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August 10, 2016

RE: June 2016 Ambient Air Monitoring Monthly Reports

Attached are the monthly continuous ambient air monitoring reports for the LICA Airshed Zone's Cold Lake South, Maskwa, St. Lina, and Portable Air Monitoring System (located in Bonnyville) 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,

Michael Bisaga

Airshed Program Manager
Lakeland Industry and Community Association

cc (email): LICA Office

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AMBIENT AIR MONITORING MONTHLY DATA REPORT

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

COLD LAKE SOUTH SITE

JOB #:2833-2016-06-1- C

June 2016

Prepared for:

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
BOX 8237, 5107W - 50 STREET
BONNYVILLE, ALBERTA
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Attention: MIKE BISAGA

DATE: **August 4, 2016**

Prepared by:

Wunmi Adekanmbi, M.Sc.
Project Manager Assistant, Customer Service, Air Services

Reviewed by:

Cheri Sinclair, B.Sc.
Supervisor, Customer Service, Air Services

SUMMARY

In June 2016, the Air Services Group of Maxxam Analytics conducted an ambient air monitoring program at the Cold Lake South Site of Lakeland Industry & Community Association, near Cold Lake, AB. 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 was above the 90% requirement.

All Parameters: Maximum instantaneous data collected on June 13 at hour 15 , June 16 at hour 4 and June 22 at hour 16 were invalidated due to power failures. Data collected at hour 15 on June 13 was also invalidated as the analyzers and wind system were recovering from one of the power failures.

TRS: Fifteen hours of data are invalid due to repeated calibrations.

NOX/NO/NO2: The analyzer was placed in "maintenance" mode for few hours on June 21 for a calibrator cross check.

PM 2.5: Fifty hours of data were invalidated as the data was below –3 ug/m3 this month.

The summary of results is presented on the following pages.

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

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

Monthly Continuous Data Summary

Lakeland Industry & Community Association Cold Lake South Site						MAXIMUM VALUES							OPERATIONAL TIME (%)
						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	0.1	1.1	5, 5	7, 8	4.6 9.3	WNW NW	0.2	19	100.0
TRS (PPB)	-	-	-	-	0.2	1.4	26	6	1.6	W	0.3	VAR	97.8
THC (PPM)	-	-	-	-	2.05	2.83	21	4	0.3	SE	2.21	20	100.0
NO2 (PPB)	159	-	0	-	2.0	8.4	20	6	1.1	WNW	3.2	16	99.3
NO (PPB)	-	-	-	-	0.3	4.2	20	6	1.1	WNW	0.5	VAR	99.3
NOX (PPB)	-	-	-	-	2.3	12.5	20	6	1.1	WNW	3.7	16	99.3
O3 (PPB)	82	-	0	-	29.4	63.7	6	16	13.3	SE	43.9	6	99.9
PM2.5 (UG/M3)	80	30	0	0	5.4	66.0	5	22	8.1	SE	10.3	2	92.9
RELATIVE HUMIDITY (%)	-	-	-	-	64.3	100	24	VAR	VAR	VAR	85.6	25	100.0
AMBIENT TEMPERATURE (DEG C)	-	-	-	-	16.6	28.7	28	13	6.4	W	21.2	7	100.0
VECTOR WS (KPH)	-	-	-	-	6.1	18.2	11	16	-	SE	10.9	9	100.0
VECTOR WD (DEG)	-	-	-	-	-	-	-	-	-	-	-	-	100.0

NA-NOT AVAILABLE VAR-VARIOUS

Exceedence Summary Report

SO_2 1- Hour Exceedences

No Exceedences Recorded During the Month

SO_2 24- Hour Exceedences

No Exceedences Recorded During the Month

NO2 1- Hour Exceedences

No Exceedences Recorded During the Month

PM2.5 1- Hour Exceedences

No Exceedences Recorded During the Month

PM2.5 24- Hour Exceedences

No Exceedences Recorded During the Month

O3 1- Hour Exceedences

No Exceedences Recorded During the Month

Volatile Organics (VOCs) Data Summary

Sample Collected Date	Maximum reading (PPB)	Volatile Organic Compound
June 5, 2016	40.2	ETHANOL
June 11, 2016	2.8	ACETONE
June 17, 2016	2.5	ACETONE
June 23, 2016	8.8	ACETONE
June 29, 2016	11.8	ACETONE

Note: NA

Polycyclic Aromatic Hydrocarbons (PAHs) Data Summary

Sample Collected Date	Maximum reading (ug)	Semi-Volatile Organic
June 5, 2016	0.35	Phenanthrene
June 11, 2016	0.12	Phenanthrene
June 17, 2016	0.11	Phenanthrene
June 23, 2016	0.33	Phenanthrene
June 29, 2016	0.28	Phenanthrene

Note: NA

Partisol Sampler Summary

Sample Collected Date	Concentration (mg)
June 5, 2016	0.076
June 11, 2016	0.033
June 17, 2016	0.028
June 23, 2016	0.079
June 29, 2016	0.107

Note: NA

TABLE OF CONTENTS

1.0 Discussion

This monthly report consists of data for parameters Sulphur Dioxide (SO2), Hydrogen Sulphide (H2S), Total Reduced Sulphur (TRS), Total Hydrocarbon (THC), Oxides of Nitrogen (NOx), Nitric Oxides (NO), Nitrogen Dioxide (NO2), Ozone (O3), Particulate Matter 2.5 (PM2.5), Relative Humidity (RH), Ambient Temperature (AmbTPX), Wind Speed (WS), Wind Direction (WD) and Standard Deviation Wind Direction (STDWD). The results for the non-continuous Partisol, VOCs and PAHs monitoring 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%).

On June 6, annual maintenance was performed on the Air Conditioning system by an HVAC technician from Horizon Mechanical.

SULPHUR DIOXIDE (SO2)

Upon arrival at the station on June 3, a low voltage warning was found displayed on the screen. A shut-down calibration was performed prior to adjusting the UV lamp amd PMT voltage. A post-repair calibration was then completed. As both calibrations met the AMD's calibration requirements, no data was discarded.

TOTAL REDUCED SULPHUR (TRS)

A successful routine monthly calibration was performed on June 2. It was noted during the calibration that the sample pump required maintenance. The pump was rebuilt on June 3 following a shut-down calibration. A post-repair calibration was completed afterwards. The analyzer spanned low on June 6. A repeat full calibration was performed on June 7 to ascertain the analyzer's performance; and the result was good. The analyzer spanned low again on June 10 as the expected span value was not set correctly. The expected span value was adjusted on June 11 following a 3-point calibration. An internal audit was conducted on the TRS analyzer on June 21. Audit results are included in this report. As all the calibrations performed this month met AMD requirements, no data was discarded.

TOTAL HYDROCARBONS (THC)

The analyzer was working well throughout the month. The routine monthly calibration was performed on June 7. The Hydrogen gas cylinder was replaced on June 21.

NITROGEN DIOXIDE (NO2)

The analyzer was working well throughout the month. The routine monthly calibration was performed on June 7. The analyzer was placed in "maintenance" mode for few hours on June 21 for a calibrator cross check.

OZONE (O3)

The pump of the zero/span system was rebuilt on June 3. A zero/span check was performed afterwards and expected span value was adjusted. The routine monthly calibration was completed on June 10.

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

The first routine bi-monthly audit was performed on June 10. The Teom unit generated many negative readings between June 11 and June 12. A maintenance audit was completed on June 13. The as founds part of the audit was completed prior to troubleshooting/maintenance. The entire sample pass was rebuilt and a new switch valve was installed. The post-repair audit was then completed. The second routine audit was performed on June 30. The inlet filter was replaced on June 3. Both the inlet filter and the FDMS filter were replaced on June 10.

Data was corrected using Alberta Air Quality Guidelines. Data between 0 and –3 ug/m3, was corrected to 0 ug/m3. Data was below –3ug/m3 was invalidated. Fifty hours of data were invalidated as the data was below –3 ug/m3 this month.

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

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

RELATIVE HUMIDITY (RH)

The humidity sensor was working well throughout the month.

AMBIENT TEMPERATURE (TPX)

The temperature sensor was working well throughout the month. The temperature sensor was audited on June 1 and 10 using the standard reference, Fischer Scientific, Model FB 1291 (S/N: 130168457).

VOC SAMPLES

The sampler was programmed to run for 24 hours every 6th day per the NAPS (North American Pollution Surveillance Schedule).
Samples were collected on June 5, 11, 17, 23 and 29. Analytical results are included in this report. VOC values are reported in ppb.
A quarterly audit was performed on the VOC sampler on June 1.

PAH SAMPLES

The sampler was programmed to run for 24 hours every 6th day per the NAPS (North American Pollution Surveillance Schedule).
Samples were collected on June 5, 11, 17, 23 and 29. Analytical results are included in this report. PAH values are reported in µg.
A quarterly audit was performed on the PAH sampler on June 1.

PARTISOL SAMPLES

The sampler was programmed to run for 24 hours every 6th day per the NAPS (North American Pollution Surveillance Schedule).
Samples were collected on June 5, 11, 17, 23 and 29. Analytical results are included in this report. Partisol values are reported in mg.

PASSIVE SAMPLES

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

2.0 Project Personnel

Mike Bisaga was the contact for Lakeland Industry & Community Association, and the Maxxam field sampling technicians were Alexander Yakupov and Limin Li.

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-00210: Ambient TRS Monitoring
Maxxam AIR SOP-00211: Ambient SO2 Monitoring
Maxxam AIR SOP-00212: Ambient O3 Monitoring
Maxxam AIR SOP-00213: Ambient NO/NO2/NOx 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 Flourescent Analyzer
Total Reduced Sulphur - Thermo 450i UV Flourescent Analyzer
Total Hydrocarbons - Thermo 450i FID Analyzer
Oxides of Nitrogen - Thermo 42i Chemiluminescent Analyzer
Ozone - Thermo 49i Photometric Analyzer
Particulate Matter (PM2.5) - R&P 1405F Teom Unit
Wind System - Met One Unit
Relative Humidity - Met One Unit
Ambient Temperature - Met One Unit
Datalogger - ESC 8832
Partisol - R&P 2000H Unit

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

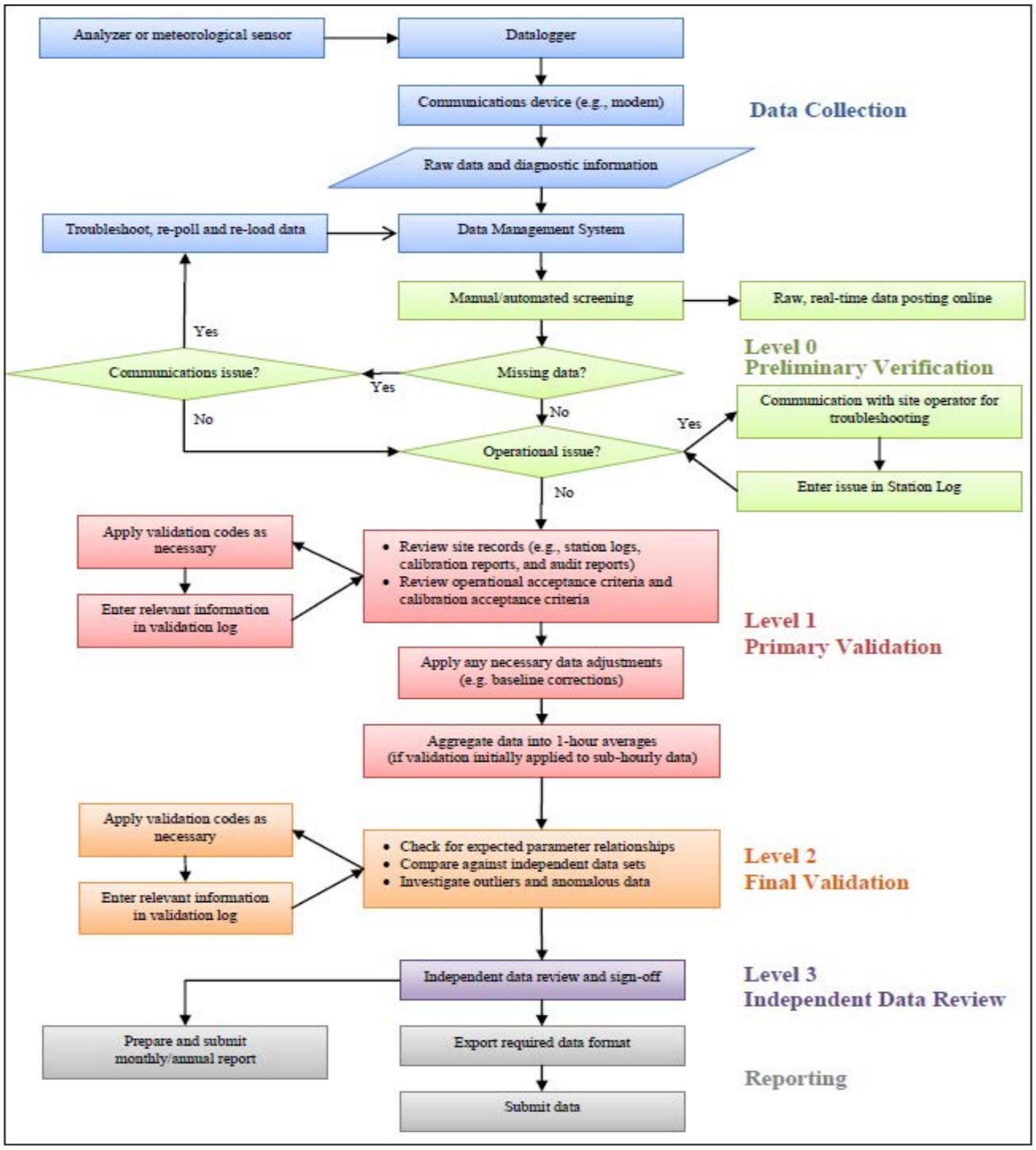
Level 0 Preliminary Verification
Level 0 data are raw data obtained directly from the data acquisition system (DAS). Under the step of Level 0, these data undergo a certain amount of manual or automated screening and flagging. It included a) identification of periods of missing data; b) verification 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

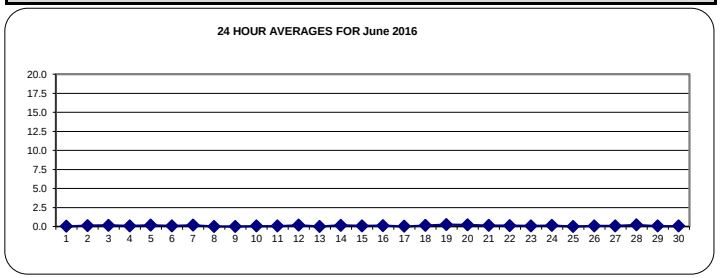
SULPHUR DIOXIDE (SO2) hourly averages in ppb

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



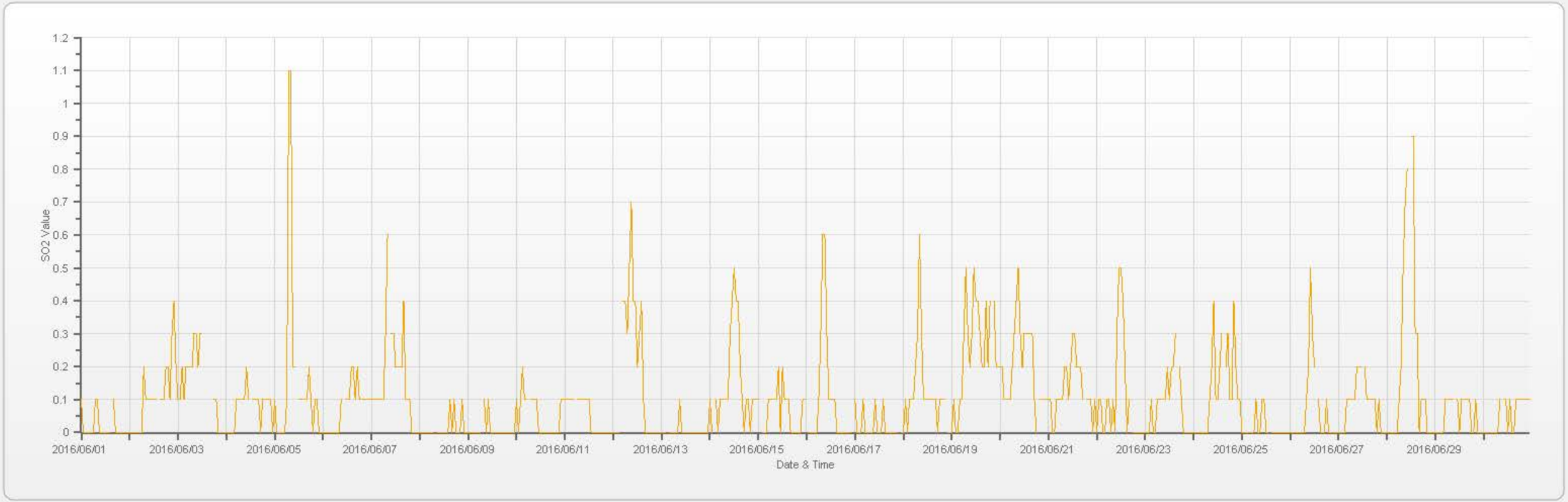
OBJECTIVE LIMIT: **ALBERTA ENVIRONMENT:** 1-HR 172 PPB | 24-HR 48 PPB

MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0					
NUMBER OF 24-HR EXCEEDENCES:	0					
NUMBER OF NON-ZERO READINGS:	364					
MINIMUM 1-HR AVERAGE	0.0	PPB	@ HOUR(S)	VAR	ON DAY(S)	VAR
MAXIMUM 1-HR AVERAGE:	1.1	PPB	@ HOUR(S)	7 , 8	ON DAY(S)	5 , 5
MAXIMUM 24-HR AVERAGE:	0.2	PPB			ON DAY(S)	VAR
					VAR-VARIOUS	

IZS CALIBRATION TIME:	30	HRS	OPERATIONAL TIME:	720	HRS
MONTHLY CALIBRATION TIME:	5	HRS	AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	0.14		MONTHLY AVERAGE:	0.1	PPB

SO2[ppb] Station: LICA COLD LAKE SOUTH Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



SULPHUR DIOXIDE MAX instantaneous maximum in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	0.6	0.4	0.6	0.5	0.5	0.6	0.4	0.6	0.6	0.7	0.5	0.5	0.6	0.5	0.5	S	0.6	0.6	0.6	0.6	0.6	0.4	0.6	0.4	0.4	0.7	0.5	24
2	0.6	0.4	0.6	0.6	0.6	0.6	0.6	0.7	0.6	0.6	0.6	0.6	0.7	0.6	S	0.9	0.9	0.9	1.0	1.0	1.0	0.9	1.0	0.9	0.4	1.0	0.7	24
3	0.7	0.6	0.7	0.7	0.6	0.7	0.7	0.9	0.7	0.7	0.7	0.6	C	C	C	C	C	C	C	0.2	0.1	0.2	0.1	0.0	0.0	0.9	0.5	24
4	0.0	0.0	0.1	0.0	0.0	0.1	0.2	0.1	0.3	0.1	0.2	0.2	S	0.0	0.2	0.1	0.1	0.0	0.2	0.2	0.2	0.0	0.2	0.0	0.0	0.3	0.1	24
5	0.1	0.1	0.2	0.0	0.2	0.1	0.4	1.8	***2.0***	0.3	0.3	S	0.2	0.3	0.3	0.3	0.2	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.0	***2.0***	0.4	24
6	0.0	0.1	0.0	0.1	0.0	0.1	0.1	0.2	0.3	0.3	S	0.2	0.2	0.3	0.3	0.5	0.3	0.3	0.2	0.2	0.3	0.2	0.3	0.1	0.0	0.5	0.2	24
7	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.3	0.7	S	0.2	0.3	0.3	0.3	0.3	0.3	0.5	0.2	0.1	0.0	0.1	0.1	0.2	0.1	0.0	0.7	0.2	24
8	0.0	0.2	0.2	0.2	0.0	0.1	0.0	0.0	S	0.1	0.2	0.1	0.3	0.3	0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.3	0.1	24
9	0.1	0.1	0.1	0.0	0.0	0.0	0.0	S	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.1	0.0	24
10	0.1	0.3	0.1	0.1	0.1	0.1	S	0.3	0.3	0.1	0.1	0.1	0.1	0.3	0.0	0.0	0.1	0.0	0.0	0.3	0.0	0.0	0.1	0.2	0.0	0.3	0.1	24
11	0.1	0.2	0.0	0.1	0.1	S	0.1	0.2	0.1	0.1	0.0	0.3	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.3	0.1	24
12	0.2	0.2	0.1	0.2	S	0.5	0.4	0.4	0.7	0.9	0.6	0.6	0.3	0.6	0.6	0.3	0.0	0.0	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.9	0.3	24
13	0.0	0.0	0.1	S	0.0	0.0	0.2	0.0	0.2	0.2	0.1	0.2	0.0	0.2	0.0	P	R	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.2	0.1	22
14	0.1	0.2	S	0.2	0.2	0.2	0.0	0.1	0.0	0.0	0.3	0.5	0.5	0.6	0.5	0.3	0.2	0.0	0.1	0.0	0.0	0.0	0.2	0.2	0.0	0.6	0.2	24
15	0.2	S	0.2	0.1	0.0	0.1	0.2	0.1	0.1	0.3	0.3	0.0	0.2	0.2	0.2	0.2	0.2	0.1	0.0	0.1	0.1	0.2	0.2	0.3	0.0	0.3	0.2	24
16	S	0.1	0.1	0.1	0.2	0.1	0.2	0.6	0.7	0.7	0.4	0.1	0.1	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.2	S	0.0	0.7	0.2	24
17	0.0	0.0	0.2	0.0	0.2	0.2	0.2	0.1	0.0	0.1	0.2	0.2	0.2	0.0	0.2	0.2	0.2	0.2	0.0	0.0	0.1	0.0	S	0.0	0.0	0.2	0.1	24
18	0.2	0.2	0.0	0.2	0.2	0.3	0.3	0.4	0.7	0.6	0.2	0.3	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.1	S	0.2	0.0	0.0	0.7	0.2	24
19	0.3	0.2	0.2	0.0	0.1	0.0	0.5	0.5	0.3	0.2	0.3	0.6	0.6	0.5	0.3	0.2	0.2	0.4	0.0	0.3	S	0.4	0.2	0.1	0.0	0.6	0.3	24
20	0.2	0.2	0.0	0.2	0.2	0.0	0.2	0.5	0.5	0.6	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.1	S	0.3	0.0	0.2	0.1	0.0	0.6	0.2	24
21	0.2	0.0	0.0	0.0	0.2	0.2	0.1	0.1	0.3	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.3	S	0.1	0.1	0.0	0.1	0.1	0.0	0.3	0.2	24
22	0.0	0.1	0.0	0.0	0.0	0.2	0.0	0.0	0.2	0.2	0.5	0.6	0.6	0.3	0.3	0.2	P	S	0.2	0.2	0.0	0.2	0.0	0.0	0.0	0.6	0.2	23
23	0.0	0.2	0.2	0.0	0.0	0.0	0.2	0.1	0.2	0.2	0.1	0.3	0.2	0.3	0.2	0.3	S	0.2	0.2	0.0	0.2	0.0	0.2	0.0	0.0	0.3	0.1	24
24	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.3	0.3	0.1	0.3	0.2	0.3	S	0.3	0.5	0.1	0.3	0.5	0.3	0.2	0.1	0.0	0.5	0.2	24
25	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.0	0.3	0.0	S	0.1	0.3	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.3	0.1	24
26	0.0	0.0	0.0	0.2	P	0.0	0.1	0.1	0.1	0.5	0.6	0.6	0.3	S	0.1	0.1	0.1	0.1	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.6	0.1	23
27	0.1	0.1	0.0	0.0	0.1	0.2	0.0	0.1	0.1	0.2	0.2	0.1	S	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.2	0.1	24
28	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.7	0.9	1.2	S	1.0	1.0	0.5	0.6	0.2	0.2	0.3	0.1	0.1	0.0	0.0	0.1	0.0	1.2	0.3	24
29	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.1	S	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.2	0.1	0.1	0.0	0.2	0.1	24
30	0.1	0.0	0.1	0.0	0.1	0.0	0.2	0.1	0.2	S	0.2	0.1	0.2	0.1	0.0	0.0	0.0	0.1	0.3	0.1	0.2	0.1	0.2	0.1	0.0	0.3	0.1	24
HOURLY MAX	0.7	0.6	0.7	0.7	0.6	0.7	0.7	1.8	2.0	0.9	1.2	0.6	1.0	1.0	0.6	0.9	0.9	0.9	1.0	1.0	1.0	0.9	1.0	0.9				
HOURLY AVG	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.2	0.1				

STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS: 500

MAXIMUM INSTANTANEOUS VALUE: 2.0 PPB @ HOUR(S) 8 ON DAY(S) 5

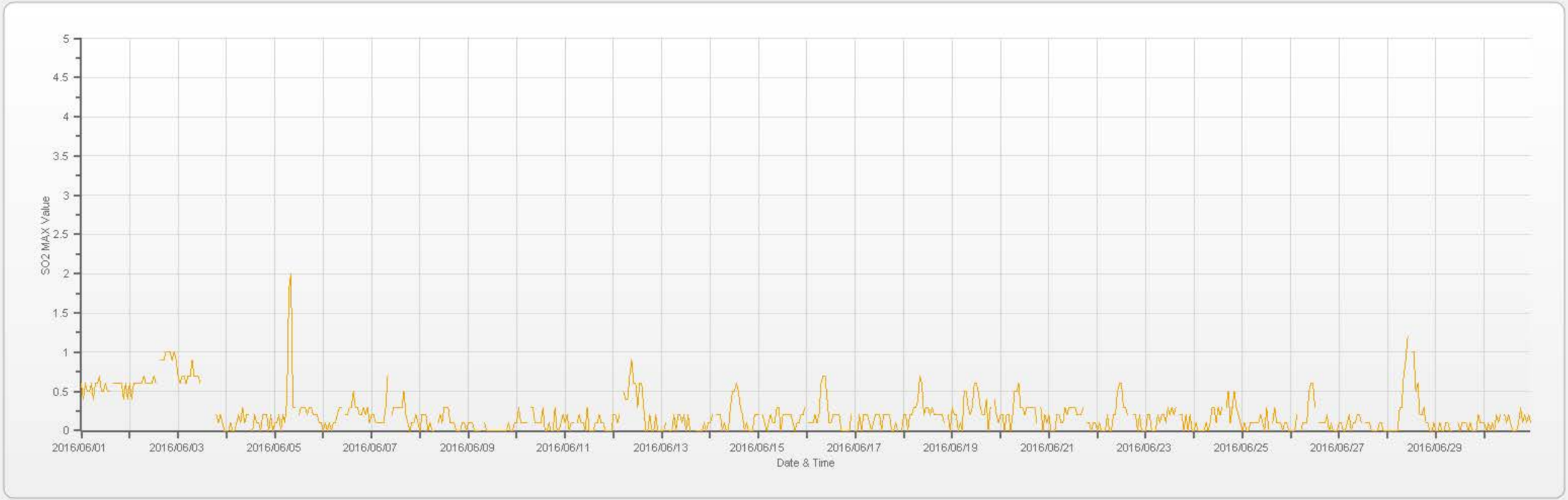
VAR-VARIOUS

IZS CALIBRATION TIME: 30 HRS OPERATIONAL TIME: 716 HRS

MONTHLY CALIBRATION TIME: 7 HRS

STANDARD DEVIATION: 0.23

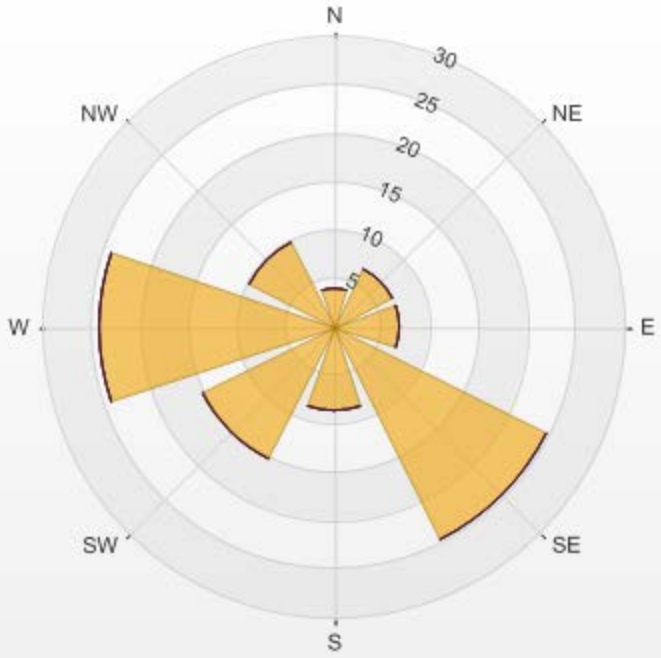
SO2 MAX[ppb] Station: LICA COLD LAKE SOUTH Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



Wind: LICA COLD LAKE SOUTH Monitor: SO2 [ppb] Monthly: 06/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
Calm: 0.00% Valid Data: 95.14% Calm Avg: 0.00

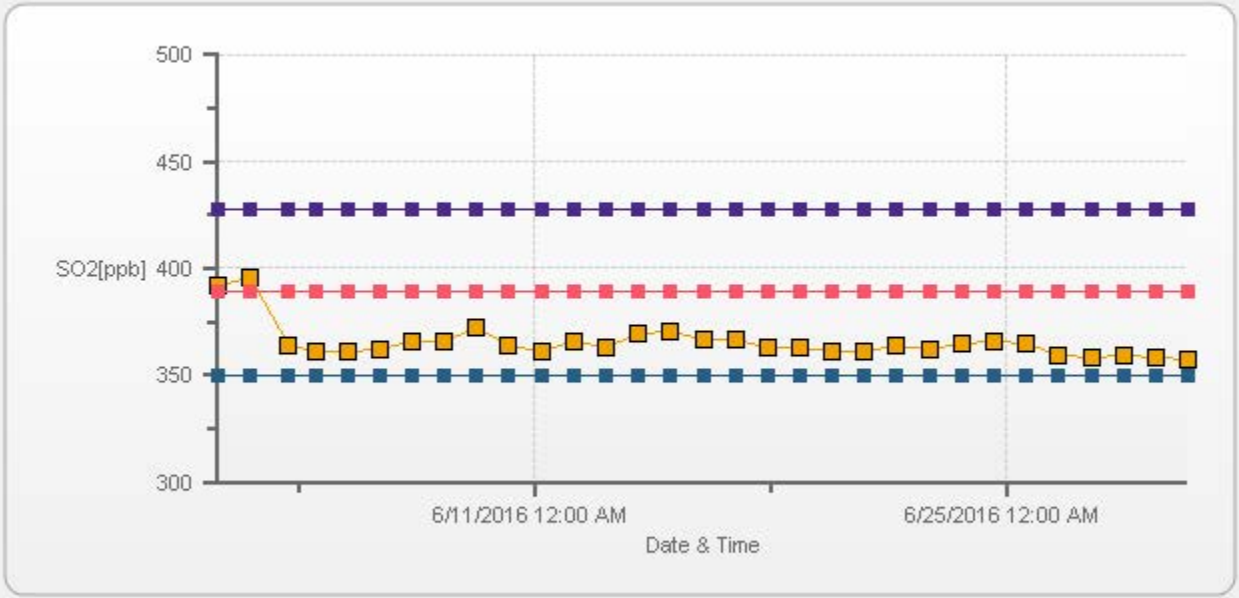
Direction	0.0-20.0	20.0-60.0	60.0-110.0	110.0-170.0	170.0-340.0	>340.0	Total
N	4.09	0	0	0	0	0	4.09
NE	6.72	0	0	0	0	0	6.72
E	6.86	0	0	0	0	0	6.86
SE	24.53	0	0	0	0	0	24.53
S	8.61	0	0	0	0	0	8.61
SW	15.18	0	0	0	0	0	15.18
W	24.23	0	0	0	0	0	24.23
NW	9.78	0	0	0	0	0	9.78
Summary	100	0	0	0	0	0	100

LICA COLD LAKE SOUTH 2016/06/01 12:00 AM - 2016/06/30 11:00 PM Calm: 0.00%



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

SO2[ppb] Calibration: LICA COLD LAKE SOUTH Monthly: 06/2016 Type: Span



TOTAL REDUCED SULPHUR

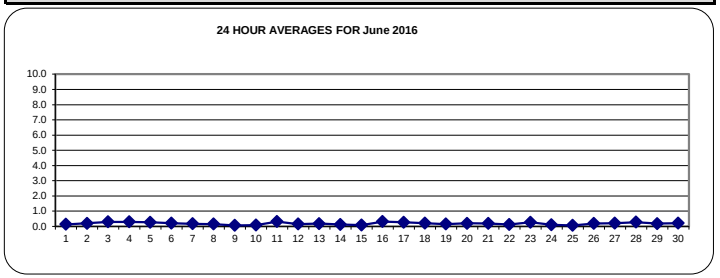
TOTAL REDUCED SULPHUR (TRS) hourly averages in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	0.2	0.2	0.1	0.2	0.2	0.2	0.4	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0	S	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.4	0.1	24
2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.1	0.2	C	C	C	C	C	0.3	0.3	0.3	0.3	0.2	0.1	0.3	0.2	24
3	0.3	0.3	0.3	0.5	0.5	0.5	0.5	0.3	0.2	0.2	0.2	0.2	0.2	C1	C1	C1	C1	C1	C1	0.1	0.2	0.3	0.3	0.3	0.1	0.5	***0.3***	18
4	0.3	0.7	0.8	0.8	1.0	0.3	0.3	0.2	0.2	0.1	0.1	0.1	S	0.2	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.1	0.3	0.3	0.1	1.0	***0.3***	24
5	0.3	0.3	0.4	0.3	0.4	0.6	0.6	0.4	0.2	0.2	0.2	S	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.6	***0.3***	24
6	0.3	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.3	0.2	S	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.4	0.2	24
7	0.1	0.2	0.3	0.2	0.3	0.3	0.3	0.3	0.3	S	C1	C1	C1	C1	C1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.2	0.2	0.0	0.3	0.2	19
8	0.2	0.7	0.5	0.2	0.2	0.1	0.1	0.1	S	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.7	0.2	24
9	0.0	0.1	0.1	0.1	0.2	0.1	0.1	S	0.1	0.2	0.1	0.2	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	0.2	0.1	24
10	0.0	0.0	0.0	0.1	0.0	0.1	S	S1	0.0	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.0	0.2	0.1	23
11	0.2	0.2	0.2	0.7	0.6	S	0.5	0.4	0.4	0.3	C1	C1	C1	C1	0.3	0.2	0.3	0.2	0.2	0.3	0.2	0.3	0.3	0.1	0.1	0.7	***0.3***	20
12	0.1	0.2	0.2	0.2	S	0.5	0.4	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.2	0.3	0.0	0.5	0.2	24
13	0.2	0.6	0.5	S	0.4	0.4	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.0	0.6	0.2	24
14	0.2	0.2	S	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.2	0.1	24
15	0.1	S	0.1	0.1	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.0	0.2	0.1	24
16	S	0.3	0.4	0.5	0.5	0.5	0.4	0.5	0.4	0.4	0.4	0.4	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	S	0.1	0.5	***0.3***	24
17	0.3	0.4	0.4	0.4	0.5	0.5	0.3	0.3	0.2	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	S	0.3	0.1	0.5	***0.3***	24
18	0.3	0.3	0.2	0.3	0.2	0.4	0.5	0.4	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.1	S	0.1	0.2	0.1	0.5	0.2	24
19	0.2	0.1	0.3	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	S	0.3	0.2	0.2	0.1	0.3	0.2	24
20	0.2	0.2	0.2	0.2	0.2	0.5	0.6	0.5	0.3	0.4	0.2	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.0	S	0.1	0.1	0.2	0.1	0.0	0.6	0.2	24
21	0.2	0.1	0.2	0.2	0.2	0.4	0.6	Q	Q	Q	0.2	0.1	0.2	0.1	0.2	0.2	0.2	0.1	S	0.1	0.1	0.2	0.1	0.2	0.1	0.6	0.2	24
22	0.2	0.2	0.3	0.6	0.4	0.4	0.4	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.6	0.1	24
23	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	S	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.1	0.4	***0.3***	24
24	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.3	0.1	24
25	0.0	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	S	0.0	0.1	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.0	0.2	0.1	24
26	0.2	0.1	0.1	0.4	0.0	0.5	***1.4***	0.2	0.1	0.0	0.1	0.1	0.1	S	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.0	***1.4***	0.2	24
27	0.2	0.1	0.1	0.5	0.7	0.7	0.7	0.2	0.2	0.1	0.0	0.0	S	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.5	0.0	0.7	0.2	24
28	0.3	0.3	0.4	0.4	0.7	0.8	0.7	0.4	0.2	0.2	0.1	S	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.8	***0.3***	24
29	0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.2	S	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.3	0.2	24
30	0.2	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.2	S	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.0	0.5	0.2	24
HOURLY MAX	0.3	0.7	0.8	0.8	1.0	0.8	1.4	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.4	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.5				
HOURLY AVG	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2				

STATUS FLAG CODES

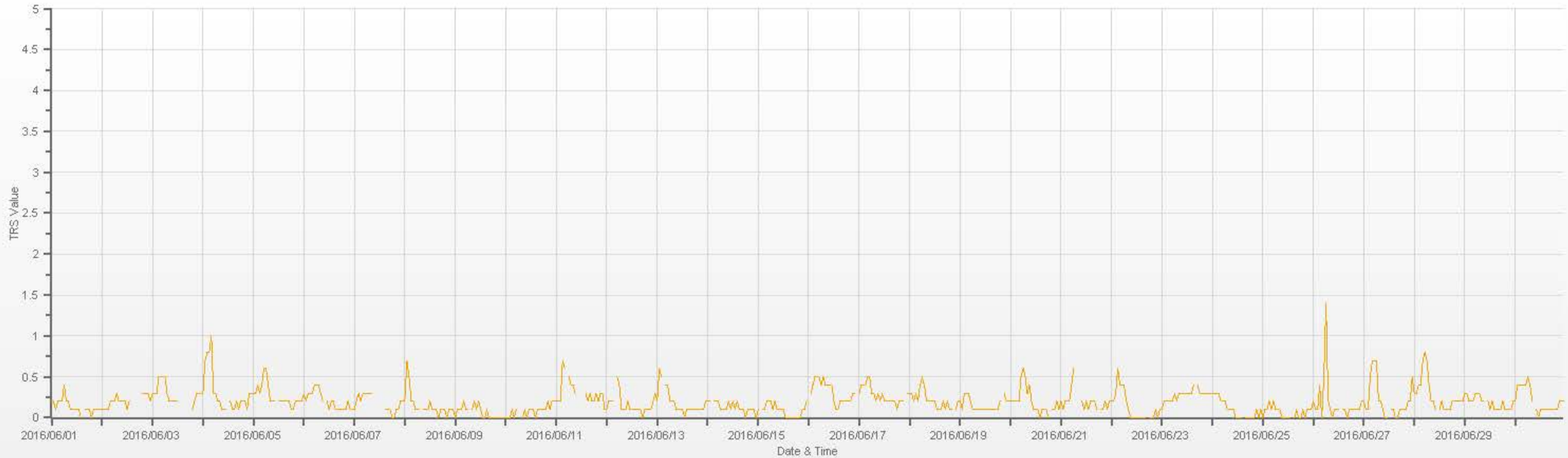
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:			589				
MINIMUM 1-HR AVERAGE	0.0	PPB	@ HOUR(S)	VAR	ON DAY(S)	VAR	
MAXIMUM 1-HR AVERAGE:	1.4	PPB	@ HOUR(S)	6	ON DAY(S)	26	
MAXIMUM 24-HR AVERAGE:	0.3	PPB			ON DAY(S)	VAR	
					VAR-VARIOUS		
IZS CALIBRATION TIME:	29	HRS	OPERATIONAL TIME:			704	HRS
MONTHLY CALIBRATION TIME:	5	HRS	AMD OPERATION UPTIME:			97.8	%
STANDARD DEVIATION:	0.16		MONTHLY AVERAGE:			0.2	PPB

TRS[ppb] Station: LICA COLD LAKE SOUTH Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



TOTAL REDUCED SULPHUR MAX instantaneous maximum in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	0.4	0.5	0.3	0.4	0.5	0.5	0.6	0.6	0.7	0.4	0.6	0.5	0.4	0.3	0.4	S	0.5	0.3	0.3	0.3	0.4	0.5	0.3	0.4	0.3	0.7	0.4	24
2	0.4	0.5	0.3	0.4	0.4	0.4	0.5	0.6	0.4	0.4	0.4	0.4	0.3	0.4	C	C	C	C	C	0.8	0.6	0.6	0.7	0.5	0.3	0.8	0.5	24
3	0.5	0.5	0.6	1.0	0.9	0.9	0.9	0.8	0.5	0.6	0.5	0.6	C1	C1	C1	C1	C1	C1	C1	0.6	0.6	0.6	0.6	0.6	0.5	1.0	0.7	17
4	1.3	1.3	1.1	1.3	1.6	0.6	0.6	0.6	0.5	0.5	0.5	0.4	S	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.4	0.7	0.6	0.4	1.6	0.7	24
5	0.6	0.7	0.6	0.5	0.7	0.8	0.9	1.0	0.4	0.5	0.5	S	0.5	0.4	0.5	0.5	0.5	0.4	0.4	0.4	0.5	0.5	0.4	0.6	0.4	1.0	0.6	24
6	0.5	0.7	0.6	0.8	0.8	0.7	0.7	0.8	0.6	0.5	S	0.6	0.5	0.5	0.6	0.5	0.6	0.7	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.8	0.6	24
7	0.5	0.7	0.8	0.6	0.7	0.6	0.7	0.9	0.6	S	C1	C1	C1	C1	C1	0.5	0.5	0.7	0.5	0.5	0.8	0.7	0.5	0.7	0.5	0.9	0.6	19
8	0.7	2.0	1.1	0.6	0.8	0.7	0.5	0.5	S	0.4	0.5	0.4	0.5	0.4	0.4	0.6	0.5	0.5	0.8	0.4	0.4	0.5	0.5	0.7	0.4	2.0	0.6	24
9	0.5	0.4	0.5	0.5	0.6	0.6	0.6	S	0.5	0.6	0.5	0.6	0.5	0.5	0.5	0.4	0.5	0.5	0.4	0.6	0.5	0.3	0.4	0.4	0.3	0.6	0.5	24
10	0.4	0.4	0.4	0.5	0.6	0.5	S	S1	0.5	0.6	0.5	0.5	0.5	0.5	0.4	0.4	0.7	0.5	0.4	0.5	0.5	0.4	0.5	0.5	0.4	0.7	0.5	23
11	0.5	0.6	0.5	1.2	1.1	S	0.7	0.7	0.8	C1	C1	C1	C1	C1	0.5	0.5	0.6	0.6	0.5	0.8	0.8	0.7	0.8	0.5	0.5	1.2	0.7	19
12	0.4	0.6	0.5	0.8	S	1.1	0.8	0.7	0.5	0.4	0.5	0.5	0.5	0.5	0.4	0.4	0.5	0.4	0.4	0.5	0.4	0.5	0.5	0.6	0.4	1.1	0.5	24
13	0.7	1.4	0.9	S	0.7	0.7	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.3	0.6	P	R	0.4	0.5	0.6	0.5	0.5	0.5	0.7	0.3	1.4	0.6	22
14	0.8	0.7	S	0.5	0.6	0.6	0.7	0.5	0.4	0.5	0.5	0.7	0.6	0.5	0.5	0.5	0.5	0.4	0.5	0.5	0.6	0.5	0.7	0.6	0.4	0.8	0.6	24
15	0.4	S	0.5	0.4	0.6	0.8	0.6	0.5	0.7	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.8	0.7	0.6	0.4	0.8	0.5	24
16	S	0.6	0.8	1.0	1.1	1.0	0.9	1.0	0.8	0.7	0.7	0.7	0.5	0.3	0.6	0.4	0.5	0.5	0.4	0.4	0.6	0.6	0.5	S	0.3	1.1	0.7	24
17	0.7	0.6	0.7	0.8	0.6	0.8	0.7	0.5	0.5	0.5	0.3	0.6	0.5	0.4	0.5	0.5	0.4	0.5	0.3	0.5	0.4	0.4	S	0.5	0.3	0.8	0.5	24
18	0.7	0.5	0.5	0.7	0.5	0.8	0.8	0.7	0.5	0.4	0.5	0.6	0.5	0.5	0.4	0.4	0.5	0.4	0.5	0.3	0.4	S	0.5	0.5	0.3	0.8	0.5	24
19	0.6	0.5	0.6	0.7	0.6	0.6	0.5	0.4	0.4	0.4	0.4	0.5	0.4	0.6	0.4	0.4	0.5	0.4	0.4	0.5	S	0.8	0.5	0.4	0.4	0.8	0.5	24
20	0.7	0.6	0.5	0.7	0.6	1.1	1.1	0.8	0.8	0.8	0.5	0.6	0.5	0.5	0.4	0.5	0.5	0.5	0.5	S	0.5	0.6	0.7	0.5	0.4	1.1	0.6	24
21	0.6	0.7	0.5	0.6	0.7	0.9	1.0	Q	Q	Q	0.6	0.4	0.5	0.4	0.4	0.5	0.4	0.4	S	0.5	0.4	0.5	0.5	0.7	0.4	1.0	0.6	24
22	0.5	0.7	0.8	1.0	1.0	0.9	0.9	0.7	0.5	0.4	0.7	0.5	0.6	0.5	0.4	0.5	P	S	0.5	0.6	0.5	0.5	0.5	0.4	0.4	1.0	0.6	23
23	0.6	0.6	0.7	0.6	0.5	0.6	0.6	0.5	0.5	0.6	0.7	0.4	0.4	0.7	0.5	0.5	S	0.6	0.6	0.4	0.5	0.6	0.6	0.5	0.4	0.7	0.6	24
24	0.7	0.6	0.7	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.6	0.4	0.4	0.5	0.5	S	0.5	0.6	0.5	0.5	0.4	0.6	0.4	0.5	0.4	0.7	0.5	24
25	0.5	0.7	0.7	0.8	0.6	0.6	0.5	0.4	0.7	0.4	0.5	0.6	0.6	0.3	S	0.5	0.5	0.6	0.5	0.5	0.5	0.4	0.5	0.5	0.3	0.8	0.5	24
26	0.6	0.6	0.5	1.3	P	***3.0***	2.9	0.7	0.5	0.6	0.5	0.5	0.6	S	0.5	0.6	0.5	0.5	0.6	0.8	0.5	0.6	0.6	0.7	0.5	***3.0***	0.8	23
27	0.6	0.5	0.8	1.2	1.2	1.2	1.1	0.6	0.6	0.6	0.3	0.6	S	0.7	0.4	0.3	0.4	0.5	0.5	0.5	0.5	0.5	0.7	2.2	0.3	2.2	0.7	24
28	0.7	0.7	1.1	1.0	1.3	1.5	1.3	0.8	0.6	0.6	0.6	S	0.5	0.5	0.5	0.6	0.4	0.5	0.5	0.5	0.7	0.5	0.6	0.7	0.4	1.5	0.7	24
29	0.6	0.7	0.7	0.6	0.6	0.8	0.8	0.7	0.6	0.5	S	0.6	0.5	0.5	0.4	0.6	0.4	0.5	0.6	0.6	0.5	0.5	0.5	0.7	0.4	0.8	0.6	24
30	0.8	0.9	1.2	1.0	0.9	1.1	1.0	0.9	0.8	S	0.7	0.5	0.6	0.5	0.5	0.5	0.6	0.5	0.7	0.6	0.6	0.7	0.6	0.6	0.5	1.2	0.7	24
HOURLY MAX	1.3	2.0	1.2	1.3	1.6	3.0	2.9	1.0	0.8	0.8	0.7	0.7	0.6	0.7	0.6	0.6	0.7	0.7	0.8	0.8	0.8	0.8	0.8	2.2				
HOURLY AVG	0.6	0.7	0.7	0.8	0.8	0.9	0.8	0.7	0.6	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	0.6	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: 661

MAXIMUM INSTANTANEOUS VALUE: 3.0 PPB @ HOUR(S) 5 ON DAY(S) 26

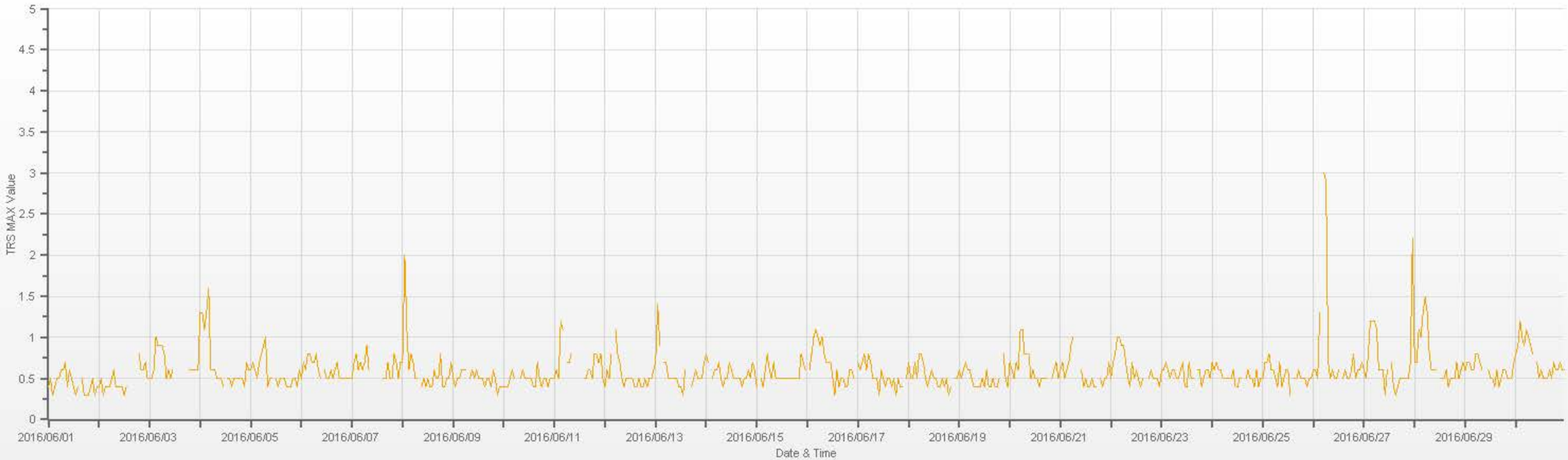
VAR-VARIOUS

IZS CALIBRATION TIME: 29 HRS OPERATIONAL TIME: 698 HRS

MONTHLY CALIBRATION TIME: 5 HRS

STANDARD DEVIATION: 0.24

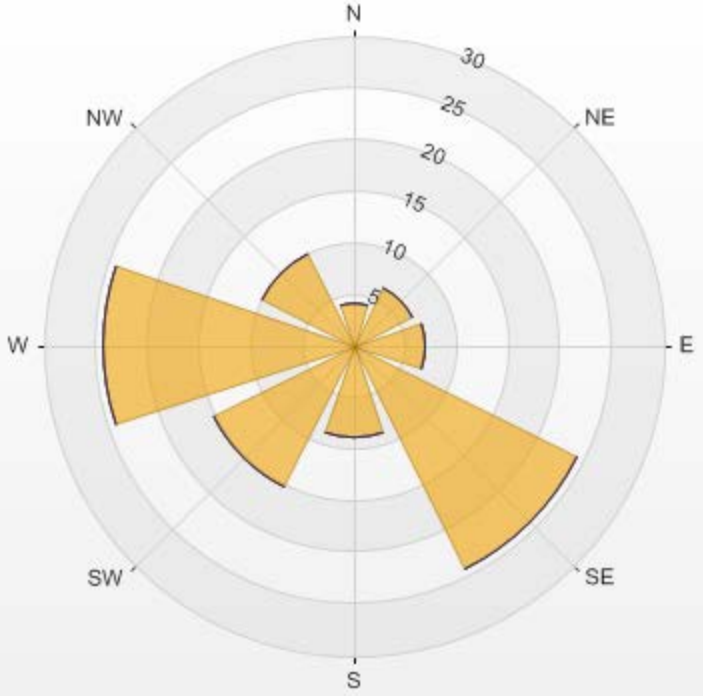
TRS MAX[ppb] Station: LICA COLD LAKE SOUTH Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



Wind: LICA COLD LAKE SOUTH Monitor: TRS [ppb] Monthly: 06/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
Calm: 0.00% Valid Data: 92.64% Calm Avg: 0.00

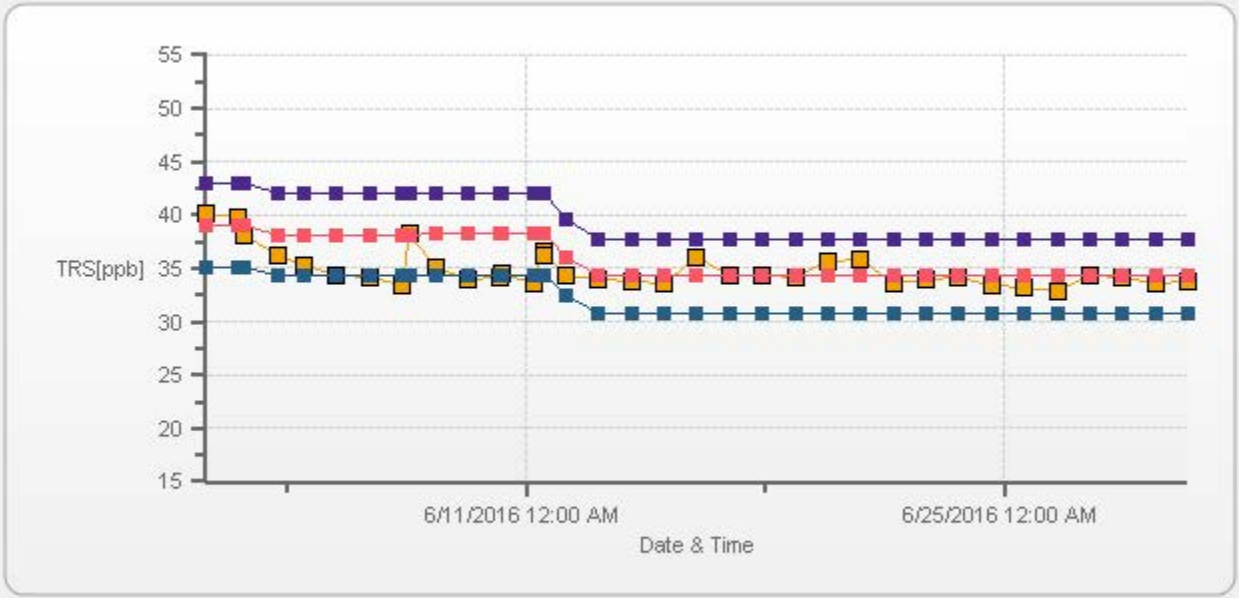
Direction	0.0-3.0	3.0-10.0	10.0-50.0	>50.0	Total
N	4.2	0	0	0	4.2
NE	6.3	0	0	0	6.3
E	6.9	0	0	0	6.9
SE	24.29	0	0	0	24.29
S	8.85	0	0	0	8.85
SW	15.29	0	0	0	15.29
W	24.29	0	0	0	24.29
NW	9.9	0	0	0	9.9
Summary	100	0	0	0	100

LICA COLD LAKE SOUTH 2016/06/01 12:00 AM - 2016/06/30 11:00 PM Calm: 0.00%



% Icon Classes (ppb)	100	0.0-3.0	0	3.0-10.0	0	10.0-50.0	0	>50.0

TRS[ppb] Calibration: LICA COLD LAKE SOUTH Monthly: 06/2016 Type: Span



TOTAL HYDROCARBON

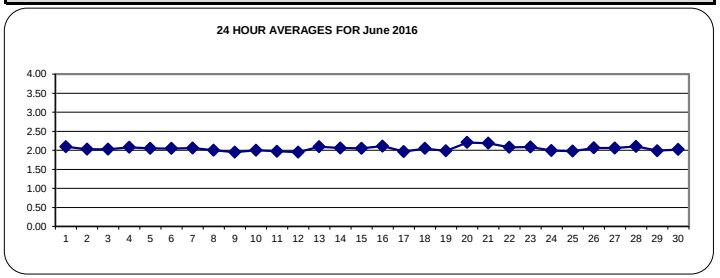
TOTAL HYDROCARBONS (THC) hourly averages in ppm

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	2.12	2.16	2.19	2.19	2.23	2.24	2.20	2.27	2.24	2.16	2.07	2.01	2.04	1.97	2.03	S	1.96	2.02	2.01	1.98	1.99	2.04	2.03	2.05	1.96	2.27	2.10	24
2	2.01	1.93	1.99	2.03	2.01	2.06	2.12	2.18	2.16	2.14	2.06	2.03	1.98	1.98	S	2.05	2.05	2.02	1.95	1.95	2.05	1.98	1.98	1.94	1.93	2.18	2.03	24
3	1.94	1.99	2.07	2.06	2.04	2.14	2.25	2.11	2.02	2.00	2.03	1.99	1.94	S	2.00	2.04	2.03	2.05	1.98	1.93	2.02	2.01	2.00	1.99	1.93	2.25	2.03	24
4	2.14	2.41	2.50	2.50	2.33	2.13	2.09	2.07	2.02	1.97	1.95	1.95	S	1.95	1.93	1.92	1.94	1.94	1.94	1.92	1.98	2.08	2.08	2.10	1.92	2.50	2.08	24
5	2.07	2.07	2.04	2.08	2.17	2.35	2.37	2.20	2.08	2.00	1.99	S	1.94	1.93	1.93	1.94	1.97	1.97	1.97	1.99	2.03	2.04	2.00	2.01	1.93	2.37	2.05	24
6	2.02	2.01	2.06	2.07	2.09	2.17	2.23	2.30	2.21	2.09	S	2.01	2.01	1.99	2.03	2.00	1.98	1.99	1.96	1.96	1.96	1.99	1.95	2.02	1.95	2.30	2.05	24
7	2.02	2.03	2.01	2.04	2.00	2.09	2.23	2.11	C	C	C	C	2.23	2.11	2.08	2.01	1.99	1.97	1.97	2.02	2.04	2.03	2.07	2.14	1.97	2.23	2.06	24
8	2.15	2.23	2.05	1.94	1.94	1.97	1.97	1.96	S	2.01	2.02	2.02	2.03	2.02	2.01	2.01	2.01	1.99	1.97	1.96	1.97	1.95	1.95	1.95	1.94	2.23	2.00	24
9	1.97	1.97	2.00	1.98	1.96	1.97	2.00	S	2.00	2.05	2.00	1.93	1.91	1.91	1.91	1.94	1.93	1.92	1.93	1.91	1.90	1.93	1.89	1.93	1.89	2.05	1.95	24
10	1.99	1.99	2.00	2.01	1.99	2.02	S	2.00	1.95	1.91	2.00	2.01	1.99	2.06	2.05	2.04	2.01	2.00	2.00	2.04	2.00	2.00	1.96	2.04	1.91	2.06	2.00	24
11	2.01	1.95	2.02	2.05	2.13	S	2.07	2.02	2.01	1.99	2.05	2.04	2.00	1.98	1.91	1.93	1.94	1.92	1.92	1.93	1.90	1.91	1.89	1.88	1.88	2.13	1.98	24
12	1.97	2.04	2.05	2.02	S	1.93	1.89	1.93	1.91	1.96	1.94	1.93	1.92	1.91	1.93	1.91	1.93	1.92	1.91	1.94	2.00	1.98	2.00	2.01	1.89	2.05	1.95	24
13	2.10	2.14	2.19	S	2.15	2.17	2.02	2.01	2.04	2.04	2.00	2.05	2.08	2.07	2.09	2.12	2.10	2.08	2.08	2.04	2.18	2.06	2.13	2.21	2.00	2.21	2.09	24
14	2.10	2.38	S	2.15	2.10	1.96	2.03	2.02	2.01	2.02	2.07	2.11	2.15	2.12	2.12	2.09	2.04	1.98	1.95	1.97	1.98	2.04	1.99	1.97	1.95	2.38	2.06	24
15	1.98	S	1.99	2.07	2.08	2.02	1.92	2.03	2.06	2.08	2.08	2.06	2.05	2.10	2.09	2.06	2.08	2.05	2.03	2.04	2.06	2.08	2.09	2.08	1.92	2.10	2.05	24
16	S	2.22	2.28	2.22	2.22	2.25	2.32	2.26	2.19	2.20	2.20	2.08	1.94	1.93	1.93	1.99	2.00	1.99	1.96	2.04	2.07	2.06	2.07	S	1.93	2.32	2.11	24
17	1.99	1.94	1.93	1.96	1.96	1.94	1.92	1.90	1.91	1.88	1.94	1.93	1.96	1.95	1.98	2.00	2.02	2.02	2.02	2.05	1.97	2.01	S	2.09	1.88	2.09	1.97	24
18	2.20	2.17	2.14	2.13	2.16	2.11	2.03	2.09	2.13	2.11	2.07	2.07	2.03	2.02	2.00	1.99	1.99	1.97	1.94	1.94	1.92	S	1.92	1.97	1.92	2.20	2.05	24
19	1.97	1.88	***1.85***	1.95	2.03	1.99	1.86	1.89	1.95	1.97	1.97	1.96	1.98	1.99	2.01	2.00	1.99	2.02	2.05	2.04	S	1.99	2.14	2.22	***1.85***	2.22	1.99	24
20	2.21	2.15	2.18	2.27	2.41	2.60	2.81	2.38	2.23	2.20	2.17	2.13	2.13	2.12	2.12	2.10	2.07	2.05	2.03	S	2.05	2.03	2.12	2.17	2.03	2.81	***2.21***	24
21	2.28	2.32	2.41	2.61	***2.83***	2.74	2.44	2.23	2.25	2.22	2.17	2.08	2.05	2.03	2.01	1.99	2.04	1.95	S	1.93	1.91	1.94	1.94	1.99	1.91	***2.83***	2.19	24
22	2.05	2.05	2.13	2.13	2.14	2.22	2.20	2.19	2.11	2.04	2.04	2.05	2.10	2.12	2.13	2.09	2.00	S	2.01	2.01	1.99	2.05	2.02	2.00	1.99	2.22	2.08	24
23	2.18	2.12	2.11	2.19	2.23	2.17	2.14	2.14	2.17	2.09	2.05	2.06	2.04	2.02	2.01	2.00	S	2.01	2.03	2.08	2.12	2.16	1.93	1.97	1.93	2.23	2.09	24
24	2.02	2.02	2.00	2.04	2.04	2.14	1.99	1.95	1.96	1.96	1.96	1.96	1.97	1.96	1.96	S	1.95	1.96	1.93	1.96	1.91	1.95	2.16	2.05	1.91	2.16	1.99	24
25	2.06	2.22	2.09	2.01	1.95	2.00	2.01	2.01	1.96	1.90	1.90	1.92	1.92	1.93	S	1.91	1.91	1.91	1.90	1.88	1.86	1.88	2.18	2.16	1.86	2.22	1.98	24
26	2.13	2.18	2.12	2.24	2.05	2.31	2.33	2.18	2.05	2.04	2.02	2.00	1.99	S	1.96	1.98	1.99	1.98	2.04	2.03	1.97	1.97	1.96	1.94	1.94	2.33	2.06	24
27	2.04	2.09	2.07	2.25	2.37	2.34	2.28	2.14	2.12	2.02	2.00	1.96	S	1.88	1.95	1.88	1.95	1.89	1.96	1.93	2.00	1.99	2.03	2.25	1.88	2.37	2.06	24
28	2.22	2.33	2.30	2.39	2.31	2.49	2.39	2.18	2.15	2.09	2.09	S	2.02	1.94	1.89	1.88	1.92	***1.85***	1.96	1.90	1.93	2.02	2.02	2.14	***1.85***	2.49	2.10	24
29	2.20	2.19	2.13	***1.85***	1.86	2.01	1.93	1.93	1.99	1.92	S	1.97	1.90	1.96	1.97	1.91	1.97	1.96	1.95	2.03	1.98	2.04	2.08	2.05	***1.85***	2.20	1.99	24
30	2.09	2.05	1.96	2.04	2.06	2.02	2.09	2.13	2.07	S	2.00	1.98	2.04	1.99	1.94	1.99	1.95	1.96	2.00	1.99	2.02	2.09	2.03	2.02	1.94	2.13	2.02	24
HOURLY MAX	2.28	2.41	2.50	2.61	2.83	2.74	2.81	2.38	2.25	2.22	2.20	2.13	2.23	2.12	2.13	2.12	2.10	2.08	2.08	2.08	2.18	2.16	2.18	2.25				
HOURLY AVG	2.08	2.11	2.10	2.12	2.13	2.16	2.14	2.10	2.07	2.04	2.03	2.01	2.01	2.00	2.00	1.99	1.99	1.98	1.98	1.98	1.99	2.01	2.02	2.05				

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

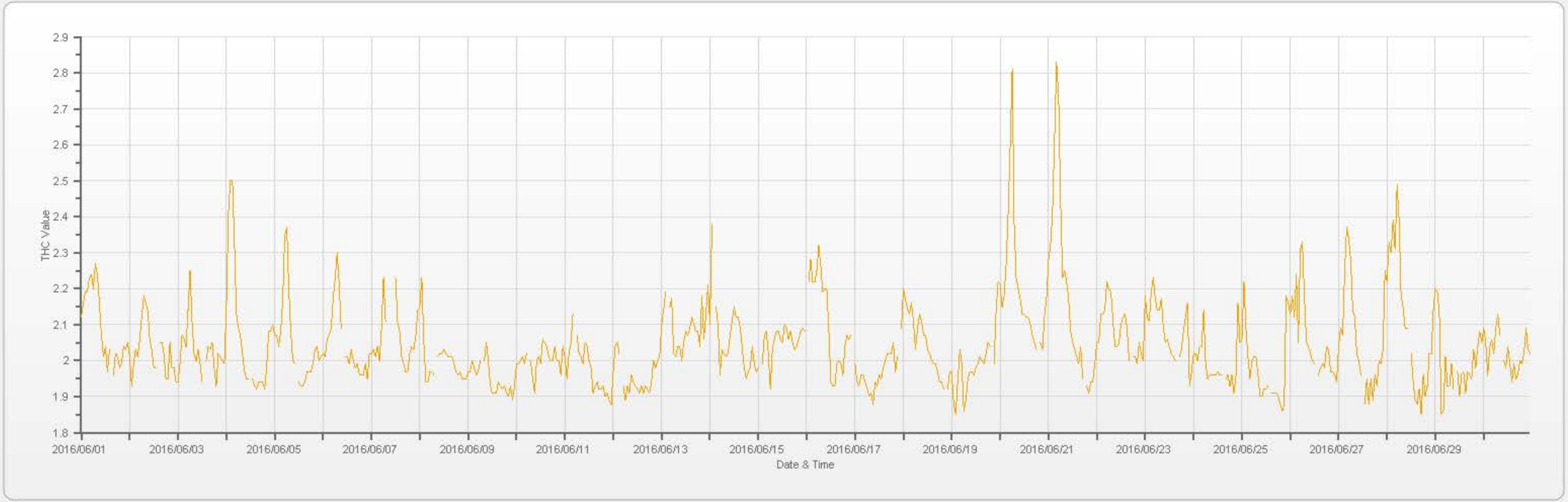


MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:			686				
MINIMUM 1-HR AVERAGE	1.85	PPM	@ HOUR(S)	VAR	ON DAY(S)	VAR	
MAXIMUM 1-HR AVERAGE:	2.83	PPM	@ HOUR(S)	4	ON DAY(S)	21	
MAXIMUM 24-HR AVERAGE:	2.21	PPM			ON DAY(S)	20	
					VAR-VARIOUS		

IZS CALIBRATION TIME:	30	HRS	OPERATIONAL TIME:	720	HRS
MONTHLY CALIBRATION TIME:	4	HRS	AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	0.12		MONTHLY AVERAGE:	2.05	PPM

THC[ppm] Station: LICA COLD LAKE SOUTH Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



TOTAL HYDROCARBONS MAX instantaneous maximum in ppm

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	2.22	2.37	2.40	2.37	2.43	2.38	2.34	2.41	2.37	2.28	2.18	2.12	2.12	2.03	2.12	S	2.00	2.07	2.06	2.03	2.16	2.09	2.07	2.10	2.00	2.43	2.21	24
2	2.04	1.94	2.04	2.10	2.06	2.46	2.15	2.19	2.18	2.15	2.06	2.01	1.96	1.96	S	2.07	2.06	2.03	2.34	2.00	2.13	2.01	2.03	1.98	1.94	2.46	2.08	24
3	2.03	2.06	2.15	2.15	2.12	2.28	2.34	2.26	2.17	2.12	2.20	2.15	2.09	S	2.12	2.18	2.16	2.20	2.12	2.09	2.19	2.19	2.20	2.25	2.03	2.34	2.17	24
4	2.43	2.60	2.69	2.71	2.62	2.37	2.29	2.34	2.24	2.21	2.15	2.16	S	2.15	2.13	2.12	2.13	2.12	2.13	2.15	2.25	2.31	2.31	2.37	2.12	2.71	2.30	24
5	2.34	2.32	2.20	2.28	2.38	2.65	2.63	2.50	2.29	2.25	2.18	S	2.13	2.13	2.12	2.12	2.15	2.13	2.14	2.17	2.31	2.31	2.20	2.19	2.12	2.65	2.27	24
6	2.20	2.23	2.25	2.28	2.32	2.84	2.40	2.49	2.46	2.31	S	2.16	2.15	2.12	2.15	2.12	2.10	2.83	2.12	2.08	2.09	2.18	2.09	2.23	2.08	2.84	2.27	24
7	2.13	2.23	2.19	2.19	2.14	2.37	2.35	2.31	C	C	C	C	2.37	2.27	2.20	2.10	2.09	2.07	2.09	2.15	2.16	2.17	2.22	2.28	2.07	2.37	2.20	24
8	2.32	2.37	2.26	2.07	2.09	2.26	2.09	2.09	S	2.10	2.12	2.09	2.09	2.09	2.06	2.07	2.06	2.03	2.00	1.98	1.97	1.97	1.94	1.94	1.94	2.37	2.09	24
9	1.96	1.96	1.97	1.94	1.93	1.93	1.97	S	1.97	2.00	1.98	1.91	1.88	1.94	1.91	3.36	2.00	1.96	2.00	1.97	2.00	2.00	1.94	1.98	1.88	3.36	2.02	24
10	2.04	2.10	2.10	2.09	2.10	2.15	S	2.10	2.06	2.09	2.22	2.15	2.17	2.25	2.23	2.23	2.20	2.18	2.20	2.59	2.23	2.24	2.14	2.23	2.04	2.59	2.18	24
11	2.28	2.15	2.29	2.29	2.37	S	2.26	2.32	2.23	2.27	2.34	2.29	2.23	2.46	2.21	2.19	2.16	2.15	2.13	2.15	2.13	2.12	2.06	2.06	2.06	2.46	2.22	24
12	2.15	2.18	2.18	2.15	S	2.06	2.10	2.09	2.09	2.22	2.17	2.12	2.12	2.07	2.10	2.10	2.10	2.10	2.09	2.15	2.23	2.17	2.17	2.16	2.06	2.23	2.13	24
13	2.26	2.46	2.40	S	2.34	2.26	2.25	2.26	2.37	2.20	2.12	2.55	2.87	2.46	2.63	P	R	2.82	3.17	2.82	3.85	2.77	3.06	2.84	2.12	3.85	2.61	22
14	2.23	***6.06***	S	4.66	3.14	2.03	2.09	2.13	2.06	2.06	2.09	2.12	2.15	2.15	2.12	2.09	2.06	2.03	1.97	2.03	2.76	3.73	2.03	2.00	1.97	***6.06***	2.51	24
15	2.00	S	2.03	2.02	2.04	2.00	1.91	2.06	2.09	2.12	2.07	2.06	2.07	2.09	2.18	2.06	2.06	2.07	2.06	2.06	2.10	2.12	2.09	2.06	1.91	2.18	2.06	24
16	S	2.22	2.28	2.26	2.25	2.26	2.40	2.56	2.28	2.31	2.34	2.16	2.07	1.97	1.98	2.06	2.07	2.06	2.06	2.11	2.15	2.17	2.19	S	1.97	2.56	2.19	24
17	2.10	2.06	2.06	2.03	2.03	2.03	2.00	1.98	2.00	2.06	2.10	2.12	2.19	2.12	2.15	2.17	2.18	2.17	2.18	2.19	2.13	2.11	S	2.23	1.98	2.23	2.10	24
18	2.32	2.31	2.28	2.29	2.31	2.31	2.23	2.29	2.34	2.29	2.35	2.25	2.20	2.20	2.18	2.17	2.17	2.19	2.17	2.16	2.18	S	2.18	2.17	2.16	2.35	2.24	24
19	2.23	2.16	2.07	2.20	2.28	2.23	2.12	2.13	2.18	2.19	2.19	2.18	2.22	2.22	2.26	2.22	2.23	2.23	2.26	2.26	S	2.23	2.37	2.49	2.07	2.49	2.22	24
20	2.46	2.40	2.41	2.50	2.71	3.03	3.08	2.81	2.47	2.46	2.43	2.37	2.38	2.37	2.37	2.34	2.31	2.31	2.31	S	2.38	2.34	2.44	2.44	2.31	3.08	2.48	24
21	2.58	2.58	2.68	2.90	3.08	3.08	2.79	2.96	2.44	2.40	2.46	2.26	2.23	2.79	2.25	2.19	2.23	2.15	S	2.12	2.17	2.13	2.11	2.34	2.11	3.08	2.47	24
22	2.22	2.26	2.43	2.32	2.34	2.49	2.43	2.46	2.29	2.23	2.23	2.23	2.28	2.41	2.34	2.34	P	S	2.20	2.20	2.22	2.23	2.22	2.22	2.20	2.49	2.30	23
23	2.41	2.29	2.34	2.41	2.46	2.43	2.34	2.31	2.34	2.25	2.18	2.20	2.17	2.16	2.12	2.14	S	2.20	2.20	2.23	2.34	2.59	2.09	2.20	2.09	2.59	2.28	24
24	2.20	2.14	2.10	2.26	2.26	2.29	2.12	2.06	2.06	2.09	2.10	2.06	2.07	2.06	2.04	S	2.03	2.07	2.03	2.09	2.06	2.35	2.40	2.20	2.03	2.40	2.14	24
25	2.19	2.47	2.29	2.14	2.05	2.17	2.19	2.14	2.10	2.06	2.01	2.06	2.05	2.06	S	2.06	2.06	2.09	2.07	2.09	2.11	2.15	2.55	2.49	2.01	2.55	2.16	24
26	2.47	2.43	2.44	2.66	P	2.63	2.63	2.60	2.37	2.38	2.40	2.35	2.37	S	2.31	2.32	2.43	2.34	2.43	2.41	2.31	2.29	2.28	2.26	2.26	2.66	2.41	23
27	2.55	2.45	2.94	2.72	2.79	2.72	2.70	2.68	2.41	2.41	2.29	2.25	S	2.17	2.23	2.19	2.23	2.19	2.29	2.26	2.37	2.40	2.40	2.81	2.17	2.94	2.45	24
28	2.60	2.76	2.65	2.73	2.70	2.85	2.79	2.55	2.49	2.44	2.49	S	2.41	2.29	2.43	2.23	2.26	2.22	2.41	2.37	2.37	2.63	2.45	2.55	2.22	2.85	2.51	24
29	2.60	2.59	2.58	2.28	2.31	2.45	2.34	2.32	2.34	2.31	S	2.32	2.25	2.32	2.34	2.26	2.32	2.31	2.31	2.40	2.38	2.42	2.58	2.44	2.25	2.60	2.38	24
30	2.47	2.45	2.32	2.40	2.44	2.40	2.44	2.79	2.38	S	2.34	2.28	2.34	2.29	2.20	2.25	2.23	2.19	2.29	2.20	2.37	2.43	2.29	2.22	2.19	2.79	2.35	24
HOURLY MAX	2.60	6.06	2.94	4.66	3.14	3.08	3.08	2.96	2.49	2.46	2.49	2.55	2.87	2.79	2.63	3.36	2.43	2.83	3.17	2.82	3.85	3.73	3.06	2.84				
HOURLY AVG	2.28	2.43	2.31	2.39	2.36	2.39	2.34	2.35	2.25	2.22	2.21	2.18	2.20	2.20	2.20	2.21	2.15	2.19	2.20	2.19	2.28	2.31	2.24	2.27				

STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS: 682

MAXIMUM INSTANTANEOUS VALUE: 6.06 PPM @ HOUR(S) 1 ON DAY(S) 14

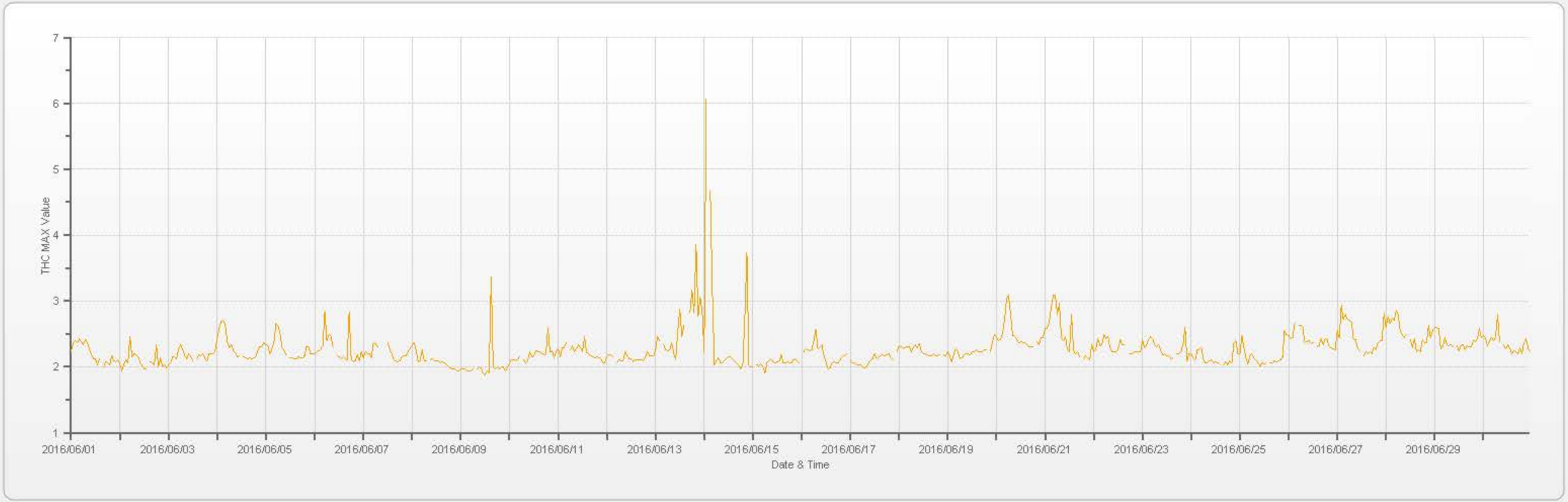
VAR-VARIOUS

IZS CALIBRATION TIME: 30 HRS OPERATIONAL TIME: 716 HRS

MONTHLY CALIBRATION TIME: 4 HRS

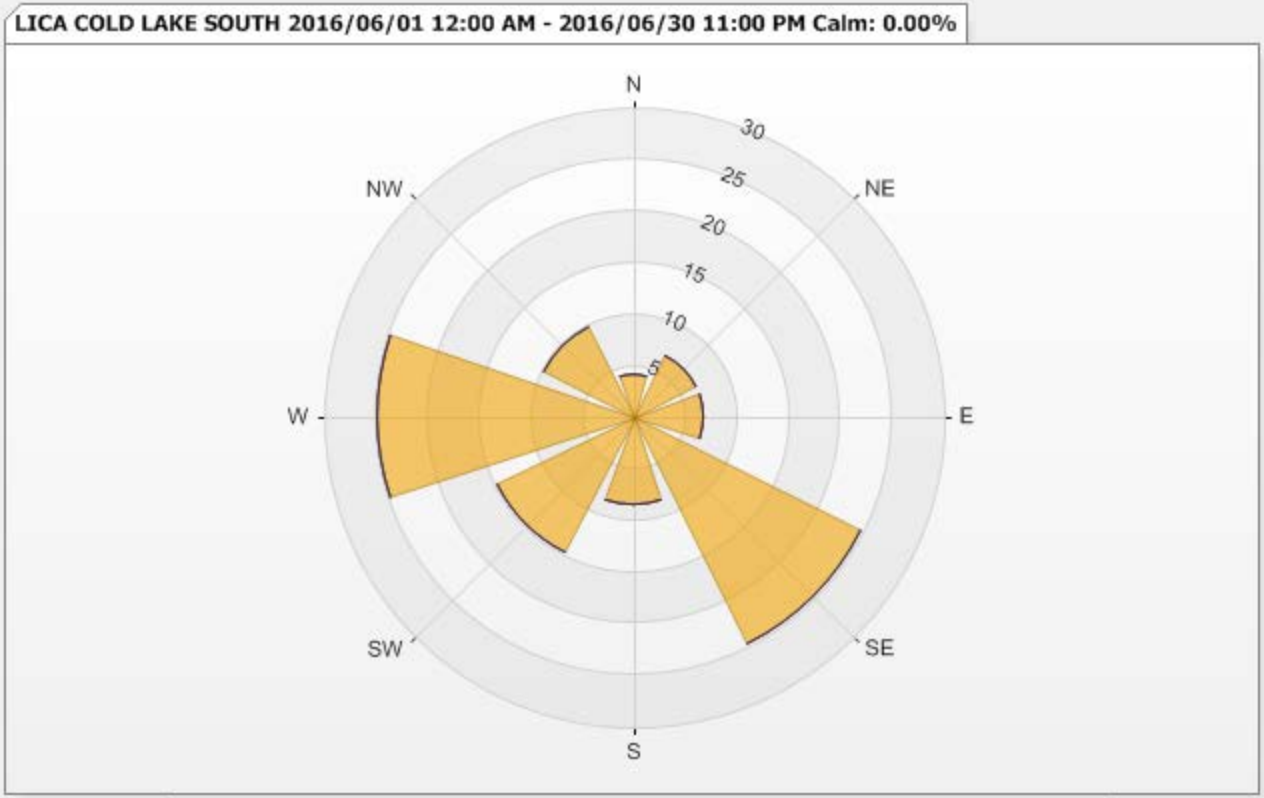
STANDARD DEVIATION: 0.29

THC MAX[ppm] Station: LICA COLD LAKE SOUTH Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]

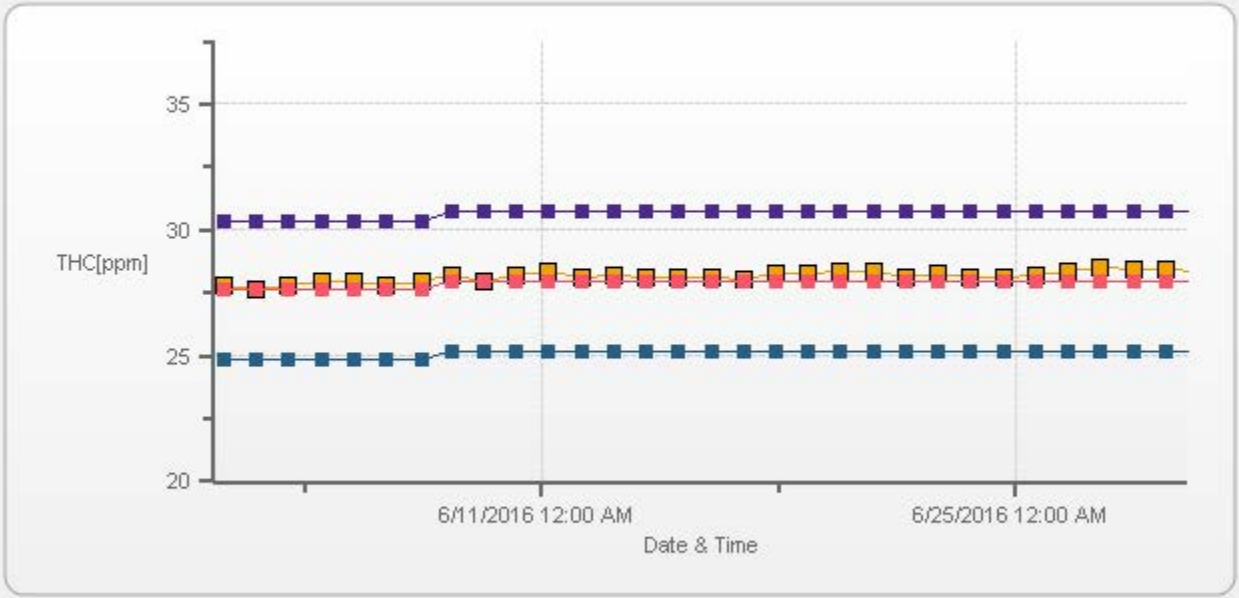


Wind: LICA COLD LAKE SOUTH Monitor: THC [ppm] Monthly: 06/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
Calm: 0.00% Valid Data: 95.28% Calm Avg: 0.00

Direction	0.0-3.0	3.0-10.0	10.0-50.0	>50.0	Total
N	4.08	0	0	0	4.08
NE	6.71	0	0	0	6.71
E	6.85	0	0	0	6.85
SE	24.49	0	0	0	24.49
S	8.6	0	0	0	8.6
SW	14.72	0	0	0	14.72
W	24.78	0	0	0	24.78
NW	9.77	0	0	0	9.77
Summary	100	0	0	0	100


LICA COLD LAKE SOUTH 2016/06/01 12:00 AM - 2016/06/30 11:00 PM Calm: 0.00%
N
NE
E
SE
S
SW
W
NW
30
25
20
15
10
5
% Icon Classes (ppm)
100 0.0-3.0
0 3.0-10.0
0 10.0-50.0
0 >50.0

THC[ppm] Calibration: LICA COLD LAKE SOUTH Monthly: 06/2016 Type: Span



OXIDES OF NITROGEN

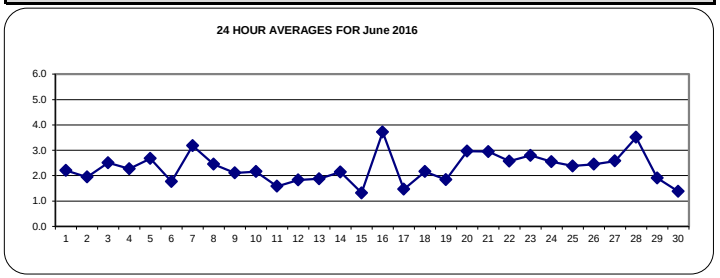
OXIDES OF NITROGEN (NOx) hourly averages in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	2.0	1.3	2.6	4.2	4.7	3.5	3.3	3.2	2.5	1.8	1.3	0.9	1.6	0.9	1.4	S	1.8	1.5	2.2	1.7	2.2	2.3	1.6	2.3	0.9	4.7	2.2	24
2	2.1	1.3	1.2	1.2	1.4	1.9	1.8	2.1	2.0	1.9	1.8	1.5	1.0	1.8	S	1.9	1.8	3.0	2.6	2.3	4.1	1.4	2.1	2.6	1.0	4.1	1.9	24
3	2.4	2.8	3.6	3.7	4.0	5.5	6.0	3.4	1.9	1.0	0.9	1.1	1.2	S	1.8	S1	1.7	1.3	0.7	0.8	2.6	3.3	2.9	2.5	0.7	6.0	2.5	23
4	2.9	4.8	4.6	4.8	5.2	3.3	2.7	2.1	1.4	0.7	0.7	0.7	S	1.0	0.8	0.7	0.6	0.6	0.7	1.0	1.8	2.7	3.5	5.0	0.6	5.2	2.3	24
5	4.9	4.3	3.9	3.7	4.1	7.3	7.0	6.3	4.2	0.9	0.9	S	1.0	0.7	0.7	0.7	0.7	0.7	0.7	0.7	3.3	3.3	0.9	0.7	0.7	7.3	2.7	24
6	0.7	0.7	0.9	1.2	1.6	2.2	2.6	3.3	3.2	2.5	S	1.9	1.6	1.4	1.6	1.6	1.7	1.8	1.8	1.7	1.6	1.6	1.7	1.8	0.7	3.3	1.8	24
7	2.0	2.4	2.4	2.9	3.3	5.2	4.5	3.6	C	C	C	C	C	3.4	2.7	2.4	2.5	2.4	2.2	3.4	4.9	3.5	3.4	3.3	2.0	5.2	3.2	24
8	4.0	4.2	2.8	2.1	2.0	2.6	2.0	2.3	S	3.1	2.1	2.3	1.9	3.3	1.9	1.9	2.4	2.4	2.3	2.4	2.2	2.1	2.1	2.0	1.9	4.2	2.5	24
9	2.3	2.3	1.9	1.9	2.4	2.7	2.9	S	3.1	3.6	3.4	2.4	2.7	2.0	1.7	1.7	1.6	1.8	1.5	1.0	1.3	0.9	1.2	2.2	0.9	3.6	2.1	24
10	2.7	2.4	2.9	3.0	3.6	3.1	S	1.9	1.1	4.4	5.9	1.0	0.9	1.5	1.7	1.1	1.2	0.8	2.0	2.2	1.5	1.9	1.3	1.6	0.8	5.9	2.2	24
11	1.2	1.2	1.8	1.8	1.9	S	2.4	2.3	2.1	1.5	1.3	1.7	1.4	1.4	1.5	1.1	0.8	1.0	1.0	1.3	2.2	1.8	2.1	1.6	0.8	2.4	1.6	24
12	1.6	1.8	1.8	1.8	S	2.8	1.9	1.4	1.8	2.2	1.7	1.6	1.3	2.4	2.8	1.4	0.8	0.9	1.0	1.2	2.5	2.7	2.9	1.8	0.8	2.9	1.8	24
13	1.4	1.7	2.2	S	2.8	2.9	3.1	2.2	2.0	1.8	1.1	1.0	1.0	0.9	0.9	0.9	0.7	0.9	1.0	1.3	2.6	2.5	3.5	4.8	0.7	4.8	1.9	24
14	1.6	2.6	S	3.2	3.0	2.2	1.7	2.0	1.4	1.7	1.7	2.1	2.1	2.0	2.1	2.0	1.7	1.2	2.0	2.3	3.6	3.1	2.3	1.7	1.2	3.6	2.1	24
15	1.6	S	2.2	2.1	2.8	2.0	1.4	1.2	1.4	1.3	1.0	0.7	0.9	0.8	0.8	0.9	0.7	0.6	0.7	0.7	1.0	1.6	2.0	2.0	0.6	2.8	1.3	24
16	S	3.7	3.7	3.3	4.0	5.9	4.7	5.3	6.8	10.2	5.9	4.8	1.6	2.8	2.3	2.2	2.9	1.6	1.5	2.1	2.1	2.0	2.5	S	1.5	10.2	***3.7***	24
17	2.4	1.5	1.2	1.1	1.7	1.6	2.1	1.7	4.7	1.4	1.5	1.3	1.1	0.7	1.0	0.9	0.6	0.6	0.7	1.0	1.6	1.4	S	2.0	0.6	4.7	1.5	24
18	1.9	2.1	2.2	3.1	3.2	3.5	3.9	4.7	3.5	2.3	1.8	1.9	1.3	0.8	0.7	0.7	0.7	1.2	1.6	1.7	1.5	S	2.8	2.6	0.7	4.7	2.2	24
19	2.7	2.3	3.3	3.2	4.8	3.9	2.4	1.7	0.9	***0.5***	0.7	1.0	0.7	0.7	***0.5***	***0.5***	***0.5***	0.7	***0.5***	0.9	S	3.5	3.3	3.3	***0.5***	4.8	1.8	24
20	3.3	2.8	2.8	2.9	3.9	5.7	***12.5***	8.0	2.2	2.1	2.0	1.3	1.3	1.6	1.3	1.4	1.0	0.9	0.9	S	3.2	2.4	2.6	2.1	0.9	***12.5***	3.0	24
21	2.1	2.3	2.9	3.6	3.6	6.2	9.7	Y	Y	Y	Y	1.1	1.3	1.3	2.3	3.2	2.6	1.4	S	1.8	1.9	2.2	3.0	3.6	1.1	9.7	3.0	20
22	3.2	2.7	2.9	2.8	2.7	3.5	3.6	3.1	1.9	1.9	1.7	1.8	1.6	1.7	1.8	1.3	1.8	S	5.2	3.3	2.3	3.1	3.0	2.2	1.3	5.2	2.6	24
23	2.1	2.6	2.4	4.8	4.0	4.1	4.7	4.3	4.8	2.4	1.6	1.3	1.3	1.3	1.4	1.2	S	1.8	2.4	3.7	4.1	3.8	1.8	2.4	1.2	4.8	2.8	24
24	2.6	2.3	2.0	2.6	3.8	4.3	3.0	2.3	3.3	3.2	2.0	1.1	1.0	1.3	1.8	S	1.7	1.7	1.3	1.7	2.6	4.0	4.7	4.4	1.0	4.7	2.6	24
25	3.9	3.4	3.2	3.5	4.0	5.1	5.3	4.1	2.2	1.3	0.9	0.7	0.8	***0.5***	S	1.6	1.3	0.9	0.9	0.8	0.7	1.1	3.8	4.7	***0.5***	5.3	2.4	24
26	3.8	3.3	2.7	2.8	2.1	4.4	5.7	5.8	2.3	2.4	2.0	1.2	1.1	S	1.5	1.3	1.3	1.5	2.2	2.2	1.7	1.5	1.5	2.1	1.1	5.8	2.5	24
27	2.6	2.5	1.9	2.4	3.5	3.7	5.4	3.0	2.7	2.6	1.6	1.5	S	1.6	1.4	1.2	0.9	0.9	1.0	2.0	3.6	6.5	3.6	3.2	0.9	6.5	2.6	24
28	3.3	3.4	4.0	3.6	4.1	5.6	7.1	5.2	4.5	3.9	3.0	S	3.2	2.0	2.5	2.0	1.8	1.8	2.2	3.7	4.3	3.3	2.7	3.6	1.8	7.1	3.5	24
29	4.5	4.0	3.2	1.2	2.4	3.2	5.1	2.1	1.2	1.1	S	1.4	1.0	1.0	1.5	0.7	0.8	0.8	0.8	1.4	1.2	2.0	1.8	1.4	0.7	5.1	1.9	24
30	1.7	0.8	0.9	0.9	1.4	1.1	1.2	2.3	1.5	S	1.5	1.0	1.2	1.0	0.9	1.0	0.9	1.0	1.2	2.3	2.9	1.8	1.6	1.6	0.8	2.9	1.4	24
HOURLY MAX	4.9	4.8	4.6	4.8	5.2	7.3	12.5	8.0	6.8	10.2	5.9	4.8	3.2	3.4	2.8	3.2	2.9	3.0	5.2	3.7	4.9	6.5	4.7	5.0				
HOURLY AVG	2.5	2.5	2.6	2.7	3.2	3.8	4.1	3.2	2.6	2.4	1.9	1.5	1.4	1.5	1.5	1.4	1.4	1.3	1.5	1.8	2.5	2.5	2.5	2.6				

