	AC-058	19-May-16
16050120-005	Carbon disulfide	I	0.02	ppbv	0.01	AC-058	19-May-16
16050120-001	Carbon disulfide	I	0.24	ppbv	0.01	AC-058	19-May-16
16050120-005	Carbon tetrachloride	I	0.08	ppbv	0.01	AC-058	19-May-16
16050120-001	Carbon tetrachloride	I	0.11	ppbv	0.01	AC-058	19-May-16
16050120-005	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-001	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-005	Chloroethane	I	0.02	ppbv	0.02	AC-058	19-May-16
16050120-001	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-005	Chloroform	I	0.07	ppbv	0.02	AC-058	19-May-16
16050120-001	Chloroform	I	0.02	ppbv	0.02	AC-058	19-May-16
16050120-005	Chloromethane		0.60	ppbv	0.02	AC-058	19-May-16
16050120-001	Chloromethane		0.94	ppbv	0.02	AC-058	19-May-16
16050120-001	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-005	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	19-May-16
16050120-001	cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	19-May-16
16050120-005	cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	19-May-16
16050120-005	cis-2-Butene	I	0.07	ppbv	0.02	AC-058	19-May-16
16050120-001	cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-001	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-005	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-005	Cyclohexane	I	0.10	ppbv	0.02	AC-058	19-May-16
16050120-001	Cyclohexane	I	0.04	ppbv	0.02	AC-058	19-May-16

Report certified by: Graham Knox, Team Lead

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

Date: June 17, 2016

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<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/ELK/May 12, 2016	14719	Ambient Air	12-May-16	21:40
<b>DESCRIPTION:</b>	Elk Point Airport			
<b>REPORT NUMBER:</b>	16050120	<b>REPORT CREATED:</b>	17-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050120-005	Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	19-May-16
16050120-001	Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	19-May-16
16050120-005	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16
16050120-001	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	19-May-16

<b>Report certified by:</b> Graham Knox, Team Lead	<b>On behalf of:</b> PJ Pretorius, Manager, Analysis and Testing Services
<b>Date:</b> June 17, 2016	<b>Inquiries:</b> (780) 632 8455 <b>E-mail:</b> EAS.Results@albertainnovates.ca



<b>RESULTS:</b> Adewunmi Adekanmbi Lakeland Industry and Community Assn 4000, 19 St NE  Calgary AB T2E 6P8	<b>CLIENT SAMPLE ID</b> LICA/VOC/ELK/May 14, 2016	<b>CANISTER ID</b> H2800	<b>Matrix</b> Ambient Air	<b>Priority</b> Normal
	<b>DESCRIPTION:</b> Elk Point Airport			
<b>INVOICE:</b> Charmaine Code 780 812-2182 PO Box 8237 5107W-50 St Bonnyville AB T9N 2J5	<b>DATE SAMPLED:</b> 14-May-16 17:20	<b>DATE RECEIVED:</b> 20-May-16		
	<b>REPORT CREATED:</b> 06-Jun-16	<b>REPORT NUMBER:</b> 16050193		
		<b>VERSION:</b> Version 01		

Lab ID	Parameter	Qualifier	Result Units	RDL	Method	Analysis Date
16050193-001	1,1,1-Trichloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-16
16050193-001	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-16
16050193-001	1,1,2-Trichloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-16
16050193-001	1,1-Dichloroethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-16
16050193-001	1,1-Dichloroethylene	K, T, U	< 0.04 ppbv	0.04	AC-058	27-May-16
16050193-001	1,2,3-Trimethylbenzene	K, T, U	< 0.05 ppbv	0.05	AC-058	27-May-16
16050193-001	1,2,4-Trichlorobenzene	K, T, U	< 0.9 ppbv	0.9	AC-058	27-May-16
16050193-001	1,2,4-Trimethylbenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	27-May-16
16050193-001	1,2-Dibromoethane	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-16
16050193-001	1,2-Dichlorobenzene	K, T, U	< 0.03 ppbv	0.03	AC-058	27-May-16
16050193-001	1,2-Dichloroethane	I	0.01 ppbv	0.01	AC-058	27-May-16
16050193-001	1,2-Dichloropropane	K, T, U	< 0.01 ppbv	0.01	AC-058	27-May-16
16050193-001	1,3,5-Trimethylbenzene	K, T, U	< 0.02 ppbv	0.02	AC-058	27-May-16
16050193-001	1,3-Butadiene	I	0.02 ppbv	0.02	AC-058	27-May-16
16050193-001	1,3-Dichlorobenzene	K, T, U	< 0.3 ppbv	0.3	AC-058	27-May-16
16050193-001	1,4-Dichlorobenzene	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May-16
16050193-001	1,4-Dioxane	K, T, U	< 0.4 ppbv	0.4	AC-058	27-May-16
16050193-001	1-Butene	I	0.12 ppbv	0.02	AC-058	27-May-16