STATUS FLAG CODES

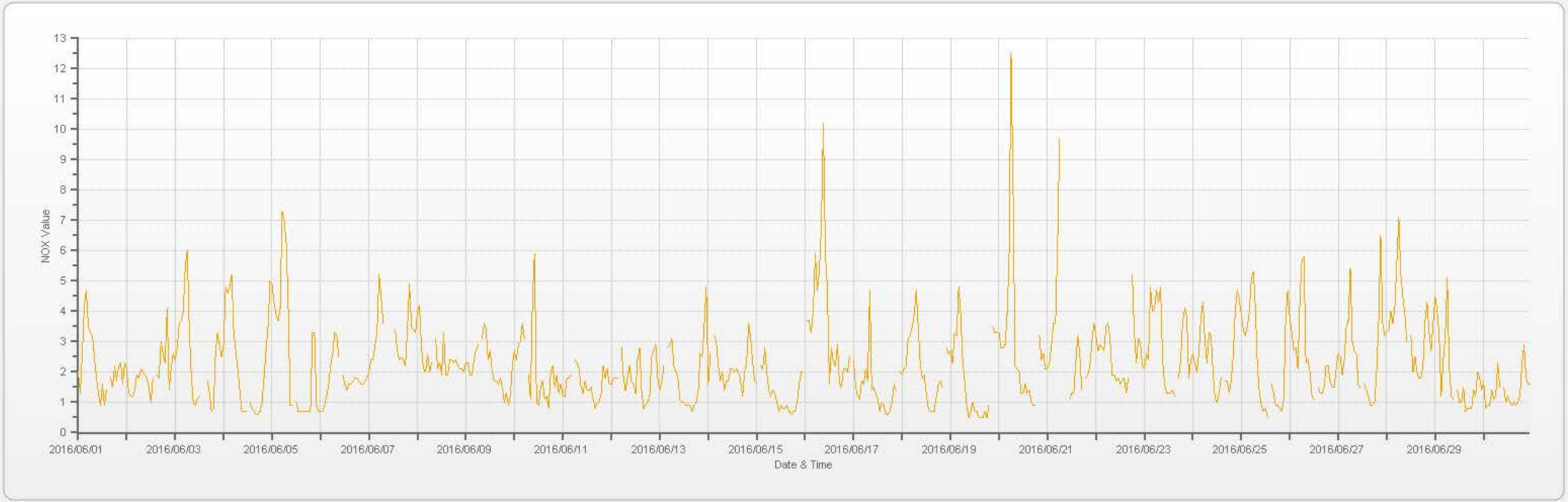
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:			680				
MINIMUM 1-HR AVERAGE	0.5	PPB	@ HOUR(S)	VAR	ON DAY(S)	19 , 25	
MAXIMUM 1-HR AVERAGE:	12.5	PPB	@ HOUR(S)	6	ON DAY(S)	20	
MAXIMUM 24-HR AVERAGE:	3.7	PPB			ON DAY(S)	16	
					VAR-VARIOUS		
IZS CALIBRATION TIME:	30	HRS	OPERATIONAL TIME:			715	HRS
MONTHLY CALIBRATION TIME:	5	HRS	AMD OPERATION UPTIME:			99.3	%
STANDARD DEVIATION:	1.39		MONTHLY AVERAGE:			2.3	PPB

NOX[ppb] Station: LICA COLD LAKE SOUTH Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



OXIDES OF NITROGEN MAX instantaneous maximum in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	4.0	2.0	5.2	8.8	6.7	7.4	7.1	3.9	3.8	2.7	12.2	3.0	11.3	1.5	9.3	**S**	3.9	2.4	2.6	2.3	7.0	10.8	6.3	4.0	1.5	12.2	5.6	24
2	3.6	1.6	1.8	2.0	2.3	4.6	6.1	3.9	3.6	10.8	3.4	1.9	2.9	5.1	**S**	3.0	8.0	8.5	6.1	2.9	8.5	2.0	2.5	3.3	1.6	10.8	4.3	24
3	3.3	4.0	4.0	4.1	4.7	6.2	13.0	4.8	3.0	1.5	1.9	5.5	2.0	**S**	**S1**	**S1**	2.8	1.6	1.1	1.3	4.5	4.2	4.6	3.3	1.1	13.0	3.9	22
4	3.6	6.3	6.2	6.2	7.4	4.8	3.0	2.7	2.1	1.1	0.9	0.9	**S**	1.6	1.2	0.8	0.8	0.8	0.9	1.3	2.4	3.0	4.6	5.4	0.8	7.4	3.0	24
5	5.4	5.2	4.6	4.8	5.6	8.8	9.1	6.8	6.3	5.2	5.8	**S**	1.6	0.8	2.9	1.1	1.1	0.9	1.1	1.1	7.9	7.4	1.6	0.8	0.8	9.1	4.2	24
6	0.9	2.2	1.1	1.5	1.9	11.9	3.6	5.9	4.5	6.0	**S**	2.8	3.2	2.8	2.9	5.2	4.2	4.0	5.5	4.3	2.2	2.6	2.5	2.5	0.9	11.9	3.7	24
7	2.4	2.9	2.9	3.2	5.2	11.8	6.0	9.7	**C**	**C**	**C**	**C**	**C**	7.3	3.3	2.8	3.6	2.6	2.6	5.5	6.3	4.6	4.6	4.5	2.4	11.8	4.8	24
8	4.8	4.8	4.1	3.8	4.3	4.3	3.3	4.6	**S**	6.2	2.8	4.0	4.7	10.7	2.5	2.8	2.9	4.1	2.8	2.9	2.9	2.5	2.5	2.5	2.5	10.7	3.9	24
9	2.8	2.8	2.2	2.3	3.0	3.2	4.0	**S**	3.4	5.0	5.0	4.0	4.7	3.0	2.0	4.2	2.6	3.8	2.2	1.5	1.8	1.2	1.9	2.6	1.2	5.0	3.0	24
10	3.2	3.7	3.2	3.6	4.3	3.6	**S**	3.4	1.3	22.3	27.1	2.5	1.8	2.0	2.7	1.6	4.4	1.5	14.9	8.6	2.3	4.3	1.9	2.3	1.3	27.1	5.5	24
11	1.5	1.3	3.2	2.4	2.4	**S**	3.0	5.4	2.9	2.4	3.6	5.4	6.9	5.9	5.8	3.5	1.3	4.5	1.3	2.0	10.1	2.9	2.6	2.2	1.3	10.1	3.6	24
12	1.9	2.6	2.0	2.0	**S**	3.8	2.2	1.6	2.4	2.6	4.2	3.8	2.5	3.9	8.9	2.0	1.1	1.3	1.3	1.6	3.5	3.4	4.3	2.3	1.1	8.9	2.8	24
13	1.9	2.1	2.8	**S**	3.4	3.3	4.1	4.5	3.0	2.8	2.5	2.5	4.1	1.7	3.6	**P**	**R**	2.5	7.4	3.3	4.1	8.6	6.9	6.6	1.7	8.6	3.9	22
14	3.4	3.3	**S**	6.4	6.3	3.8	4.8	6.2	2.0	5.9	4.2	3.4	3.7	6.8	3.8	8.5	6.8	2.0	2.9	4.1	33.8	6.4	3.6	2.0	2.0	33.8	5.8	24
15	1.8	**S**	2.8	2.8	3.2	3.0	2.8	2.0	1.9	1.8	1.6	1.3	1.8	1.3	1.5	3.8	1.2	0.8	2.9	0.8	3.6	6.0	4.7	2.5	0.8	6.0	2.4	24
16	**S**	4.5	4.3	5.0	6.3	10.6	9.3	7.3	11.2	***36.4***	11.6	11.8	6.4	19.8	6.0	6.9	12.9	2.0	1.8	3.4	2.5	2.5	2.7	**S**	1.8	***36.4***	8.4	24
17	3.6	1.7	1.3	1.5	1.9	1.9	6.0	4.7	20.1	3.4	3.3	2.5	1.8	1.3	1.6	1.8	1.2	0.8	1.2	1.8	2.9	2.2	**S**	2.5	0.8	20.1	3.1	24
18	2.3	3.9	3.3	3.6	4.3	3.8	4.2	6.8	4.1	2.9	2.2	4.7	1.8	1.1	1.2	1.2	1.0	3.0	2.9	2.5	2.9	**S**	3.6	3.3	1.0	6.8	3.1	24
19	4.9	3.1	10.0	3.8	7.0	6.1	3.3	2.9	2.0	1.2	1.1	1.5	1.1	1.0	0.8	0.7	0.6	1.3	0.8	1.6	**S**	4.3	3.8	5.6	0.6	10.0	3.0	24
20	4.0	3.8	4.1	3.8	6.9	11.6	14.0	13.0	4.7	5.2	2.9	1.9	2.9	4.2	1.9	8.7	1.7	2.8	1.1	**S**	5.5	4.0	3.7	2.7	1.1	14.0	5.0	24
21	2.9	2.9	3.8	5.9	7.7	16.6	16.5	**Y**	**Y**	**Y**	**Y**	1.9	2.0	2.9	7.1	5.0	5.5	1.9	**S**	2.4	3.8	3.8	4.1	4.6	1.9	16.6	5.3	20
22	4.0	3.4	3.8	4.1	3.6	4.7	5.5	10.5	3.9	9.2	3.8	9.5	2.0	4.6	5.2	2.6	**P**	**S**	7.0	5.9	5.8	3.9	3.7	2.8	2.0	10.5	5.0	23
23	2.5	3.2	3.0	6.9	5.0	6.4	5.9	6.0	10.1	3.4	4.5	1.9	2.8	4.1	6.3	2.8	**S**	2.8	9.2	14.5	7.2	7.9	2.4	3.0	1.9	14.5	5.3	24
24	3.0	3.2	2.4	3.6	4.7	4.7	4.6	3.0	4.7	5.2	5.6	1.6	1.9	6.4	4.8	**S**	2.8	2.5	1.8	2.4	2.9	8.6	9.6	5.5	1.6	9.6	4.2	24
25	4.8	4.5	3.6	4.6	5.4	6.3	6.0	5.5	2.9	2.4	1.3	1.1	3.3	0.8	**S**	6.1	2.4	1.6	1.9	2.0	0.9	1.6	5.1	5.9	0.8	6.3	3.5	24
26	5.4	3.7	3.6	3.9	**P**	11.9	6.2	9.2	3.4	3.2	2.6	1.9	2.5	**S**	2.4	1.8	4.3	4.1	4.8	3.0	2.3	1.9	2.2	2.4	1.8	11.9	3.9	23
27	3.7	3.2	2.9	3.4	4.8	4.2	15.5	4.6	4.3	4.7	2.8	2.9	**S**	2.6	2.4	4.7	1.3	1.3	1.5	2.5	6.5	15.6	5.2	4.2	1.3	15.6	4.6	24
28	4.2	3.9	5.8	4.2	5.3	16.3	8.9	6.3	5.9	5.0	4.3	**S**	4.2	3.5	4.3	4.7	5.9	2.3	3.7	4.7	23.8	4.2	3.2	5.9	2.3	23.8	6.1	24
29	5.4	5.6	4.5	2.6	3.8	7.3	12.9	7.9	2.4	4.4	**S**	2.5	1.6	1.6	13.5	1.3	1.9	1.3	1.2	5.4	1.6	21.5	3.0	1.8	1.2	21.5	5.0	24
30	3.3	1.1	1.5	1.2	2.8	4.6	1.6	13.7	2.0	**S**	2.8	1.5	5.4	2.0	1.3	4.6	1.5	2.0	1.9	4.7	22.6	4.8	3.4	4.6	1.1	22.6	4.1	24
HOURLY MAX	5.4	6.3	10.0	8.8	7.7	16.6	16.5	13.7	20.1	36.4	27.1	11.8	11.3	19.8	13.5	8.7	12.9	8.5	14.9	14.5	33.8	21.5	9.6	6.6				
HOURLY AVG	3.4	3.3	3.6	3.9	4.7	6.8	6.6	6.0	4.5	6.0	4.8	3.3	3.4	3.9	4.0	3.5	3.2	2.4	3.3	3.5	6.6	5.4	3.8	3.5				

STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS: 675

MAXIMUM INSTANTANEOUS VALUE: 36.4 PPB @ HOUR(S) 9 ON DAY(S) 16

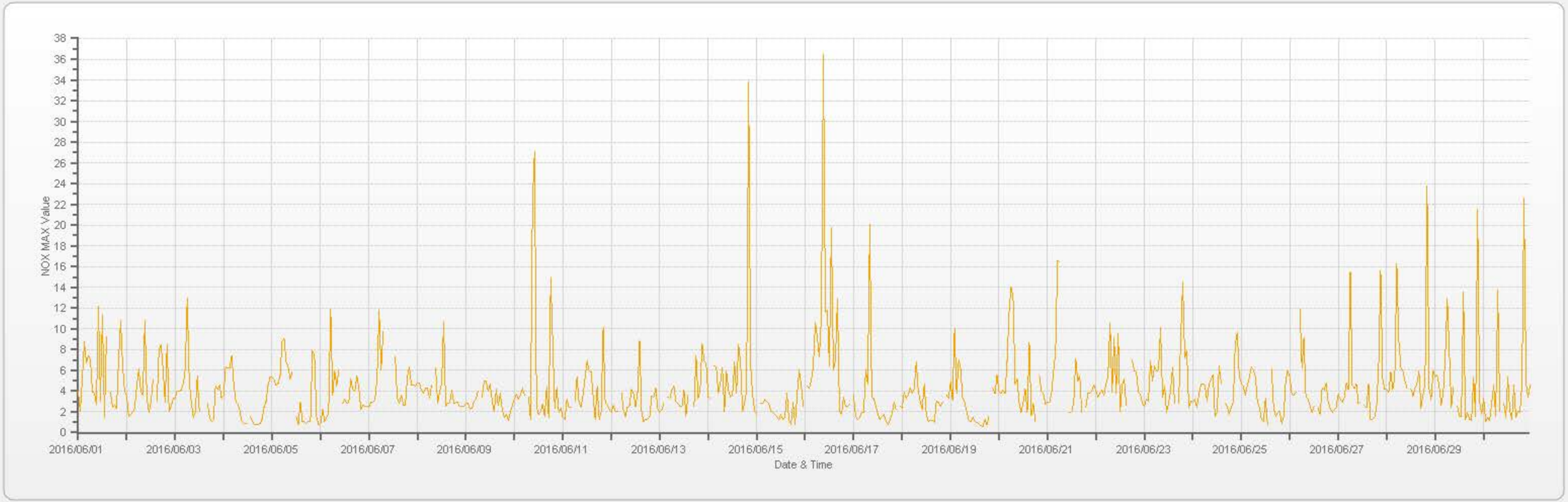
VAR-VARIOUS

IZS CALIBRATION TIME: 30 HRS OPERATIONAL TIME: 710 HRS

MONTHLY CALIBRATION TIME: 5 HRS

STANDARD DEVIATION: 3.68

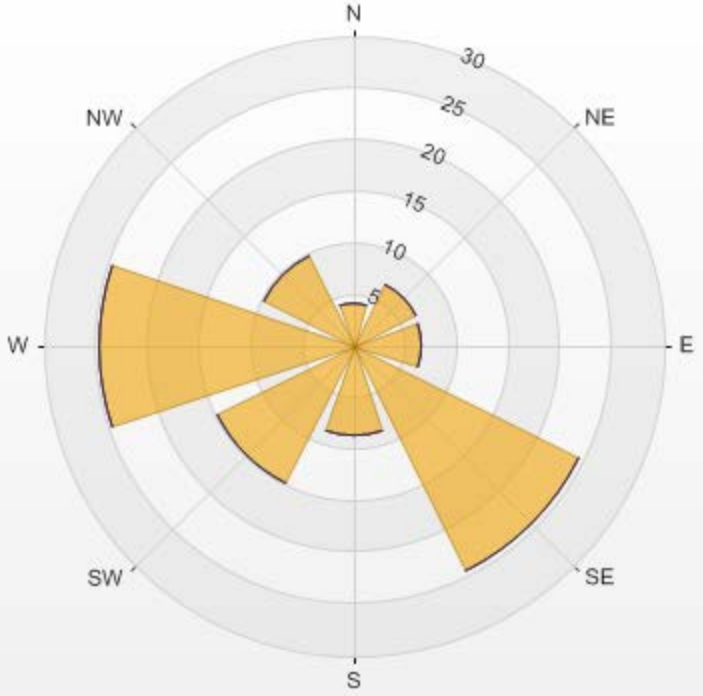
NOX MAX[ppb] Station: LICA COLD LAKE SOUTH Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



Wind: LICA COLD LAKE SOUTH Monitor: NOX [ppb] Monthly: 06/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
Calm: 0.00% Valid Data: 94.44% Calm Avg: 0.00

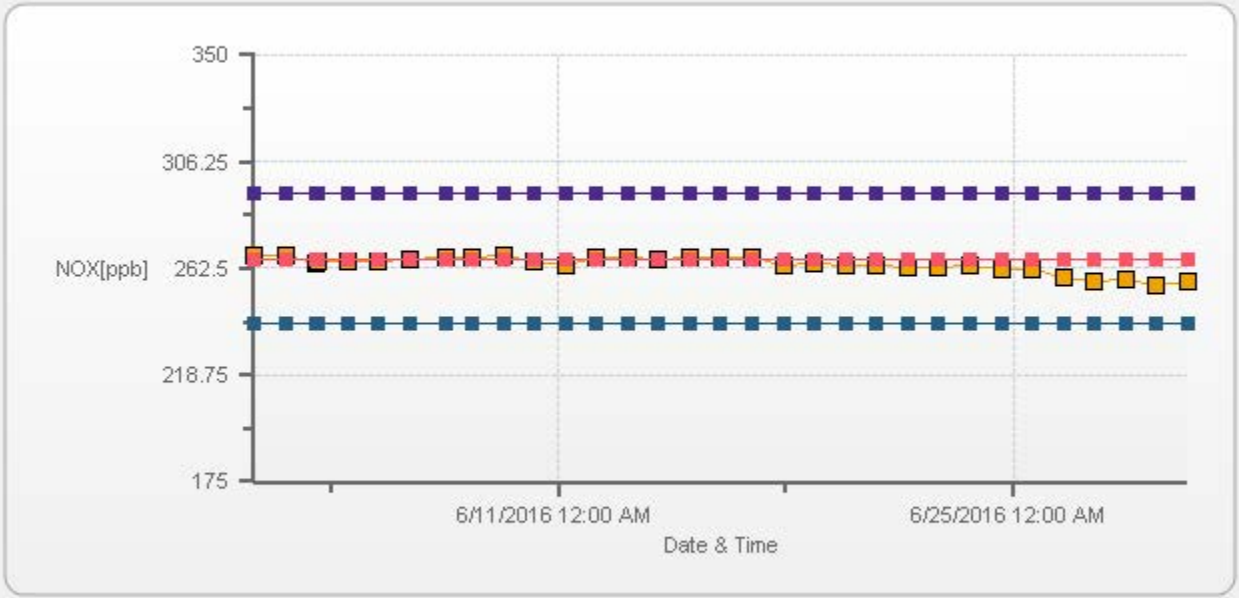
Direction	0.0-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	4.12	0	0	0	4.12
NE	6.76	0	0	0	6.76
E	6.62	0	0	0	6.62
SE	24.41	0	0	0	24.41
S	8.68	0	0	0	8.68
SW	14.85	0	0	0	14.85
W	24.71	0	0	0	24.71
NW	9.85	0	0	0	9.85
Summary	100	0	0	0	100

LICA COLD LAKE SOUTH 2016/06/01 12:00 AM - 2016/06/30 11:00 PM Calm: 0.00%



% Icon Classes (ppb)								
100	0.0-50.0	0	50.0-110.0	0	110.0-210.0	0	>210.0

NOX[ppb] Calibration: LICA COLD LAKE SOUTH Monthly: 06/2016 Type: Span



NITRIC OXIDES

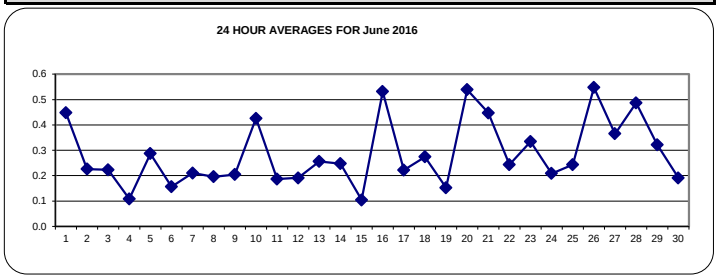
NITRIC OXIDE (NO) hourly averages in ppb

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	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	0.3	0.2	0.6	1.2	1.9	1.2	0.9	0.9	0.7	0.4	0.2	0.1	0.3	0.1	0.2	S	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.1	0.1	1.9	0.4	24
2	0.1	0.1	0.2	0.1	0.1	0.4	0.4	0.5	0.4	0.5	0.3	0.2	0.2	0.2	S	0.2	0.3	0.4	0.3	0.1	0.1	0.0	0.0	0.1	0.0	0.5	0.2	24
3	0.1	0.1	0.1	0.1	0.2	0.5	1.1	0.7	0.5	0.2	0.1	0.2	0.2	S	0.1	S1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.2	0.0	1.1	0.2	23
4	0.2	0.2	0.1	0.1	0.3	0.3	0.4	0.4	0.2	0.1	0.1	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	0.4	0.1	24
5	0.1	0.1	0.1	0.1	0.3	1.1	1.5	1.5	0.9	0.1	0.2	S	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	1.5	0.3	24
6	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.7	0.5	0.4	S	0.3	0.1	0.1	0.1	0.1	0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.7	0.2	24
7	0.0	0.0	0.0	0.0	0.1	0.5	0.5	0.6	C	C	C	C	C	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.0	0.6	0.2	24
8	0.2	0.2	0.1	0.1	0.1	0.3	0.2	0.2	S	0.3	0.2	0.3	0.2	0.6	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.6	0.2	24
9	0.1	0.1	0.1	0.1	0.2	0.2	0.3	S	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.1	0.0	0.4	0.2	24
10	0.1	0.1	0.1	0.1	0.1	0.1	S	0.1	0.1	2.7	3.8	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.4	0.4	0.1	0.1	0.1	0.1	0.1	3.8	0.4	24
11	0.1	0.1	0.1	0.1	0.2	S	0.2	0.3	0.2	0.3	0.3	0.4	0.4	0.3	0.4	0.2	0.1	0.1	0.0	0.1	0.2	0.1	0.1	0.0	0.0	0.4	0.2	24
12	0.0	0.0	0.0	0.0	S	0.3	0.3	0.3	0.2	0.4	0.3	0.3	0.2	0.4	0.7	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.7	0.2	24
13	0.2	0.2	0.2	S	0.3	0.6	0.8	0.6	0.5	0.4	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.8	0.3	24
14	0.1	0.1	S	0.2	0.3	0.3	0.3	0.6	0.2	0.3	0.3	0.3	0.2	0.3	0.2	0.2	0.3	0.0	0.1	0.1	0.9	0.2	0.1	0.1	0.0	0.9	0.2	24
15	0.1	S	0.1	0.1	0.1	0.2	0.2	0.2	0.3	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	0.0	0.0	0.3	0.1	24
16	S	0.0	0.0	0.0	0.2	0.9	1.0	1.5	1.6	2.1	0.9	0.7	0.3	1.2	0.3	0.2	0.4	0.1	0.1	0.2	0.0	0.0	0.0	S	0.0	2.1	***0.5***	24
17	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.4	1.5	0.3	0.5	0.4	0.3	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0	S	0.0	0.0	1.5	0.2	24
18	0.0	0.0	0.0	0.0	0.2	0.5	1.0	1.4	0.9	0.4	0.3	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	S	0.2	0.2	0.0	1.4	0.3	24
19	0.1	0.0	0.2	0.1	0.4	0.5	0.5	0.4	0.2	0.1	0.1	0.2	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	S	0.1	0.1	0.2	0.0	0.5	0.2	24
20	0.1	0.2	0.2	0.2	0.8	2.0	***4.2***	2.4	0.4	0.4	0.3	0.2	0.1	0.2	0.1	0.1	0.0	0.0	0.0	S	0.1	0.1	0.1	0.2	0.0	***4.2***	***0.5***	24
21	0.1	0.1	0.2	0.3	0.8	2.1	3.1	Y	Y	Y	Y	0.2	0.1	0.1	0.2	0.3	0.3	0.1	S	0.1	0.1	0.1	0.1	0.1	0.1	3.1	0.4	20
22	0.1	0.1	0.1	0.1	0.3	0.7	0.8	0.7	0.3	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.1	S	0.4	0.2	0.1	0.1	0.1	0.2	0.1	0.8	0.2	24
23	0.2	0.1	0.1	0.1	0.5	1.0	1.0	0.9	0.9	0.4	0.2	0.2	0.2	0.2	0.3	0.1	S	0.1	0.3	0.3	0.2	0.2	0.1	0.1	0.1	1.0	0.3	24
24	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.5	0.6	0.4	0.2	0.2	0.3	0.3	S	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.6	0.2	24
25	0.3	0.5	0.3	0.2	0.3	0.5	0.6	0.4	0.3	0.3	0.2	0.2	0.2	0.1	S	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.6	0.2	24
26	0.3	0.4	0.6	0.9	0.9	2.2	2.5	2.1	0.5	0.5	0.3	0.1	0.1	S	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	2.5	***0.5***	24
27	0.2	0.3	0.4	0.4	0.6	0.6	1.6	0.9	0.6	0.5	0.3	0.2	S	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.4	0.2	0.2	0.1	1.6	0.4	24
28	0.3	0.3	0.4	0.3	1.1	2.4	1.8	1.0	0.6	0.4	0.2	S	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.2	0.6	0.3	0.1	0.2	0.1	2.4	***0.5***	24
29	0.3	0.4	0.3	0.2	0.3	0.9	1.9	0.5	0.2	0.3	S	0.2	0.1	0.1	0.3	0.1	0.1	0.1	0.1	0.3	0.1	0.4	0.1	0.1	0.1	1.9	0.3	24
30	0.2	0.0	0.1	0.1	0.1	0.3	0.2	0.9	0.3	S	0.2	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.6	0.1	0.1	0.1	0.0	0.9	0.2	24
HOURLY MAX	0.3	0.5	0.6	1.2	1.9	2.4	4.2	2.4	1.6	2.7	3.8	0.7	0.4	1.2	0.7	0.3	0.4	0.4	0.4	0.4	0.9	0.4	0.2	0.2				
HOURLY AVG	0.1	0.1	0.2	0.2	0.4	0.7	1.0	0.8	0.5	0.5	0.4	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1				

STATUS FLAG CODES

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

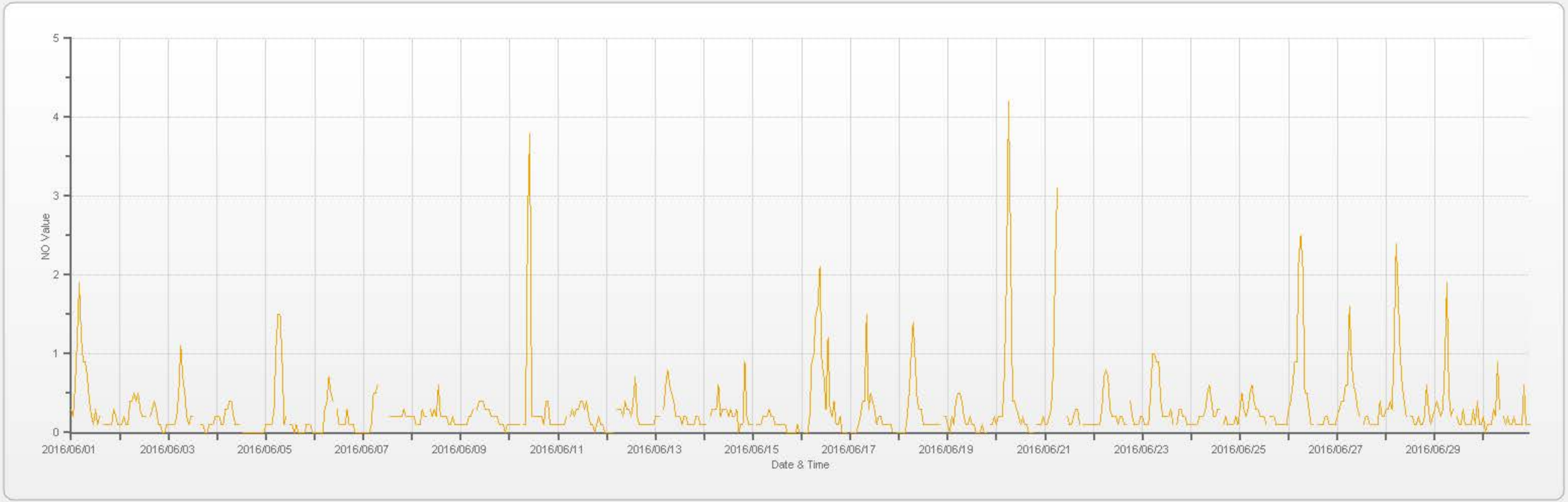


MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:			606				
MINIMUM 1-HR AVERAGE	0.0	PPB	@ HOUR(S)	VAR	ON DAY(S)	VAR	
MAXIMUM 1-HR AVERAGE:	4.2	PPB	@ HOUR(S)	6	ON DAY(S)	20	
MAXIMUM 24-HR AVERAGE:	0.5	PPB			ON DAY(S)	VAR	
					VAR-VARIOUS		

IZS CALIBRATION TIME:	30	HRS	OPERATIONAL TIME:	715	HRS
MONTHLY CALIBRATION TIME:	5	HRS	AMD OPERATION UPTIME:	99.3	%
STANDARD DEVIATION:	0.43		MONTHLY AVERAGE:	0.3	PPB

NO[ppb] Station: LICA COLD LAKE SOUTH Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



NITRIC OXIDE MAX instantaneous maximum in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	1.1	0.4	1.7	3.5	3.0	4.6	2.4	1.7	1.3	1.0	2.7	0.4	3.6	0.9	1.8	S	0.4	0.3	0.2	0.4	0.5	4.0	1.3	0.6	0.2	4.6	1.6	24
2	0.5	0.2	0.2	0.4	0.3	1.8	2.6	1.1	0.9	5.8	0.9	0.4	2.2	1.1	S	0.4	6.7	6.7	0.5	0.3	0.3	0.2	0.2	0.2	0.2	6.7	1.5	24
3	0.3	0.2	0.2	0.2	0.4	0.6	5.6	1.1	1.0	0.4	0.5	0.6	0.6	S	S1	S1	0.3	0.2	0.1	0.1	0.3	0.3	0.3	0.2	0.1	5.6	0.6	22
4	0.3	0.3	0.5	0.2	0.4	0.5	0.5	0.5	0.4	0.2	0.2	0.2	S	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.5	0.2	24
5	0.3	0.3	0.2	0.4	0.5	1.8	2.1	1.7	1.5	1.8	1.9	S	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.6	0.4	0.3	0.2	0.2	2.1	0.7	24
6	0.2	0.5	0.1	0.2	0.1	1.8	0.8	2.2	0.9	1.7	S	7.2	0.4	0.5	0.5	1.0	5.2	0.6	1.0	1.3	0.4	0.3	0.2	0.2	0.1	7.2	1.2	24
7	0.2	0.2	0.2	0.1	0.3	1.4	0.9	6.0	C	C	C	C	C	0.7	0.3	0.5	0.5	0.3	0.3	0.4	0.4	0.3	0.4	0.4	0.1	6.0	0.7	24
8	0.6	0.5	0.2	0.2	0.5	1.8	0.6	0.8	S	1.1	0.4	0.8	0.9	3.5	0.4	0.4	0.6	0.9	0.3	0.4	0.4	0.4	0.4	0.3	0.2	3.5	0.7	24
9	0.4	0.3	0.3	0.4	0.4	0.3	0.6	S	0.5	0.9	1.3	1.3	0.6	1.0	1.1	0.9	0.9	0.6	0.3	0.3	0.3	0.2	0.1	0.1	0.1	1.3	0.6	24
10	0.2	0.2	0.2	0.2	0.3	0.2	S	0.3	0.3	19.3	***30.7***	0.4	1.5	0.4	0.6	0.3	2.3	0.4	6.1	3.3	0.3	0.5	0.3	0.3	0.2	***30.7***	3.0	24
11	0.3	0.2	0.4	0.3	0.3	S	0.4	2.3	0.6	0.8	2.6	1.4	1.9	1.7	3.6	1.5	0.8	0.9	0.2	1.3	4.9	0.3	0.3	0.2	0.2	4.9	1.2	24
12	0.2	0.2	0.2	0.2	S	0.4	0.4	0.3	0.4	0.5	1.9	0.9	1.5	0.8	3.5	0.3	0.3	0.4	0.3	0.2	0.4	0.8	0.3	0.3	0.2	3.5	0.6	24
13	0.5	0.4	0.8	S	0.5	0.8	1.1	1.4	0.9	0.9	0.6	0.5	2.3	0.4	2.3	P	R	0.5	1.7	0.9	0.3	0.5	0.3	0.3	0.3	2.3	0.9	22
14	0.6	0.3	S	1.8	0.8	0.8	1.9	3.9	0.4	2.6	1.3	2.3	1.0	3.6	0.9	2.6	4.0	0.4	0.3	0.6	18.1	1.0	0.3	0.2	0.2	18.1	2.2	24
15	0.2	S	0.2	0.2	0.3	0.6	0.6	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	1.8	0.3	0.2	0.8	0.2	0.3	0.6	1.3	0.4	0.2	1.8	0.5	24
16	S	0.2	0.2	0.4	0.8	2.8	6.2	1.9	3.9	12.8	2.8	4.1	4.0	17.8	1.9	2.4	4.3	0.3	0.2	2.1	0.2	0.2	0.2	S	0.2	17.8	3.2	24
17	0.2	0.1	0.1	0.1	0.2	0.3	2.0	0.9	9.7	1.1	1.1	1.4	0.5	0.5	0.5	0.5	0.3	0.3	0.3	0.3	1.1	0.1	S	0.1	0.1	9.7	0.9	24
18	0.2	0.7	0.2	0.1	0.8	0.9	1.4	2.2	1.3	0.7	0.4	2.3	0.3	0.2	0.4	0.3	0.2	0.3	0.3	0.3	0.4	S	0.4	0.4	0.1	2.3	0.6	24
19	0.4	0.2	2.1	0.3	0.6	0.5	0.6	0.8	0.6	0.4	0.3	0.3	0.2	0.2	0.1	0.1	0.2	0.3	0.2	0.2	S	0.2	0.3	0.7	0.1	2.1	0.4	24
20	0.4	0.4	0.6	0.6	3.2	3.7	4.9	4.5	1.1	2.3	0.5	0.5	0.5	1.1	0.2	2.3	0.4	0.4	0.1	S	0.3	0.3	0.3	0.3	0.1	4.9	1.3	24
21	0.3	0.3	0.4	1.0	3.1	7.2	6.1	Y	Y	Y	Y	1.4	0.3	0.3	1.3	0.6	0.9	0.3	S	0.2	1.0	0.4	0.2	0.2	0.2	7.2	1.3	20
22	0.2	0.2	0.3	0.4	0.8	1.0	1.4	3.5	1.0	1.5	0.5	2.2	0.3	1.0	1.0	0.3	P	S	0.6	0.8	1.4	0.2	0.4	0.4	0.2	3.5	0.9	23
23	0.5	0.4	0.3	0.2	0.9	3.0	1.3	1.5	2.3	0.7	1.2	0.3	0.7	1.4	4.8	0.3	S	0.4	3.2	2.9	0.4	0.6	0.2	0.2	0.2	4.8	1.2	24
24	0.2	0.3	0.2	0.3	0.3	0.4	0.3	0.4	1.1	1.2	1.9	0.4	0.5	1.9	1.4	S	0.3	0.4	0.3	0.3	0.2	0.2	0.4	0.3	0.2	1.9	0.6	24
25	0.6	1.0	0.6	0.5	0.5	0.6	0.8	0.6	0.5	0.4	0.3	0.3	0.8	0.3	S	2.3	0.8	0.5	0.4	0.5	0.2	0.2	0.2	0.4	0.2	2.3	0.6	24
26	0.6	1.1	1.4	2.1	P	7.5	3.2	4.0	0.9	0.8	0.5	0.3	0.5	S	0.3	0.2	1.5	0.7	1.1	0.5	0.2	0.2	0.2	0.3	0.2	7.5	1.3	23
27	0.4	0.6	0.6	0.8	1.4	0.8	9.3	1.6	1.5	1.4	0.5	0.5	S	0.3	0.4	2.9	0.3	0.2	0.3	0.3	0.3	2.4	0.5	0.6	0.2	9.3	1.2	24
28	0.9	0.5	0.8	0.7	2.2	12.6	2.4	1.4	1.1	0.6	0.4	S	0.4	0.4	0.4	0.5	1.1	0.3	0.1	0.3	11.2	1.8	0.4	0.9	0.1	12.6	1.8	24
29	0.5	1.5	0.6	1.0	1.0	3.1	6.8	3.3	0.5	3.6	S	0.4	0.4	0.4	5.3	0.3	1.3	0.3	0.2	2.3	0.1	9.1	0.3	0.3	0.1	9.1	1.9	24
30	0.5	0.2	0.3	0.2	0.2	3.9	0.4	6.2	0.5	S	0.9	0.3	1.9	0.7	0.4	0.9	0.7	1.4	0.4	0.3	10.4	0.1	0.2	0.3	0.1	10.4	1.4	24
HOURLY MAX	1.1	1.5	2.1	3.5	3.2	12.6	9.3	6.2	9.7	19.3	30.7	7.2	4.0	17.8	5.3	2.9	6.7	6.7	6.1	3.3	18.1	9.1	1.3	0.9				
HOURLY AVG	0.4	0.4	0.5	0.6	0.9	2.3	2.3	2.0	1.3	2.4	2.2	1.2	1.1	1.5	1.3	0.9	1.3	0.6	0.7	0.7	1.9	0.9	0.4	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: 675

MAXIMUM INSTANTANEOUS VALUE: 30.7 PPB @ HOUR(S) 10 ON DAY(S) 10

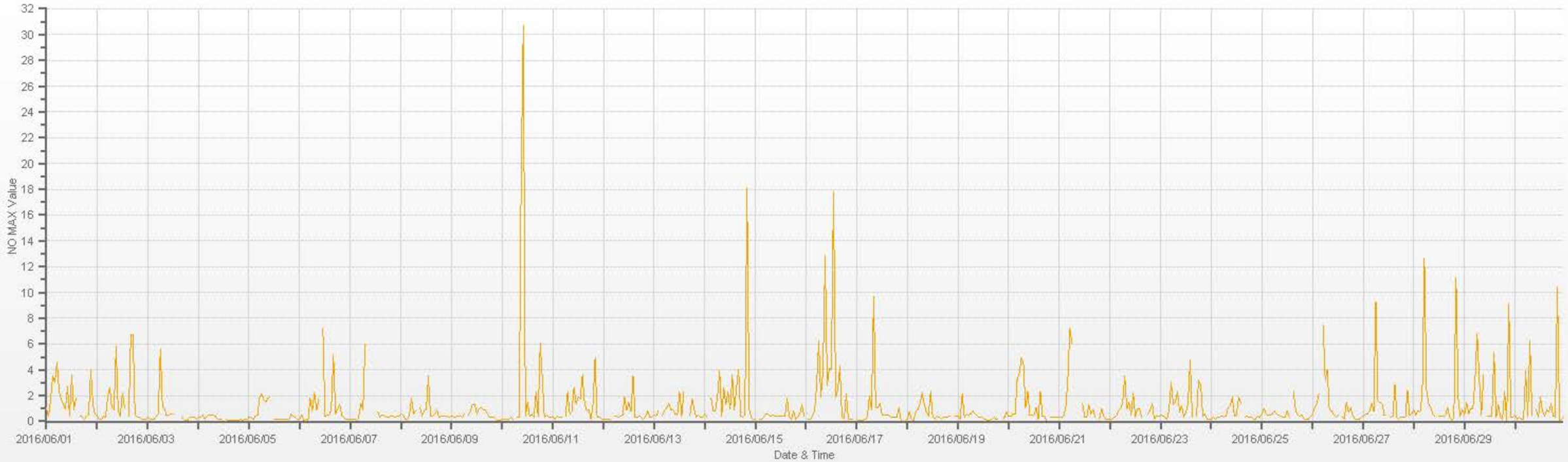
VAR-VARIOUS

IZS CALIBRATION TIME: 30 HRS OPERATIONAL TIME: 710 HRS

MONTHLY CALIBRATION TIME: 5 HRS

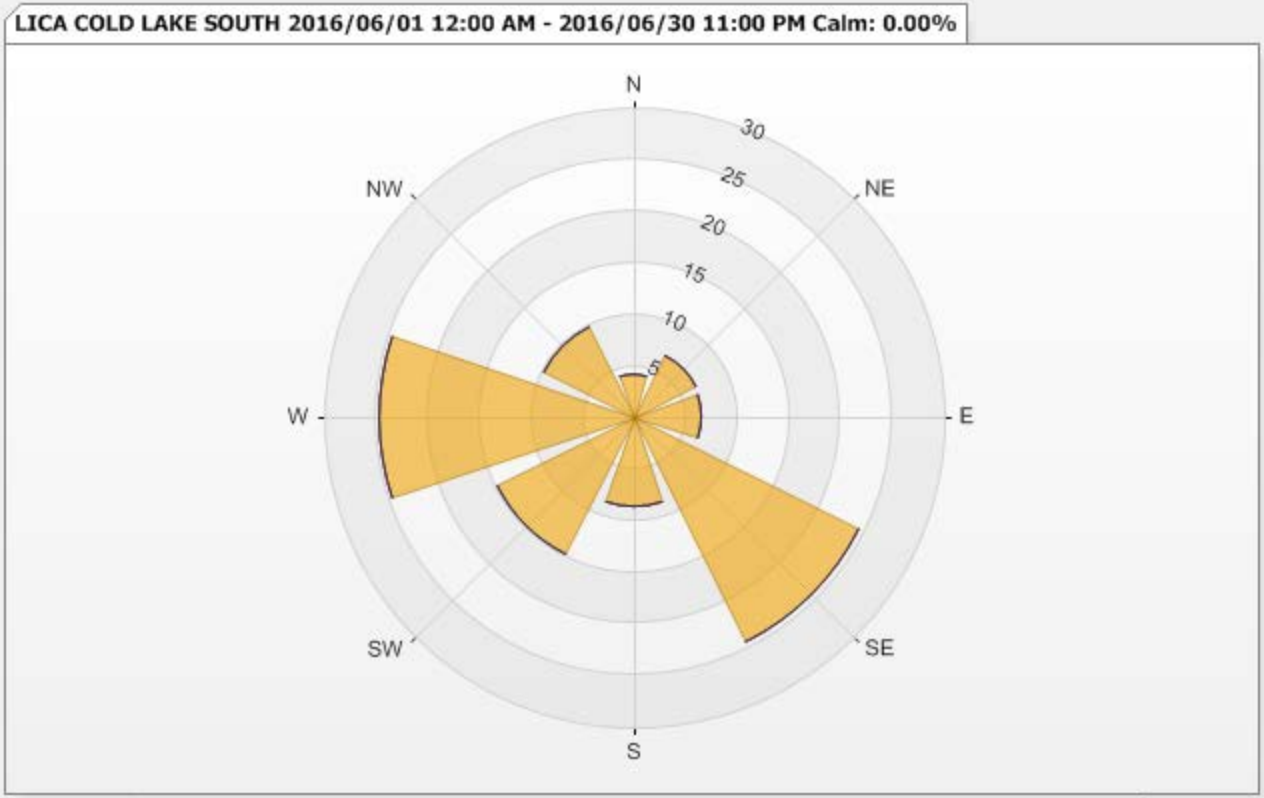
STANDARD DEVIATION: 2.25

NO MAX[ppb] Station: LICA COLD LAKE SOUTH Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



Wind: LICA COLD LAKE SOUTH Monitor: NO [ppb] Monthly: 06/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
Calm: 0.00% Valid Data: 94.44% Calm Avg: 0.00

Direction	0.0-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	4.12	0	0	0	4.12
NE	6.76	0	0	0	6.76
E	6.62	0	0	0	6.62
SE	24.41	0	0	0	24.41
S	8.68	0	0	0	8.68
SW	14.85	0	0	0	14.85
W	24.71	0	0	0	24.71
NW	9.85	0	0	0	9.85
Summary	100	0	0	0	100


LICA COLD LAKE SOUTH 2016/06/01 12:00 AM - 2016/06/30 11:00 PM Calm: 0.00%
N
NE
E
SE
S
SW
W
NW
30
25
20
15
10
5
% Icon Classes (ppb)
100 0.0-50.0
0 50.0-110.0
0 110.0-210.0
0 >210.0

NITROGEN DIOXIDE

NITROGEN DIOXIDE (NO2) hourly averages in ppb

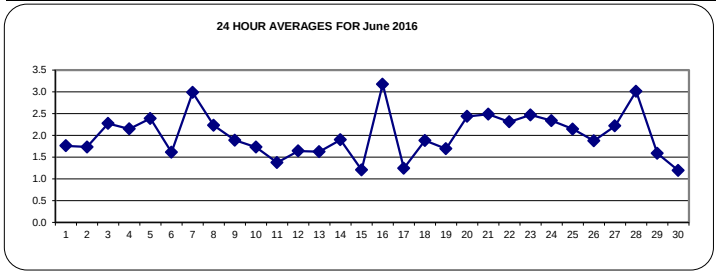
MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	1.6	1.1	2.0	3.1	2.8	2.3	2.3	2.2	1.9	1.4	1.1	0.8	1.3	0.8	1.2	S	1.7	1.5	2.1	1.5	2.1	2.0	1.5	2.2	0.8	3.1	1.8	24
2	2.0	1.2	1.0	1.1	1.3	1.6	1.4	1.6	1.6	1.5	1.5	1.3	0.9	1.6	S	1.7	1.5	2.6	2.3	2.2	4.0	1.4	2.1	2.5	0.9	4.0	1.7	24
3	2.3	2.8	3.6	3.6	3.8	5.1	4.8	2.7	1.4	0.8	0.7	1.0	1.0	S	1.6	S1	1.6	1.1	0.7	0.8	2.4	3.2	2.8	2.3	0.7	5.1	2.3	23
4	2.8	4.6	4.4	4.7	5.0	3.0	2.3	1.7	1.2	0.6	0.6	0.6	S	1.0	0.7	0.6	0.6	0.6	0.7	1.0	1.8	2.7	3.4	4.9	0.6	5.0	2.2	24
5	4.8	4.1	3.7	3.5	3.9	6.2	5.6	4.8	3.3	0.8	0.7	S	0.9	0.7	0.7	0.6	0.7	0.7	0.7	0.7	3.2	3.2	0.8	0.7	0.6	6.2	2.4	24
6	0.7	0.7	0.9	1.2	1.5	2.0	2.1	2.6	2.7	2.2	S	1.5	1.5	1.3	1.5	1.6	1.5	1.8	1.7	1.6	1.5	1.6	1.6	1.8	0.7	2.7	1.6	24
7	2.0	2.3	2.4	2.9	3.2	4.8	4.1	3.0	C	C	C	C	C	3.2	2.5	2.2	2.4	2.3	2.1	3.2	4.6	3.3	3.2	3.1	2.0	4.8	3.0	24
8	3.7	4.0	2.7	2.0	1.9	2.3	1.7	2.1	S	2.8	1.9	2.0	1.7	2.6	1.6	1.7	2.1	2.2	2.2	2.2	2.1	2.0	2.0	1.8	1.6	4.0	2.2	24
9	2.2	2.2	1.8	1.8	2.2	2.5	2.6	S	2.8	3.2	3.0	2.0	2.3	1.7	1.5	1.4	1.3	1.6	1.3	0.8	1.2	0.8	1.2	2.1	0.8	3.2	1.9	24
10	2.6	2.3	2.8	3.0	3.5	3.0	S	1.8	0.9	1.8	2.1	0.8	0.6	1.3	1.4	0.9	1.0	0.7	1.6	1.9	1.4	1.8	1.1	1.5	0.6	3.5	1.7	24
11	1.1	1.1	1.6	1.7	1.7	S	2.2	2.0	1.9	1.2	1.0	1.3	1.0	1.1	1.1	0.9	0.6	0.9	0.9	1.1	1.9	1.7	2.0	1.6	0.6	2.2	1.4	24
12	1.6	1.8	1.8	1.8	S	2.5	1.6	1.2	1.6	1.9	1.4	1.3	1.1	2.0	2.0	1.2	0.7	0.7	0.9	1.1	2.5	2.6	2.8	1.7	0.7	2.8	1.6	24
13	1.2	1.5	2.0	S	2.5	2.3	2.3	1.7	1.5	1.4	0.9	0.8	0.8	0.7	0.7	0.7	0.6	0.8	0.9	1.2	2.4	2.4	3.4	4.7	0.6	4.7	1.6	24
14	1.6	2.5	S	3.0	2.8	1.9	1.4	1.4	1.2	1.4	1.5	1.8	1.9	1.7	1.9	1.8	1.4	1.1	1.8	2.2	2.7	2.9	2.2	1.6	1.1	3.0	1.9	24
15	1.5	S	2.1	2.0	2.7	1.9	1.1	1.0	1.1	1.1	0.8	0.6	0.8	0.7	0.7	0.7	0.6	0.6	0.6	0.7	1.0	1.6	1.9	2.0	0.6	2.7	1.2	24
16	S	3.7	3.6	3.2	3.8	5.0	3.7	3.8	5.3	8.2	5.0	4.1	1.3	1.6	2.0	1.9	2.5	1.4	1.4	1.9	2.0	2.0	2.5	S	1.3	8.2	***3.2***	24
17	2.3	1.5	1.2	1.1	1.6	1.4	1.7	1.4	3.2	1.1	1.0	0.9	0.8	0.5	0.8	0.8	0.5	0.5	0.7	0.9	1.4	1.3	S	2.0	0.5	3.2	1.2	24
18	1.9	2.0	2.2	3.1	3.0	3.0	2.9	3.3	2.6	1.9	1.5	1.6	1.1	0.7	0.6	0.6	0.7	1.1	1.5	1.6	1.4	S	2.6	2.4	0.6	3.3	1.9	24
19	2.6	2.3	3.2	3.1	4.5	3.4	2.0	1.3	0.7	***0.4***	0.6	0.9	0.6	0.6	***0.4***	***0.4***	***0.4***	0.6	0.4	0.9	S	3.4	3.2	3.1	***0.4***	4.5	1.7	24
20	3.2	2.7	2.7	2.7	3.1	3.7	***8.4***	5.6	1.8	1.8	1.7	1.2	1.2	1.4	1.2	1.3	0.9	0.9	0.9	S	3.1	2.3	2.4	1.9	0.9	***8.4***	2.4	24
21	2.0	2.1	2.7	3.3	2.9	4.1	6.6	Y	Y	Y	Y	1.0	1.1	1.1	2.1	2.9	2.3	1.3	S	1.6	1.7	2.1	2.9	3.5	1.0	6.6	2.5	20
22	3.1	2.6	2.8	2.6	2.4	2.8	2.8	2.4	1.6	1.7	1.5	1.6	1.5	1.6	1.6	1.2	1.7	S	4.8	3.0	2.2	2.9	2.8	2.0	1.2	4.8	2.3	24
23	1.9	2.4	2.3	4.7	3.5	3.1	3.7	3.4	3.9	2.0	1.4	1.2	1.2	1.2	1.1	1.1	S	1.7	2.2	3.4	3.9	3.6	1.7	2.2	1.1	4.7	2.5	24
24	2.5	2.2	1.9	2.4	3.6	4.1	2.8	2.0	2.7	2.7	1.6	0.9	0.8	1.0	1.5	S	1.6	1.6	1.1	1.6	2.5	3.9	4.5	4.3	0.8	4.5	2.3	24
25	3.7	2.8	2.9	3.3	3.7	4.6	4.8	3.7	1.9	1.1	0.8	0.6	0.6	***0.4***	S	1.3	1.1	0.7	0.8	0.7	0.6	1.0	3.7	4.6	***0.4***	4.8	2.1	24
26	3.5	2.8	2.1	1.9	1.2	2.2	3.2	3.6	1.8	1.8	1.6	1.1	1.0	S	1.4	1.1	1.1	1.4	2.0	2.0	1.6	1.4	1.4	2.0	1.0	3.6	1.9	24
27	2.5	2.2	1.5	2.0	2.9	3.2	3.8	2.1	2.1	2.1	1.4	1.3	S	1.5	1.2	1.0	0.7	0.8	0.9	1.9	3.4	6.1	3.4	3.0	0.7	6.1	2.2	24
28	3.0	3.1	3.5	3.3	3.0	3.3	5.3	4.2	3.9	3.5	2.8	S	3.0	1.9	2.4	1.8	1.6	1.6	2.0	3.5	3.7	3.0	2.6	3.4	1.6	5.3	3.0	24
29	4.2	3.7	2.9	1.0	2.1	2.3	3.3	1.6	1.0	0.8	S	1.3	0.9	0.9	1.2	0.6	0.6	0.7	0.7	1.1	1.1	1.6	1.6	1.3	0.6	4.2	1.6	24
30	1.6	0.8	0.8	0.8	1.3	0.8	0.9	1.4	1.3	S	1.4	0.9	1.0	0.9	0.7	0.8	0.8	0.8	1.1	2.2	2.4	1.7	1.5	1.6	0.7	2.4	1.2	24
HOURLY MAX	4.8	4.6	4.4	4.7	5.0	6.2	8.4	5.6	5.3	8.2	5.0	4.1	3.0	3.2	2.5	2.9	2.5	2.6	4.8	3.5	4.6	6.1	4.5	4.9				
HOURLY AVG	2.4	2.4	2.4	2.5	2.8	3.0	3.2	2.5	2.1	1.9	1.5	1.3	1.2	1.3	1.3	1.2	1.2	1.2	1.4	1.7	2.3	2.4	2.4	2.5				

STATUS FLAG CODES

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

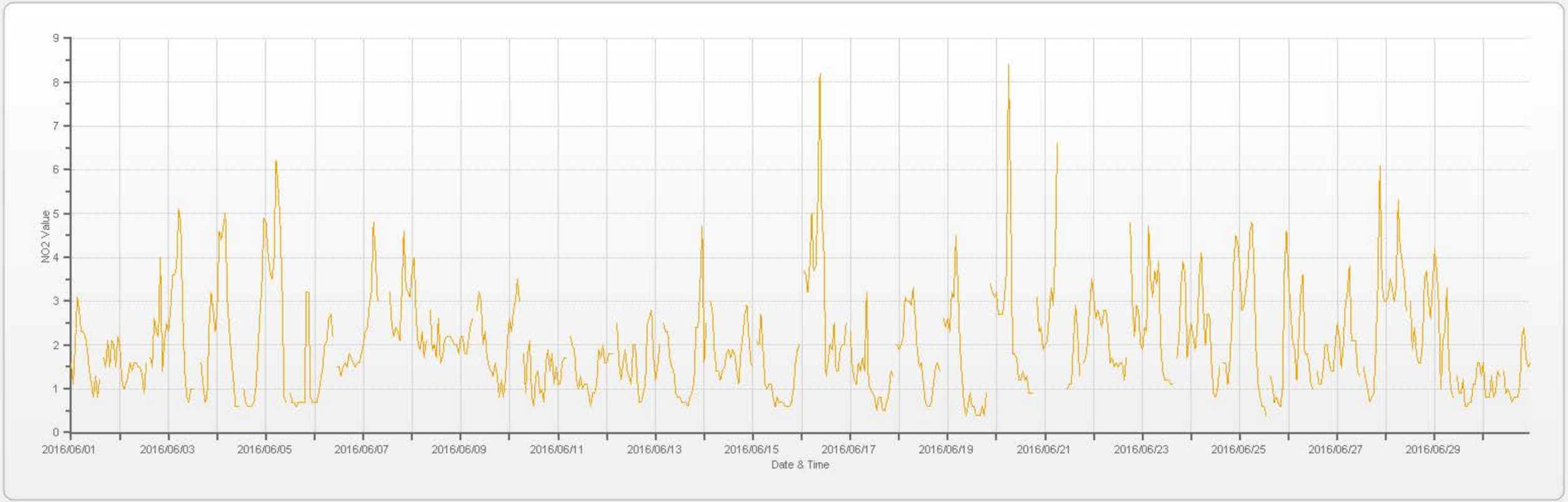
OBJECTIVE LIMIT: **ALBERTA ENVIRONMENT:** 1-HR 159 PPB



MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:			0				
NUMBER OF NON-ZERO READINGS:			680				
MINIMUM 1-HR AVERAGE	0.4	PPB	@ HOUR(S)	VAR	ON DAY(S)	19 , 25	
MAXIMUM 1-HR AVERAGE:	8.4	PPB	@ HOUR(S)	6	ON DAY(S)	20	
MAXIMUM 24-HR AVERAGE:	3.2	PPB			ON DAY(S)	16	
					VAR-VARIOUS		
IZS CALIBRATION TIME:	30	HRS	OPERATIONAL TIME:			715	HRS
MONTHLY CALIBRATION TIME:	5	HRS	AMD OPERATION UPTIME:			99.3	%
STANDARD DEVIATION:	1.15		MONTHLY AVERAGE:			2.0	PPB

NO2[ppb] Station: LICA COLD LAKE SOUTH Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



NITROGEN DIOXIDE MAX instantaneous maximum in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	2.5	1.6	3.5	5.5	3.9	3.3	4.7	2.5	2.4	1.6	9.4	2.5	7.6	1.0	7.4	S	3.5	2.3	2.4	2.0	6.5	6.9	4.9	3.3	1.0	9.4	4.0	24
2	3.2	1.4	1.5	1.7	2.0	2.8	3.6	2.8	2.5	5.7	2.4	1.6	1.5	4.1	S	2.7	2.2	4.8	5.7	2.8	8.1	1.9	2.4	3.2	1.4	8.1	3.1	24
3	2.9	3.9	3.9	3.9	4.3	5.7	7.3	3.8	1.9	1.0	1.5	4.8	1.5	S	S1	S1	2.4	1.5	0.9	1.2	4.3	4.0	4.2	2.9	0.9	7.3	3.2	22
4	3.3	6.3	5.6	6.0	7.2	4.5	2.5	2.2	1.6	0.9	0.7	0.8	S	1.5	1.0	0.7	0.7	0.7	0.9	1.2	2.3	2.9	4.4	5.2	0.7	7.2	2.7	24
5	5.2	5.1	4.3	4.4	5.1	7.2	7.1	5.1	4.8	3.2	3.8	S	1.4	0.7	2.8	0.9	1.0	0.7	1.0	0.9	7.4	7.3	1.4	0.7	0.7	7.4	3.5	24
6	0.9	1.6	1.0	1.4	1.8	10.2	2.8	4.0	3.5	4.3	S	2.5	2.5	2.3	2.5	4.3	2.7	3.2	4.4	3.1	1.9	2.4	2.3	2.4	0.9	10.2	3.0	24
7	2.3	2.8	2.8	3.1	5.0	10.5	5.2	3.5	C	C	C	C	C	6.6	2.9	2.5	2.9	2.4	2.4	5.1	5.9	4.4	4.3	4.1	2.3	10.5	4.1	24
8	4.3	4.5	3.8	3.6	4.0	2.9	2.4	3.7	S	5.1	2.3	3.1	3.9	7.2	2.0	2.3	2.5	3.2	2.4	2.5	2.5	2.2	2.3	2.3	2.0	7.2	3.3	24
9	2.3	2.4	1.9	1.8	2.5	2.8	3.2	S	3.1	4.1	4.1	3.2	4.1	2.0	1.8	3.1	2.2	3.1	1.8	1.1	1.5	1.1	1.6	2.5	1.1	4.1	2.5	24
10	2.9	3.5	3.1	3.5	4.1	3.3	S	3.2	1.1	9.4	12.2	2.2	1.0	1.5	2.2	1.4	2.7	1.1	8.7	6.8	2.0	3.7	1.6	1.9	1.0	12.2	3.6	24
11	1.2	1.2	2.5	2.0	2.0	S	2.7	3.3	2.4	1.9	1.9	4.5	5.1	4.4	4.1	2.9	1.0	3.5	1.0	1.4	5.3	2.7	2.4	2.0	1.0	5.3	2.7	24
12	1.8	2.4	1.8	1.9	S	3.5	1.8	1.2	1.9	2.2	2.3	2.9	1.4	3.2	5.5	1.6	0.8	1.1	1.1	1.4	3.3	3.1	4.1	2.0	0.8	5.5	2.3	24
13	1.5	1.8	2.5	S	3.1	2.5	2.8	2.9	2.0	1.9	1.9	1.9	2.1	1.4	1.2	P	R	1.9	6.0	2.4	3.8	8.1	6.6	6.5	1.2	8.1	3.1	22
14	2.8	3.1	S	5.1	5.6	3.1	2.8	4.1	1.5	3.9	2.8	2.8	2.5	3.5	3.3	6.0	3.1	1.5	2.7	3.3	15.5	5.4	3.2	1.8	1.5	15.5	3.9	24
15	1.6	S	2.7	2.5	3.1	2.8	2.0	1.6	1.4	1.2	1.2	0.9	1.5	0.9	1.1	2.0	0.9	0.7	2.0	0.7	3.3	5.3	3.6	2.4	0.7	5.3	2.0	24
16	S	4.3	4.1	4.5	5.6	8.6	5.2	5.3	7.2	***23.4***	8.7	7.6	2.7	12.0	4.2	4.4	8.8	1.8	1.6	2.2	2.4	2.3	2.5	S	1.6	***23.4***	5.9	24
17	3.5	1.6	1.2	1.4	1.8	1.5	3.9	3.7	10.3	2.2	2.0	1.2	1.4	0.9	1.4	1.2	0.9	0.7	0.9	1.5	2.7	2.0	S	2.3	0.7	10.3	2.2	24
18	2.2	3.2	3.2	3.5	3.5	3.5	3.1	4.6	2.8	2.2	1.6	2.8	1.5	0.9	0.9	0.8	0.8	2.7	2.4	2.2	2.7	S	3.3	2.8	0.8	4.6	2.5	24
19	4.8	2.9	7.8	3.6	6.5	5.5	2.5	2.0	1.2	0.9	0.8	1.1	0.9	0.9	0.6	0.5	0.5	1.0	0.8	1.4	S	4.1	3.6	5.1	0.5	7.8	2.6	24
20	3.6	3.5	3.6	3.3	3.7	7.7	9.4	8.3	3.5	3.6	2.4	1.5	2.5	3.3	1.6	6.2	1.4	2.3	0.9	S	5.2	3.7	3.3	2.4	0.9	9.4	3.8	24
21	2.5	2.5	3.3	4.8	4.6	10.2	10.2	Y	Y	Y	Y	1.4	1.8	2.5	5.7	4.5	5.1	1.5	S	2.2	3.6	3.7	3.9	4.4	1.4	10.2	4.1	20
22	3.8	3.1	3.6	3.6	3.2	3.8	4.0	7.0	2.8	7.6	3.5	7.2	1.8	3.6	4.1	2.3	P	S	6.2	5.6	4.4	3.7	3.5	2.4	1.8	7.6	4.1	23
23	2.3	3.1	2.8	6.7	4.6	3.9	4.7	4.6	7.8	2.7	3.2	1.5	2.3	2.5	3.6	2.4	S	2.5	5.9	11.5	7.0	7.3	2.2	2.8	1.5	11.5	4.3	24
24	2.9	2.9	2.2	3.3	4.4	4.5	4.3	2.5	3.9	4.0	3.8	1.4	1.2	4.6	3.2	S	2.4	2.3	1.5	2.2	2.8	8.5	9.4	5.3	1.2	9.4	3.6	24
25	4.3	4.0	3.2	4.3	5.2	5.9	5.7	4.8	2.4	1.9	1.0	0.7	2.5	0.6	S	4.0	1.6	1.0	1.5	1.5	0.9	1.4	4.9	5.7	0.6	5.9	3.0	24
26	4.6	3.2	2.5	2.5	P	4.4	3.8	5.2	2.7	2.3	2.0	1.5	1.9	S	2.0	1.5	3.5	3.3	3.9	2.8	2.0	1.6	1.9	2.3	1.5	5.2	2.8	23
27	3.5	2.8	2.2	2.7	3.5	3.5	6.2	2.9	2.7	3.6	2.2	2.4	S	2.4	2.0	2.0	1.1	1.2	1.2	2.3	6.4	13.3	4.6	3.7	1.1	13.3	3.4	24
28	3.6	3.5	5.6	3.7	3.7	5.1	6.5	4.9	4.8	4.3	3.7	S	3.9	3.0	4.0	4.1	4.7	2.0	3.3	4.5	12.6	3.9	2.9	5.2	2.0	12.6	4.5	24
29	5.1	4.1	3.9	1.9	3.1	4.3	6.4	4.5	1.8	1.6	S	2.0	1.2	1.2	8.9	1.0	1.1	1.0	1.0	2.9	1.5	12.6	2.7	1.5	1.0	12.6	3.3	24
30	2.7	0.9	1.2	1.1	2.5	1.4	1.1	7.4	1.6	S	2.3	1.2	4.4	1.6	1.1	3.6	1.2	1.2	1.5	4.4	11.9	4.8	3.2	4.4	0.9	11.9	2.9	24
HOURLY MAX	5.2	6.3	7.8	6.7	7.2	10.5	10.2	8.3	10.3	23.4	12.2	7.6	7.6	12.0	8.9	6.2	8.8	4.8	8.7	11.5	15.5	13.3	9.4	6.5				
HOURLY AVG	3.0	3.0	3.1	3.4	3.9	4.8	4.4	4.0	3.2	4.0	3.2	2.5	2.4	2.9	3.0	2.7	2.3	1.9	2.6	2.9	4.8	4.6	3.5	3.2				

STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS: 675

MAXIMUM INSTANTANEOUS VALUE: 23.4 PPB @ HOUR(S) 9 ON DAY(S) 16

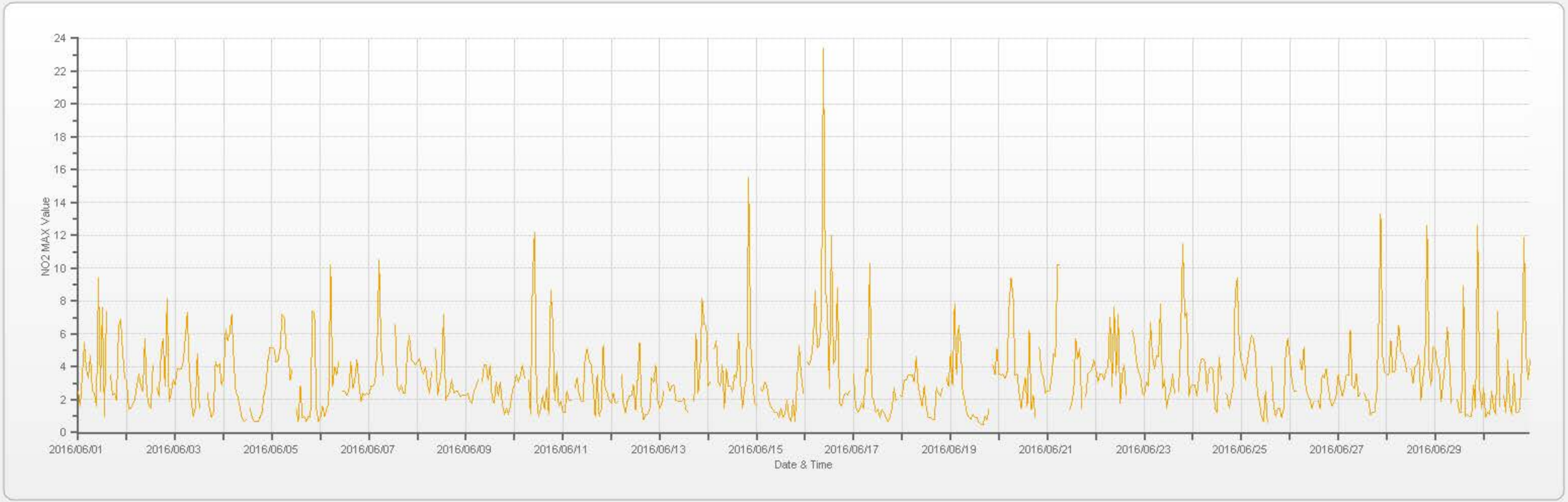
VAR-VARIOUS

IZS CALIBRATION TIME: 30 HRS OPERATIONAL TIME: 710 HRS

MONTHLY CALIBRATION TIME: 5 HRS

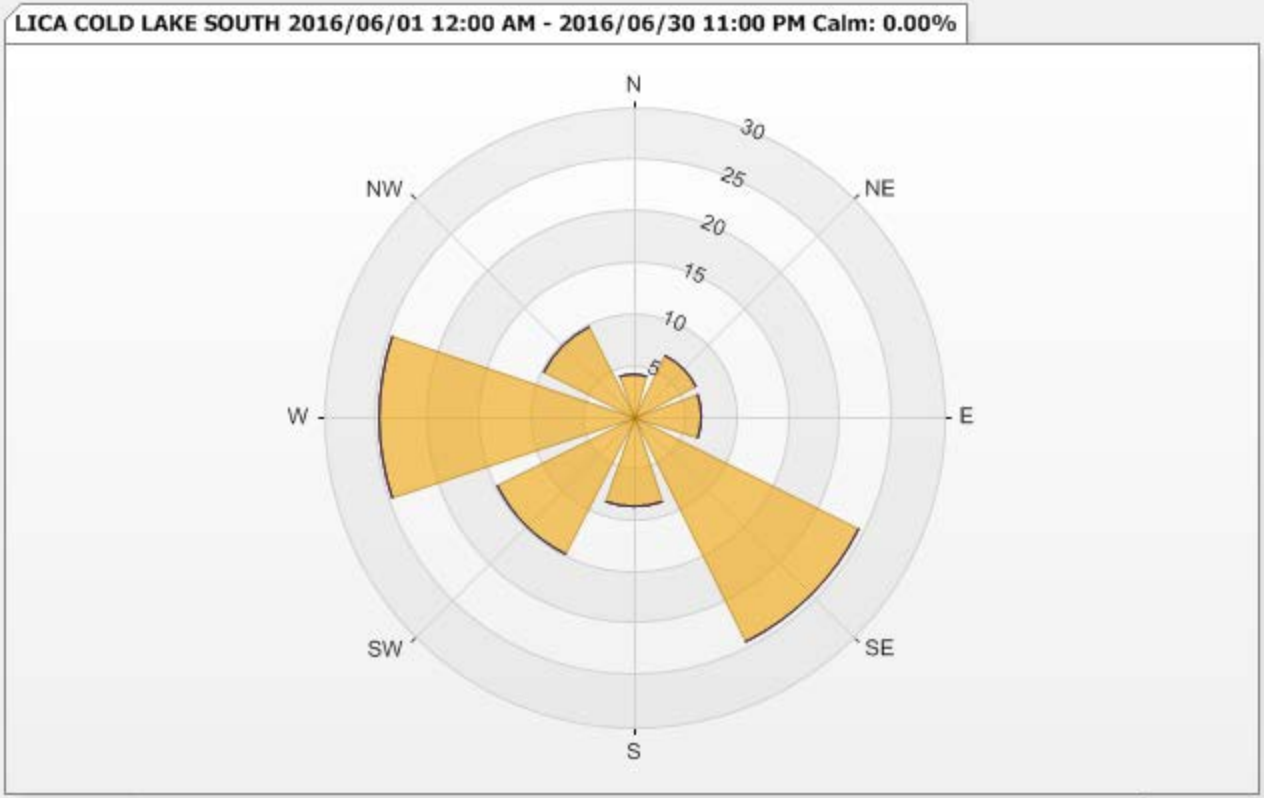
STANDARD DEVIATION: 2.27

NO2 MAX[ppb] Station: LICA COLD LAKE SOUTH Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]

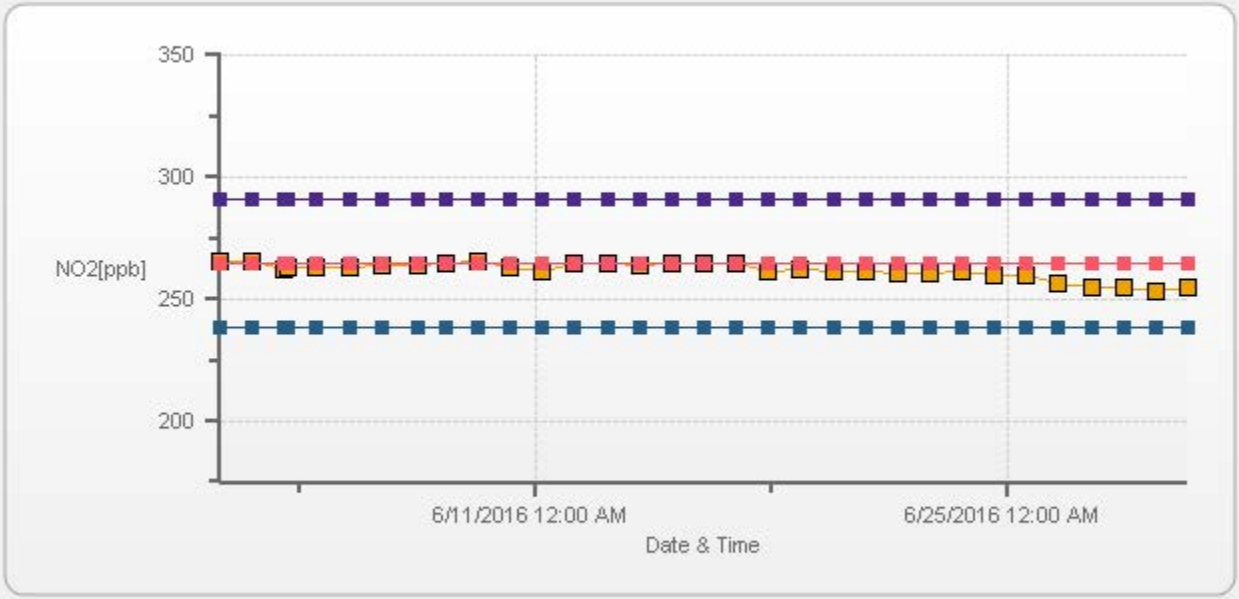


Wind: LICA COLD LAKE SOUTH Monitor: NO2 [ppb] Monthly: 06/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
Calm: 0.00% Valid Data: 94.44% Calm Avg: 0.00

Direction	0.0-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	4.12	0	0	0	4.12
NE	6.76	0	0	0	6.76
E	6.62	0	0	0	6.62
SE	24.41	0	0	0	24.41
S	8.68	0	0	0	8.68
SW	14.85	0	0	0	14.85
W	24.71	0	0	0	24.71
NW	9.85	0	0	0	9.85
Summary	100	0	0	0	100


LICA COLD LAKE SOUTH 2016/06/01 12:00 AM - 2016/06/30 11:00 PM Calm: 0.00%
N
NE
E
SE
S
SW
W
NW
30
25
20
15
10
5
% Icon Classes (ppb)
100 0.0-50.0
0 50.0-110.0
0 110.0-210.0
0 >210.0

NO2[ppb] Calibration: LICA COLD LAKE SOUTH Monthly: 06/2016 Type: Span



OZONE

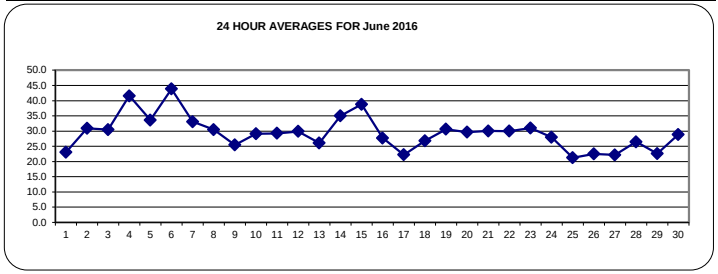
OZONE (O3) hourly averages in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	5.9	4.5	2.4	1.5	1.5	7.7	14.5	16.9	20.0	25.3	33.3	35.6	37.4	38.5	39.1	S	40.0	39.5	31.7	35.3	28.3	27.4	21.2	21.8	1.5	40.0	23.0	24
2	16.2	14.7	10.2	18.5	20.9	23.7	24.3	25.3	30.9	33.3	34.4	36.3	42.4	38.8	S	43.6	44.6	41.7	42.8	39.7	26.7	36.9	36.6	29.4	10.2	44.6	31.0	24
3	24.7	28.8	27.0	24.8	22.8	20.1	17.5	18.8	23.7	30.6	33.8	37.4	38.3	S	43.1	S1	48.0	47.9	48.0	46.1	32.8	23.4	17.7	15.0	15.0	48.0	30.5	23
4	12.5	13.1	18.1	18.9	19.3	28.4	30.6	34.9	39.9	47.7	53.2	53.0	S	55.9	57.9	58.7	59.2	59.0	58.7	56.8	53.1	47.1	42.3	38.3	12.5	59.2	41.6	24
5	34.7	24.9	20.8	17.6	19.9	24.6	26.2	29.7	36.6	39.2	39.3	S	43.0	43.4	43.3	42.6	42.3	42.7	42.8	39.9	29.9	28.1	31.4	30.1	17.6	43.4	33.6	24
6	30.2	29.8	28.2	26.5	24.5	24.3	25.3	27.0	29.7	38.9	S	52.5	56.1	56.7	58.5	62.5	***63.7***	62.1	57.5	55.0	53.4	52.2	49.3	45.6	24.3	***63.7***	***43.9***	24
7	42.4	36.0	33.0	30.2	26.3	19.7	22.8	25.2	28.8	S	40.9	45.1	52.0	51.0	46.9	38.8	45.9	42.8	40.3	31.1	21.1	16.6	14.1	10.3	10.3	52.0	33.1	24
8	7.8	8.7	17.0	23.6	27.5	30.4	32.8	30.6	S	30.5	32.2	31.2	29.8	30.6	35.4	35.9	33.5	40.1	41.2	38.7	37.6	36.1	35.0	34.3	7.8	41.2	30.5	24
9	33.3	35.4	31.6	28.8	26.5	24.4	23.1	S	23.2	24.9	20.9	24.0	25.0	26.4	28.1	28.9	26.4	26.4	23.5	21.0	19.2	21.6	22.4	21.2	19.2	35.4	25.5	24
10	19.5	19.5	20.0	20.0	20.9	25.4	S	30.9	33.3	37.5	39.3	40.4	38.5	C	C	C	37.6	37.6	35.4	32.7	25.3	25.3	24.2	20.0	19.5	40.4	29.2	24
11	26.5	25.6	24.3	20.1	13.7	S	21.4	26.4	32.5	31.3	33.8	35.6	33.4	32.9	36.7	34.6	33.7	33.5	32.5	30.8	28.6	32.5	21.2	31.8	13.7	36.7	29.3	24
12	33.3	28.1	29.1	28.7	S	27.4	30.1	33.2	33.2	33.4	37.1	34.7	32.4	29.1	29.5	31.7	32.6	31.7	34.1	34.5	27.3	19.5	20.5	16.4	16.4	37.1	29.9	24
13	5.8	4.6	7.2	S	7.9	14.6	20.0	25.0	28.2	30.5	33.1	34.8	37.8	39.2	39.4	40.2	41.1	40.6	41.1	35.5	24.1	20.3	16.2	12.9	4.6	41.1	26.1	24
14	28.9	20.2	S	22.2	16.8	32.9	32.2	30.8	30.3	30.6	34.5	39.8	45.5	49.9	47.8	48.5	47.3	46.1	41.9	38.4	32.4	26.9	29.6	31.5	16.8	49.9	35.0	24
15	31.4	S	32.7	29.5	24.5	31.6	36.4	36.1	36.7	38.9	41.6	42.0	42.1	41.8	42.7	43.1	43.8	44.5	45.8	48.0	45.3	41.1	37.5	35.8	24.5	48.0	38.8	24
16	S	31.4	28.8	24.8	24.2	17.4	20.5	22.8	28.8	28.6	20.0	19.4	37.4	37.9	35.6	34.7	30.1	31.0	27.7	26.9	28.5	27.9	25.2	S	17.4	37.9	27.7	24
17	20.6	17.9	17.3	17.8	17.2	16.9	17.1	17.7	16.0	16.8	17.2	19.5	21.6	26.9	29.6	30.7	31.7	31.4	31.1	29.9	22.0	20.9	S	23.4	16.0	31.7	22.2	24
18	20.6	20.0	16.7	21.1	20.2	19.9	19.5	20.6	27.2	32.3	36.5	39.2	38.4	35.5	34.0	34.1	34.5	33.2	32.5	27.0	30.5	S	13.3	10.3	10.3	39.2	26.8	24
19	14.0	30.9	22.2	15.6	14.9	20.2	28.1	32.5	35.5	34.4	36.1	37.2	38.7	38.6	41.5	40.8	38.9	40.5	41.1	40.6	S	26.7	20.4	15.1	14.0	41.5	30.6	24
20	10.9	11.0	8.5	6.4	4.9	8.2	18.1	24.1	35.4	38.1	41.5	44.2	48.8	50.5	51.1	49.7	48.1	46.8	46.6	S	29.7	22.7	19.3	18.3	4.9	51.1	29.7	24
21	14.4	11.7	8.1	7.1	5.2	7.6	16.1	31.7	35.7	41.4	45.8	48.6	49.9	51.8	45.8	43.5	43.8	43.4	S	40.7	39.3	26.1	17.8	15.7	5.2	51.8	30.1	24
22	21.4	16.6	17.3	15.6	7.5	13.1	23.0	30.2	38.6	41.3	45.6	46.8	47.3	51.7	50.4	47.3	44.8	S	20.4	23.3	33.4	28.1	13.7	12.5	7.5	51.7	30.0	24
23	11.6	19.8	16.9	16.5	7.6	12.8	24.1	29.4	34.0	38.9	41.8	44.6	46.1	44.8	46.0	46.8	S	47.4	39.1	27.9	20.4	20.9	42.2	33.6	7.6	47.4	31.0	24
24	25.0	19.0	20.9	17.9	20.1	19.3	28.2	29.2	27.7	30.5	36.4	35.1	34.8	37.5	38.4	S	36.2	36.4	32.6	29.6	31.9	26.1	15.0	15.7	15.0	38.4	28.0	24
25	6.6	2.5	8.7	13.6	14.4	12.4	11.4	13.1	16.0	23.1	27.3	27.0	27.5	29.6	S	32.6	30.4	29.5	30.2	31.3	30.8	27.8	23.7	19.4	2.5	32.6	21.3	24
26	9.4	4.6	2.9	1.3	***1.1***	2.4	5.4	16.4	27.9	30.4	34.4	36.4	37.9	S	37.7	39.2	38.5	34.2	30.2	26.9	27.5	26.5	24.2	22.2	***1.1***	39.2	22.5	24
27	12.1	5.3	2.2	4.5	5.7	9.2	11.5	18.4	24.9	30.9	35.0	38.4	S	35.9	35.7	36.9	38.1	38.2	37.6	34.2	25.1	12.7	10.2	6.6	2.2	38.4	22.1	24
28	5.6	3.6	3.7	2.3	2.5	5.6	17.1	25.6	37.9	46.7	51.0	S	58.5	51.4	45.6	46.8	44.2	43.5	36.2	23.3	20.9	12.2	14.7	9.5	2.3	58.5	26.5	24
29	5.7	2.9	7.6	21.0	15.1	5.5	15.3	26.5	28.1	28.7	S	29.4	30.3	31.3	31.0	33.0	33.5	32.8	31.7	29.3	25.2	21.7	19.1	14.8	2.9	33.5	22.6	24
30	13.4	22.9	22.9	22.1	21.5	21.8	21.6	22.6	27.8	S	33.9	34.7	34.2	35.0	35.9	36.7	36.1	34.8	33.3	31.8	30.9	32.0	29.7	28.3	13.4	36.7	28.9	24
HOURLY MAX	42.4	36.0	33.0	30.2	27.5	32.9	36.4	36.1	39.9	47.7	53.2	53.0	58.5	56.7	58.5	62.5	63.7	62.1	58.7	56.8	53.4	52.2	49.3	45.6				
HOURLY AVG	18.8	17.7	17.5	17.9	15.7	18.2	21.9	25.9	29.9	33.4	36.1	37.2	39.5	40.5	41.0	40.8	40.3	40.0	37.5	34.7	30.4	27.1	24.4	22.1				

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

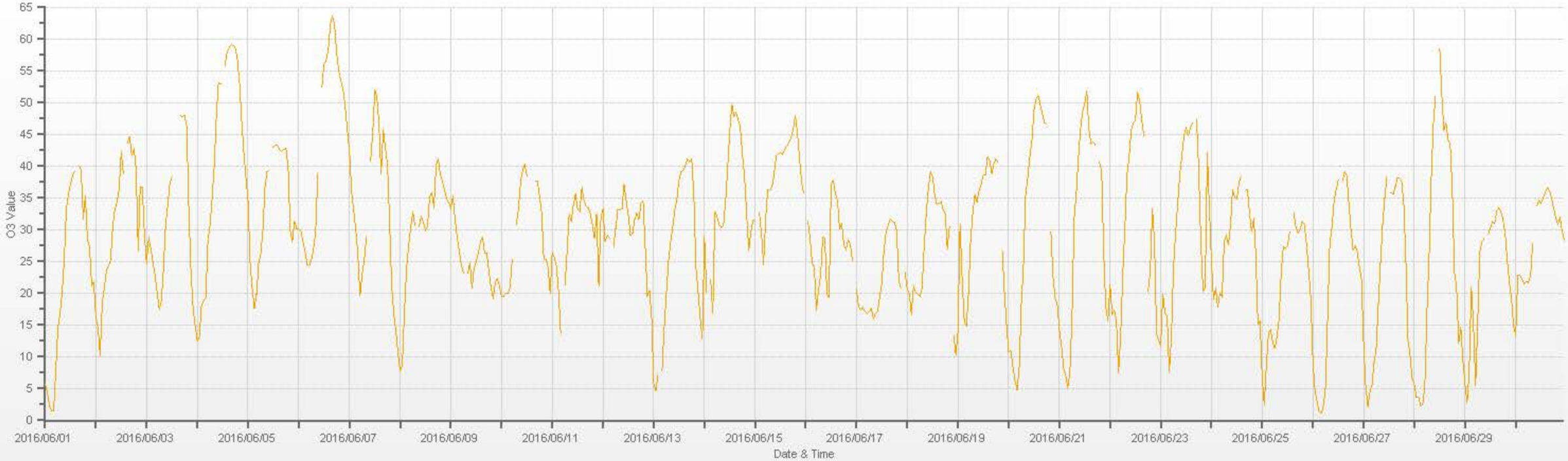


OBJECTIVE LIMIT: **ALBERTA ENVIRONMENT:** 1-HR 82 PPB

MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:		0				
NUMBER OF NON-ZERO READINGS:		685				
MINIMUM 1-HR AVERAGE	1.1	PPB	@ HOUR(S)	4	ON DAY(S)	26
MAXIMUM 1-HR AVERAGE:	63.7	PPB	@ HOUR(S)	16	ON DAY(S)	6
MAXIMUM 24-HR AVERAGE:	43.9	PPB			ON DAY(S)	6
					VAR-VARIOUS	
IZS CALIBRATION TIME:	31	HRS	OPERATIONAL TIME:		719	HRS
MONTHLY CALIBRATION TIME:	3	HRS	AMD OPERATION UPTIME:		99.9	%
STANDARD DEVIATION:	12.31		MONTHLY AVERAGE:		29.4	PPB

O3[ppb] Station: LICA COLD LAKE SOUTH Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



OZONE MAX instantaneous maximum in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	8.6	8.2	3.4	2.1	1.8	12.9	16.9	18.4	22.2	29.5	35.1	36.8	38.8	39.7	40.7	**S**	41.6	41.3	37.7	37.2	34.0	31.4	25.9	24.8	1.8	41.6	25.6	24
2	31.7	29.9	17.4	20.4	21.9	25.0	25.8	27.8	34.2	34.3	38.5	42.1	47.8	42.3	**S**	48.8	47.3	43.6	44.2	43.4	34.9	38.4	38.2	43.3	17.4	48.8	35.7	24
3	31.6	33.0	29.3	25.5	23.9	21.0	18.7	20.9	28.3	34.0	36.0	39.3	39.4	**S**		**SD**	49.3	48.8	49.3	47.5	45.2	26.9	21.9	20.2	18.7	49.3	32.9	22
4	15.5	21.1	23.6	22.8	25.3	30.0	32.8	37.1	42.7	53.1	55.7	54.2	**S**	57.5	59.1	60.0	60.0	60.0	59.7	59.1	55.5	50.5	45.7	40.7	15.5	60.0	44.4	24
5	40.0	29.6	26.2	19.9	27.5	27.2	28.7	34.3	39.7	40.3	40.6	**S**	45.1	44.6	44.5	44.0	43.6	43.9	44.0	42.5	38.4	31.1	32.2	30.5	19.9	45.1	36.5	24
6	30.9	30.8	29.0	27.4	25.7	25.5	26.8	29.5	34.9	44.5	**S**	56.5	57.6	57.9	61.6	64.8	***65.4***	64.5	60.2	56.3	54.5	54.2	50.7	48.2	25.5	***65.4***	46.0	24
7	44.2	41.9	36.6	31.7	29.5	23.6	26.0	27.5	33.3	**S**	44.2	48.7	56.0	53.2	52.8	41.4	48.8	44.9	45.1	41.4	28.6	19.9	19.6	15.1	15.1	56.0	37.1	24
8	11.4	13.8	24.5	28.1	28.9	31.7	34.3	33.0	**S**	32.2	32.8	33.3	32.0	34.0	36.9	37.1	39.8	44.9	46.7	40.5	38.9	36.9	35.9	35.1	11.4	46.7	33.2	24
9	34.5	37.8	34.0	30.2	28.1	26.0	23.9	**S**	24.5	26.6	24.6	25.9	26.8	29.3	29.3	31.4	28.4	28.1	26.1	21.9	20.0	22.8	22.8	22.1	20.0	37.8	27.2	24
10	20.6	22.1	20.8	21.5	24.7	27.7	**S**	33.4	37.5	40.0	41.9	41.2	**C**	**C**	**C**	**C**	**C**	38.7	36.9	34.9	30.3	29.2	27.4	26.5	20.6	41.9	30.9	24
11	28.0	26.8	25.0	22.7	18.5	**S**	23.7	31.4	35.2	34.6	35.5	38.4	35.5	35.1	38.7	35.9	35.1	34.3	33.4	31.9	36.2	37.4	25.2	34.9	18.5	38.7	31.9	24
12	35.5	31.7	31.7	30.2	**S**	28.9	32.2	35.1	35.2	36.0	39.8	37.1	34.3	31.4	33.4	36.5	34.3	33.6	35.9	35.9	34.2	25.8	22.8	22.1	22.1	39.8	32.8	24
13	11.3	7.1	11.7	**S**	14.1	18.3	23.0	28.3	29.6	32.7	34.6	36.3	39.1	40.5	40.7	**P**	**R**	42.3	43.1	41.8	32.0	24.5	21.8	23.0	7.1	43.1	28.4	22
14	32.5	27.2	**S**	28.0	33.9	34.5	33.7	32.4	31.7	31.6	38.1	43.4	49.3	51.6	50.1	50.2	49.2	47.8	44.2	41.5	36.6	29.9	30.6	34.5	27.2	51.6	38.4	24
15	32.3	**S**	34.2	31.4	26.9	35.7	37.5	37.2	38.7	41.8	43.1	43.3	44.3	43.3	44.0	44.2	45.2	46.4	48.1	49.5	48.5	45.5	38.4	36.9	26.9	49.5	40.7	24
16	**S**	32.5	30.6	27.8	26.8	21.9	22.1	28.4	33.3	33.4	24.1	40.1	42.7	44.0	45.8	38.8	35.9	35.7	30.2	28.9	29.9	29.5	26.6	**S**	21.9	45.8	32.2	24
17	22.2	19.5	18.0	18.4	17.8	17.4	18.3	18.6	18.3	17.5	18.1	21.5	22.4	30.3	31.8	32.3	32.5	32.3	31.7	31.4	28.1	23.6	**S**	25.3	17.4	32.5	23.8	24
18	24.8	25.9	24.9	23.1	22.8	21.2	20.6	24.1	30.9	35.1	39.0	41.2	40.5	39.1	35.5	36.2	35.9	35.2	34.2	31.4	33.4	**S**	18.4	12.9	12.9	41.2	29.8	24
19	29.3	34.0	28.0	19.1	18.3	23.1	33.7	34.6	37.7	36.2	37.8	38.5	40.6	41.5	42.8	42.1	40.7	42.8	42.8	41.4	**S**	36.8	25.9	19.3	18.3	42.8	34.2	24
20	13.1	15.0	10.8	9.8	6.1	16.0	20.2	32.7	37.4	40.3	43.3	47.2	52.0	53.1	54.3	52.0	50.2	50.1	49.2	**S**	41.1	32.7	23.6	25.3	6.1	54.3	33.7	24
21	21.0	13.8	11.7	10.1	7.0	13.1	28.3	34.2	39.1	48.5	49.6	52.0	52.3	55.1	49.3	46.6	46.6	45.9	**S**	42.7	43.3	36.5	22.5	21.6	7.0	55.1	34.4	24
22	25.9	22.5	21.6	18.7	13.8	23.1	28.9	35.4	41.2	47.0	47.9	48.8	50.5	53.9	53.9	51.1	**P**	**S**	32.6	34.6	38.0	34.5	24.1	21.5	13.8	53.9	35.0	23
23	18.7	30.3	24.9	18.7	14.7	23.0	28.7	35.4	40.1	43.0	45.7	47.5	48.8	48.4	49.0	49.2	**S**	51.4	46.2	34.5	30.2	47.3	48.2	38.2	14.7	51.4	37.5	24
24	32.7	23.9	23.4	23.4	22.4	23.9	32.0	32.3	30.0	37.7	38.5	37.4	36.5	39.7	41.3	**S**	38.2	38.5	35.1	31.7	34.8	32.9	23.9	19.5	19.5	41.3	31.7	24
25	10.7	4.6	13.9	15.7	15.4	14.2	12.9	15.9	17.5	29.2	29.3	30.1	31.9	32.0	**S**	35.2	31.9	32.2	31.7	33.4	32.3	30.3	27.1	21.5	4.6	35.2	23.9	24
26	19.3	9.0	5.0	2.3	**P**	7.1	7.6	26.0	30.6	33.7	36.8	39.4	40.2	**S**	40.4	42.7	42.1	36.8	34.0	34.8	34.5	28.9	28.6	25.4	2.3	42.7	27.5	23
27	19.7	9.2	4.2	8.9	8.7	11.9	13.5	22.8	31.1	33.7	37.1	40.9	**S**	37.5	37.1	39.1	39.4	39.7	39.1	37.2	32.3	19.2	13.3	9.6	4.2	40.9	25.4	24
28	9.1	4.6	7.7	2.9	4.0	15.6	22.0	29.8	44.0	51.3	57.0	**S**	62.2	55.8	54.8	54.3	51.1	46.9	44.6	33.1	29.9	20.6	24.3	14.2	2.9	62.2	32.2	24
29	9.1	4.9	19.3	22.1	21.0	10.5	27.8	28.1	29.6	30.6	**S**	30.3	31.8	32.4	32.9	34.0	34.5	34.2	33.1	31.5	28.4	24.8	23.6	20.3	4.9	34.5	25.9	24
30	23.1	23.7	23.9	22.8	22.7	22.7	22.7	25.3	32.2	**S**	34.8	36.0	35.1	35.7	37.2	37.8	37.2	35.7	34.6	33.9	33.1	33.3	30.9	29.6	22.7	37.8	30.6	24
HOURLY MAX	44.2	41.9	36.6	31.7	33.9	35.7	37.5	37.2	44.0	53.1	57.0	56.5	62.2	57.9	61.6	64.8	65.4	64.5	60.2	59.1	55.5	54.2	50.7	48.2				
HOURLY AVG	23.7	21.9	21.2	20.2	19.7	21.8	24.9	29.3	33.1	36.7	38.6	40.3	42.0	42.9	43.8	43.4	42.5	42.1	40.5	38.1	35.8	32.3	28.3	26.3				

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: 678

MAXIMUM INSTANTANEOUS VALUE: 65.4 PPB @ HOUR(S) 16 ON DAY(S) 6

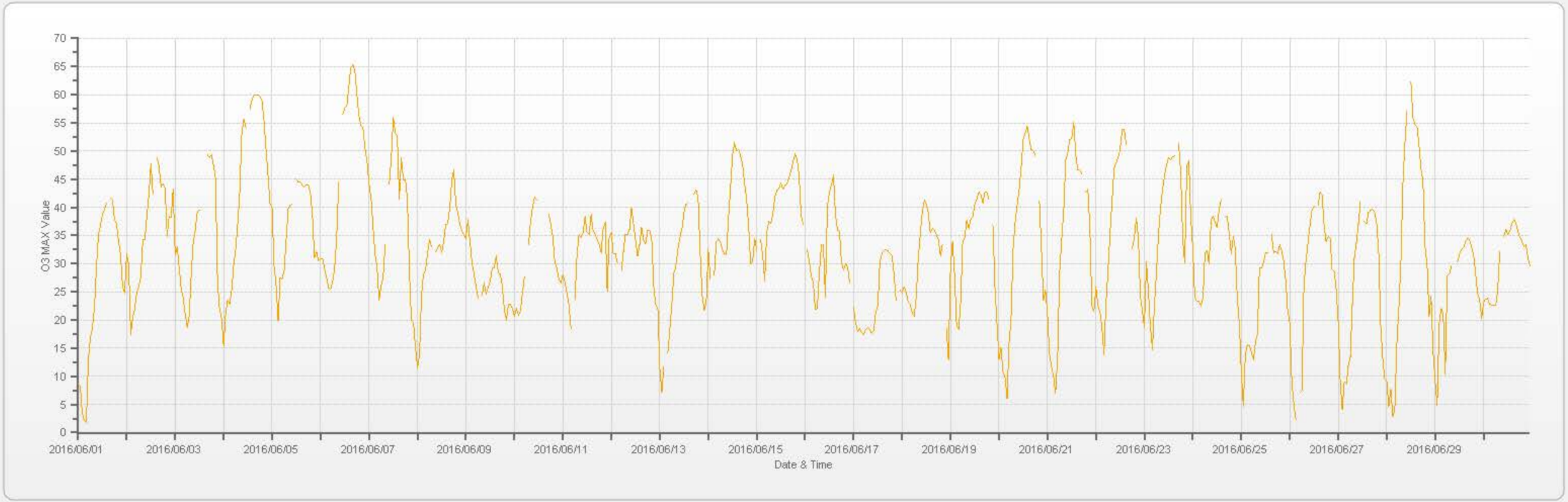
VAR-VARIOUS

IZS CALIBRATION TIME: 31 HRS OPERATIONAL TIME: 714 HRS

MONTHLY CALIBRATION TIME: 5 HRS

STANDARD DEVIATION: 11.88

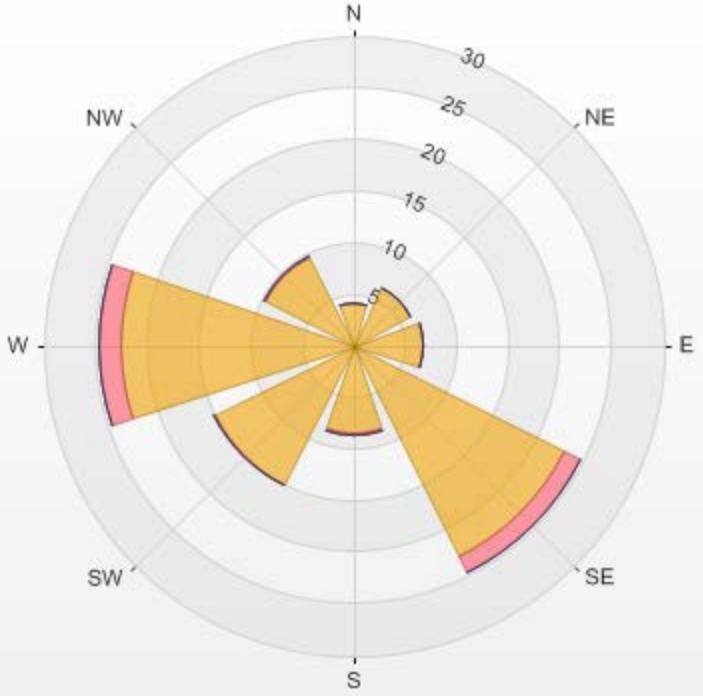
O3 MAX[ppb] Station: LICA COLD LAKE SOUTH Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



Wind: LICA COLD LAKE SOUTH Monitor: O3 [ppb] Monthly: 06/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
Calm: 0.00% Valid Data: 95.14% Calm Avg: 0.00

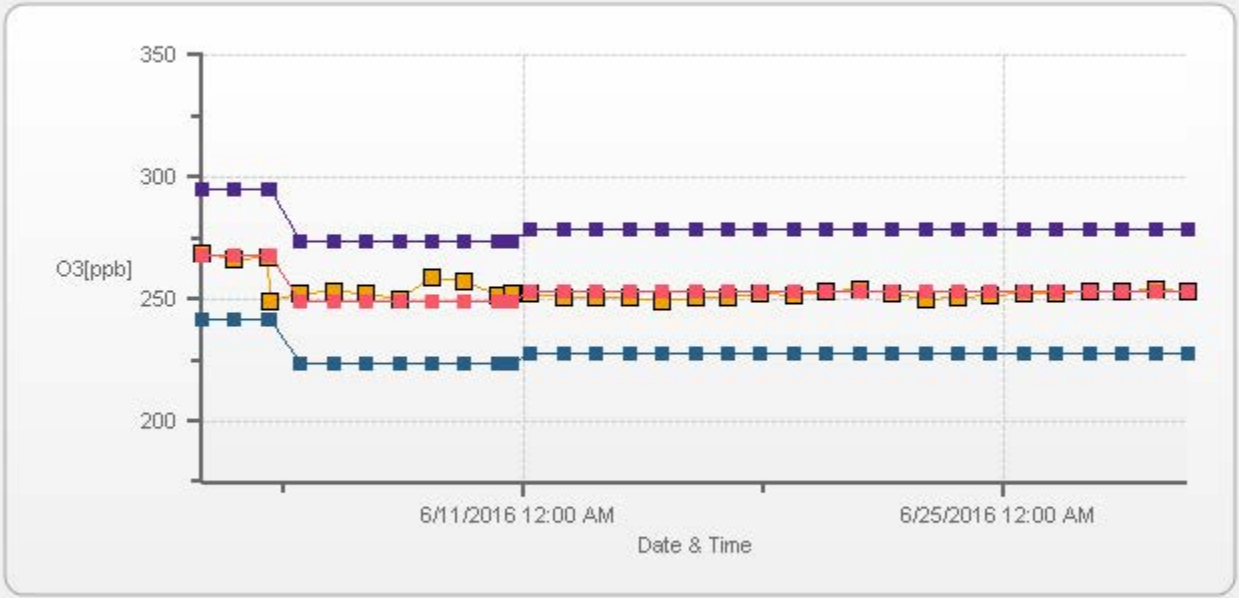
Direction	0.0-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	4.09	0	0	0	4.09
NE	6.28	0	0	0	6.28
E	6.86	0	0	0	6.86
SE	22.77	1.75	0	0	24.52
S	8.47	0.15	0	0	8.62
SW	15.04	0.15	0	0	15.19
W	22.48	2.19	0	0	24.67
NW	9.49	0.29	0	0	9.78
Summary	95.48	4.53	0	0	100

LICA COLD LAKE SOUTH 2016/06/01 12:00 AM - 2016/06/30 11:00 PM Calm: 0.00%



%	Icon	Classes (ppb)	95	0.0-50.0	5	50.0-110.0	0	110.0-210.0	0	>210.0

O3[ppb] Calibration: LICA COLD LAKE SOUTH Monthly: 06/2016 Type: Span



PARTICULATE MATTER 2.5

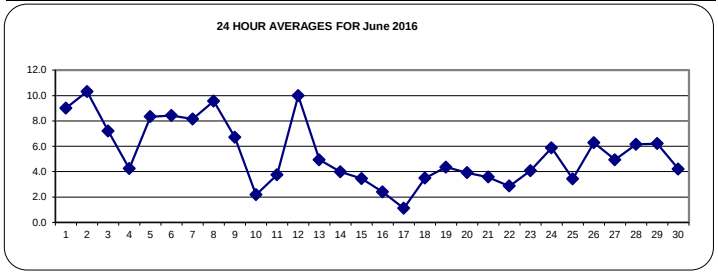
PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM2.5) hourly averages in ug/m3

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	12.4	7.5	12.4	23.4	16.4	7.5	4.9	10.9	0.0	0.0	0.0	4.5	X	3.4	12.2	12.1	3.1	31.5	15.2	0.0	7.4	6.7	9.7	6.1	0.0	31.5	9.0	23
2	4.4	12.7	11.2	5.6	11.0	10.4	11.3	4.8	11.1	18.9	10.1	13.3	8.7	7.6	7.9	3.5	7.0	9.9	12.8	8.3	6.8	33.0	X	6.9	3.5	33.0	***10.3***	23
3	12.0	X	0.0	24.0	15.8	5.0	2.3	0.0	9.4	17.4	11.9	5.4	0.0	18.9	11.4	X	Y	3.0	5.4	0.0	0.0	1.0	8.4	0.0	0.0	24.0	7.2	21
4	2.9	7.5	5.9	4.4	2.9	5.5	6.9	0.0	1.9	1.0	4.4	3.4	1.4	8.4	5.9	6.4	2.9	4.4	6.4	4.9	1.9	1.9	3.9	6.9	0.0	8.4	4.3	24
5	6.9	12.4	10.9	5.4	8.9	3.9	0.4	14.5	12.9	0.0	X	5.9	0.0	0.4	1.4	1.4	2.9	0.0	3.4	2.4	1.9	8.4	***66.0***	21.4	0.0	***66.0***	8.3	23
6	27.4	13.9	8.9	3.9	4.4	7.5	0.0	6.9	4.0	0.0	7.9	6.9	7.5	7.5	5.5	7.5	5.9	6.4	6.4	8.4	8.4	10.9	16.4	20.0	0.0	27.4	8.4	24
7	9.9	8.4	8.9	11.9	2.9	1.0	5.4	3.4	3.9	12.0	10.9	3.9	8.4	1.9	8.9	11.4	14.0	9.4	8.9	5.5	8.4	9.4	13.5	13.5	1.0	14.0	8.2	24
8	18.0	11.4	9.4	10.4	9.4	8.4	12.0	10.4	4.4	10.4	6.9	9.4	9.4	12.4	8.9	5.9	9.4	7.9	6.9	14.0	6.4	5.9	8.9	13.0	4.4	18.0	9.6	24
9	7.9	3.4	3.9	13.9	9.4	8.4	14.4	17.0	9.4	11.9	10.9	7.9	5.9	2.4	4.4	7.9	0.0	2.9	4.9	4.4	4.9	1.9	1.4	1.9	0.0	17.0	6.7	24
10	3.4	3.4	1.0	0.0	1.9	2.9	0.4	2.4	1.0	6.4	4.4	1.9	0.0	X	C	0.0	X	X	3.4	X	X	X	X	2.4	0.0	6.4	2.2	17
11	0.0	8.9	X	X	0.4	X	X	X	0.0	0.0	19.2	0.0	6.4	0.0	X	X	X	X	7.2	4.1	0.0	X	6.4	0.0	0.0	19.2	3.8	14
12	X	X	X	X	8.4	11.2	33.6	X	27.4	0.0	0.0	12.1	X	X	X	13.0	0.0	2.9	1.3	X	X	X	X	X	0.0	33.6	10.0	11
13	0.0	X	14.5	1.3	X	0.0	5.4	X	13.9	23.4	X	1.0	X	X	C	C	C	0.0	X	1.1	3.4	0.8	1.9	2.4	0.0	23.4	4.9	17
14	1.2	2.1	4.5	0.0	1.4	2.0	0.4	0.0	4.4	3.8	X	3.6	7.4	7.7	8.9	14.9	3.5	0.0	3.4	2.3	7.1	5.8	5.4	1.8	0.0	14.9	4.0	23
15	2.4	1.6	7.5	2.3	1.9	0.0	0.0	0.3	0.0	0.4	0.0	5.0	9.3	7.0	6.9	6.4	0.6	4.9	6.9	1.4	8.4	5.4	2.4	1.9	0.0	9.3	3.5	24
16	7.5	5.9	2.9	2.4	0.0	2.4	1.4	X	2.9	7.5	1.4	4.9	2.4	1.4	1.9	0.0	6.4	0.0	0.0	0.4	1.0	1.0	1.4	0.0	0.0	7.5	2.4	23
17	2.4	1.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.4	2.9	0.0	0.0	8.4	0.0	X	1.4	3.4	2.4	0.0	1.4	0.0	8.4	1.1	23
18	2.4	0.0	0.0	1.4	2.0	0.0	1.0	0.0	0.4	0.0	0.0	7.9	8.5	5.9	4.4	0.0	6.4	3.4	7.9	9.4	0.0	7.9	10.4	4.4	0.0	10.4	3.5	24
19	1.9	0.0	3.4	1.9	1.4	1.4	1.0	5.4	6.4	0.0	8.9	4.4	4.9	3.9	6.4	5.4	10.4	13.0	5.4	7.5	0.4	5.9	2.4	2.9	0.0	13.0	4.4	24
20	3.9	2.9	5.4	3.4	4.4	1.4	1.9	0.0	5.9	3.4	1.9	3.4	7.5	4.9	2.9	3.4	4.9	4.9	5.5	9.9	1.4	4.4	3.4	2.9	0.0	9.9	3.9	24
21	3.4	2.9	0.4	7.5	3.9	1.9	2.4	X	4.9	6.4	0.0	2.4	3.9	0.0	6.4	4.9	5.9	3.4	0.0	7.9	2.9	1.9	4.4	4.4	0.0	7.9	3.6	23
22	1.4	1.0	1.0	1.4	0.0	0.0	X	4.4	7.5	3.9	3.4	4.4	2.9	2.4	5.4	1.4	X	0.0	6.9	1.0	X	4.9	2.9	3.9	0.0	7.5	2.9	21
23	6.9	3.4	6.4	6.4	4.4	0.4	5.4	4.9	1.4	8.9	1.0	6.4	3.9	1.9	2.4	2.4	7.9	4.4	5.9	2.4	0.0	1.4	8.9	0.4	0.0	8.9	4.1	24
24	6.4	3.4	6.9	7.9	9.4	8.9	2.0	2.9	3.9	3.9	9.4	4.4	5.9	6.4	7.9	6.4	4.9	11.4	8.4	0.0	1.4	6.9	4.4	7.5	0.0	11.4	5.9	24
25	2.9	4.4	4.4	2.9	2.9	5.9	6.4	3.9	1.9	4.4	2.9	0.0	3.4	3.9	4.4	1.4	3.4	X	2.4	3.4	2.9	5.9	2.0	2.9	0.0	6.4	3.4	23
26	4.9	1.4	4.9	4.4	0.0	0.0	1.9	10.4	5.4	6.9	4.4	10.4	7.5	6.4	7.5	10.9	9.4	9.9	6.4	12.4	7.9	2.9	7.9	6.9	0.0	12.4	6.3	24
27	2.9	2.4	3.9	7.9	2.4	6.4	5.9	10.4	7.9	2.9	6.4	4.9	1.9	4.4	2.9	3.9	3.4	4.4	3.9	2.9	5.4	10.4	5.4	5.4	1.9	10.4	4.9	24
28	1.9	2.4	3.4	1.4	2.9	1.4	5.9	8.9	6.9	6.9	7.9	4.9	8.9	8.9	12.4	7.5	8.4	8.9	7.9	5.4	6.4	5.9	5.9	6.4	1.4	12.4	6.2	24
29	4.9	5.9	4.9	9.4	10.9	7.5	12.0	0.0	6.9	6.4	4.9	4.9	8.4	6.4	8.5	6.9	8.4	9.4	2.9	6.4	0.0	8.4	3.9	1.0	0.0	12.0	6.2	24
30	1.9	0.0	0.0	1.0	2.4	1.4	0.0	12.0	3.9	2.9	5.9	1.9	5.9	C	C	0.4	6.9	8.4	6.9	5.9	7.5	3.4	7.5	6.4	0.0	12.0	4.2	24
HOURLY MAX	27.4	13.9	14.5	24.0	16.4	11.2	33.6	17.0	27.4	23.4	19.2	13.3	9.4	18.9	12.4	14.9	14.0	31.5	15.2	14.0	8.4	33.0	66.0	21.4				
HOURLY AVG	5.7	4.8	5.2	5.9	4.9	3.9	5.2	5.4	5.7	5.7	5.4	5.0	5.2	5.3	6.2	5.4	5.8	6.1	5.8	4.8	3.9	6.1	8.0	5.3				

STATUS FLAG CODES

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

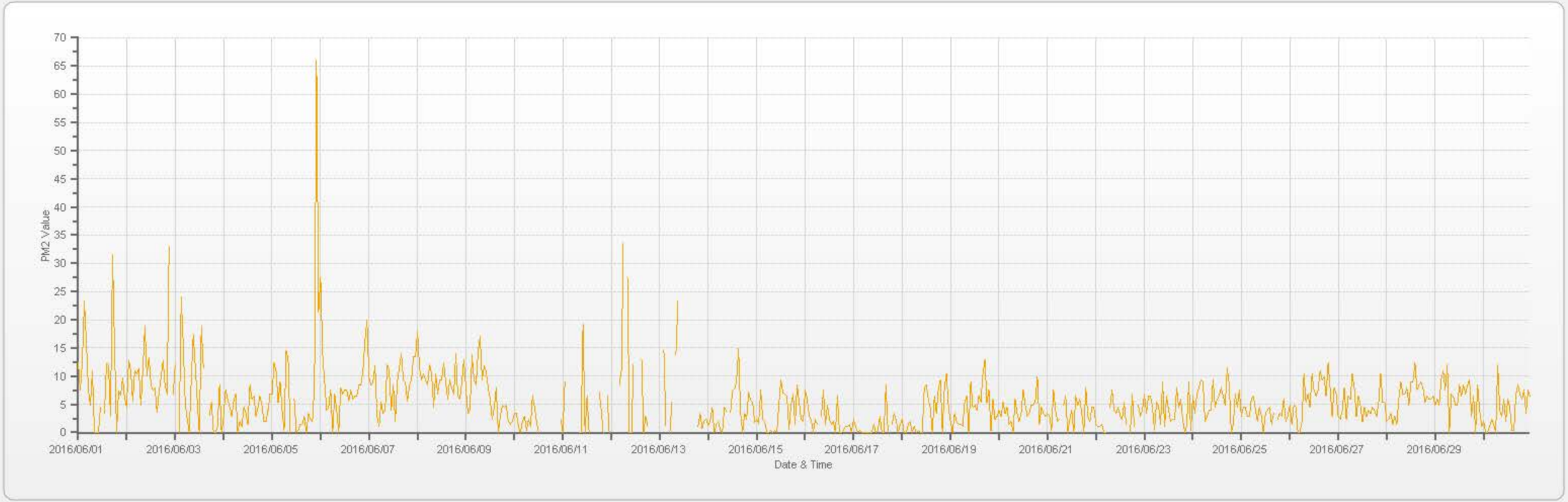


OBJECTIVE LIMIT: **ALBERTA ENVIRONMENT:** 1-HR 80 ug/m3 | 24-HR 30 ug/m3

MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:			0				
NUMBER OF 24-HR EXCEEDENCES:			0				
NUMBER OF NON-ZERO READINGS:			579				
MINIMUM 1-HR AVERAGE	0.0	ug/m3	@ HOUR(S)	VAR	ON DAY(S)	VAR	
MAXIMUM 1-HR AVERAGE:	66.0	ug/m3	@ HOUR(S)	22	ON DAY(S)	5	
MAXIMUM 24-HR AVERAGE:	10.3	ug/m3			ON DAY(S)	2	
					VAR-VARIOUS		
			OPERATIONAL TIME:			669	HRS
MONTHLY CALIBRATION TIME:	6	HRS	AMD OPERATION UPTIME:			92.9	%
STANDARD DEVIATION:	5.29		MONTHLY AVERAGE:			5.4	ug/m3

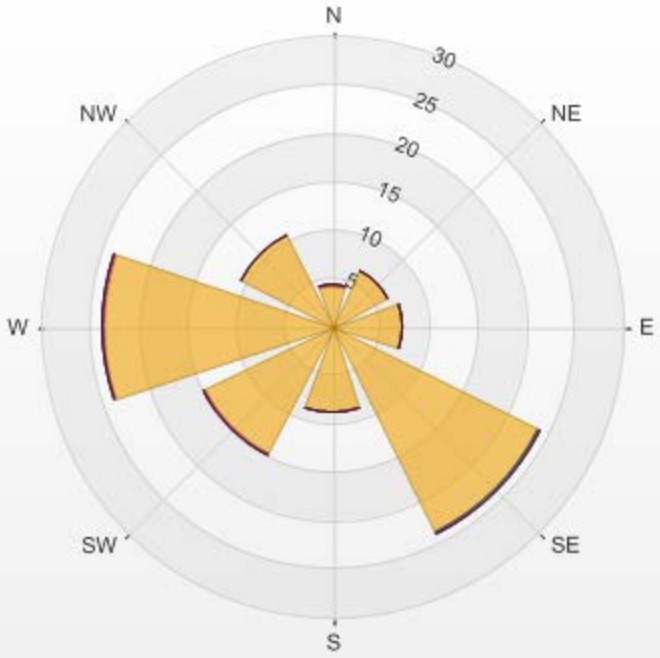
PM2[ug/m3(L)] Station: LICA COLD LAKE SOUTH Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



Wind: LICA COLD LAKE SOUTH Monitor: PM2 [ug/m3(L)] Monthly: 06/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
Calm: 0.00% Valid Data: 92.36% 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	4.21	0.15	0	0	0	0	4.36
NE	6.47	0	0	0	0	0	6.47
E	7.22	0	0	0	0	0	7.22
SE	23.76	0	0.15	0	0	0	23.91
S	8.87	0	0	0	0	0	8.87
SW	14.74	0.15	0	0	0	0	14.89
W	23.61	0.15	0	0	0	0	23.76
NW	10.53	0	0	0	0	0	10.53
Summary	99.41	0.45	0.15	0	0	0	100

LICA COLD LAKE SOUTH 2016/06/01 12:00 AM - 2016/06/30 11:00 PM Calm: 0.00%



%	Icon	Classes (ug/m3(L))									
99		0.0-30.0	0	30.0-60.0	0	60.0-80.0	0	80.0-120.0	0	120.0-240.0	0 >240.0

WIND SPEED

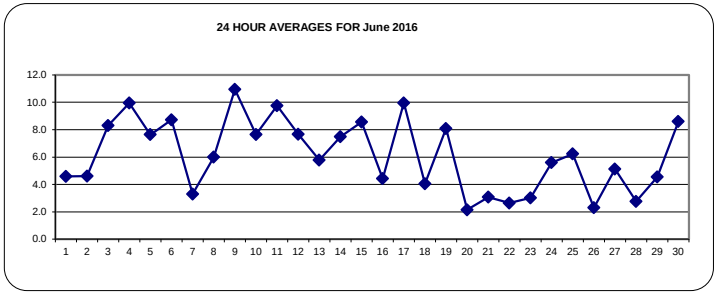
WIND SPEED (WS) hourly averages in km/hr

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	0.3	0.3	0.7	0.7	0.6	0.4	2.7	3.1	5.9	7.2	6.9	7.8	8.1	10.2	10.4	9.9	5.1	5.1	2.9	7.3	4.4	4.0	2.6	3.2	0.3	10.4	4.6	24
2	2.6	2.7	2.7	4.7	5.5	6.4	5.2	4.2	4.9	4.3	3.9	2.2	5.7	5.5	5.9	2.8	4.7	6.2	5.6	3.1	2.8	11.1	6.2	1.7	1.7	11.1	4.6	24
3	1.5	6.0	8.1	7.0	6.8	6.1	6.4	6.1	8.2	9.8	10.4	13.2	13.2	13.0	14.1	14.4	15.1	13.6	11.1	6.3	2.8	2.8	2.4	0.8	0.8	15.1	8.3	24
4	1.6	3.1	4.0	3.2	4.2	7.7	8.7	10.3	13.5	14.2	16.3	16.4	16.0	16.1	17.2	16.2	15.5	13.7	12.1	9.7	5.9	3.9	4.5	4.8	1.6	17.2	10.0	24
5	3.7	2.8	1.8	1.7	4.0	5.2	3.9	4.6	9.3	10.6	11.8	15.4	14.4	13.8	14.1	11.2	9.3	9.8	7.0	4.3	1.4	6.9	8.1	8.1	1.4	15.4	7.6	24
6	7.9	8.1	9.3	7.0	4.4	4.7	5.0	5.1	6.0	7.8	9.1	11.2	12.1	12.6	12.1	13.4	13.3	11.7	10.8	9.8	8.6	6.7	8.0	4.7	4.4	13.4	8.7	24
7	3.3	2.1	5.5	6.0	1.8	1.5	2.0	2.7	4.5	3.8	4.6	3.9	4.5	5.4	5.0	5.5	5.4	3.7	2.3	2.4	1.1	0.8	0.6	0.7	0.6	6.0	3.3	24
8	0.7	1.2	1.9	2.1	2.5	4.7	6.4	4.1	2.9	5.2	6.3	5.5	7.0	9.5	10.0	10.7	6.6	7.4	4.4	7.8	9.4	10.5	8.2	8.8	0.7	10.7	6.0	24
9	6.6	10.6	13.1	11.6	8.6	7.2	7.5	6.1	3.2	8.0	10.7	12.6	13.8	14.5	13.1	15.4	16.4	12.4	13.5	13.1	10.7	10.1	11.8	12.1	3.2	16.4	***10.9***	24
10	12.0	9.4	11.4	7.8	7.5	10.1	9.3	11.3	10.9	11.7	11.2	9.0	6.7	4.4	6.8	5.5	6.9	7.6	5.6	4.9	3.0	4.4	3.3	2.9	2.9	12.0	7.7	24
11	5.9	6.2	3.6	3.1	***0.2***	5.8	7.1	10.6	10.0	13.7	13.5	11.7	11.1	12.6	15.2	16.7	***18.2***	14.9	16.9	11.8	4.7	8.7	5.8	6.1	***0.2***	***18.2***	9.8	24
12	4.6	2.8	4.8	6.6	6.2	7.3	8.4	11.7	9.1	7.8	10.4	10.9	9.8	11.4	13.7	10.5	13.4	12.6	7.6	5.5	3.9	2.5	1.7	0.7	0.7	13.7	7.7	24
13	0.5	0.9	2.1	2.2	2.3	3.6	6.3	8.7	10.3	10.0	11.8	9.7	10.6	11.3	11.8	9.9	8.1	6.3	5.1	1.6	1.7	1.1	1.4	1.3	0.5	11.8	5.8	24
14	3.1	0.9	2.3	2.2	2.1	6.4	10.2	13.0	13.5	9.9	11.0	10.5	9.7	13.0	14.5	13.7	7.1	9.2	6.0	4.9	2.2	2.3	3.9	8.2	0.9	14.5	7.5	24
15	8.7	8.5	8.6	8.2	6.4	8.0	8.8	9.3	10.8	10.0	9.6	9.4	9.1	10.1	10.2	11.6	10.7	9.7	7.0	6.1	3.7	6.4	7.2	7.3	3.7	11.6	8.6	24
16	5.9	4.5	3.8	3.2	1.5	3.2	4.7	4.0	1.8	1.5	1.3	3.2	7.4	7.2	3.2	7.0	4.3	5.1	5.3	4.1	4.7	5.6	7.7	5.8	1.3	7.7	4.4	24
17	6.9	8.0	7.0	8.4	10.2	10.3	11.6	13.1	12.5	11.7	13.5	13.4	15.0	14.7	13.3	15.5	14.0	11.2	8.8	6.1	3.0	3.6	3.2	4.0	3.0	15.5	10.0	24
18	2.0	2.3	1.5	4.7	4.4	4.7	4.9	3.7	5.1	4.8	5.7	6.7	6.0	8.5	7.3	5.7	6.0	1.6	4.8	1.4	3.4	**0.2**	1.0	0.5	***0.2***	8.5	4.0	24
19	6.1	6.3	0.8	3.3	4.7	5.3	8.4	9.8	8.2	9.0	10.4	10.8	14.5	15.0	15.6	13.4	10.1	11.0	12.3	9.5	5.4	1.8	1.9	0.5	0.5	15.6	8.1	24
20	0.8	0.7	0.6	0.4	0.4	1.1	1.1	1.2	2.8	3.8	4.4	4.2	4.7	3.7	3.8	3.4	1.6	3.1	3.5	1.9	1.0	0.7	1.0	1.6	0.4	4.7	2.1	24
21	0.3	0.6	0.6	0.6	0.3	1.4	1.8	5.1	5.7	6.9	7.2	6.5	5.4	3.7	2.3	2.1	6.3	4.5	3.5	4.7	2.0	0.5	0.9	0.7	0.3	7.2	3.1	24
22	1.2	0.6	1.4	0.9	1.0	0.8	3.5	2.0	3.8	2.8	3.5	3.0	4.0	4.9	4.1	5.0	7.0	2.9	0.4	1.9	3.8	1.8	1.3	1.8	0.4	7.0	2.6	24
23	1.5	1.6	0.8	3.8	1.6	1.8	2.2	2.2	2.9	4.3	3.5	5.4	5.4	4.2	2.7	4.1	4.3	3.8	1.2	0.8	0.4	3.3	6.5	3.9	0.4	6.5	3.0	24
24	0.3	1.8	1.0	2.6	3.1	5.0	9.3	7.6	9.1	7.4	7.4	7.3	11.0	9.4	8.1	7.7	6.2	6.5	4.4	4.5	6.8	3.3	1.1	3.2	0.3	11.0	5.6	24
25	0.6	1.4	2.1	3.7	4.1	4.7	3.6	6.1	7.8	9.3	11.0	10.2	10.3	11.9	10.8	7.8	7.8	7.4	7.5	6.5	4.8	5.0	2.4	2.7	0.6	11.9	6.2	24
26	**0.2**	0.4	0.8	0.8	0.7	2.3	1.6	2.3	2.3	2.8	1.8	2.8	0.7	0.7	3.8	3.5	2.5	4.6	4.5	2.1	3.9	3.2	3.0	3.9	***0.2***	4.6	2.3	24
27	0.7	0.9	0.9	2.2	2.6	3.4	4.4	5.9	4.2	5.0	7.5	7.6	8.2	9.8	9.9	10.4	11.4	9.3	8.2	4.8	3.6	0.8	0.6	0.6	0.6	11.4	5.1	24
28	0.3	1.6	1.5	0.3	0.5	0.9	2.9	3.2	4.4	5.7	5.4	5.8	6.2	6.4	1.7	4.6	4.8	2.6	0.9	1.9	1.7	1.7	1.1	***0.2***	***0.2***	6.4	2.8	24
29	0.3	0.5	2.5	4.5	1.8	0.5	3.0	6.0	8.0	8.8	8.7	7.4	6.0	5.5	2.5	5.4	5.5	4.9	5.8	7.1	4.3	4.8	2.9	2.3	0.3	8.8	4.5	24
30	2.4	3.8	4.0	3.9	4.3	9.3	9.8	7.6	9.5	10.6	11.3	13.4	14.1	13.3	14.6	14.0	13.4	12.0	9.1	5.5	4.7	4.2	6.0	5.4	2.4	14.6	8.6	24
HOURLY MAX	12.0	10.6	13.1	11.6	10.2	10.3	11.6	13.1	13.5	14.2	16.3	16.4	16.0	16.1	17.2	16.7	18.2	14.9	16.9	13.1	10.7	11.1	11.8	12.1				
HOURLY AVG	3.1	3.4	3.6	3.9	3.5	4.7	5.7	6.4	7.0	7.6	8.3	8.6	9.0	9.4	9.3	9.2	8.7	7.8	6.6	5.4	4.0	4.1	3.9	3.6				

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

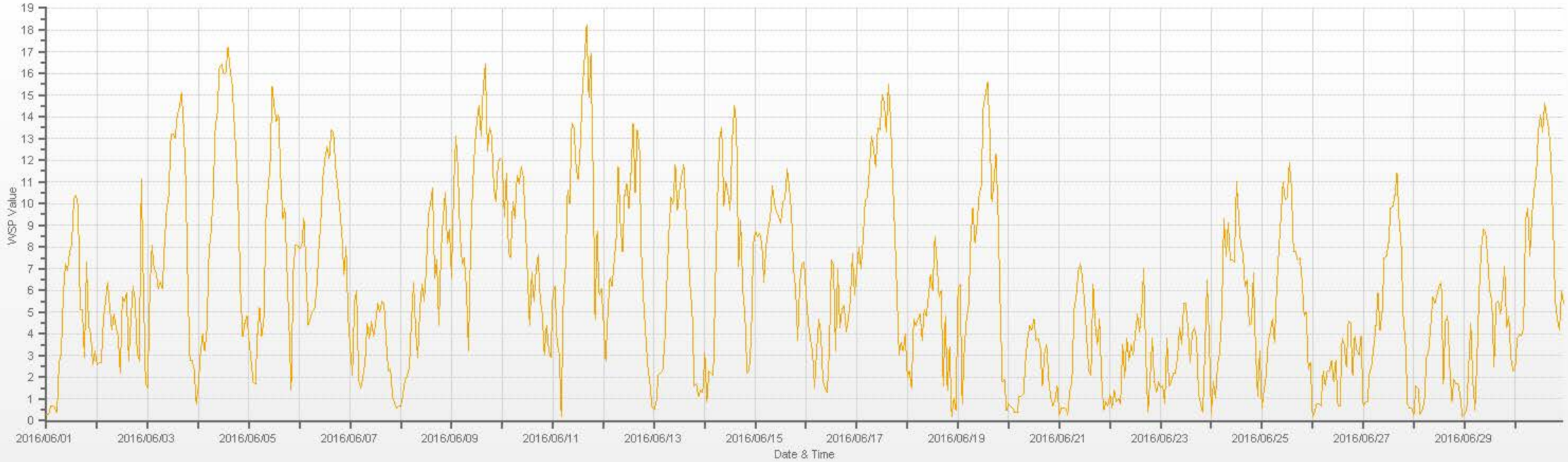


LAST CALIBRATION:	April 1, 2015
DECLINATION :	MAGNETIC DECLINATION 19 DEGREE EAST

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:			720					
MINIMUM 1-HR AVERAGE		0.2	KPH	@ HOUR(S)	VAR	ON DAY(S)	VAR	
MAXIMUM 1-HR AVERAGE:		18.2	KPH	@ HOUR(S)	16	ON DAY(S)	11	
MAXIMUM 24-HR AVERAGE:		10.9	KPH			ON DAY(S)	9	
						VAR-VARIOUS		
				OPERATIONAL TIME:			720	HRS
MONTHLY CALIBRATION TIME:	0	HRS		AMD OPERATION UPTIME:			100.0	%
STANDARD DEVIATION:	4.11			MONTHLY AVERAGE:			6.1	KPH

WSP[kph] Station: LICA COLD LAKE SOUTH Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



VECTOR WIND SPEED MAX instantaneous maximum in km/hr

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	2.7	2.9	1.7	1.6	1.9	3.2	7.2	6.8	10.0	12.0	16.7	16.0	17.4	20.4	18.7	15.3	10.0	19.0	10.3	12.9	9.0	7.7	5.6	10.8	1.6	20.4	10.0	24
2	6.3	4.8	6.2	7.4	7.2	8.5	9.0	8.3	11.4	9.6	10.1	11.1	14.4	10.2	8.9	9.3	9.6	8.8	8.9	6.7	17.8	20.4	17.1	9.7	4.8	20.4	10.1	24
3	8.7	11.2	11.8	12.8	8.9	11.2	10.0	11.7	16.3	17.3	17.1	21.1	21.4	18.6	27.2	23.2	21.3	18.4	21.6	13.5	5.3	3.8	3.2	2.8	2.8	27.2	14.1	24
4	2.9	4.7	6.3	6.0	8.5	13.1	14.5	16.9	20.3	22.6	26.9	25.3	24.3	23.6	***30.4***	25.2	24.6	20.5	18.4	15.2	9.6	6.4	5.8	6.1	2.9	***30.4***	15.8	24
5	6.4	4.7	4.2	3.6	7.0	7.4	7.1	11.0	15.3	17.2	18.2	27.1	24.9	26.3	22.9	21.6	16.6	17.9	12.9	7.7	6.4	11.8	12.4	10.1	3.6	27.1	13.4	24
6	12.5	11.3	12.1	12.2	7.0	7.0	8.3	8.8	11.4	14.9	17.9	18.7	18.9	20.2	20.5	23.0	22.3	18.9	14.4	13.7	14.2	11.2	11.2	9.8	7.0	23.0	14.2	24
7	6.5	6.2	9.1	10.5	9.1	6.1	6.2	6.8	8.6	10.0	8.9	9.8	12.7	12.1	10.5	11.7	10.0	6.7	6.1	4.0	2.8	2.3	2.3	5.7	2.3	12.7	7.7	24
8	3.8	3.9	4.6	3.7	4.7	8.3	10.3	7.1	4.8	11.1	9.5	12.2	12.8	16.3	16.3	15.3	13.1	18.6	14.1	15.2	17.0	16.3	16.1	15.4	3.7	18.6	11.3	24
9	10.6	21.3	20.8	19.5	19.0	13.3	13.0	12.4	9.8	13.6	21.5	21.9	23.5	21.9	21.3	24.2	27.0	19.4	22.2	21.0	15.5	18.9	18.3	18.6	9.8	27.0	***18.7***	24
10	17.5	17.5	16.6	15.0	11.3	17.2	15.6	18.8	19.8	18.9	19.5	14.8	11.9	13.0	14.5	10.5	11.2	12.7	11.6	7.9	4.7	6.2	5.1	4.9	4.7	19.8	13.2	24
11	9.2	8.8	7.9	6.7	2.8	10.8	12.2	20.3	15.1	24.7	20.8	19.8	19.1	17.1	25.1	28.7	27.4	23.5	26.8	22.6	10.8	12.6	13.8	11.6	2.8	28.7	16.6	24
12	10.3	9.8	8.4	11.8	9.7	12.1	15.2	18.5	20.1	14.6	17.5	18.2	17.2	19.0	22.4	17.9	21.4	21.4	13.9	11.4	18.0	7.6	4.3	3.2	3.2	22.4	14.3	24
13	2.4	2.8	3.5	4.4	5.3	6.7	12.8	16.0	17.0	19.1	20.1	20.2	15.8	19.0	22.3	**P**	**R**	13.6	10.6	6.1	3.4	2.4	2.2	5.4	2.2	22.3	10.5	22
14	8.5	4.2	4.0	4.2	8.0	12.5	15.7	21.4	21.1	16.1	20.4	15.8	19.4	20.9	22.1	23.1	15.9	15.3	10.5	9.3	6.8	6.8	7.1	14.6	4.0	23.1	13.5	24
15	14.4	13.8	12.7	14.1	13.6	17.1	16.5	18.8	20.2	19.5	16.3	18.9	22.6	19.1	21.6	22.6	21.0	20.9	17.3	11.5	7.2	9.6	9.0	11.0	7.2	22.6	16.2	24
16	8.8	6.9	7.3	6.6	5.3	10.8	9.4	7.3	7.5	7.3	8.1	10.3	17.4	12.2	12.5	12.1	12.6	11.9	9.7	9.3	8.9	9.7	12.5	11.4	5.3	17.4	9.8	24
17	15.4	13.6	11.8	17.0	16.0	19.8	21.4	22.8	19.6	18.3	20.4	25.7	23.9	23.5	27.2	23.0	19.6	21.4	13.4	12.9	5.7	6.0	7.7	7.5	5.7	27.2	17.2	24
18	4.3	3.9	16.1	16.2	8.8	9.3	8.9	8.1	10.0	11.3	14.9	13.1	12.4	16.5	14.1	11.5	10.9	9.9	9.0	7.7	8.7	3.5	3.4	3.3	3.3	16.5	9.8	24
19	20.9	18.6	4.7	4.9	8.0	8.6	17.4	15.0	14.6	19.9	19.0	18.1	22.7	26.5	24.8	21.0	18.8	20.3	22.7	13.7	9.6	4.1	3.6	2.8	2.8	26.5	15.0	24
20	2.5	2.5	2.8	2.1	2.2	3.1	3.4	5.8	8.8	9.8	12.9	12.9	14.5	10.2	11.3	9.8	9.2	9.3	6.6	4.8	2.3	2.6	3.8	3.4	2.1	14.5	6.5	24
21	2.2	2.3	1.8	2.1	2.0	3.9	4.8	9.6	9.6	15.1	14.8	16.2	12.2	13.2	10.2	6.9	16.6	10.0	7.1	11.2	6.3	3.2	4.1	6.2	1.8	16.6	8.0	24
22	5.0	4.2	6.5	3.9	2.5	6.6	7.0	8.9	8.4	7.3	10.2	11.7	13.1	14.3	10.0	10.6	**P**	15.4	7.5	12.3	8.8	9.0	4.4	6.4	2.5	15.4	8.4	23
23	6.8	9.9	9.6	8.6	5.1	4.3	5.5	5.6	7.0	10.4	8.0	11.7	12.3	10.5	9.9	10.2	10.8	7.5	3.4	2.7	3.8	15.4	17.9	8.7	2.7	17.9	8.6	24
24	4.7	5.6	5.1	5.5	6.6	11.8	13.4	13.9	13.1	15.1	14.1	14.2	17.2	17.5	16.3	13.4	10.2	10.6	10.8	7.8	13.2	6.4	4.5	6.5	4.5	17.5	10.7	24
25	3.2	2.7	4.5	5.9	6.2	7.9	6.2	11.0	10.9	17.7	18.5	19.6	17.9	19.3	18.2	21.2	13.4	13.4	14.5	10.9	8.6	6.5	5.0	4.6	2.7	21.2	11.2	24
26	3.4	2.4	3.0	3.4	**P**	6.0	4.8	5.5	7.1	8.5	10.1	9.4	6.2	8.2	10.2	7.5	5.9	6.9	5.5	19.8	8.2	6.0	5.7	7.3	2.4	19.8	7.0	23
27	4.0	2.8	1.7	4.6	4.4	5.5	8.4	11.0	8.6	9.7	11.3	14.7	14.4	17.0	18.6	20.7	18.1	15.8	14.1	9.1	4.9	2.8	1.4	2.4	1.4	20.7	9.4	24
28	5.7	2.9	4.2	1.8	1.7	3.5	4.9	6.6	8.0	10.2	10.5	11.9	12.8	18.5	12.5	24.4	11.6	9.9	4.2	6.4	7.1	8.5	4.6	3.7	1.7	24.4	8.2	24
29	5.3	2.6	6.5	6.7	4.0	3.2	11.7	12.2	15.6	17.0	15.6	15.3	16.0	13.6	9.1	10.9	12.6	10.9	12.1	10.1	6.4	7.3	4.2	5.0	2.6	17.0	9.7	24
30	5.4	6.4	7.9	6.5	10.0	14.4	14.3	13.0	14.2	16.5	19.5	22.5	22.0	19.9	24.5	22.6	21.0	16.9	12.1	9.6	7.2	7.4	8.5	8.5	5.4	24.5	13.8	24
HOURLY MAX	20.9	21.3	20.8	19.5	19.0	19.8	21.4	22.8	21.1	24.7	26.9	27.1	24.9	26.5	30.4	28.7	27.4	23.5	26.8	22.6	18.0	20.4	18.3	18.6				
HOURLY AVG	7.3	7.2	7.4	7.6	7.1	9.1	10.5	12.0	12.8	14.5	15.6	16.6	17.0	17.3	17.8	17.2	15.8	14.9	12.4	10.9	8.6	8.1	7.5	7.6				

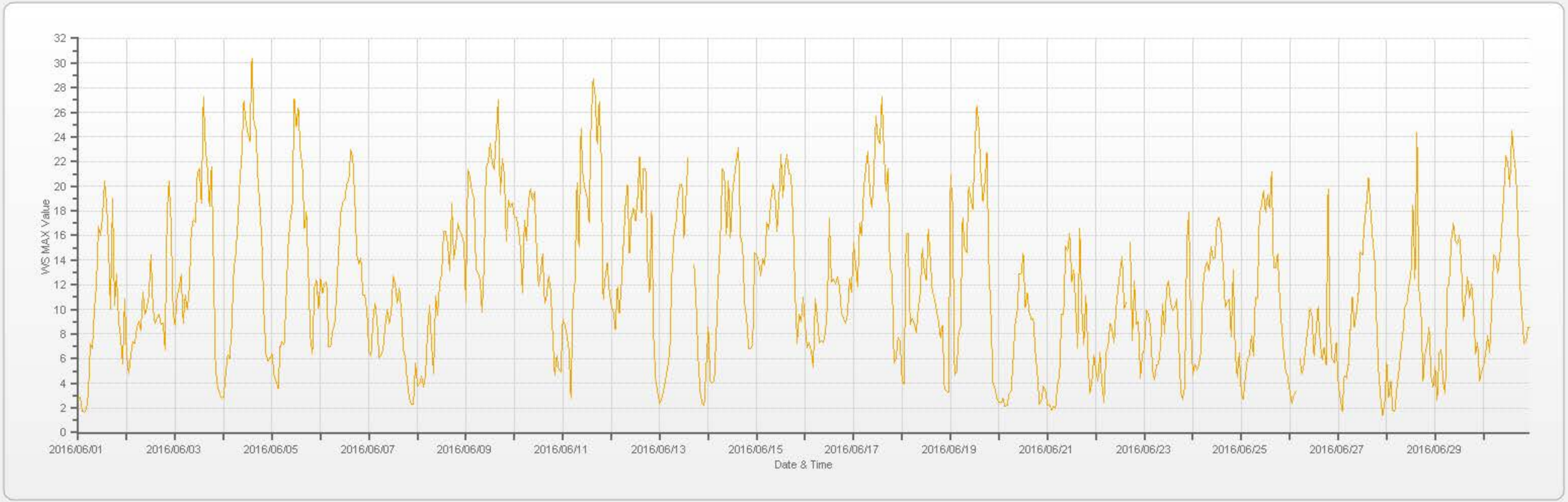
STATUS FLAG CODES

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

MAXIMUM INSTANTANEOUS VALUE:	30.4	KPH	@ HOUR(S)	14	ON DAY(S)	4
				VAR-VARIOUS		
OPERATIONAL TIME:					716	HRS

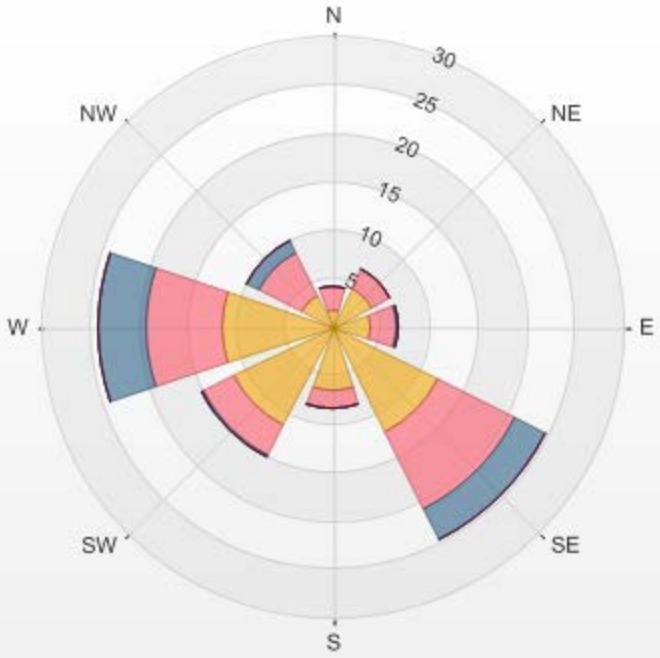
WS MAX[kph] Station: LICA COLD LAKE SOUTH Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



Wind: LICA COLD LAKE SOUTH Monitor: WSP [kph] Monthly: 06/2016 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	1.81	2.36	0	0	0	0	4.17
NE	4.44	2.22	0	0	0	0	6.66
E	3.89	2.78	0.14	0	0	0	6.81
SE	12.22	8.89	3.33	0	0	0	24.44
S	6.53	1.94	0	0	0	0	8.47
SW	11.39	3.47	0.28	0	0	0	15.14
W	11.53	7.78	5	0	0	0	24.31
NW	3.61	4.86	1.53	0	0	0	10
Summary	55.42	34.3	10.28	0	0	0	100

LICA COLD LAKE SOUTH 2016/06/01 12:00 AM - 2016/06/30 11:00 PM Calm: 0.00%



%	Icon	Classes (kph)									
34		6.0-12.0	10		12.0-20.0	0		20.0-29.0	0		29.0-39.0	0		>39.0
55		0.0-6.0												

WIND DIRECTION

WIND DIRECTION (WD) hourly averages

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

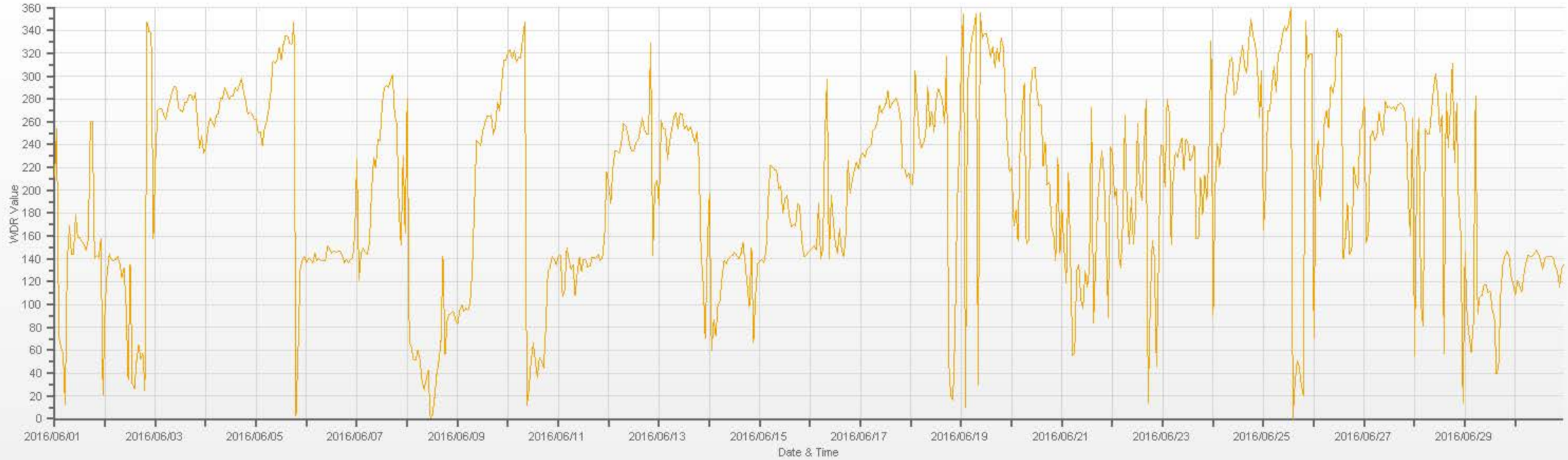
STATUS FLAG CODES

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

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

MONTHLY CALIBRATION TIME:	0	HRS	OPERATIONAL TIME:	720	HRS
STANDARD DEVIATION:	84.79		AMD OPERATION UPTIME:	100.0	%

WDR[Deg] Station: LICA COLD LAKE SOUTH Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



STANDARD DEVIATION WIND DIRECTION

STANDARD DEVIATION WIND DIRECTION (STDWD) hourly averages in degrees

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	
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	RDGS.
DAY																									
1	61	47	43	49	44	76	49	37	26	25	38	40	38	34	29	23	33	27	40	21	21	17	26	43	24
2	24	19	19	16	13	13	20	32	29	35	40	47	48	31	24	65	37	20	18	17	34	20	34	64	24
3	52	22	19	20	17	21	21	25	26	26	28	25	27	27	25	25	24	24	24	22	13	10	9	44	24
4	23	15	17	27	21	18	20	23	24	25	24	22	23	25	24	23	23	23	23	20	18	15	14	14	24
5	14	14	46	37	13	17	25	28	18	27	23	20	24	25	23	30	32	26	21	17	38	16	14	12	24
6	12	12	13	14	17	14	22	20	21	24	33	29	25	24	27	24	18	15	12	12	14	15	11	31	24
7	34	51	16	29	76	53	59	41	40	44	33	47	42	34	21	22	31	21	30	18	40	57	47	43	24
8	58	48	32	23	23	17	20	24	29	29	21	22	18	21	24	20	25	40	34	22	24	21	27	23	24
9	25	22	21	22	25	24	24	26	35	24	26	25	23	23	24	24	22	23	22	23	20	22	18	18	24
10	15	17	17	20	16	16	16	16	23	24	24	26	37	52	32	36	31	25	28	22	13	13	15	21	24
11	15	14	23	33	47	21	21	18	24	21	17	22	21	16	19	20	15	16	15	21	42	14	27	33	24
12	37	39	28	27	26	27	28	26	25	26	28	29	29	27	25	25	26	24	25	27	50	43	42	49	24
13	51	52	26	31	31	28	25	24	24	28	26	30	28	30	28	28	34	30	28	30	12	20	20	27	24
14	32	56	20	29	50	22	21	16	18	16	22	23	29	17	14	17	29	16	24	25	43	48	24	18	24
15	14	15	16	20	39	32	33	34	35	39	42	41	41	41	42	36	39	39	41	41	38	13	13	17	24
16	19	24	33	29	65	39	30	34	40	38	60	47	38	22	41	27	38	25	30	41	38	33	27	34	24
17	27	26	27	27	25	25	25	23	23	24	23	24	22	24	24	22	23	24	23	22	30	29	32	28	24
18	38	34	64	47	26	25	27	40	34	43	39	35	35	34	34	29	37	41	23	60	40	56	36	60	24
19	36	46	59	16	20	15	17	22	26	25	25	24	23	21	23	19	23	26	19	16	13	38	15	42	24
20	49	40	54	63	58	40	45	58	49	49	53	55	45	53	50	55	55	52	34	31	36	56	29	37	24
21	51	42	57	57	67	41	38	24	24	29	37	42	46	69	35	48	37	42	39	35	44	60	52	76	24
22	41	58	44	57	53	66	32	43	38	52	56	57	54	53	41	32	25	44	78	41	30	44	49	43	24
23	57	39	65	18	29	31	36	48	49	42	48	38	38	43	59	42	36	28	31	38	62	52	46	34	24
24	74	32	35	28	32	28	22	21	18	20	27	28	20	26	32	22	22	18	33	17	14	15	39	36	24
25	58	31	21	17	19	15	21	16	14	18	18	18	20	22	19	24	24	25	24	33	18	13	22	15	24
26	44	62	43	17	47	30	42	42	60	65	66	63	85	67	45	33	32	13	12	29	34	38	26	17	24
27	32	40	28	28	22	18	23	25	35	34	28	33	31	29	29	25	24	25	22	18	13	30	38	44	24
28	59	27	34	52	46	53	28	34	30	28	35	35	40	38	55	28	30	45	51	57	46	35	50	55	24
29	69	58	26	18	52	63	48	28	25	27	29	34	46	41	61	38	37	34	21	10	13	10	14	15	24
30	20	20	21	25	23	15	17	18	16	19	26	21	21	23	19	18	16	16	12	17	20	21	15	16	24

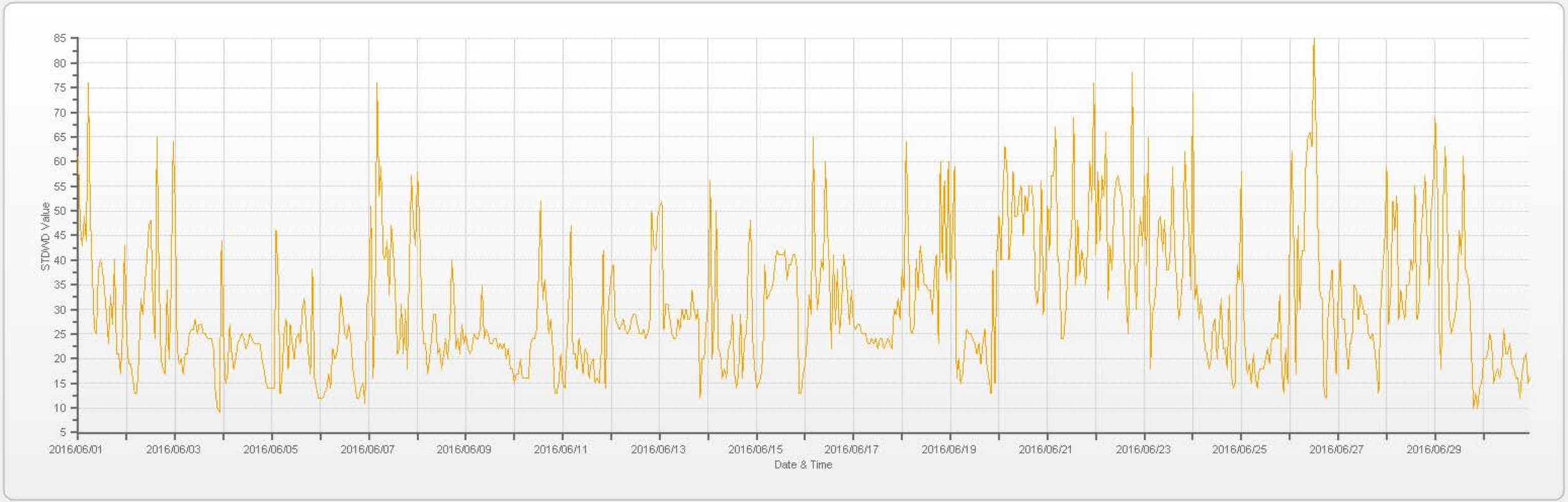
STATUS FLAG CODES

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: 925 HRS

STDWD[Deg] Station: LICA COLD LAKE SOUTH Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



RELATIVE HUMIDITY

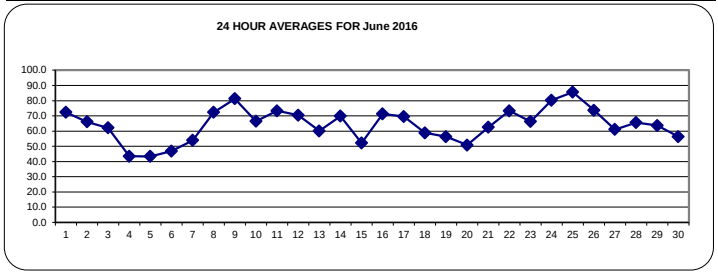
RELATIVE HUMIDITY (RH) hourly averages in %

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	94	95	96	95	94	90	80	72	68	61	46	42	44	41	42	41	44	55	89	88	87	88	93	92	41	96	72.4	24
2	95	93	98	98	96	88	80	72	63	60	58	54	44	51	49	40	38	42	41	46	64	60	67	88	38	98	66.0	24
3	96	95	95	95	95	94	90	84	70	55	48	40	39	35	33	30	27	28	27	30	50	70	81	84	27	96	62.1	24
4	88	88	84	81	76	57	52	47	42	34	29	28	25	22	20	19	***17***	18	19	24	31	40	48	54	***17***	88	43.5	24
5	59	75	79	85	83	67	58	48	36	31	28	25	23	21	20	21	21	20	20	23	39	48	53	59	20	85	43.4	24
6	62	65	69	72	74	69	63	57	55	44	34	31	28	27	28	26	27	31	35	39	42	45	50	50	26	74	46.8	24
7	49	53	50	53	62	69	67	66	60	56	53	51	47	37	36	39	32	35	32	44	63	75	81	84	32	84	53.9	24
8	88	87	84	82	80	76	71	72	67	62	59	57	61	56	48	46	51	69	81	85	84	88	90	91	46	91	72.3	24
9	97	96	93	92	92	92	90	85	80	80	89	81	77	76	69	63	65	69	72	70	77	80	81	84	63	97	81.3	24
10	87	89	85	88	94	93	92	87	77	65	60	57	52	48	43	41	38	38	40	46	60	65	72	78	38	94	66.5	24
11	72	74	74	80	85	84	80	76	73	65	58	58	64	69	66	68	64	65	67	72	82	87	94	82	58	94	73.3	24
12	82	87	85	82	80	72	64	59	61	60	54	54	58	61	60	68	56	57	60	62	81	94	97	97	54	97	70.5	24
13	97	98	99	99	98	85	73	60	54	50	45	42	35	32	33	32	33	33	33	37	56	69	75	75	32	99	60.1	24
14	82	91	93	87	89	67	62	61	60	60	53	50	43	36	44	40	42	67	86	85	90	95	95	97	36	97	69.8	24
15	98	96	95	94	89	82	69	64	58	53	45	39	35	31	28	27	25	23	23	23	28	36	44	46	23	98	52.1	24
16	49	51	56	62	60	68	64	53	47	49	61	78	69	70	74	85	91	89	91	93	92	89	86	85	47	93	71.3	24
17	83	79	78	75	74	76	76	74	76	77	75	78	79	69	63	62	53	50	48	47	61	70	74	73	47	83	69.6	24
18	77	80	83	77	72	67	64	60	55	51	47	45	43	37	35	36	35	41	48	58	59	71	84	88	35	88	58.9	24
19	87	77	88	94	94	87	74	67	59	54	48	42	35	35	28	29	31	28	26	27	33	56	74	79	26	94	56.3	24
20	85	87	90	91	88	73	56	48	37	35	30	27	23	22	23	23	23	24	26	32	51	67	78	80	22	91	50.8	24
21	86	89	89	91	90	74	66	50	43	37	36	35	36	37	45	50	51	58	58	58	67	81	86	88	35	91	62.5	24
22	88	90	89	91	90	81	72	64	60	56	52	49	48	43	48	45	53	87	93	89	86	90	96	99	43	99	73.3	24
23	99	96	95	96	97	88	75	67	61	55	48	41	36	35	35	36	41	42	51	64	74	77	87	96	35	99	66.3	24
24	98	***100***	***100***	***100***	***100***	***100***	***100***	93	89	82	72	69	64	59	58	60	63	62	65	65	69	79	88	91	58	***100***	80.3	24
25	94	96	97	97	96	94	93	97	99	92	83	79	75	71	70	69	88	78	74	76	80	83	85	88	69	99	***85.6***	24
26	93	96	97	97	98	98	96	80	71	65	59	53	47	40	44	47	49	55	61	70	87	89	88	89	40	98	73.7	24
27	93	95	97	98	99	94	85	69	57	48	42	40	36	35	34	32	29	30	31	34	50	70	79	88	29	99	61.0	24
28	87	92	92	91	88	76	68	61	52	47	42	37	37	34	44	44	43	47	57	84	82	90	86	93	34	93	65.6	24
29	93	96	95	82	86	88	78	67	65	59	54	52	49	45	44	38	37	38	41	48	57	66	72	77	37	96	63.6	24
30	78	68	69	72	71	70	68	66	61	52	47	43	42	39	37	39	42	46	50	53	55	56	62	66	37	78	56.3	24
HOURLY MAX	99	100	100	100	100	100	100	97	99	92	89	81	79	76	74	85	91	89	93	93	92	95	97	99				
HOURLY AVG	84.5	85.8	86.5	86.6	86.3	80.6	74.2	67.5	61.9	56.5	51.8	49.2	46.5	43.8	43.4	43.2	43.6	47.5	51.5	55.7	64.6	72.5	78.2	81.4				

STATUS FLAG CODES

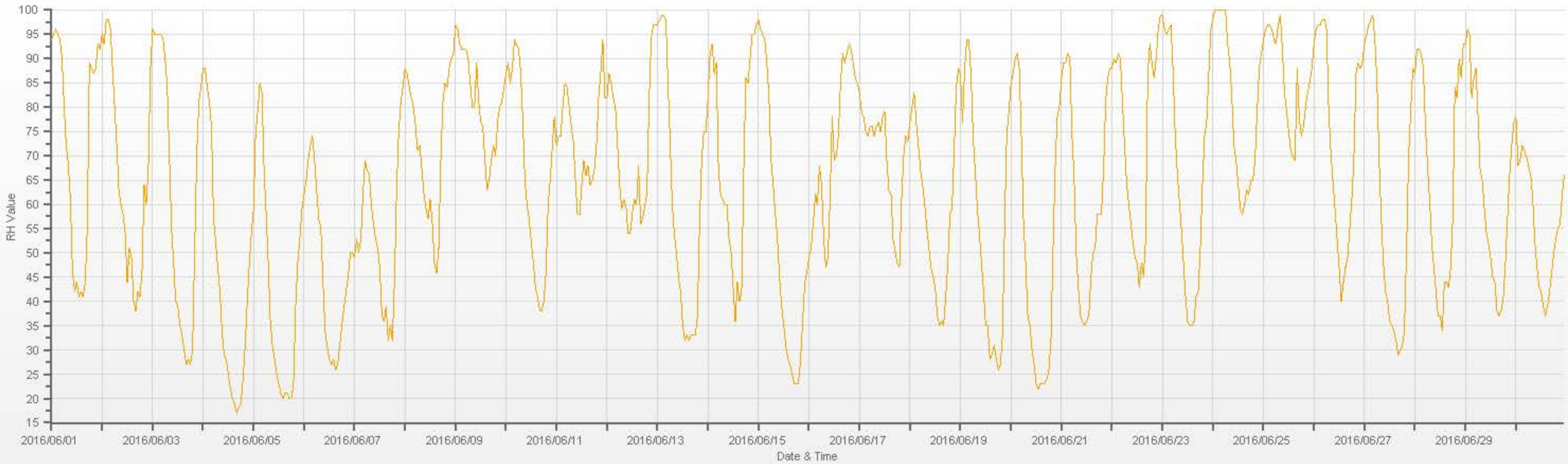
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	17	%	@ HOUR(S)	16	ON DAY(S)	4	
MAXIMUM 1-HR AVERAGE:	100	%	@ HOUR(S)	VAR	ON DAY(S)	24	
MAXIMUM 24-HR AVERAGE:	85.6	%			ON DAY(S)	25	
					VAR-VARIOUS		
			OPERATIONAL TIME:			720	HRS
			AMD OPERATION UPTIME:			100.0	%
STANDARD DEVIATION:	22.24		MONTHLY AVERAGE:			64	%

RH[%RH] Station: LICA COLD LAKE SOUTH Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



AMBIENT TEMPERATURE

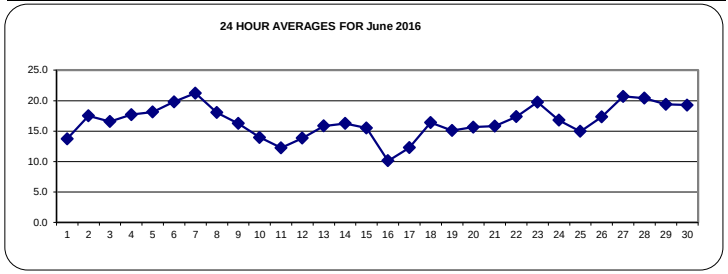
AMBIENT TEMPERATURE (AmbTPX) hourly averages in Degrees Celsius

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	7.0	6.1	5.5	5.0	5.2	8.2	11.1	13.5	15.1	16.6	18.7	19.3	19.8	20.5	20.3	20.4	20.3	18.3	13.7	13.3	13.2	12.9	12.4	12.3	5.0	20.5	13.7	24
2	11.3	10.5	9.5	9.9	10.6	12.2	13.9	15.9	17.8	19.0	20.3	21.5	22.4	21.8	22.1	23.6	24.0	23.1	23.0	21.9	18.3	17.3	16.1	13.9	9.5	24.0	17.5	24
3	13.1	12.7	12.3	12.2	11.7	11.7	12.5	13.8	16.2	18.3	19.6	20.4	20.9	21.3	21.6	21.9	21.7	21.8	21.7	21.1	17.5	12.8	10.9	9.8	9.8	21.9	16.6	24
4	8.8	8.7	9.3	10.1	11.1	15.1	16.7	18.1	19.2	20.5	21.1	21.8	22.4	23.0	23.2	23.4	23.4	23.4	22.6	21.5	18.9	15.9	13.8	12.6	8.7	23.4	17.7	24
5	11.7	9.4	8.7	7.0	7.4	10.9	14.5	17.9	20.0	21.3	21.9	22.8	23.5	24.0	24.1	24.4	24.4	24.7	24.4	23.7	19.5	17.0	16.8	15.3	7.0	24.7	18.1	24
6	14.7	14.0	13.1	12.2	11.6	12.9	14.8	16.9	18.5	21.0	23.0	24.1	24.9	25.2	25.4	25.9	26.0	24.9	23.8	22.8	21.8	20.4	18.8	18.6	11.6	26.0	19.8	24
7	18.4	18.1	18.2	17.8	16.8	16.3	17.2	18.2	20.1	22.1	23.3	24.7	26.0	26.8	26.1	25.5	27.2	26.4	27.4	25.4	20.2	16.9	15.6	14.5	14.5	27.4	***21.2***	24
8	13.6	13.4	13.7	13.2	13.5	14.4	16.1	16.0	17.8	19.9	20.0	21.7	21.4	22.9	24.5	24.6	24.2	20.7	18.4	17.2	16.9	16.3	16.2	16.1	13.2	24.6	18.0	24
9	15.8	16.1	16.3	16.1	16.0	16.2	16.6	17.9	19.1	18.9	17.3	17.3	17.3	16.9	18.5	19.2	18.2	17.2	16.3	15.1	13.5	12.5	11.4	10.7	10.7	19.2	16.3	24
10	10.0	9.6	9.6	9.5	9.1	9.2	9.3	10.0	11.8	13.4	14.8	15.8	16.9	18.0	18.8	18.8	19.3	19.5	19.2	18.3	15.5	14.0	12.8	11.8	9.1	19.5	14.0	24
11	12.8	12.5	12.1	10.9	10.2	10.3	10.9	11.2	10.7	12.2	12.4	12.4	12.3	12.5	12.7	13.0	14.2	14.3	14.1	14.0	13.3	12.0	11.8	11.3	10.2	14.3	12.3	24
12	10.0	9.0	9.4	10.2	10.6	12.1	13.9	15.1	14.9	15.5	16.8	16.7	16.0	15.6	16.8	15.8	17.7	17.3	16.8	15.9	13.7	11.8	10.9	9.9	9.0	17.7	13.9	24
13	8.5	7.7	8.1	7.9	8.2	10.9	12.9	14.9	16.1	17.6	18.5	19.8	21.2	21.9	21.7	22.1	22.1	21.8	21.9	21.7	17.0	13.5	12.0	12.3	7.7	22.1	15.8	24
14	13.0	12.5	11.8	11.8	11.2	14.2	15.6	16.1	16.8	17.3	19.8	20.7	22.6	23.2	21.8	21.8	20.8	16.4	14.3	14.3	13.8	13.4	13.4	13.3	11.2	23.2	16.2	24
15	13.3	13.2	13.0	12.0	10.1	10.0	11.4	12.3	13.8	15.3	16.6	17.6	18.7	19.2	19.9	19.9	20.3	20.0	19.5	19.2	17.2	14.5	12.8	12.2	10.0	20.3	15.5	24
16	11.1	10.3	9.4	7.8	8.2	7.7	9.2	12.3	14.0	14.1	13.7	12.2	11.4	10.8	10.5	9.1	9.0	9.0	9.1	8.5	8.2	8.5	9.2	9.5	7.7	14.1	10.1	24
17	9.8	9.3	8.8	9.6	9.7	10.1	10.5	10.9	11.0	11.5	12.8	12.9	13.0	14.0	14.6	14.7	15.3	16.2	16.6	16.6	14.0	11.7	10.4	10.4	8.8	16.6	12.3	24
18	9.1	8.3	7.5	9.4	10.5	12.1	13.8	15.8	17.5	19.1	20.1	20.9	21.1	22.5	23.2	22.6	23.3	21.5	20.0	18.5	17.6	15.1	12.5	11.5	7.5	23.3	16.4	24
19	11.9	13.2	11.9	10.3	9.7	10.6	13.1	14.3	15.3	16.2	16.6	17.6	18.0	18.2	19.3	18.9	19.3	20.5	20.8	19.8	17.2	12.8	9.1	7.7	7.7	20.8	15.1	24
20	6.4	5.3	4.3	***3.5***	4.1	8.3	12.3	16.0	17.8	19.5	20.6	21.4	22.3	23.2	23.5	23.7	23.8	23.7	23.1	21.6	17.6	13.5	10.7	9.3	***3.5***	23.8	15.6	24
21	8.0	6.8	5.9	5.1	5.9	10.0	13.3	16.9	19.5	21.5	22.4	23.3	24.3	24.5	21.6	20.5	21.2	19.1	18.7	18.8	16.2	13.4	11.9	11.2	5.1	24.5	15.8	24
22	11.4	11.4	11.7	11.5	11.3	13.6	16.7	18.9	19.5	20.6	21.2	22.7	23.7	24.7	23.6	24.0	22.0	15.7	16.6	16.4	16.0	15.6	14.4	13.5	11.3	24.7	17.4	24
23	12.9	13.1	13.2	12.7	12.2	14.5	16.8	18.7	20.6	21.8	23.1	24.4	25.2	26.0	26.4	26.2	25.4	25.3	24.2	22.2	20.2	18.6	15.8	14.6	12.2	26.4	19.8	24
24	14.8	14.4	14.3	14.1	13.8	13.9	13.8	14.7	15.2	16.5	18.2	18.8	19.9	20.6	21.4	20.6	20.1	20.0	19.5	20.0	17.6	14.8	13.3	12.4	12.4	21.4	16.8	24
25	11.3	10.3	10.8	11.6	11.7	12.7	13.6	13.9	14.2	15.8	16.5	17.2	17.8	18.0	17.9	18.3	16.0	17.4	17.6	16.8	15.9	15.0	14.5	14.0	10.3	18.3	15.0	24
26	12.4	11.0	10.1	9.2	8.9	9.7	12.3	16.5	18.6	20.3	21.6	22.4	23.3	24.8	23.3	23.3	23.1	22.2	20.8	19.2	16.4	15.7	15.9	14.9	8.9	24.8	17.3	24
27	13.9	12.8	11.9	11.5	12.8	14.7	16.5	19.8	22.6	24.5	24.9	25.6	26.3	27.0	27.5	27.3	27.2	27.3	26.6	25.8	22.4	17.9	15.7	14.3	11.5	27.5	20.7	24
28	13.5	12.4	12.0	11.9	12.4	15.9	19.1	21.9	24.1	25.3	26.5	27.6	28.2	***28.7***	24.5	25.1	24.1	24.0	23.2	19.7	19.0	17.9	17.2	15.8	11.9	***28.7***	20.4	24
29	14.7	13.6	13.7	15.5	14.6	14.6	16.5	18.2	18.9	20.4	21.7	22.6	23.4	23.9	24.1	24.9	24.8	24.6	23.7	22.3	20.1	17.6	16.2	14.7	13.6	24.9	19.4	24
30	13.6	14.8	14.6	14.3	14.1	14.8	15.9	17.4	19.6	21.2	22.5	23.2	23.6	24.0	24.0	23.7	23.2	22.6	21.7	20.8	19.6	18.6	17.6	17.2	13.6	24.0	19.3	24
HOURLY MAX	18.4	18.1	18.2	17.8	16.8	16.3	19.1	21.9	24.1	25.3	26.5	27.6	28.2	28.7	27.5	27.3	27.2	27.3	27.4	25.8	22.4	20.4	18.8	18.6				
HOURLY AVG	11.9	11.4	11.0	10.8	10.8	12.3	14.0	15.8	17.2	18.6	19.6	20.3	20.9	21.5	21.4	21.4	21.4	20.6	20.0	19.1	16.9	14.9	13.7	12.9				

STATUS FLAG CODES

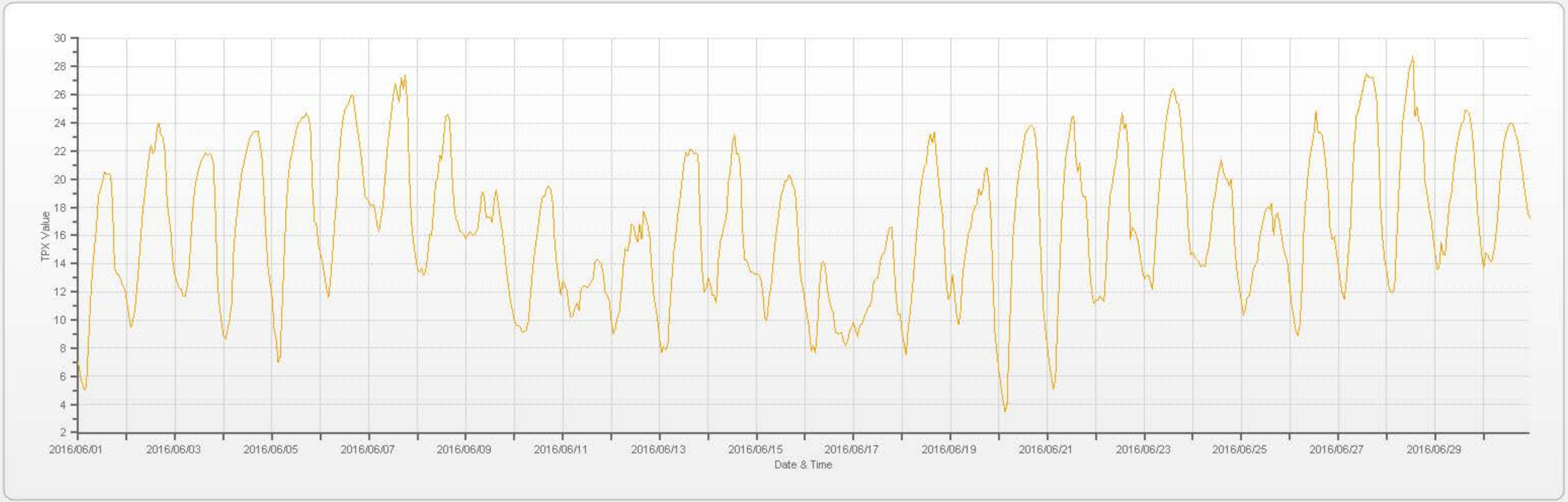
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	3.5	°C	@ HOUR(S)	3	ON DAY(S)	20	
MAXIMUM 1-HR AVERAGE:	28.7	°C	@ HOUR(S)	13	ON DAY(S)	28	
MAXIMUM 24-HR AVERAGE:	21.2	°C			ON DAY(S)	7	
					VAR-VARIOUS		
			OPERATIONAL TIME:			720	HRS
			AMD OPERATION UPTIME:			100.0	%
STANDARD DEVIATION:	5.16		MONTHLY AVERAGE:			16.6	°C

TPX[C°] Station: LICA COLD LAKE SOUTH Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



APPENDIX II
NON-CONTINUOUS MONITORING DATA RESULTS

VOC RESULTS

Sample ID: 16060039-004

Customer ID: LICA

Cust Samp ID: LICA/VOC/CLS/ June 5, 2016

Maxxam Analytics

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

Client: LICA

Location: Cold Lake South

Station ID: LICA 01

Sample ID: LICA/VOC/CLS/June 5, 2016

Sampler S/N: 6167

Canister ID: 2491

Installation Date/Time (mst): May 31, 2016 @ 08:59

Removal Date/Time (mst): June 6, 2016 @ 09:06

Date and Time Information

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
June 5, 2016	00:00	00:00 June 6, 2016	24.0

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
-28.0	+24.8

Flow Settings		
Flow Reading (sccm)	Pot Set Point	Pump Set (psi)
10.0	6.52	24

Deployment/Collection and Maintenance Checklist

Initial leak check deployment vacuum (in. Hg) = -28.0 @ 08:59 mst

Final leak check deployment vacuum (in. Hg) = -28.0 @ 08:59 mst

Total leak rate = 0.0 psi over 24.0 ~~minutes~~ hours Ø-Y

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

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

Date of last flow calibration: June 1, 2016 (due every 3 months)

Last date of sample line & fitting replacement: May 3, 2016 / June 1, 2016 (due every 6 months)

Comments: Date of last audit : June 1, 2016

Deployment Technician Signature: Alex Yakupov

Collection Technician Signature: Alex Yakupov Date: June 6, 2016

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Volatile Organics Data Results

Date: June 5 , 2016
Canister ID: 2491

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	0.20
1-Hexene	0.10
1-Pentene	0.02
2,2,4-Trimethylpentane	0.02
2,2-Dimethylbutane	< 0.01
2,3,4-Trimethylpentane	< 0.01
2,3-Dimethylbutane	0.03
2,3-Dimethylpentane	0.06
2,4-Dimethylpentane	0.01
2-Methylheptane	< 0.01
2-Methylhexane	0.16
2-Methylpentane	0.16
3-Methylheptane	< 0.02
3-Methylhexane	0.24
3-Methylpentane	0.06
Acetone	4.2
Acrolein	< 0.3
Benzene	0.05
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	0.26
Carbon tetrachloride	0.09
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	< 0.02
Cyclopentane	0.02
Dibromochloromethane	< 0.01
Ethanol	40.2
Ethyl acetate	< 0.4
Ethylbenzene	0.01
Freon-11	0.27
Freon-113	0.07

Volatile Organics Data Results

Date: June 5 , 2016
Canister ID: 2491

PARAMETERS	CONCENTRATION (PPB)
Freon-114	0.02
Freon-12	0.13
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.20
Isopentane	0.68
Isoprene	0.67
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	0.7
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.20
Methylcyclopentane	0.09
Methylene chloride	0.8
n-Butane	0.49
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	0.36
n-Hexane	0.16
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	0.08
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	0.5
Vinyl chloride	< 0.02

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

Client: LICA
Location: Cold Lake South
Station ID: LICA 01
Sample ID: LICA/VOC/CLS/June 11, 2016

Sampler S/N: 6167
Canister ID: H3298
Installation Date/Time (mst): June 6, 2016 @ 09:06
Removal Date/Time (mst): June 13, 2016 @ 17:46

Date and Time Information

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
June 11, 2016	00:00	00:00 June 12, 2016	24.0

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
-28.0	+24.5

Flow Settings		
Flow Reading (sccm)	Pot Set Point	Pump Set (psi)
10.0	6.52	24

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

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

Timer reset to zero prior to sampling? YES (yes/no)
Date of last flow calibration: June 1, 2016 (due every 3 months)
Last date of sample line & fitting replacement: May 3, 2016 (due every 6 months)

Comments: Date of last audit: June 1, 2016

Deployment Technician Signature: Alex Yakupov

Collection Technician Signature: Alex Yakupov Date: June 13, 2016

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Sample ID: 16060175-001

Customer ID: LICA

Cust Samp ID: LICA/VOC/CLS/June 11, 2016

Volatile Organics Data Results

Date: June 11 , 2016
Canister ID: 43298

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	1.1
1,2,4-Trimethylbenzene	< 0.03
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.02
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	< 0.02
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	0.10
1-Hexene	< 0.02
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	2.8
Acrolein	< 0.3
Benzene	< 0.01
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	1.42
Carbon tetrachloride	0.10
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.02
Chloromethane	0.81
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	< 0.02
cis-2-Pentene	< 0.02
Cyclohexane	< 0.02
Cyclopentane	< 0.01
Dibromochloromethane	< 0.01
Ethanol	1.3
Ethyl acetate	< 0.4
Ethylbenzene	< 0.01
Freon-11	0.29
Freon-113	0.04

Volatile Organics Data Results

Date: June 11 , 2016
Canister ID: 43298

PARAMETERS	CONCENTRATION (PPB)
Freon-114	0.02
Freon-12	0.78
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.28
Isopentane	0.11
Isoprene	0.15
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	< 0.03
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	< 0.50
Methyl ethyl ketone	0.4
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	< 0.01
Methylcyclopentane	< 0.02
Methylene chloride	< 0.3
n-Butane	0.14
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	< 0.01
n-Hexane	0.02
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane	< 0.1
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	< 0.01
o-Xylene	0.01
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	0.04
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

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

Client:	LICA	Sampler S/N:	6167
Location:	Cold Lake South	Canister ID:	1531
Station ID:	LICA 01	Installation Date/Time (mst):	June 13, 2016 @ 17:46
Sample ID:	LICA/VOC/CLS/June 17, 2016	Removal Date/Time (mst):	June 22, 2016 @ 16:36

Date and Time Information

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
June 17, 2016	00:00	00:00 June 18, 2016	24.0

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
-28.0	+23.9

Flow Settings		
Flow Reading (sccm)	Pot Set Point	Pump Set (psi)
10.0	6.52	24

Deployment/Collection and Maintenance Checklist

Initial leak check deployment vacuum (in. Hg) =	—	@	—	mst	**Leak rate must be 0.0 psi over a minimum of 5 minutes or repair is required**
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: June 1, 2016 (due every 3 months)

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

Comments: Date of last audit : June 1, 2016

Deployment Technician Signature: Alex Yakupov

Collection Technician Signature: Alex Yakupov Date: June 22, 2016

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Sample ID: 16060297-003

Customer ID: LICA

Cust Samp ID: LICA/VOC/CLS/June 17, 2016

Volatile Organics Data Results

Date: June 17 , 2016
Canister ID: 1531

PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.02
1,1,2,2-Tetrachloroethane	< 0.02
1,1,2-Trichloroethane	< 0.02
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	< 0.04
1,2,3-Trimethylbenzene	< 0.05
1,2,4-Trichlorobenzene	< 0.8
1,2,4-Trimethylbenzene	< 0.03
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.02
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	< 0.02
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	< 0.02
1-Hexene	< 0.02
1-Pentene	< 0.01
2,2,4-Trimethylpentane	< 0.01
2,2-Dimethylbutane	< 0.01
2,3,4-Trimethylpentane	< 0.01
2,3-Dimethylbutane	< 0.02
2,3-Dimethylpentane	< 0.02
2,4-Dimethylpentane	< 0.01
2-Methylheptane	< 0.01
2-Methylhexane	< 0.01
2-Methylpentane	< 0.01
3-Methylheptane	< 0.02
3-Methylhexane	< 0.02
3-Methylpentane	< 0.01
Acetone	2.5
Acrolein	< 0.3
Benzene	< 0.01
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	0.39
Carbon tetrachloride	0.10
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.02
Chloromethane	0.58
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	0.28
Freon-113	0.05

Volatile Organics Data Results

Date: June 17 , 2016
Canister ID: 1531

PARAMETERS	CONCENTRATION (PPB)
Freon-114	< 0.02
Freon-12	0.79
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.26
Isopentane	< 0.03
Isoprene	0.07
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	0.14
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	< 0.01
n-Hexane	< 0.01
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane	< 0.1
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	< 0.01
o-Xylene	< 0.01
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	< 0.01
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	< 0.01
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02

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

Client: LICA
Location: Cold Lake South
Station ID: LICA 01
Sample ID: LICA/VOC/CLS/June 23, 2016

Sampler S/N: 6167
Canister ID: 1532
Installation Date/Time (mst): June 22, 2016 @ 16:36
Removal Date/Time (mst): June 27, 2016 @ 08:43

Date and Time Information

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
June 23, 2016	00:00	00:00 June 24, 2016	24.0

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
-28.0	+26.3

Flow Settings		
Flow Reading (sccm)	Pot Set Point	Pump Set (psi)
10.0	6.52	24

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

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

Timer reset to zero prior to sampling? YES (yes/no)
Date of last flow calibration: June 1, 2016 (due every 3 months)
Last date of sample line & fitting replacement: May 3, 2016 (due every 6 months)

Comments: Date of last audit: June 1, 2016

Deployment Technician Signature: Alex Yakupov

Collection Technician Signature: Alex Yakupov Date: June 27, 2016

Sample ID: 16060335-001
Customer ID: LICA
Cust Samp ID: LICA/VOC/CLS/June 23, 2016

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Volatile Organics Data Results

Date: June 23 , 2016
Canister ID: 1532

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	0.21
1-Hexene	0.07
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	< 0.02
2,4-Dimethylpentane	< 0.01
2-Methylheptane	< 0.01
2-Methylhexane	0.02
2-Methylpentane	0.06
3-Methylheptane	< 0.02
3-Methylhexane	0.04
3-Methylpentane	0.05
Acetone	8.8
Acrolein	< 0.3
Benzene	0.04
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	2.32
Carbon tetrachloride	0.09
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.02
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	0.04
Cyclopentane	0.02
Dibromochloromethane	< 0.01
Ethanol	2.0
Ethyl acetate	< 0.4
Ethylbenzene	0.01
Freon-11	0.28
Freon-113	0.07

Volatile Organics Data Results

Date: June 23 , 2016
Canister ID: 1532

PARAMETERS	CONCENTRATION (PPB)
Freon-114	< 0.02
Freon-12	0.55
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.34
Isopentane	0.38
Isoprene	1.76
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	1.5
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.04
Methylcyclopentane	0.08
Methylene chloride	0.8
n-Butane	0.38
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	0.03
n-Hexane	0.13
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane	0.2
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	< 0.01
o-Xylene	0.02
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	0.04
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02

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

Client: LICA
Location: Cold Lake South
Station ID: LICA 01
Sample ID: LICA/VOC/CLS/June 29, 2016

Sampler S/N: 6167
Canister ID: 2523
Installation Date/Time (mst): June 27, 2016 @ 08:43
Removal Date/Time (mst): June 30, 2016 @ 13:21

Date and Time Information

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
June 29, 2016	00:00	00:00 June 30, 2016	24.0

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
-28.0	+23.7

Flow Settings		
Flow Reading (sccm)	Pot Set Point	Pump Set (psi)
10.0	6.52	24

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

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

Timer reset to zero prior to sampling? YES (yes/no)
Date of last flow calibration: June 1, 2016 (due every 3 months)
Last date of sample line & fitting replacement: May 3, 2016 (due every 6 months)

Comments: Date of last audit : June 1, 2016

Deployment Technician Signature: Alex Yakupov

Collection Technician Signature: Alex Yakupov Date: June 30, 2016

Sample ID: 16070015-001

Customer ID: LICA

Cust Samp ID: LICA/VOC/CLS/June 29, 2016

Volatile Organics Data Results

Date: June 29 , 2016
Canister ID: 2523

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	0.05
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	0.6
1-Butene	0.10
1-Hexene	< 0.02
1-Pentene	0.01
2,2,4-Trimethylpentane	0.03
2,2-Dimethylbutane	< 0.01
2,3,4-Trimethylpentane	< 0.01
2,3-Dimethylbutane	< 0.02
2,3-Dimethylpentane	< 0.02
2,4-Dimethylpentane	< 0.01
2-Methylheptane	< 0.01
2-Methylhexane	< 0.01
2-Methylpentane	0.02
3-Methylheptane	< 0.02
3-Methylhexane	< 0.02
3-Methylpentane	0.01
Acetone	11.8
Acrolein	0.4
Benzene	0.06
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	0.02
Carbon disulfide	5.56
Carbon tetrachloride	0.09
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	< 0.02
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	< 0.02
Cyclopentane	< 0.01
Dibromochloromethane	< 0.01
Ethanol	2.4
Ethyl acetate	< 0.4
Ethylbenzene	0.01
Freon-11	0.26
Freon-113	0.07

Volatile Organics Data Results

Date: June 29 , 2016
Canister ID: 2523

PARAMETERS	CONCENTRATION (PPB)
Freon-114	< 0.02
Freon-12	< 0.02
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.57
Isopentane	0.32
Isoprene	1.26
Isopropyl alcohol	1.1
Isopropylbenzene	0.01
m,p-Xylene	0.04
m-Diethylbenzene	< 0.04
m-Ethyltoluene	< 0.08
Methyl butyl ketone	0.53
Methyl ethyl ketone	0.9
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.02
Methylcyclopentane	< 0.02
Methylene chloride	< 0.3
n-Butane	0.19
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	0.02
n-Hexane	0.03
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane	< 0.1
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	< 0.01
o-Xylene	0.02
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	0.06
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	< 0.01
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	0.4
Vinyl chloride	< 0.02

PAH RESULTS

Sample ID: 16060039-005

Customer ID: LICA

Cust Samp ID: LICA/PUF/CLS/June 5, 2016

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TISCH PUF PLUS Sample Collection Data Sheet

Client:	LICA	Puf+ S/N:	A13-02
Location:	Cold Lake South	Motor S/N:	1138/100-1020
Station ID:	LICA 01	Installation Date/Time:	May 31, 2016 / 08:54
Field Sample ID:	LICA/PUF/CLS/~~May~~ June 5, 2016 A.Y	Removal Date/Time:	June 6, 2016 / 09:02

Sample Data Collection Information

Sample Date:	June 5, 2016	Average Pressure (mmHg)	713
Start Time (mst):	00:00	Average Flow (Q_{std})	229
End Time (mst):	00:00 June 6, 2016	Average Tempurature (°C)	19.5
Elapsed Time (Hours):	24.0	Volume (Vstd m^3)	330.22

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: June 6, 2016

Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: June 5 , 2016
PUF S/N: A1302

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.03
2-Methylnaphthalene	0.07
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	0.03
Acenaphthylene	0.03
Acridine	< 0.01
Anthracene	0.04
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	0.10
Fluorene	0.10
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.03
Perylene	< 0.01
Phenanthrene	0.35
Pyrene	0.07
Retene	0.03

Sample ID: 16060175-002

Customer ID: LICA

Cust Samp ID: LICA/PUF/CLS/June 11, 2016

TISCH PUF PLUS Sample Collection Data Sheet

Client:	LICA	**Puf+ S/N:**	TE-08
Location:	Cold Lake South	**Motor S/N:**	1138/100-1020
Station ID:	LICA 01	**Installation Date/Time:**	June 6, 2016/09:02
Field Sample ID:	LICA/PUF/CLS/June 11, 2016	**Removal Date/Time:**	June 13, 2016/17:56

Sample Data Collection Information

Sample Date:	June 11, 2016	**Average Pressure (mmHg)**	711
Start Time (mst):	00:00	**Average Flow (Q_{std})**	229
End Time (mst):	00:00 June 12, 2016	**Average Tempurature (°C)**	12.4 °
Elapsed Time (Hours):	24.0	**Volume (Vstd m^3)**	330.20

Sample Recovery Checklist

	(circle one)	
Flow Rate 230 slpm +/- 0.2 slpm ?	(YES)	NO
Average temperature appears correct?	(YES)	NO
Average pressure appears correct?	(YES)	NO
Any error messages? (if yes list below)	YES	(NO)
Sample duration 24 hours?	(YES)	NO

Date of last calibration/audit: June 1, 2016

Other observations?