**Report certified by:** Graham Knox, Team Lead

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

**Date:** June-06-16

**Inquiries:** (780) 632 8455

**E-mail:** EAS.Results@albertainnovates.ca

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/ELK/May 14, 2016	H2800	Ambient Air	14-May-16	17:20
<b>DESCRIPTION:</b>	Elk Point Airport			
<b>REPORT NUMBER:</b>	16050193	<b>REPORT CREATED:</b>	06-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050193-001	1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-16
16050193-001	1-Pentene	I	0.02	ppbv	0.01	AC-058	27-May-16
16050193-001	2,2,4-Trimethylpentane	I	0.07	ppbv	0.01	AC-058	27-May-16
16050193-001	2,2-Dimethylbutane	I	0.05	ppbv	0.01	AC-058	27-May-16
16050193-001	2,3,4-Trimethylpentane	I	0.02	ppbv	0.01	AC-058	27-May-16
16050193-001	2,3-Dimethylbutane	I	0.14	ppbv	0.02	AC-058	27-May-16
16050193-001	2,3-Dimethylpentane	I	0.14	ppbv	0.02	AC-058	27-May-16
16050193-001	2,4-Dimethylpentane	I	0.05	ppbv	0.01	AC-058	27-May-16
16050193-001	2-Methylheptane	I	0.02	ppbv	0.01	AC-058	27-May-16
16050193-001	2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	27-May-16
16050193-001	2-Methylpentane	I	0.12	ppbv	0.01	AC-058	27-May-16
16050193-001	3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-16
16050193-001	3-Methylhexane	I	0.06	ppbv	0.02	AC-058	27-May-16
16050193-001	3-Methylpentane	I	0.08	ppbv	0.01	AC-058	27-May-16
16050193-001	Acetone		5.1	ppbv	0.4	AC-058	27-May-16
16050193-001	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	27-May-16
16050193-001	Benzene	I	0.19	ppbv	0.01	AC-058	27-May-16
16050193-001	Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	27-May-16
16050193-001	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-16
16050193-001	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-16
16050193-001	Bromomethane	I	0.01	ppbv	0.01	AC-058	27-May-16
16050193-001	Carbon disulfide	I	0.04	ppbv	0.01	AC-058	27-May-16
16050193-001	Carbon tetrachloride	I	0.08	ppbv	0.01	AC-058	27-May-16
16050193-001	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-16
16050193-001	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-16

**Report certified by:** Graham Knox, Team Lead

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<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/ELK/May 14, 2016	H2800	Ambient Air	14-May-16	17:20
<b>DESCRIPTION:</b>	Elk Point Airport			
<b>REPORT NUMBER:</b>	16050193	<b>REPORT CREATED:</b>	06-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050193-001	Chloroform	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-16
16050193-001	Chloromethane		0.71	ppbv	0.02	AC-058	27-May-16
16050193-001	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	27-May-16
16050193-001	cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	27-May-16
16050193-001	cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-16
16050193-001	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-16
16050193-001	Cyclohexane	I	0.12	ppbv	0.02	AC-058	27-May-16
16050193-001	Cyclopentane	I	0.05	ppbv	0.01	AC-058	27-May-16
16050193-001	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	27-May-16
16050193-001	Ethanol		1.5	ppbv	0.3	AC-058	27-May-16
16050193-001	Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	27-May-16
16050193-001	Ethylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	27-May-16
16050193-001	Freon-11	I	0.26	ppbv	0.02	AC-058	27-May-16
16050193-001	Freon-113	I	0.07	ppbv	0.01	AC-058	27-May-16
16050193-001	Freon-114	I	0.02	ppbv	0.02	AC-058	27-May-16
16050193-001	Freon-12		0.54	ppbv	0.02	AC-058	27-May-16
16050193-001	Hexachloro-1,3-butadiene	K, T, U	< 0.54	ppbv	0.54	AC-058	27-May-16
16050193-001	Isobutane		1.60	ppbv	0.02	AC-058	27-May-16
16050193-001	Isopentane		0.72	ppbv	0.03	AC-058	27-May-16
16050193-001	Isoprene	I	0.17	ppbv	0.01	AC-058	27-May-16
16050193-001	Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	27-May-16
16050193-001	Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	27-May-16
16050193-001	m,p-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	27-May-16
16050193-001	m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	27-May-16
16050193-001	m-Ethyltoluene	K, T, U	< 0.09	ppbv	0.09	AC-058	27-May-16