Deployed By: Alex Yakupov

Collected By: Alex Yakupov **Date:** June 13, 2016

RECEIVED
JUN 16 2016

Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: June 11 , 2016
PUF S/N: TE08

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	0.02
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	< 0.01
Benzo(c)phenanthrene	< 0.01
Benzo(e)pyrene	< 0.01
Benzo(ghi)perylene	< 0.01
Chrysene	< 0.01
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.03
Fluorene	0.04
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.02
Perylene	< 0.01
Phenanthrene	0.12
Pyrene	0.02
Retene	< 0.01

Sample ID: 16060297-004

Customer ID: LICA

Cust Samp ID: LICA/PUF/CLS/June 17, 2016

TISCH PUF PLUS Sample Collection Data Sheet

Client:	LICA	Puf+ S/N:	TE-06
Location:	Cold Lake South	Motor S/N:	1138/ 100-1020
Station ID:	LICA 01	Installation Date/Time:	June 13, 2016/17:56
Field Sample ID:	LICA/PUF/CLS/June 17, 2016	Removal Date/Time:	June 22, 2016/16:24

Sample Data Collection Information

Sample Date:	June 17, 2016	Average Pressure (mmHg)	709
Start Time (mst):	00:00	Average Flow (Q_{std})	229
End Time (mst):	00:00 June 18, 2016	Average Tempurature (°C)	13.1
Elapsed Time (Hours):	24.0	Volume (Vstd m^3)	330.20

Sample Recovery Checklist

	(circle one)	
Flow Rate 230 slpm +/- 0.2 slpm ?	(YES)	NO
Average temperature appears correct?	(YES)	NO
Average pressure appears correct?	(YES)	NO
Any error messages? (if yes list below)	YES	(NO)
Sample duration 24 hours?	(YES)	NO
Date of last calibration/audit:	June 1, 2016	
Other observations?		

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Deployed By: Alex Yakupov

Collected By: Alex Yakupov Date: June 22, 2016

Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: June 17 , 2016
PUF S/N: TE06

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.05
2-Methylnaphthalene	0.10
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	< 0.01
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	0.02
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	< 0.01
Benzo(c)phenanthrene	< 0.01
Benzo(e)pyrene	< 0.01
Benzo(ghi)perylene	< 0.01
Chrysene	< 0.01
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.04
Fluorene	0.05
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.03
Perylene	< 0.01
Phenanthrene	0.11
Pyrene	0.02
Retene	< 0.01

Sample ID: 16060335-002

Customer ID: LICA

Cust Samp ID: LICA/PUF/CLS/June 23, 2016

TISCH PUF PLUS Sample Collection Data Sheet

Client:	LICA	Puf+ S/N:	9801
Location:	Cold Lake South	Motor S/N:	1138/1009-1020
Station ID:	LICA 01	Installation Date/Time:	June 22, 2016/16:24
Field Sample ID:	LICA/PUF/CLS/June 23, 2016	Removal Date/Time:	June 27, 2016/08:52

Sample Data Collection Information

Sample Date:	June 23, 2016	Average Pressure (mmHg)	707
Start Time (mst):	00:00	Average Flow (Q_{std})	229
End Time (mst):	00:00 June 24, 2016	Average Tempurature (°C)	22.3°
Elapsed Time (Hours):	24.0	Volume (Vstd m^3)	330.21

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:	June 1, 2016	
Other observations?		

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Deployed By: Alex Yakupov

Collected By: Alex Yakupov Date: June 27, 2016

Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: June 23 , 2016
PUF S/N: 9801

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.03
2-Methylnaphthalene	0.07
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	< 0.01
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	0.02
Benzo(a)anthracene	< 0.01
Benzo(a)pyrene	< 0.01
Benzo(b,j,k)fluoranthene	< 0.01
Benzo(c)phenanthrene	< 0.01
Benzo(e)pyrene	< 0.01
Benzo(ghi)perylene	< 0.01
Chrysene	< 0.01
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.08
Fluorene	0.10
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.02
Perylene	< 0.01
Phenanthrene	0.33
Pyrene	0.05
Retene	< 0.01

Sample ID: 16070015-002

AIR FCD-01321/2

Customer ID: LICA

Cust Samp ID: LICA/PUF/CLS/June 29, 2016

TISCH PUF PLUS Sample Collection Data Sheet

Client:	LICA	Puf+ S/N:	TE-04
Location:	Cold Lake South	Motor S/N:	1138/100-1020
Station ID:	LICA 01	Installation Date/Time:	June 27, 2016/08:52
Field Sample ID:	LICA/PUF/CLS/June 29, 2016	Removal Date/Time:	June 30, 2016/13:15

Sample Data Collection Information

Sample Date:	June 29, 2016	Average Pressure (mmHg)	716
Start Time (mst):	00:00	Average Flow (Q_{std})	229
End Time (mst):	00:00 June 30, 2016	Average Tempurature (°C)	20.8°
Elapsed Time (Hours):	24.0	Volume (Vstd m^3)	330.22

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:	June 1, 2016	
Other observations?		

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Deployed By: Alex Yakupov

Collected By: Alex Yakupov Date: June 30, 2016

Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: June 29 , 2016
PUF S/N: TE04

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.02
2-Methylnaphthalene	0.05
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	0.02
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	0.04
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	0.02
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	0.04
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.02
Perylene	< 0.01
Phenanthrene	0.28
Pyrene	0.04
Retene	0.03

PARTISOL RESULTS

Sample ID: 16060037-001

AIR FCD-01318/2

Customer ID: LICA

Cust Samp ID: LICA flt #P4131727

isol Sample Data Sheet

Priority: Normal

Date Sampled: June 5, 2016

Location: Cold Lake South

Parameter: TSP PM10 PM2.5

Filter #: P 4131 727

Start Time 00:00 June 5, 2016

End Time 00:00 June 6, 2016

Status OK

Std Vol 23.205

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: June 6, 2016
Time: 08:58

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: 16060176-001 AIR FCD-01318/2

Customer ID: LICA

Cust Samp ID: LICA P4149580

artisol Sample Data Sheet

Priority: Normal

Date Sampled: June 11, 2016

Location: Cold Lake South

Parameter: TSP PM10 PM2.5

Filter #: P 414 95 80

Start Time 00:00 June 11, 2016

End Time 00:00 June 12, 2016

Status OK

Std Vol 23.612

Valid Time 24:00

Total Time 24.0

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Comments: Weather Conditions, etc.

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

Technician Signature: Alex Yakupov

Date: June 13, 2016
Time : 17:58

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	Note: Beginning & End
6) Enter End D	dd-Aug	Date should be same date
7) "Stop/Run"		

Sample ID: 16060296-001

Customer ID: LICA

Cust Samp ID: Filter # P6024410

AIR FCD-01318/2

Partisol Sample Data Sheet

Priority: Normal

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Date Sampled: June 17, 2016

Location: Cold Lake South

Parameter: TSP PM10 PM2.5

Filter #: P 602 44 10

Start Time 00:00 June 17, 2016

End Time 00:00 June 18, 2016

Status OK

Std Vol 23.508

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: June 22, 2016
Time: 16:41

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

Note: Beginning & End Date should be same date

Sample ID: 16060334-001

Customer ID: LICA

Cust Samp ID: LICA FLT# P6024404

AIR FCD-01318/2

Priority: Normal

Partisol Sample Data Sheet

Date Sampled: June 23, 2016

Location: Cold Lake South

Parameter: TSP PM10 PM2.5

Filter #: P602 44 04

Start Time 00:00 June 23, 2016

End Time 00:00 June 24, 2016

Status OK

Std Vol 22.883

Valid Time 24:00

Total Time 24.0

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Comments: Weather Conditions, etc.

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

Technician Signature: Alex Yakupov

Date: June 27, 2016
Time: 08:35

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

Note: Beginning & End Date should be same date

Partisol Sample Data Sheet

Date Sampled: June 29, 2016

Location: Cold Lake South

Parameter: TSP PM10 (PM2.5)

Filter #: P602 44 05

Sample ID: 16070019-001

Customer ID: LICA

Cust Samp ID: LICA Flt# P6024405

Priority: Normal

Start Time 00:00 June 29, 2016

End Time 00:00 June 30, 2016

Status OK

Std Vol 23.184

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: June 30, 2016
Time: 13:36

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	Note: Beginning & End
6) Enter End D	dd-Aug	Date should be same date
7) "Stop/Run"		

Partisol Sampler Results

Date	Filter NO.	Concentration (mg)
June 5	P4131727	0.076
June 11	P4149580	0.033
June 17	P6024410	0.028
June 23	P6024404	0.079
June 29	P6024405	0.107

APPENDIX III
EQUIPMENT CALIBRATION RESULTS

SULPHUR DIOXIDE

Thermo 43i Sulphur Dioxide Analyzer Calibration

Date:	June 3, 2016	**Barometric Pressure:**	28.06 inHg
Company/Airshed:	LICA	**Station Temperature °C:**	22
Location/Station Name:	Cold Lake South	**Weather Conditions:**	Sunny
Parameter:	Sulphur Dioxide	**Calibration Purpose:**	shut down
Start Time 24 hr. (mst):	13:10	**Performed By/Reviewer:**	Limin Li / Tom Bourque
End Time 24 hr. (mst):	14:45	**Cal Gas Expiry Date:**	December 25, 2018
Calibration Method:	Gas Dilution	**Converter Model & s/n (if applicable):**	n/a

Analyzer:

Serial Number:	806528242	**Range ppb:**	500
Last Calibration Date:	May 2, 2016	**As Found C.F.:**	0.941
Previous C.F.:	1.000	**New C.F.:**	n/a

Calibrator:

Flow Meter ID's:	n/a
Make & Model:	SABIO 2010
Serial #:	17200415
Cal Gas Cylinder I.D. # :	BLM002756T
Cal Gas Conc. (ppm):	49.9

Standard Calibration Points for Ranges

Point	Sulphur Dioxide Standard Calibration Points
High	**380**
Mid	**180**
Low	**90**

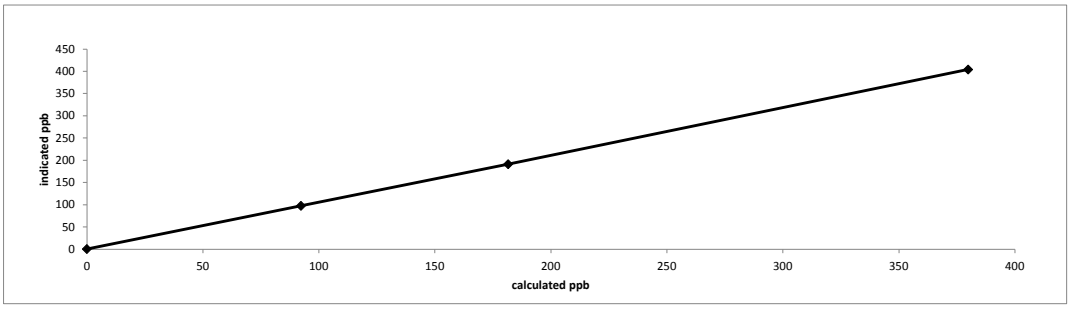
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors (C.F.):
Point	**Diluent**	**Cal Gas**	**Total**	**(ppb)**	**(ppb)**	
as found zero	5026	0.00	5026	0.0	0.2	N/A
as found high	4993	38.30	5031	379.9	404.0	0.941
mid	5011	18.30	5029	181.6	191.0	0.952
low	5019	9.30	5028	92.3	97.3	0.950
					Average C.F.=	0.948

Linear Regression/Calibration Results:

		LIMITS
Correlation Coeffecient =	**1.000**	**> or = 0.995**
Slope =	**0.940**	**0.90-1.10**
b (Intercept as % of full scale)=	**0.13%**	**± 3% F.S.**
% change in C.F. from last cal=	**5.93%**	**± 10%**

Thermo 43i Sulphur Dioxide Analyzer Calibration



	As found:		**As left:**
BKG:	7.6	BKG:	7.6
COEF:	1.188	COEF:	1.188
PMT:	-632.0	PMT:	-632.0
FLASH:	698	FLASH:	698
INTERNAL:	28.3	INTERNAL:	28.3
CHAMBER:	45	CHAMBER:	45
PERM OVEN GAS:	45.0	PERM OVEN GAS:	45.0
PERM OVEN HEATER:	44.19	PERM OVEN HEATER:	44.19
PRESSURE:	679.5	PRESSURE:	679.5
SAMPLE FLOW:	0.475	SAMPLE FLOW:	0.475
LAMP INTENSITY:	76	LAMP INTENSITY:	76
CONVERTER:	n/a	CONVERTER:	n/a
CONVERTER SET:	n/a	CONVERTER SET:	n/a
Internal Span:	388.9	Internal Span:	388.9

Comments:

Sample filter changed. Performed a shut down calibration, adjusted the UV lamp and PMT voltage. UV lamp voltage was low, showed alarm, voltage was less than 700V.

Thermo 43i Sulphur Dioxide Analyzer Calibration

Date:	June 3, 2016	**Barometric Pressure:**	28.06 inHg
Company/Airshed:	LICA	**Station Temperature °C:**	22
Location/Station Name:	Cold Lake South	**Weather Conditions:**	Sunny
Parameter:	Sulphur Dioxide	**Calibration Purpose:**	post repair
Start Time 24 hr. (mst):	15:20	**Performed By/Reviewer:**	Limin Li / Tom Bourque
End Time 24 hr. (mst):	18:15	**Cal Gas Expiry Date:**	December 25, 2018
Calibration Method:	Gas Dilution	**Converter Model & s/n (if applicable):**	n/a

Analyzer:

Serial Number:	806528242	**Range ppb:**	500
Last Calibration Date:	May 2, 2016	**As Found C.F.:**	n/a
Previous C.F.:	1.000	**New C.F.:**	1.000

Calibrator:

Flow Meter ID's:	n/a
Make & Model:	SABIO 2010
Serial #:	17200415
Cal Gas Cylinder I.D. # :	BLM002756T
Cal Gas Conc. (ppm):	49.9

Standard Calibration Points for Ranges

Point	Sulphur Dioxide Standard Calibration Points
High	**380**
Mid	**180**
Low	**90**

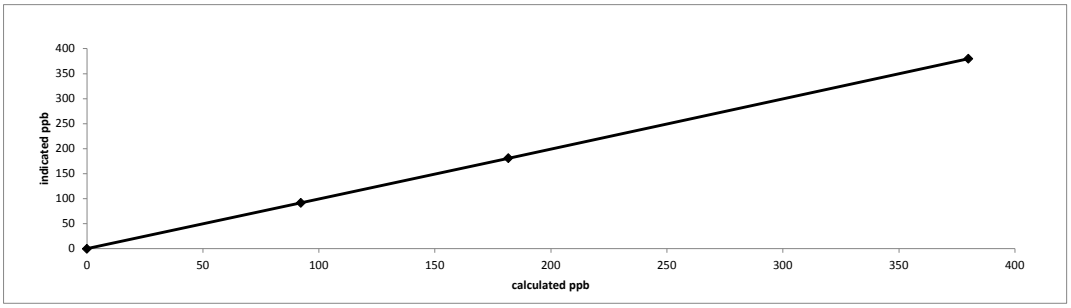
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors (C.F.):
Point	**Diluent**	**Cal Gas**	**Total**	**(ppb)**	**(ppb)**	
adjusted zero	5026	0.00	5026	0.0	0.0	N/A
adjusted high	4992	38.30	5030	379.9	380.0	1.000
mid	5008	18.30	5026	181.7	181.0	1.004
low	5022	9.30	5031	92.2	91.7	1.006
calibrator zero	5028	0.00	5028	0.0	0.0	n/a
					Average C.F.=	1.003

Linear Regression/Calibration Results:

		LIMITS
Correlation Coeffecient =	**1.000**	**> or = 0.995**
Slope =	**0.999**	**.95-1.05**
b (Intercept as % of full scale)=	**0.07%**	**± 3% F.S.**
% change in C.F. from last cal=	**n/a**	**± 10%**

Thermo 43i Sulphur Dioxide Analyzer Calibration

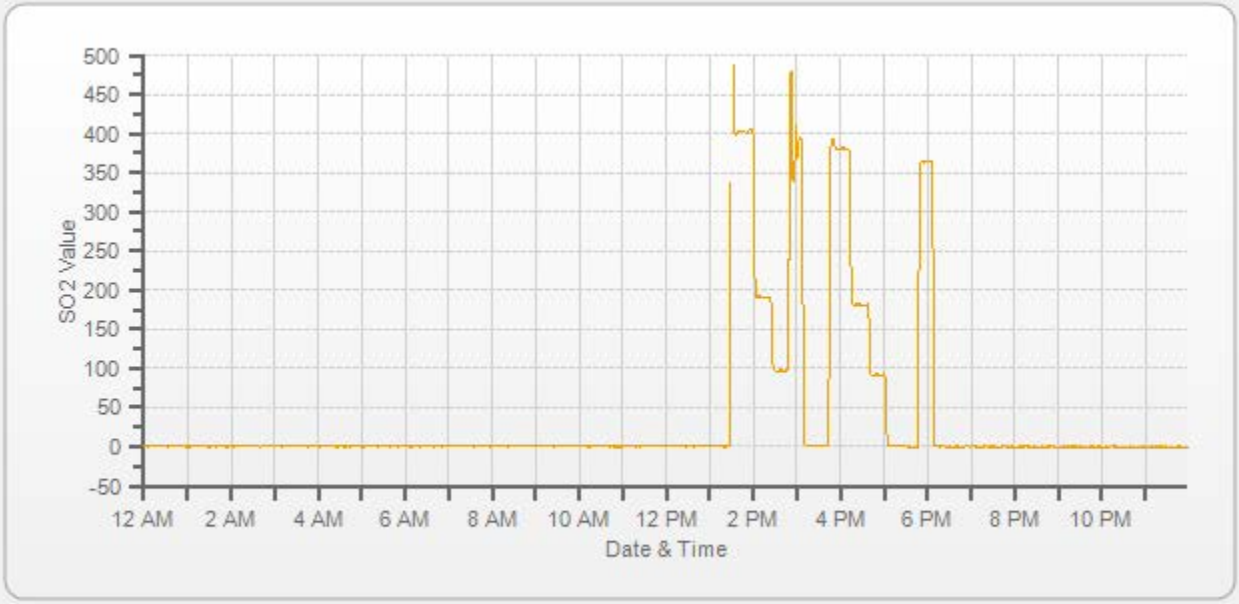


	As found:		**As left:**
BKG:	7.6	BKG:	7.7
COEF:	1.188	COEF:	0.970
PMT:	-632.0	PMT:	-624.2
FLASH:	698	FLASH:	758
INTERNAL:	28.3	INTERNAL:	27.9
CHAMBER:	45	CHAMBER:	44.9
PERM OVEN GAS:	45.0	PERM OVEN GAS:	45.0
PERM OVEN HEATER:	44.19	PERM OVEN HEATER:	44.19
PRESSURE:	679.5	PRESSURE:	679.5
SAMPLE FLOW:	0.475	SAMPLE FLOW:	0.475
LAMP INTENSITY:	76	LAMP INTENSITY:	97
CONVERTER:	n/a	CONVERTER:	n/a
CONVERTER SET:	n/a	CONVERTER SET:	n/a
Internal Span:	388.9	Internal Span:	363.5

Comments:

Sample filter changed. Performed a shut down calibration, adjusted the UV lamp and PMT voltage. UV lamp voltage was low, showed alarm, voltage was less than 700V.

SO2[ppb] Station: LICA COLD LAKE SOUTH Daily: 2016/06/03 Type: AVG 1 Min. [1 Min.]



TOTAL REDUCED SULPHUR

Thermo 450i Total Reduced Sulphur Analyzer Calibration

Date:	June 2, 2016	**Barometric Pressure:**	27.77 inHg
Company/Airshed:	LICA	**Station Temperature °C:**	22
Location/Station Name:	Cold Lake South	**Weather Conditions:**	Mainly sunny
Parameter:	Total Reduced Sulphur	**Calibration Purpose:**	routine monthly
Start Time 24 hr. (mst):	15:00	**Performed By/Reviewer:**	Limin Li / Tom Bourque
End Time 24 hr. (mst):	18:30	**Cal Gas Expiry Date:**	January 6, 2018
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 6, 2016	**As Found C.F.:**	0.917
Previous C.F.:	1.000	**New C.F.:**	1.000

Calibrator:

Flow Meter ID's:	n/a
Make & Model:	Envirinics 2000
Serial #:	1991
Cal Gas Cylinder I.D. # :	BLM002508
Cal Gas Conc. (ppm):	10.2

Standard Calibration Points for Ranges

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

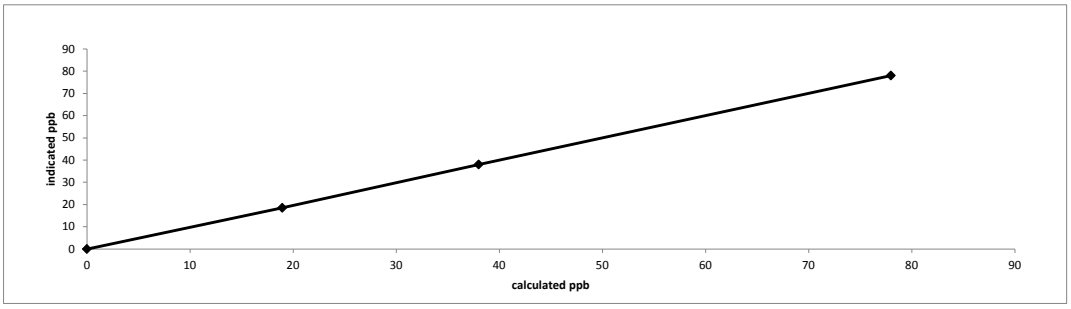
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors (C.F.):
Point	**Diluent**	**Cal Gas**	**Total**	**(ppb)**	**(ppb)**	
as found zero	7504	0.00	7504	0.0	0.0	N/A
as found high	7447	57.37	7504	78.0	85.0	0.917
adjusted zero	7504	0.00	7504	0.0	0.0	n/a
adjusted high	7447	57.37	7504	78.0	78.0	1.000
mid	7479	27.97	7507	38.0	38.0	1.000
low	7494	13.95	7508	18.9	18.5	1.024
calibrator zero	7504	0.00	7504	0.0	0.1	n/a
					Average C.F.=	1.008

Linear Regression/Calibration Results:

		LIMITS
Correlation Coeffecient =	**1.000**	**> or = 0.995**
Slope =	**0.998**	**.95-1.05**
b (Intercept as % of full scale)=	**0.19%**	**± 3% F.S.**
% change in C.F. from last cal=	**8.26%**	**± 10%**

Thermo 450i Total Reduced Sulphur Analyzer Calibration

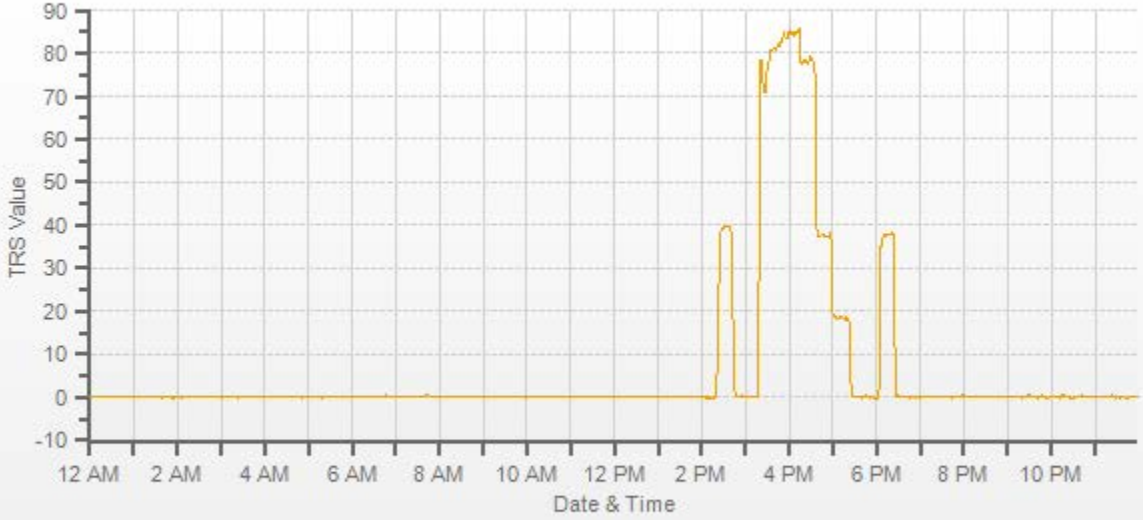


	As found:	As left:
BKG:	15.1	13.7
COEF:	1.042	0.945
PMT:	-651.2	-651.2
FLASH:	741	741
INTERNAL:	32.2	32.2
CHAMBER:	45	45
CONVERTER TEMP:	810	810
CONVERTER SET:	810	810
PERM OVEN GAS:	45	45
PERM OVEN HTR:	44.38	44.38
PRESSURE:	655	655
SAMPLE FLOW:	0.508	0.508
LAMP INTENSITY:	91	91
Internal Span:	39.0	38.16

Comments:

Sample filter changed. No zero adjusted. It is 107 small pump. Rebuilt on Feburary 2015 last time. Need rebuilt TRS pump ASAP.

TRS[ppb] Station: LICA COLD LAKE SOUTH Daily: 2016/06/02 Type: AVG 1 Min. [1 Min.]



Thermo 450i Total Reduced Sulphur Analyzer Calibration

Date:	June 3, 2016	**Barometric Pressure:**	28.06 inHg
Company/Airshed:	LICA	**Station Temperature °C:**	22
Location/Station Name:	Cold Lake South	**Weather Conditions:**	Sunny
Parameter:	Total Reduced Sulphur	**Calibration Purpose:**	shut down
Start Time 24 hr. (mst):	13:10	**Performed By/Reviewer:**	Limin Li / Tom Bourque
End Time 24 hr. (mst):	15:00	**Cal Gas Expiry Date:**	January 6, 2018
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 6, 2016	**As Found C.F.:**	1.004
Previous C.F.:	1.000	**New C.F.:**	n/a

Calibrator:

Flow Meter ID's:	n/a
Make & Model:	Envirinics 2000
Serial #:	1991
Cal Gas Cylinder I.D. # :	BLM002508
Cal Gas Conc. (ppm):	10.2

Standard Calibration Points for Ranges

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

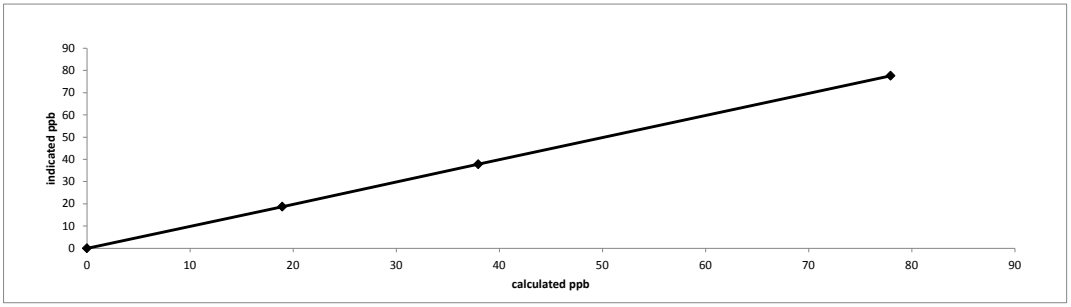
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors (C.F.):
Point	**Diluent**	**Cal Gas**	**Total**	**(ppb)**	**(ppb)**	
as found zero	7504	0.00	7504	0.0	0.0	N/A
as found high	7450	57.37	7507	77.9	77.6	1.004
mid	7482	27.94	7510	37.9	37.8	1.004
low	7496	13.95	7510	18.9	18.7	1.013
					Average C.F.=	1.007

Linear Regression/Calibration Results:

		LIMITS
Correlation Coeffecient =	**1.000**	**> or = 0.995**
Slope =	**1.004**	**0.90-1.10**
b (Intercept as % of full scale)=	**0.06%**	**± 3% F.S.**
% change in C.F. from last cal=	**-0.44%**	**± 10%**

Thermo 450i Total Reduced Sulphur Analyzer Calibration



	As found:		**As left:**
BKG:	13.7	BKG:	13.7
COEF:	0.945	COEF:	0.945
PMT:	-651.2	PMT:	-651.2
FLASH:	741	FLASH:	741
INTERNAL:	32.2	INTERNAL:	32.2
CHAMBER:	45	CHAMBER:	45
CONVERTER TEMP:	810	CONVERTER TEMP:	810
CONVERTER SET:	810	CONVERTER SET:	810
PERM OVEN GAS:	45	PERM OVEN GAS:	45
PERM OVEN HTR:	44.38	PERM OVEN HTR:	44.38
PRESSURE:	655	PRESSURE:	655
SAMPLE FLOW:	0.508	SAMPLE FLOW:	0.508
LAMP INTENSITY:	91	LAMP INTENSITY:	91
Internal Span:	38.16	Internal Span:	38.16

Comments:

After shut down calibration, Rebuilt pump. Then do post repair calibration.

Thermo 450i Total Reduced Sulphur Analyzer Calibration

Date:	June 3, 2016	**Barometric Pressure:**	28.06 inHg
Company/Airshed:	LICA	**Station Temperature °C:**	22
Location/Station Name:	Cold Lake South	**Weather Conditions:**	Sunny
Parameter:	Total Reduced Sulphur	**Calibration Purpose:**	post repair
Start Time 24 hr. (mst):	15:30	**Performed By/Reviewer:**	Limin Li / Tom Bourque
End Time 24 hr. (mst):	18:30	**Cal Gas Expiry Date:**	January 6, 2018
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 6, 2016	**As Found C.F.:**	n/a
Previous C.F.:	1.000	**New C.F.:**	1.000

Calibrator:

Flow Meter ID's:	n/a
Make & Model:	Envirinics 2000
Serial #:	1991
Cal Gas Cylinder I.D. # :	BLM002508
Cal Gas Conc. (ppm):	10.2

Standard Calibration Points for Ranges

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

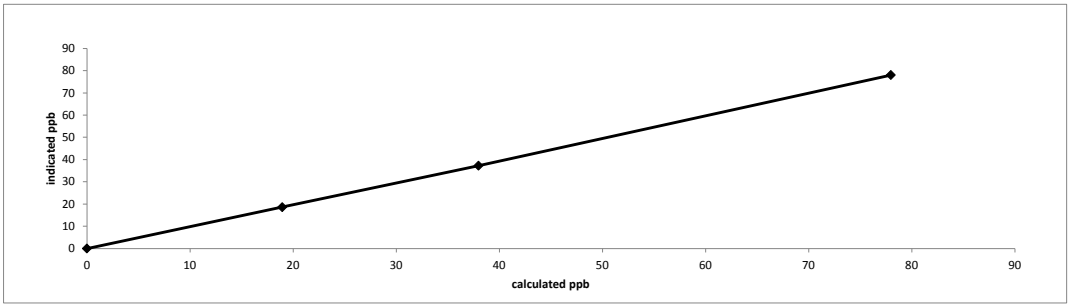
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors (C.F.):
Point	**Diluent**	**Cal Gas**	**Total**	**(ppb)**	**(ppb)**	
adjusted zero	7509	0.00	7509	0.0	0.0	N/A
adjusted high	7450	57.39	7507	78.0	78.0	1.000
mid	7484	27.97	7512	38.0	37.2	1.021
low	7496	13.95	7510	18.9	18.6	1.019
calibrator zero	7509	0.00	7509	0.0	0.0	n/a
					Average C.F.=	1.013

Linear Regression/Calibration Results:

		LIMITS
Correlation Coeffecient =	**1.000**	**> or = 0.995**
Slope =	**0.999**	**.95-1.05**
b (Intercept as % of full scale)=	**0.31%**	**± 3% F.S.**
% change in C.F. from last cal=	**n/a**	**± 10%**

Thermo 450i Total Reduced Sulphur Analyzer Calibration

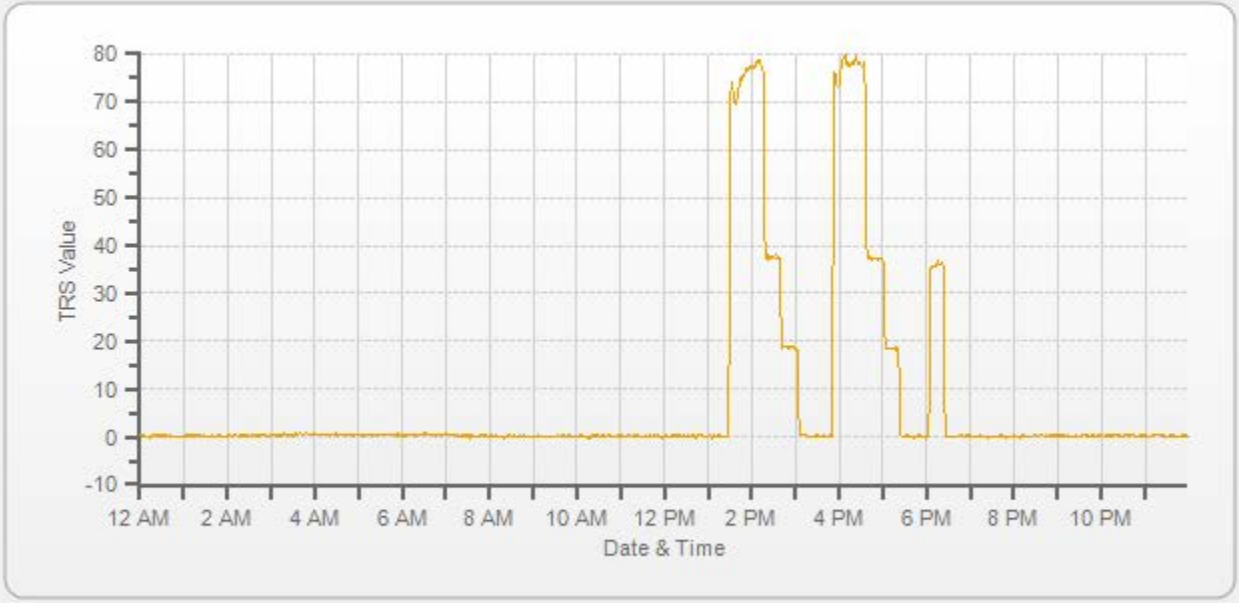


	As found:		**As left:**
BKG:	13.7	BKG:	13.2
COEF:	0.945	COEF:	0.914
PMT:	-651.2	PMT:	-651.2
FLASH:	741	FLASH:	741
INTERNAL:	32.2	INTERNAL:	31.8
CHAMBER:	45	CHAMBER:	45
CONVERTER TEMP:	810	CONVERTER TEMP:	810
CONVERTER SET:	810	CONVERTER SET:	810
PERM OVEN GAS:	45	PERM OVEN GAS:	45
PERM OVEN HTR:	44.38	PERM OVEN HTR:	44.38
PRESSURE:	655	PRESSURE:	664.2
SAMPLE FLOW:	0.508	SAMPLE FLOW:	0.515
LAMP INTENSITY:	91	LAMP INTENSITY:	91
Internal Span:	38.16	Internal Span:	36.1

Comments:

After shut down calibration, Rebuilt pump. Then do post repair calibration.

TRS[ppb] Station: LICA COLD LAKE SOUTH Daily: 2016/06/03 Type: AVG 1 Min. [1 Min.]



Thermo 450i Total Reduced Sulphur Analyzer Calibration

Date:	June 7, 2016	**Barometric Pressure:**	0.930 atm
Company/Airshed:	LICA	**Station Temperature °C:**	21
Location/Station Name:	Cold Lake South	**Weather Conditions:**	A few clouds
Parameter:	Total Reduced Sulphur	**Calibration Purpose:**	repeat
Start Time 24 hr. (mst):	10:43	**Performed By/Reviewer:**	Alex Yakupov / Tom Bourque
End Time 24 hr. (mst):	14:29	**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:	June 3, 2016	**As Found C.F.:**	1.054
Previous C.F.:	1.000	**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

Standard Calibration Points for Ranges

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

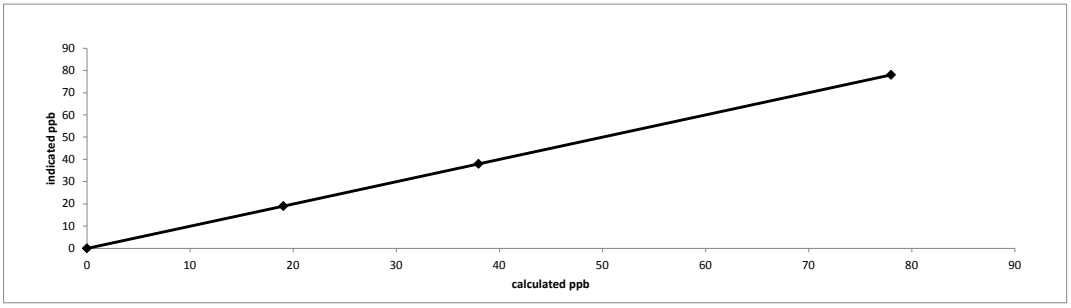
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors (C.F.):
Point	**Diluent**	**Cal Gas**	**Total**	**(ppb)**	**(ppb)**	
as found zero	7498	0.00	7498	0.0	0.0	N/A
as found high	7443	58.50	7502	78.0	74.0	1.054
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	7474	28.50	7503	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
					Average C.F.=	1.001

Linear Regression/Calibration Results:

		LIMITS
Correlation Coeffecient =	**1.000**	**> or = 0.995**
Slope =	**1.000**	**.95-1.05**
b (Intercept as % of full scale)=	**0.02%**	**± 3% F.S.**
% change in C.F. from last cal=	**-5.38%**	**± 10%**

Thermo 450i Total Reduced Sulphur Analyzer Calibration

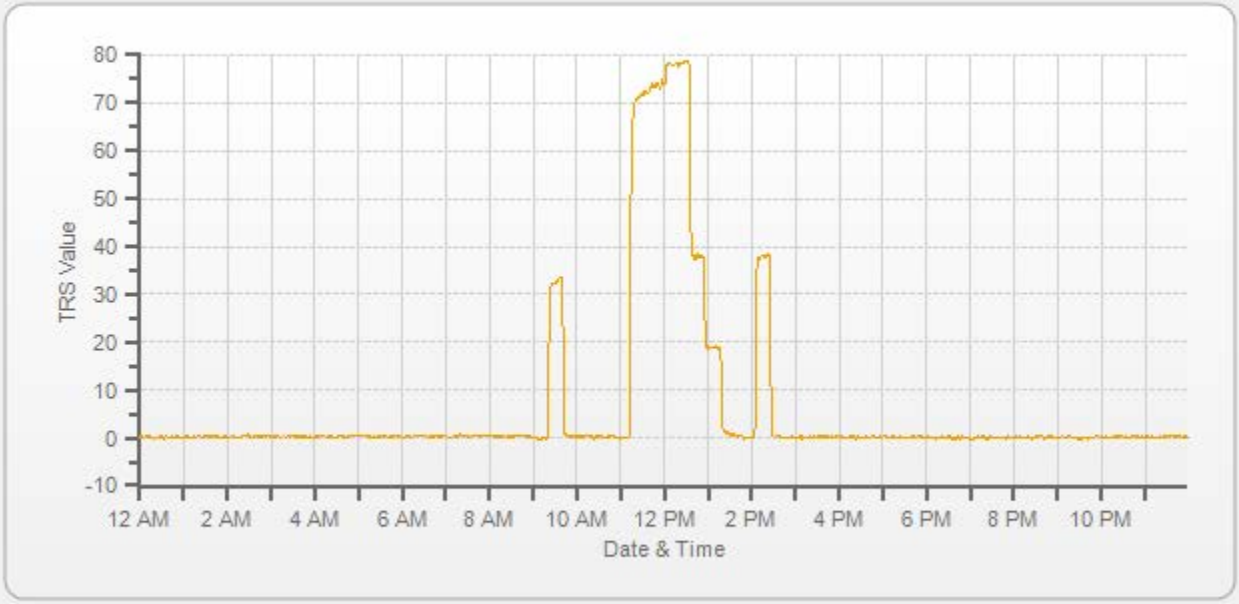


As found:		As left:	
BKG:	13.3	BKG:	13.9
COEF:	0.914	COEF:	0.955
PMT:	-651.2	PMT:	-650.5
FLASH:	742	FLASH:	742
INTERNAL:	31.2	INTERNAL:	31.2
CHAMBER:	45.0	CHAMBER:	45.0
CONVERTER TEMP:	810	CONVERTER TEMP:	810
CONVERTER SET:	810	CONVERTER SET:	810
PERM OVEN GAS:	45.0	PERM OVEN GAS:	45.0
PERM OVEN HTR:	44.38	PERM OVEN HTR:	44.38
PRESSURE:	653.8	PRESSURE:	653.2
SAMPLE FLOW:	0.510	SAMPLE FLOW:	0.510
LAMP INTENSITY:	91	LAMP INTENSITY:	91
Internal Span:	38.16	Internal Span:	38.2

Comments:

No ZERO adjustment made. This calibration started as "As Found" calibration. It was required because, according to a daily report, TRS span check was low, 34.1/38.1, -10.49%. Second scheduled Zero-Span check resulted in a similar SPAN reading of 33.45 ppb. After "As Found" High Point (74 ppb), full three points "Repeat" calibration completed, because the difference was over 5%. TRS sample inlet filter was changed on June 2, 2016 (Calibration by Limin Li)

TRS[ppb] Station: LICA COLD LAKE SOUTH Daily: 2016/06/07 Type: AVG 1 Min. [1 Min.]



Thermo 450i Total Reduced Sulphur Analyzer Calibration

Date:	June 11, 2016	**Barometric Pressure:**	0.921 atm
Company/Airshed:	LICA	**Station Temperature °C:**	21
Location/Station Name:	Cold Lake South	**Weather Conditions:**	A few clouds and light rain showers
Parameter:	Total Reduced Sulphur	**Calibration Purpose:**	repeat
Start Time 24 hr. (mst):	10:02	**Performed By/Reviewer:**	Alex Yakupov / Tom Bourque
End Time 24 hr. (mst):	13:40	**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:	June 7, 2016	**As Found C.F.:**	1.009
Previous C.F.:	1.000	**New C.F.:**	1.009

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

Standard Calibration Points for Ranges

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

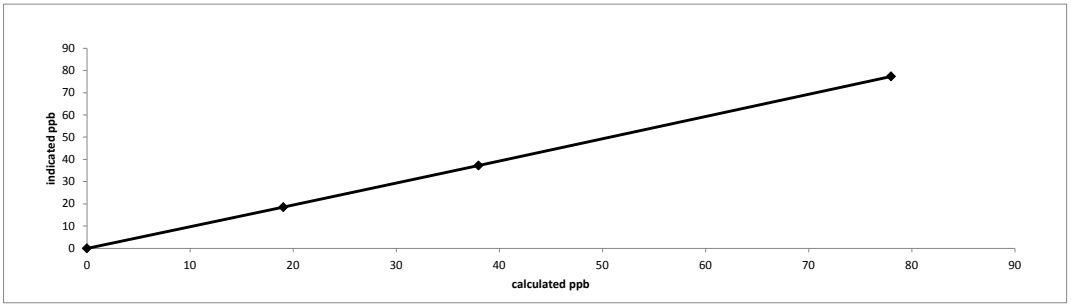
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors (C.F.):
Point	**Diluent**	**Cal Gas**	**Total**	**(ppb)**	**(ppb)**	
as found zero	7498	0.00	7498	0.0	0.0	N/A
as found high	7443	58.50	7502	78.0	77.3	1.009
adjusted zero	7498	0.00	7498	0.0	0.0	n/a
adjusted high	7443	58.50	7502	78.0	77.3	1.009
mid	7474	28.50	7503	38.0	37.2	1.021
low	7490	14.30	7504	19.1	18.5	1.030
calibrator zero	7498	0.00	7498	0.0	0.0	n/a
					Average C.F.=	1.020

Linear Regression/Calibration Results:

		LIMITS
Correlation Coeffecient =	**1.000**	**> or = 0.995**
Slope =	**1.008**	**.95-1.05**
b (Intercept as % of full scale)=	**0.25%**	**± 3% F.S.**
% change in C.F. from last cal=	**-0.89%**	**± 10%**

Thermo 450i Total Reduced Sulphur Analyzer Calibration

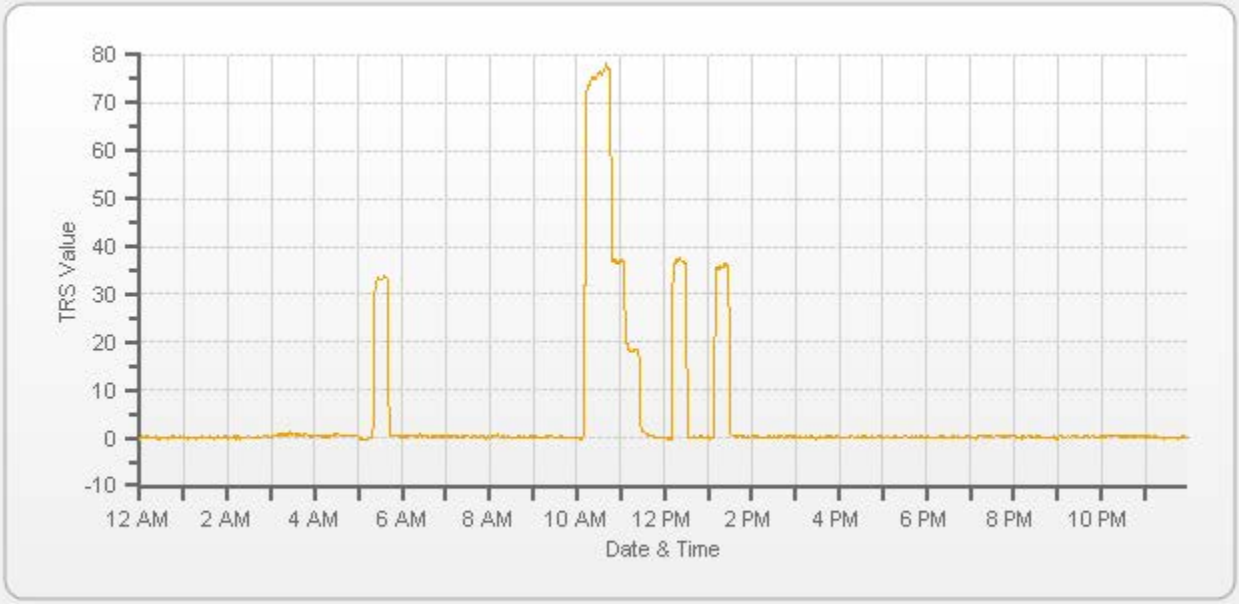


	As found:		**As left:**
BKG:	13.8	BKG:	13.8
COEF:	0.995	COEF:	0.995
PMT:	-651.2	PMT:	-651.3
FLASH:	743	FLASH:	742
INTERNAL:	31.0	INTERNAL:	31.2
CHAMBER:	44.8	CHAMBER:	44.9
CONVERTER TEMP:	810	CONVERTER TEMP:	810
CONVERTER SET:	810	CONVERTER SET:	810
PERM OVEN GAS:	44.99	PERM OVEN GAS:	44.99
PERM OVEN HTR:	44.37	PERM OVEN HTR:	44.37
PRESSURE:	660.8	PRESSURE:	660.5
SAMPLE FLOW:	0.514	SAMPLE FLOW:	0.514
LAMP INTENSITY:	91	LAMP INTENSITY:	91
Internal Span:	38.2	Internal Span:	36.0

Comments:

No ZERO adjustment made. No High Point adjustement made. This calibration started as "As Found" calibration. It was required because, according to a daily report, TRS span check was low, 33.6/38.2, -12.04%, "As Found" calibration required as soon as possible. "As Found" calibration contunied as Three Point Repeat calibration, because a full three point calibration is required to correct the EV. TRS sample inlet filter was changed on June 2, 2016 (Calibration by Limin)

TRS[ppb] Station: LICA COLD LAKE SOUTH Daily: 2016/06/11 Type: AVG 1 Min. [1 Min.]



TOTAL HYDROCARBON

Thermo 51C Total Hydrocarbon Analyzer Calibration

Date:	June 7, 2016	**Barometric Pressure:**	0.930 atm
Company/Airshed:	LICA	**Station Temperature °C:**	21
Location/Station Name:	Cold Lake South	**Weather Conditions:**	A few clouds
Parameter:	Total Hydrocarbon	**Calibration Purpose:**	routine monthly
Start/End Time 24 hr. (mst):	8:04 / 11:27	**Performed By/Reviewer:**	Alex Yakupov / Tom Bourque
Calibration Method:	Gas Dilution	**Cal Gas Expiry Date:**	November 25, 2023

Analyzer:

Serial Number:	427408718	**Range ppm:**	50
Last Calibration Date:	May 3, 2016	**As Found C.F.:**	1.013
Previous Cal High Point C.F.:	1.001	**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_4/C_3H_8 Cylinder Conc. (ppm):	606.0	212.0
CH_4 as propane/total CH_4 equivilants (ppm):	583.0	1189.0

Standard Calibration Points for a Range of 50 ppm

Point	Target ppm
High	38
Mid	18
Low	9

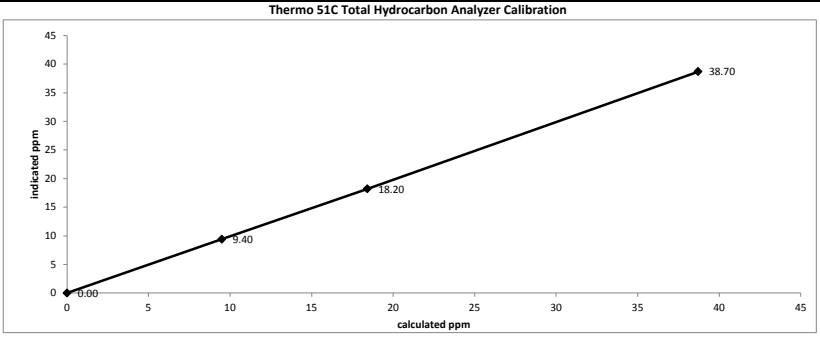
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors:
Point	**Diluent**	**Cal Gas**	**Total**	**(ppm)**	**(ppm)**	
as found zero	1999	0.00	1999	0.0	0.00	n/a
as found high	1932	65.00	1997	38.70	38.20	1.013
adjusted zero	1999	0.00	1999	0.00	0.00	n/a
adjusted high	1932	65.00	1997	38.70	38.70	1.000
mid	1970	31.00	2001	18.42	18.20	1.012
low	1987	16.00	2003	9.50	9.40	1.010
calibrator zero	1999	0.00	1999	0.0	0.00	n/a
					Average C.F.=	1.008

Linear Regression/Calibration Results:

		LIMITS
Correlation Coeffecient =	**1.000**	**> or = 0.995**
Slope =	**1.000**	**.95-1.05**
b (Intercept as % of full scale)=	**0.17%**	**± 3% F.S.**
% change in C.F. from last cal=	**-1.21%**	**± 10%**

Thermo 51C Total Hydrocarbon Analyzer Calibration

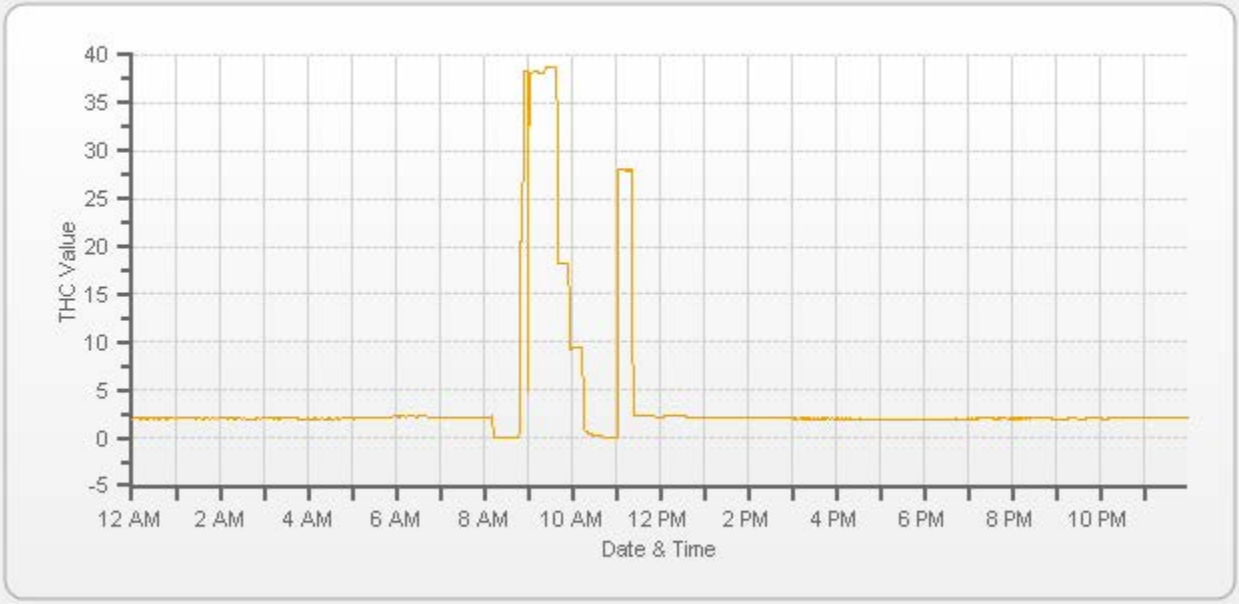


As found:		As left:	
H2 cylinder (psi):	800	H2 cylinder (psi):	800
H2 cylinder reg set (psi):	22	H2 cylinder reg set (psi):	22
Span Cylinder (psi):	1500	Span Cylinder (psi):	1500
Span Cylinder Reg Set (psi):	22	Span Cylinder Reg Set (psi):	22
Zero Air Gen Pressure:	34	Zero Air Gen Pressure:	34
measurement alarms:	None	measurement alarms:	None
service alarms:	None	service alarms:	None
cnt:	1491	cnt:	1765
rng:	1	rng:	1
try:	0	try:	0
flm:	182.4	flm:	182.8
det:	125.2	det:	125.1
Flame:	182	Flame:	182
Filter:	125	Filter:	125
Base:	125	Base:	125
Sample psi:	06.50	Sample psi:	06.50
Internal Air Pressure:	20	Internal Air	20
Internal Fuel Pressure:	14	Internal Fuel Pressure:	14
Intenal Pressure Gauge psi:	27	Intenal Pressure Gauge psi:	27
Internal Span:	27.6	Internal Span:	27.98

Comments:

Sample inlet filter changed. No ZERO adjustment made. High Point starts at 09:06.

THC[ppm] Station: LICA COLD LAKE SOUTH Daily: 2016/06/07 Type: AVG 1 Min. [1 Min.]



NITROGEN DIOXIDE

Thermo 42i NO-NO2-NOx Analyzer Calibration

Date:	June 7, 2016	**Barometric Pressure:**	0.930 atm
Company/Airshed:	LICA	**Station Temperature °C:**	21
Location/Station Name:	Cold Lake South	**Weather Conditions:**	A few clouds
Start/End Time 24 hr. (mst):	8:04 / 12:57	**Calibration Purpose:**	routine monthly
G.P.T. to be used for Ozone?	No	**Performed By/Reviewer:**	Alex Yakupov / Tom Bourque
Calibration Method:	Gas Dilution & Varying UV Lamp Power	**Cal Gas Expiry Date:**	December 2, 2023

Analyzer:

Serial Number:	1505664393
Last Calibration Date:	May 2, 2016
Range ppb:	500

Correction Factors:

	Previous C.F.:	As Found C.F.:	New C.F.:
NO =	1.000	1.000	1.000
NO_2 =	1.000	1.000	1.000
NOx =	1.000	1.000	1.000

Calibrator:

Flow Meter ID's:	n/a	
Make & Model:	SABIO 2010 D	
Serial #:	11900613	
Cal Gas Cylinder I.D. # :	LL119346	
NO/NOx Gas Conc. (ppm):	50.0	50.0

Standard Calibration Points for a Range of: 500 ppb

Point	Target NO (ppb)	Target NO_2 (ppb)	Cc Ozone ?
High	**380**	**250**	**n/a**
Mid	**180**	**145**	**n/a**
Low	**90**	**50**	**n/a**
Extra Point #1	**n/a**	**n/a**	**n/a**
Extra Point #2	**n/a**	**n/a**	**n/a**

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	0.0	n/a	n/a
as found high	4962	38.00	5000	380.0	380.0	380.0	380.0	1.000	1.000
adjusted zero	4999	0.00	4999	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	4999	0.00	4999	0	0	0.0	0.0	n/a	n/a
							Average C.F.=	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_2	NO drop	NO_2 gain	NO_2 C.F.
Point	**Diluent**	**Cal Gas**	**Total Flow**	**volts or ppb**	**(ppb)**	**(ppb)**	**(ppb)**	**(ppb)**	**(ppb)**	**(ppb)**
NOx reference	4962	38.00	5000	0.0	380.0	380.0	0.0	0.0	0.0	
as found high NO2	4962	38.00	5000	245.0	126.0	380.0	254.0	254.0	254.0	1.000
adjusted high NO2	4962	38.00	5000	245.0	126.0	380.0	254.0	254.0	254.0	1.000
gpt mid	4962	38.00	5000	141.0	232.0	380.0	148.0	148.0	148.0	1.000
gpt low	4962	38.00	5000	45.0	330.0	380.0	50.0	50.0	50.0	1.000
								Average NO_2 C.F.=		1.000

Linear Regression/Calibration Results:

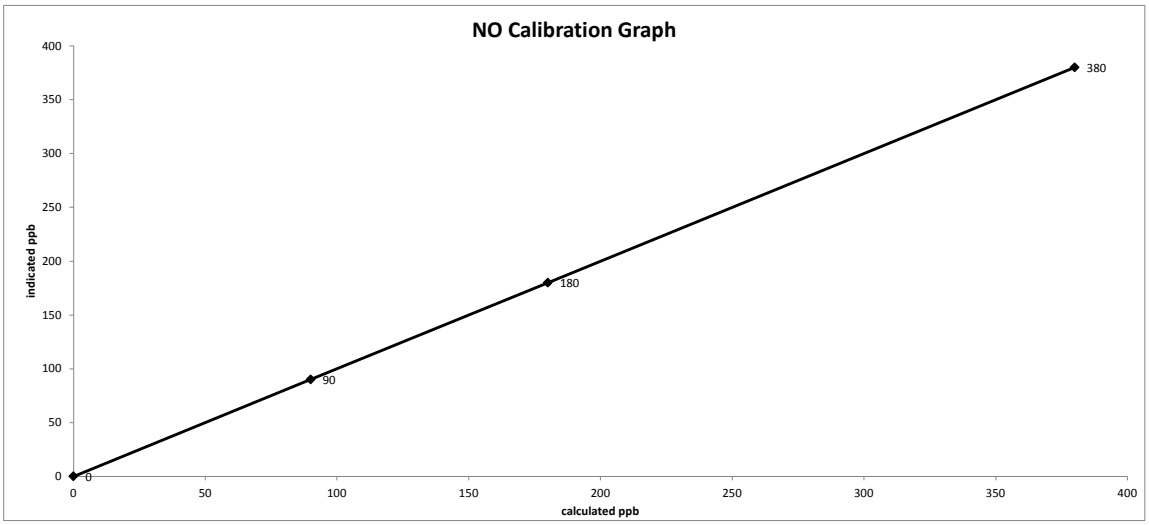
	NO	NOx	NO_2	LIMITS
Correlation Coeffecient =	**1.000**	**1.000**	**1.000**	**> or = 0.995**
Slope =	**1.000**	**1.000**	**1.000**	**.95-1.05**
b (Intercept as % of full scale)=	**0.00%**	**0.00%**	**0.00%**	**± 3% F.S.**
% change in C.F. from last cal=	**0.00%**	**0.00%**	**0.00%**	**± 10%**
NO2 converter effeciency			**1.00**	**0.96 to 1.04**

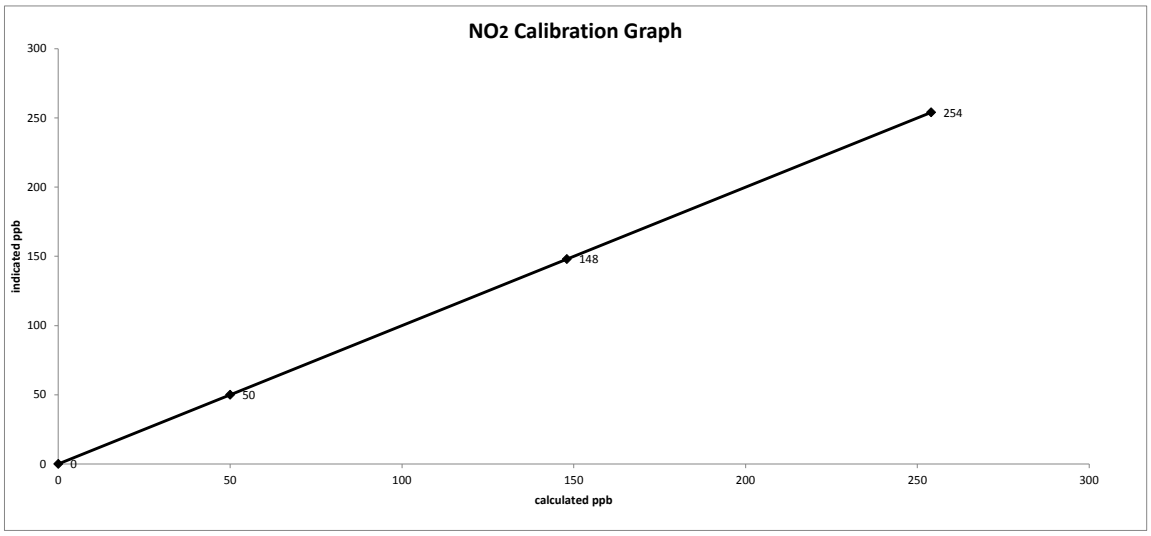
As found:		**As left:**	
NO Bkg:	3.4	NO Bkg:	3.4
NOx Bkg:	3.5	NOx Bkg:	3.5
NO Coef:	1.025	NO Coef:	1.025
NO2 Coef:	1.000	NO2 Coef:	1.000
NOx Coef:	0.998	NOx Coef:	0.998
PMT:	-854.3	PMT:	-854.3
Internal:	24.1	Internal:	23.6
Chamber:	50.0	Chamber:	50.2
Cooler:	-3.1	Cooler:	-3.0
NO2 Converter:	325.3	NO2 Converter:	325.0
NO2 Converter Set:	325.0	NO2 Converter Set:	325.0
Pressure:	185.6	Pressure:	184.7
Flow:	0.789	Flow:	0.788
Ozonator Flow:	OK	Ozonator Flow:	OK
Internal Span NO:	2.0	Internal Span NO:	2.0
Internal Span NO2:	264.3	Internal Span NO2:	264.3
Internal Span NOx:	266.5	Internal Span NOx:	266.5

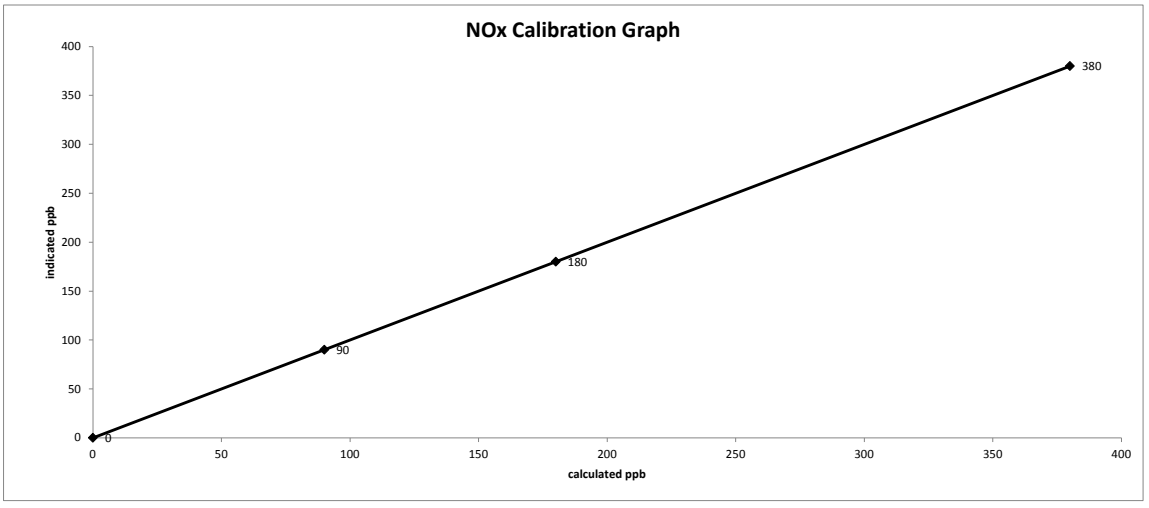
Comments:

Sample inlet filter changed. No High Point adjustement made. No ZERO adjustment made. No NO2 adjustment made. High Point starts at 09:06. No EV adjustment needed. ZS check after calibration resulted in ZERO difference for both ZERO and SPAN readings.

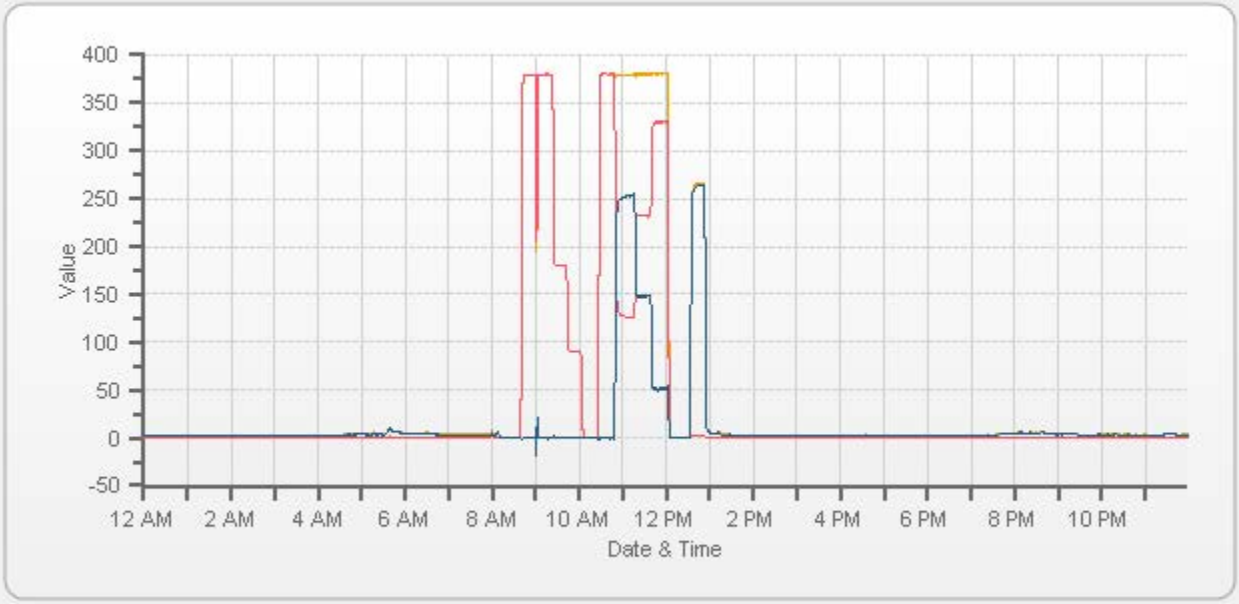
Date:	**June 7, 2016**	**Start/End Time 24 hr. (mst):**	**8:04 / 12:57**
Company/Airshed:	**LICA**	**Calibration Purpose:**	**routine monthly**
Location/Station Name:	**Cold Lake South**	**Calibration Method:**	**Gas Dilution & Varying UV Lamp Power**







Station: LICA COLD LAKE SOUTH Daily: 2016/06/07 Type: AVG 1 Min. [1 Min.]



OZONE

Thermo 49i Ozone Analyzer Calibration

Date:	June 10, 2016	**Barometric Pressure:**	0.936 atm
Company/Airshed:	LICA	**Station Temperature °C:**	22
Location/Station Name:	Cold Lake South	**Weather Conditions:**	Clear
Start/End Time 24 hr. (mst):	12:55 / 16:10	**Calibration Purpose:**	routine monthly
Ozone Calibration Method:	Varying UV Lamp Power	**Performed By/Reviewer:**	Alex Yakupov / Tom Bourque
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 18, 2016	**As Found C.F.:**	1.000
Previous Cal High Point C.F.:	1.000	**New C.F.:**	1.000

Calibrator:

Flow Meter ID's:	n/a
Make & Model:	SABIO 2010 D
Serial #:	11900613
Cal Gas Cylinder I.D. # :	n/a

Point	AMD Required Range of Ozone Calibration Points
High	300-400 ppb
Mid	150-200 ppb
Low	50-75 ppb

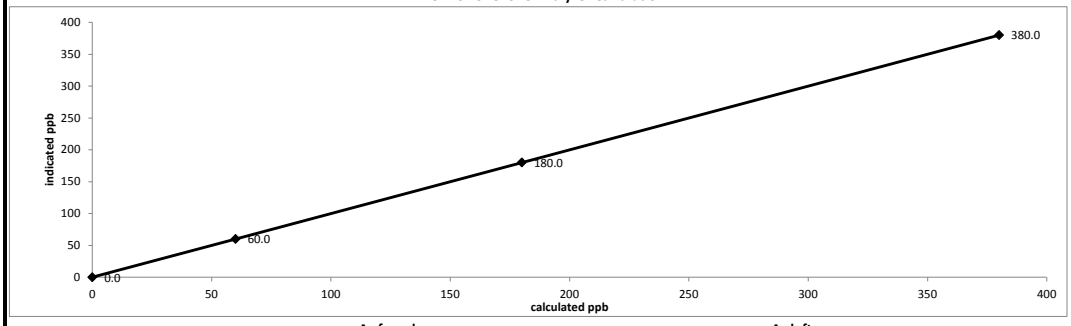
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

	Calibrator Flow Rate (cc/min)		Calculated Concentration:	Corrected Calculated Conentration:	Indicated Concentration:	Correction Factors:
Point	**Total Flow @ Point Start**	**Total Flow @ Point Finish**	**(ppb)**	**(ppb)**	**(ppb)**	
as found zero	5000	5000	0.0	n/a	0.0	n/a
as found high	5000	5000	380.0	380.0	380.0	1.000
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	180.0	1.000
low	5000	5000	60.0	60.0	60.0	1.000
calibrator zero	5000	5000	0.0	n/a	0.0	n/a
					Average C.F.=	1.000

Linear Regression/Calibration Results:

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

Thermo 49i Ozone Analyzer Calibration



As found:		As left:	
O3 Bkg:	0.2	O3 Bkg:	0.2
O3 Coef:	1.010	O3 Coef:	1.010
Photo Lamp	8.7	Photo Lamp	8.7
O3 Lamp	9.0	O3 Lamp	9.0
Bench:	27.5	Bench:	27.7
Bench Lamp:	53.4	Bench Lamp:	53.5
O3 Lamp:	67.4	O3 Lamp:	67.4
Pressure:	706.2	Pressure:	707.1
Cell A lpm:	0.715	Cell A lpm:	0.715
Cell B lpm:	0.754	Cell B lpm:	0.754
O3 ppb:	0.7	O3 ppb:	-0.2
Cell A ppb:	0.4	Cell A ppb:	-0.2
Cell B ppb:	0.9	Cell B ppb:	0.9
Cell A int:	54768	Cell A int:	54820
Cell B int:	55263	Cell B int:	55316
Internal Span:	248.7	Internal Span:	253

Comments:

Sample inlet filter changed. No ZERO adjustment made. No High Point adjustment made.

O3[ppb] Station: LICA COLD LAKE SOUTH Daily: 2016/06/10 Type: AVG 1 Min. [1 Min.]

PARTICULATE MATTER

R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date:	June 10, 2016	**Performed By/Reviewer:**	Alex Yakupov / Tom Bourque
Company:	LICA	**Start Time (mst):**	14:07
Station Name/Location:	Cold Lake South	**End Time (mst):**	14:57
Previous Audit Date:	May 24, 2016	**Calibration Purpose:**	Bi-monthly #1
Parameter:	PM 2.5	**Weather Conditions:**	Clear

1400A Information and Status:

Serial Number:	1405A201620804	**As Found Filter Loading %:**	21.65
Ko Factor:	14578	**As Left Filter Loading %:**	16.54
Ambient Temperature °C:	18.75	**As Found Noise:**	0.004
Ambient Pressure atm:	0.938	**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:	Dwyer	Fisher	Fisher
Model:	475 Mark III	FB1291	FB 1291
Serial Number:	#2	130168457	130168457
Calibration Date:	January 15, 2016	February 7, 2016	February 7, 2016

As found leak check:

		Base	**Zero**	**Reference**	**Zero**
PM 2.5 Flow	actual	0.00	0.12	0.03	0.11
	limit	0.15		0.15	
Bypass Flow	actual	0.14	-0.08	0.12	-0.08
	limit	0.60		0.60	

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

		Base	**Zero**	**Reference**	**Zero**
PM 2.5 Flow	actual	0.00	0.12	0.03	0.11
	limit	0.15		0.15	
Bypass Flow	actual	0.14	-0.08	0.12	-0.08
	limit	0.60		0.60	

As found temperature and pressure:

	tolerance +/- 2.0°C		**tolerance +/- 0.01 atm**
1405F temperature °C:	18.8	**1405F pressure atm:**	0.938
reference temperature °C:	18.9	**reference pressure:**	0.938
difference °C:	0.1	**difference :**	0.000

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

	tolerance +/- 2.0°C		**tolerance +/- 0.01 atm**
1405F temperature °C:	18.8	**1405F pressure atm:**	0.938
reference temperature °C:	18.9	**reference pressure:**	0.938
difference °C:	0.1	**difference :**	0.000

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:	3.00	**1400A total/aux flow lpm:**	16.67
reference main flow lpm:	3.00	**reference total/aux flow lpm:**	16.65
difference lpm:	0.00	**difference lpm:**	-0.02

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:	3.00	**1400A total/aux flow lpm:**	16.67
reference main flow lpm:	3.00	**reference total/aux flow lpm:**	16.65
difference lpm:	0.00	**difference lpm:**	-0.02

K_o Audit:

Last K_o audit date:	May 3, 2016
1405F K_o factor:	14578
Measured K_o factor:	14848.5000
% difference:	1.86

Comments:

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

R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date:	June 13, 2016	**Performed By/Reviewer:**	Alex Yakupov / Tom Bourque
Company:	LICA	**Start Time (mst):**	14:49
Station Name/Location:	Cold Lake South	**End Time (mst):**	16:44
Previous Audit Date:	June 10, 2016	**Calibration Purpose:**	post repair
Parameter:	PM 2.5	**Weather Conditions:**	Mix of sun and clouds

1400A Information and Status:

Serial Number:	1405A201620804	**As Found Filter Loading %:**	16.34
Ko Factor:	14578	**As Left Filter Loading %:**	16.75
Ambient Temperature °C:	20.70	**As Found Noise:**	0.022
Ambient Pressure atm:	0.931	**As Left Noise:**	0.002
Main Flow Reading lpm:	3.00	**Pump Vacuum:**	0.30
Aux Flow Reading lpm:	13.67	**Warnings:**	None

Reference Standards:

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

As found leak check:

		Base	**Zero**	**Reference**	**Zero**
PM 2.5 Flow	actual	0.03	0.12	0.02	0.12
	limit	0.15		0.15	
Bypass Flow	actual	0.14	-0.08	0.14	-0.08
	limit	0.60		0.60	

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

		Base	**Zero**	**Reference**	**Zero**
PM 2.5 Flow	actual	0.01	0.12	0.01	0.12
	limit	0.15		0.15	
Bypass Flow	actual	0.00	-0.08	0.00	-0.08
	limit	0.60		0.60	

As found temperature and pressure:

tolerance +/- 2.0°C		**tolerance +/- 0.01 atm**	
1405F temperature °C:	20.7	**1405F pressure atm:**	0.931
reference temperature °C:	21.2	**reference pressure:**	0.931
difference °C:	0.5	**difference :**	0.000

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

tolerance +/- 2.0°C		**tolerance +/- 0.01 atm**	
1405F temperature °C:	22.3	**1405F pressure atm:**	0.930
reference temperature °C:	22.3	**reference pressure:**	0.930
difference °C:	0.0	**difference :**	0.000

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:	3.00	**1400A total/aux flow lpm:**	16.67
reference main flow lpm:	2.84	**reference total/aux flow lpm:**	16.12
difference lpm:	-0.16	**difference lpm:**	-0.55

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:	3.00	**1400A total/aux flow lpm:**	16.67
reference main flow lpm:	3.02	**reference total/aux flow lpm:**	16.67
difference lpm:	0.02	**difference lpm:**	0.00

K_o Audit:

Last K_o audit date:	May 3, 2016
1405F K_o factor:	14578
Measured K_o factor:	14848.5000
% difference:	1.86

Comments:

47 mm FDMS filter was changed. A new switch valve installed. Sample pass from the sample inlet head to sample filter was rebuilt. Before post-repair audit, section for "As Found" information was completed.

R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date:	June 30, 2016	**Performed By/Reviewer:**	Alex Yakupov / Trina Whitsitt
Company:	LICA	**Start Time (mst):**	13:42
Station Name/Location:	Cold Lake South	**End Time (mst):**	14:34
Previous Audit Date:	June 13, 2016	**Calibration Purpose:**	Bi-monthly #2
Parameter:	PM 2.5	**Weather Conditions:**	Mix of sun and clouds

1400A Information and Status:

Serial Number:	1405A201620804	**As Found Filter Loading %:**	25.93
Ko Factor:	14578	**As Left Filter Loading %:**	25.12
Ambient Temperature °C:	24.11	**As Found Noise:**	0.003
Ambient Pressure atm:	0.941	**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:	Dwyer	Fisher	Fisher
Model:	475 Mark III	FB1291	FB 1291
Serial Number:	#2	130168457	130168457
Calibration Date:	January 15, 2016	February 7, 2016	February 7, 2016

As found leak check:

		Base	**Zero**	**Reference**	**Zero**
PM 2.5 Flow	actual	0.00	0.11	0.00	0.11
	limit	0.15		0.15	
Bypass Flow	actual	0.00	-0.08	0.00	-0.08
	limit	0.60		0.60	

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

		Base	**Zero**	**Reference**	**Zero**
PM 2.5 Flow	actual	0.00	0.11	0.00	0.11
	limit	0.15		0.15	
Bypass Flow	actual	0.00	-0.08	0.00	-0.08
	limit	0.60		0.60	

As found temperature and pressure:

tolerance +/- 2.0°C		**tolerance +/- 0.01 atm**	
1405F temperature °C:	24.1	**1405F pressure atm:**	0.942
reference temperature °C:	24.5	**reference pressure:**	0.942
difference °C:	0.4	**difference :**	0.000

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

tolerance +/- 2.0°C		**tolerance +/- 0.01 atm**	
1405F temperature °C:	24.5	**1405F pressure atm:**	0.942
reference temperature °C:	24.5	**reference pressure:**	0.942
difference °C:	0.0	**difference :**	0.000

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:	3.00	**1400A total/aux flow lpm:**	16.67
reference main flow lpm:	3.03	**reference total/aux flow lpm:**	16.67
difference lpm:	0.03	**difference lpm:**	0.00

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:	3.00	**1400A total/aux flow lpm:**	16.67
reference main flow lpm:	3.03	**reference total/aux flow lpm:**	16.67
difference lpm:	0.03	**difference lpm:**	0.00

K_o Audit:

Last K_o audit date:	May 3, 2016
1405F K_o factor:	14578
Measured K_o factor:	14848.5000
% difference:	1.86

Comments:

47 mm FDMS filter was changed. rebuilt. Sample inlet head PM10/2.5 was cleaned.

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: AJ2 **Inspection Date:** APR 0 3 2015

New Unit [ ] **Repair/Adjust** [X] **Re-Calibration** [X] **As Found** [ ]

Unit Within Tolerance as Found [ ] **Unit Within Tolerance as Left** [X]

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)
30	.084	30.3	.3	3.06	.059	2.96	-.1
60	.165	59.3	-.7	3.07	.059	2.94	-.13
120	.334	120.2	.2	3.08	.059	2.94	-.14
150	.415	149.5	-.5	3.07	.059	2.94	-.13
210	.583	210	0	3.08	.059	2.95	-.12
240	.668	240.3	.3	3.08	.06	2.98	-.1
300	.834	300.4	.4	3.07	.06	3.02	-.04
330	.916	329.8	-.2	3.09	.059	2.97	-.12

Output Type:

0 to 1 volt	X
0 to 2.5 volt	
0 to 5 volt	
RS-232	X
SDI-12	
RS-422	
RS-485	

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)
30	.081	29.3	-.7	11.79	.235	11.76	-.04
60	.165	59.5	-.5	11.85	.237	11.87	.01
120	.331	119.1	-.9	11.85	.236	11.81	-.03
150	.415	149.3	-.7	11.88	.236	11.8	-.08
210	.582	209.5	-.5	11.81	.236	11.79	-.02
240	.666	239.9	-.1	11.88	.235	11.73	-.16
300	.833	299.7	-.3	11.87	.235	11.73	-.13
330	.915	329.6	-.4	11.84	.238	11.9	.06

Test Items:

Array Alignment	✓
Jumper Config	✓
Firmware Config	✓
Zero Calibration	✓
Low Speed Test OK	✓
High Speed Test OK	✓
Sensor Function	✓
Physical Inspection	✓

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 hereon, 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

METEOROLOGICAL SYSTEM CHECK

LABORATORY THERMOMETER - CALIBRATION REPORT

Typically, the difference between the working & reference thermometer readings should agree to within one degree Celsius. However, other limits (may be tighter or wider) for certain protocols or methods may be applied if technically justified and approved by the department manager/supervisor and QA.
Refer to CAL WI-00009 for details. Document the reason for limits other than one degree Celsius in the comment section below.
Thermometer verification is valid for one year.

Date:	02/08/2016	(yyyy/mm/dd)
Analyst Initals :	BW/JL	
Location of Thermometer:	Air Services Group Lab	
Range of Use (°C):	30	

Medium used for Verification:	Ambient Air
Smallest Gradation / Resolution of Working Thermometer (°C):	0.1
u_r:	0.1

	Reference Thermometer	**Working Thermometer**
Make & Model Number:	Fluke - 1S51A EX	Traceable 02-406
Serial Number:	2329001	130168457
Maxxam ID:	4296	S544
Calibration Due:	02/13/2016	(yyyy/mm/dd)

	Thermometer in Use			**Reference Thermometer**	
	Time (hh:mm)	**Reading (°C)**	**Round To, Decimals**	**Reading (°C)**	**Correction Factor of Reference (°C)**
1st	14:35	21.6	1	21.8	0
2nd	14:40	21.3		21.79	
3rd	14:45	21.4		21.85	
4th	14:50	21.3		21.87	
5th	14:55	21.3		21.84	
6th	15:00	21.3		21.84	
7th	15:05	21.3		21.79	

Difference (°C) (Working - Corrected Reference)	**Average Difference (°C)**	**|Diff - Mean|**	**(Diff - Mean)²**	**Maximum Acceptable Difference (°C)**	**Acceptable Reading (Y/N)**	**Correction Factor (°C)**
-0.5	-0.486	0.014	0.0002	1	Y	0.5
-0.53		0.044	0.0020		Y	
-0.45		0.036	0.0013		Y	
-0.47		0.016	0.0003		Y	
-0.44		0.046	0.0021		Y	
-0.51		0.024	0.0006		Y	
-0.46		0.026	0.0007		Y	
Sum d:	-3.400	**Sum s:**	0.0071			
Mean:	-0.486	**Std Dev s_p:**	0.035			

Combined Standard Uncertainty

$u_c = \sqrt{(u_r)^2 + (s_p)^2 + (u_1)^2}$ = 0.160

Expanded Uncertainty

k = 2 $U = k(u_c)$ = 0.320

Comments:

Manager / Supervisor Initials or Signature: BW

Date: 03/14/2016 (yyyy/mm/dd)

QA Initials or Signature: Pantea Niksirat

Date: 2016/05/13 (yyyy/mm/dd)

VOC SAMPLER

Maxxam Analytics

XONTECK FLOW RATE VERIFICATION/CALIBRATION

Client:	LICA	**Date:**	June 1, 2016	
Location:	Cold Lake South	**Last Cal. Date:**	March 29, 2016	
Station ID:	LICA 01	**Start Time 24 hr. (mst):**	8:19	
Sampler s/n:	6167	**End Time 24 hr. (mst):**	10:03	
Purpose:	Routine Quarterly	**Performed By/Reviewer:**	Alex Yakupov	Tom Bourque

	Pressure Standard:	**Flow Standard:**
Make/Model	Fisher Scientific / FB 1291	n/a
S/N or ID#:	130168457	n/a
Certification Date:	February 7, 2016	

The desired flow rate can be calculated using the equation provided by USEPA Method T0-14 Section 9.1.3.1.

$$F = \frac{(P \times V)}{(T \times 60)} = \frac{1.62 \times 6000}{24 \times 60} = 6.74 \text{ cc/min}$$

= target flow rate

where;

F=	flow rate in cc/min
P=	final canister in atmosphere absolute
V=	volume of canister in c.c.
T=	sampling period in hours
bp=	barometric pressure in atmospheres

enter:

bp	0.936	atm
P=	1.61646	(atm)+.68046
V=	6000	cubic centimetres
T=	24	hours

XONTECK QUARTERLY FLOW VERIFICATION/CALIBRATION

XONTECK MAINTENANCE

Item:	**Most Recent Date Completed:**
1. Replace sample line and fittings from sampler to canister every 6 months.	June 1, 2016
2. Purge line from manifold--> sampler with zero air every 6 months.	June 1, 2016
3. Sample system cleaning every 2 years.	
4. Perform 12 hour leak check procedure every 6 months.	June 1, 2016

COMMENTS:

PUF SAMPLER

Maxxam
A Bureau Veritas Group Company

TISCH PUF PLUS SAMPLER AUDIT

Date:	June 1, 2016	**PUF PLUS Serial #:**	100-1020
Company/Airshed:	LICA	**Performed By/Reviewer:**	Alex Yakupov / Tom Bourque
Location/Station Name:	Cold Lake South	**Weather Conditions:**	A few clouds

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):	711.06	**AS FOUND Reference Temperature (°C):**	19.3
AS FOUND PUF PLUS Barometric Pressure (mmHg):	710	**AS FOUND PUF PLUS Temperature (°C):**	20.1
% Difference (+/- 2% max.):	**0.15%**	**% Difference (+/- 2 °C max.):**	**-0.8**
****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 refrence (inHg)	27.99
Barometric Pressure (mmHg)	710.0
Enter Ambient Temperature from reference °C	19.3
Enter "m" variable from calibrated orifice	6.07570
Enter "b" variable from calibrated orifice	-0.03578
Enter Δp in. H_2O	1.98
Standardized Flow lpm=	231.85
Flow Set Point lpm=	230.00
% Difference (+/- 2% max.)=	**-0.81%**

****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:

CALIBRATORS

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Calibrator Performance Audit

Oxides Of Nitrogen

File No. 2016-076A

Company Maxxam **Operator:** Christopher Wesson

Calibrator:		**Flow Measurement Device:**	
Make/Model	Sabio 2010	Make/Model	N/A
Serial Number	17200415	Serial Number	N/A
Last Verification Date	May 2015	Temperature (°C)	N/A
NO Cylinder S/N	LL42475	Barometric Pressure	N/A
NO/NOX Concentration	48.5/48.5		

Dilution Flow (sccm)

Pt. #1 5000 Pt. #2 5000 Pt. #3 5000

Gas Flow (sccm)

Pt. #1 80 Pt. #2 40 Pt. #3 20

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO_2	NOx	NO	NOx
5029	0.0	0.000	0.000	0.000	0.000	0.000	Limit ± 10%	
5030	80.6	0.777	0.777	0.805	-0.005	0.800	4%	3%
5025	39.4	0.380	0.380	0.394	-0.002	0.392	4%	3%
5028	19.8	0.191	0.191	0.198	-0.001	0.197	4%	3%
						Absolute Average Percent Difference	3.65%	3.09%

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)=	1.0360	**0.90-1.10**	m (Slope)=	1.0295
b (Intercept % of FS)=	0.0110	**± 3% F.S.**	b (Intercept % of FS)=	0.0293

Flow	O_3 Conc	NO Decrease	NO	NO2	NOX	% Diff. Vs Audit gas	
5030	Lamp C.	0.000	0.804	-0.004	0.800	NO_2	% Diff. Limit
5030	1.388	0.495	0.309	0.491	0.800	0%	± 10%
5030	0.745	0.241	0.563	0.239	0.802	1%	± 10%
5030	0.367	0.091	0.713	0.089	0.801	2%	± 10%
					Absolute Average Percent Difference	1%	± 10%

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

NO_2		**LIMITS**
Correlation=	1.0000	**≥ 0.995**
m (Slope)=	0.9988	**0.90-1.10**
b (Intercept % of FS)=	-0.2760	**± 3% F.S.**

AENV Standards		**NO_X Analyzer**	
Audit Calibrator		Make/Model	Teco 42i
Make/Model	Teco 146i	Serial/AMU Number	AMU 1868
Serial/AMU Number	AMU 1809	Last Calibration Date	May 18, 2016
		Full Scale (ppm)	1.0

COMMENTS: Contains 50.3 ppm SO2. Flows not measured as per Chapter 7, Section 5 of AMD.

Auditor: Al Clark Date: May 18, 2016

Operator Signature: Location: McIntyre Center Edmonton

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Calibrator Performance Audit

Oxides Of Nitrogen

File No. 2015-166

Company Maxxam **Operator:** Chris Wesson

Calibrator:		**Flow Measurement Device:**	
Make/Model	Environics 2000	Make/Model	None
Serial Number	1991	Serial Number	None
Last Verification Date	April 2, 2015	Temperature (°C)	23.5
NO Cylinder S/N	LL119317	Barometric Pressure	706 mmHg
NO/NOX Concentration	50.3ppm/50.3ppm		

Dilution Flow (sccm)

Pt. #1 5000 Pt. #2 5000 Pt. #3 5001

Gas Flow (sccm)

Pt. #1 77.5 Pt. #2 37.7 Pt. #3 18.88

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO_2	NOx	NO	NOx
5000	0.0	0.000	0.000	0.000	0.000	0.000	Limit ± 10%	
5000	77.5	0.780	0.780	0.795	0.000	0.795	2%	2%
5000	37.7	0.380	0.380	0.381	-0.001	0.381	0%	0%
5001	18.9	0.190	0.190	0.189	0.000	0.190	-1%	0%
						Absolute Average Percent Difference	0.52%	0.73%

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)=	1.0204	**0.90-1.10**	m (Slope)=	1.0200
b (Intercept % of FS)=	-0.3105	**± 3% F.S.**	b (Intercept % of FS)=	-0.2765

Flow	O_3 Conc	NO Decrease	NO	NO2	NOX	% Diff. Vs Audit gas	
5000	0	0.000	0.796	0.000	0.796	NO_2	% Diff. Limit
5000	485	0.521	0.275	0.520	0.795	0%	± 10%
5000	280	0.271	0.525	0.271	0.796	0%	± 10%
5000	120	0.104	0.692	0.105	0.797	1%	± 10%
					Absolute Average Percent Difference	0.3%	± 10%

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

NO_2		**LIMITS**
Correlation=	1.0000	**≥ 0.995**
m (Slope)=	0.9973	**0.90-1.10**
b (Intercept % of FS)=	0.0603	**± 3% F.S.**

AENV Standards Audit Calibrator		**NO_X Analyzer**	
Make/Model	Thermo 146i	Make/Model	Thermo 42i
Serial/AMU Number	1809	Serial/AMU Number	1868
		Last Calibration Date	March 28, 2016
		Full Scale (ppm)	1

COMMENTS: NO Cyl has 49.9ppb SO2 - Flows Not Manually Measured

Auditor: Shea Beaton Date: March 31, 2016

Operator Signature: Location: McIntyre Center Edmonton

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Calibrator Performance Audit

Oxides Of Nitrogen

File No. 2015-119

Company Maxxam **Operator:** Chris Wesson

Calibrator:		**Flow Measurement Device:**	
Make/Model	API 700	Make/Model	NA
Serial Number	627	Serial Number	NA
Last Verification Date	April 1 2015	Temperature (°C)	NA
NO Cylinder S/N	LL119317	Barometric Pressure	NA
NO/NOX Concentration	50.3/50.3		

Dilution Flow (sccm)

Pt. #1 5000 Pt. #2 5000 Pt. #3 5000

Gas Flow (sccm)

Pt. #1 77.5 Pt. #2 37.8 Pt. #3 18.9

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO_2	NOx	NO	NOx
5007	0.0	0.000	0.000	0.000	0.000	0.000	Limit ± 10%	
5003	77.5	0.779	0.779	0.787	-0.001	0.786	1%	1%
5004	37.8	0.380	0.380	0.383	0.000	0.383	1%	1%
5001	18.9	0.190	0.190	0.191	0.000	0.191	1%	1%
						Absolute Average Percent Difference	1%	1%

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

NO		**LIMITS**	**NOx**	
Correlation=	1.0000	**≥ 0.990**	Correlation=	1.0000
m (Slope)=	1.0106	**0.90-1.10**	m (Slope)=	1.0092
b (Intercept % of FS)=	-0.0566	**± 3% F.S.**	b (Intercept % of FS)=	-0.0368

Flow	O_3 Conc	NO Decrease	NO	NO2	NOX	% Diff. Vs Audit gas	
						NO_2	% Diff. Limit
5003	0	0.000	0.787	0.001	0.788		
5003	0.5	0.493	0.294	0.498	0.792	1%	± 10%
5003	0.25	0.256	0.531	0.262	0.792	2%	± 10%
5003	0.1	0.108	0.679	0.110	0.789	1%	± 10%
					Absolute Average Percent Difference	1.2%	± 10%

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

NO_2		**LIMITS**
Correlation=	1.0000	**≥ 0.995**
m (Slope)=	1.0089	**0.90-1.10**
b (Intercept % of FS)=	0.1591	**± 3% F.S.**

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

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

Auditor: Shea Beaton Date: February 3, 2016

Operator Signature: Location: McIntyre Center Edmonton

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Calibrator Performance Audit

OZONE

File No. 2015-163

Company: Maxxam **Operator:** Chris Wesson

Calibrator:		**Flow Measurement Device:**	
Make/Model	Sabio 2010D	Make/Model	NA
Serial Number	11900613	Serial Number	NA
Oven Temperature	49.8	Temperature (°C)	24
Last Verification Date	May 21, 2015	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	% Difference % 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)

O_3		**LIMITS**
Correlation=	1.0000	**≥ 0.995**
m (Slope)=	1.0119	**0.90-1.10**
b (Intercept % of FS)=	-0.0724	**± 3% F.S.**

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

COMMENTS:

Auditor: Shea Beaton Date: March 30, 2016

Operator Signature: Location: McIntyre Center Edmonton

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Calibrator Performance Audit

Oxides Of Nitrogen

File No. 2015-122

Company Maxxam **Operator:** Chris Wesson

Calibrator:		**Flow Measurement Device:**	
Make/Model	Sabio 2010	Make/Model	NA
Serial Number	42531101	Serial Number	NA
Last Verification Date	January 19, 2016	Temperature (°C)	NA
NO Cylinder S/N	LL119317	Barometric Pressure	NA
NO/NOX Concentration	50.3/50.3		

Dilution Flow (sccm)

Pt. #1 5000 Pt. #2 5000 Pt. #3 5000

Gas Flow (sccm)

Pt. #1 77.5 Pt. #2 37.8 Pt. #3 18.9

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO_2	NOx	NO	NOx
4998	0.0	0.000	0.000	0.000	0.000	0.000	Limit ± 10%	
5001	77.5	0.779	0.779	0.787	0.000	0.787	1%	1%
5001	37.8	0.380	0.380	0.383	0.000	0.383	1%	1%
5000	18.9	0.190	0.190	0.191	0.000	0.191	1%	1%
						Absolute Average Percent Difference	1%	1%

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)=	1.0106	**0.90-1.10**	m (Slope)=	1.0106
b (Intercept % of FS)=	-0.0566	**± 3% F.S.**	b (Intercept % of FS)=	-0.0566

Flow	O_3 Conc	NO Decrease	NO	NO2	NOX	% Diff. Vs Audit gas	
						NO_2	% Diff. Limit
5001	0	0.000	0.787	0.001	0.788	1%	± 10%
5001	1.75v	0.538	0.249	0.542	0.791	1%	± 10%
5001	0.9v	0.271	0.516	0.274	0.790	1%	± 10%
5001	0.35v	0.100	0.687	0.102	0.790	1%	± 10%
					Absolute Average Percent Difference	0.8%	± 10%

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

NO_2		**LIMITS**
Correlation=	1.0000	**≥ 0.995**
m (Slope)=	1.0054	**0.90-1.10**
b (Intercept % of FS)=	0.1281	**± 3% F.S.**

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

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

Auditor: Shea Beaton Date: February 4, 2016

Operator Signature: Location: McIntyre Center Edmonton

CALIBRATION GASES

Alberta Government

Calibration Gas Audit

Single Component Cylinder Gas

File No. 2015-342CGA

Company: Maxxam **Operator's Name:** Limin Li

Cylinder #: BLM002756T Concentration PPM: 49.9 Tolerance(%) 2 Certified By: Air Liquide

Reference Calibrator and Gas:

Make/Model: R&R MFC 201
Serial Number: AMU 1690
Last Verification Date: March 31, 2015
Gas Type: SO2 Conc. 98.57
Cylinder Number: CAL016720

Flow Measurement Device:

Make/Model: Bios DC2
Serial Number: AMU 1659
Temp.°C: 22.5 C
B.P. 690 mmhg

Reference Analyzer:

Make/Model: Teco 43C Serial/AMU Number: 1623
Instrument Settings: Zero: 7.9 Span: 1.028 Range: 1.0
Last Calibration: Date: Mar 31/15 C.F. 1.000 Done By: Al Clark

Calibrator Flows (sccm)		Indicated	Gas Flow/	Concentration	Cylinder
Dilution	Gas	Concentration (PPM)	Dilution Flow	Factor	Concentration
5000	0.0	0.000			
4976	82.6	0.821	0.01660	60.242	49.5
4993	41.0	0.410	0.00821	121.780	49.9
4977	20.2	0.202	0.00406	246.386	49.8
				Average Cylinder Concentration:	**49.7**

Previous Stated Concentration PPM: 49.9

Percent variance from Stated: **0.4**

Meets Manufacturer Tolerance. Use manufacturers stated concentration [X] **COMMENTS:**

<=5% Outside Manufacturer Tolerance. Use manufacturers concentration [ ]

> 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder [ ]

Auditor: Al Clark Date: March 31, 2015

Operator Signature: Location: McIntyre Center Edmonton

Alberta Government

Calibration Gas Audit

Single Component Cylinder Gas

File No. 2015-338CGA

Company: Maxxam **Operator's Name:** Limin Li

Cylinder #: BLM002508 Concentration PPM: 10.2 Tolerance(%) 2 Certified By: Air Liquide

Reference Calibrator and Gas:

Make/Model: R&R MFC 201
Serial Number: AMU1690
Last Verification Date: March 31, 2015
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. 689 mmhg

Reference Analyzer:

Make/Model: Teco 450i Serial/AMU Number: 1980
Instrument Settings: Zero: 14.5 Span: 1.035 Range: 0.1
Last Calibration: Date: Mar 31/15 C.F. 1.000 Done By: Al Clark

Calibrator Flows (sccm)		Indicated	Gas Flow/	Concentration	Cylinder
Dilution	Gas	Concentration (PPM)	Dilution Flow	Factor	Concentration
5000	0.0	0.0000			
5080	38.2	0.0725	0.00752	132.984	9.6
5078	17.9	0.0340	0.00353	283.687	9.6
5066	9.1	0.0170	0.00180	556.703	9.5
				Average Cylinder Concentration:	**9.6**

Previous Stated Concentration PPM: 10.2

Percent variance from Stated: **6.0**

Meets Manufacturer Tolerance. Use manufacturers stated concentration [ ] **COMMENTS:**

<=5% Outside Manufacturer Tolerance. Use manufacturers concentration [X]

> 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder [ ]

Auditor: Al Clark Date: March 31, 2015

Operator Signature: Al Clark Location: McIntyre Center Edmonton

Alberta Government

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

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

Previous Stated Concentration PPM: 10.0

Percent variance from Stated: **1.1**

Meets Manufacturer Tolerance. Use manufacturers stated concentration [X] **COMMENTS:**

< =5% Outside Manufacturer Tolerance. Use manufacturers concentration [ ]

> 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder [ ]

Auditor: Al Clark Date: December 16, 2014

Operator Signature: Location: McIntyre Center Edmonton

aemera.org

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.	698mmHg

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

	CH4	C3H8
Previous Stated Concentration PPM:	606	212
Percent variance from Stated:	**0.3**	**1.6**

Cylinder gas tolerances based on CH4 only

Meets Manufacturer Tolerance. Use manufacturers stated concentration [X] **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

aemera.org

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:

Make/Model	Thermo 146i		
Serial Number	AMU 1809		
Last Verification Date	February 2, 2016		
Gas Type	NO	Conc.	48.79
Cylinder Number	CAL018024		

Flow Measurement Device:

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

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/	Concentration	Cylinder Concentration	
Dilution	Gas	NO	NOX	Dilution Flow	Factor	NO	NOX
4952	0.0	0.000	0.000				
4946	79.54	0.809	0.809	0.01608	62.183	50.3	50.3
4941	39.35	0.403	0.402	0.00796	125.565	50.6	50.5
4940	19.57	0.200	0.200	0.00396	252.427	50.5	50.5
					Average Cylinder Concentration:	**50.5**	**50.4**

	NO	NOx
Previous Stated Concentration PPM:	50.0	50.0
Percent variance from Stated:	**0.9**	**0.8**

Cylinder gas tolerances based on NO only

Meets Manufacturer Tolerance. Use manufacturers stated concentration [X] **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: Location: McIntyre Center Edmonton

Alberta Government

Calibration Gas Audit

Single Component Cylinder Gas

File No. 2014-250CGA

Company: Maxxam **Operator's Name:** Limin Li

Cylinder #: LL74267 Concentration PPM: 9.88 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	Gas Flow/	Concentration	Cylinder
Dilution	Gas	Concentration (PPM)	Dilution Flow	Factor	Concentration
5000	0.0	0.0000			
5099	38.5	0.0731	0.00755	132.442	9.68
5092	18.0	0.0342	0.00353	282.889	9.67
5066	9.2	0.0173	0.00182	550.652	9.53
				Average Cylinder Concentration:	**9.63**

Previous Stated Concentration PPM: 9.88

Percent variance from Stated: **2.6**

Meets Manufacturer Tolerance. Use manufacturers stated concentration [ ] **COMMENTS:**

<=5% Outside Manufacturer Tolerance. Use manufacturers concentration [X]

> 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder [ ]

Auditor: Al Clark Date: December 16, 2014

Operator Signature: Location: McIntyre Center Edmonton

APPENDIX IV
ANALYTICAL RESULTS

VOCS SAMPLES

Alberta Innovates Technology Futures
PO Bag 4000
Vegreville, Alberta
Canada T9C 1T4
(780) 632-8211

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/ June 5, 2016	2491	Ambient Air	05-Jun-16 0:00

DESCRIPTION: Cold Lake South LICA01

REPORT NUMBER: 16060039 **REPORT CREATED:** 24-Jun-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060039-004	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-16
16060039-004	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-16
16060039-004	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-16
16060039-004	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-16
16060039-004	1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	22-Jun-16
16060039-004	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	22-Jun-16
16060039-004	1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	22-Jun-16
16060039-004	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	22-Jun-16
16060039-004	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-16
16060039-004	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	22-Jun-16
16060039-004	1,2-Dichloroethane	I	0.02	ppbv	0.01	AC-058	22-Jun-16
16060039-004	1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-16
16060039-004	1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-16
16060039-004	1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-16
16060039-004	1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	22-Jun-16
16060039-004	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	22-Jun-16
16060039-004	1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	22-Jun-16
16060039-004	1-Butene	I	0.20	ppbv	0.02	AC-058	22-Jun-16
16060039-004	1-Hexene	I	0.10	ppbv	0.02	AC-058	22-Jun-16
16060039-004	1-Pentene	I	0.02	ppbv	0.01	AC-058	22-Jun-16
16060039-004	2,2,4-Trimethylpentane	I	0.02	ppbv	0.01	AC-058	22-Jun-16
16060039-004	2,2-Dimethylbutane	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-16
16060039-004	2,3,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-16
16060039-004	2,3-Dimethylbutane	I	0.03	ppbv	0.02	AC-058	22-Jun-16
16060039-004	2,3-Dimethylpentane	I	0.06	ppbv	0.02	AC-058	22-Jun-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

Date: June 24, 2016 **Inquiries:** (780) 632 8455 **E-mail:** EAS.Results@albertainnovates.ca

Alberta Innovates Technology Futures
PO Bag 4000
Vegreville, Alberta
Canada T9C 1T4
(780) 632-8211

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/ June 5, 2016	2491	Ambient Air	05-Jun-16 0:00

DESCRIPTION: Cold Lake South LICA01

REPORT NUMBER: 16060039 **REPORT CREATED:** 24-Jun-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060039-004	2,4-Dimethylpentane	I	0.01	ppbv	0.01	AC-058	22-Jun-16
16060039-004	2-Methylheptane	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-16
16060039-004	2-Methylhexane	I	0.16	ppbv	0.01	AC-058	22-Jun-16
16060039-004	2-Methylpentane	I	0.16	ppbv	0.01	AC-058	22-Jun-16
16060039-004	3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-16
16060039-004	3-Methylhexane	I	0.24	ppbv	0.02	AC-058	22-Jun-16
16060039-004	3-Methylpentane	I	0.06	ppbv	0.01	AC-058	22-Jun-16
16060039-004	Acetone		4.2	ppbv	0.4	AC-058	22-Jun-16
16060039-004	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	22-Jun-16
16060039-004	Benzene	I	0.05	ppbv	0.01	AC-058	22-Jun-16
16060039-004	Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	22-Jun-16
16060039-004	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-16
16060039-004	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-16
16060039-004	Bromomethane	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-16
16060039-004	Carbon disulfide	I	0.26	ppbv	0.01	AC-058	22-Jun-16
16060039-004	Carbon tetrachloride	I	0.09	ppbv	0.01	AC-058	22-Jun-16
16060039-004	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-16
16060039-004	Chloroethane	I	0.02	ppbv	0.02	AC-058	22-Jun-16
16060039-004	Chloroform	I	0.03	ppbv	0.02	AC-058	22-Jun-16
16060039-004	Chloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-16
16060039-004	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-16
16060039-004	cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	22-Jun-16
16060039-004	cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-16
16060039-004	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-16
16060039-004	Cyclohexane	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

Date: June 24, 2016 **Inquiries:** (780) 632 8455 **E-mail:** EAS.Results@albertainnovates.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/ June 5, 2016	2491	Ambient Air	05-Jun-16 0:00

DESCRIPTION: Cold Lake South LICA01

REPORT NUMBER: 16060039 **REPORT CREATED:** 24-Jun-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060039-004	Cyclopentane	I	0.02	ppbv	0.01	AC-058	22-Jun-16
16060039-004	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-16
16060039-004	Ethanol		40.2	ppbv	0.9	AC-058	22-Jun-16
16060039-004	Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	22-Jun-16
16060039-004	Ethylbenzene	I	0.01	ppbv	0.01	AC-058	22-Jun-16
16060039-004	Freon-11	I	0.27	ppbv	0.02	AC-058	22-Jun-16
16060039-004	Freon-113	I	0.07	ppbv	0.01	AC-058	22-Jun-16
16060039-004	Freon-114	I	0.02	ppbv	0.02	AC-058	22-Jun-16
16060039-004	Freon-12	I	0.13	ppbv	0.06	AC-058	22-Jun-16
16060039-004	Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.50	AC-058	22-Jun-16
16060039-004	Isobutane	I	0.20	ppbv	0.02	AC-058	22-Jun-16
16060039-004	Isopentane		0.68	ppbv	0.03	AC-058	22-Jun-16
16060039-004	Isoprene		0.67	ppbv	0.01	AC-058	22-Jun-16
16060039-004	Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	22-Jun-16
16060039-004	Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-16
16060039-004	m,p-Xylene	I	0.05	ppbv	0.03	AC-058	22-Jun-16
16060039-004	m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	22-Jun-16
16060039-004	m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	22-Jun-16
16060039-004	Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.50	AC-058	22-Jun-16
16060039-004	Methyl ethyl ketone		0.7	ppbv	0.3	AC-058	22-Jun-16
16060039-004	Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	22-Jun-16
16060039-004	Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	22-Jun-16
16060039-004	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	22-Jun-16
16060039-004	Methylcyclohexane	I	0.20	ppbv	0.01	AC-058	22-Jun-16
16060039-004	Methylcyclopentane	I	0.09	ppbv	0.02	AC-058	22-Jun-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

Date: June 24, 2016 **Inquiries:** (780) 632 8455 **E-mail:** EAS.Results@albertainnovates.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/ June 5, 2016	2491	Ambient Air	05-Jun-16 0:00

DESCRIPTION: Cold Lake South LICA01

REPORT NUMBER: 16060039 **REPORT CREATED:** 24-Jun-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060039-004	Methylene chloride		0.8	ppbv	0.3	AC-058	22-Jun-16
16060039-004	n-Butane		0.49	ppbv	0.03	AC-058	22-Jun-16
16060039-004	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	22-Jun-16
16060039-004	n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	22-Jun-16
16060039-004	n-Heptane		0.36	ppbv	0.01	AC-058	22-Jun-16
16060039-004	n-Hexane	I	0.16	ppbv	0.01	AC-058	22-Jun-16
16060039-004	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-16
16060039-004	n-Pentane	I	0.3	ppbv	0.1	AC-058	22-Jun-16
16060039-004	n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	22-Jun-16
16060039-004	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	22-Jun-16
16060039-004	Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	22-Jun-16
16060039-004	n-Nonane	I	0.01	ppbv	0.01	AC-058	22-Jun-16
16060039-004	o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-16
16060039-004	o-Xylene	I	0.02	ppbv	0.01	AC-058	22-Jun-16
16060039-004	p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	22-Jun-16
16060039-004	p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	22-Jun-16
16060039-004	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	22-Jun-16
16060039-004	Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	22-Jun-16
16060039-004	Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	22-Jun-16
16060039-004	Toluene	I	0.08	ppbv	0.01	AC-058	22-Jun-16
16060039-004	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-16
16060039-004	trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	22-Jun-16
16060039-004	trans-2-Butene	K, T, U	< 0.01	ppbv	0.01	AC-058	22-Jun-16
16060039-004	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-16
16060039-004	Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	22-Jun-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/ June 5, 2016	2491	Ambient Air	05-Jun-16 0:00

DESCRIPTION: Cold Lake South LICA01

REPORT NUMBER: 16060039 **REPORT CREATED:** 24-Jun-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060039-004	Vinyl acetate		0.5	ppbv	0.4	AC-058	22-Jun-16
16060039-004	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	22-Jun-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	GROUP SAMPLE ID	Matrix	PROJECT NUMBER	STATION ID	SAMPLER ID
LICA/VOC/CLS/June 11, 2016		Ambient Air			AY

DATE SAMPLED: 11-Jun-16 0:00 **STATION DESCRIPTION:**

REPORT NUMBER: 16060175 **REPORT CREATED:** 12-Jul-16 **VERSION:** Version 01

AGENCY: **MATRIX:** **TYPE:** **COLLECTION:**

Lab ID	Parameter	Qualifier	Result	Units	RDL	VMV	Method	Analysis Date
16060175-001	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-001	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-001	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-001	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-001	1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04		AC-058	28-Jun-16
16060175-001	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05		AC-058	28-Jun-16
16060175-001	1,2,4-Trichlorobenzene		1.1	ppbv	0.8		AC-058	28-Jun-16
16060175-001	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03		AC-058	28-Jun-16
16060175-001	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-001	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03		AC-058	28-Jun-16
16060175-001	1,2-Dichloroethane	I	0.02	ppbv	0.01		AC-058	28-Jun-16
16060175-001	1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-001	1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-001	1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-001	1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3		AC-058	28-Jun-16
16060175-001	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4		AC-058	28-Jun-16
16060175-001	1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4		AC-058	28-Jun-16
16060175-001	1-Butene	I	0.10	ppbv	0.02		AC-058	28-Jun-16
16060175-001	1-Hexene	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-001	1-Pentene	I	0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-001	2,2,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-001	2,2-Dimethylbutane	K, T, U	< 0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-001	2,3,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-001	2,3-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	GROUP SAMPLE ID	Matrix	PROJECT NUMBER	STATION ID	SAMPLER ID
LICA/VOC/CLS/June 11, 2016		Ambient Air			AY

DATE SAMPLED: 11-Jun-16 0:00 **STATION DESCRIPTION:**

REPORT NUMBER: 16060175 **REPORT CREATED:** 12-Jul-16 **VERSION:** Version 01

AGENCY: **MATRIX:** **TYPE:** **COLLECTION:**

Lab ID	Parameter	Qualifier	Result	Units	RDL	VMV	Method	Analysis Date
16060175-001	2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-001	2,4-Dimethylpentane	K, T, U	< 0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-001	2-Methylheptane	K, T, U	< 0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-001	2-Methylhexane	K, T, U	< 0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-001	2-Methylpentane	I	0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-001	3-Methylheptane	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-001	3-Methylhexane	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-001	3-Methylpentane	K, T, U	< 0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-001	Acetone		2.8	ppbv	0.4		AC-058	28-Jun-16
16060175-001	Acrolein	K, T, U	< 0.3	ppbv	0.3		AC-058	28-Jun-16
16060175-001	Benzene	K, T, U	< 0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-001	Benzyl chloride	K, T, U	< 0.4	ppbv	0.4		AC-058	28-Jun-16
16060175-001	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-001	Bromoform	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-001	Bromomethane	K, T, U	< 0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-001	Carbon disulfide		1.42	ppbv	0.01		AC-058	28-Jun-16
16060175-001	Carbon tetrachloride	I	0.10	ppbv	0.01		AC-058	28-Jun-16
16060175-001	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-001	Chloroethane	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-001	Chloroform	I	0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-001	Chloromethane		0.81	ppbv	0.02		AC-058	28-Jun-16
16060175-001	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-001	cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04		AC-058	28-Jun-16
16060175-001	cis-2-Butene	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	GROUP SAMPLE ID	Matrix	PROJECT NUMBER	STATION ID	SAMPLER ID
LICA/VOC/CLS/June 11, 2016		Ambient Air			AY

DATE SAMPLED: 11-Jun-16 0:00 **STATION DESCRIPTION:**

REPORT NUMBER: 16060175 **REPORT CREATED:** 12-Jul-16 **VERSION:** Version 01

AGENCY: **MATRIX:** **TYPE:** **COLLECTION:**

Lab ID	Parameter	Qualifier	Result	Units	RDL	VMV	Method	Analysis Date
16060175-001	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-001	Cyclohexane	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-001	Cyclopentane	K, T, U	< 0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-001	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-001	Ethanol		1.3	ppbv	0.3		AC-058	28-Jun-16
16060175-001	Ethyl acetate	K, T, U	< 0.4	ppbv	0.4		AC-058	28-Jun-16
16060175-001	Ethylbenzene	K, T, U	< 0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-001	Freon-11	I	0.29	ppbv	0.02		AC-058	28-Jun-16
16060175-001	Freon-113	I	0.04	ppbv	0.01		AC-058	28-Jun-16
16060175-001	Freon-114	I	0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-001	Freon-12		0.78	ppbv	0.02		AC-058	28-Jun-16
16060175-001	Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.50		AC-058	28-Jun-16
16060175-001	Isobutane	I	0.28	ppbv	0.02		AC-058	28-Jun-16
16060175-001	Isopentane	I	0.11	ppbv	0.03		AC-058	28-Jun-16
16060175-001	Isoprene	I	0.15	ppbv	0.01		AC-058	28-Jun-16
16060175-001	Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4		AC-058	28-Jun-16
16060175-001	Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-001	m,p-Xylene	K, T, U	< 0.03	ppbv	0.03		AC-058	28-Jun-16
16060175-001	m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04		AC-058	28-Jun-16
16060175-001	m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08		AC-058	28-Jun-16
16060175-001	Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.50		AC-058	28-Jun-16
16060175-001	Methyl ethyl ketone		0.4	ppbv	0.3		AC-058	28-Jun-16
16060175-001	Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4		AC-058	28-Jun-16
16060175-001	Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07		AC-058	28-Jun-16

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	GROUP SAMPLE ID	Matrix	PROJECT NUMBER	STATION ID	SAMPLER ID
LICA/VOC/CLS/June 11, 2016		Ambient Air			AY

DATE SAMPLED: 11-Jun-16 0:00 **STATION DESCRIPTION:**

REPORT NUMBER: 16060175 **REPORT CREATED:** 12-Jul-16 **VERSION:** Version 01

AGENCY: **MATRIX:** **TYPE:** **COLLECTION:**

Lab ID	Parameter	Qualifier	Result	Units	RDL	VMV	Method	Analysis Date
16060175-001	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03		AC-058	28-Jun-16
16060175-001	Methylcyclohexane	K, T, U	< 0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-001	Methylcyclopentane	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-001	Methylene chloride	K, T, U	< 0.3	ppbv	0.3		AC-058	28-Jun-16
16060175-001	n-Butane	I	0.14	ppbv	0.03		AC-058	28-Jun-16
16060175-001	n-Decane	K, T, U	< 0.06	ppbv	0.06		AC-058	28-Jun-16
16060175-001	n-Dodecane	K, T, U	< 0.4	ppbv	0.4		AC-058	28-Jun-16
16060175-001	n-Heptane	K, T, U	< 0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-001	n-Hexane	I	0.02	ppbv	0.01		AC-058	28-Jun-16
16060175-001	n-Octane	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-001	n-Pentane	K, T, U	< 0.1	ppbv	0.1		AC-058	28-Jun-16
16060175-001	n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05		AC-058	28-Jun-16
16060175-001	n-Undecane	K, T, U	< 0.5	ppbv	0.5		AC-058	28-Jun-16
16060175-001	Naphthalene	K, T, U	< 0.5	ppbv	0.5		AC-058	28-Jun-16
16060175-001	n-Nonane	K, T, U	< 0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-001	o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-001	o-Xylene	I	0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-001	p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04		AC-058	28-Jun-16
16060175-001	p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07		AC-058	28-Jun-16
16060175-001	Styrene	K, T, U	< 0.04	ppbv	0.04		AC-058	28-Jun-16
16060175-001	Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04		AC-058	28-Jun-16
16060175-001	Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4		AC-058	28-Jun-16
16060175-001	Toluene	I	0.04	ppbv	0.01		AC-058	28-Jun-16
16060175-001	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01		AC-058	28-Jun-16

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	GROUP SAMPLE ID	Matrix	PROJECT NUMBER	STATION ID	SAMPLER ID
LICA/VOC/CLS/June 11, 2016		Ambient Air			AY

DATE SAMPLED: 11-Jun-16 0:00 **STATION DESCRIPTION:**

REPORT NUMBER: 16060175 **REPORT CREATED:** 12-Jul-16 **VERSION:** Version 01

AGENCY: **MATRIX:** **TYPE:** **COLLECTION:**

Lab ID	Parameter	Qualifier	Result	Units	RDL	VMV	Method	Analysis Date
16060175-001	trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04		AC-058	28-Jun-16
16060175-001	trans-2-Butene	K, T, U	< 0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-001	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-001	Trichloroethylene	K, T, U	< 0.04	ppbv	0.04		AC-058	28-Jun-16
16060175-001	Vinyl acetate	K, T, U	< 0.4	ppbv	0.4		AC-058	28-Jun-16
16060175-001	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/June 17, 2016	1531	Ambient Air	17-Jun-16 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 16060297 **REPORT CREATED:** 12-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060297-003	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-003	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-003	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-003	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-003	1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	29-Jun-16
16060297-003	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	29-Jun-16
16060297-003	1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	29-Jun-16
16060297-003	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Jun-16
16060297-003	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-003	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Jun-16
16060297-003	1,2-Dichloroethane	I	0.02	ppbv	0.01	AC-058	29-Jun-16
16060297-003	1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-003	1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-003	1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-003	1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Jun-16
16060297-003	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	29-Jun-16
16060297-003	1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	29-Jun-16
16060297-003	1-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-003	1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-003	1-Pentene	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-003	2,2,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-003	2,2-Dimethylbutane	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-003	2,3,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-003	2,3-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-003	2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/June 17, 2016	1531	Ambient Air	17-Jun-16 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 16060297 **REPORT CREATED:** 12-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060297-003	2,4-Dimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-003	2-Methylheptane	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-003	2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-003	2-Methylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-003	3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-003	3-Methylhexane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-003	3-Methylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-003	Acetone		2.5	ppbv	0.4	AC-058	29-Jun-16
16060297-003	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Jun-16
16060297-003	Benzene	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-003	Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	29-Jun-16
16060297-003	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-003	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-003	Bromomethane	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-003	Carbon disulfide		0.39	ppbv	0.01	AC-058	29-Jun-16
16060297-003	Carbon tetrachloride	I	0.10	ppbv	0.01	AC-058	29-Jun-16
16060297-003	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-003	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-003	Chloroform	I	0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-003	Chloromethane		0.58	ppbv	0.02	AC-058	29-Jun-16
16060297-003	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-003	cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	29-Jun-16
16060297-003	cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-003	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-003	Cyclohexane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

Date: July 12, 2016 **Inquiries:** (780) 632 8455 **E-mail:** EAS.Results@albertainnovates.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/June 17, 2016	1531	Ambient Air	17-Jun-16 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 16060297 **REPORT CREATED:** 12-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060297-003	Cyclopentane	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-003	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-003	Ethanol		0.6	ppbv	0.3	AC-058	29-Jun-16
16060297-003	Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	29-Jun-16
16060297-003	Ethylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-003	Freon-11	I	0.28	ppbv	0.02	AC-058	29-Jun-16
16060297-003	Freon-113	I	0.05	ppbv	0.01	AC-058	29-Jun-16
16060297-003	Freon-114	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-003	Freon-12		0.79	ppbv	0.02	AC-058	29-Jun-16
16060297-003	Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.50	AC-058	29-Jun-16
16060297-003	Isobutane	I	0.26	ppbv	0.02	AC-058	29-Jun-16
16060297-003	Isopentane	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Jun-16
16060297-003	Isoprene	I	0.07	ppbv	0.01	AC-058	29-Jun-16
16060297-003	Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	29-Jun-16
16060297-003	Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-003	m,p-Xylene	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Jun-16
16060297-003	m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	29-Jun-16
16060297-003	m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	29-Jun-16
16060297-003	Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.50	AC-058	29-Jun-16
16060297-003	Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Jun-16
16060297-003	Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	29-Jun-16
16060297-003	Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	29-Jun-16
16060297-003	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Jun-16
16060297-003	Methylcyclohexane	I	0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-003	Methylcyclopentane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/June 17, 2016	1531	Ambient Air	17-Jun-16 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 16060297 **REPORT CREATED:** 12-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060297-003	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Jun-16
16060297-003	n-Butane	I	0.14	ppbv	0.03	AC-058	29-Jun-16
16060297-003	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	29-Jun-16
16060297-003	n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	29-Jun-16
16060297-003	n-Heptane	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-003	n-Hexane	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-003	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-003	n-Pentane	K, T, U	< 0.1	ppbv	0.1	AC-058	29-Jun-16
16060297-003	n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	29-Jun-16
16060297-003	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	29-Jun-16
16060297-003	Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	29-Jun-16
16060297-003	n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-003	o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-003	o-Xylene	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-003	p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	29-Jun-16
16060297-003	p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	29-Jun-16
16060297-003	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	29-Jun-16
16060297-003	Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	29-Jun-16
16060297-003	Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	29-Jun-16
16060297-003	Toluene	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-003	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-003	trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	29-Jun-16
16060297-003	trans-2-Butene	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-003	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-003	Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	29-Jun-16

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/June 17, 2016	1531	Ambient Air	17-Jun-16 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 16060297 **REPORT CREATED:** 12-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060297-003	Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	29-Jun-16
16060297-003	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/June 23, 2016	1532	Ambient Air	23-Jun-16 0:00

DESCRIPTION:

REPORT NUMBER: 16060335 **REPORT CREATED:** 19-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060335-001	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	09-Jul-16
16060335-001	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	09-Jul-16
16060335-001	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	09-Jul-16
16060335-001	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	09-Jul-16
16060335-001	1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	09-Jul-16
16060335-001	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	09-Jul-16
16060335-001	1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	09-Jul-16
16060335-001	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	09-Jul-16
16060335-001	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	09-Jul-16
16060335-001	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	09-Jul-16
16060335-001	1,2-Dichloroethane	I	0.01	ppbv	0.01	AC-058	09-Jul-16
16060335-001	1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	09-Jul-16
16060335-001	1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	09-Jul-16
16060335-001	1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	09-Jul-16
16060335-001	1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	09-Jul-16
16060335-001	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	09-Jul-16
16060335-001	1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	09-Jul-16
16060335-001	1-Butene	I	0.21	ppbv	0.02	AC-058	09-Jul-16
16060335-001	1-Hexene	I	0.07	ppbv	0.02	AC-058	09-Jul-16
16060335-001	1-Pentene	K, T, U	< 0.01	ppbv	0.01	AC-058	09-Jul-16
16060335-001	2,2,4-Trimethylpentane	I	0.02	ppbv	0.01	AC-058	09-Jul-16
16060335-001	2,2-Dimethylbutane	K, T, U	< 0.01	ppbv	0.01	AC-058	09-Jul-16
16060335-001	2,3,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	09-Jul-16
16060335-001	2,3-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	09-Jul-16
16060335-001	2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	09-Jul-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/June 23, 2016	1532	Ambient Air	23-Jun-16 0:00

DESCRIPTION:

REPORT NUMBER: 16060335 **REPORT CREATED:** 19-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060335-001	2,4-Dimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	09-Jul-16
16060335-001	2-Methylheptane	K, T, U	< 0.01	ppbv	0.01	AC-058	09-Jul-16
16060335-001	2-Methylhexane	I	0.02	ppbv	0.01	AC-058	09-Jul-16
16060335-001	2-Methylpentane	I	0.06	ppbv	0.01	AC-058	09-Jul-16
16060335-001	3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	09-Jul-16
16060335-001	3-Methylhexane	I	0.04	ppbv	0.02	AC-058	09-Jul-16
16060335-001	3-Methylpentane	I	0.05	ppbv	0.01	AC-058	09-Jul-16
16060335-001	Acetone		8.8	ppbv	0.4	AC-058	09-Jul-16
16060335-001	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	09-Jul-16
16060335-001	Benzene	I	0.04	ppbv	0.01	AC-058	09-Jul-16
16060335-001	Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	09-Jul-16
16060335-001	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	09-Jul-16
16060335-001	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	09-Jul-16
16060335-001	Bromomethane	K, T, U	< 0.01	ppbv	0.01	AC-058	09-Jul-16
16060335-001	Carbon disulfide		2.32	ppbv	0.01	AC-058	09-Jul-16
16060335-001	Carbon tetrachloride	I	0.09	ppbv	0.01	AC-058	09-Jul-16
16060335-001	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	09-Jul-16
16060335-001	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	09-Jul-16
16060335-001	Chloroform	I	0.02	ppbv	0.02	AC-058	09-Jul-16
16060335-001	Chloromethane		0.65	ppbv	0.02	AC-058	09-Jul-16
16060335-001	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	09-Jul-16
16060335-001	cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	09-Jul-16
16060335-001	cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	09-Jul-16
16060335-001	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	09-Jul-16
16060335-001	Cyclohexane	I	0.04	ppbv	0.02	AC-058	09-Jul-16

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/June 23, 2016	1532	Ambient Air	23-Jun-16 0:00

DESCRIPTION:

REPORT NUMBER: 16060335 **REPORT CREATED:** 19-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060335-001	Cyclopentane	I	0.02	ppbv	0.01	AC-058	09-Jul-16
16060335-001	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	09-Jul-16
16060335-001	Ethanol		2.0	ppbv	0.3	AC-058	09-Jul-16
16060335-001	Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	09-Jul-16
16060335-001	Ethylbenzene	I	0.01	ppbv	0.01	AC-058	09-Jul-16
16060335-001	Freon-11	I	0.28	ppbv	0.02	AC-058	09-Jul-16
16060335-001	Freon-113	I	0.07	ppbv	0.01	AC-058	09-Jul-16
16060335-001	Freon-114	K, T, U	< 0.02	ppbv	0.02	AC-058	09-Jul-16
16060335-001	Freon-12		0.55	ppbv	0.02	AC-058	09-Jul-16
16060335-001	Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.50	AC-058	09-Jul-16
16060335-001	Isobutane		0.34	ppbv	0.02	AC-058	09-Jul-16
16060335-001	Isopentane		0.38	ppbv	0.03	AC-058	09-Jul-16
16060335-001	Isoprene		1.76	ppbv	0.01	AC-058	09-Jul-16
16060335-001	Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	09-Jul-16
16060335-001	Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	09-Jul-16
16060335-001	m,p-Xylene	I	0.04	ppbv	0.03	AC-058	09-Jul-16
16060335-001	m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	09-Jul-16
16060335-001	m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	09-Jul-16
16060335-001	Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.50	AC-058	09-Jul-16
16060335-001	Methyl ethyl ketone		1.5	ppbv	0.3	AC-058	09-Jul-16
16060335-001	Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	09-Jul-16
16060335-001	Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	09-Jul-16
16060335-001	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	09-Jul-16
16060335-001	Methylcyclohexane	I	0.04	ppbv	0.01	AC-058	09-Jul-16
16060335-001	Methylcyclopentane	I	0.08	ppbv	0.02	AC-058	09-Jul-16

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/June 23, 2016	1532	Ambient Air	23-Jun-16 0:00

DESCRIPTION:

REPORT NUMBER: 16060335 **REPORT CREATED:** 19-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060335-001	Methylene chloride		0.8	ppbv	0.3	AC-058	09-Jul-16
16060335-001	n-Butane		0.38	ppbv	0.03	AC-058	09-Jul-16
16060335-001	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	09-Jul-16
16060335-001	n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	09-Jul-16
16060335-001	n-Heptane	I	0.03	ppbv	0.01	AC-058	09-Jul-16
16060335-001	n-Hexane	I	0.13	ppbv	0.01	AC-058	09-Jul-16
16060335-001	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	09-Jul-16
16060335-001	n-Pentane	I	0.2	ppbv	0.1	AC-058	09-Jul-16
16060335-001	n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	09-Jul-16
16060335-001	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	09-Jul-16
16060335-001	Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	09-Jul-16
16060335-001	n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	09-Jul-16
16060335-001	o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	09-Jul-16
16060335-001	o-Xylene	I	0.02	ppbv	0.01	AC-058	09-Jul-16
16060335-001	p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	09-Jul-16
16060335-001	p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	09-Jul-16
16060335-001	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	09-Jul-16
16060335-001	Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	09-Jul-16
16060335-001	Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	09-Jul-16
16060335-001	Toluene	I	0.07	ppbv	0.01	AC-058	09-Jul-16
16060335-001	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	09-Jul-16
16060335-001	trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	09-Jul-16
16060335-001	trans-2-Butene	I	0.04	ppbv	0.01	AC-058	09-Jul-16
16060335-001	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	09-Jul-16
16060335-001	Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	09-Jul-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/June 23, 2016	1532	Ambient Air	23-Jun-16 0:00

DESCRIPTION:

REPORT NUMBER: 16060335 **REPORT CREATED:** 19-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060335-001	Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	09-Jul-16
16060335-001	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	09-Jul-16

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/June 29, 2016	2523	Ambient Air	29-Jun-16 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 16070015 **REPORT CREATED:** 20-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16070015-001	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16070015-001	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16070015-001	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16070015-001	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16070015-001	1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	08-Jul-16
16070015-001	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	08-Jul-16
16070015-001	1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	08-Jul-16
16070015-001	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	08-Jul-16
16070015-001	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16070015-001	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	08-Jul-16
16070015-001	1,2-Dichloroethane	I	0.05	ppbv	0.01	AC-058	08-Jul-16
16070015-001	1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Jul-16
16070015-001	1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16070015-001	1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16070015-001	1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	08-Jul-16
16070015-001	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	08-Jul-16
16070015-001	1,4-Dioxane		0.6	ppbv	0.4	AC-058	08-Jul-16
16070015-001	1-Butene	I	0.10	ppbv	0.02	AC-058	08-Jul-16
16070015-001	1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16070015-001	1-Pentene	I	0.01	ppbv	0.01	AC-058	08-Jul-16
16070015-001	2,2,4-Trimethylpentane	I	0.03	ppbv	0.01	AC-058	08-Jul-16
16070015-001	2,2-Dimethylbutane	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Jul-16
16070015-001	2,3,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Jul-16
16070015-001	2,3-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16070015-001	2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/June 29, 2016	2523	Ambient Air	29-Jun-16 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 16070015 **REPORT CREATED:** 20-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16070015-001	2,4-Dimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Jul-16
16070015-001	2-Methylheptane	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Jul-16
16070015-001	2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Jul-16
16070015-001	2-Methylpentane	I	0.02	ppbv	0.01	AC-058	08-Jul-16
16070015-001	3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16070015-001	3-Methylhexane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16070015-001	3-Methylpentane	I	0.01	ppbv	0.01	AC-058	08-Jul-16
16070015-001	Acetone		11.8	ppbv	0.4	AC-058	08-Jul-16
16070015-001	Acrolein		0.4	ppbv	0.3	AC-058	08-Jul-16
16070015-001	Benzene	I	0.06	ppbv	0.01	AC-058	08-Jul-16
16070015-001	Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	08-Jul-16
16070015-001	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16070015-001	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16070015-001	Bromomethane	I	0.02	ppbv	0.01	AC-058	08-Jul-16
16070015-001	Carbon disulfide		5.56	ppbv	0.01	AC-058	08-Jul-16
16070015-001	Carbon tetrachloride	I	0.09	ppbv	0.01	AC-058	08-Jul-16
16070015-001	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16070015-001	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16070015-001	Chloroform	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16070015-001	Chloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16070015-001	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Jul-16
16070015-001	cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	08-Jul-16
16070015-001	cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16070015-001	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16070015-001	Cyclohexane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/June 29, 2016	2523	Ambient Air	29-Jun-16 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 16070015 **REPORT CREATED:** 20-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16070015-001	Cyclopentane	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Jul-16
16070015-001	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Jul-16
16070015-001	Ethanol		2.4	ppbv	0.3	AC-058	08-Jul-16
16070015-001	Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	08-Jul-16
16070015-001	Ethylbenzene	I	0.01	ppbv	0.01	AC-058	08-Jul-16
16070015-001	Freon-11	I	0.26	ppbv	0.02	AC-058	08-Jul-16
16070015-001	Freon-113	I	0.07	ppbv	0.01	AC-058	08-Jul-16
16070015-001	Freon-114	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16070015-001	Freon-12	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16070015-001	Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.50	AC-058	08-Jul-16
16070015-001	Isobutane		0.57	ppbv	0.02	AC-058	08-Jul-16
16070015-001	Isopentane		0.32	ppbv	0.03	AC-058	08-Jul-16
16070015-001	Isoprene		1.26	ppbv	0.01	AC-058	08-Jul-16
16070015-001	Isopropyl alcohol		1.1	ppbv	0.4	AC-058	08-Jul-16
16070015-001	Isopropylbenzene	I	0.01	ppbv	0.01	AC-058	08-Jul-16
16070015-001	m,p-Xylene	I	0.04	ppbv	0.03	AC-058	08-Jul-16
16070015-001	m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	08-Jul-16
16070015-001	m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	08-Jul-16
16070015-001	Methyl butyl ketone		0.53	ppbv	0.50	AC-058	08-Jul-16
16070015-001	Methyl ethyl ketone		0.9	ppbv	0.3	AC-058	08-Jul-16
16070015-001	Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	08-Jul-16
16070015-001	Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	08-Jul-16
16070015-001	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	08-Jul-16
16070015-001	Methylcyclohexane	I	0.02	ppbv	0.01	AC-058	08-Jul-16
16070015-001	Methylcyclopentane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/June 29, 2016	2523	Ambient Air	29-Jun-16 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 16070015 **REPORT CREATED:** 20-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16070015-001	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	08-Jul-16
16070015-001	n-Butane	I	0.19	ppbv	0.03	AC-058	08-Jul-16
16070015-001	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	08-Jul-16
16070015-001	n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	08-Jul-16
16070015-001	n-Heptane	I	0.02	ppbv	0.01	AC-058	08-Jul-16
16070015-001	n-Hexane	I	0.03	ppbv	0.01	AC-058	08-Jul-16
16070015-001	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16070015-001	n-Pentane	K, T, U	< 0.1	ppbv	0.1	AC-058	08-Jul-16
16070015-001	n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	08-Jul-16
16070015-001	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	08-Jul-16
16070015-001	Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	08-Jul-16
16070015-001	n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Jul-16
16070015-001	o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Jul-16
16070015-001	o-Xylene	I	0.02	ppbv	0.01	AC-058	08-Jul-16
16070015-001	p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	08-Jul-16
16070015-001	p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	08-Jul-16
16070015-001	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	08-Jul-16
16070015-001	Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	08-Jul-16
16070015-001	Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	08-Jul-16
16070015-001	Toluene	I	0.06	ppbv	0.01	AC-058	08-Jul-16
16070015-001	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Jul-16
16070015-001	trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	08-Jul-16
16070015-001	trans-2-Butene	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Jul-16
16070015-001	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16070015-001	Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	08-Jul-16

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/CLS/June 29, 2016	2523	Ambient Air	29-Jun-16 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 16070015 **REPORT CREATED:** 20-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16070015-001	Vinyl acetate		0.4	ppbv	0.4	AC-058	08-Jul-16
16070015-001	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/PUF/CLS/June 5, 2016	A13-02	Air Filter	05-Jun-16 0:00

DESCRIPTION: Cold Lake South LICA01

REPORT NUMBER: 16060039 **REPORT CREATED:** 24-Jun-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060039-005	1-Methylnaphthalene		0.03	ug/puf	0.01	NA-017	16-Jun-16
16060039-005	2-Methylnaphthalene		0.07	ug/puf	0.01	NA-017	16-Jun-16
16060039-005	3-Methylcholanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060039-005	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060039-005	Acenaphthene		0.03	ug/puf	0.01	NA-017	16-Jun-16
16060039-005	Acenaphthylene		0.03	ug/puf	0.01	NA-017	16-Jun-16
16060039-005	Acridine	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060039-005	Anthracene		0.04	ug/puf	0.01	NA-017	16-Jun-16
16060039-005	Benzo(a)anthracene		0.01	ug/puf	0.01	NA-017	16-Jun-16
16060039-005	Benzo(a)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060039-005	Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060039-005	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060039-005	Benzo(e)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060039-005	Benzo(ghi)perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060039-005	Chrysene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060039-005	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060039-005	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060039-005	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060039-005	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060039-005	Fluoranthene		0.10	ug/puf	0.01	NA-017	16-Jun-16
16060039-005	Fluorene		0.10	ug/puf	0.01	NA-017	16-Jun-16
16060039-005	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060039-005	Naphthalene		0.03	ug/puf	0.01	NA-017	16-Jun-16
16060039-005	Perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060039-005	Phenanthrene		0.35	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

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/PUF/CLS/June 5, 2016	A13-02	Air Filter	05-Jun-16 0:00

DESCRIPTION: Cold Lake South LICA01

REPORT NUMBER: 16060039 **REPORT CREATED:** 24-Jun-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060039-005	Pyrene		0.07	ug/puf	0.01	NA-017	16-Jun-16
16060039-005	Retene		0.03	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

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	GROUP SAMPLE ID	Matrix	PROJECT NUMBER	STATION ID	SAMPLER ID
LICA/PUF/CLS/June 11, 2016		Air Filter			AY

DATE SAMPLED: 11-Jun-16 0:00 **STATION DESCRIPTION:**

REPORT NUMBER: 16060175 **REPORT CREATED:** 12-Jul-16 **VERSION:** Version 01

AGENCY: **MATRIX:** **TYPE:** **COLLECTION:**

Lab ID	Parameter	Qualifier	Result	Units	RDL	VMV	Method	Analysis Date
16060175-002	1-Methylnaphthalene		0.03	ug/puf	0.01		NA-017	01-Jul-16
16060175-002	2-Methylnaphthalene		0.05	ug/puf	0.01		NA-017	01-Jul-16
16060175-002	3-Methylcholanthrene	K, T, U	< 0.01	ug/puf	0.01	102847	NA-017	01-Jul-16
16060175-002	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	102848	NA-017	01-Jul-16
16060175-002	Acenaphthene	K, T, U	< 0.01	ug/puf	0.01	102849	NA-017	01-Jul-16
16060175-002	Acenaphthylene	K, T, U	< 0.01	ug/puf	0.01	102850	NA-017	01-Jul-16
16060175-002	Acridine	K, T, U	< 0.01	ug/puf	0.01	102851	NA-017	01-Jul-16
16060175-002	Anthracene		0.02	ug/puf	0.01	102852	NA-017	01-Jul-16
16060175-002	Benzo(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	102853	NA-017	01-Jul-16
16060175-002	Benzo(a)pyrene	K, T, U	< 0.01	ug/puf	0.01	102854	NA-017	01-Jul-16
16060175-002	Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/puf	0.01	102855	NA-017	01-Jul-16
16060175-002	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/puf	0.01	102856	NA-017	01-Jul-16
16060175-002	Benzo(e)pyrene	K, T, U	< 0.01	ug/puf	0.01	102857	NA-017	01-Jul-16
16060175-002	Benzo(ghi)perylene	K, T, U	< 0.01	ug/puf	0.01	102858	NA-017	01-Jul-16
16060175-002	Chrysene	K, T, U	< 0.01	ug/puf	0.01	102859	NA-017	01-Jul-16
16060175-002	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/puf	0.01	102860	NA-017	01-Jul-16
16060175-002	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/puf	0.01	102861	NA-017	01-Jul-16
16060175-002	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/puf	0.01	102862	NA-017	01-Jul-16
16060175-002	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/puf	0.01	102863	NA-017	01-Jul-16
16060175-002	Fluoranthene		0.03	ug/puf	0.01	102864	NA-017	01-Jul-16
16060175-002	Fluorene		0.04	ug/puf	0.01	102865	NA-017	01-Jul-16
16060175-002	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/puf	0.01	102866	NA-017	01-Jul-16
16060175-002	Naphthalene		0.02	ug/puf	0.01	102867	NA-017	01-Jul-16
16060175-002	Perylene	K, T, U	< 0.01	ug/puf	0.01		NA-017	01-Jul-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

Date: July 12, 2016 **Inquiries:** (780) 632 8455 **E-mail:** EAS.Results@albertainnovates.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	GROUP SAMPLE ID	Matrix	PROJECT NUMBER	STATION ID	SAMPLER ID
LICA/PUF/CLS/June 11, 2016		Air Filter			AY

DATE SAMPLED: 11-Jun-16 0:00 **STATION DESCRIPTION:**

REPORT NUMBER: 16060175 **REPORT CREATED:** 12-Jul-16 **VERSION:** Version 01

AGENCY: **MATRIX:** **TYPE:** **COLLECTION:**

Lab ID	Parameter	Qualifier	Result	Units	RDL	VMV	Method	Analysis Date
16060175-002	Phenanthrene		0.12	ug/puf	0.01	102868	NA-017	01-Jul-16
16060175-002	Pyrene		0.02	ug/puf	0.01	102869	NA-017	01-Jul-16
16060175-002	Retene	K, T, U	< 0.01	ug/puf	0.01	103826	NA-017	01-Jul-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/PUF/CLS/June 17, 2016	TE-06	Air Filter	17-Jun-16 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 16060297 **REPORT CREATED:** 12-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060297-004	1-Methylnaphthalene		0.05	ug/puf	0.01	NA-017	01-Jul-16
16060297-004	2-Methylnaphthalene		0.10	ug/puf	0.01	NA-017	01-Jul-16
16060297-004	3-Methylcholanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060297-004	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060297-004	Acenaphthene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060297-004	Acenaphthylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060297-004	Acridine	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060297-004	Anthracene		0.02	ug/puf	0.01	NA-017	01-Jul-16
16060297-004	Benzo(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060297-004	Benzo(a)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060297-004	Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060297-004	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060297-004	Benzo(e)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060297-004	Benzo(ghi)perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060297-004	Chrysene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060297-004	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060297-004	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060297-004	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060297-004	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060297-004	Fluoranthene		0.04	ug/puf	0.01	NA-017	01-Jul-16
16060297-004	Fluorene		0.05	ug/puf	0.01	NA-017	01-Jul-16
16060297-004	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060297-004	Naphthalene		0.03	ug/puf	0.01	NA-017	01-Jul-16
16060297-004	Perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060297-004	Phenanthrene		0.11	ug/puf	0.01	NA-017	01-Jul-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/PUF/CLS/June 17, 2016	TE-06	Air Filter	17-Jun-16 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 16060297 **REPORT CREATED:** 12-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060297-004	Pyrene		0.02	ug/puf	0.01	NA-017	01-Jul-16
16060297-004	Retene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/PUF/CLS/June 23, 2016	9801	Air Filter	23-Jun-16 0:00

DESCRIPTION:

REPORT NUMBER: 16060335 **REPORT CREATED:** 19-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060335-002	1-Methylnaphthalene		0.03	ug/puf	0.01	NA-017	01-Jul-16
16060335-002	2-Methylnaphthalene		0.07	ug/puf	0.01	NA-017	01-Jul-16
16060335-002	3-Methylcholanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060335-002	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060335-002	Acenaphthene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060335-002	Acenaphthylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060335-002	Acridine	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060335-002	Anthracene		0.02	ug/puf	0.01	NA-017	01-Jul-16
16060335-002	Benzo(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060335-002	Benzo(a)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060335-002	Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060335-002	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060335-002	Benzo(e)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060335-002	Benzo(ghi)perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060335-002	Chrysene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060335-002	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060335-002	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060335-002	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060335-002	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060335-002	Fluoranthene		0.08	ug/puf	0.01	NA-017	01-Jul-16
16060335-002	Fluorene		0.10	ug/puf	0.01	NA-017	01-Jul-16
16060335-002	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060335-002	Naphthalene		0.02	ug/puf	0.01	NA-017	01-Jul-16
16060335-002	Perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060335-002	Phenanthrene		0.33	ug/puf	0.01	NA-017	01-Jul-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/PUF/CLS/June 23, 2016	9801	Air Filter	23-Jun-16 0:00

DESCRIPTION:

REPORT NUMBER: 16060335 **REPORT CREATED:** 19-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060335-002	Pyrene		0.05	ug/puf	0.01	NA-017	01-Jul-16
16060335-002	Retene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/PUF/CLS/June 29, 2016	TE-04	Air Filter	29-Jun-16 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 16070015 **REPORT CREATED:** 20-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16070015-002	1-Methylnaphthalene		0.02	ug/puf	0.01	NA-017	15-Jul-16
16070015-002	2-Methylnaphthalene		0.05	ug/puf	0.01	NA-017	15-Jul-16
16070015-002	3-Methylcholanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jul-16
16070015-002	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jul-16
16070015-002	Acenaphthene		0.02	ug/puf	0.01	NA-017	15-Jul-16
16070015-002	Acenaphthylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jul-16
16070015-002	Acridine	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jul-16
16070015-002	Anthracene		0.04	ug/puf	0.01	NA-017	15-Jul-16
16070015-002	Benzo(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jul-16
16070015-002	Benzo(a)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jul-16
16070015-002	Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jul-16
16070015-002	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jul-16
16070015-002	Benzo(e)pyrene		0.01	ug/puf	0.01	NA-017	15-Jul-16
16070015-002	Benzo(ghi)perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jul-16
16070015-002	Chrysene		0.02	ug/puf	0.01	NA-017	15-Jul-16
16070015-002	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jul-16
16070015-002	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jul-16
16070015-002	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jul-16
16070015-002	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jul-16
16070015-002	Fluoranthene		0.06	ug/puf	0.01	NA-017	15-Jul-16
16070015-002	Fluorene		0.04	ug/puf	0.01	NA-017	15-Jul-16
16070015-002	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jul-16
16070015-002	Naphthalene		0.02	ug/puf	0.01	NA-017	15-Jul-16
16070015-002	Perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jul-16
16070015-002	Phenanthrene		0.28	ug/puf	0.01	NA-017	15-Jul-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

Date: July 20, 2016 **Inquiries:** (780) 632 8455 **E-mail:** EAS.Results@albertainnovates.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/PUF/CLS/June 29, 2016	TE-04	Air Filter	29-Jun-16 0:00

DESCRIPTION: Cold Lake South

REPORT NUMBER: 16070015 **REPORT CREATED:** 20-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16070015-002	Pyrene		0.04	ug/puf	0.01	NA-017	15-Jul-16
16070015-002	Retene		0.03	ug/puf	0.01	NA-017	15-Jul-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

Date: July 20, 2016 **Inquiries:** (780) 632 8455 **E-mail:** EAS.Results@albertainnovates.ca

PARTISOL SAMPLES

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

RESULTS: Adewunmi Adekanmbi
Lakeland Industry and Community Assn
4000, 19 St NE
Calgary
AB T2E 6P8

INVOICE: Charmaine Code 780 812-2182
PO Box 8237
5107W-50 St
Bonnyville
AB T9N 2J5

CLIENT SAMPLE ID	CANISTER ID	Matrix	Priority
LICA flt #P4131727		Air Filter	Normal

DESCRIPTION: Cold Lake South PM2.5

DATE SAMPLED: 05-Jun-16 0:00
DATE RECEIVED: 07-Jun-16
REPORT CREATED: 04-Jul-16
REPORT NUMBER: 16060037
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060037-001	Particulate Weight		0.076	mg	0.004	AC-029	13-Jun-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

Date: July 4, 2016 **Inquiries:** (780) 632 8455 **E-mail:** EAS.Results@albertainnovates.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

RESULTS: Adewunmi Adekanmbi
Lakeland Industry and Community Assn
4000, 19 St NE

Calgary
AB T2E 6P8

INVOICE: Charmaine Code 780 812-2182
PO Box 8237
5107W-50 St
Bonnyville
AB T9N 2J5

CLIENT SAMPLE ID	CANISTER ID	Matrix	Priority
LICA P4149580		Air Filter	Normal

DESCRIPTION:

DATE SAMPLED: 11-Jun-16 0:00
DATE RECEIVED: 16-Jun-16
REPORT CREATED: 04-Jul-16
REPORT NUMBER: 16060176
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060176-001	Particulate Weight		0.033	mg	0.004	AC-029	20-Jun-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

Date: July 4, 2016 **Inquiries:** (780) 632 8455 **E-mail:** EAS.Results@albertainnovates.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

RESULTS: Adewunmi Adekanmbi
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Calgary
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5107W-50 St
Bonnyville
AB T9N 2J5

CLIENT SAMPLE ID	CANISTER ID	Matrix	Priority
Filter # P6024410		Air Filter	Normal

DESCRIPTION:

DATE SAMPLED: 17-Jun-16 0:00
DATE RECEIVED: 24-Jun-16
REPORT CREATED: 19-Jul-16
REPORT NUMBER: 16060296
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060296-001	Particulate Weight		0.028	mg	0.004	AC-029	28-Jun-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

Date: July 19, 2016 **Inquiries:** (780) 632 8455 **E-mail:** EAS.Results@albertainnovates.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

RESULTS: Adewunmi Adekanmbi
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Calgary
AB T2E 6P8

INVOICE: Charmaine Code 780 812-2182
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AB T9N 2J5

CLIENT SAMPLE ID	CANISTER ID	Matrix	Priority
LICA FLT# P6024404		Air Filter	Normal

DESCRIPTION:

DATE SAMPLED: 23-Jun-16 0:00
REPORT CREATED: 19-Jul-16
DATE RECEIVED: 29-Jun-16
REPORT NUMBER: 16060334
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060334-001	Particulate Weight		0.079	mg	0.004	AC-029	04-Jul-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

Date: July 19, 2016 **Inquiries:** (780) 632 8455 **E-mail:** EAS.Results@albertainnovates.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

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5107W-50 St
Bonnyville
AB T9N 2J5

CLIENT SAMPLE ID	CANISTER ID	Matrix	Priority
LICA Flt# P6024405		Air Filter	Normal

DESCRIPTION: PM 2.5

DATE SAMPLED: 29-Jun-16 0:00
DATE RECEIVED: 05-Jul-16
REPORT CREATED: 02-Aug-16
REPORT NUMBER: 16070019
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16070019-001	Particulate Weight		0.107	mg	0.004	AC-029	07-Jul-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

Date: August-02-16 **Inquiries:** (780) 632 8455 **E-mail:** EAS.Results@albertainnovates.ca

APPENDIX V
INTERNAL AUDIT RESULTS

`

COMPANY: LICA **PLANT:** Cold Lake South **DATE:** June 21, 2016

Station Location: UTM Coordinates: _____
Elevation (m): _____
Declination: _____

GENERAL	Yes	No	n/a	Comments:
Has site location changed from previous audit?		x		
Is site secure?	x			
Are station operating conditions adequate?				
Last twelve month's of calibrations available?	x			
All applicable SOP's available in station?	x			Online
Site documentation up to date?		x		Mike Bisaga responsible.

DATA ACQUISITION	Yes	No	n/a	Comments:
Are strip charts in use?		x		
Is a digital data logger in use?	x			
Is a telemetry system for data acquisition in use?	x			

TRAILER COMPONENTS	Yes	No	n/a	Comments:
Is a glass sampling manifold installed?	x			
Is sampling manifold clean and free of chips and	x			
Is a trap in place?	x			
Are spare manifold ports capped?	x			
Is manifold pump properly installed and operative?	x			
If horizontal, is the manifold mounted at a slight			x	
Do sample lines extend halfway into manifold?	x			
Are monitor sampling lines connected to manifold?	x			
Are sampling lines clean?	x			
Are monitors properly mounted and secure?	x			
Are monitors properly exhausted from room or	x			Good job - **dates for scrubber material changes on all scrubbers
Are zero and span systems operational?	x			

Meteorological	Yes	No	n/a	Comments:
Is wind equipment properly oriented?	x			Trees getting close to 30 dregrees.
Is the wind equipment functioning properly?	x			Trees getting close to 30 dregrees.

	Indicated Value:	Audit Value:	% Difference	Scalar Difference:
Station Temperature ^{o}C	n/a	n/a	**n/a**	n/a
Barometric Pressure	n/a	n/a	**n/a**	n/a
Wind Speed (kph)	n/a	n/a	**n/a**	n/a
Wind Direction (Deg)	n/a	n/a	**n/a**	n/a
Relative Humidity %	n/a	n/a	**n/a**	n/a
Ambient Temperature ^{o}C	n/a	n/a	**n/a**	n/a
Solar Radiation kW/m^2	n/a	n/a	**n/a**	n/a
Precipitation (Tipping Bucket mm)	n/a	n/a	**n/a**	n/a

Recommendations: PM 2.5 head missing an o-ring, head found mildly dirty

All ,analyzers changed to 120 seconds averaging time, adviced to Alex by Al, disagree, take up with Mike Bisaga.

AUDITOR: Tom Bourque

Thermo 450i Total Reduced Sulphur Analyzer Audit

Date:	June 21, 2016	**Barometric Pressure:**	.938 atm
Company/Airshed:	LICA	**Station Temperature °C:**	21 C
Location/Station Name:	Cold Lake South	**Weather Conditions:**	Clear
Parameter:	Total Reduced Sulphur	**Calibration Purpose:**	shut do Audit
Start Time 24 hr. (mst):	8:03	**Performed By/Reviewer:**	Tom Bourque
End Time 24 hr. (mst):	9:33	**Cal Gas Expiry Date:**	February 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:	June 11, 2016	**As Found C.F.:**	1.002
Previous C.F.:	1.009	**New C.F.:**	n/a

Calibrator:

Flow Meter ID's:	n/a
Make & Model:	Sabio 2010
Serial #:	042531101(0911)
Cal Gas Cylinder I.D. # :	LL74267
Cal Gas Conc. (ppm):	9.88

Standard Calibration Points for Ranges

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

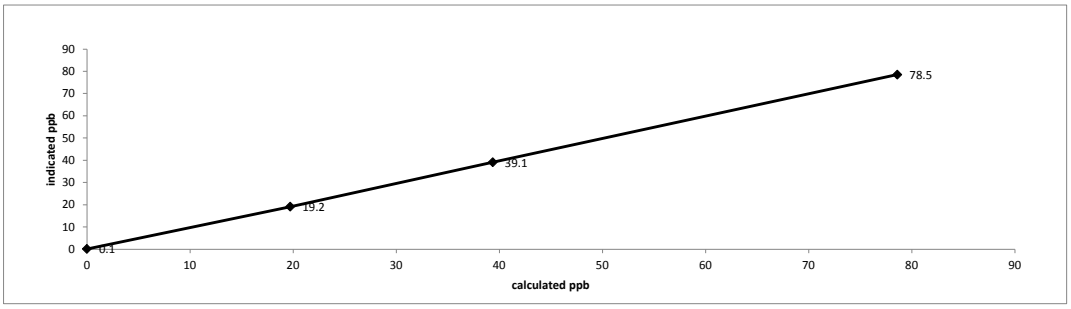
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors (C.F.):
Point	**Diluent**	**Cal Gas**	**Total**	**(ppb)**	**(ppb)**	
as found zero	5000	0.00	5000	0.0	0.1	N/A
as found high	4988	40.00	5028	78.6	78.5	1.002
mid	5000	20.00	5020	39.4	39.1	1.010
low	4999	10.00	5009	19.7	19.2	1.035
					Average C.F.=	1.016

Linear Regression/Calibration Results:

		LIMITS
Correlation Coeffecient =	**1.000**	**> or = 0.995**
Slope =	**1.000**	**0.90-1.10**
b (Intercept as % of full scale)=	**0.21%**	**± 3% F.S.**
% change in C.F. from last cal=	**0.65%**	**± 10%**

Thermo 450i Total Reduced Sulphur Analyzer Audit

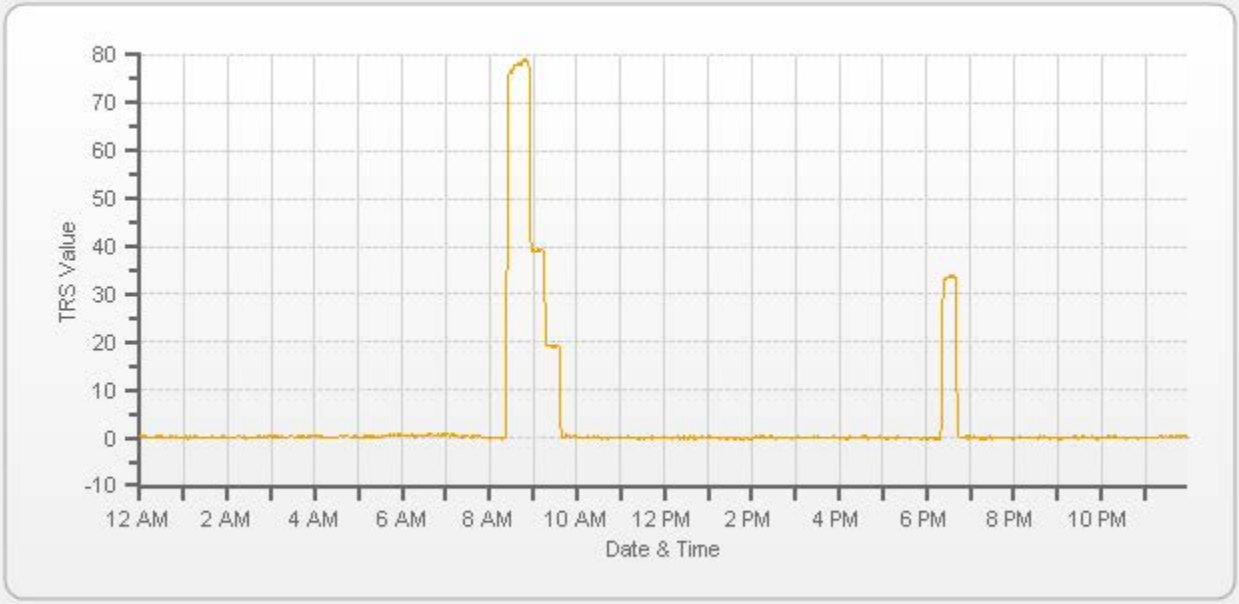


	As found:	As left:
BKG:	13.8	n/a
COEF:	.955	n/a
PMT:	-651.2	n/a
FLASH:	742	n/a
INTERNAL:	30.9	n/a
CHAMBER:	45.2	n/a
CONVERTER TEMP:	810	n/a
CONVERTER SET:	810	n/a
PERM OVEN GAS:	45.00	n/a
PERM OVEN HTR:	44.38	n/a
PRESSURE:	660.2	n/a
SAMPLE FLOW:	.511 lpm	n/a
LAMP INTENSITY:	92 %	n/a
Internal Span:	34.27	n/a

Comments:

Use source testing SO2 in N2 50.2 ppm cylinder # DT0008954 for scrubber challenge run 349 ppb SO2, based on AEP scrubber challenge protocol of duplicating SO2 calibration high point, run 349 ppb for 10 minutes, result = .1 ppb, no adjustments made to analyzer

TRS[ppb] Station: LICA COLD LAKE SOUTH Daily: 2016/06/21 Type: AVG 1 Min. [1 Min.]



APPENDIX VI
REPORT CERTIFICATION FORM

Report Certification Form

Alberta Airshed (if applicable)	EPA Approval or Code of Practice Registration # (if applicable)
YES	NA
Company Name (if applicable)	Industrial Operation Name (if applicable)
Lakeland Industry & Community Association	Cold Lake South Site
Name of the Representative of the Person Responsible (Last, First, Middle)	Position / Title of the Representative of the Person Responsible
Wunmi Adekanmbi	Project Manager Assistant, Customer Service, Air Services
Is an External Party Certifying the Report? (If 'Yes', fill in the fields below for the external person. ☐ Yes ■ 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

04-Aug-2016

Report Issued Date (dd-mm-yyyy)

APPENDIX VII
DATA VALIDATION CERTIFICATION FORM

Maxxam
A Bureau Veritas Group Company

Validation Certificate Form

Client: Lakeland Industry & Community Association
Site: Cold Lake South Site
Project #: 2833-2016-06-1- C
Contact: Mike Bisaga

Level 0 Preliminary Verification	mcdmhq	**Date**	15-July-2016
Level 1 Primary Validation	mcdmhq	**Date**	15-July-2016
Level 2 Final Validation	mcdmhq	**Date**	04-Aug-2016
Level 3 Independent Data Review	Phil Smeleri	**Date**	04-Aug-2016
Post-Final Validation	NA	**Date**	NA

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

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
MASKWA SITE

JOB #:2833-2016-06-30- C

June 2016

Prepared for:

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

Attention: MIKE BISAGA

DATE: **July 26, 2016**

Prepared by:

Wunmi Adekanmbi, M.Sc., EPt
Project Manager Assistant, Customer Service, Air Services

Reviewed by: On behalf of

Thomas Bourque, C. Tech
Technical Specialist, Air Services

SUMMARY

In June 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.

All Parameters: Maximum instantaneous data collected on June 22 at hour 9 was invalidated due to a short power outage.

NOX/NO/NO2: Sixty-three hours were discarded in June. These losses were incurred as a result of extra removal and installation calibrations that were required to address analyzer malfunctions. However the AMD operational time requirements were satisfied at 91.1%.

THC: Thirteen hours of data collected from hour 19 on June 8 to hour 7 on June 9 were invalidated due to low gas pressure.

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 Maskwa Site						MAXIMUM VALUES							OPERATIONAL TIME (%)
						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	0.2	8.9	5	5	4.1	WNW	1.8	5	100.0
H2S (PPB)	**10**	**3**	**0**	**0**	**0.1**	**4.2**	20	6	1.1	SSW	0.4	2, 20	99.9
THC (PPM)	-	-	-	-	2.04	4.17	20	6	1.1	SSW	2.22	20	97.9
NO2 (PPB)	159	-	0	-	1.9	14.9	5	5	4.1	WNW	4.7	5	91.1
NO (PPB)	-	-	-	-	0.4	5.6	3, 9	8, 21	7.4 7.8	NW NW	1.2	5	91.1
NOX (PPB)	-	-	-	-	2.4	19.5	5	5	4.1	WNW	5.9	5	91.1
RELATIVE HUMIDITY (%)	-	-	-	-	62.5	93	VAR	VAR	VAR	VAR	83.3	9	100.0
BAROMETRIC PRESSURE (MILIBAR)	-	-	-	-	940	952	29	VAR	VAR	VAR	951	29	100.0
AMBIENT TEMPERATURE (DEG C)	-	-	-	-	16.6	28.9	27	14	7.1	W	21.3	27	100.0
PRECIPITATION (MM)	-	-	-	-	0.1	4.3	9	1	9.6	E	0.2	9	100.0
VECTOR WS (KPH)	-	-	-	-	5.9	17.0	15	13	-	S	12.3	15	100.0
VECTOR WD (DEG)	-	-	-	-	-	-	-	-	-	-	-	-	100.0

NA-NOT AVAILABLE VAR-VARIOUS

Exceedence Summary Report

SO_2 1- Hour Exceedences

No Exceedences Recorded During the Month

SO_2 24- Hour Exceedences

No Exceedences Recorded During the Month

H2S 1- Hour Exceedences

No Exceedences Recorded During the Month

H2S 24- Hour Exceedences

No Exceedences Recorded During the Month

NO2 1- Hour Exceedences

No Exceedences Recorded During the Month

TABLE OF CONTENTS

1.0 Discussion

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

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/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%).

Annual maintenance was performed on the Air Conditioning System on June 13 by a Maxxam technician and an HVAC technician from Horizon Mechanical.

SULPHUR DIOXIDE (SO2)
The analyzer was working well throughout the month. The routine monthly calibration was performed on June 15. Maximum instantaneous data collected on June 22 at hour 9 was invalidated due to a short power outage.

HYDROGEN SULPHIDE (H2S)
The analyzer spanned high on June 14. The span check was repeated on June 15 and the result was within acceptance limits. No data was discarded. The routine monthly calibration was performed on June 15. Maximum instantaneous data collected on June 22 at hour 9 was invalidated due to a short power outage.

TOTAL HYDROCARBONS (THC)
The Hydrogen gas cylinder was replaced on June 9. Thirteen hours of data collected from hour 19 on June 8 to hour 7 on June 9 were invalidated due to low gas pressure. The routine monthly calibration was performed on June 16. The analyzer did not span correctly on June 17 as the span valve was not properly closed after the calibration on June 16. The valve was closed and the issue was fixed. No data was discarded due to this issue. Maximum instantaneous data collected on June 22 at hour 9 was invalidated due to a short power outage.

NITROGEN DIOXIDE (NO2)
A removal calibration was performed on the Maxxam-supplied API 200A (S/N: 1899) analyzer on June 15. The LICA-owned analyzer, API 200E (S/N: 592) which had earlier been removed for maintenance, was then installed and allowed time to stabilize overnight. A successful installation calibration was performed on June 16. The analyzer spanned low on June 21. Upon arrival at the station on June 22, an 'A-ZERO' warning was found displayed on the analyzer's screen. An as found points check was performed and the result was good. It was decided that the analyzer be replaced for maintenance purposes. A successful removal calibration was performed on the LICA analyzer on June 23. On June 24, an API 200A (S/N: 2166) analyzer was installed and a successful installation calibration was performed. A verification repeat shutdown was performed on the same day due to suspect calibrator performance. A full calibration was completed on June 25 to verify the analyzer's performance. The calibration equipment had been cross-checked with a different zero air generator prior to this calibration. The calibration met AMD requirements. Sixty-three hours of data are invalid due to these events.

WIND SPEED (WS), WIND DIRECTION (WD) and STANDARD DEVIATION WIND DIRECTION (STDWD)
The wind system is reported as vector wind speed and vector wind direction. The wind direction data included in this report represents where the wind was coming from.
The wind system was working well throughout the month. Maximum instantaneous data collected on June 22 at hour 9 was invalidated due to a short power outage.

RELATIVE HUMIDITY (RH)
The humidity sensor was working well throughout the month.

BAROMETRIC PRESSURE (BP)
The pressure sensor was working well throughout the month. A routine quarterly audit was conducted on the pressure sensor using the reference, Fischer Scientific, Model FB 1291 (S/N: 130168457).

PRECIPITATION
The rain guage system was working well throughout the month.

AMBIENT TEMPERATURE (TPX)
The temperature sensor was working well throughout the month.