<b>Report certified by:</b>	Graham Knox, Team Lead	<b>On behalf of:</b>	PJ Pretorius, Manager, Analysis and Testing Services	
<b>Date:</b>	June-06-16	<b>Inquiries:</b>	(780) 632 8455	<b>E-mail:</b> EAS.Results@albertainnovates.ca

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/ELK/May 14, 2016	H2800	Ambient Air	14-May-16	17:20
<b>DESCRIPTION:</b>	Elk Point Airport			
<b>REPORT NUMBER:</b>	16050193	<b>REPORT CREATED:</b>	06-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050193-001	Methyl butyl ketone	K, T, U	< 0.54	ppbv	0.54	AC-058	27-May-16
16050193-001	Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	27-May-16
16050193-001	Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	27-May-16
16050193-001	Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	27-May-16
16050193-001	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	27-May-16
16050193-001	Methylcyclohexane	I	0.21	ppbv	0.01	AC-058	27-May-16
16050193-001	Methylcyclopentane	I	0.14	ppbv	0.02	AC-058	27-May-16
16050193-001	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	27-May-16
16050193-001	n-Butane		1.05	ppbv	0.03	AC-058	27-May-16
16050193-001	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	27-May-16
16050193-001	n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	27-May-16
16050193-001	n-Heptane	I	0.05	ppbv	0.01	AC-058	27-May-16
16050193-001	n-Hexane	I	0.11	ppbv	0.01	AC-058	27-May-16
16050193-001	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-16
16050193-001	n-Pentane	I	0.3	ppbv	0.1	AC-058	27-May-16
16050193-001	n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	27-May-16
16050193-001	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	27-May-16
16050193-001	Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	27-May-16
16050193-001	n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	27-May-16
16050193-001	o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	27-May-16
16050193-001	o-Xylene	I	0.01	ppbv	0.01	AC-058	27-May-16
16050193-001	p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	27-May-16
16050193-001	p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	27-May-16
16050193-001	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	27-May-16
16050193-001	Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	27-May-16

<b>Report certified by:</b>	Graham Knox, Team Lead	<b>On behalf of:</b>	PJ Pretorius, Manager, Analysis and Testing Services	
<b>Date:</b>	June-06-16	<b>Inquiries:</b>	(780) 632 8455	<b>E-mail:</b> EAS.Results@albertainnovates.ca

<b>CLIENT SAMPLE ID</b>	<b>CANISTER ID</b>	<b>Matrix</b>	<b>DATE SAMPLED</b>	
LICA/VOC/ELK/May 14, 2016	H2800	Ambient Air	14-May-16	17:20
<b>DESCRIPTION:</b>	Elk Point Airport			
<b>REPORT NUMBER:</b>	16050193	<b>REPORT CREATED:</b>	06-Jun-16	<b>VERSION:</b> Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16050193-001	Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	27-May-16
16050193-001	Toluene	I	0.20	ppbv	0.01	AC-058	27-May-16
16050193-001	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	27-May-16
16050193-001	trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	27-May-16
16050193-001	trans-2-Butene	K, T, U	< 0.01	ppbv	0.01	AC-058	27-May-16
16050193-001	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-16
16050193-001	Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	27-May-16
16050193-001	Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	27-May-16
16050193-001	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	27-May-16

**Report certified by:** Graham Knox, Team Lead

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

**Date:** June-06-16

**Inquiries:** (780) 632 8455

**E-mail:** EAS.Results@albertainnovates.ca

***APPENDIX V***  
***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
Bim Adeniji	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.



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

05-07-2016

\_\_\_\_\_  
Report Issued Date (dd-mm-yyyy)

***APPENDIX VI***  
***DATA VALIDATION CERTIFICATION FORM***





### Validation Certificate Form

<b>Client:</b> <u>Lakeland Industry &amp; Community Association</u>	<b>Project #:</b> <u>2833-2016-05-35- C</u>
<b>Site:</b> <u>Elk Point Airport Site</u>	<b>Contact:</b> <u>Mike Bisaga</u>

Level 0 Preliminary Verification	<u></u>	Date <u>28-June-2016</u>
Level 1 Primary Validation	<u></u>	Date <u>28-June-2016</u>
Level 2 Final Validation	<u></u>	Date <u>28-June-2016</u>
Level 3 Independent Data Review	<u></u>	Date <u>05-Jul-2016</u>
Post-Final Validation	<u>NA</u>	Date <u>NA</u>

<b>Notes</b>
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.