2.0 Project Personnel

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

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 H2S Monitoring
Maxxam AIR SOP-00211: Ambient SO2 Monitoring
Maxxam AIR SOP-00213: Ambient NO/NO2/NOx 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 Flourescent Analyzer
Hydrogen Sulphide - API 101E UV Flourescent Analyzer
Total Hydrocarbons - Thermo 51C FID Analyzer
Oxides of Nitrogen - 0 Chemiluminescent Analyzer
Wind System - Met One Unit
Relative Humidity - Met One Unit
Barometric Pressure - Met One Unit
Ambient Temperature - Met One Unit
Precipitation - Met One Unit
Datalogger - ESC 8832

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

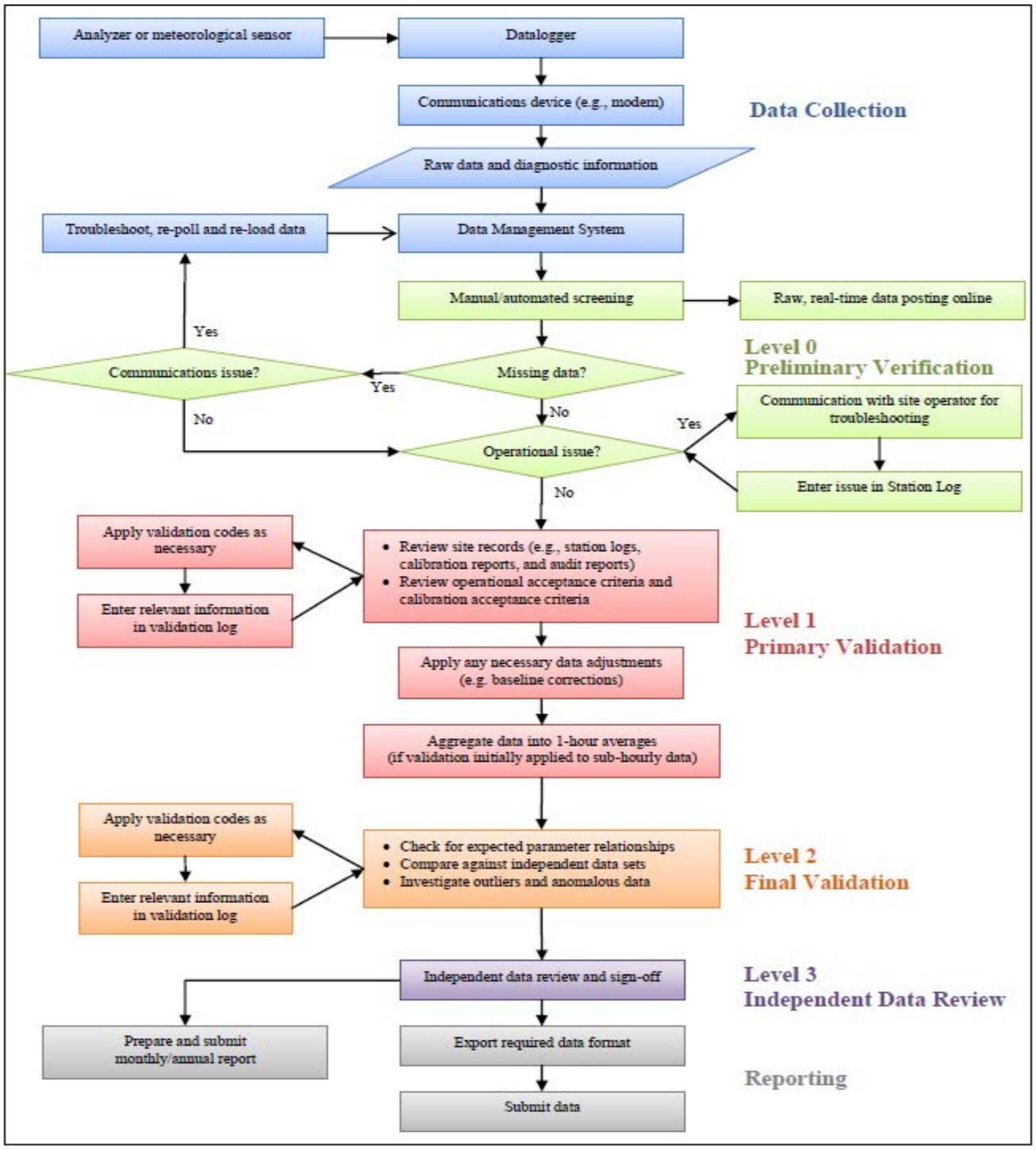
Level 0 Preliminary Verification
Level 0 data are raw data obtained directly from the data acquisition system (DAS). Under the step of Level 0, these data undergo a certain amount of manual or automated screening and flagging. It included a) identification of periods of missing data; b) verification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

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

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

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

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



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

APPENDIX I
CONTINUOUS MONITORING DATA RESULTS

SULPHUR DIOXIDE

SULPHUR DIOXIDE (SO2) hourly averages in ppb

MST

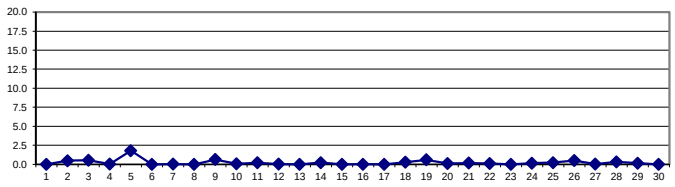
HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	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
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	4.4	2.2	0.5	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	S	0.0	0.0	4.4	0.5	24
3	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.9	6.0	2.6	0.0	0.1	0.7	0.0	0.0	0.9	0.5	0.2	0.0	0.0	0.0	S	0.0	0.0	0.0	6.0	0.5	24
4	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.6	0.0	24
5	0.0	0.0	1.1	2.7	1.1	***8.9***	5.3	2.9	1.0	3.7	4.0	3.1	1.2	0.0	0.4	2.9	1.9	1.2	0.0	S	0.0	0.0	0.0	0.0	0.0	***8.9***	***1.8***	24
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	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	0.5	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	24
8	0.0	0.0	0.0	0.0	0.0	0.0	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
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	3.5	3.4	6.4	0.5	0.0	0.0	6.4	0.6	24
10	0.0	0.0	0.0	1.1	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	0.5	0.0	1.1	0.1	24
11	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	2.0	0.0	0.0	0.0	S	0.1	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.2	24
12	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.8	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	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
14	0.0	0.0	0.0	0.0	0.0	0.0	1.6	1.6	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	1.8	0.2	24
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	C	C	C	C	C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
16	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	24
17	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
18	0.0	0.0	S	0.0	0.0	0.3	0.6	2.1	1.7	1.4	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	2.1	0.3	24
19	1.6	S	0.0	0.0	0.0	0.4	0.2	0.0	0.0	0.0	0.4	0.0	1.1	2.5	1.1	3.0	2.5	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	3.0	0.6	24
20	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	1.2	0.4	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	1.2	0.1	24
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.4	1.0	1.2	0.7	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	1.2	0.2	24
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.0	0.5	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	1.0	0.1	24
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	24
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.8	0.0	0.0	0.4	1.4	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	1.4	0.1	24
25	0.0	1.1	1.1	0.5	1.9	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	1.9	0.2	24
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.9	2.6	1.0	0.0	0.0	0.0	4.5	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	4.5	0.5	24
27	0.0	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	0.4	0.0	S	0.0	0.0	0.0	0.0	0.0	0.4	0.0	24
28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.6	1.2	0.2	0.0	3.1	0.3	1.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	3.1	0.3	24
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.8	0.7	0.0	0.0	0.0	0.0	0.2	0.3	S	0.3	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.1	24
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
HOURLY MAX	1.6	1.1	1.1	2.7	1.9	8.9	5.3	2.9	6.0	4.4	4.0	3.1	1.2	2.5	3.1	4.5	2.5	1.2	0.3	3.5	3.4	6.4	0.7	0.5				
HOURLY AVG	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.3	0.6	0.6	0.4	0.3	0.2	0.1	0.2	0.5	0.2	0.1	0.0	0.2	0.1	0.3	0.0	0.0				

STATUS FLAG CODES

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

OBJECTIVE LIMIT: **ALBERTA ENVIRONMENT:** 1-HR 172 PPB | 24-HR 48 PPB

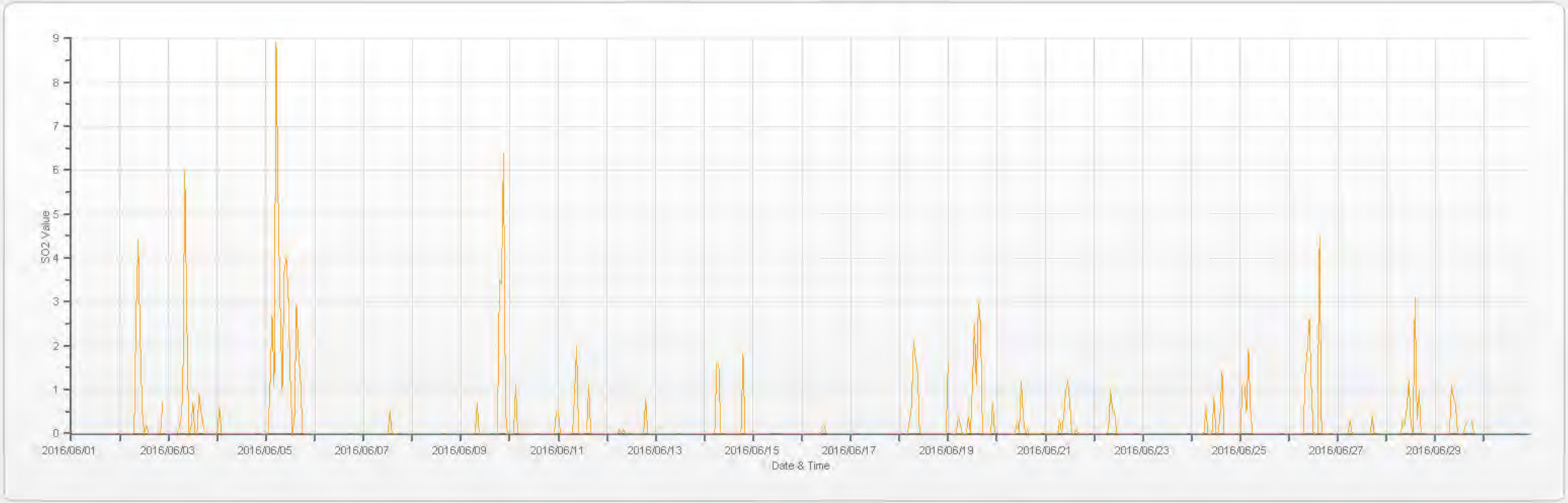
24 HOUR AVERAGES FOR June 2016



MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:			0				
NUMBER OF 24-HR EXCEEDENCES:			0				
NUMBER OF NON-ZERO READINGS:			112				
MINIMUM 1-HR AVERAGE	0.0	PPB	@ HOUR(S)	VAR	ON DAY(S)	ALL	
MAXIMUM 1-HR AVERAGE:	8.9	PPB	@ HOUR(S)	5	ON DAY(S)	5	
MAXIMUM 24-HR AVERAGE:	1.8	PPB			ON DAY(S)	5	
					VAR-VARIOUS		
IZS CALIBRATION TIME:	31	HRS	OPERATIONAL TIME:			720	HRS
MONTHLY CALIBRATION TIME:	5	HRS	AMD OPERATION UPTIME:			100.0	%
STANDARD DEVIATION:	0.77		MONTHLY AVERAGE:			0.2	PPB

SO2[ppb] Station: LICA MASKWA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



SULPHUR DIOXIDE MAX instantaneous maximum in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	**S**	3.6	3.5	3.4	3.3	3.4	3.4	3.6	3.5	3.4	3.5	3.5	3.7	3.5	3.7	3.5	3.8	3.8	4.5	4.5	3.9	3.9	4.0	**S**	3.3	4.5	3.7	24
2	5.9	4.7	4.6	4.1	4.0	4.0	4.1	7.2	9.4	11.6	10.0	8.6	5.6	5.9	4.6	5.8	4.2	4.2	4.2	5.3	4.2	13.0	**S**	7.0	4.0	13.0	6.2	24
3	4.1	3.8	3.8	3.8	4.0	5.6	5.6	9.7	15.4	12.4	6.2	9.6	13.2	8.2	3.9	13.1	17.3	16.6	4.5	4.4	3.5	**S**	3.3	3.4	3.3	17.3	7.6	24
4	3.8	5.0	4.5	3.4	3.2	3.4	3.2	3.2	3.4	3.2	3.2	3.2	3.2	3.3	3.2	3.2	3.2	3.2	3.2	3.3	**S**	3.2	3.2	3.3	3.2	5.0	3.4	24
5	3.4	3.8	5.6	7.8	5.3	20.9	16.7	10.5	11.1	15.3	14.4	14.6	9.8	4.7	12.6	14.0	14.5	9.9	3.3	**S**	3.3	4.8	4.5	3.5	3.3	20.9	9.3	24
6	4.3	3.6	3.3	3.5	3.7	3.9	3.9	3.7	4.5	4.2	4.2	3.9	3.7	3.7	3.9	4.3	4.3	5.1	**S**	4.0	4.1	4.0	4.3	5.4	3.3	5.4	4.1	24
7	4.0	4.0	5.4	4.3	4.3	4.3	4.3	4.4	4.4	4.7	5.0	4.7	6.6	11.8	4.6	4.4	5.5	**S**	4.8	5.1	4.4	4.4	4.2	4.2	4.0	11.8	4.9	24
8	4.3	4.3	4.3	4.3	4.3	4.4	4.3	4.2	4.2	4.3	4.3	4.3	4.5	4.5	4.5	4.6	**S**	4.5	4.5	4.5	4.5	4.7	4.7	4.8	4.2	4.8	4.4	24
9	4.9	5.8	6.4	6.4	5.2	5.4	5.4	5.9	7.2	5.6	5.4	5.4	5.6	5.4	5.4	**S**	5.1	5.0	5.1	***21.4***	16.5	18.6	7.7	5.8	4.9	***21.4***	7.4	24
10	5.1	7.2	6.0	9.2	4.6	4.6	4.5	4.4	4.5	4.2	4.0	4.2	4.1	4.0	**S**	4.0	4.6	4.2	5.3	4.5	5.8	4.0	5.4	5.6	4.0	9.2	5.0	24
11	5.7	5.6	4.5	5.3	4.2	4.0	3.9	3.9	8.0	8.3	4.8	5.1	4.9	**S**	6.8	8.0	4.7	4.5	4.5	4.7	4.7	4.7	5.1	4.8	3.9	8.3	5.2	24
12	4.8	4.7	4.8	4.7	4.9	5.0	5.3	5.3	5.4	5.3	5.2	5.2	**S**	5.2	4.8	5.0	4.7	4.7	5.3	10.8	6.3	4.8	4.6	4.5	4.5	10.8	5.3	24
13	4.7	4.6	4.8	5.1	4.6	4.8	4.7	4.6	4.6	4.5	4.6	**S**	4.8	4.7	4.7	4.7	4.8	4.8	4.8	5.1	4.9	4.8	4.8	4.9	4.5	5.1	4.8	24
14	4.9	4.9	5.2	5.0	5.0	5.1	11.3	9.4	6.2	5.4	**S**	6.2	5.8	5.6	5.6	5.5	5.8	5.0	5.3	14.8	8.3	7.0	6.2	6.0	4.9	14.8	6.5	24
15	5.3	5.6	5.6	5.6	5.6	5.6	5.6	5.4	5.4	**C**	**C**	**C**	**C**	**C**	1.0	0.9	1.0	1.0	1.1	1.1	1.0	1.0	1.0	2.6	0.9	5.6	3.2	24
16	1.0	0.9	0.9	0.9	**S**	0.9	1.0	1.0	1.3	1.8	2.2	2.0	2.3	1.7	1.4	1.2	3.7	2.3	1.0	1.0	1.0	1.0	1.0	1.0	0.9	3.7	1.4	24
17	0.9	1.0	1.0	**S**	1.4	1.8	1.0	1.0	1.0	0.8	0.8	0.8	0.6	1.6	1.6	0.4	0.4	0.5	0.6	1.0	1.0	0.4	0.4	0.4	0.4	1.8	0.9	24
18	0.3	0.4	**S**	1.4	1.6	1.8	5.0	8.3	8.0	5.1	0.7	1.1	0.6	2.8	3.4	4.4	0.8	1.7	1.7	2.3	2.0	1.0	0.8	0.9	0.3	8.3	2.4	24
19	10.1	**S**	0.9	0.8	1.0	2.7	1.9	1.2	1.1	0.7	6.3	1.5	9.0	10.8	6.8	10.5	10.0	3.1	0.5	0.5	0.4	2.4	3.8	0.7	0.4	10.8	3.8	24
20	**S**	0.4	0.2	0.2	0.2	0.4	0.8	0.6	0.9	0.7	2.6	1.8	7.8	3.6	1.6	2.4	0.7	3.1	1.4	0.4	0.4	0.4	0.5	**S**	0.2	7.8	1.4	24
21	0.4	0.4	0.4	0.4	0.5	0.6	0.8	2.8	1.7	7.8	4.7	5.2	4.0	2.4	1.8	2.3	1.5	1.7	0.9	0.7	0.7	0.9	**S**	0.6	0.4	7.8	1.9	24
22	0.7	0.7	1.0	1.0	0.8	1.0	1.1	2.4	2.9	**P**	2.4	2.1	1.3	1.3	1.2	1.1	1.2	1.4	1.4	1.0	1.2	**S**	0.8	1.0	0.7	2.9	1.3	23
23	1.0	0.9	0.9	1.4	1.1	1.4	1.6	2.0	1.7	2.2	1.6	1.7	1.9	1.4	1.4	1.7	1.6	1.8	2.0	1.8	1.9	1.6	1.7	**S**	0.9	2.2	1.6	24
24	1.4	1.6	1.8	2.1	2.0	2.6	3.0	4.3	2.4	2.2	4.9	6.0	6.2	2.0	7.4	8.0	1.8	3.7	2.0	2.1	3.3	2.0	**S**	2.0	1.4	8.0	3.3	24
25	3.9	5.1	4.6	4.1	6.9	4.5	2.4	1.8	1.9	1.9	2.0	1.9	1.9	1.8	1.7	1.8	1.8	1.6	1.7	1.6	1.5	**S**	2.0	1.5	1.5	6.9	2.6	24
26	1.5	1.4	1.4	1.4	1.4	1.3	1.4	2.0	5.0	4.8	6.4	3.9	1.8	1.6	1.8	12.8	1.6	1.4	2.0	1.4	**S**	1.3	1.2	1.0	1.0	12.8	2.6	24
27	1.1	1.4	1.3	1.3	1.4	1.8	2.2	2.1	1.6	1.6	1.6	1.8	2.9	1.4	1.2	1.8	1.8	6.6	3.1	**S**	1.0	1.2	1.3	1.3	1.0	6.6	1.9	24
28	1.4	1.3	1.3	1.4	1.3	1.8	1.5	1.7	3.6	4.2	3.7	5.4	2.4	3.4	9.7	8.5	11.3	3.0	**S**	1.3	1.6	1.7	1.6	1.6	1.3	11.3	3.2	24
29	1.6	1.6	1.4	1.4	1.4	1.4	1.3	1.3	4.5	3.8	3.5	2.6	2.9	2.3	1.8	3.4	5.8	**S**	4.4	2.3	1.4	1.2	1.3	1.4	1.2	5.8	2.3	24
30	1.4	1.4	1.9	1.7	1.5	1.4	1.7	1.8	2.0	1.9	1.7	1.6	1.6	2.9	1.8	2.0	**S**	2.0	2.0	1.8	1.8	1.9	1.9	1.9	1.4	2.9	1.8	24
HOURLY MAX	10.1	7.2	6.4	9.2	6.9	20.9	16.7	10.5	15.4	15.3	14.4	14.6	13.2	11.8	12.6	14.0	17.3	16.6	5.3	21.4	16.5	18.6	7.7	7.0				
HOURLY AVG	3.3	3.1	3.1	3.3	3.1	3.7	3.8	4.0	4.6	4.7	4.3	4.2	4.4	4.0	3.9	4.9	4.6	3.9	3.0	4.0	3.4	3.7	3.0	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: 683

MAXIMUM INSTANTANEOUS VALUE: 21.4 PPB @ HOUR(S) 19 ON DAY(S) 9

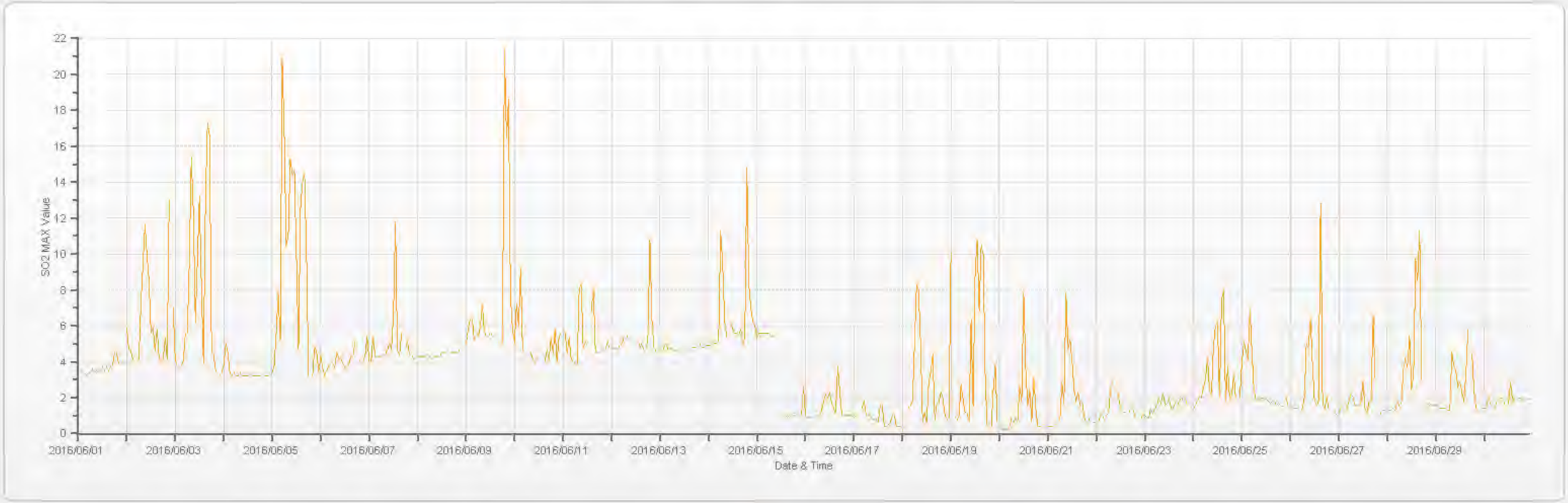
VAR-VARIOUS

IZS CALIBRATION TIME: 31 HRS OPERATIONAL TIME: 719 HRS

MONTHLY CALIBRATION TIME: 5 HRS

STANDARD DEVIATION: 3.02

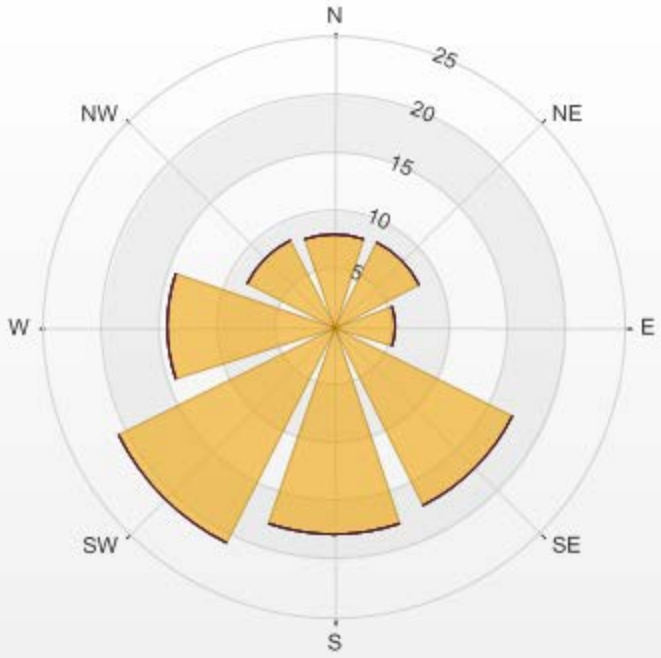
SO2 MAX[ppb] Station: LICA MASKWA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



Wind: LICA MASKWA Monitor: SO2 [ppb] Monthly: 06/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
Calm: 0.00% Valid Data: 95.00% Calm Avg: 0.00

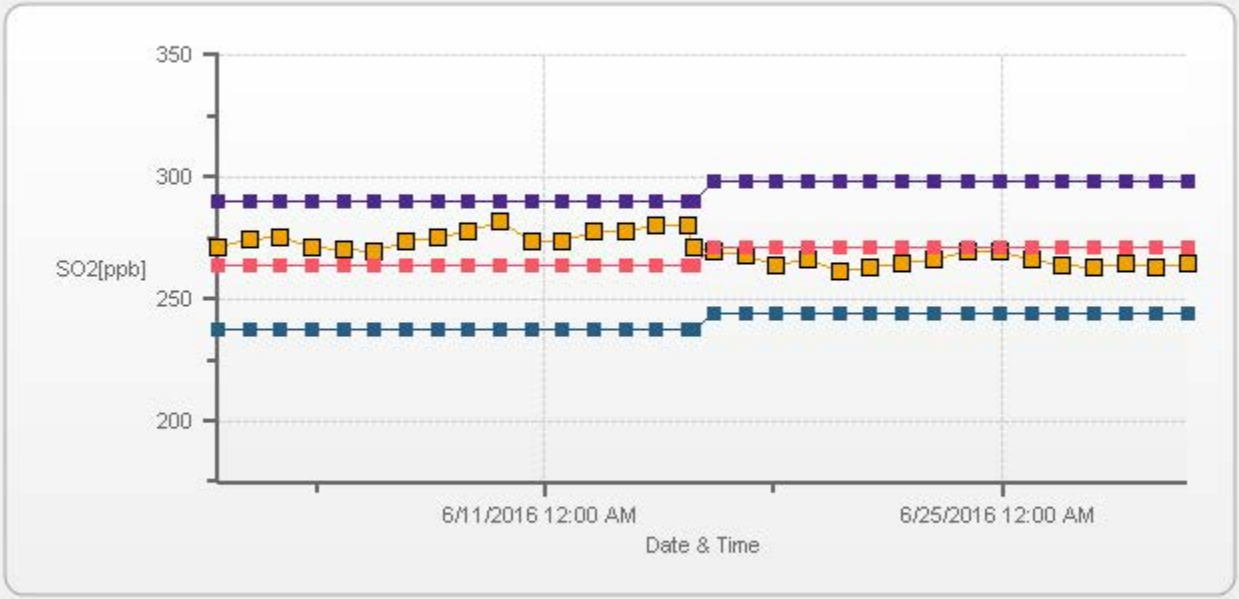
Direction	0.0-20.0	20.0-60.0	60.0-110.0	110.0-170.0	170.0-340.0	>340.0	Total
N	8.04	0	0	0	0	0	8.04
NE	8.19	0	0	0	0	0	8.19
E	5.41	0	0	0	0	0	5.41
SE	17.11	0	0	0	0	0	17.11
S	17.84	0	0	0	0	0	17.84
SW	20.76	0	0	0	0	0	20.76
W	14.33	0	0	0	0	0	14.33
NW	8.33	0	0	0	0	0	8.33
Summary	100	0	0	0	0	0	100

LICA MASKWA 2016/06/01 12:00 AM - 2016/06/30 11:00 PM Calm: 0.00%



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

SO2[ppb] Calibration: LICA MASKWA Monthly: 06/2016 Type: Span



HYDROGEN SULPHIDE

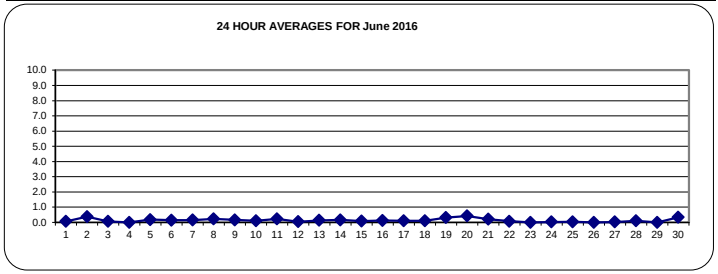
HYDROGEN SULPHIDE (H2S) hourly averages in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	**S**	0.0	0.0	0.0	0.1	0.2	0.3	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.2	0.0	**S**	0.0	0.3	0.1	24
2	0.2	1.8	2.7	0.1	0.2	0.2	0.2	0.2	0.3	0.9	0.4	0.2	0.1	0.1	0.0	0.0	0.2	0.0	0.0	0.3	0.4	0.1	**S**	0.0	0.0	2.7	***0.4***	24
3	0.1	0.1	0.1	0.0	0.0	0.2	0.0	0.1	0.2	0.2	0.0	0.2	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	**S**	0.0	0.0	0.0	0.2	0.1	24
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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
5	0.0	0.0	0.0	0.1	0.2	0.7	0.1	0.0	0.0	0.9	0.6	0.0	0.1	0.1	0.2	0.1	0.2	0.1	0.1	**S**	0.1	0.0	0.6	0.0	0.0	0.9	0.2	24
6	0.5	0.3	0.0	0.0	0.2	1.5	0.0	0.5	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**S**	0.0	0.1	0.0	0.0	0.0	0.0	1.5	0.1	24
7	0.0	0.0	0.0	0.0	0.2	2.5	0.0	0.0	0.6	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**S**	0.0	0.0	0.0	0.0	0.0	0.1	0.0	2.5	0.2	24
8	0.7	0.6	0.8	0.1	0.2	0.7	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**S**	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	1.2	0.2	24
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	1.1	0.0	0.0	0.0	0.0	0.3	0.0	**S**	0.0	0.0	0.3	0.0	0.0	0.4	0.8	0.0	0.0	1.1	0.2	24
10	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	**S**	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0	0.0	1.9	0.1	24
11	0.0	0.0	0.1	0.9	0.3	0.3	0.0	0.0	0.3	0.2	0.0	0.1	0.3	**S**	1.5	0.4	0.3	0.4	0.1	0.2	0.0	0.0	0.0	0.0	0.0	1.5	0.2	24
12	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.0	0.1	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	0.4	0.0	0.4	0.0	24
13	1.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**S**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	1.2	0.1	24
14	0.5	0.3	1.3	0.0	0.0	0.0	0.0	0.7	0.0	0.0	**S**	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.0	0.0	0.0	0.0	0.1	0.4	0.0	1.3	0.2	24
15	0.0	0.0	0.4	0.1	0.2	0.0	0.0	**S1**	0.0	**S**	**C**	**C**	**C**	**C**	0.0	0.0	0.2	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.1	23
16	0.0	0.0	0.0	0.0	**S**	0.0	0.2	0.0	0.4	0.3	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.1	0.7	0.1	0.0	0.0	0.0	0.7	0.1	24
17	0.0	0.7	0.3	**S**	0.5	0.3	0.3	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.1	24
18	0.0	0.0	**S**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.4	1.1	0.0	0.0	1.1	0.1	24
19	0.0	**S**	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.6	0.5	0.4	0.1	0.7	1.4	0.3	1.0	0.8	0.2	0.0	1.4	0.3	24
20	**S**	0.6	0.8	0.6	1.2	0.1	***4.2***	0.0	0.4	0.3	0.1	0.1	0.0	0.1	0.1	0.4	0.3	0.0	0.0	0.1	0.0	0.0	0.0	**S**	0.0	***4.2***	***0.4***	24
21	0.0	0.1	0.0	0.7	0.7	1.1	0.3	1.1	0.3	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	**S**	0.0	0.0	1.1	0.2	24
22	0.0	0.0	0.0	0.0	0.3	0.7	0.3	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	**S**	0.0	0.0	0.0	0.7	0.1	24
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**S**	0.0	0.0	0.0	24
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.1	0.0	0.0	0.0	0.1	0.0	**S**	0.0	0.0	0.3	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	0.9	0.0	0.0	0.0	0.0	**S**	0.0	0.0	0.9	0.0	24
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	**S**	0.0	0.0	0.0	0.0	0.1	0.0	24
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	**S**	0.0	0.0	0.0	0.4	0.0	0.4	0.0	24
28	0.1	0.0	0.0	0.0	0.0	0.1	0.4	0.0	0.0	0.1	0.6	0.0	0.0	0.1	0.5	0.4	0.0	0.0	**S**	0.1	0.0	0.0	0.1	0.1	0.0	0.6	0.1	24
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**S**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
30	0.0	0.0	1.2	0.9	0.3	0.5	0.5	0.0	0.2	0.0	0.0	0.4	0.8	0.6	0.3	0.2	**S**	0.0	0.1	0.5	0.1	0.5	0.2	0.4	0.0	1.2	0.3	24
HOURLY MAX	1.0	1.8	2.7	0.9	1.2	2.5	4.2	1.1	1.1	0.9	0.6	0.4	0.8	0.6	1.5	0.5	0.4	0.9	0.7	1.4	1.2	1.9	1.1	1.2				
HOURLY AVG	0.1	0.2	0.3	0.2	0.2	0.3	0.2	0.2	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1				

STATUS FLAG CODES

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

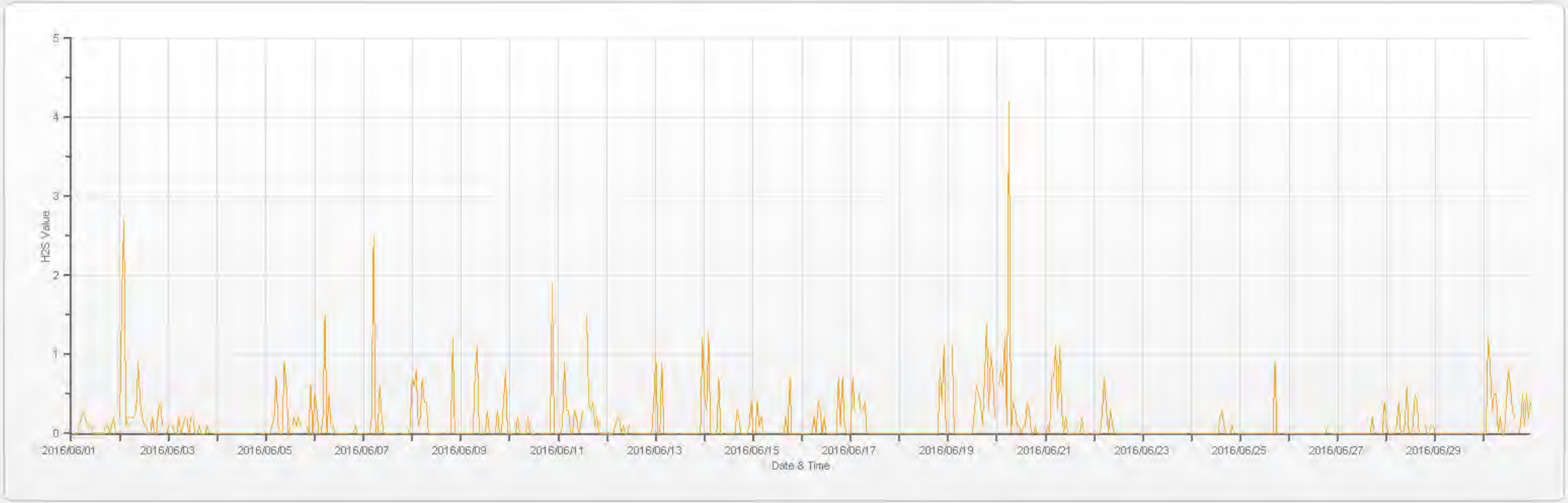


OBJECTIVE LIMIT: **ALBERTA ENVIRONMENT:** 1-HR 10 PPB | 24-HR 3 PPB

MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:			0				
NUMBER OF 24-HR EXCEEDENCES:			0				
NUMBER OF NON-ZERO READINGS:			216				
MINIMUM 1-HR AVERAGE	0.0	PPB	@ HOUR(S)	VAR	ON DAY(S)	ALL	
MAXIMUM 1-HR AVERAGE:	4.2	PPB	@ HOUR(S)	6	ON DAY(S)	20	
MAXIMUM 24-HR AVERAGE:	0.4	PPB			ON DAY(S) VAR-VARIOUS	2, 20	
IZS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:			719	HRS
MONTHLY CALIBRATION TIME:	4	HRS	AMD OPERATION UPTIME:			99.9	%
STANDARD DEVIATION:	0.34		MONTHLY AVERAGE:			0.1	PPB

H2S[ppb] Station: LICA MASKWA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



HYDROGEN SULPHIDE MAX instantaneous maximum in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	**S**	1.1	0.9	0.8	1.1	1.4	1.3	1.3	1.0	1.0	1.1	1.0	1.0	1.0	0.9	0.8	1.0	1.3	1.2	1.0	1.1	1.4	1.3	**S**	0.8	1.4	1.1	24
2	1.3	5.7	5.3	1.3	1.3	1.4	1.3	1.6	1.7	2.8	1.9	1.3	1.1	1.2	1.2	1.1	1.3	1.2	1.2	1.5	1.4	1.2	**S**	1.0	1.0	5.7	1.8	24
3	1.2	1.2	1.2	1.0	0.9	1.5	1.5	1.3	1.3	1.5	0.8	1.9	1.3	1.2	0.8	1.3	1.5	1.4	0.9	1.0	0.9	**S**	0.7	0.8	0.7	1.9	1.2	24
4	0.6	0.9	0.8	3.1	0.7	0.8	0.9	0.9	0.7	0.9	0.9	1.1	0.7	0.8	0.9	0.8	0.8	0.8	0.8	0.9	**S**	0.7	0.8	0.8	0.6	3.1	0.9	24
5	0.8	1.0	3.3	1.2	1.1	2.1	1.6	0.8	0.9	3.2	2.1	1.2	1.4	1.1	1.4	1.5	1.3	1.2	0.9	**S**	0.8	0.8	2.6	0.9	0.8	3.3	1.4	24
6	1.7	1.6	1.0	1.1	2.6	3.5	2.8	1.8	1.5	1.4	1.1	0.9	1.0	1.3	1.8	1.7	1.6	1.2	**S**	1.7	1.8	1.5	0.6	0.8	0.6	3.5	1.6	24
7	1.7	1.9	1.6	1.7	2.6	5.7	2.8	1.7	2.7	2.7	1.5	1.2	1.4	1.4	1.5	1.6	1.5	**S**	1.4	1.5	1.3	0.8	1.7	1.6	0.8	5.7	1.9	24
8	4.1	4.0	2.5	1.9	2.1	2.5	2.4	2.1	1.7	0.5	1.1	1.1	1.1	1.4	1.5	1.2	**S**	1.3	1.2	1.7	4.4	1.9	2.3	2.2	0.5	4.4	2.0	24
9	1.0	2.0	1.6	1.7	1.6	1.7	1.6	7.3	4.3	1.5	1.7	1.5	1.9	2.5	2.1	**S**	2.4	1.6	2.4	2.1	1.6	3.8	3.8	1.4	1.0	7.3	2.3	24
10	1.7	1.6	1.2	2.0	2.5	1.1	1.2	1.3	1.4	2.1	2.1	2.2	1.8	2.0	**S**	0.6	1.1	1.2	1.5	1.5	1.6	5.4	0.9	1.1	0.6	5.4	1.7	24
11	1.2	1.3	1.6	2.9	2.8	2.8	1.3	1.1	2.8	1.9	1.3	2.1	2.1	**S**	4.1	2.3	1.5	1.6	1.6	1.6	1.5	1.4	1.4	1.6	1.1	4.1	1.9	24
12	1.3	1.0	1.1	1.6	1.7	1.8	1.9	1.7	1.6	1.7	1.6	1.8	**S**	1.1	0.9	1.5	1.3	1.4	1.5	1.3	1.3	2.0	1.5	3.6	0.9	3.6	1.6	24
13	3.2	1.6	1.0	3.6	2.5	1.8	1.9	1.7	1.4	1.9	1.5	**S**	2.4	1.9	1.8	1.9	2.3	3.5	1.4	2.2	1.4	1.1	1.9	5.1	1.0	5.1	2.1	24
14	4.5	2.3	4.1	2.0	1.6	1.2	1.9	3.1	2.9	2.2	**S**	1.7	1.9	1.1	2.3	2.3	2.5	2.2	2.0	3.3	2.3	2.5	2.7	4.6	1.1	4.6	2.5	24
15	1.1	1.7	4.6	2.1	2.3	2.3	1.6	**S1**	**S1**	**S**	**C**	**C**	**C**	**C**	1.3	1.4	1.6	1.6	2.6	0.7	1.0	1.0	1.0	1.5	0.7	4.6	1.7	22
16	1.4	0.7	1.2	1.8	**S**	1.8	2.2	1.2	1.9	2.1	1.4	1.5	1.0	0.4	0.6	1.1	1.4	1.4	2.2	2.1	2.6	2.4	0.8	1.1	0.4	2.6	1.5	24
17	1.2	1.4	1.2	**S**	1.2	1.2	1.2	1.2	0.8	0.9	1.0	0.6	1.1	1.2	1.2	0.5	0.6	0.9	0.9	0.7	0.4	0.5	1.2	1.0	0.4	1.4	1.0	24
18	0.7	1.3	**S**	0.9	0.6	1.1	1.0	1.0	0.7	0.5	0.6	0.5	1.1	0.5	0.8	0.6	1.2	1.1	1.0	2.1	2.6	2.5	3.2	1.7	0.5	3.2	1.2	24
19	1.3	**S**	3.6	1.2	0.8	0.4	0.7	0.9	1.0	0.7	1.3	1.5	0.4	1.4	1.4	1.4	0.9	0.9	1.0	1.9	1.8	1.5	1.5	0.3	0.3	3.6	1.2	24
20	**S**	0.9	1.0	0.9	1.6	1.3	***8.9***	0.3	0.7	0.7	0.4	0.4	0.6	0.7	0.7	1.4	1.1	0.4	0.5	1.0	1.0	0.2	0.8	**S**	0.2	***8.9***	1.2	24
21	0.4	1.2	1.3	2.1	1.9	2.4	2.0	2.2	1.5	1.9	2.2	1.3	0.8	0.9	0.8	0.6	0.7	1.0	1.3	1.0	0.7	0.8	**S**	1.0	0.4	2.4	1.3	24
22	0.7	1.2	1.0	1.2	1.7	1.8	1.8	1.4	1.7	**P**	1.1	0.8	0.9	1.0	1.0	0.3	0.7	0.8	0.9	0.6	0.8	**S**	1.5	1.4	0.3	1.8	1.1	23
23	0.8	0.5	0.8	0.6	1.0	0.9	1.2	0.9	1.2	0.8	0.9	1.0	1.2	1.2	0.7	0.5	0.6	0.7	1.1	0.9	1.2	1.4	1.8	**S**	0.5	1.8	1.0	24
24	1.6	1.1	1.0	1.3	1.2	1.1	1.4	2.0	1.2	3.9	4.2	3.0	1.1	1.9	1.7	1.9	1.9	1.4	1.1	1.0	1.3	0.9	**S**	1.0	0.9	4.2	1.7	24
25	1.1	0.8	1.0	1.0	1.2	1.2	0.8	1.4	1.3	1.1	0.8	0.4	0.8	0.4	0.7	1.0	0.4	3.0	2.2	1.1	1.3	**S**	1.9	0.6	0.4	3.0	1.1	24
26	0.8	1.0	1.1	0.0	2.3	0.2	0.6	1.1	1.0	0.8	1.1	1.6	1.6	0.7	0.8	1.1	1.4	1.3	1.1	1.4	**S**	1.1	0.5	0.9	0.0	2.3	1.0	24
27	0.8	0.2	1.0	0.8	1.6	1.7	1.2	0.5	0.5	0.7	1.0	0.9	0.6	0.5	0.7	0.4	0.5	0.8	0.6	**S**	0.2	0.1	0.8	1.0	0.1	1.7	0.7	24
28	1.0	0.5	0.9	0.3	0.3	1.4	1.0	1.1	0.1	1.0	1.2	0.7	0.4	0.9	1.8	1.3	1.4	0.6	**S**	0.8	0.6	0.7	0.9	1.0	0.1	1.8	0.9	24
29	0.9	0.7	0.2	0.0	0.3	0.5	0.2	0.4	0.8	0.4	0.3	0.7	0.9	0.7	0.8	0.8	0.9	**S**	1.1	1.1	0.5	0.4	0.2	0.8	0.0	1.1	0.6	24
30	0.8	1.1	3.5	2.4	1.2	1.4	1.3	1.0	1.1	0.9	0.5	1.2	1.8	1.4	0.8	0.6	**S**	0.4	0.6	1.2	1.1	1.2	0.9	1.2	0.4	3.5	1.2	24
HOURLY MAX	4.5	5.7	5.3	3.6	2.8	5.7	8.9	7.3	4.3	3.9	4.2	3.0	2.4	2.5	4.1	2.3	2.5	3.5	2.6	3.3	4.4	5.4	3.8	5.1				
HOURLY AVG	1.4	1.4	1.7	1.5	1.5	1.7	1.7	1.5	1.4	1.5	1.3	1.3	1.2	1.1	1.3	1.2	1.3	1.3	1.3	1.4	1.4	1.5	1.5	1.5				

STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS: 679

MAXIMUM INSTANTANEOUS VALUE: 8.9 PPB @ HOUR(S) 6 ON DAY(S) 20

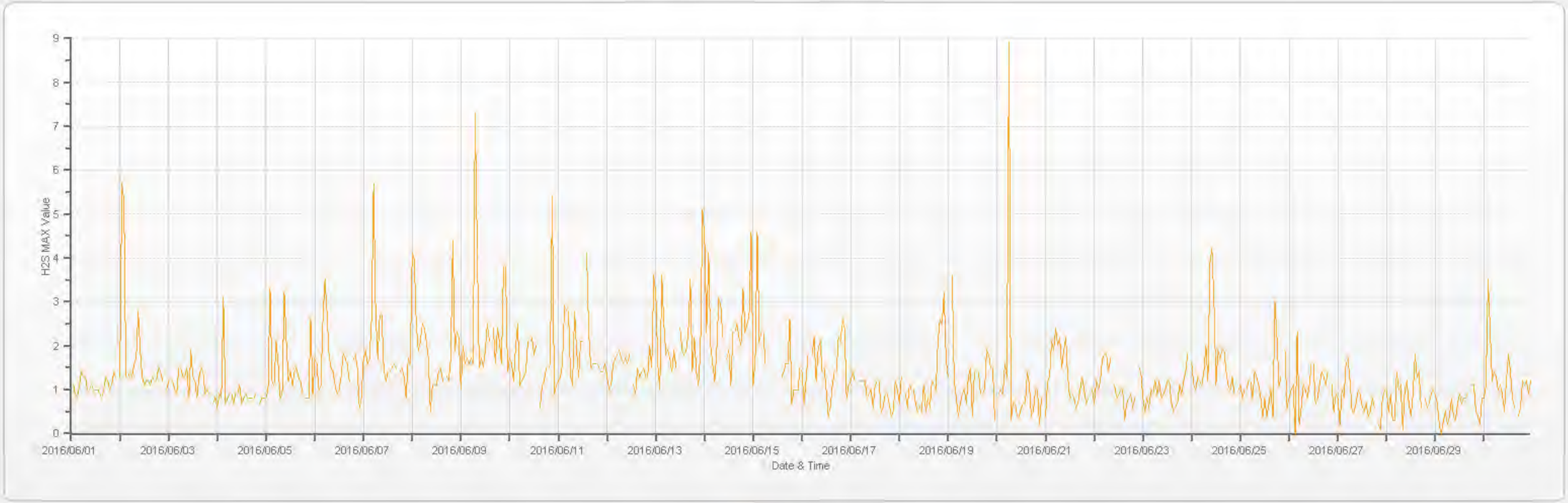
VAR-VARIOUS

IZS CALIBRATION TIME: 32 HRS OPERATIONAL TIME: 717 HRS

MONTHLY CALIBRATION TIME: 4 HRS

STANDARD DEVIATION: 0.90

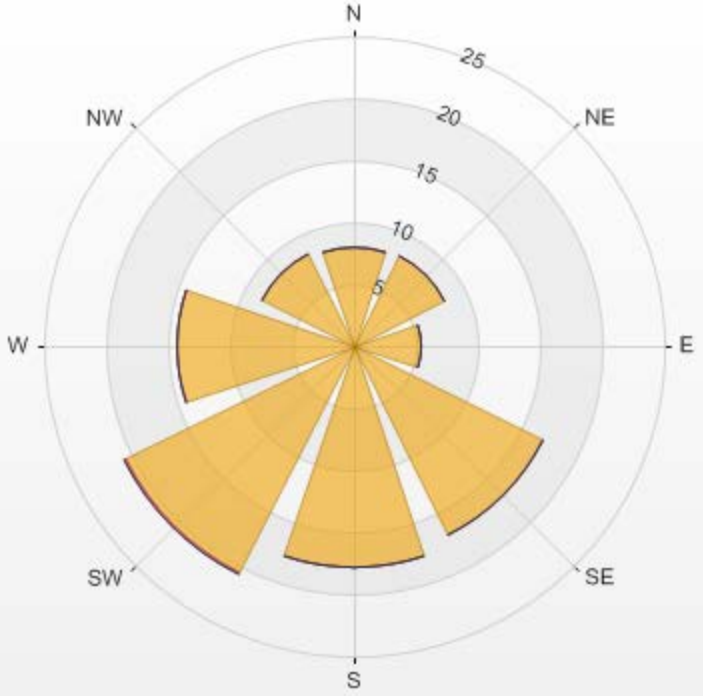
H2S MAX[ppb] Station: LICA MASKWA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



Wind: LICA MASKWA Monitor: H2S [ppb] Monthly: 06/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
Calm: 0.00% Valid Data: 94.86% Calm Avg: 0.00

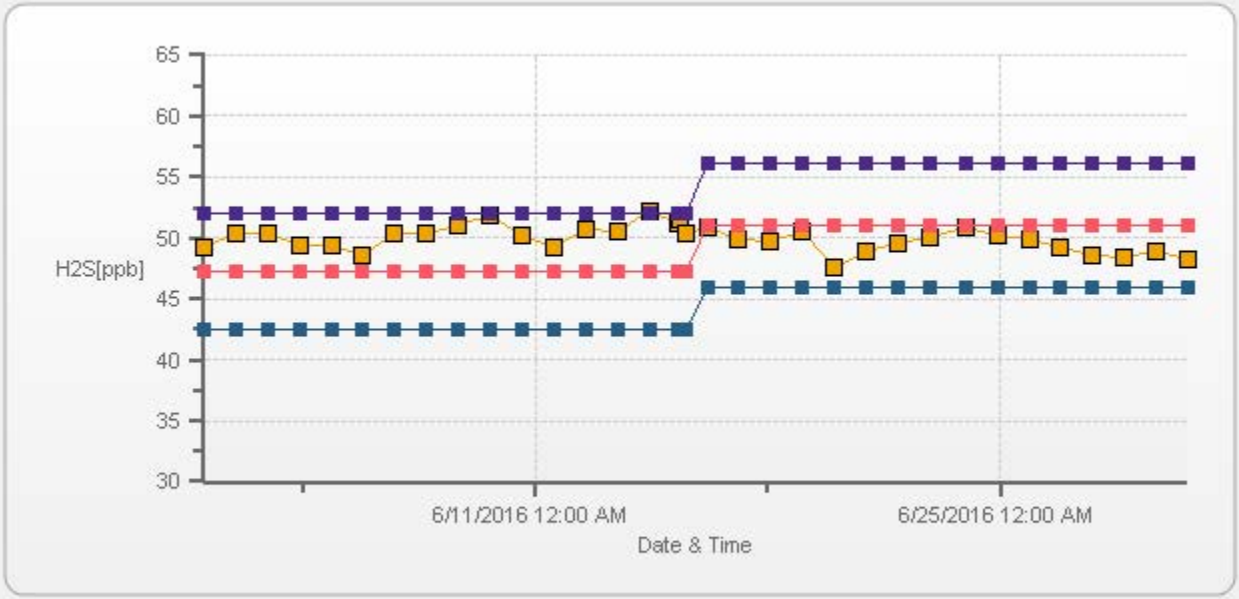
Direction	0.0-3.0	3.0-10.0	10.0-50.0	>50.0	Total
N	8.05	0	0	0	8.05
NE	8.2	0	0	0	8.2
E	5.42	0	0	0	5.42
SE	17.13	0	0	0	17.13
S	17.86	0	0	0	17.86
SW	20.5	0.15	0	0	20.65
W	14.35	0	0	0	14.35
NW	8.35	0	0	0	8.35
Summary	100	0.15	0	0	100

LICA MASKWA 2016/06/01 12:00 AM - 2016/06/30 11:00 PM Calm: 0.00%



% Low Class (m/s) 100 0.0-3.0 0 3.0-10.0 0 10.0-50.0 0 >50.0

H2S[ppb] Calibration: LICA MASKWA Monthly: 06/2016 Type: Span



TOTAL HYDROCARBON

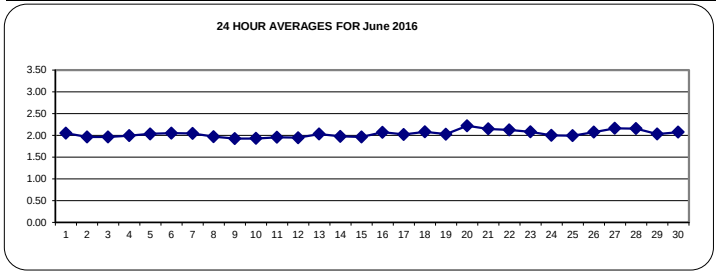
TOTAL HYDROCARBONS (THC) hourly averages in ppm

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	**S**	2.09	2.13	2.17	2.30	2.25	2.23	2.17	2.12	2.15	2.04	2.04	2.00	1.97	1.95	1.96	1.94	1.92	1.92	1.92	1.94	1.96	1.98	**S**	1.92	2.30	2.05	24
2	1.96	2.01	1.97	1.95	1.95	1.97	1.97	2.00	1.99	1.98	1.95	1.95	1.96	1.96	1.96	1.96	1.97	1.97	1.97	1.97	1.92	1.93	**S**	***1.90***	***1.90***	2.01	1.96	24
3	1.92	1.94	1.93	1.91	1.91	1.93	1.93	1.96	1.98	1.97	1.95	2.00	2.00	1.97	1.98	2.00	2.00	2.00	1.99	1.94	1.94	**S**	2.00	2.02	1.91	2.02	1.96	24
4	2.07	2.10	2.16	2.10	1.99	2.03	1.95	1.94	1.95	1.95	1.96	1.96	1.98	1.97	1.97	1.98	1.98	1.98	1.98	1.97	**S**	1.97	1.98	1.99	1.94	2.16	2.00	24
5	1.99	2.00	2.04	2.12	2.14	2.33	2.07	1.99	1.97	2.23	2.11	2.01	1.99	1.97	1.98	2.00	2.00	1.99	1.97	**S**	1.98	2.01	1.96	1.96	1.96	2.33	2.04	24
6	2.00	1.98	1.98	2.01	2.07	2.11	2.20	2.20	2.17	2.15	2.11	2.03	2.02	2.02	2.04	2.03	2.03	2.02	**S**	1.99	2.00	2.00	2.01	2.04	1.98	2.20	2.05	24
7	2.01	2.02	2.03	2.03	2.03	2.05	2.07	2.09	2.10	2.18	2.23	2.16	2.07	1.97	1.95	1.96	1.95	**S**	1.96	1.98	1.99	2.01	2.04	2.16	1.95	2.23	2.05	24
8	2.01	2.10	2.06	2.01	1.99	2.03	1.97	1.95	1.95	1.96	1.95	1.95	1.95	1.93	1.91	1.91	**S**	1.93	1.91	**X**	**X**	**X**	**X**	**X**	1.91	2.10	1.97	19
9	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	1.94	1.95	1.99	1.94	1.90	1.92	1.91	**S**	1.90	1.91	1.92	1.94	1.96	1.94	***1.90***	***1.90***	***1.90***	1.99	1.93	16
10	1.91	1.93	1.93	1.94	1.93	1.93	1.93	1.93	1.92	***1.90***	***1.90***	***1.90***	1.91	1.92	**S**	1.93	1.92	1.93	1.94	1.94	1.95	1.96	1.95	1.98	***1.90***	1.98	1.93	24
11	1.98	1.99	2.00	2.01	2.01	2.02	2.03	2.00	1.99	1.97	1.95	1.94	1.94	**S**	1.93	1.93	1.92	1.93	1.92	1.93	1.91	1.92	1.96	1.91	1.91	2.03	1.96	24
12	1.91	1.92	1.95	1.95	1.96	1.98	1.98	1.97	1.96	1.95	1.95	1.94	**S**	1.94	1.93	1.93	1.92	1.93	1.96	1.96	1.93	1.94	1.96	1.97	1.91	1.98	1.95	24
13	2.02	2.08	2.23	2.35	2.23	2.20	2.20	2.08	1.98	1.94	1.92	**S**	1.94	1.94	1.95	1.94	1.94	1.94	1.95	1.95	1.94	1.97	2.04	2.06	1.92	2.35	2.03	24
14	2.01	1.94	1.96	1.97	1.97	1.95	1.95	1.93	1.96	1.98	**S**	2.01	2.04	2.06	2.07	2.08	2.05	2.00	1.95	1.93	1.91	1.92	1.92	1.93	1.91	2.08	1.98	24
15	1.93	1.95	1.98	2.01	2.06	1.96	1.94	1.94	1.94	**S**	1.94	1.95	1.95	1.96	1.95	1.96	1.95	1.94	1.93	1.93	1.95	1.98	2.00	2.03	1.93	2.06	1.96	24
16	2.07	2.11	2.14	2.16	**S**	2.18	2.14	2.11	2.06	**C**	**C**	**C**	**C**	2.05	2.05	2.02	2.01	2.00	2.02	2.08	2.07	2.04	2.04	2.03	2.00	2.18	2.07	24
17	2.03	2.04	2.04	**S**	2.03	2.04	2.05	2.03	2.00	2.00	1.99	1.98	1.98	2.01	2.01	2.01	2.03	2.01	2.01	2.01	**S1**	2.06	2.07	2.08	1.98	2.08	2.02	23
18	2.08	2.10	**S**	2.22	2.28	2.29	2.21	**S1**	2.05	2.06	2.04	2.04	2.03	2.04	2.04	2.04	2.01	2.00	2.02	2.01	2.04	2.02	2.05	2.17	2.00	2.29	2.08	23
19	2.16	**S**	2.07	2.05	2.05	2.04	2.01	1.99	1.98	1.99	1.99	1.99	2.00	2.02	2.02	2.03	2.01	2.00	2.00	2.00	2.00	2.04	2.14	2.09	1.98	2.16	2.03	24
20	**S**	2.16	2.34	2.35	2.30	2.45	***4.17***	2.08	2.07	2.06	2.06	2.06	2.07	2.07	2.06	2.06	2.05	2.05	2.05	2.05	2.07	2.10	2.18	**S**	2.05	***4.17***	***2.22***	24
21	2.30	2.29	2.34	2.43	2.43	2.40	2.36	2.27	2.06	2.04	2.05	2.06	2.06	2.06	2.05	2.05	2.05	2.03	1.99	2.00	2.00	2.04	**S**	2.09	1.99	2.43	2.15	24
22	2.13	2.18	2.18	2.24	2.38	2.50	2.27	2.17	2.13	2.08	2.06	2.03	2.06	2.05	2.13	2.11	2.02	2.03	2.02	2.02	2.05	**S**	2.06	2.05	2.02	2.50	2.13	24
23	2.07	2.12	2.14	2.24	2.22	2.16	2.11	2.09	2.10	2.18	2.16	2.05	2.02	2.02	2.01	2.01	2.02	2.01	2.00	2.01	2.04	2.05	2.01	**S**	2.00	2.24	2.08	24
24	2.05	2.03	2.01	2.05	2.01	1.99	2.03	2.01	1.96	1.94	2.01	2.00	1.99	1.98	1.98	2.00	1.98	1.97	1.97	1.98	1.99	2.02	**S**	2.07	1.94	2.07	2.00	24
25	2.05	2.11	2.07	2.05	2.08	2.02	2.01	2.01	1.98	1.97	1.95	1.94	1.94	1.94	1.95	1.95	1.95	1.94	1.94	1.94	1.96	**S**	2.12	2.05	1.94	2.12	2.00	24
26	2.05	2.07	2.10	2.11	2.14	2.20	2.23	2.11	2.06	2.08	2.06	2.04	2.04	2.05	2.05	2.05	2.03	2.02	2.04	2.04	**S**	2.05	2.04	2.05	2.02	2.23	2.07	24
27	2.15	2.17	2.18	2.20	2.31	2.51	2.58	2.37	2.31	2.26	2.07	2.02	2.08	2.10	2.00	2.06	2.02	2.06	2.02	**S**	2.00	2.04	2.06	2.16	2.00	2.58	2.16	24
28	2.23	2.38	2.38	2.26	2.38	2.41	2.27	2.15	2.07	2.06	2.05	2.05	2.01	2.01	2.07	2.02	2.05	2.00	**S**	2.01	2.08	2.19	2.25	2.20	2.00	2.41	2.16	24
29	2.15	2.09	2.05	2.06	2.06	2.03	2.01	2.07	2.01	1.99	2.01	1.99	1.99	2.00	2.00	2.01	2.01	**S**	2.02	2.02	2.02	2.04	2.07	2.08	1.99	2.15	2.03	24
30	2.09	2.16	2.14	2.09	2.09	2.11	2.13	2.14	2.15	2.14	2.10	2.07	2.04	2.03	2.03	2.03	**S**	2.03	2.04	2.02	2.02	2.04	2.03	2.03	2.02	2.16	2.08	24
HOURLY MAX	2.30	2.38	2.38	2.43	2.43	2.51	4.17	2.37	2.31	2.26	2.23	2.16	2.08	2.10	2.13	2.11	2.05	2.06	2.05	2.08	2.08	2.19	2.25	2.20				
HOURLY AVG	2.05	2.07	2.09	2.11	2.12	2.14	2.17	2.06	2.03	2.04	2.02	2.00	2.00	2.00	2.00	2.00	1.99	1.98	1.98	1.98	1.99	2.01	2.03	2.04				

STATUS FLAG CODES

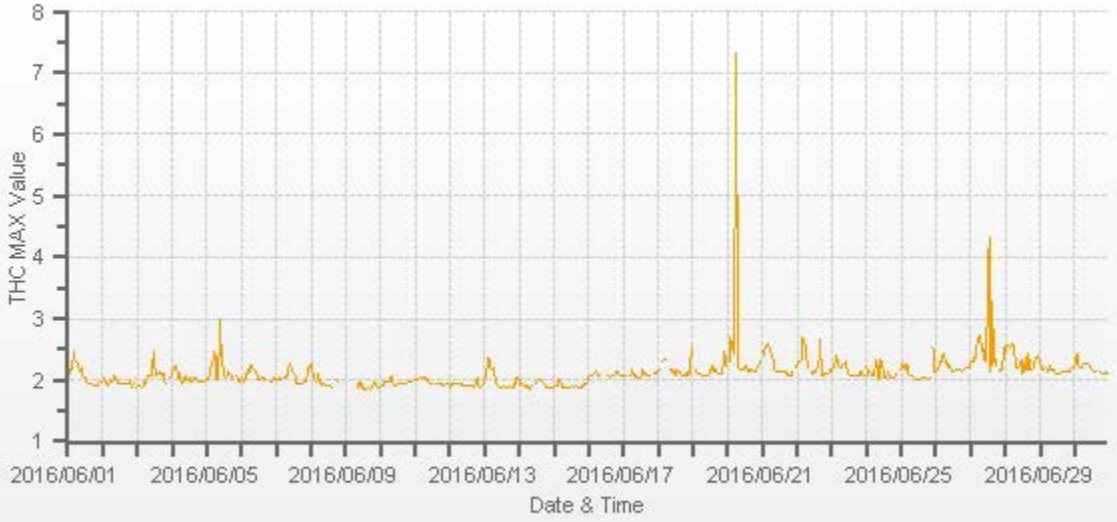
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:		669					
MINIMUM 1-HR AVERAGE	1.90	PPM	@ HOUR(S)	VAR	ON DAY(S)	VAR	
MAXIMUM 1-HR AVERAGE:	4.17	PPM	@ HOUR(S)	6	ON DAY(S)	20	
MAXIMUM 24-HR AVERAGE:	2.22	PPM			ON DAY(S)	20	
					VAR-VARIOUS		
IZS CALIBRATION TIME:	32	HRS	OPERATIONAL TIME:			705	HRS
MONTHLY CALIBRATION TIME:	4	HRS	AMD OPERATION UPTIME:			97.9	%
STANDARD DEVIATION:	0.13		MONTHLY AVERAGE:			2.04	PPM

THC MAX[ppm] Station: LICA MASKWA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



TOTAL HYDROCARBONS MAX instantaneous maximum in ppm

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	**S**	2.12	2.17	2.20	2.46	2.30	2.29	2.23	2.15	2.20	2.08	2.05	2.03	1.99	1.94	1.94	1.94	1.93	1.91	1.91	1.91	1.95	1.98	**S**	1.91	2.46	2.08	24
2	1.98	2.03	1.96	1.91	1.95	2.02	1.97	1.98	2.06	2.03	1.97	1.94	1.94	1.94	1.95	1.95	1.95	1.95	1.95	2.02	1.88	1.94	**S**	1.88	1.88	2.06	1.96	24
3	1.90	1.91	1.91	1.88	1.90	1.99	1.94	2.09	2.09	2.08	2.06	2.45	2.21	2.06	2.12	2.11	2.15	2.07	2.12	1.99	1.95	**S**	2.05	2.05	1.88	2.45	2.05	24
4	2.12	2.20	2.23	2.23	2.05	2.12	2.00	1.94	2.00	2.06	2.02	2.00	2.05	1.99	1.99	2.03	2.03	2.01	1.99	1.99	**S**	1.98	1.99	2.02	1.94	2.23	2.05	24
5	2.01	2.02	2.11	2.23	2.26	2.46	2.36	2.01	2.03	3.00	2.46	2.23	2.12	2.04	2.08	2.14	2.11	2.07	2.01	**S**	2.06	2.04	1.99	1.99	1.99	3.00	2.17	24
6	2.03	2.01	1.99	2.02	2.17	2.12	2.23	2.23	2.17	2.17	2.15	2.05	2.02	2.02	2.04	2.03	2.02	2.01	**S**	1.99	1.98	1.98	2.00	2.03	1.98	2.23	2.06	24
7	2.01	2.00	2.05	2.02	2.02	2.03	2.05	2.06	2.09	2.26	2.24	2.17	2.12	2.06	1.95	1.95	1.95	**S**	1.95	1.98	1.97	2.00	2.19	2.21	1.95	2.26	2.06	24
8	2.27	2.14	2.09	1.99	1.97	2.12	1.94	1.93	1.91	1.93	1.91	1.91	1.91	1.91	1.88	1.88	**S**	2.00	1.97	**X**	**X**	**X**	**X**	**X**	1.88	2.27	1.98	19
9	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	1.96	1.88	1.99	1.96	1.85	1.87	1.85	**S**	1.88	1.85	1.88	1.96	1.97	1.96	1.87	1.87	1.85	1.99	1.91	16
10	1.88	1.91	1.91	1.97	1.99	1.98	1.99	2.03	2.09	1.90	1.91	1.91	1.93	1.96	**S**	1.95	1.94	1.95	1.96	1.97	1.99	1.98	1.98	2.00	1.88	2.09	1.96	24
11	2.00	2.00	2.00	2.03	2.05	2.05	2.05	2.02	2.03	2.02	1.96	1.94	1.94	**S**	1.96	1.96	1.93	1.93	1.91	1.93	1.91	1.93	1.96	1.93	1.91	2.05	1.98	24
12	1.88	1.91	1.94	1.93	1.96	1.96	1.95	1.94	1.93	1.91	1.91	1.90	**S**	1.91	1.90	1.90	1.88	1.90	1.94	2.03	1.90	1.88	1.91	1.94	1.88	2.03	1.92	24
13	2.00	2.08	2.26	2.38	2.20	2.17	2.20	2.09	1.96	1.91	1.88	**S**	1.88	1.90	1.91	1.88	1.88	1.90	1.90	1.88	1.88	1.93	2.03	2.03	1.88	2.38	2.01	24
14	2.00	1.90	1.94	1.91	1.90	1.88	1.91	1.85	1.88	1.91	**S**	1.94	1.99	2.01	2.02	2.02	1.98	1.94	1.91	1.88	1.88	1.88	1.87	1.87	1.85	2.02	1.92	24
15	1.87	1.90	1.91	2.00	2.02	1.93	1.88	1.88	1.88	**S**	1.88	1.88	1.90	1.90	1.88	1.91	1.88	1.88	1.88	1.88	1.91	1.93	1.96	1.97	1.87	2.02	1.91	24
16	2.03	2.06	2.09	2.11	**S**	2.15	2.12	2.09	2.08	**C**	**C**	**C**	**C**	**C**	2.07	2.05	2.08	2.06	2.07	2.15	2.14	2.08	2.08	2.07	2.03	2.15	2.09	24
17	2.08	2.09	2.09	**S**	2.09	2.09	2.18	2.09	2.07	2.05	2.04	2.04	2.04	2.18	2.15	2.07	2.12	2.09	2.08	**S1**	**S1**	2.12	2.12	2.15	2.04	2.18	2.10	22
18	2.14	2.17	**S**	2.30	2.35	2.35	2.32	**S1**	2.17	2.17	2.14	2.14	2.09	2.17	2.14	2.15	2.07	2.07	2.09	2.07	2.15	2.09	2.12	2.54	2.07	2.54	2.18	23
19	2.41	**S**	2.18	2.12	2.12	2.12	2.08	2.07	2.06	2.07	2.09	2.08	2.17	2.23	2.15	2.21	2.17	2.11	2.11	2.11	2.12	2.23	2.48	2.23	2.06	2.48	2.16	24
20	**S**	2.29	2.68	2.60	2.44	4.21	***7.32***	2.29	2.17	2.17	2.17	2.17	2.20	2.23	2.15	2.15	2.17	2.17	2.14	2.14	2.17	2.21	2.29	**S**	2.14	***7.32***	2.57	24
21	2.46	2.39	2.54	2.55	2.60	2.54	2.45	2.42	2.17	2.14	2.15	2.15	2.15	2.14	2.14	2.14	2.12	2.15	2.07	2.08	2.09	2.14	**S**	2.20	2.07	2.60	2.26	24
22	2.27	2.29	2.30	2.32	2.68	2.62	2.54	2.26	2.21	**P**	2.14	2.12	2.14	2.14	2.21	2.27	2.65	2.09	2.09	2.11	2.12	**S**	2.12	2.17	2.09	2.68	2.27	23
23	2.15	2.20	2.26	2.39	2.32	2.24	2.20	2.20	2.27	2.27	2.29	2.12	2.09	2.08	2.07	2.07	2.08	2.07	2.06	2.06	2.14	2.15	2.07	**S**	2.06	2.39	2.17	24
24	2.23	2.09	2.15	2.15	2.08	2.06	2.20	2.34	2.00	2.03	2.35	2.26	2.05	2.04	2.09	2.14	2.05	2.03	2.03	2.03	2.06	2.12	**S**	2.18	2.00	2.35	2.12	24
25	2.20	2.26	2.21	2.17	2.27	2.12	2.08	2.07	2.06	2.05	2.02	2.02	2.00	2.02	2.03	2.03	2.03	2.03	2.02	2.02	2.03	**S**	2.52	2.14	2.00	2.52	2.10	24
26	2.15	2.17	2.20	2.29	2.29	2.42	2.38	2.32	2.20	2.26	2.20	2.15	2.14	2.15	2.17	2.18	2.17	2.17	2.15	2.18	**S**	2.22	2.22	2.20	2.14	2.42	2.22	24
27	2.26	2.29	2.29	2.36	2.51	2.65	2.71	2.64	2.47	2.49	2.29	2.43	3.77	4.31	2.15	3.27	2.29	2.34	2.23	**S**	2.14	2.17	2.20	2.52	2.14	4.31	2.56	24
28	2.42	2.55	2.55	2.52	2.56	2.58	2.52	2.32	2.20	2.20	2.24	2.35	2.12	2.18	2.36	2.18	2.42	2.18	**S**	2.17	2.26	2.36	2.41	2.37	2.12	2.58	2.35	24
29	2.32	2.21	2.17	2.17	2.22	2.17	2.15	2.23	2.18	2.17	2.15	2.12	2.12	2.12	2.12	2.14	2.15	**S**	2.15	2.15	2.14	2.18	2.22	2.20	2.12	2.32	2.17	24
30	2.23	2.39	2.43	2.21	2.20	2.22	2.26	2.26	2.26	2.26	2.24	2.20	2.17	2.14	2.14	2.14	**S**	2.14	2.15	2.12	2.12	2.13	2.12	2.12	2.12	2.43	2.20	24
HOURLY MAX	2.46	2.55	2.68	2.60	2.68	4.21	7.32	2.64	2.47	3.00	2.46	2.45	3.77	4.31	2.36	3.27	2.65	2.34	2.23	2.18	2.26	2.36	2.52	2.54				
HOURLY AVG	2.12	2.13	2.16	2.18	2.20	2.26	2.35	2.14	2.09	2.13	2.10	2.10	2.11	2.13	2.06	2.10	2.07	2.04	2.03	2.03	2.03	2.06	2.11	2.11				

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: 666

MAXIMUM INSTANTANEOUS VALUE: 7.32 PPM @ HOUR(S) 6 ON DAY(S) 20

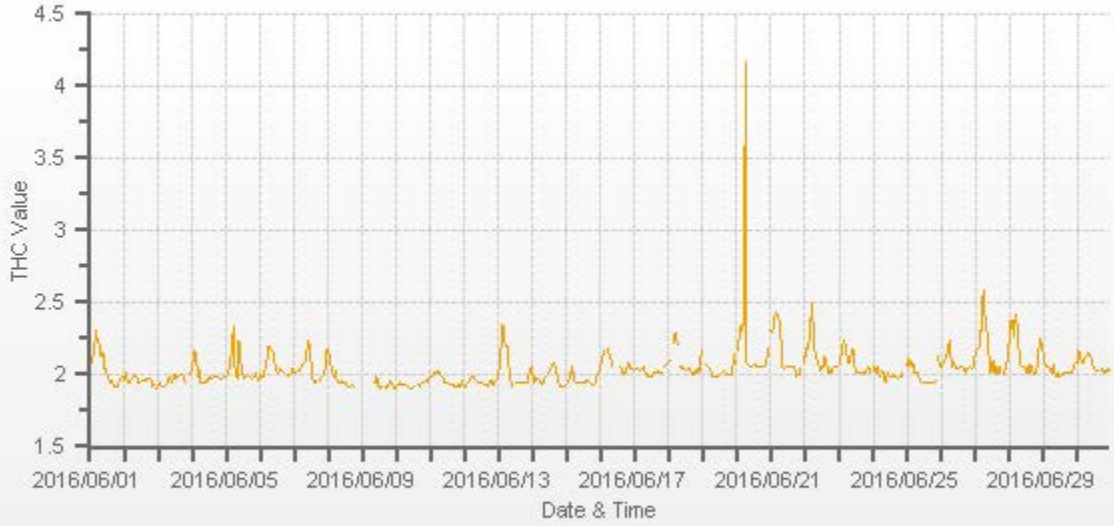
VAR-VARIOUS

IZS CALIBRATION TIME: 32 HRS OPERATIONAL TIME: 703 HRS

MONTHLY CALIBRATION TIME: 5 HRS

STANDARD DEVIATION: 0.30

THC[ppm] Station: LICA MASKWA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]

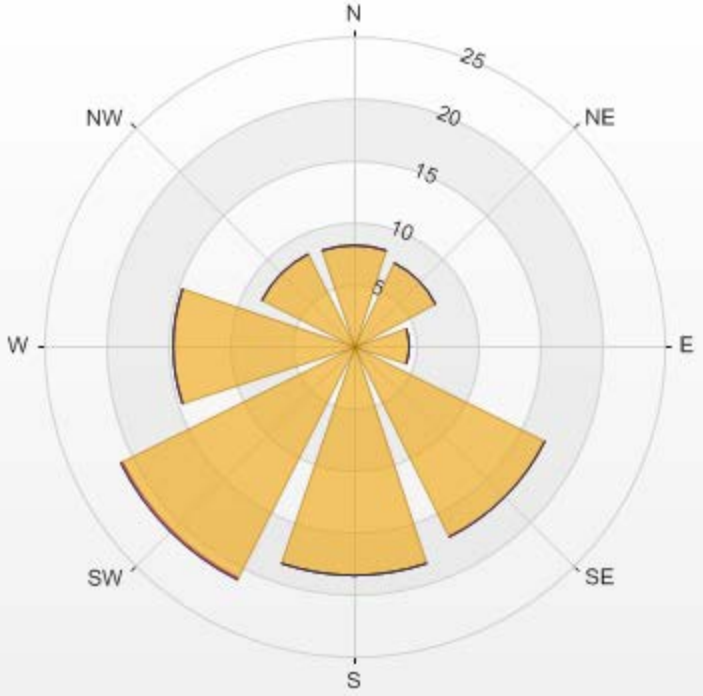


THC[ppm]

Wind: LICA MASKWA Monitor: THC [ppm] Monthly: 06/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
Calm: 0.00% Valid Data: 92.92% Calm Avg: 0.00

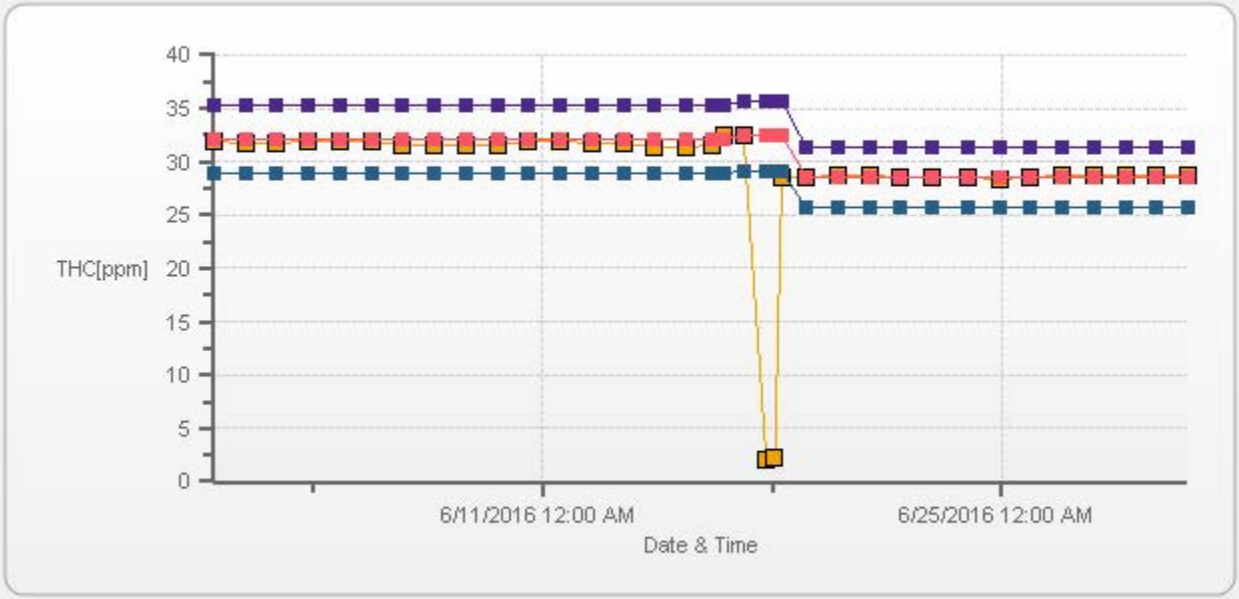
Direction	0.0-3.0	3.0-10.0	10.0-20.0	>20.0	Total
N	8.22	0	0	0	8.22
NE	7.47	0	0	0	7.47
E	4.48	0	0	0	4.48
SE	17.19	0	0	0	17.19
S	18.54	0	0	0	18.54
SW	20.93	0.15	0	0	21.08
W	14.65	0	0	0	14.65
NW	8.37	0	0	0	8.37
Summary	100	0.15	0	0	100

LICA MASKWA 2016/06/01 12:00 AM - 2016/06/30 11:00 PM Calm: 0.00%



% 100 0.0-3.0 0 3.0-10.0 0 10.0-20.0 0

THC[ppm] Calibration: LICA MASKWA Monthly: 06/2016 Type: Span



OXIDES OF NITROGEN

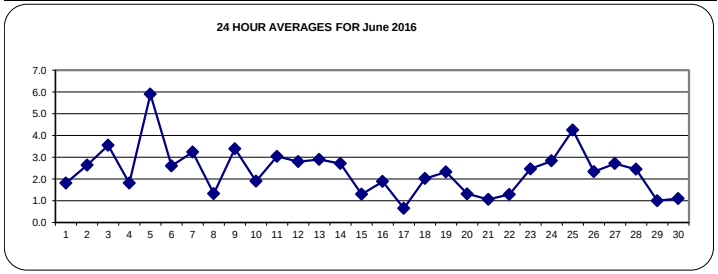
OXIDES OF NITROGEN (NOx) hourly averages in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	**S**	4.8	4.3	3.5	2.1	2.3	2.7	3.3	2.7	2.3	1.8	1.1	0.8	0.6	0.6	0.6	0.6	0.6	0.7	1.0	0.9	1.2	1.3	**S**	0.6	4.8	1.8	24
2	5.4	6.0	4.9	1.8	1.8	1.3	1.8	2.1	6.5	9.2	4.5	1.6	1.1	1.2	0.6	0.8	0.6	0.5	0.2	0.8	1.1	3.1	**S**	3.8	0.2	9.2	2.6	24
3	3.7	2.6	2.0	2.1	3.5	9.3	8.0	5.8	12.0	7.0	1.3	1.4	2.7	2.0	0.6	2.9	1.3	2.4	0.5	0.6	0.0	**S**	5.8	4.2	0.0	12.0	3.6	24
4	3.5	6.6	6.1	3.4	1.3	2.9	1.3	1.0	0.8	0.4	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**S**	8.1	3.2	2.6	0.0	8.1	1.8	24
5	4.2	9.4	11.3	11.4	8.4	***19.5***	10.5	5.3	2.5	5.8	6.6	5.8	2.7	0.4	1.2	5.3	3.6	2.7	0.3	**S**	8.5	4.1	4.1	2.2	0.3	***19.5***	***5.9***	24
6	2.5	2.0	1.4	1.7	2.9	2.5	3.0	2.9	3.1	3.0	2.8	1.6	1.2	1.2	1.4	1.6	1.2	1.7	**S**	5.6	5.3	4.2	3.5	3.6	1.2	5.6	2.6	24
7	2.9	3.0	3.2	2.9	3.1	3.5	3.8	4.0	3.9	4.9	4.8	3.7	2.7	2.6	1.9	1.1	2.2	**S**	3.2	4.0	3.2	3.6	3.4	2.8	1.1	4.9	3.2	24
8	2.2	1.4	1.2	1.2	1.2	1.1	0.9	0.9	1.2	1.1	1.0	0.9	1.0	1.1	0.7	0.6	**S**	1.4	1.8	2.1	2.2	1.8	1.9	1.6	0.6	2.2	1.3	24
9	1.6	2.4	2.0	2.4	1.3	1.2	1.2	1.7	4.1	2.2	2.6	2.3	2.2	2.2	0.8	**S**	1.2	2.8	2.6	9.8	9.6	16.7	3.1	2.1	0.8	16.7	3.4	24
10	1.7	3.0	2.4	6.6	1.3	1.8	1.7	1.1	0.5	0.1	0.1	0.1	0.0	0.0	**S**	5.2	4.3	2.6	2.0	1.7	2.1	0.9	1.4	3.2	0.0	6.6	1.9	24
11	3.2	2.0	1.4	2.5	0.7	0.9	2.2	1.8	7.1	6.8	1.3	1.4	1.4	**S**	9.3	9.7	3.4	2.4	2.0	1.9	2.0	1.8	3.0	1.8	0.7	9.7	3.0	24
12	1.6	1.8	2.2	2.4	2.8	3.3	3.1	2.8	2.4	1.5	1.3	1.4	**S**	8.6	5.5	3.9	2.4	2.1	2.6	5.6	3.1	1.2	1.2	1.6	1.2	8.6	2.8	24
13	2.2	3.1	6.5	6.7	3.4	4.0	4.9	2.5	0.7	0.3	0.3	**S**	11.1	4.8	3.0	2.4	1.8	1.2	1.2	1.4	1.2	1.2	1.6	1.2	0.3	11.1	2.9	24
14	1.3	1.2	2.2	0.9	0.6	0.4	4.2	3.8	1.4	1.0	**S**	9.0	5.8	4.2	3.3	2.9	2.7	2.6	2.1	4.7	2.1	2.0	2.0	1.9	0.4	9.0	2.7	24
15	1.1	1.1	1.2	1.1	2.5	2.0	1.2	0.7	0.8	**C**	**C**	**C**	**C**	**C**	**C**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	0.7	2.5	1.3	15
16	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**C**	**C**	**C**	**C**	**C**	**C**	**C**	**C**	1.8	1.8	2.1	1.9	2.0	2.1	1.5	1.5	2.1	1.9	15
17	1.3	1.1	1.2	**S**	1.7	2.6	0.7	0.8	0.1	0.0	0.1	0.0	0.1	0.0	0.5	0.0	0.0	0.0	0.0	0.5	1.7	0.5	1.1	1.0	0.0	2.6	0.7	24
18	1.1	1.6	**S**	5.0	5.5	5.3	5.4	6.2	5.3	4.8	0.3	0.5	0.0	0.2	0.8	0.9	0.3	0.3	0.2	0.4	1.1	0.3	0.3	0.7	0.0	6.2	2.0	24
19	13.5	**S**	2.3	0.5	1.3	3.8	1.5	0.5	0.0	0.0	1.6	0.1	2.6	4.6	2.4	5.8	4.7	0.1	0.0	0.0	0.0	1.1	5.4	1.8	0.0	13.5	2.3	24
20	**S**	3.0	2.4	1.1	0.8	1.1	2.1	0.0	0.4	1.1	2.1	1.7	4.0	2.3	0.9	1.4	0.3	0.6	0.1	0.2	0.5	0.9	2.0	**S**	0.0	4.0	1.3	24
21	1.9	1.4	1.5	1.1	0.5	1.0	1.1	1.9	0.6	1.3	2.1	2.2	1.8	0.4	0.7	0.8	0.2	0.2	0.4	0.4	0.9	1.2	**S**	0.9	0.2	2.2	1.1	24
22	0.9	1.2	1.2	1.8	1.8	4.5	**S1**	**S1**	3.0	**C1**	**C1**	**C1**	0.7	0.6	0.9	1.0	0.9	0.8	1.0	0.5	0.8	**S**	0.8	0.8	0.5	4.5	1.3	19
23	1.6	1.5	1.3	4.2	3.3	1.9	3.6	2.7	1.9	3.3	2.7	1.6	**C1**	**C1**	**C1**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	1.3	4.2	2.5	12
24	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**C1**	**C1**	**C1**	**C1**	**C1**	2.6	1.6	**S**	4.3	1.6	4.3	2.8	4
25	4.1	11.0	8.4	4.7	13.5	3.8	2.5	2.7	1.1	1.1	**C1**	**C1**	**C1**	**C1**	**C1**	**C1**	**C1**	**C1**	**C1**	0.4	0.1	**S**	4.9	1.3	0.1	13.5	4.3	15
26	1.4	1.6	1.2	0.6	0.5	1.5	2.1	2.0	5.1	6.9	8.2	3.9	1.4	1.3	1.5	5.1	1.4	0.8	1.7	1.4	**S**	1.6	1.3	1.3	0.5	8.2	2.3	24
27	2.5	2.5	3.4	3.5	4.6	8.3	9.8	5.4	3.7	2.5	2.3	1.1	1.4	1.4	0.7	0.8	0.6	2.5	1.3	**S**	0.8	0.9	1.1	1.2	0.6	9.8	2.7	24
28	1.7	2.1	1.5	0.9	1.0	3.8	2.7	2.0	3.1	2.7	2.2	3.0	1.3	1.8	7.5	3.5	4.2	1.0	**S**	1.3	2.6	2.6	1.6	2.2	0.9	7.5	2.4	24
29	1.0	0.3	0.0	0.1	0.4	0.1	1.6	3.0	3.6	2.3	1.1	0.6	0.8	0.7	0.4	0.7	0.6	**S**	1.5	1.1	0.7	0.9	1.0	0.6	0.0	3.6	1.0	24
30	0.6	0.8	1.9	1.4	0.8	1.0	1.3	2.0	2.1	1.6	1.1	0.7	0.7	0.8	0.5	0.7	**S**	1.0	1.2	1.0	1.0	1.0	1.1	1.0	0.5	2.1	1.1	24
HOURLY MAX	13.5	11.0	11.3	11.4	13.5	19.5	10.5	6.2	12.0	9.2	8.2	9.0	11.1	8.6	9.3	9.7	4.7	2.8	3.2	9.8	9.6	16.7	5.8	4.3				
HOURLY AVG	2.6	2.9	2.9	2.8	2.6	3.4	3.1	2.6	2.8	2.8	2.2	1.9	2.0	1.8	1.9	2.4	1.7	1.3	1.2	1.9	2.2	2.6	2.3	2.0				

STATUS FLAG CODES

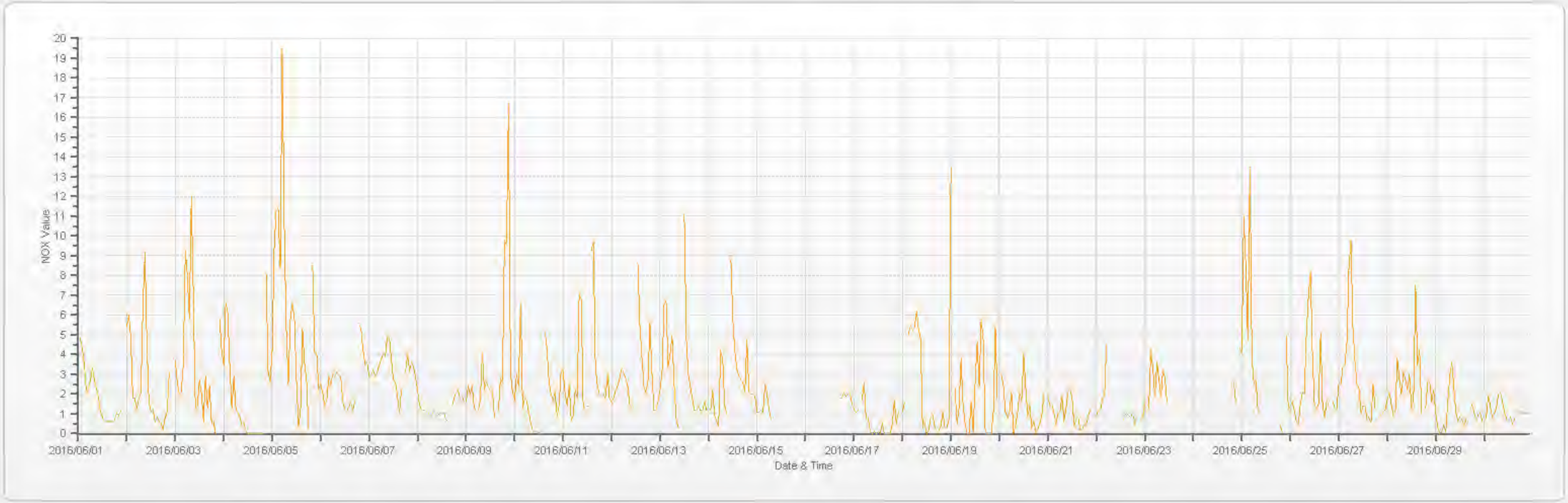
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:			587				
MINIMUM 1-HR AVERAGE	0.0	PPB	@ HOUR(S)	VAR	ON DAY(S)	VAR	
MAXIMUM 1-HR AVERAGE:	19.5	PPB	@ HOUR(S)	5	ON DAY(S)	5	
MAXIMUM 24-HR AVERAGE:	5.9	PPB			ON DAY(S)	5	
					VAR-VARIOUS		
IZS CALIBRATION TIME:	29	HRS	OPERATIONAL TIME:			656	HRS
MONTHLY CALIBRATION TIME:	14	HRS	AMD OPERATION UPTIME:			91.1	%
STANDARD DEVIATION:	2.36		MONTHLY AVERAGE:			2.4	PPB

NOX[ppb] Station: LICA MASKWA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



OXIDES OF NITROGEN MAX instantaneous maximum in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	S	5.9	5.3	4.7	4.1	4.1	5.3	4.7	3.5	3.0	3.5	2.4	1.8	1.2	1.3	1.3	1.3	1.3	2.4	2.4	1.8	2.4	2.4	S	1.2	5.9	3.0	24
2	11.2	8.8	7.7	3.0	2.4	2.4	2.4	5.9	9.4	15.8	7.6	4.1	1.8	3.0	1.3	2.4	1.3	1.3	1.3	2.4	2.4	20.6	S	10.6	1.3	20.6	5.6	24
3	5.3	3.5	3.0	3.5	6.5	44.0	30.5	17.6	18.2	14.6	3.5	6.4	8.8	6.5	3.5	15.2	15.8	16.4	3.0	4.7	0.6	S	7.1	5.9	0.6	44.0	10.6	24
4	5.3	9.4	9.4	7.1	2.4	5.9	3.0	2.4	1.8	1.3	1.8	1.3	0.6	0.6	0.7	0.6	0.6	0.6	0.6	0.7	S	15.2	4.7	5.9	0.6	15.2	3.6	24
5	7.7	15.2	14.2	14.7	10.6	34.0	21.8	10.0	8.8	11.8	13.0	14.1	7.1	1.8	7.6	14.1	10.0	8.8	0.6	S	16.4	5.3	6.5	2.4	0.6	34.0	11.2	24
6	3.0	3.0	1.8	1.8	4.1	3.5	4.1	3.5	3.5	3.5	3.0	2.4	1.8	1.3	1.8	2.4	1.8	1.8	S	5.9	5.9	4.7	3.5	4.7	1.3	5.9	3.2	24
7	3.0	3.5	4.1	3.0	3.5	3.5	4.7	4.1	4.7	5.9	5.9	4.1	3.5	8.8	3.0	1.8	3.0	S	4.1	4.7	3.5	4.1	4.1	3.5	1.8	8.8	4.1	24
8	2.4	1.8	1.8	1.3	1.3	1.3	1.3	1.2	1.3	1.3	1.2	1.3	1.3	1.8	1.3	0.6	S	2.4	1.8	2.4	2.4	1.8	2.4	1.8	0.6	2.4	1.6	24
9	1.8	4.7	6.4	6.4	1.8	1.8	1.8	2.9	5.9	2.4	3.0	3.5	3.5	4.1	1.3	S	2.4	3.0	3.0	31.7	22.3	29.3	5.3	4.7	1.3	31.7	6.7	24
10	3.0	7.7	5.9	18.2	2.4	3.0	2.4	2.4	1.3	0.6	0.6	0.6	0.7	0.6	S	6.5	5.9	4.1	3.5	3.0	4.7	1.8	4.1	4.7	0.6	18.2	3.8	24
11	4.7	4.1	2.4	5.3	1.8	2.4	3.5	3.0	13.0	11.8	4.1	4.1	3.5	S	15.8	20.6	5.3	3.5	3.0	3.0	3.0	3.0	4.7	2.4	1.8	20.6	5.6	24
12	2.4	2.4	3.0	3.0	4.7	4.7	4.1	4.1	3.5	3.0	3.0	2.4	S	10.6	7.1	5.3	3.5	3.0	3.5	21.8	19.4	2.4	2.4	2.4	2.4	21.8	5.3	24
13	3.0	4.7	9.4	9.4	4.1	4.7	7.7	4.1	1.8	1.3	8.8	S	18.2	7.1	4.7	3.5	3.0	2.4	2.4	2.4	1.8	2.4	2.4	1.8	1.3	18.2	4.8	24
14	2.4	2.4	5.9	3.0	1.3	1.3	11.2	8.2	3.5	1.8	S	10.6	8.2	5.9	4.1	3.5	3.5	3.5	3.5	15.2	4.7	7.1	7.0	4.1	1.3	15.2	5.3	24
15	1.8	2.4	2.4	3.0	3.5	3.5	2.4	1.8	2.4	C	C	C	C	C	C	Y	Y	Y	Y	Y	Y	Y	Y	Y	1.8	3.5	2.6	15
16	Y	Y	Y	Y	Y	Y	Y	Y	Y	C	C	C	C	C	C	C	C	3.3	1.1	1.7	1.7	1.8	1.6	1.2	1.1	3.3	1.8	15
17	1.1	1.0	1.0	S	3.2	3.6	1.4	1.4	0.0	0.0	0.6	0.0	1.2	3.9	4.2	0.0	0.0	0.0	0.0	3.3	3.2	0.6	0.8	0.8	0.0	4.2	1.4	24
18	0.8	1.4	S	8.2	7.0	6.4	12.6	13.7	13.9	8.9	0.0	2.4	0.0	2.4	3.7	5.6	0.0	0.0	0.0	1.3	0.8	0.0	0.0	0.0	0.0	13.9	3.9	24
19	***44.3***	S	6.6	0.1	2.0	5.4	1.9	1.2	0.0	0.0	9.7	0.0	13.7	13.7	10.2	17.4	13.8	2.0	0.0	0.0	0.0	7.0	10.6	1.7	0.0	***44.3***	7.0	24
20	S	3.2	2.0	1.7	0.6	0.6	2.2	0.0	0.6	1.1	4.2	2.2	14.2	4.9	1.4	2.2	0.3	3.9	0.8	0.0	0.1	0.6	1.7	S	0.0	14.2	2.2	24
21	1.9	1.0	1.2	0.7	0.1	0.6	0.7	2.5	0.4	6.2	4.1	3.2	3.4	0.4	1.2	1.1	0.3	0.5	0.0	0.0	0.8	0.9	S	0.5	0.0	6.2	1.4	24
22	0.5	1.2	1.0	1.8	2.2	11.4	S1	S1	3.0	P	C1	C1	0.8	0.5	0.9	S	S	0.6	1.0	0.1	0.8	S	0.7	1.6	0.1	11.4	1.8	19
23	1.6	1.6	1.2	7.4	7.2	3.3	5.5	6.3	2.9	4.3	3.2	2.8	C1	C1	C1	Y	Y	Y	Y	Y	Y	Y	Y	Y	1.2	7.4	3.9	12
24	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	C1	C1	C1	C1	C1	C1	4.7	S	8.2	4.7	8.2	6.5	3
25	20.6	20.6	17.6	14.7	29.9	14.7	2.4	2.4	1.2	C1	C1	C1	C1	C1	C1	C1	C1	C1	C1	0.6	0.0	S	7.7	0.6	0.0	29.9	10.2	14
26	1.3	1.2	0.6	0.0	0.0	3.6	3.6	3.0	7.1	11.2	9.5	5.9	0.6	0.6	1.2	9.5	0.6	0.0	1.2	0.6	S	1.2	0.6	0.6	0.0	11.2	2.8	24
27	1.8	1.8	3.0	3.0	5.3	8.8	9.5	8.8	4.1	2.5	30.5	5.9	3.5	10.6	0.6	1.3	0.6	8.8	3.5	S	0.6	0.6	1.2	0.6	0.6	30.5	5.1	24
28	1.8	1.8	1.3	0.6	0.6	5.9	4.7	3.0	7.6	8.2	4.7	6.5	1.8	4.1	19.4	19.4	20.0	1.8	S	1.2	3.0	2.4	1.3	2.4	0.6	20.0	5.4	24
29	1.2	0.0	0.0	0.0	0.0	0.0	10.6	10.0	4.7	3.5	1.8	0.6	1.2	1.2	0.6	1.2	2.4	S	3.0	1.2	0.6	0.6	0.6	0.6	0.0	10.6	2.0	24
30	0.6	0.6	1.8	1.8	0.6	0.6	1.3	1.8	2.4	1.8	1.2	0.6	0.6	1.3	0.0	1.3	S	0.6	1.2	0.6	0.6	0.6	1.2	0.6	0.0	2.4	1.0	24
HOURLY MAX	44.3	20.6	17.6	18.2	29.9	44.0	30.5	17.6	18.2	15.8	30.5	14.1	18.2	13.7	19.4	20.6	20.0	16.4	4.1	31.7	22.3	29.3	10.6	10.6				
HOURLY AVG	5.2	4.3	4.4	4.7	4.0	6.6	6.0	4.8	4.7	5.0	5.4	3.6	4.2	4.0	4.0	5.9	4.3	3.1	1.9	4.4	4.0	4.8	3.4	2.9				

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: 574

MAXIMUM INSTANTANEOUS VALUE: 44.3 PPB @ HOUR(S) 0 ON DAY(S) 19

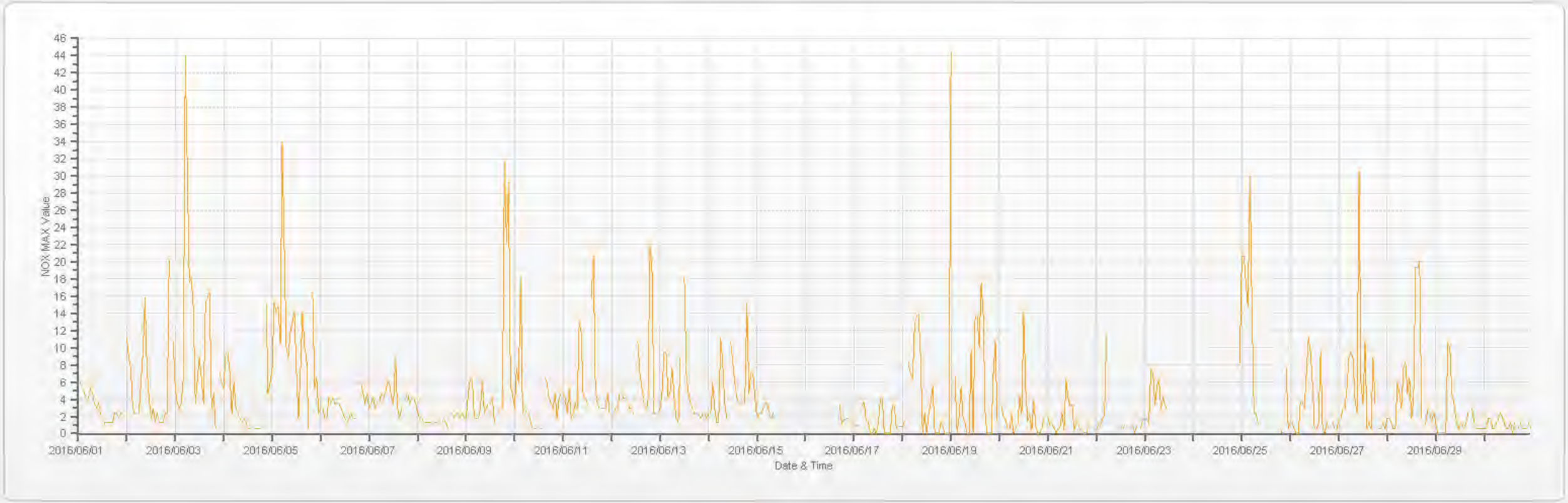
VAR-VARIOUS

IZS CALIBRATION TIME: 31 HRS OPERATIONAL TIME: 654 HRS

MONTHLY CALIBRATION TIME: 14 HRS

STANDARD DEVIATION: 5.56

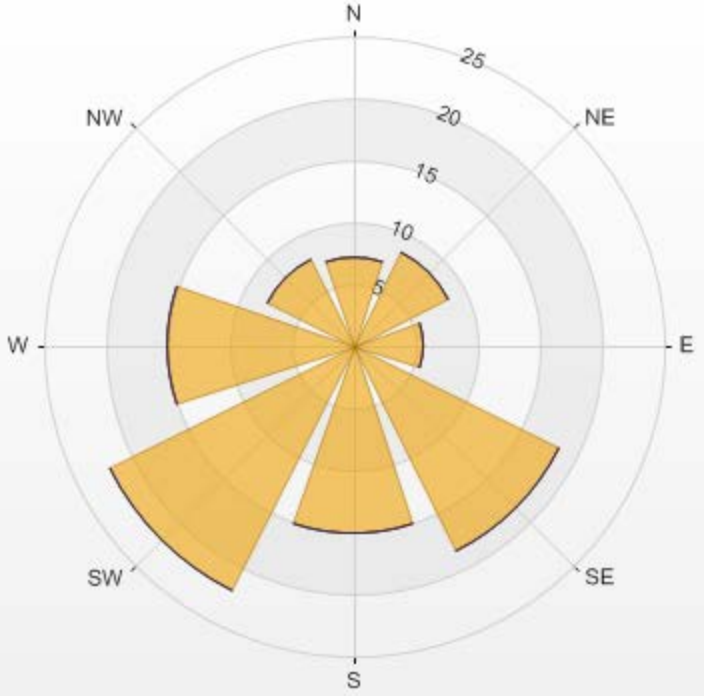
NOX MAX[ppb] Station: LICA MASKWA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



Wind: LICA MASKWA Monitor: NOX [ppb] Monthly: 06/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
Calm: 0.00% Valid Data: 85.14% Calm Avg: 0.00

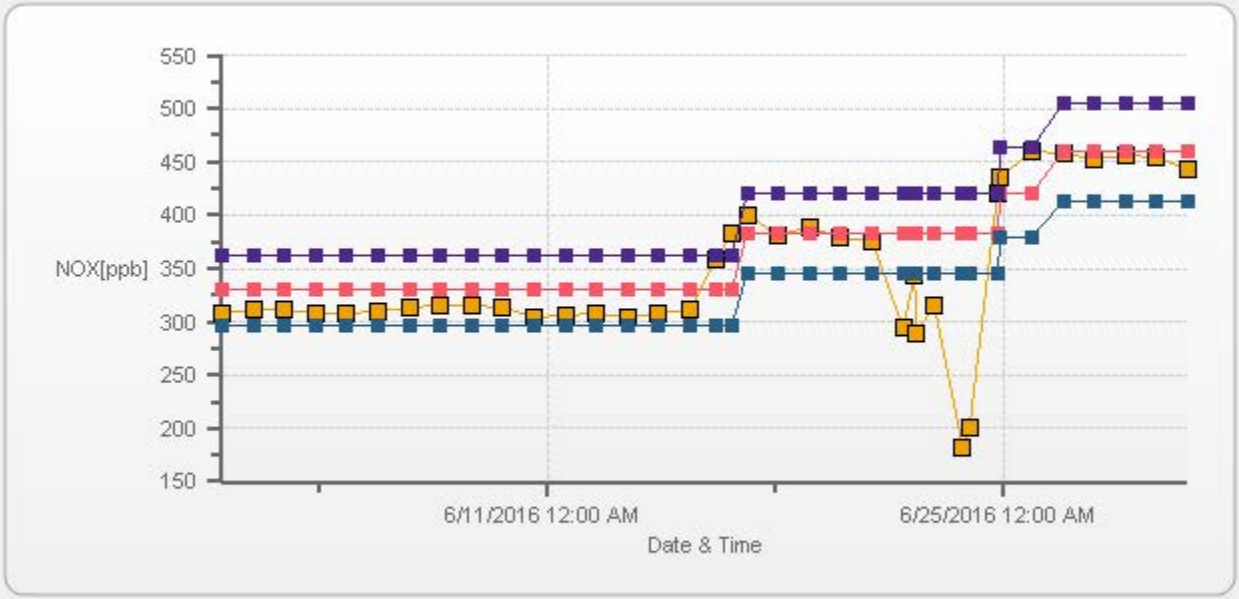
Direction	0.0-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	7.18	0	0	0	7.18
NE	8.48	0	0	0	8.48
E	5.71	0	0	0	5.71
SE	18.6	0	0	0	18.6
S	15.17	0	0	0	15.17
SW	22.02	0	0	0	22.02
W	15.01	0	0	0	15.01
NW	7.83	0	0	0	7.83
Summary	100	0	0	0	100

LICA MASKWA 2016/06/01 12:00 AM - 2016/06/30 11:00 PM Calm: 0.00%



% Icon Class (m/s) 0.0-50.0 0 50.0-110.0 0 110.0-210.0 0 210.0

NOX[ppb] Calibration: LICA MASKWA Monthly: 06/2016 Type: Span



NITRIC OXIDES

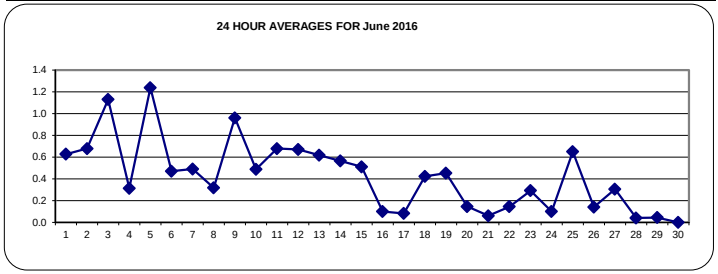
NITRIC OXIDE (NO) hourly averages in ppb

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	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	**S**	0.5	0.5	0.5	0.5	0.9	1.1	1.1	1.0	1.1	0.7	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	**S**	0.4	1.1	0.6	24
2	0.5	0.5	0.3	0.4	0.5	0.5	0.5	0.5	2.1	2.8	1.4	0.5	0.5	0.5	0.4	0.4	0.5	0.5	0.2	0.3	0.5	0.9	**S**	0.4	0.2	2.8	0.7	24
3	0.1	0.4	0.4	0.5	0.5	1.9	2.4	2.1	***5.6***	2.8	0.7	0.9	1.2	1.1	0.5	1.2	0.8	1.1	0.5	0.5	0.0	**S**	0.3	0.5	0.0	***5.6***	1.1	24
4	0.5	0.5	0.5	0.5	0.5	0.7	0.5	0.5	0.5	0.4	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**S**	0.5	0.5	0.5	0.0	0.7	0.3	24
5	0.5	0.5	0.5	0.5	0.5	4.6	3.1	1.8	1.0	2.2	2.4	2.2	1.2	0.3	0.7	2.0	1.3	1.0	0.3	**S**	0.5	0.5	0.4	0.5	0.3	4.6	***1.2***	24
6	0.3	0.3	0.4	0.3	0.5	0.5	0.7	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	**S**	0.4	0.5	0.4	0.5	0.5	0.3	0.7	0.5	24
7	0.4	0.3	0.4	0.4	0.4	0.5	0.5	0.6	1.1	1.1	1.0	0.5	0.5	0.6	0.5	0.4	0.5	**S**	0.3	0.5	0.3	0.3	0.2	0.0	0.0	1.1	0.5	24
8	0.1	0.0	0.2	0.2	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.4	0.5	0.5	0.5	0.4	**S**	0.2	0.2	0.0	0.4	0.2	0.3	0.1	0.0	0.5	0.3	24
9	0.4	0.3	0.4	0.3	0.3	0.5	0.2	0.5	1.1	0.5	0.5	0.5	0.6	0.7	0.5	**S**	0.4	0.5	0.5	3.9	2.7	***5.6***	0.6	0.6	0.2	***5.6***	1.0	24
10	0.4	1.0	0.7	1.8	0.5	0.5	0.5	0.5	0.5	0.1	0.1	0.1	0.0	0.0	**S**	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	1.8	0.5	24
11	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.1	2.1	0.5	0.7	0.6	**S**	1.0	1.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2.1	0.7	24
12	0.5	0.5	0.5	0.5	0.5	1.1	1.1	1.1	1.1	0.6	0.7	0.7	**S**	0.6	0.7	0.5	0.5	0.5	0.5	1.1	0.6	0.5	0.5	0.5	0.5	1.1	0.7	24
13	0.5	0.5	0.5	0.5	0.5	1.3	2.1	1.4	0.5	0.3	0.3	**S**	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.3	0.3	2.1	0.6	24
14	0.5	0.5	0.5	0.5	0.5	0.5	1.3	1.2	0.6	0.5	**S**	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.5	0.5	0.4	0.4	0.4	1.3	0.6	24
15	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	**C**	**C**	**C**	**C**	**C**	**C**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	0.5	0.6	0.5	15
16	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**C**	**C**	**C**	**C**	**C**	**C**	**C**	**C**	0.1	0.1	0.1	0.0	0.1	0.2	0.1	0.0	0.2	0.1	15
17	0.0	0.0	0.1	**S**	0.3	0.6	0.0	0.3	0.1	0.0	0.2	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.1	24
18	0.0	0.0	**S**	0.2	0.6	1.0	1.8	2.1	1.9	1.6	0.0	0.0	0.0	0.0	0.2	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.4	24
19	3.3	**S**	0.0	0.0	0.0	0.8	0.2	0.0	0.0	0.0	0.4	0.0	0.7	1.5	0.8	1.6	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	0.5	24
20	**S**	0.0	0.0	0.0	0.0	0.3	0.7	0.0	0.0	0.2	0.3	0.1	0.9	0.5	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**S**	0.0	0.9	0.1	24
21	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.4	0.0	0.1	0.2	0.2	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	0.4	0.1	24
22	0.0	0.0	0.0	0.0	0.0	1.4	**S1**	**S1**	0.7	**C1**	**C1**	**C1**	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	**S**	0.0	0.0	0.0	1.4	0.1	19
23	0.0	0.1	0.0	0.1	0.0	0.2	0.7	0.7	0.3	0.6	0.5	0.3	**P**	**C1**	**C1**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	0.0	0.7	0.3	12
24	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**C1**	**C1**	**C1**	**C1**	**C1**	0.3	0.0	**S**	0.0	0.0	0.3	0.1	4
25	0.4	2.0	0.6	0.2	5.1	0.6	0.0	0.1	0.0	0.1	**C1**	**C1**	**C1**	**C1**	**C1**	**C1**	**C1**	**C1**	**C1**	0.0	0.0	0.0	**S**	0.0	0.0	5.1	0.7	15
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.9	1.8	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	1.8	0.1	24
27	0.0	0.0	0.0	0.0	0.0	2.2	3.6	1.1	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	3.6	0.3	24
28	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	**S**	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	24
29	0.0	0.0	0.0	0.0	0.0	0.0	0.1	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	0.0	0.6	0.0	24
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**S**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
HOURLY MAX	3.3	2.0	0.7	1.8	5.1	4.6	3.6	2.1	5.6	2.8	2.4	2.2	1.2	1.5	1.0	2.0	1.3	1.1	0.5	3.9	2.7	5.6	0.6	0.6				
HOURLY AVG	0.4	0.3	0.3	0.3	0.5	0.8	0.8	0.7	0.8	0.7	0.6	0.4	0.4	0.4	0.4	0.5	0.4	0.3	0.2	0.4	0.3	0.5	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

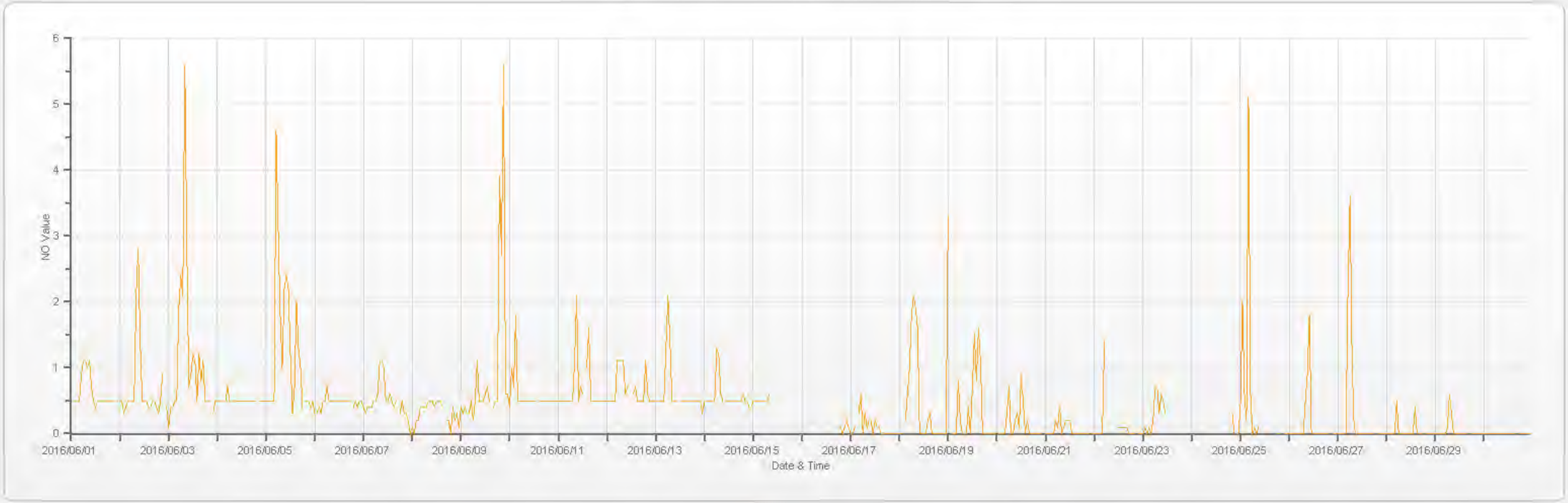


MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:			401				
MINIMUM 1-HR AVERAGE	0.0	PPB	@ HOUR(S)	VAR	ON DAY(S)	VAR	
MAXIMUM 1-HR AVERAGE:	5.6	PPB	@ HOUR(S)	8 , 21	ON DAY(S)	3 , 9	
MAXIMUM 24-HR AVERAGE:	1.2	PPB			ON DAY(S)	5	
					VAR-VARIOUS		

IZS CALIBRATION TIME:	29	HRS	OPERATIONAL TIME:	656	HRS
MONTHLY CALIBRATION TIME:	14	HRS	AMD OPERATION UPTIME:	91.1	%
STANDARD DEVIATION:	0.66		MONTHLY AVERAGE:	0.4	PPB

NO[ppb] Station: LICA MASKWA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



NITRIC OXIDE MAX instantaneous maximum in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	S	0.5	0.5	0.5	0.5	1.7	1.7	1.7	1.1	1.1	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	S	0.5	1.7	0.8	24
2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.7	2.8	4.6	2.3	1.1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	3.9	S	0.5	0.5	4.6	1.1	24
3	0.5	0.5	0.5	0.5	0.5	***23.4***	12.8	7.5	8.7	6.3	1.1	2.8	3.3	2.3	1.1	5.1	4.6	5.2	1.1	0.5	0.5	S	0.5	0.5	0.5	***23.4***	3.9	24
4	0.5	0.5	0.5	0.5	0.5	1.7	1.1	1.1	0.5	0.5	1.1	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	1.7	0.6	24
5	0.5	0.5	0.5	0.5	0.5	10.5	6.3	3.3	2.8	4.6	4.6	5.2	2.3	1.1	2.8	5.2	3.4	2.8	0.5	S	0.5	0.5	0.5	0.5	0.5	10.5	2.6	24
6	0.5	0.5	0.5	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	S	0.5	0.5	0.5	0.5	0.5	0.5	1.1	0.6	24
7	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.1	1.1	1.7	1.7	0.5	0.5	1.7	0.5	0.5	0.5	S	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.7	0.7	24
8	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	0.5	0.5	0.5	0.5	0.5	24
9	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2.3	0.5	0.5	1.1	1.1	1.7	0.5	S	0.5	0.5	0.5	15.1	9.9	12.2	1.1	1.1	0.5	15.1	2.3	24
10	0.5	2.3	1.7	5.7	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	5.7	0.9	24
11	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.1	2.3	3.4	1.1	1.7	1.1	S	3.4	3.9	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	3.9	1.1	24
12	0.5	0.5	0.5	0.5	1.1	1.7	1.7	1.1	1.1	1.1	1.1	1.1	S	1.1	1.1	0.5	0.5	0.5	1.1	3.9	2.8	0.5	0.5	0.5	0.5	3.9	1.1	24
13	0.5	0.5	0.5	0.5	1.1	1.7	2.8	1.7	0.5	1.1	3.9	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	3.9	0.9	24
14	0.5	0.5	0.5	0.5	0.5	0.5	2.8	2.3	1.1	0.5	S	0.5	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	2.8	0.7	24
15	0.5	0.5	0.5	0.5	0.5	0.5	1.1	0.5	1.1	C	C	C	C	C	C	Y	Y	Y	Y	Y	Y	Y	Y	Y	0.5	1.1	0.6	15
16	Y	Y	Y	Y	Y	Y	Y	Y	Y	C	C	C	C	C	C	C	C	1.0	0.7	0.6	0.6	0.8	0.8	0.6	0.6	1.0	0.7	15
17	0.4	0.6	0.6	S	1.0	1.2	1.6	1.7	0.6	0.7	1.2	0.6	1.5	2.0	2.1	0.5	0.5	0.3	0.4	1.2	0.6	0.6	0.4	0.6	0.3	2.1	0.9	24
18	0.5	0.3	S	0.9	1.3	1.8	6.2	6.4	6.2	3.7	0.8	0.7	0.4	1.3	1.6	2.1	0.5	0.6	0.2	0.4	0.3	0.5	0.6	0.2	0.2	6.4	1.6	24
19	15.1	S	0.7	0.4	0.7	2.2	0.9	0.8	0.3	0.3	4.1	0.4	5.0	5.8	4.3	6.6	4.9	0.8	0.5	0.3	0.4	0.6	0.6	0.4	0.3	15.1	2.4	24
20	S	0.5	0.5	0.4	0.6	1.0	2.0	0.7	0.9	0.9	1.3	0.8	5.2	1.8	0.6	0.9	0.3	0.8	0.3	0.4	0.7	0.4	0.3	S	0.3	5.2	1.0	24
21	0.6	0.5	0.5	0.5	0.4	1.0	0.7	1.1	0.4	1.8	1.3	1.0	1.0	0.4	0.6	0.6	0.3	0.0	0.3	0.2	0.6	0.3	S	0.6	0.0	1.8	0.6	24
22	0.4	0.4	0.4	0.4	0.6	6.5	S1	S1	1.4	P	C1	C1	0.9	0.5	0.6	S1	S1	0.4	0.6	0.5	0.6	S	0.5	0.4	0.4	6.5	0.9	17
23	0.5	0.8	0.6	0.6	0.5	1.0	2.3	2.4	1.3	1.7	1.2	1.2	C1	C1	C1	Y	Y	Y	Y	Y	Y	Y	Y	Y	0.5	2.4	1.2	12
24	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	C1	C1	C1	C1	C1	S	0.2	S	0.2	0.2	0.2	0.2	4
25	4.9	6.6	2.0	5.4	14.8	5.5	0.2	0.2	0.2	C1	C1	C1	C1	C1	C1	C1	C1	C1	C1	0.2	0.0	S	0.0	0.0	0.0	14.8	3.1	14
26	0.0	0.0	0.0	0.0	0.0	2.0	0.8	0.8	2.0	3.2	2.6	0.8	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	3.2	0.6	24
27	0.0	0.0	0.0	0.0	0.2	3.2	4.3	3.7	1.4	0.2	17.2	1.4	0.2	7.8	0.0	0.0	0.0	2.0	0.0	S	0.0	0.0	0.0	0.0	0.0	17.2	1.8	24
28	0.0	0.0	0.0	0.0	0.0	1.4	0.8	0.2	1.4	0.8	0.2	0.8	0.0	0.0	2.6	2.6	3.7	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	3.7	0.6	24
29	0.0	0.0	0.0	0.0	0.0	0.0	6.1	4.3	0.8	0.8	0.2	0.2	0.2	0.0	0.0	0.0	0.2	S	0.2	0.2	0.0	0.0	0.0	0.0	0.0	6.1	0.6	24
30	0.0	0.2	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.0	0.2	0.2	0.2	0.2	0.2	S	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	24
HOURLY MAX	15.1	6.6	2.0	5.7	14.8	23.4	12.8	7.5	8.7	6.3	17.2	5.2	5.2	7.8	4.3	6.6	4.9	5.2	1.1	15.1	9.9	12.2	1.1	1.1				
HOURLY AVG	1.1	0.7	0.5	0.8	1.0	2.6	2.2	1.8	1.6	1.6	2.1	1.1	1.1	1.3	1.1	1.5	1.1	0.8	0.5	1.2	0.9	1.0	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: 541

MAXIMUM INSTANTANEOUS VALUE: 23.4 PPB @ HOUR(S) 5 ON DAY(S) 3

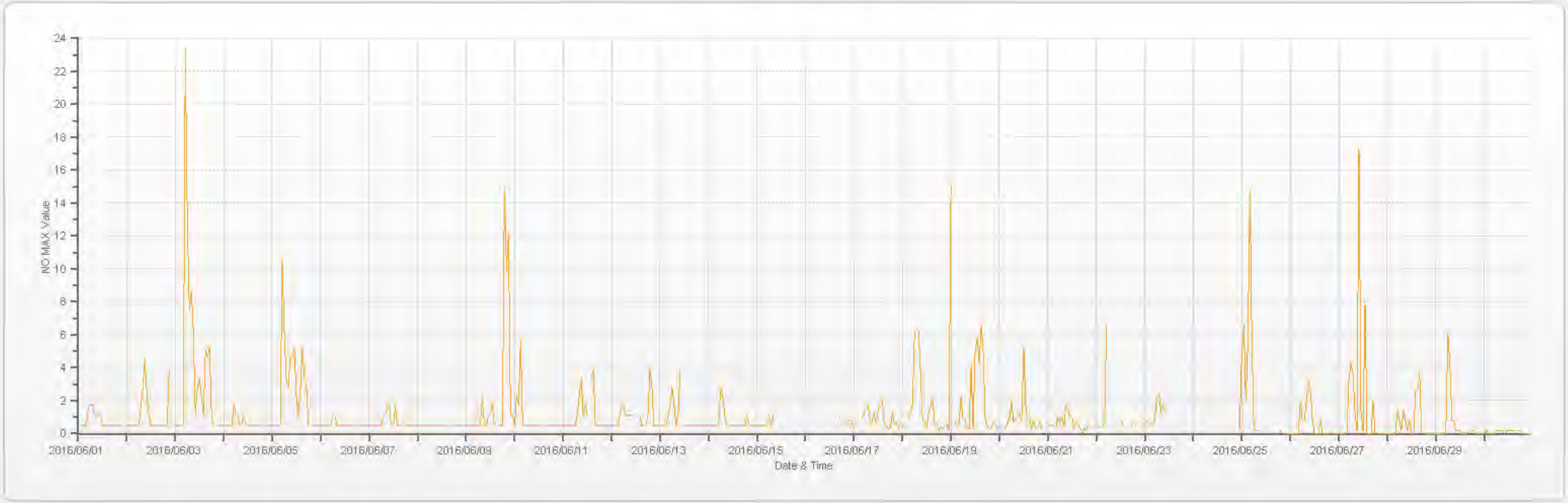
VAR-VARIOUS

IZS CALIBRATION TIME: 30 HRS OPERATIONAL TIME: 653 HRS

MONTHLY CALIBRATION TIME: 14 HRS

STANDARD DEVIATION: 2.15

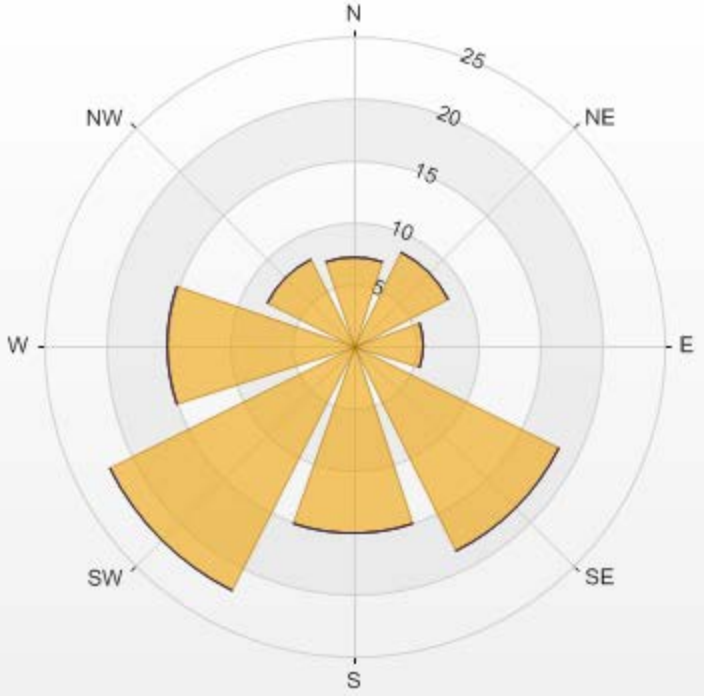
NO MAX[ppb] Station: LICA MASKWA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



Wind: LICA MASKWA Monitor: NO [ppb] Monthly: 06/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
Calm: 0.00% Valid Data: 85.14% Calm Avg: 0.00

Direction	0.0-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	7.18	0	0	0	7.18
NE	8.48	0	0	0	8.48
E	5.71	0	0	0	5.71
SE	18.6	0	0	0	18.6
S	15.17	0	0	0	15.17
SW	22.02	0	0	0	22.02
W	15.01	0	0	0	15.01
NW	7.83	0	0	0	7.83
Summary	100	0	0	0	100

LICA MASKWA 2016/06/01 12:00 AM - 2016/06/30 11:00 PM Calm: 0.00%



% Icon Classes (m/s) 0.0-50.0 0 50.0-110.0 0 110.0-210.0 0 210.0

NITROGEN DIOXIDE

NITROGEN DIOXIDE (NO2) hourly averages in ppb

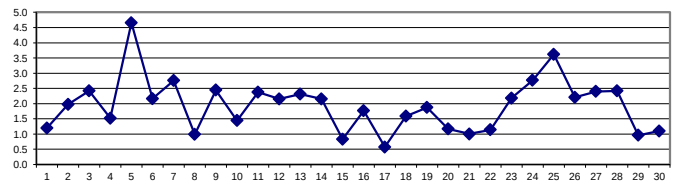
MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	**S**	4.3	3.8	3.0	1.6	1.4	1.6	2.2	1.7	1.3	1.1	0.6	0.3	0.1	0.1	0.1	0.1	0.1	0.3	0.5	0.4	0.8	0.9	**S**	0.1	4.3	1.2	24
2	4.9	5.6	4.6	1.4	1.3	0.8	1.3	1.6	4.4	6.4	3.1	1.1	0.6	0.7	0.2	0.4	0.2	0.1	0.1	0.5	0.6	2.2	**S**	3.3	0.1	6.4	2.0	24
3	3.6	2.2	1.6	1.6	3.0	7.4	5.5	3.6	6.4	4.2	0.6	0.5	1.5	0.9	0.0	1.7	0.5	1.4	0.0	0.2	0.0	**S**	5.5	3.8	0.0	7.4	2.4	24
4	3.0	6.2	5.6	2.9	0.8	2.2	0.9	0.5	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**S**	7.6	2.8	2.1	0.0	7.6	1.5	24
5	3.7	8.9	10.8	11.0	7.9	***14.9***	7.4	3.5	1.5	3.6	4.1	3.6	1.6	0.0	0.5	3.3	2.2	1.7	0.0	**S**	8.0	3.6	3.6	1.7	0.0	***14.9***	***4.7***	24
6	2.2	1.7	1.0	1.4	2.4	2.0	2.3	2.4	2.7	2.5	2.3	1.2	0.8	0.7	1.0	1.1	0.7	1.3	**S**	5.2	4.9	3.8	3.0	3.1	0.7	5.2	2.2	24
7	2.5	2.7	2.7	2.6	2.7	3.0	3.3	3.5	2.8	3.8	3.8	3.2	2.3	2.0	1.4	0.7	1.7	**S**	2.9	3.5	2.9	3.3	3.3	2.8	0.7	3.8	2.8	24
8	2.1	1.4	1.0	1.0	0.7	0.7	0.5	0.5	0.7	0.6	0.5	0.5	0.5	0.6	0.2	0.2	**S**	1.3	1.5	2.1	1.7	1.5	1.5	1.5	0.2	2.1	1.0	24
9	1.1	2.1	1.5	2.1	1.0	0.8	1.0	1.2	3.0	1.7	2.2	1.8	1.6	1.6	0.4	**S**	0.8	2.3	2.2	5.9	6.8	11.1	2.4	1.6	0.4	11.1	2.4	24
10	1.3	2.1	1.6	4.7	0.9	1.4	1.2	0.7	0.0	0.0	0.0	0.0	0.0	0.0	**S**	4.8	3.8	2.2	1.6	1.2	1.6	0.4	1.0	2.7	0.0	4.8	1.4	24
11	2.7	1.5	1.0	2.0	0.3	0.4	1.7	1.3	6.0	4.7	0.8	0.6	0.8	**S**	8.3	8.1	2.9	1.9	1.6	1.5	1.5	1.3	2.5	1.3	0.3	8.3	2.4	24
12	1.1	1.3	1.8	1.9	2.3	2.2	2.0	1.8	1.4	0.9	0.7	0.7	**S**	8.0	4.7	3.4	2.0	1.6	2.1	4.5	2.5	0.8	0.7	1.1	0.7	8.0	2.2	24
13	1.7	2.7	6.1	6.3	2.9	2.6	2.8	1.1	0.2	0.0	0.0	**S**	10.6	4.3	2.6	2.0	1.4	0.7	0.8	1.0	0.7	0.8	1.1	0.8	0.0	10.6	2.3	24
14	0.8	0.7	1.8	0.4	0.1	0.0	2.9	2.6	0.8	0.5	**S**	8.5	5.4	3.7	2.8	2.4	2.2	2.1	1.6	4.1	1.7	1.5	1.6	1.4	0.0	8.5	2.2	24
15	0.7	0.6	0.8	0.7	2.0	1.6	0.7	0.2	0.2	**C**	**C**	**C**	**C**	**C**	**C**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	0.2	2.0	0.8	15
16	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**C**	**C**	**C**	**C**	**C**	**C**	**C**	**C**	1.6	1.6	2.1	1.8	1.9	1.9	1.5	1.5	2.1	1.8	15
17	1.3	1.1	1.1	**S**	1.4	2.0	0.6	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.5	1.7	0.5	1.1	1.0	0.0	2.0	0.6	24
18	1.1	1.6	**S**	4.7	4.9	4.2	3.6	4.1	3.4	3.2	0.2	0.5	0.0	0.2	0.7	0.6	0.3	0.3	0.2	0.4	1.1	0.3	0.3	0.7	0.0	4.9	1.6	24
19	10.2	**S**	2.3	0.5	1.3	3.0	1.3	0.5	0.0	0.0	1.3	0.1	1.9	3.1	1.6	4.2	3.5	0.1	0.0	0.0	0.0	1.0	5.4	1.8	0.0	10.2	1.9	24
20	**S**	3.0	2.4	1.1	0.8	0.7	1.5	0.0	0.4	0.9	1.8	1.5	3.1	1.8	0.9	1.2	0.3	0.6	0.1	0.2	0.5	0.9	2.0	**S**	0.0	3.1	1.2	24
21	1.9	1.4	1.5	1.1	0.5	0.8	1.0	1.5	0.6	1.1	1.9	2.0	1.7	0.4	0.7	0.8	0.2	0.2	0.4	0.4	0.9	1.2	**S**	0.9	0.2	2.0	1.0	24
22	0.9	1.2	1.2	1.8	1.7	3.0	**S1**	**S1**	2.3	**C1**	**C1**	**C1**	0.6	0.5	0.9	0.9	0.8	0.8	1.0	0.5	0.8	**S**	0.8	0.8	0.5	3.0	1.1	19
23	1.6	1.4	1.3	4.1	3.3	1.7	2.9	2.1	1.6	2.7	2.2	1.3	**C1**	**C1**	**C1**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	1.3	4.1	2.2	12
24	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**C1**	**C1**	**C1**	**C1**	**C1**	2.4	1.6	**S**	4.3	1.6	4.3	2.8	4
25	3.8	9.0	7.8	4.5	8.4	3.2	2.5	2.6	1.1	1.1	**C1**	**C1**	**C1**	**C1**	**C1**	**C1**	**C1**	**C1**	**C1**	0.4	0.1	**S**	4.9	1.3	0.1	9.0	3.6	15
26	1.4	1.6	1.2	0.6	0.5	1.5	2.1	2.0	4.6	6.0	6.5	3.9	1.4	1.3	1.5	5.1	1.4	0.8	1.7	1.4	**S**	1.6	1.3	1.3	0.5	6.5	2.2	24
27	2.5	2.5	3.4	3.5	4.6	6.1	6.2	4.3	3.5	2.5	2.3	1.1	1.4	1.4	0.7	0.8	0.6	2.5	1.3	**S**	0.8	0.9	1.1	1.2	0.6	6.2	2.4	24
28	1.7	2.1	1.5	0.9	1.0	3.4	2.7	2.0	3.1	2.7	2.2	3.0	1.3	1.8	7.2	3.5	4.2	1.0	**S**	1.3	2.6	2.6	1.6	2.2	0.9	7.2	2.4	24
29	1.0	0.3	0.0	0.1	0.4	0.1	1.5	2.4	3.3	2.3	1.1	0.6	0.8	0.7	0.4	0.7	0.6	**S**	1.5	1.1	0.7	0.9	1.0	0.6	0.0	3.3	1.0	24
30	0.6	0.8	1.9	1.4	0.8	1.0	1.3	2.0	2.1	1.6	1.1	0.7	0.7	0.8	0.5	0.7	**S**	1.0	1.2	1.0	1.0	1.0	1.1	1.0	0.5	2.1	1.1	24
HOURLY MAX	10.2	9.0	10.8	11.0	8.4	14.9	7.4	4.3	6.4	6.4	6.5	8.5	10.6	8.0	8.3	8.1	4.2	2.5	2.9	5.9	8.0	11.1	5.5	4.3				
HOURLY AVG	2.3	2.6	2.6	2.5	2.1	2.6	2.3	1.9	2.1	2.1	1.7	1.5	1.6	1.4	1.6	1.9	1.3	1.1	1.0	1.6	1.8	2.1	2.1	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

24 HOUR AVERAGES FOR June 2016

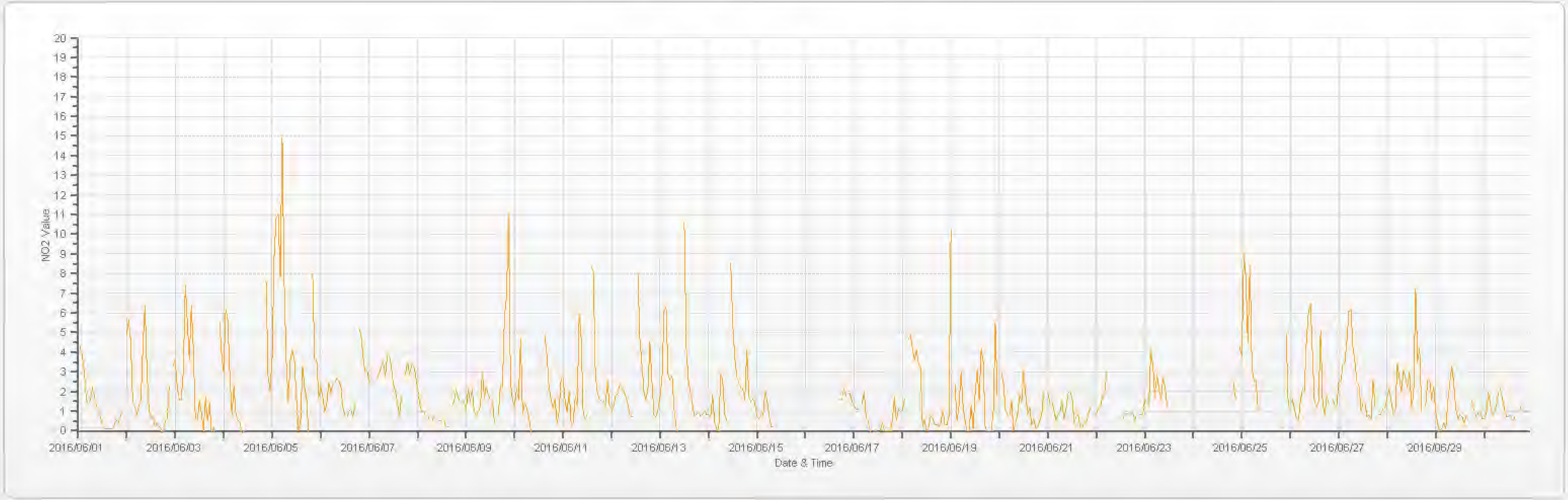


OBJECTIVE LIMIT: **ALBERTA ENVIRONMENT:** 1-HR 159 PPB

MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:			0				
NUMBER OF NON-ZERO READINGS:			570				
MINIMUM 1-HR AVERAGE	0.0	PPB	@ HOUR(S)	VAR	ON DAY(S)	VAR	
MAXIMUM 1-HR AVERAGE:	14.9	PPB	@ HOUR(S)	5	ON DAY(S)	5	
MAXIMUM 24-HR AVERAGE:	4.7	PPB			ON DAY(S)	5	
					VAR-VARIOUS		
IZS CALIBRATION TIME:	29	HRS	OPERATIONAL TIME:			656	HRS
MONTHLY CALIBRATION TIME:	14	HRS	AMD OPERATION UPTIME:			91.1	%
STANDARD DEVIATION:	1.93		MONTHLY AVERAGE:			1.9	PPB

NO2[ppb] Station: LICA MASKWA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



NITROGEN DIOXIDE MAX instantaneous maximum in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	**S**	5.6	5.0	3.8	3.8	2.7	3.8	3.3	2.7	2.1	2.1	1.5	1.5	0.9	0.9	0.9	0.9	0.9	2.1	1.5	1.5	2.1	2.1	**S**	0.9	5.6	2.4	24
2	10.9	8.5	7.3	2.7	2.1	2.1	2.1	4.4	6.7	10.9	5.6	3.2	1.5	2.7	0.9	2.1	0.9	0.9	0.9	2.1	2.1	16.7	**S**	9.7	0.9	16.7	4.7	24
3	5.6	3.3	2.7	3.3	5.6	21.4	17.3	10.3	9.7	8.5	2.1	3.8	5.6	3.8	2.7	10.3	10.9	11.5	2.7	3.8	0.3	**S**	6.7	5.6	0.3	21.4	6.8	24
4	5.0	9.1	9.1	6.2	2.1	4.4	2.7	1.5	1.5	0.9	0.9	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	**S**	15.0	4.4	5.6	0.3	15.0	3.1	24
5	7.3	14.9	13.9	14.4	10.3	23.8	15.5	6.7	5.6	7.3	8.5	8.5	4.4	0.9	4.9	9.1	6.7	6.2	0.0	**S**	15.5	5.0	6.2	2.1	0.0	23.8	8.6	24
6	2.7	2.1	1.5	1.5	3.3	2.7	3.2	2.7	2.7	2.7	2.7	2.1	0.9	0.9	1.5	1.5	0.9	1.5	**S**	5.6	5.6	4.4	3.8	4.4	0.9	5.6	2.6	24
7	3.2	3.2	3.8	2.7	3.2	3.2	3.8	3.8	3.2	4.4	4.4	3.8	3.2	7.3	2.7	1.5	2.1	**S**	3.8	4.4	3.3	3.8	3.8	3.3	1.5	7.3	3.6	24
8	2.7	2.1	1.5	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.3	**S**	2.1	2.1	2.1	2.1	2.1	1.5	1.5	0.3	2.7	1.3	24
9	1.5	4.4	6.1	6.1	0.9	1.5	1.5	2.1	4.3	2.1	2.7	2.7	2.7	2.7	0.9	**S**	2.1	2.7	2.7	16.7	12.7	17.3	3.8	3.8	0.9	17.3	4.5	24
10	2.7	5.6	4.4	12.7	1.5	2.7	2.1	2.1	0.9	0.3	0.3	0.3	0.3	0.3	**S**	6.2	5.5	3.7	3.3	2.1	3.8	1.5	3.8	4.4	0.3	12.7	3.1	24
11	4.4	3.8	2.1	4.9	1.5	2.1	2.7	2.1	10.9	9.7	3.2	2.7	2.1	**S**	12.7	16.1	4.4	2.7	2.7	2.7	2.7	2.7	4.4	2.1	1.5	16.1	4.6	24
12	2.1	2.1	2.7	2.7	3.8	3.8	3.3	2.7	2.1	2.1	2.1	1.5	**S**	9.7	6.7	4.9	3.2	2.7	3.3	17.9	16.1	1.5	1.5	2.1	1.5	17.9	4.4	24
13	2.7	4.4	8.5	9.1	3.8	3.8	5.0	2.7	0.9	0.9	7.3	**S**	17.9	6.7	4.4	2.7	2.1	1.5	1.5	2.1	1.5	2.1	2.1	1.5	0.9	17.9	4.1	24
14	2.1	2.1	4.9	2.7	0.9	0.9	7.9	6.1	2.7	1.5	**S**	10.3	7.3	5.0	3.8	3.3	3.3	3.2	3.2	13.8	4.4	6.7	6.1	3.8	0.9	13.8	4.6	24
15	1.5	2.1	2.1	2.7	2.7	2.7	1.5	1.5	1.5	**C**	**C**	**C**	**C**	**C**	**C**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	1.5	2.7	2.0	15
16	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**C**	**C**	**C**	**C**	**C**	**C**	**C**	**C**	2.8	1.0	1.6	1.6	1.7	1.6	1.2	1.0	2.8	1.6	15
17	1.1	1.3	1.0	**S**	3.2	3.0	0.5	0.8	0.0	0.0	0.0	0.0	0.0	2.4	2.7	0.0	0.0	0.0	0.0	2.8	3.0	0.9	1.3	1.0	0.0	3.2	1.1	24
18	1.2	1.9	**S**	8.2	6.4	5.8	7.4	8.0	8.2	5.6	0.2	2.0	0.0	1.7	2.8	4.1	0.0	0.4	0.4	1.5	1.2	0.3	0.1	0.7	0.0	8.2	3.0	24
19	***29.4***	**S**	6.4	0.6	2.0	3.8	2.0	0.9	0.0	0.0	5.9	0.1	9.2	8.0	6.4	11.6	10.3	1.8	0.0	0.0	0.0	7.4	11.0	2.0	0.0	***29.4***	5.2	24
20	**S**	3.5	2.6	2.2	0.9	0.6	1.8	0.3	0.3	1.1	3.4	2.2	9.4	3.9	1.4	2.0	0.7	3.7	1.3	0.0	0.3	1.1	2.0	**S**	0.0	9.4	2.0	24
21	2.2	1.5	1.8	1.2	0.8	0.7	1.0	2.2	0.8	4.8	3.3	3.0	2.9	0.6	1.3	1.7	0.6	1.0	0.5	0.5	1.3	1.3	**S**	1.0	0.5	4.8	1.6	24
22	1.0	1.6	1.5	2.4	2.5	5.6	**S1**	**S1**	2.4	**P**	**C1**	**C1**	0.5	0.6	1.0	**S**	**S**	0.8	1.2	0.6	1.1	**S**	0.8	1.7	0.5	5.6	1.6	19
23	2.0	1.8	1.6	7.9	7.6	2.9	3.9	4.7	2.4	3.3	2.5	2.0	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	1.6	7.9	3.6	24
24	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	5.4	**S**	8.3	5.4	8.3	6.9	24
25	15.9	14.2	15.4	8.9	16.5	9.5	1.9	1.9	1.3	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	0.7	0.2	**S**	8.3	1.9	0.2	16.5	7.4	24
26	1.9	1.9	1.3	0.7	0.7	1.3	2.5	2.5	5.4	7.7	6.5	4.8	1.9	1.3	1.9	8.9	1.3	0.7	2.5	1.9	**S**	1.9	1.9	1.3	0.7	8.9	2.7	24
27	2.5	2.5	3.6	3.6	4.8	6.0	5.4	4.8	3.6	2.5	13.0	4.1	3.0	5.4	1.3	1.3	1.3	7.1	3.6	**S**	1.3	1.3	1.9	1.3	1.3	13.0	3.7	24
28	2.5	2.5	1.9	1.3	1.3	4.8	4.2	2.5	6.5	7.7	5.4	6.0	2.5	4.1	17.1	17.1	16.5	1.9	**S**	1.9	3.6	3.1	2.5	2.5	1.3	17.1	5.2	24
29	1.9	0.7	0.7	0.7	0.7	0.7	4.8	6.0	4.2	2.5	1.9	0.7	1.3	1.3	0.7	1.3	2.5	**S**	3.1	1.3	1.3	1.3	1.3	0.7	0.7	6.0	1.8	24
30	0.7	1.3	2.5	1.9	0.7	1.3	1.3	1.9	1.9	1.9	1.3	0.7	0.7	1.3	0.7	1.3	**S**	1.3	1.3	1.3	1.3	1.3	1.3	1.3	0.7	2.5	1.3	24
HOURLY MAX	29.4	14.9	15.4	14.4	16.5	23.8	17.3	10.3	10.9	10.9	13.0	10.3	17.9	9.7	17.1	17.1	16.5	11.5	3.8	17.9	16.1	17.3	11.0	9.7				
HOURLY AVG	4.5	4.0	4.3	4.3	3.4	4.5	4.1	3.3	3.3	3.7	3.6	2.8	3.3	3.0	3.4	4.7	3.5	2.6	1.8	3.6	3.5	4.3	3.4	2.9				

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: 591

MAXIMUM INSTANTANEOUS VALUE: 29.4 PPB @ HOUR(S) 0 ON DAY(S) 19

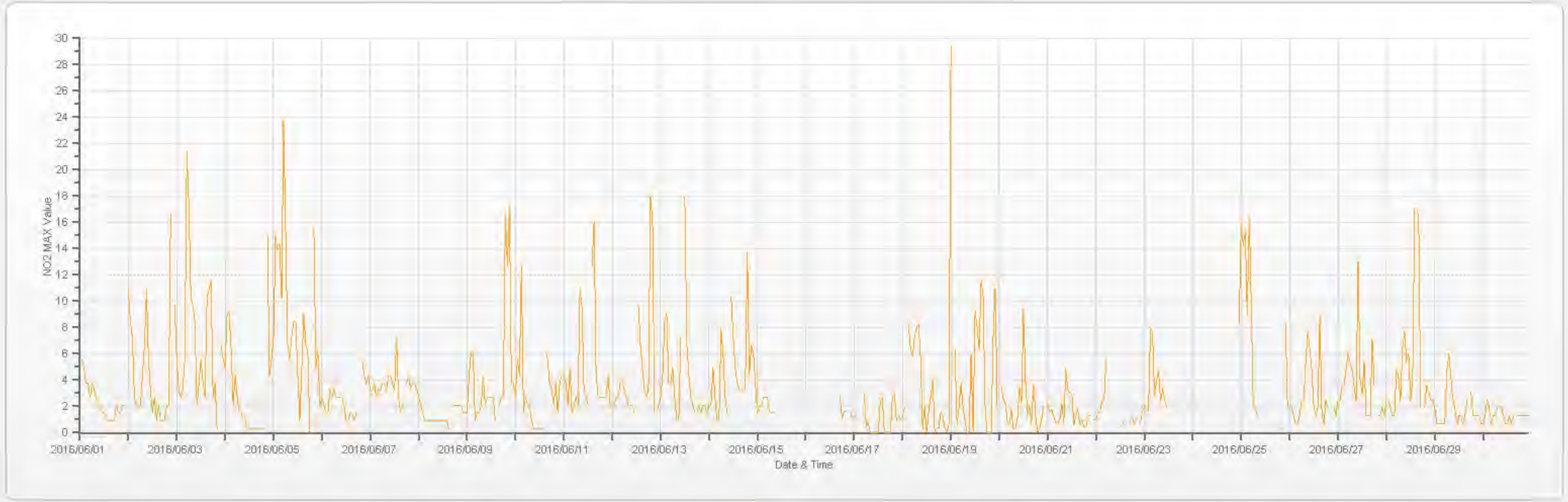
VAR-VARIOUS

IZS CALIBRATION TIME: 74 HRS OPERATIONAL TIME: 697 HRS

MONTHLY CALIBRATION TIME: 14 HRS

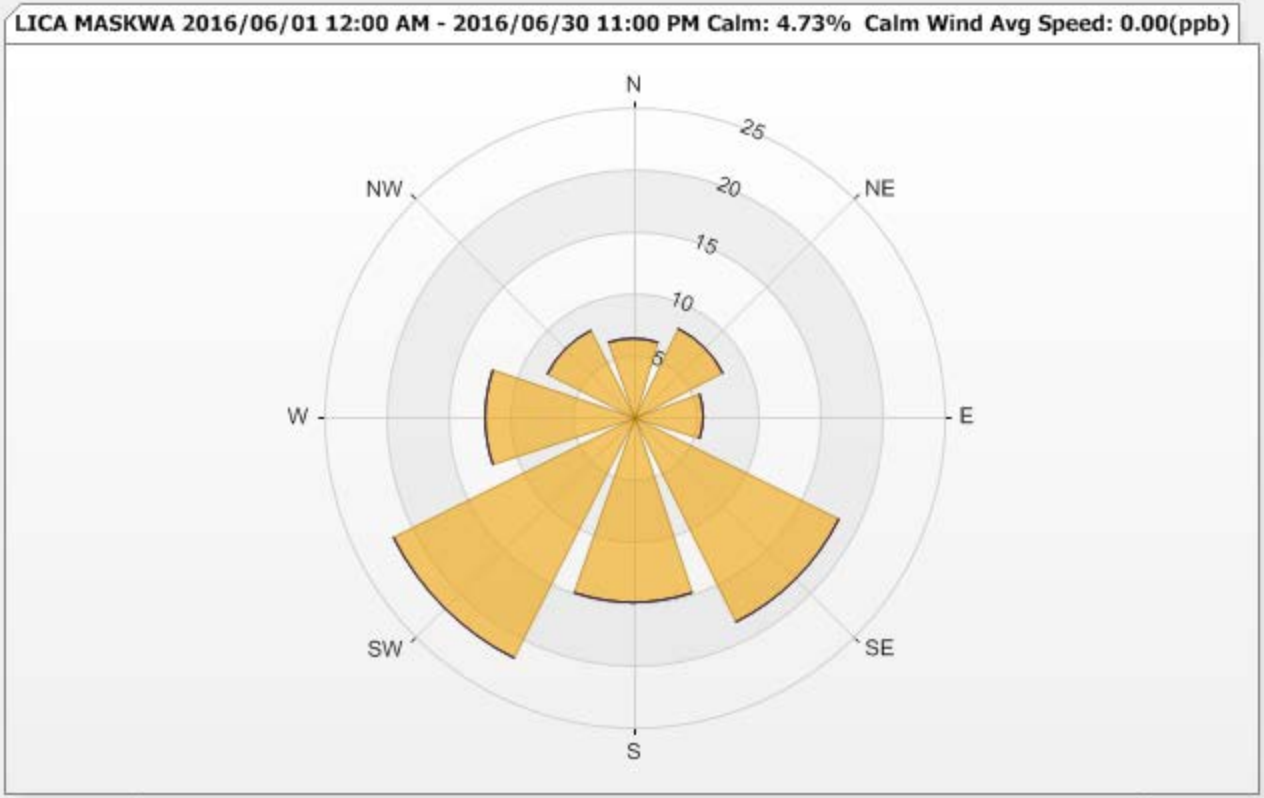
STANDARD DEVIATION: 3.81

NO2 MAX[ppb] Station: LICA MASKWA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]

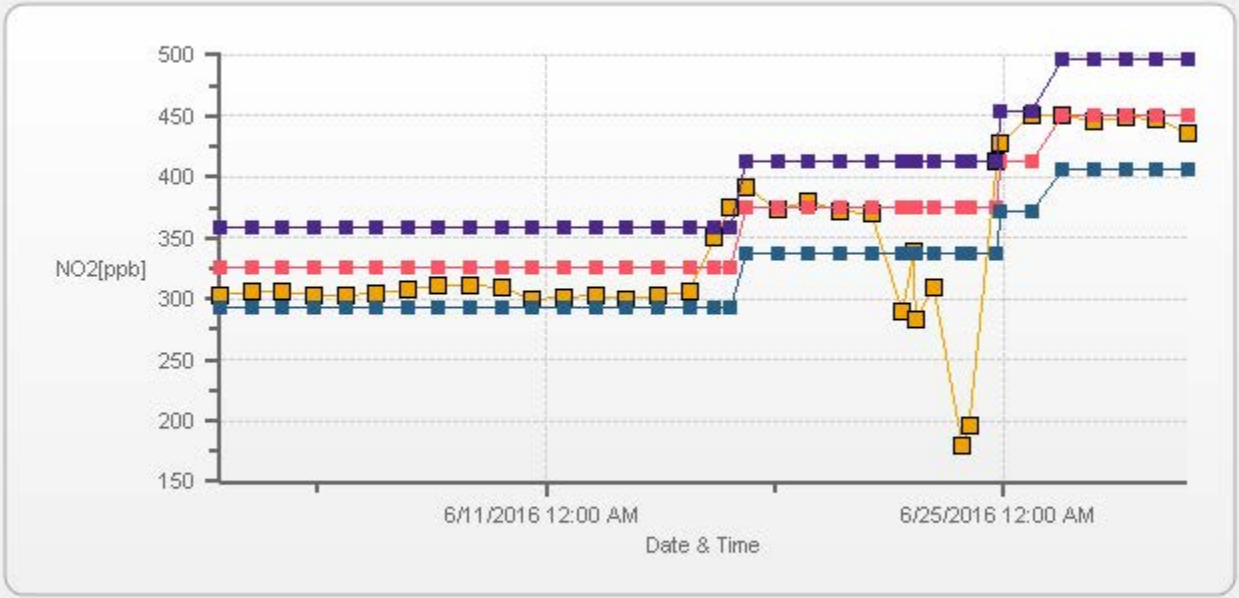


Wind: LICA MASKWA Monitor: NO2 [ppb] Monthly: 06/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
Calm: 4.73% Valid Data: 85.14% Calm Avg: 0.00

Direction	0.0-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	6.36	0	0	0	6.36
NE	7.99	0	0	0	7.99
E	5.71	0	0	0	5.71
SE	18.6	0	0	0	18.6
S	15.01	0	0	0	15.01
SW	21.7	0	0	0	21.7
W	12.07	0	0	0	12.07
NW	7.83	0	0	0	7.83
Summary	95.27	0	0	0	95.27


LICA MASKWA 2016/06/01 12:00 AM - 2016/06/30 11:00 PM Calm: 4.73% Calm Wind Avg Speed: 0.00(ppb)
N
NE
E
SE
S
SW
W
NW
25
20
15
10
5
% Ions Classes (ppb)
0.0-50.0
0
50.0-110.0
0
110.0-210.0
0
>210.0

NO2[ppb] Calibration: LICA MASKWA Monthly: 06/2016 Type: Span



WIND SPEED

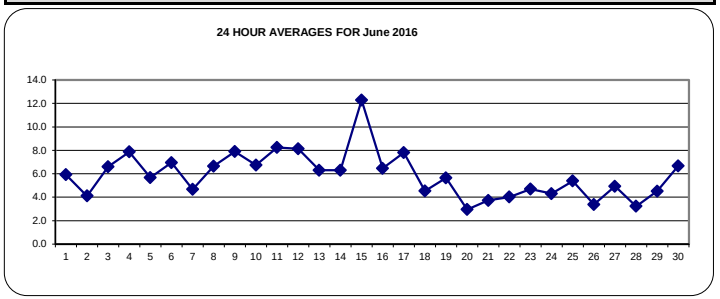
WIND SPEED (WS) hourly averages in km/hr

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	4.7	5.6	5.2	3.3	0.5	0.9	0.9	5.4	6.6	6.5	8.7	7.6	9.8	8.6	10.3	9.6	8.9	10.3	7.9	8.1	4.3	1.7	2.3	4.6	0.5	10.3	5.9	24
2	3.7	2.5	4.7	5.1	3.3	2.8	2.8	3.4	3.4	3.0	3.2	3.4	5.0	3.9	6.1	5.7	4.8	3.4	3.3	1.6	7.9	7.9	4.9	2.8	1.6	7.9	4.1	24
3	2.1	2.6	3.7	5.3	5.3	3.9	6.1	6.4	7.4	7.5	9.3	10.9	7.5	8.6	8.8	11.1	10.2	10.4	8.7	7.9	3.5	2.4	3.4	5.3	2.1	11.1	6.6	24
4	6.2	5.8	4.7	4.4	4.2	3.8	7.3	9.6	9.8	9.7	11.2	11.4	11.2	11.9	12.1	11.1	11.1	10.4	9.4	7.0	4.8	4.0	3.4	4.2	3.4	12.1	7.9	24
5	4.4	2.6	3.8	3.0	3.3	4.1	4.6	5.0	6.4	8.5	8.8	9.2	9.3	8.5	8.8	7.6	6.4	6.4	6.9	5.4	0.8	3.6	4.8	3.8	0.8	9.3	5.7	24
6	3.0	3.3	4.6	2.0	2.0	1.9	3.5	4.8	5.3	7.0	8.3	10.4	11.1	11.6	11.0	10.0	10.7	8.3	6.7	7.1	7.1	6.4	8.0	12.6	1.9	12.6	6.9	24
7	13.5	8.3	9.3	5.0	6.0	2.4	3.6	5.2	6.1	4.8	5.1	6.1	2.1	3.7	3.7	4.9	2.4	4.6	5.0	4.1	2.1	1.7	0.9	1.4	0.9	13.5	4.7	24
8	1.8	3.6	4.0	4.4	3.5	5.1	6.7	6.1	4.8	6.2	6.5	4.2	6.2	9.9	11.0	9.9	12.1	7.0	7.6	8.1	7.7	8.9	7.5	6.9	1.8	12.1	6.7	24
9	5.9	9.6	10.1	9.3	7.5	6.6	6.3	4.5	4.2	6.1	7.2	10.1	8.2	7.7	8.8	9.3	10.9	9.7	10.1	7.5	8.5	7.8	6.7	6.9	4.2	10.9	7.9	24
10	5.6	6.5	5.8	6.2	7.2	6.4	7.6	8.4	9.2	10.3	13.3	9.9	8.7	7.3	6.3	5.3	3.9	5.7	4.8	3.9	3.0	4.0	6.5	6.0	3.0	13.3	6.7	24
11	6.3	5.3	3.5	3.1	3.2	6.2	7.2	9.5	8.7	7.4	8.8	9.1	8.6	8.1	7.9	10.4	11.2	11.4	11.6	10.4	11.4	7.3	8.9	12.1	3.1	12.1	8.2	24
12	10.2	8.6	8.5	7.7	6.9	6.8	7.4	7.5	7.5	9.7	11.6	13.0	11.2	11.0	9.6	6.9	7.9	8.2	6.2	5.2	6.3	6.0	4.6	6.8	4.6	13.0	8.1	24
13	7.9	7.2	6.6	4.9	5.6	4.9	6.5	5.3	6.4	7.3	8.1	8.3	8.2	8.8	9.1	9.6	6.7	6.9	5.6	4.0	3.0	4.0	4.1	2.2	2.2	9.6	6.3	24
14	7.1	6.8	4.5	3.4	3.8	4.8	7.7	10.8	9.3	7.6	5.8	4.9	6.7	8.0	9.8	12.1	9.2	4.7	4.2	4.6	3.3	2.7	3.5	5.9	2.7	12.1	6.3	24
15	7.7	7.8	6.0	7.8	11.9	14.5	13.8	16.1	15.3	16.6	16.6	15.4	15.5	***17.0***	16.5	14.6	15.1	14.5	10.1	11.5	7.5	6.7	7.7	8.5	***6.0***	***17.0***	***12.3***	24
16	7.5	7.9	5.9	5.9	6.9	6.3	4.4	4.2	1.0	2.0	4.4	3.4	6.7	4.5	4.9	4.7	6.4	6.2	10.1	12.7	9.4	10.8	10.3	8.5	1.0	12.7	6.5	24
17	8.0	7.8	7.1	7.4	8.0	8.9	7.0	6.3	8.9	6.7	8.8	8.4	8.7	10.9	10.1	10.5	9.3	8.7	6.1	5.7	5.2	5.3	6.0	7.3	5.2	10.9	7.8	24
18	8.8	8.4	4.6	6.7	4.4	3.2	3.6	4.8	5.0	5.2	6.0	5.2	4.8	6.9	6.1	5.2	4.7	3.3	3.3	3.0	2.5	1.4	1.6	0.3	0.3	8.8	4.5	24
19	4.7	0.4	2.7	2.0	3.2	3.0	5.0	6.7	8.4	7.8	6.6	7.2	8.8	10.3	9.3	8.4	8.6	9.1	8.8	6.7	3.5	0.9	2.1	1.1	0.4	10.3	5.6	24
20	1.8	1.4	2.1	0.8	1.1	0.7	1.1	5.0	3.8	3.7	0.5	2.0	3.2	4.3	3.9	2.0	3.2	3.0	4.0	6.7	5.3	5.5	3.9	1.8	0.5	6.7	3.0	24
21	0.3	1.3	0.6	0.6	0.8	1.4	2.2	1.8	3.1	5.9	6.4	5.3	3.8	2.9	2.2	6.1	6.6	9.1	11.2	8.0	4.8	3.3	0.3	1.5	0.3	11.2	3.7	24
22	1.6	4.4	2.4	2.6	0.2	0.2	4.8	4.9	4.9	5.9	6.3	7.6	6.5	7.1	6.0	4.3	1.8	3.9	3.0	2.8	4.2	3.0	3.0	5.2	0.2	7.6	4.0	24
23	2.2	3.9	1.2	2.9	2.9	2.6	1.8	1.7	7.1	7.5	7.7	6.3	9.7	7.4	8.1	7.7	7.3	6.3	3.6	1.6	0.4	1.7	7.0	4.3	0.4	9.7	4.7	24
24	1.7	2.0	3.0	2.9	3.3	4.7	6.8	5.3	6.2	4.2	5.1	6.0	5.6	6.2	6.6	5.4	4.9	5.1	5.0	5.5	3.3	2.0	0.8	1.7	0.8	6.8	4.3	24
25	3.2	2.6	3.0	2.9	3.2	4.0	4.1	4.6	5.4	5.6	7.5	7.7	10.4	11.5	10.9	11.4	7.4	6.3	4.5	4.8	2.2	1.3	2.1	2.6	1.3	11.5	5.4	24
26	1.6	0.7	0.7	2.1	1.2	1.1	1.8	2.2	1.2	3.0	2.4	4.0	4.2	5.5	6.2	5.7	6.4	5.9	4.1	4.9	1.8	3.4	6.2	4.7	0.7	6.4	3.4	24
27	4.3	4.2	5.3	4.5	6.2	4.7	5.0	4.1	5.4	5.3	5.2	6.1	6.6	6.9	7.1	8.4	6.7	7.0	4.4	3.8	2.9	1.5	2.9	***0.0***	***0.0***	8.4	4.9	24
28	3.5	2.6	1.8	2.9	3.1	2.2	1.7	3.1	5.2	3.0	3.1	5.4	3.4	4.0	0.9	6.9	4.9	3.7	5.9	3.1	1.2	2.8	1.2	1.9	0.9	6.9	3.2	24
29	3.2	4.0	4.7	3.6	3.5	4.1	3.0	2.0	4.1	5.1	5.6	6.9	6.5	5.3	5.8	4.9	4.5	6.0	5.0	3.7	4.0	4.9	4.2	3.9	2.0	6.9	4.5	24
30	3.8	3.4	3.5	5.4	7.4	5.9	5.7	5.9	8.1	8.2	8.5	9.5	9.0	8.5	8.9	8.9	9.3	7.2	5.9	5.3	4.7	4.9	5.9	6.4	3.4	9.5	6.7	24
HOURLY MAX	13.5	9.6	10.1	9.3	11.9	14.5	13.8	16.1	15.3	16.6	16.6	15.4	15.5	17.0	16.5	14.6	15.1	14.5	11.6	12.7	11.4	10.8	10.3	12.6				
HOURLY AVG	4.9	4.7	4.5	4.3	4.3	4.3	5.0	5.7	6.3	6.6	7.2	7.5	7.6	7.9	7.9	8.0	7.5	7.1	6.4	5.8	4.6	4.3	4.5	4.7				

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

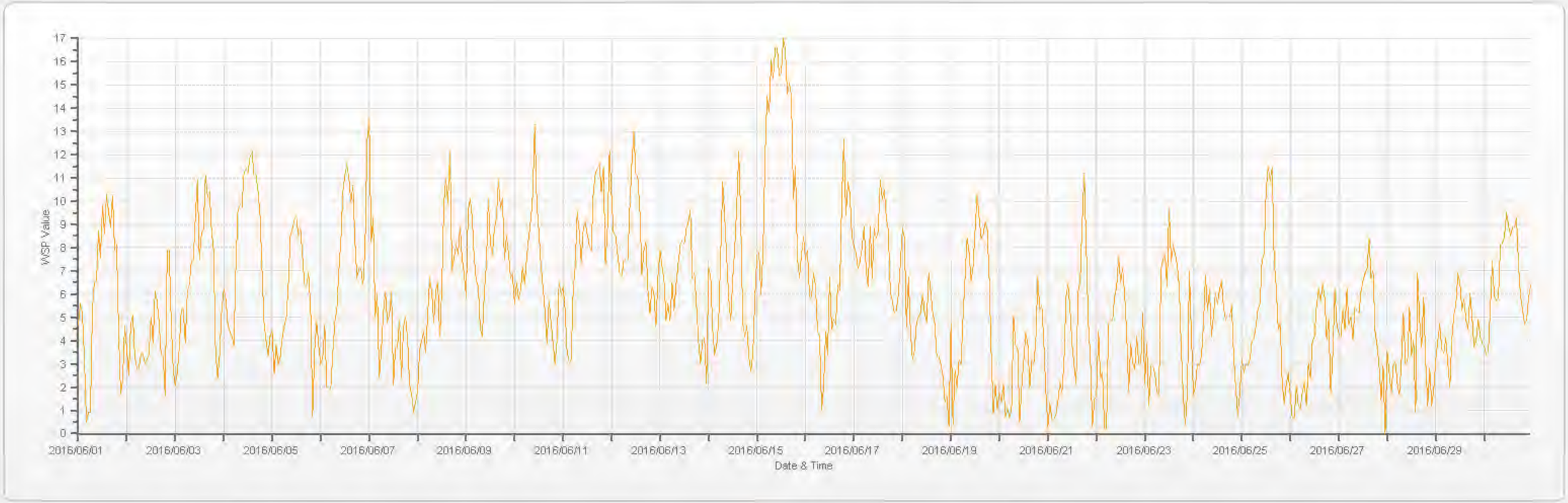


LAST CALIBRATION:	March 30, 2016
DECLINATION :	MAGNETIC DECLINATION 19 DEGREE EAST

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:			719				
MINIMUM 1-HR AVERAGE	0.0	KPH	@ HOUR(S)	23	ON DAY(S)	27	
MAXIMUM 1-HR AVERAGE:	17.0	KPH	@ HOUR(S)	13	ON DAY(S)	15	
MAXIMUM 24-HR AVERAGE:	12.3	KPH			ON DAY(S) VAR-VARIOUS	15	
			OPERATIONAL TIME:			720	HRS
MONTHLY CALIBRATION TIME:	0	HRS	AMD OPERATION UPTIME:			100.0	%
STANDARD DEVIATION:	3.09		MONTHLY AVERAGE:			5.9	KPH

WSP[kph] Station: LICA MASKWA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



VECTOR WIND SPEED MAX instantaneous maximum in km/hr

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	14.9	14.0	13.2	8.9	7.6	3.6	8.9	15.7	17.2	22.5	30.6	28.4	32.3	29.2	31.9	32.8	33.2	42.6	24.9	36.9	14.4	13.9	8.9	16.8	3.6	42.6	21.0	24
2	13.3	10.2	14.1	17.9	12.2	10.9	10.9	10.9	15.5	15.5	18.6	23.2	23.2	27.4	22.1	22.6	17.0	14.4	13.9	27.7	25.3	34.1	23.8	14.6	10.2	34.1	18.3	24
3	13.3	8.3	17.4	19.9	19.0	15.7	28.4	31.7	26.4	32.6	41.1	43.0	31.4	38.0	35.8	39.1	39.8	39.5	36.5	38.7	15.2	8.2	9.3	11.3	8.2	43.0	26.7	24
4	13.5	12.4	13.5	15.8	17.9	12.5	26.5	31.3	49.9	45.5	49.9	50.9	45.2	43.7	45.7	45.9	45.0	42.4	41.3	28.8	19.2	15.0	12.2	14.6	12.2	50.9	30.8	24
5	14.6	11.8	13.5	11.5	13.9	12.4	17.7	16.8	26.0	30.1	36.0	51.1	39.3	39.1	31.0	34.3	25.3	25.1	21.6	19.0	8.5	17.7	18.3	15.5	8.5	51.1	22.9	24
6	10.7	12.9	17.7	12.5	5.3	5.8	11.1	16.1	15.5	23.1	28.4	32.1	38.9	35.4	32.7	29.0	29.0	27.7	22.9	20.5	25.1	18.8	22.7	44.8	5.3	44.8	22.4	24
7	33.6	22.7	29.3	13.3	19.4	9.6	15.5	12.0	18.8	17.0	35.8	17.0	15.7	15.5	16.3	17.2	15.4	14.6	13.3	11.1	6.9	4.1	5.0	5.0	4.1	35.8	16.0	24
8	22.0	9.6	9.6	11.4	10.5	13.6	19.3	15.3	12.4	19.9	18.8	15.9	18.5	24.2	25.5	27.7	36.5	30.6	28.4	33.2	26.8	36.1	20.3	25.8	9.6	36.5	21.3	24
9	23.1	43.5	40.2	32.8	39.1	23.1	23.1	16.1	21.1	16.4	24.2	33.2	32.1	30.8	38.9	37.2	44.4	41.1	49.6	27.7	37.2	28.4	30.2	30.4	16.1	49.6	31.8	24
10	34.4	33.5	25.8	25.8	31.7	27.7	32.6	28.4	33.9	34.5	40.2	30.8	27.9	21.4	19.2	18.5	12.4	21.8	22.9	17.7	8.5	11.3	19.4	20.7	8.5	40.2	25.0	24
11	17.9	16.8	11.8	12.0	8.9	20.3	24.7	36.5	50.4	30.9	32.1	34.6	33.2	30.8	35.0	43.5	50.3	45.5	37.2	42.6	35.2	22.5	24.2	32.6	8.9	50.4	30.4	24
12	26.2	26.0	24.9	23.4	27.1	22.0	32.3	27.3	27.1	32.1	36.7	38.2	35.0	39.2	39.0	31.8	41.4	31.2	22.0	26.2	23.4	15.7	12.4	14.6	12.4	41.4	28.1	24
13	16.8	16.6	17.5	17.0	14.8	21.2	20.7	21.6	24.2	23.1	32.8	30.3	34.9	36.5	36.9	32.6	29.0	33.2	19.6	14.1	6.9	7.4	8.0	8.9	6.9	36.9	21.9	24
14	32.6	28.4	14.5	17.1	8.8	17.4	31.2	48.1	34.1	31.0	25.8	20.9	26.8	30.8	32.5	34.5	34.1	20.3	15.0	15.5	13.7	17.0	10.7	28.2	8.8	48.1	24.5	24
15	24.4	22.7	16.8	23.1	33.4	42.4	45.5	48.3	42.0	43.5	51.6	46.3	52.9	***58.4***	46.1	46.9	47.5	47.5	34.4	33.5	21.4	19.6	21.6	23.6	16.8	***58.4***	***37.2***	24
16	19.4	23.8	19.2	14.4	22.5	21.8	12.6	13.1	10.7	10.7	16.8	10.2	24.9	15.9	16.4	18.3	22.5	21.8	31.5	39.6	22.3	24.5	25.0	24.5	10.2	39.6	20.1	24
17	22.3	21.8	23.8	25.3	33.4	33.0	30.4	29.5	36.9	41.8	33.4	37.4	37.2	38.7	39.6	40.2	38.5	34.7	24.4	23.8	15.2	12.0	14.6	19.9	12.0	41.8	29.5	24
18	23.5	21.7	28.5	14.4	11.3	13.3	14.4	17.9	20.1	22.7	24.2	19.4	20.5	35.1	26.2	22.9	15.5	17.4	12.0	10.2	6.1	5.2	4.5	8.9	4.5	35.1	17.3	24
19	26.6	12.0	11.3	9.1	15.0	12.6	21.8	19.4	25.5	30.0	27.6	39.0	29.4	53.2	42.7	40.1	37.6	40.9	40.0	41.1	17.7	5.0	5.8	6.1	5.0	53.2	25.4	24
20	5.4	4.5	4.5	3.4	4.1	4.8	9.1	13.3	12.2	18.3	17.6	15.0	18.5	19.0	16.6	15.7	16.8	14.1	21.4	15.9	11.8	12.0	10.2	6.8	3.4	21.4	12.1	24
21	2.2	5.1	4.3	3.9	2.8	5.4	6.5	8.7	15.7	24.2	22.5	24.0	18.1	18.8	18.1	24.2	24.6	35.1	27.5	18.8	21.6	9.6	4.1	3.9	2.2	35.1	14.6	24
22	12.2	10.4	9.6	6.9	8.3	3.0	12.4	15.0	17.0	**P**	22.7	21.8	22.0	24.9	24.2	27.9	13.5	23.6	17.6	10.3	13.6	17.1	11.4	20.6	3.0	27.9	15.9	23
23	13.7	12.0	8.9	13.5	12.0	10.2	8.0	10.2	18.1	26.0	23.1	20.3	24.2	25.5	22.9	22.9	19.2	17.9	15.4	8.0	9.8	10.2	39.3	23.6	8.0	39.3	17.3	24
24	8.9	9.6	11.1	12.6	14.6	19.2	24.2	22.3	21.8	21.1	20.3	21.8	21.9	22.6	28.5	25.6	15.3	21.0	18.2	20.3	15.7	8.2	6.5	9.3	6.5	28.5	17.5	24
25	13.9	16.1	12.0	13.1	14.8	14.6	19.4	19.6	19.4	27.3	30.1	26.0	30.1	35.6	31.2	30.1	31.2	24.2	28.4	16.6	14.1	5.0	10.9	9.6	5.0	35.6	20.6	24
26	6.9	3.2	3.7	4.4	3.5	2.6	6.9	7.1	10.7	10.9	11.5	16.3	19.6	20.1	23.1	21.3	21.6	21.1	13.0	20.9	9.3	13.1	14.6	12.0	2.6	23.1	12.4	24
27	9.6	10.4	12.8	12.4	11.8	11.1	12.4	13.5	13.7	17.4	27.5	23.3	31.6	30.3	36.0	37.5	34.7	30.1	21.6	18.3	16.5	6.5	5.6	12.2	5.6	37.5	19.0	24
28	6.7	6.2	4.6	6.4	7.6	7.6	10.4	16.6	20.1	13.0	14.8	31.4	43.9	26.2	25.5	24.4	29.7	23.5	19.6	15.7	9.3	5.6	10.2	15.9	4.6	43.9	16.5	24
29	12.0	11.8	11.5	10.0	9.6	12.0	8.7	12.4	16.6	22.9	25.7	28.8	24.6	27.5	25.1	30.6	23.5	25.5	16.6	12.4	13.1	11.4	10.7	12.3	8.7	30.6	17.3	24
30	9.9	15.3	13.1	20.1	23.1	21.1	18.3	19.2	27.1	27.3	28.4	41.3	30.6	30.1	37.8	32.5	33.8	30.8	19.6	18.8	16.1	15.5	18.3	17.9	9.9	41.3	23.6	24
HOURLY MAX	34.4	43.5	40.2	32.8	39.1	42.4	45.5	48.3	50.4	45.5	51.6	51.1	52.9	58.4	46.1	46.9	50.3	47.5	49.6	42.6	37.2	36.1	39.3	44.8				
HOURLY AVG	16.8	15.8	15.3	14.4	15.5	15.0	18.8	20.5	23.3	25.2	28.3	29.1	29.5	30.8	30.1	30.3	29.3	28.6	24.3	22.8	16.7	14.4	14.6	17.0				

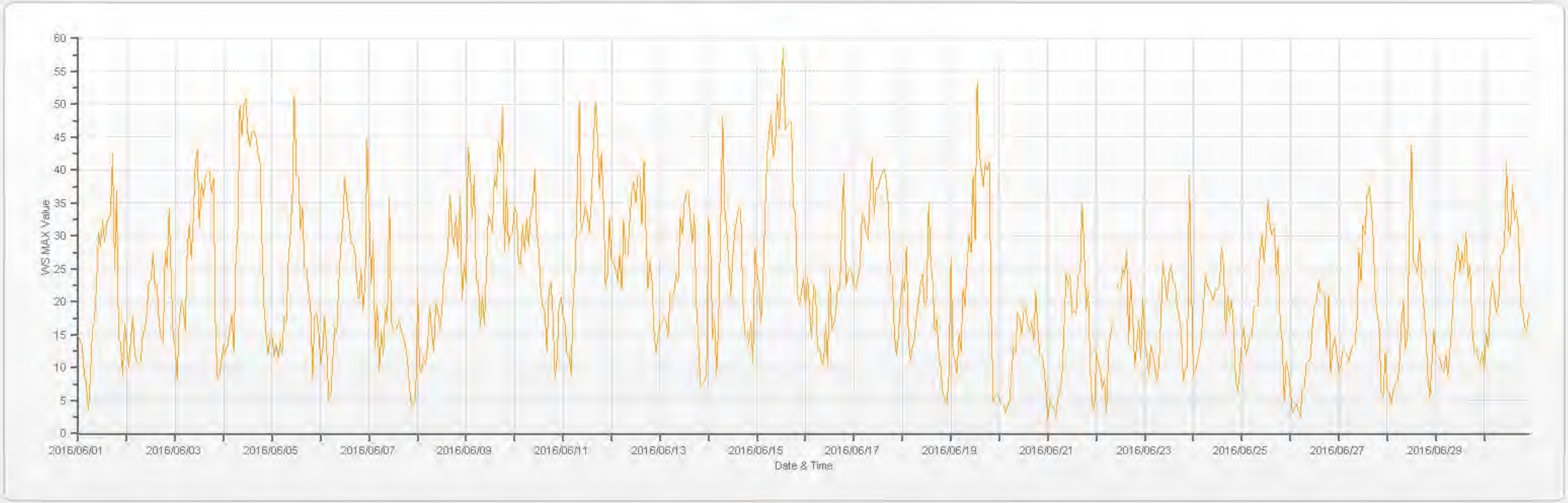
STATUS FLAG CODES

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

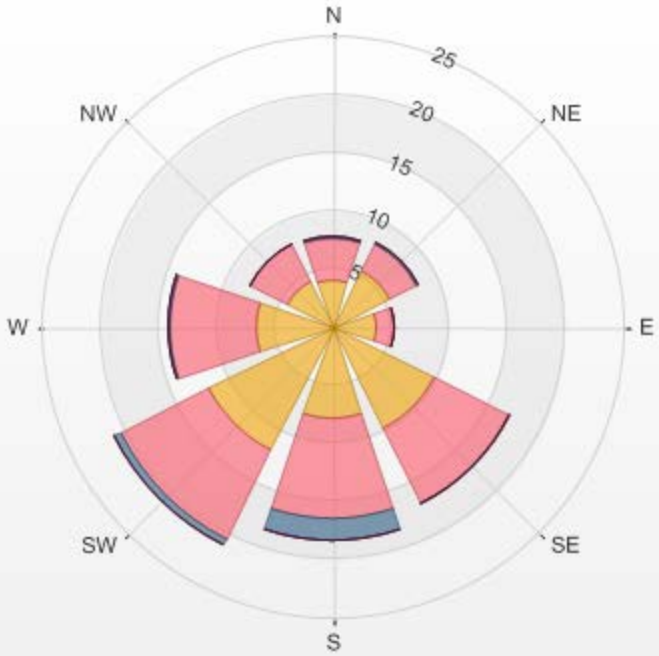
MONTHLY SUMMARY

MAXIMUM INSTANTANEOUS VALUE:	58.4	KPH	@ HOUR(S)	13	ON DAY(S) 15
				VAR-VARIOUS	
OPERATIONAL TIME:				719	HRS

WS MAX[kph] Station: LICA MASKWA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



LICA MASKWA 2016/06/01 12:00 AM - 2016/06/30 11:00 PM Calm: 0.00%



%	Icon	Classes (kph)									
54		0.0-6.0	43	6.0-12.0	3	12.0-20.0	0	20.0-29.0	0	29.0-39.0	0 >39.0

Wind: LICA MASKWA Monitor: WSP [kph] Monthly: 06/2016 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	4.03	3.61	0.14	0	0	0	7.78
NE	5.42	2.64	0.14	0	0	0	8.2
E	3.75	1.53	0	0	0	0	5.28
SE	9.86	7.08	0.14	0	0	0	17.08
S	7.92	8.61	1.94	0	0	0	18.47
SW	11.94	8.47	0.56	0	0	0	20.97
W	6.67	7.36	0.14	0	0	0	14.17
NW	4.44	3.61	0	0	0	0	8.05
Summary	54.03	42.91	3.06	0	0	0	100

WIND DIRECTION

WIND DIRECTION (WD) hourly averages

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

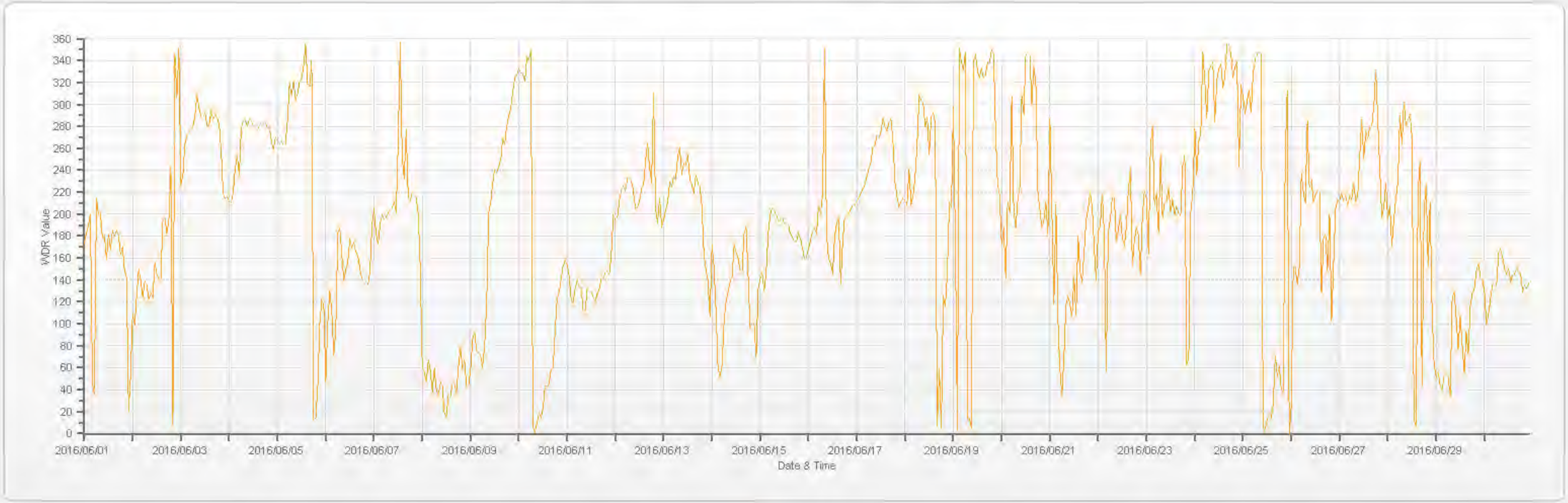
STATUS FLAG CODES

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:	720	HRS
STANDARD DEVIATION:	86.12		AMD OPERATION UPTIME:	100.0	%

WDR[Deg] Station: LICA MASKWA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



STANDARD DEVIATION WIND DIRECTION

STANDARD DEVIATION WIND DIRECTION (STDWD) hourly averages in degrees

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	
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	RDGS.
DAY																									
1	19	18	17	18	40	36	51	26	24	33	30	37	31	33	31	30	28	27	26	26	27	46	35	23	24
2	30	29	19	25	26	35	41	44	52	56	59	55	42	52	40	53	42	56	29	29	26	36	39	61	24
3	39	31	30	31	31	38	32	35	39	41	37	38	44	41	42	36	39	35	39	33	30	25	19	16	24
4	13	13	21	32	33	29	34	34	37	39	39	39	38	39	37	37	37	32	35	33	29	29	29	29	24
5	29	39	30	34	34	30	38	39	42	40	43	41	40	46	39	42	40	42	32	23	46	30	29	36	24
6	23	31	34	54	23	27	34	30	34	33	35	32	31	28	33	32	28	26	27	25	23	20	23	21	24
7	19	20	23	22	21	43	31	19	31	31	35	26	44	39	39	37	57	42	17	19	41	27	63	48	24
8	54	18	16	15	19	16	22	21	24	22	27	29	29	20	18	24	23	24	25	30	26	27	23	22	24
9	28	31	32	29	31	28	25	33	31	22	23	30	39	42	42	39	38	37	33	38	34	39	41	44	24
10	47	40	41	44	38	42	36	30	31	27	23	31	29	33	32	46	44	38	37	30	19	16	18	18	24
11	21	20	23	23	20	26	33	29	38	35	30	37	32	37	37	35	38	31	30	30	25	32	25	20	24
12	21	19	23	27	31	31	36	34	38	28	25	24	23	30	35	40	44	39	32	45	34	17	23	14	24
13	15	15	15	28	24	35	30	39	39	36	39	39	44	38	38	31	39	38	37	25	11	8	11	27	24
14	26	24	23	25	17	25	33	35	34	38	37	43	43	38	32	31	23	27	33	34	32	30	35	31	24
15	30	24	26	23	21	20	21	22	23	23	23	25	23	24	25	28	26	26	27	23	22	21	20	22	24
16	22	21	21	16	18	19	23	32	68	61	34	35	27	32	22	29	35	27	21	19	19	16	19	17	24
17	19	21	24	30	31	32	38	39	39	40	37	39	36	36	36	37	36	36	41	31	19	16	17	20	24
18	19	18	44	13	26	38	36	43	45	44	40	38	43	39	46	42	32	46	33	30	16	63	24	66	24
19	56	47	40	40	41	37	39	32	28	36	42	51	40	40	44	43	43	41	42	38	34	47	24	63	24
20	28	29	22	65	40	41	68	29	41	61	68	65	65	51	57	71	45	50	40	16	14	10	10	59	24
21	56	44	54	63	44	33	18	47	54	44	41	50	61	68	38	34	34	26	19	18	27	24	71	28	24
22	47	13	45	39	43	52	26	31	32	37	35	33	45	40	40	36	52	37	38	37	27	47	33	24	24
23	29	24	59	39	45	31	50	61	24	27	28	39	27	31	28	30	27	28	39	40	57	32	34	41	24
24	63	43	32	38	37	37	30	41	39	42	36	44	46	48	49	45	35	40	38	39	39	44	66	34	24
25	36	50	41	45	39	41	39	37	32	39	29	32	23	24	25	21	35	32	30	28	55	38	28	38	24
26	49	64	42	22	51	32	39	40	61	39	56	59	49	40	55	30	22	22	45	42	43	15	15	15	24
27	14	15	13	16	13	18	22	34	32	40	42	41	41	38	43	38	42	37	37	38	27	57	17	62	24
28	11	15	24	27	15	32	57	43	36	39	54	42	47	52	58	31	38	31	29	56	55	14	46	35	24
29	30	21	16	18	19	21	51	27	44	44	44	42	41	53	44	46	51	37	32	19	14	14	17	18	24
30	20	29	31	25	28	30	30	35	33	32	35	37	35	38	37	37	28	33	28	27	28	25	25	24	24

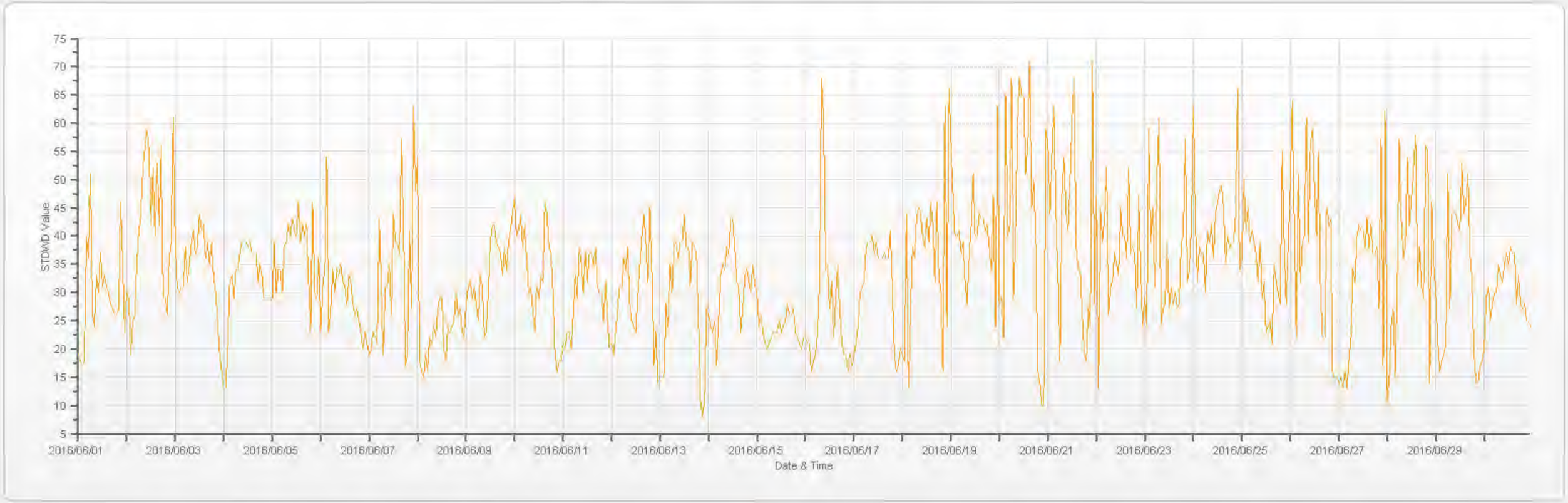
STATUS FLAG CODES

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: 1011 HRS

STDWD[Deg] Station: LICA MASKWA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



RELATIVE HUMIDITY

RELATIVE HUMIDITY (RH) hourly averages in %

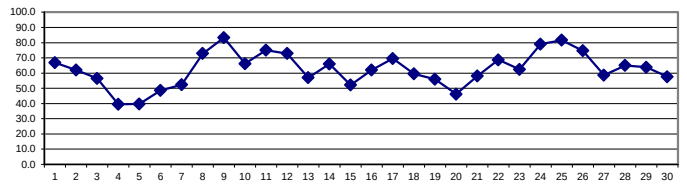
MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	82	83	83	88	88	86	76	67	62	58	54	48	44	44	42	42	44	62	71	67	74	76	80	82	42	88	66.8	24
2	86	91	92	90	90	81	72	63	57	53	50	45	43	46	44	42	39	38	38	49	59	68	74	79	38	92	62.0	24
3	89	91	91	90	90	88	84	77	62	51	43	36	36	32	32	30	27	27	27	30	41	59	67	57	27	91	56.5	24
4	57	60	60	58	60	58	50	45	40	36	31	27	25	23	21	19	19	20	22	27	37	45	53	56	19	60	39.5	24
5	58	61	64	67	68	57	46	40	34	28	26	23	21	20	21	20	19	19	20	24	42	53	59	63	19	68	39.7	24
6	73	74	70	75	86	76	60	52	50	47	42	28	25	25	28	27	28	34	37	41	44	50	49	47	25	86	48.7	24
7	44	54	53	57	60	61	63	64	58	56	50	52	44	36	35	35	29	32	36	43	58	71	80	85	29	85	52.3	24
8	86	83	85	88	87	80	77	75	72	67	62	59	57	56	52	49	47	64	80	82	83	84	86	87	47	88	72.8	24
9	88	91	92	91	91	91	90	90	86	83	90	89	83	80	75	72	64	64	72	76	80	85	88	87	64	92	***83.3***	24
10	88	88	89	90	90	90	89	84	74	69	59	53	48	46	45	42	44	40	42	49	61	69	69	70	40	90	66.2	24
11	68	70	76	84	85	80	77	75	78	76	69	62	63	72	81	74	66	69	70	75	81	87	86	79	62	87	75.1	24
12	82	83	84	85	85	77	71	69	67	61	57	60	62	67	67	70	60	57	59	70	85	89	90	91	57	91	72.8	24
13	91	90	91	88	83	75	70	62	55	52	44	40	33	32	32	33	32	31	32	36	54	63	72	77	31	91	57.0	24
14	65	76	86	89	90	74	59	53	54	54	58	54	44	36	36	42	49	67	70	73	84	89	90	91	36	91	66.0	24
15	92	92	91	92	87	81	72	68	62	58	50	43	35	32	31	30	27	24	25	22	26	32	38	44	22	92	52.3	24
16	49	50	54	60	62	59	61	53	46	45	49	55	58	58	57	56	66	72	77	80	82	81	79	79	45	82	62.0	24
17	80	80	80	77	76	76	77	79	74	81	71	76	76	73	64	57	53	49	47	50	60	70	72	71	47	81	69.5	24
18	70	71	73	76	79	69	61	56	51	47	43	44	43	37	34	35	43	45	52	69	75	82	85	87	34	87	59.5	24
19	85	91	92	***93***	92	84	77	71	61	49	46	42	37	34	28	31	29	27	25	27	35	56	63	69	25	***93***	56.0	24
20	76	82	87	90	91	83	59	39	34	30	27	22	20	19	***16***	***16***	17	17	21	30	41	53	62	76	***16***	91	46.2	24
21	85	87	90	91	92	85	65	51	37	28	27	27	26	28	33	39	39	45	49	57	64	73	86	90	26	92	58.1	24
22	92	90	90	90	91	89	74	64	56	54	53	46	45	40	43	49	62	55	58	67	78	85	90	87	40	92	68.7	24
23	90	***93***	92	92	92	88	74	63	63	57	52	43	38	35	36	34	39	40	41	50	61	62	72	91	34	***93***	62.4	24
24	92	92	92	***93***	92	92	91	90	85	80	78	70	68	64	62	57	61	64	68	71	73	83	90	89	57	***93***	79.0	24
25	88	90	89	90	91	90	89	91	87	86	82	78	73	71	65	63	66	67	77	80	80	89	89	87	63	91	81.6	24
26	90	92	***93***	***93***	***93***	***93***	***93***	77	66	65	56	55	53	48	46	56	69	68	67	72	85	90	87	86	46	***93***	74.7	24
27	86	88	91	92	***93***	87	79	66	58	51	39	34	33	33	31	30	31	31	36	38	50	69	79	82	30	***93***	58.6	24
28	86	86	91	91	***93***	79	60	52	45	49	42	35	37	45	35	35	34	42	68	86	90	***93***	***93***	***93***	34	***93***	65.0	24
29	***93***	92	91	91	92	87	86	85	74	58	51	46	43	41	39	35	32	32	35	45	60	70	76	78	32	***93***	63.8	24
30	76	78	81	77	70	67	65	60	57	54	47	42	42	40	36	39	41	46	52	58	60	61	65	68	36	81	57.6	24
HOURLY MAX	93	93	93	93	93	93	93	91	87	86	90	89	83	80	81	74	69	72	80	86	90	93	93	93				
HOURLY AVG	79.6	81.6	83.1	84.3	84.6	79.4	72.2	66.0	60.2	56.1	51.6	47.8	45.2	43.8	42.2	42.0	42.5	44.9	49.1	54.8	63.4	71.2	75.6	77.6				

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 June 2016

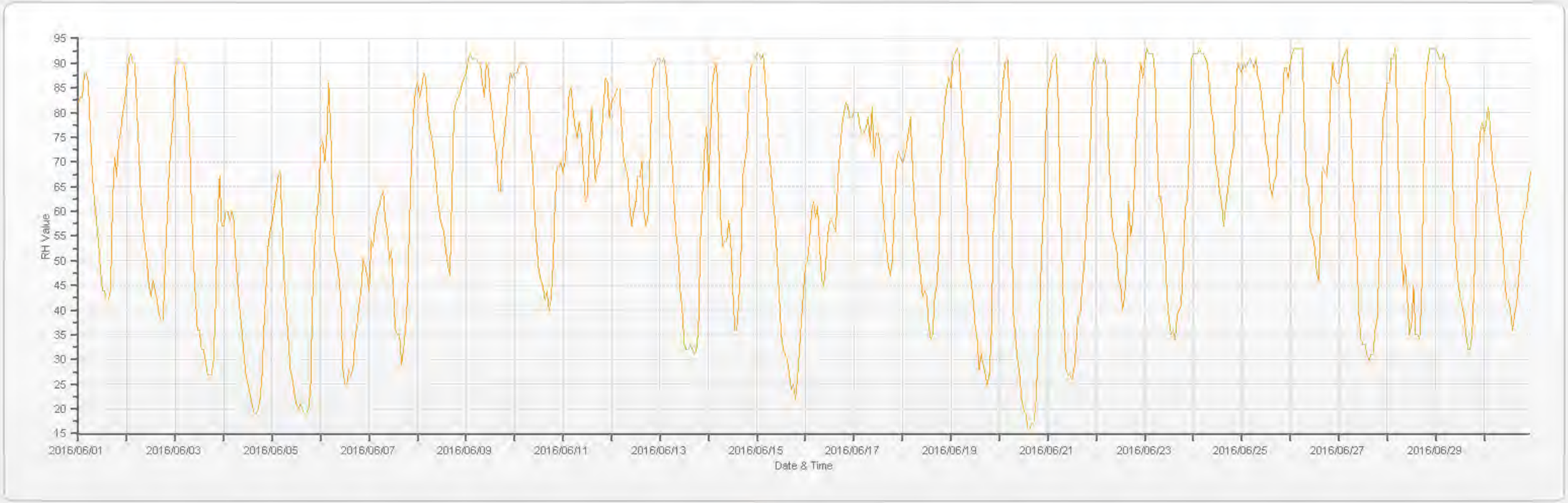


Hour of th
720

MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	16	%	@ HOUR(S)	14 , 15	ON DAY(S)	20 , 20	
MAXIMUM 1-HR AVERAGE:	93	%	@ HOUR(S)	VAR	ON DAY(S)	VAR	
MAXIMUM 24-HR AVERAGE:	83.3	%			ON DAY(S)	9	
					VAR-VARIOUS		
			OPERATIONAL TIME:			720	HRS
			AMD OPERATION UPTIME:			100.0	%
STANDARD DEVIATION:	21.38		MONTHLY AVERAGE:			62	%

RH[%RH] Station: LICA MASKWA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



BAROMETRIC PRESSURE

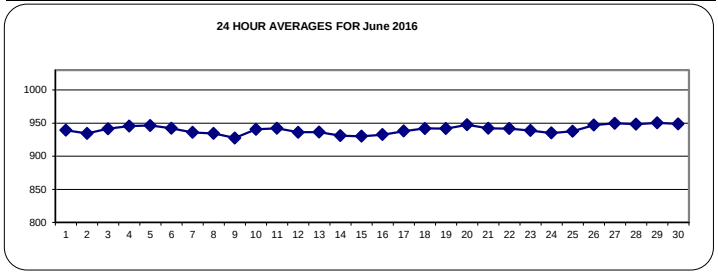
BAROMETRIC PRESSURE (BP) hourly averages in millibar

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	943	943	943	942	941	941	941	942	941	941	941	940	939	939	938	938	937	937	936	936	936	936	936	936	936	943	939	24
2	935	935	934	934	934	934	935	935	935	935	935	934	934	934	934	933	933	933	933	933	934	935	935	936	933	936	934	24
3	937	937	937	937	938	939	940	940	941	942	942	943	943	943	943	943	944	944	944	944	944	944	944	944	937	944	942	24
4	944	944	945	945	945	946	946	947	947	947	947	946	946	946	946	946	945	945	945	945	945	945	945	945	944	947	946	24
5	945	945	945	945	945	947	947	948	948	948	948	947	947	947	947	946	946	946	946	946	946	945	946	946	945	948	946	24
6	946	945	945	945	945	945	946	945	945	945	944	944	943	942	941	940	940	939	939	938	938	937	936	936	936	946	942	24
7	937	937	936	935	935	935	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	935	935	935	935	937	936	24
8	935	935	935	935	935	936	936	936	936	936	936	936	937	936	935	935	933	933	933	932	932	931	931	931	931	937	934	24
9	930	929	928	928	926	926	***925***	***925***	***925***	***925***	***925***	***925***	926	927	927	927	928	928	929	929	930	931	931	932	***925***	932	928	24
10	933	934	934	935	936	938	939	940	941	942	942	942	943	943	944	944	943	943	943	944	943	943	944	945	933	945	941	24
11	945	945	944	943	944	945	945	945	944	944	945	944	944	943	941	941	941	940	939	939	938	937	937	937	937	945	942	24
12	937	936	936	936	936	936	937	937	937	937	936	936	936	935	936	935	936	936	936	937	936	936	937	936	935	937	936	24
13	937	937	937	937	937	937	938	938	938	938	938	937	937	937	937	936	936	936	935	935	934	934	933	933	933	938	936	24
14	934	933	933	932	931	931	931	931	931	931	931	931	931	931	931	931	931	932	931	931	931	930	929	929	929	934	931	24
15	928	927	927	926	927	928	929	930	930	931	931	932	932	932	932	932	932	931	931	931	932	932	932	932	926	932	930	24
16	932	932	932	932	932	933	933	934	934	934	934	933	933	933	932	933	932	932	933	932	932	932	932	933	932	934	933	24
17	933	933	933	933	933	933	934	934	935	936	937	938	939	940	941	942	942	942	942	942	942	942	942	942	933	942	938	24
18	942	941	942	942	942	943	943	944	944	944	944	944	943	942	942	942	942	941	941	941	940	940	939	939	939	944	942	24
19	940	939	938	938	938	939	940	940	941	941	941	941	942	942	943	943	943	943	944	944	945	945	945	946	938	946	942	24
20	946	947	947	947	947	948	949	949	950	950	950	949	949	949	948	948	947	947	946	946	946	945	945	944	944	950	947	24
21	944	944	943	943	943	943	944	944	944	944	943	943	943	942	942	941	941	941	941	941	941	941	941	940	940	944	942	24
22	940	941	941	941	941	941	942	942	943	943	943	943	943	942	942	942	942	942	942	941	942	941	941	941	940	943	942	24
23	941	940	940	940	940	940	940	941	941	940	940	940	939	939	938	938	938	937	937	937	936	936	936	936	936	941	939	24
24	935	934	934	934	934	934	934	934	934	935	935	935	936	936	936	936	936	936	936	936	936	936	936	936	934	936	935	24
25	935	935	935	935	935	936	936	936	937	937	937	937	938	938	939	938	939	939	940	941	941	941	942	942	935	942	938	24
26	943	943	943	944	944	945	946	947	948	948	948	949	948	949	948	949	948	948	949	949	949	949	949	949	943	949	947	24
27	949	949	949	949	950	950	951	951	951	951	951	951	951	950	950	950	949	949	949	949	949	949	948	948	948	951	950	24
28	948	948	948	948	948	949	949	949	950	950	950	949	949	948	948	948	947	948	948	947	947	947	948	948	947	950	948	24
29	948	948	948	948	949	950	950	951	***952***	***952***	***952***	***952***	***952***	***952***	***952***	951	951	951	951	951	951	951	951	951	948	***952***	***951***	24
30	951	951	950	950	950	951	951	951	951	951	951	950	949	948	948	948	948	947	947	946	946	945	945	945	945	951	949	24
HOURLY MAX	951	951	950	950	950	951	951	951	952	952	952	952	952	952	952	951	951	951	951	951	951	951	951	951				
HOURLY AVG	940	940	939	939	939	940	940	941	941	941	941	941	941	941	941	940	940	940	940	940	940	940	940	940				

STATUS FLAG CODES

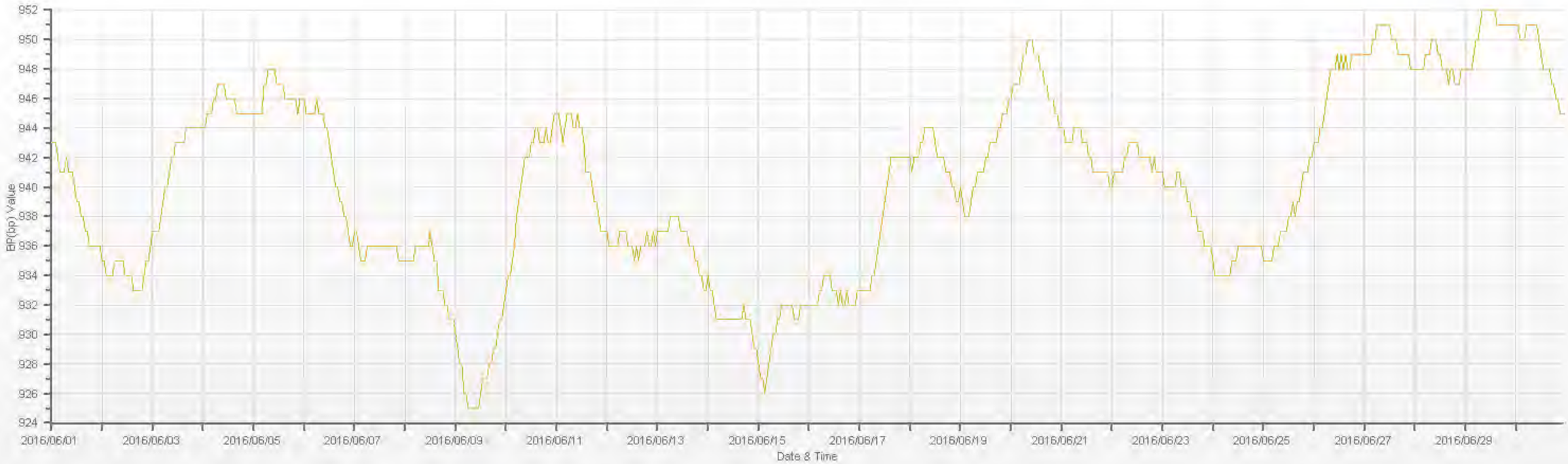
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	925	MB	@ HOUR(S)	VAR	ON DAY(S)	9	
MAXIMUM 1-HR AVERAGE:	952	MB	@ HOUR(S)	VAR	ON DAY(S)	29	
MAXIMUM 24-HR AVERAGE:	951	MB			ON DAY(S)	29	
					VAR-VARIOUS		
			OPERATIONAL TIME:			720	HRS
			AMD OPERATION UPTIME:			100.0	%
STANDARD DEVIATION:	6.31		MONTHLY AVERAGE:			940	MB

BP(bp)[mb] Station: LICA MASKWA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



AMBIENT TEMPERATURE

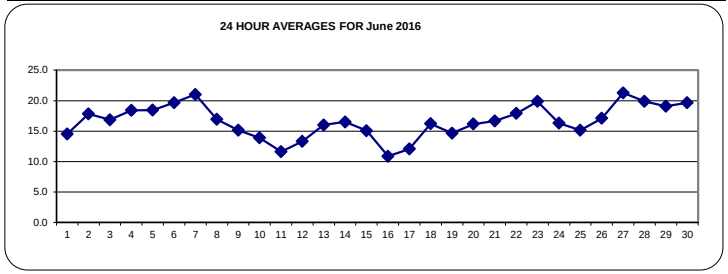
AMBIENT TEMPERATURE (AmbTPX) hourly averages in Degrees Celsius

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	9.0	8.9	8.7	7.5	5.7	7.2	11.6	14.3	15.8	17.7	18.3	20.0	20.7	20.5	21.2	20.9	20.7	17.2	16.4	15.7	13.4	12.9	12.1	11.6	5.7	21.2	14.5	24
2	10.6	8.8	9.2	9.9	9.6	12.4	15.3	17.4	19.8	21.3	22.5	23.6	23.6	23.0	24.0	24.1	24.4	24.1	23.1	20.4	17.6	15.7	14.1	13.4	8.8	24.4	17.8	24
3	12.2	11.8	11.4	11.1	10.7	11.5	12.8	14.0	17.4	19.7	20.9	21.7	22.5	22.7	22.7	22.6	22.5	22.3	21.6	20.3	16.7	12.3	10.6	12.6	10.6	22.7	16.9	24
4	12.1	11.6	11.7	12.5	12.5	14.6	17.2	18.9	20.2	21.4	22.3	22.9	23.5	23.8	23.9	24.1	23.9	23.6	22.7	20.8	17.6	14.7	12.8	12.0	11.6	24.1	18.4	24
5	11.7	11.2	10.3	9.2	8.8	13.1	16.4	18.8	20.7	22.5	23.5	23.8	24.6	24.6	24.7	25.1	25.4	24.9	23.9	22.2	16.3	13.3	14.3	13.7	8.8	25.4	18.5	24
6	11.4	11.1	12.1	11.0	8.3	11.7	16.1	18.0	19.2	21.5	23.7	25.6	26.2	26.8	26.3	27.0	26.5	24.5	23.8	22.0	20.9	19.1	19.1	19.4	8.3	27.0	19.6	24
7	20.1	18.1	17.9	16.8	16.5	17.1	17.9	18.3	21.1	22.3	24.9	24.6	25.1	25.0	26.4	27.1	27.3	27.0	25.6	23.7	19.8	15.8	13.6	12.4	12.4	27.3	21.0	24
8	11.3	11.0	10.5	10.5	10.8	13.4	15.3	16.0	17.3	18.8	20.3	21.2	21.8	21.7	22.9	23.8	22.9	19.8	17.1	17.2	16.3	15.9	15.6	15.5	10.5	23.8	17.0	24
9	15.3	15.2	15.2	15.3	15.2	15.2	15.6	16.0	17.2	17.5	16.4	15.6	15.7	15.9	17.1	17.7	18.5	17.6	15.3	13.6	12.1	10.8	9.9	9.4	9.4	18.5	15.1	24
10	9.0	8.9	8.6	8.6	8.4	8.4	8.6	9.7	12.5	13.4	16.0	17.4	18.5	18.8	19.0	20.1	19.4	20.2	19.6	17.5	13.5	11.6	12.6	12.7	8.4	20.2	13.9	24
11	13.1	12.4	11.0	9.0	9.4	10.5	10.8	10.8	9.6	11.8	11.6	12.9	12.3	11.7	11.0	12.2	14.4	13.7	13.4	12.9	11.5	11.1	11.4	10.7	9.0	14.4	11.6	24
12	9.9	9.7	9.8	9.6	9.4	11.1	12.6	13.2	14.2	15.1	16.3	15.8	15.3	14.8	15.8	15.7	18.2	18.1	17.3	14.4	11.6	10.9	10.6	10.0	9.4	18.2	13.3	24
13	9.9	9.7	9.0	8.8	8.8	11.0	12.5	14.7	17.0	18.1	19.4	20.7	22.1	22.3	22.4	22.2	22.5	22.1	21.5	20.2	15.5	13.0	11.3	9.6	8.8	22.5	16.0	24
14	13.4	12.6	10.9	9.3	9.8	13.0	16.4	18.0	18.2	19.4	18.3	20.7	24.0	25.2	24.9	22.7	20.0	16.9	15.9	15.3	13.3	12.6	12.4	12.5	9.3	25.2	16.5	24
15	12.7	12.6	12.0	11.3	10.6	9.7	10.5	11.5	13.4	14.4	15.8	17.4	18.4	19.0	19.4	19.8	20.1	20.3	19.0	18.3	16.2	14.1	12.9	12.1	9.7	20.3	15.1	24
16	11.0	10.3	9.2	7.6	7.3	8.6	8.8	11.1	14.4	15.8	15.4	14.2	13.3	12.7	12.6	12.1	11.0	10.5	9.6	8.8	8.4	9.0	9.6	9.6	7.3	15.8	10.9	24
17	9.3	8.4	8.1	8.6	9.1	9.6	9.9	10.0	11.2	10.8	13.6	12.8	13.6	13.5	14.6	15.0	15.9	16.9	16.8	15.8	13.4	11.1	10.7	10.8	8.1	16.9	12.1	24
18	10.6	10.1	9.6	8.7	8.2	11.6	14.6	17.4	19.2	20.7	21.6	20.8	20.9	23.0	22.9	22.2	21.0	21.0	19.3	16.8	14.4	12.3	11.3	11.0	8.2	23.0	16.2	24
19	11.6	10.2	9.1	8.4	8.8	11.6	12.7	13.9	15.4	16.5	17.6	18.0	18.3	19.2	20.2	19.1	20.0	20.2	20.1	18.9	15.9	10.6	8.5	7.0	7.0	20.2	14.7	24
20	5.3	4.0	3.0	***2.6***	2.7	8.0	14.0	17.0	19.1	20.7	22.0	23.1	23.8	24.4	24.9	25.3	25.1	25.0	23.9	21.4	17.7	14.1	12.1	8.5	***2.6***	25.3	16.2	24
21	6.6	5.7	4.7	3.9	3.6	8.4	14.1	18.6	21.8	23.8	24.3	25.4	26.0	26.6	25.0	24.9	24.8	23.0	20.2	18.0	16.3	14.1	10.9	9.4	3.6	26.6	16.7	24
22	9.0	10.7	10.7	10.1	10.4	11.1	16.2	18.6	20.5	21.3	22.2	23.4	24.5	25.9	24.9	22.9	22.1	21.8	20.6	20.2	17.9	15.5	14.5	14.6	9.0	25.9	17.9	24
23	13.4	12.4	12.7	12.8	11.8	13.2	16.7	19.9	20.5	22.0	23.3	24.9	25.5	26.5	26.6	26.7	25.2	25.2	24.8	22.8	19.6	18.5	17.2	14.5	11.8	26.7	19.9	24
24	14.1	13.8	13.6	13.6	13.6	13.5	13.5	14.0	15.8	16.8	16.9	18.8	19.8	20.9	21.6	22.0	19.8	19.3	18.7	17.4	15.6	13.5	11.8	12.6	11.8	22.0	16.3	24
25	12.5	11.5	11.8	11.9	12.0	13.2	13.7	13.8	15.5	15.8	16.1	16.8	17.5	17.6	18.9	19.3	19.6	19.7	17.2	16.4	14.7	12.4	12.6	13.2	11.5	19.7	15.2	24
26	11.3	9.8	9.0	8.6	8.7	9.9	12.3	17.2	19.8	20.3	23.2	22.6	23.6	24.7	25.6	22.9	19.7	19.9	19.7	19.0	17.0	15.1	15.7	15.0	8.6	25.6	17.1	24
27	14.4	14.3	14.1	13.7	13.8	15.8	18.0	20.9	23.1	25.1	26.7	27.3	27.9	27.4	***28.9***	28.7	28.0	27.5	26.1	24.8	20.8	16.3	14.0	13.0	13.0	***28.9***	***21.3***	24
28	12.6	12.8	11.4	10.7	11.1	16.2	21.1	23.8	26.1	24.3	26.8	28.2	27.7	23.9	26.5	26.8	26.5	23.8	19.9	17.4	16.6	15.3	14.6	13.4	10.7	28.2	19.9	24
29	12.9	13.1	12.7	12.1	11.7	13.7	13.7	15.2	17.8	22.2	24.1	24.6	25.5	25.7	25.4	26.2	26.1	25.9	24.9	22.1	18.3	16.1	14.4	13.2	11.7	26.2	19.1	24
30	12.8	12.1	11.9	13.5	14.8	15.8	16.9	19.3	21.1	22.4	24.5	25.2	25.5	26.2	26.3	25.6	24.4	23.4	21.9	20.1	18.4	16.9	16.5	16.1	11.9	26.3	19.7	24
HOURLY MAX	20.1	18.1	17.9	16.8	16.5	17.1	21.1	23.8	26.1	25.1	26.8	28.2	27.9	27.4	28.9	28.7	28.0	27.5	26.1	24.8	20.9	19.1	19.1	19.4				
HOURLY AVG	11.6	11.1	10.7	10.2	10.1	12.0	14.2	16.0	17.8	19.1	20.3	21.0	21.6	21.8	22.2	22.2	21.9	21.2	20.0	18.5	15.9	13.8	12.9	12.3				

STATUS FLAG CODES

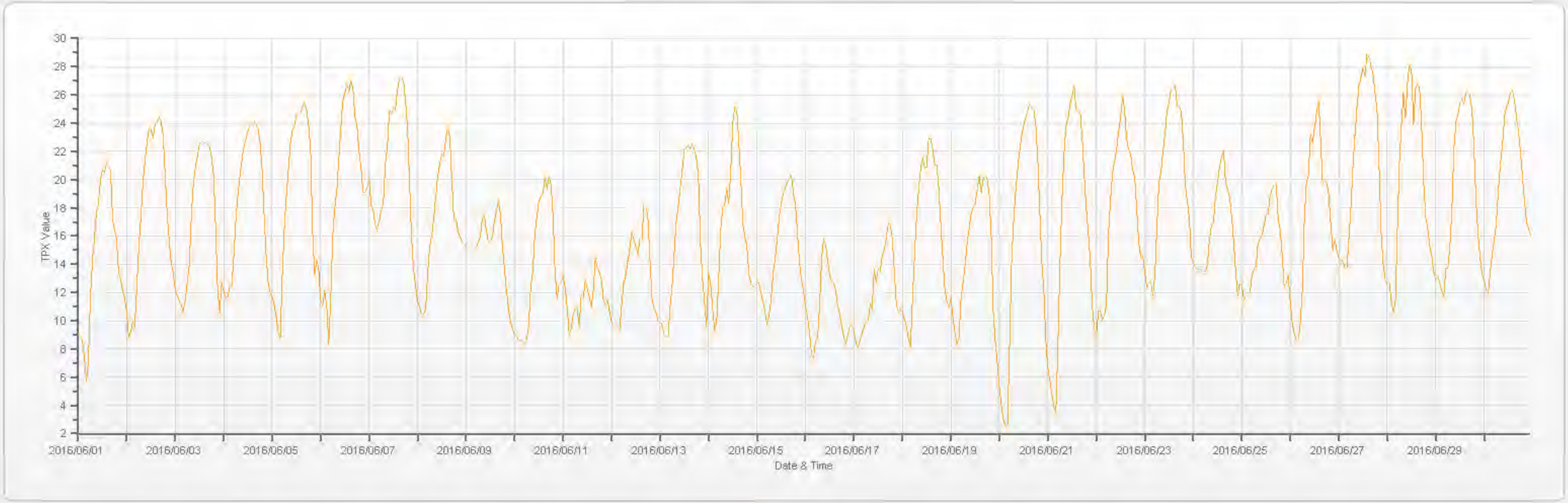
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	2.6	°C	@ HOUR(S)	3	ON DAY(S)	20	
MAXIMUM 1-HR AVERAGE:	28.9	°C	@ HOUR(S)	14	ON DAY(S)	27	
MAXIMUM 24-HR AVERAGE:	21.3	°C			ON DAY(S)	27	
					VAR-VARIOUS		
			OPERATIONAL TIME:			720	HRS
			AMD OPERATION UPTIME:			100.0	%
STANDARD DEVIATION:	5.56		MONTHLY AVERAGE:			16.6	°C

TPX[C°] Station: LICA MASKWA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



PRECIPITATION

PRECIPITATION hourly averages (mm)

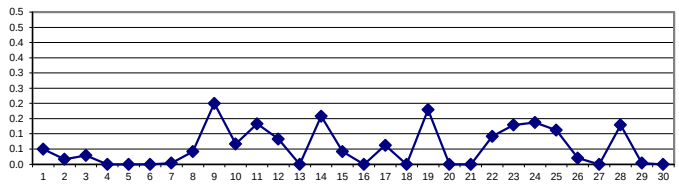
MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.4	0.0	24
3	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	24
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.0	0.0	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	0.1	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	0.1	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	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	24
9	0.1	***4.3***	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	***4.3***	***0.2***	24
10	0.1	0.3	0.3	0.5	0.2	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	0.5	0.1	24
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.2	0.0	0.0	0.2	0.4	1.1	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	1.1	0.1	24
12	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	0.2	0.0	0.0	0.0	0.9	0.8	0.0	0.0	0.0	0.0	0.9	0.1	24
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
14	0.2	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.5	0.0	0.2	2.2	0.0	2.2	0.2	24
15	0.5	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	24
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.5	0.1	0.6	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	0.6	0.1	24
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
19	4.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2	0.2	24
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.3	0.0	0.3	0.4	0.3	0.6	0.0	0.6	0.1	24
23	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	0.0	0.0	0.0	0.0	0.9	2.0	0.0	2.0	0.1	24
24	0.1	0.0	0.3	0.9	0.1	0.7	0.5	0.6	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	0.9	0.1	24
25	0.0	0.0	0.0	0.0	0.0	0.0	0.1	2.5	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	2.5	0.1	24
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.1	0.1	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	2.5	0.5	0.0	0.0	0.0	0.0	0.0	2.5	0.1	24
29	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	0.0	0.1	0.0	24
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
HOURLY MAX	4.2	4.3	0.3	0.9	0.2	0.7	0.5	2.5	1.1	0.5	0.1	0.6	0.2	0.4	1.1	0.3	0.2	1.2	2.5	0.9	0.8	0.4	0.9	2.2				
HOURLY AVG	0.2	0.2	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.1	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

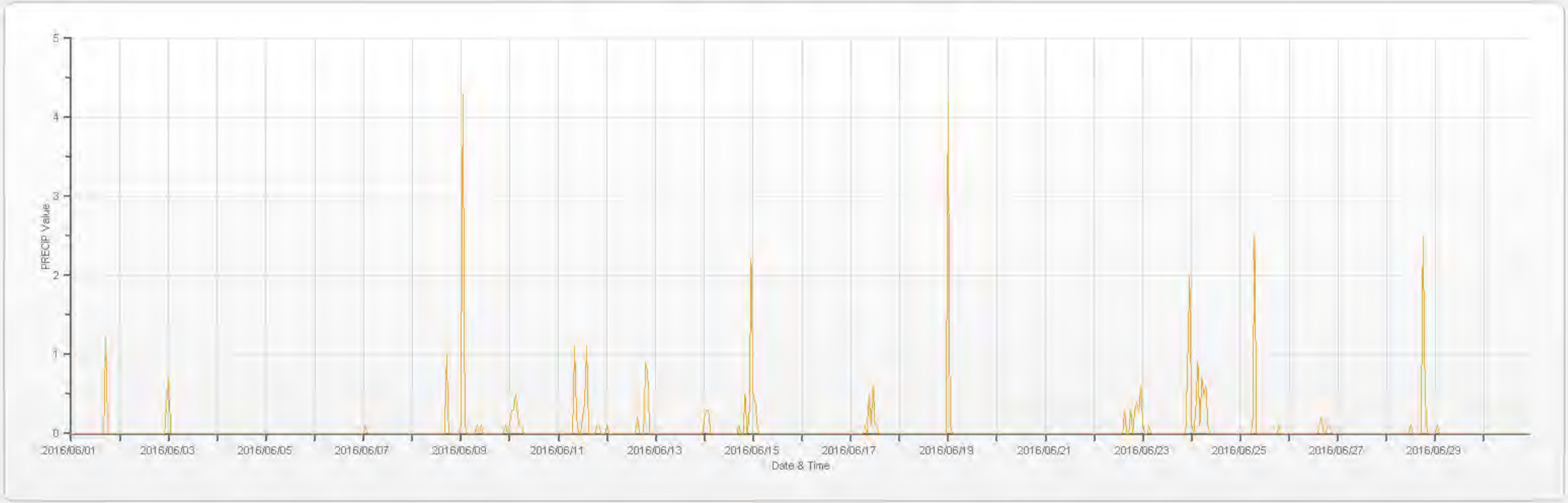
24 HOUR AVERAGES FOR June 2016



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:		0.0	MM	@ HOUR(S)	VAR	ON DAY(S)	ALL
MAXIMUM 1-HR AVERAGE:		4.3	MM	@ HOUR(S)	1	ON DAY(S)	9
MAXIMUM 24-HR AVERAGE:		0.2	MM			ON DAY(S)	9
MONTHLY TOTAL	40.6	MM				VAR-VARIOUS	
				OPERATIONAL TIME:		720	HRS
				AMD OPERATION UPTIME:		100.0	%
STANDARD DEVIATION:		0.31		MONTHLY AVERAGE:		0.1	MM

PRECIP[mm] Station: LICA MASKWA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



APPENDIX II
EQUIPMENT CALIBRATION RESULTS

SULPHUR DIOXIDE

API 101E Sulphur Dioxide Analyzer Calibration

Date:	June 15, 2016	**Barometric Pressure:**	0.919 atm
Company/Airshed:	LICA	**Station Temperature °C:**	22
Location/Station Name:	Maskwa	**Weather Conditions:**	Mix of sun and clouds
Parameter:	Sulphur Dioxide	**Calibration Purpose:**	routine monthly
Start Time 24 hr. (mst):	9:49	**Performed By/Reviewer:**	Alex Yakupov / Tom Bourque
End Time 24 hr. (mst):	13:29	**Cal Gas Expiry Date:**	December 2, 2023
Calibration Method:	Gas Dilution	**Converter Model & s/n (if applicable):**	n/a

Analyzer:

Serial Number:	508	**Range ppb:**	1000
Last Calibration Date:	May 10, 2016	**As Found C.F.:**	0.984
Previous C.F.:	0.996	**New C.F.:**	0.997

Calibrator:

Flow Meter ID's:	n/a
Make & Model:	SABIO 2010 D
Serial #:	11900613
Cal Gas Cylinder I.D. # :	LL119346
Cal Gas Conc. (ppm):	50.0

Standard Calibration Points for Ranges

Point	Sulphur Dioxide Standard Calibration Points
High	**780**
Mid	**380**
Low	**190**

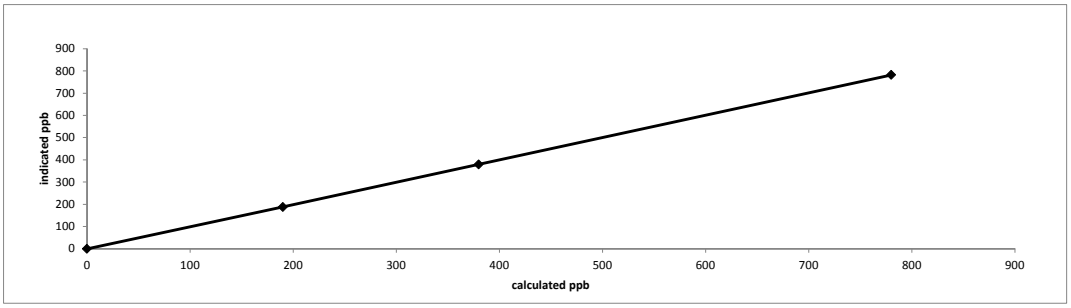
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors (C.F.):
Point	**Diluent**	**Cal Gas**	**Total**	**(ppb)**	**(ppb)**	
as found zero	4999	0.00	4999	0.0	4.0	N/A
as found high	4922	78.00	5000	780.0	797.0	0.984
adjusted zero	4999	0.00	4999	0.0	0.0	n/a
adjusted high	4922	78.00	5000	780.0	782.0	0.997
mid	4962	38.00	5000	380.0	379.0	1.003
low	4981	19.00	5000	190.0	188.0	1.011
calibrator zero	4999	0.00	4999	0.0	0.0	n/a
					Average C.F.=	1.004

Linear Regression/Calibration Results:

		LIMITS
Correlation Coeffecient =	**1.000**	**> or = 0.995**
Slope =	**0.997**	**.95-1.05**
b (Intercept as % of full scale)=	**0.14%**	**± 3% F.S.**
% change in C.F. from last cal=	**1.24%**	**± 10%**

API 101E Sulphur Dioxide Analyzer Calibration

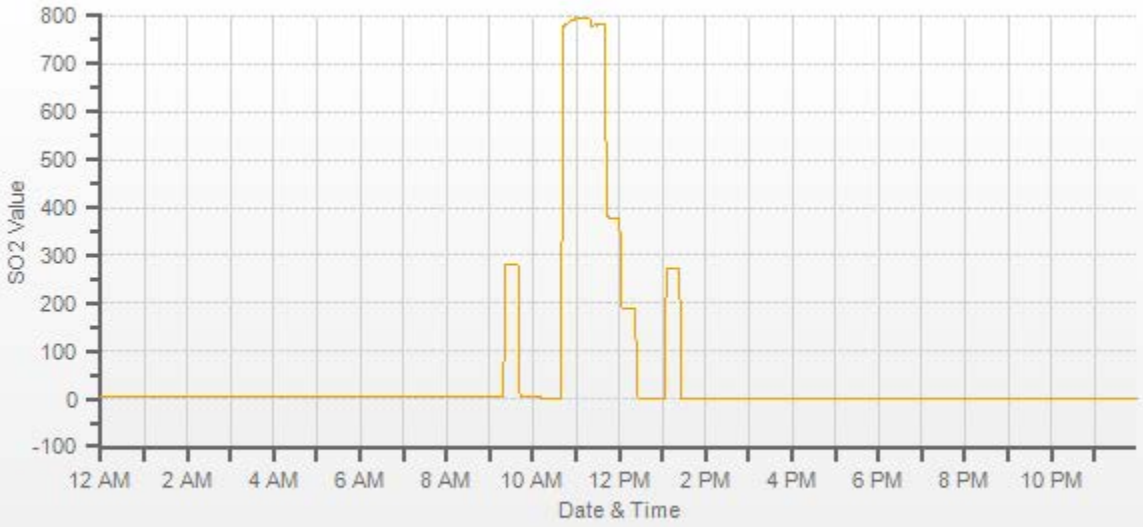


	As found:		**As left:**
SLOPE:	1.032	SLOPE:	1.016
OFFSET:	95.8	OFFSET:	103.7
HVPS:	479	HVPS:	479
RCELL TEMP:	50.0	RCELL TEMP:	50.0
BOX TEMP:	31.2	BOX TEMP:	31.9
PMT TEMP:	7.7	PMT TEMP:	7.7
IZS TEMP:	45.0	IZS TEMP:	45.0
Converter Temp:	n/a	Converter Temp:	n/a
PRES:	24.3	PRES:	24.3
SAMP FL:	587	SAMP FL:	588
UV LAMP:	3262.2	UV LAMP:	3263.5
LAMP RATIO:	93.2	LAMP RATIO:	93.3
STR. LGT	49.4	STR. LGT	52.6
DRK PMT:	10.2	DRK PMT:	10.7
DRK LMP:	-0.8	DRK LMP:	-0.8
Internal Span:	263.7	Internal Span:	271

Comments:

Sample inlet filter changed. ZERO air charcoal filter renewed.

SO2[ppb] Station: LICA MASKWA Daily: 2016/06/15 Type: AVG 1 Min. [1 Min.]



SO2[ppb]

HYDROGEN SULPHIDE

API 101E Hydrogen Sulphide Analyzer Calibration

Date:	June 15, 2016	**Barometric Pressure:**	0.919 atm
Company/Airshed:	LICA	**Station Temperature °C:**	22
Location/Station Name:	Maskwa	**Weather Conditions:**	Mix of sun and clouds
Parameter:	Hydrogen Sulphide	**Calibration Purpose:**	routine monthly
Start Time 24 hr. (mst):	9:49	**Performed By/Reviewer:**	Alex Yakupov / Tom Bourque
End Time 24 hr. (mst):	13:51	**Cal Gas Expiry Date:**	July 15, 2017
Calibration Method:	Gas Dilution	**Converter Model & s/n (if applicable):**	n/a

Analyzer:

Serial Number:	511	**Range ppb:**	100
Last Calibration Date:	May 10, 2016	**As Found C.F.:**	1.002
Previous C.F.:	1.008	**New C.F.:**	0.999

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

Standard Calibration Points for Ranges

Point	Hydrogen Sulphide Standard Calibration Points
High	**78**
Mid	**38**
Low	**19**

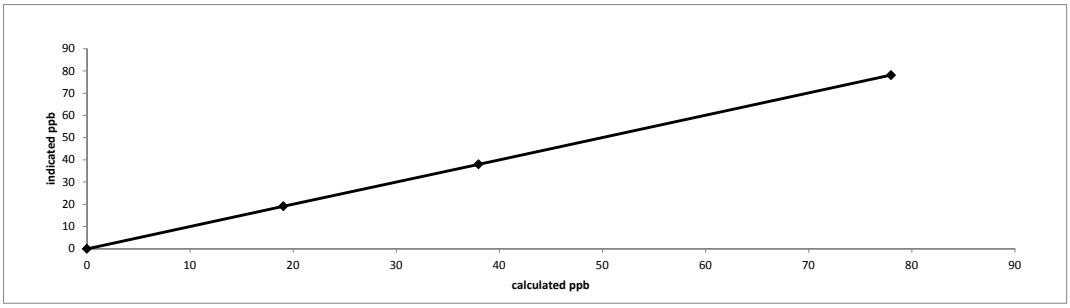
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

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	1.0	N/A
as found high	7443	58.50	7502	78.0	78.8	1.002
adjusted zero	7500	0.00	7500	0.0	0.0	n/a
adjusted high	7443	58.50	7502	78.0	78.1	0.999
mid	7475	28.50	7504	38.0	38.0	1.000
low	7490	14.30	7504	19.1	19.1	0.998
calibrator zero	7498	0.00	7498	0.0	0.0	n/a
					Average C.F.=	0.999

Linear Regression/Calibration Results:

		LIMITS
Correlation Coeffecient =	**1.000**	**> or = 0.995**
Slope =	**0.999**	**.95-1.05**
b (Intercept as % of full scale)=	**0.00%**	**± 3% F.S.**
% change in C.F. from last cal=	**0.56%**	**± 10%**

API 101E Hydrogen Sulphide Analyzer Calibration

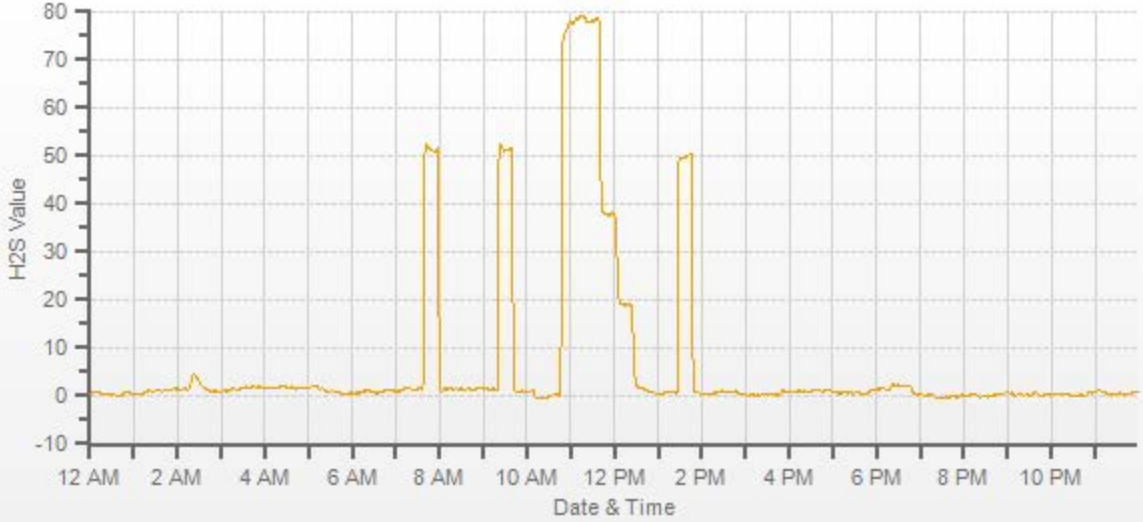


	As found:		**As left:**
SLOPE:	0.936	SLOPE:	0.934
OFFSET:	48.8	OFFSET:	49.9
HVPS:	616	HVPS:	616
RCELL TEMP:	50.0	RCELL TEMP:	50.0
BOX TEMP:	31.6	BOX TEMP:	32.2
PMT TEMP:	7.8	PMT TEMP:	7.9
IZS TEMP:	45.0	IZS TEMP:	45.0
Converter Temp:	315.5	Converter Temp:	315.5
PRES:	26.9	PRES:	26.8
SAMP FL:	635	SAMP FL:	638
UV LAMP:	3082.1	UV LAMP:	3080.8
LAMP RATIO:	96.3	LAMP RATIO:	96.3
STR. LGT	22.8	STR. LGT	23.3
DRK PMT:	36.1	DRK PMT:	36.3
DRK LMP:	6.9	DRK LMP:	7.0
Internal Span:	47.3	Internal Span:	51

Comments:

Sample inlet filter changed.

H2S[ppb] Station: LICA MASKWA Daily: 2016/06/15 Type: AVG 1 Min. [1 Min.]



H2S[ppb]

TOTAL HYDROCARBON

Thermo 51C Total Hydrocarbon Analyzer Calibration

Date:	June 16, 2016	**Barometric Pressure:**	0.921 atm
Company/Airshed:	LICA	**Station Temperature °C:**	23
Location/Station Name:	Maskwa	**Weather Conditions:**	A few clouds
Parameter:	Total Hydrocarbon	**Calibration Purpose:**	routine monthly
Start/End Time 24 hr. (mst):	9:34 / 13:08	**Performed By/Reviewer:**	Alex Yakupov / Tom Bourque
Calibration Method:	Gas Dilution	**Cal Gas Expiry Date:**	November 25, 2023

Analyzer:

Serial Number:	436609738	**Range ppm:**	50
Last Calibration Date:	May 10, 2016	**As Found C.F.:**	1.022
Previous Cal High Point C.F.:	1.002	**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_4/C_3H_8 Cylinder Conc. (ppm):	606.0	212.0
CH_4 as propane/total CH_4 equivilants (ppm):	583.0	1189.0

Standard Calibration Points for a Range of 50 ppm

Point	Target ppm
High	38
Mid	18
Low	9

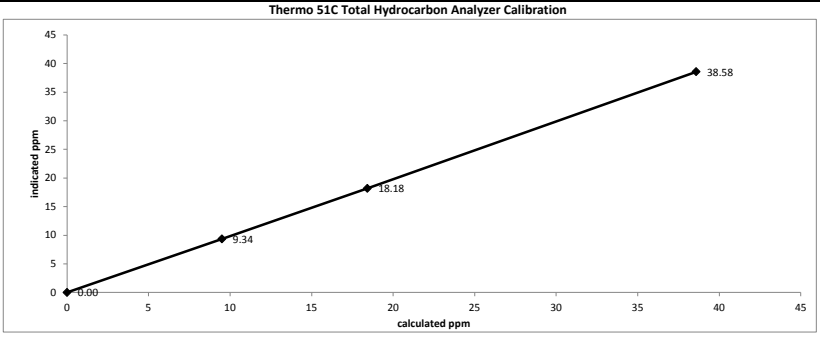
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors:
Point	**Diluent**	**Cal Gas**	**Total**	**(ppm)**	**(ppm)**	
as found zero	2000	0.00	2000	0.0	-0.08	n/a
as found high	1938	65.00	2003	38.58	37.68	1.022
adjusted zero	1999	0.00	1999	0.00	0.00	n/a
adjusted high	1938	65.00	2003	38.58	38.58	1.000
mid	1970	31.00	2001	18.42	18.18	1.013
low	1986	16.00	2002	9.50	9.34	1.017
calibrator zero	2000	0.00	2000	0.0	0.00	n/a
					Average C.F.=	1.010

Linear Regression/Calibration Results:

		LIMITS
Correlation Coeffecient =	**1.000**	**> or = 0.995**
Slope =	**0.999**	**.95-1.05**
b (Intercept as % of full scale)=	**0.23%**	**± 3% F.S.**
% change in C.F. from last cal=	**-1.98%**	**± 10%**

Thermo 51C Total Hydrocarbon Analyzer Calibration

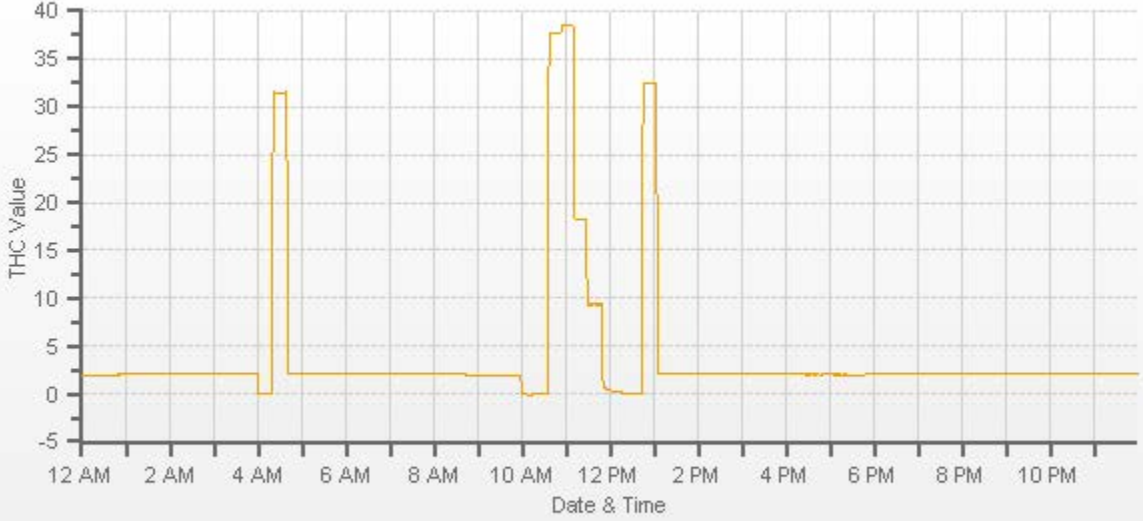


As found:		As left:	
H2 cylinder (psi):	1900	H2 cylinder (psi):	1900
H2 cylinder reg set (psi):	22	H2 cylinder reg set (psi):	22
Span Cylinder (psi):	100	Span Cylinder (psi):	100
Span Cylinder Reg Set (psi):	23	Span Cylinder Reg Set (psi):	23
Zero Air Gen Pressure:	35	Zero Air Gen Pressure:	35
measurement alarms:	None	measurement alarms:	None
service alarms:	None	service alarms:	None
cnt:	1035	cnt:	1450
rng:	1	rng:	1
try:	0	try:	0
flm:	185.1	flm:	185.7
det:	125.1	det:	125.3
Flame:	185	Flame:	185
Filter:	125	Filter:	125
Base:	125	Base:	125
Sample psi:	07.53	Sample psi:	07.51
Internal Air Pressure:	20	Internal Air	20
Internal Fuel Pressure:	12	Internal Fuel Pressure:	12
Intenal Pressure Gauge psi:	28	Intenal Pressure Gauge psi:	28
Internal Span:	32.16	Internal Span:	32.4

Comments:

Sample inlet filter changed. A new CH4 gas cylinder connected.

THC[ppm] Station: LICA MASKWA Daily: 2016/06/16 Type: AVG 1 Min. [1 Min.]



NITROGEN DIOXIDE

API 200A NO-NO2-NOx Analyzer Calibration

Date:	June 15, 2016	**Barometric Pressure:**	0.919 atm
Company/Airshed:	LICA	**Station Temperature °C:**	22
Location/Station Name:	Maskwa	**Weather Conditions:**	Mix of sun and clouds
Start/End Time 24 hr. (mst):	9:49 / 14:35	**Calibration Purpose:**	shut down
G.P.T. to be used for Ozone?	No	**Performed By/Reviewer:**	Alex Yakupov / Tom Bourque
Calibration Method:	Gas Dilution & Varying UV Lamp Power	**Cal Gas Expiry Date:**	December 2, 2023

Analyzer:

Serial Number:	1899
Last Calibration Date:	May 10, 2016
Range ppb:	1000

Correction Factors:

	Previous C.F.:	As Found C.F.:	New C.F.:
NO =	1.000	0.997	n/a
NO_2 =	1.000	0.998	n/a
NOx =	1.000	0.989	n/a

Calibrator:

Flow Meter ID's:	n/a	
Make & Model:	SABIO 2010 D	
Serial #:	11900613	
Cal Gas Cylinder I.D. # :	LL119346	
NO/NOx Gas Conc. (ppm):	50.0	50.0

Standard Calibration Points for a Range of: 1000 ppb

Point	Target NO (ppb)	Target NO_2 (ppb)	Cc Ozone ?
High	780	500	n/a
Mid	380	275	n/a
Low	190	100	n/a
Extra Point #1	n/a	n/a	n/a
Extra Point #2	n/a	n/a	n/a

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

Calibrator Flow Rates (cc/min)				Calculated NO	Calculated NOx	Indicated NO	Indicated NOx	NO C.F.	NOx C.F.
Point	**Diluent**	**Cal Gas**	**Total Flow**	**(ppb)**	**(ppb)**	**(ppb)**	**(ppb)**		
as found zero	4999	0.0	4999	0	0	2.0	2.0	n/a	n/a
as found high	4922	78.0	5000	780.0	780.0	784.0	791.0	0.997	0.989
mid	4962	38.00	5000	380.0	380.0	376.0	379.0	1.016	1.008
low	4981	19.00	5000	190.0	190.0	184.0	186.0	1.044	1.033
							Average C.F.=	1.019	1.010

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

Calibrator Flow Rates (cc/min)				Calibrator Setting	Indicated NO	Indicated NOx	Indicated NO_2	NO drop	NO_2 gain	NO_2 C.F.
Point	**Diluent**	**Cal Gas**	**Total Flow**	**volts or ppb**	**(ppb)**	**(ppb)**	**(ppb)**	**(ppb)**	**(ppb)**	**(ppb)**
NOx reference	4922	78.00	5000	0.0	782.0	789.0	6.0	2.0	6.0	
as found high NO2	4922	78.00	5000	480.0	300.0	789.0	489.0	482.0	483.0	0.998
gpt mid	4922	78.00	5000	265.0	511.0	788.0	277.0	271.0	271.0	1.000
gpt low	4922	78.00	5000	90.0	686.0	787.0	102.0	96.0	96.0	1.000
									Average NO_2 C.F.=	0.999

Linear Regression/Calibration Results:

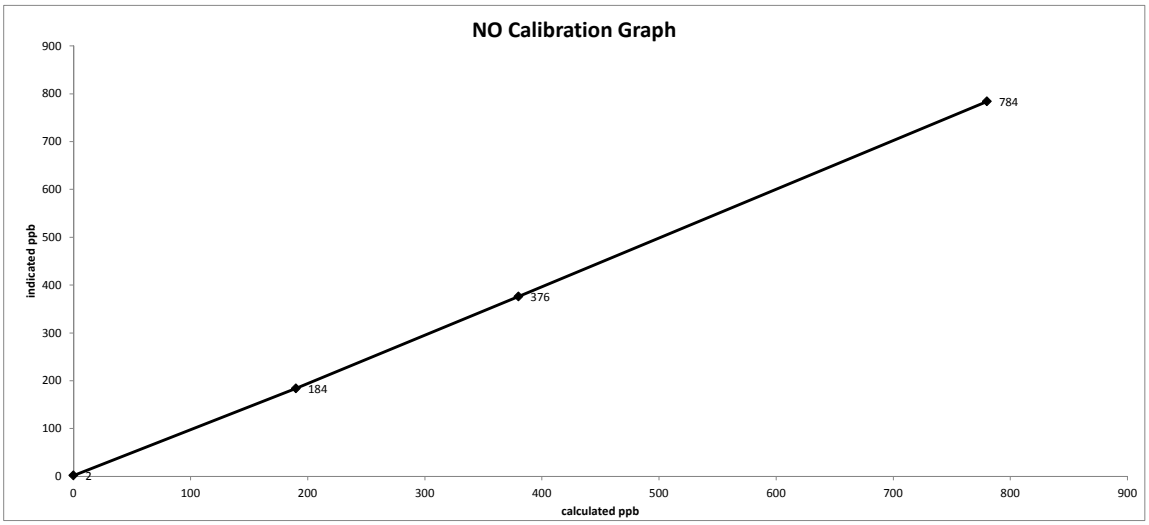
	NO	NOx	NO_2	LIMITS
Correlation Coeffecient =	**1.000**	**1.000**	**1.000**	**> or = 0.995**
Slope =	**0.994**	**0.986**	**1.004**	**0.90-1.10**
b (Intercept as % of full scale)=	**-0.28%**	**-0.28%**	**0.22%**	**± 3% F.S.**
% change in C.F. from last cal=	**0.26%**	**0.21%**	**1.14%**	**± 10%**
NO2 converter effeciency			**1.00**	**0.96 to 1.04**

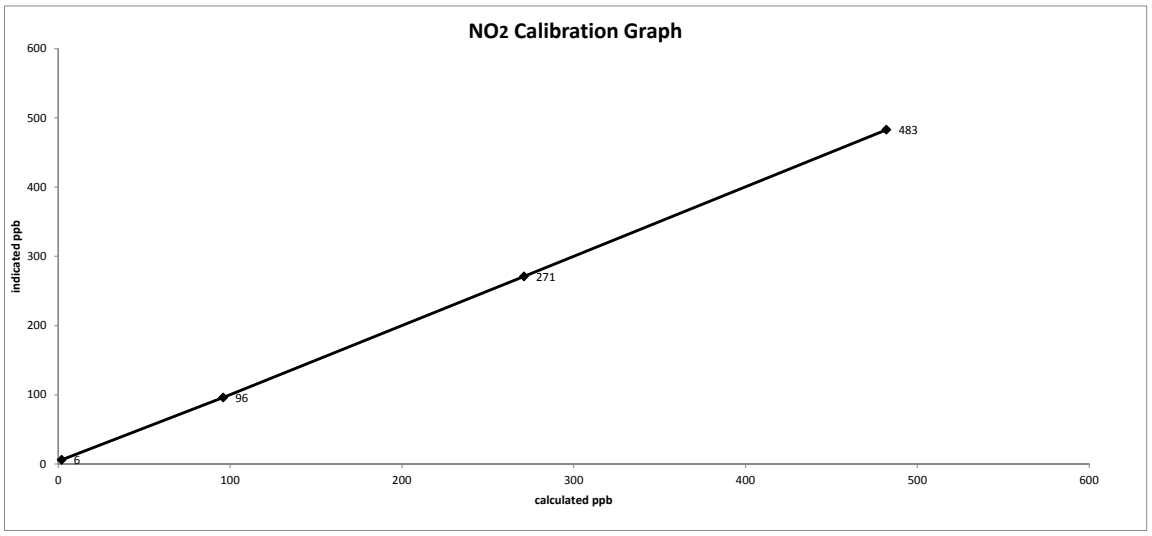
	As found:	As left:
NOx SLOPE:	0.909	n/a
NOx OFFS:	-0.1	n/a
NO SLOPE:	0.916	n/a
NO OFFS:	-2.5	n/a
SAMP FLW:	541	n/a
OZONE FL:	77	n/a
NORM PMT:	14.6	n/a
AZERO:	23.3	n/a
HVPS:	682	n/a
DCPS:	2580	n/a
RCELL:	49.7	n/a
BOX TEMP:	30.8	n/a
IZS TEMP:	40.2	n/a
MOLY TEMP:	316.6	n/a
RCEL:	5.6	n/a
SAMP:	25.4	n/a
Internal Span NO:	3.3	n/a
Internal Span NO2:	325.9	n/a
Internal Span NOx:	329.6	n/a

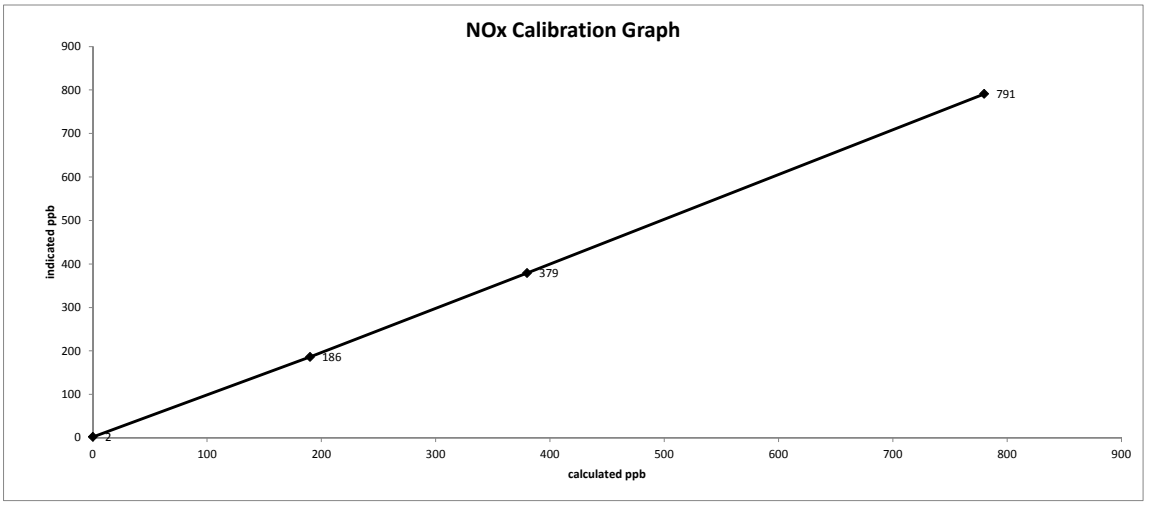
Comments:

Shutdowm calibration completed to remove Maxxam's analyzer and install back LICA's NOx analyzer, which was repaired in Calgary shop. No ZERO adjustment made. No High Point adjustment made. No NO2 adjustment made.

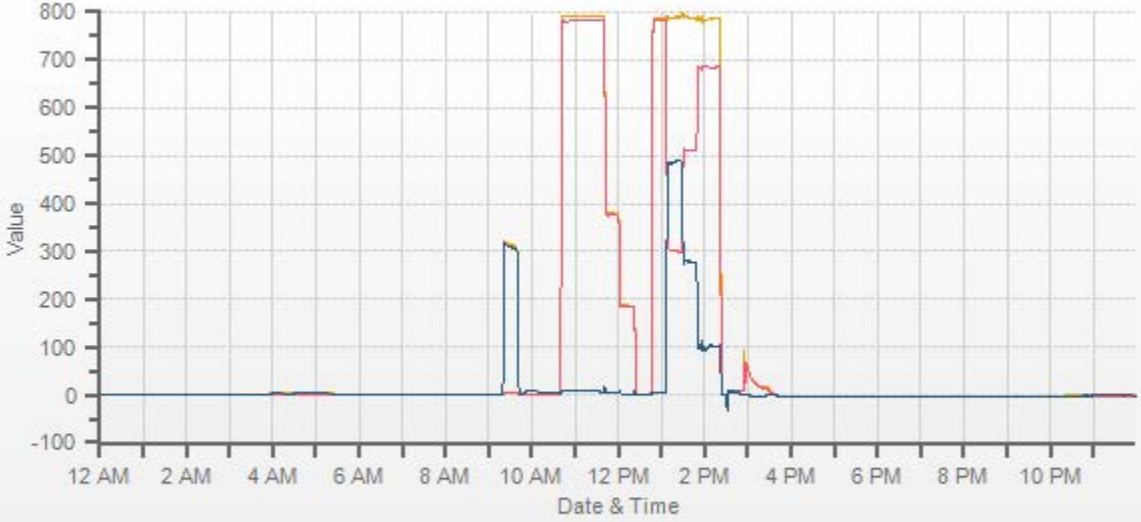
Date:	**June 15, 2016**	**Start/End Time 24 hr. (mst):**	**9:49 / 14:35**
Company/Airshed:	**LICA**	**Calibration Purpose:**	**shut down**
Location/Station Name:	**Maskwa**	**Calibration Method:**	**Gas Dilution & Varying UV Lamp Power**







Station: LICA MASKWA Daily: 2016/06/15 Type: AVG 1 Min. [1 Min.]



API 200E NO-NO2-NOx Analyzer Calibration

Date:	June 16, 2016	**Barometric Pressure:**	0.921 atm
Company/Airshed:	LICA	**Station Temperature °C:**	23
Location/Station Name:	Maskwa	**Weather Conditions:**	A few clouds
Start/End Time 24 hr. (mst):	9:43 / 16:23	**Calibration Purpose:**	installation
G.P.T. to be used for Ozone?	No	**Performed By/Reviewer:**	Alex Yakupov / Tom Bourque
Calibration Method:	Gas Dilution & Varying UV Lamp Power	**Cal Gas Expiry Date:**	December 2, 2023

Analyzer:

Serial Number:	592
Last Calibration Date:	n/a
Range ppb:	1000

Correction Factors:

	Previous C.F.:	As Found C.F.:	New C.F.:
NO =	n/a	n/a	1.000
NO_2 =	n/a	n/a	1.010
NOx =	n/a	n/a	1.000

Calibrator:

Flow Meter ID's:	n/a
Make & Model:	SABIO 2010 D
Serial #:	11900613
Cal Gas Cylinder I.D. # :	LL119346
NO/NOx Gas Conc. (ppm):	50.0 / 50.0

Standard Calibration Points for a Range of: 1000 ppb

Point	Target NO (ppb)	Target NO_2 (ppb)	Cc Ozone ?
High	780	500	n/a
Mid	380	275	n/a
Low	190	100	n/a
Extra Point #1	n/a	n/a	n/a
Extra Point #2	n/a	n/a	n/a

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

Calibrator Flow Rates (cc/min)				Calculated NO	Calculated NOx	Indicated NO	Indicated NOx	NO C.F.	NOx C.F.
Point	**Diluent**	**Cal Gas**	**Total Flow**	**(ppb)**	**(ppb)**	**(ppb)**	**(ppb)**		
adjusted zero	4999	0.0	4999	0	0	0.0	0.0	n/a	n/a
adjusted high	4922	78.0	5000	780.0	780.0	780.0	780.0	1.000	1.000
mid	4962	38.00	5000	380.0	380.0	379.0	379.0	1.003	1.003
low	4981	19.00	5000	190.0	190.0	190.0	187.0	1.000	1.016
calibrator zero	4999	0.00	4999	0.0	0.0	0.0	0.0	n/a	n/a
							Average C.F.=	1.001	1.006

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

Calibrator Flow Rates (cc/min)				Calibrator Setting	Indicated NO	Indicated NOx	Indicated NO_2	NO drop	NO_2 gain	NO_2 C.F.
Point	**Diluent**	**Cal Gas**	**Total Flow**	**volts or ppb**	**(ppb)**	**(ppb)**	**(ppb)**	**(ppb)**	**(ppb)**	**(ppb)**
NOx reference	4922	78.00	5000	0.0	777.0	779.0	2.0	0.0	2.0	
adjusted high NO2	4922	78.00	5000	510.0	273.0	774.0	501.0	504.0	499.0	1.010
gpt mid	4922	78.00	5000	280.0	498.0	771.0	272.0	279.0	270.0	1.033
gpt low	4922	78.00	5000	105.0	672.0	774.0	102.0	105.0	100.0	1.050
								Average NO_2 C.F.=		1.031

Linear Regression/Calibration Results:

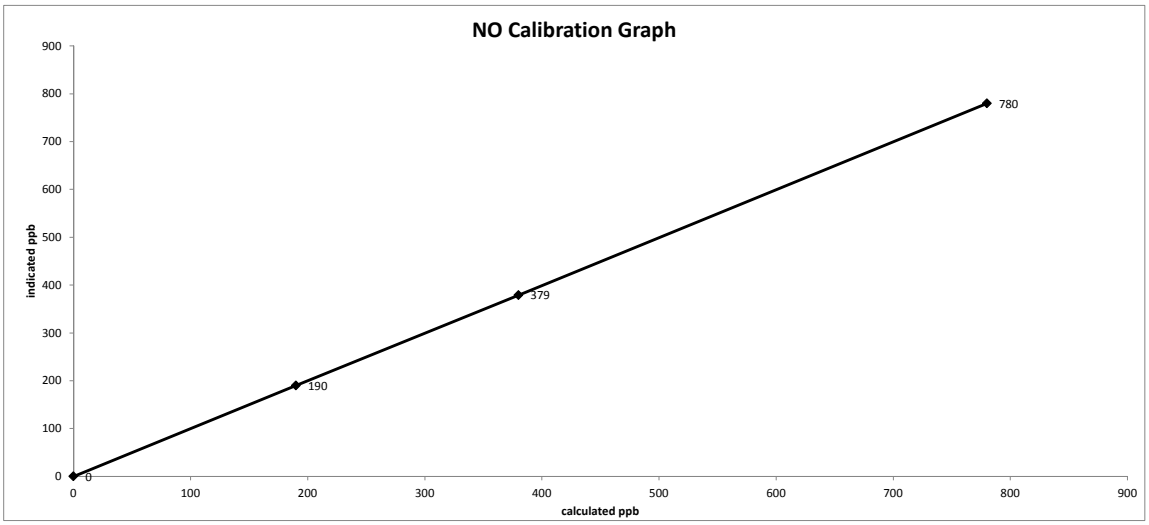
	NO	NOx	NO_2	LIMITS
Correlation Coeffecient =	**1.000**	**1.000**	**1.000**	**> or = 0.995**
Slope =	**1.000**	**0.999**	**1.012**	**.95-1.05**
b (Intercept as % of full scale)=	**-0.02%**	**-0.14%**	**-0.15%**	**± 3% F.S.**
% change in C.F. from last cal=	**n/a**	**n/a**	**n/a**	**± 10%**
NO2 converter effeciency			**1.03**	**0.96 to 1.04**

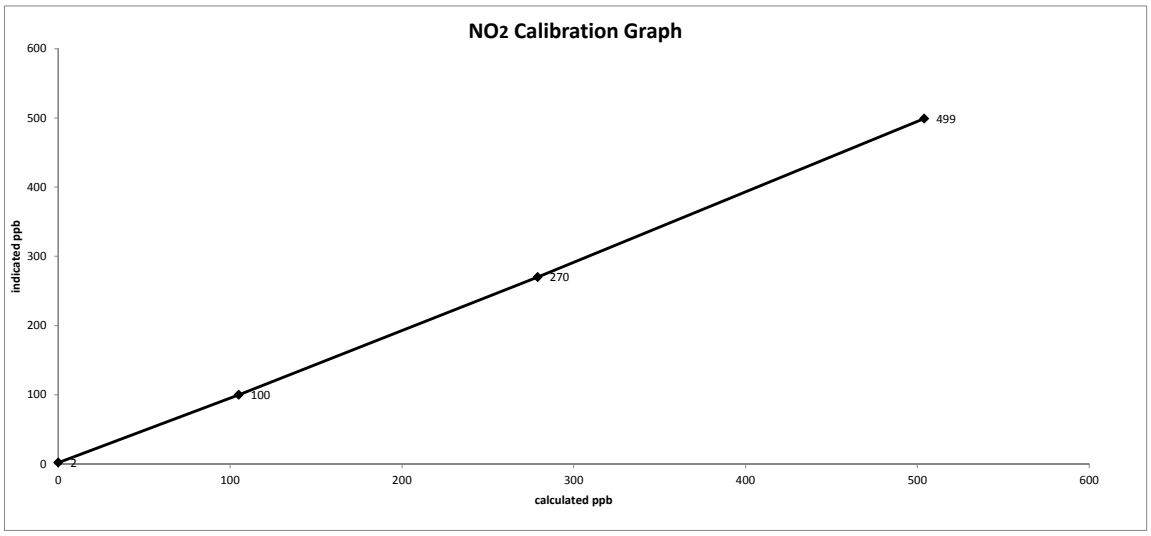
As found:		As left:	
NOx SLOPE:	n/a	NOx SLOPE:	1.050
NOx OFFS:	n/a	NOx OFFS:	4.0
NO SLOPE:	n/a	NO SLOPE:	1.049
NO OFFS:	n/a	NO OFFS:	0.7
SAMP FLW:	n/a	SAMP FLW:	457
OZONE FL:	n/a	OZONE FL:	74
PMT:	n/a	PMT:	45.7
NORM PMT:	n/a	NORM PMT:	4.2
AZERO:	n/a	AZERO:	28.8
HVPS:	n/a	HVPS:	670
RCELL TEMP:	n/a	RCELL TEMP:	50.0
BOX TEMP:	n/a	BOX TEMP:	31.7
PMT TEMP:	n/a	PMT TEMP:	6.9
IZS TEMP:	n/a	IZS TEMP:	40.3
MOLY TEMP:	n/a	MOLY TEMP:	316.2
RCEL:	n/a	RCEL:	4.4
SAMP:	n/a	SAMP:	26.3
Internal Span NO:	n/a	Internal Span NO:	8.4
Internal Span NO2:	n/a	Internal Span NO2:	375
Internal Span NOx:	n/a	Internal Span NOx:	383

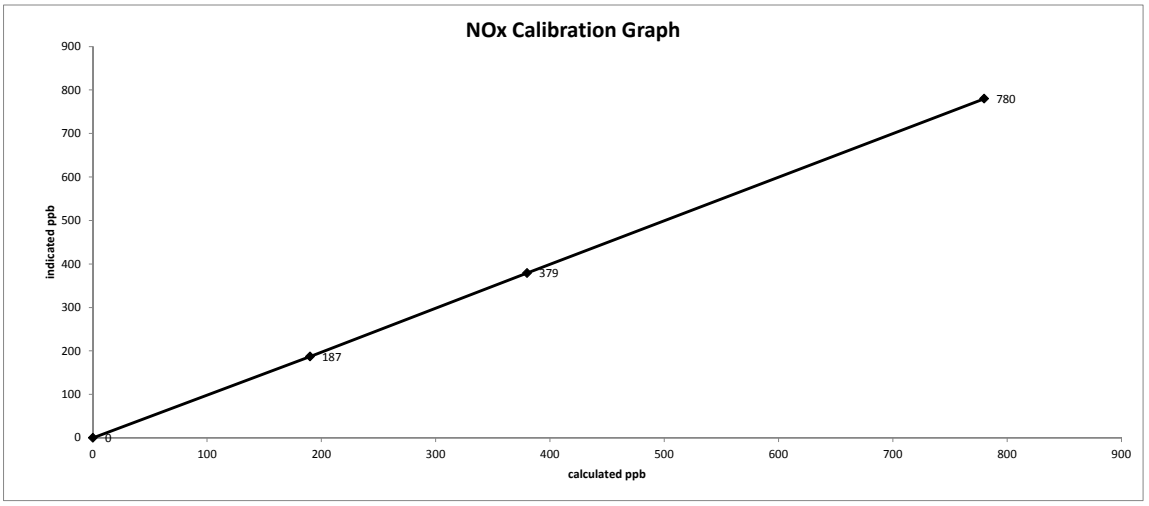
Comments:

Sample inlet filter changed. No NO2 adjustment made. ZERO air scrubber renewed (Charcoal and Purafil beads). Output voltage had been calibrated before the installation calibration was started. This analyzer was installed after it had been repaired/serviced in Calgary shop.

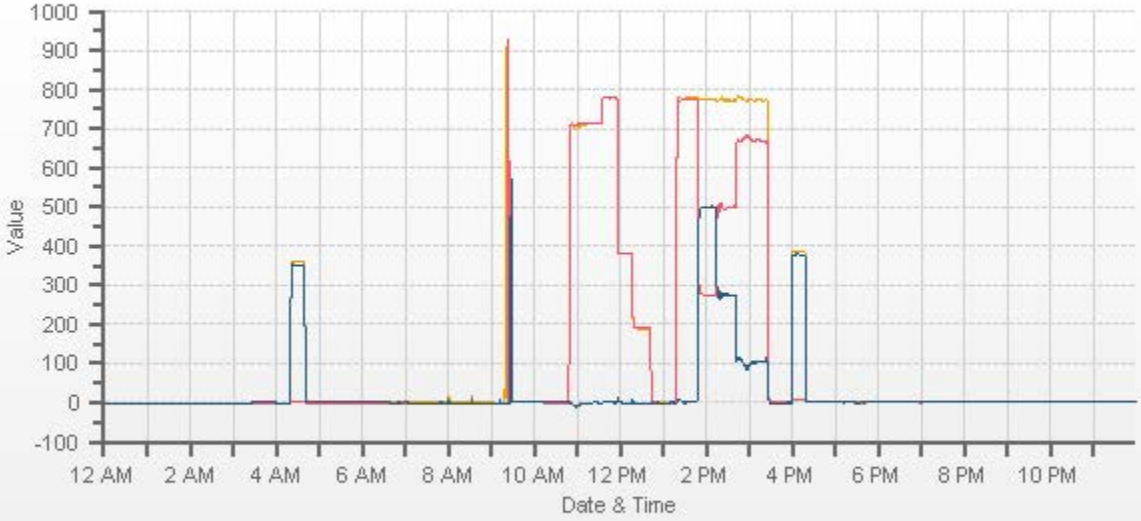
Date:	**June 16, 2016**	**Start/End Time 24 hr. (mst):**	**9:43 / 16:23**
Company/Airshed:	**LICA**	**Calibration Purpose:**	**installation**
Location/Station Name:	**Maskwa**	**Calibration Method:**	**Gas Dilution & Varying UV Lamp Power**







Station: LICA MASKWA Daily: 2016/06/16 Type: AVG 1 Min. [1 Min.]



API 200E NO-NO2-NOx Analyzer Calibration

Date:	June 22, 2016	**Barometric Pressure:**	0.936 atm
Company/Airshed:	LICA	**Station Temperature °C:**	23
Location/Station Name:	Maskwa	**Weather Conditions:**	Mainly sunny
Start/End Time 24 hr. (mst):	8:45 / 10:54	**Calibration Purpose:**	as found
G.P.T. to be used for Ozone?	No	**Performed By/Reviewer:**	Alex Yakupov / Tom Bourque
Calibration Method:	Gas Dilution & Varying UV Lamp Power	**Cal Gas Expiry Date:**	December 2, 2023

Analyzer:

Serial Number:	592
Last Calibration Date:	June 16, 2016
Range ppb:	1000

Correction Factors:

	Previous C.F.:	As Found C.F.:	New C.F.:
NO =	1.000	1.036	n/a
NO_2 =	1.010	1.010	n/a
NOx =	1.000	1.037	n/a

Calibrator:

Flow Meter ID's:	n/a
Make & Model:	SABIO 2010 D
Serial #:	11900613
Cal Gas Cylinder I.D. # :	LL119346
NO/NOx Gas Conc. (ppm):	50.0 / 50.0

Standard Calibration Points for a Range of: 1000 ppb

Point	Target NO (ppb)	Target NO_2 (ppb)	Cc Ozone ?
High	780	500	n/a
Mid	380	275	n/a
Low	190	100	n/a
Extra Point #1	n/a	n/a	n/a
Extra Point #2	n/a	n/a	n/a

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

Calibrator Flow Rates (cc/min)				Calculated NO	Calculated NOx	Indicated NO	Indicated NOx	NO C.F.	NOx C.F.
Point	Diluent	Cal Gas	Total Flow	(ppb)	(ppb)	(ppb)	(ppb)		
as found zero	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	753.0	751.0	1.036	1.037
							Average C.F.=	n/a	n/a

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

Calibrator Flow Rates (cc/min)				Calibrator Setting	Indicated NO	Indicated NOx	Indicated NO_2	NO drop	NO_2 gain	NO_2 C.F.
Point	Diluent	Cal Gas	Total Flow	volts or ppb	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)
NOx reference	4922	78.00	5000	0.0	753.0	751.0	-2.0	0.0	-2.0	
as found high NO2	4922	78.00	5000	520.0	261.0	747.0	485.0	492.0	487.0	1.010
								Average NO_2 C.F.=		n/a

Linear Regression/Calibration Results:

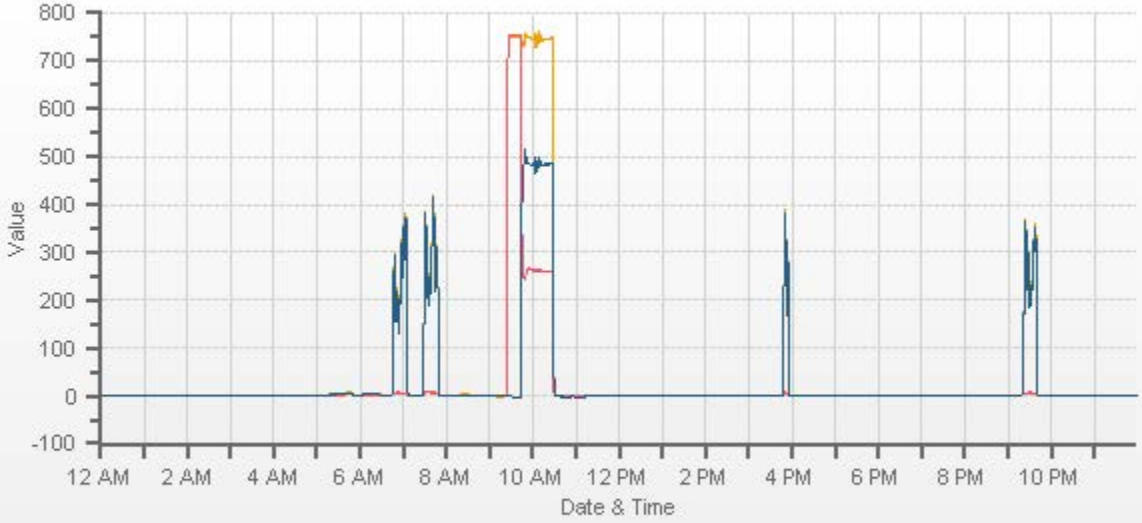
	NO	NOx	NO_2	LIMITS
Correlation Coeffecient =	n/a	n/a	n/a	> or = 0.995
Slope =	n/a	n/a	n/a	.95-1.05
b (Intercept as % of full scale)=	n/a	n/a	n/a	± 3% F.S.
% change in C.F. from last cal=	-3.59%	-0.03%	-3.72%	± 10%
NO2 converter effeciency			1.01	0.96 to 1.04

As found:		As left:	
NOx SLOPE:	1.050	NOx SLOPE:	1.050
NOx OFFS:	4.0	NOx OFFS:	4.0
NO SLOPE:	1.049	NO SLOPE:	1.049
NO OFFS:	0.7	NO OFFS:	0.7
SAMP FLW:	461	SAMP FLW:	462
OZONE FL:	74	OZONE FL:	74
PMT:	17.7	PMT:	28.2
NORM PMT:	4.4	NORM PMT:	-0.4
AZERO:	22.0	AZERO:	22.5
HVPS:	670	HVPS:	670
RCELL TEMP:	49.9	RCELL TEMP:	50.0
BOX TEMP:	30.3	BOX TEMP:	31.5
PMT TEMP:	6.9	PMT TEMP:	6.9
IZS TEMP:	40.2	IZS TEMP:	40.3
MOLY TEMP:	315.4	MOLY TEMP:	316.2
RCEL:	4.5	RCEL:	4.5
SAMP:	27.0	SAMP:	27.0
Internal Span NO:	8.4	Internal Span NO:	8.4
Internal Span NO2:	375	Internal Span NO2:	375
Internal Span NOx:	383	Internal Span NOx:	383

Comments:

Sample inlet filter was changed on June 16, 2016. No alarm found on the screen. "As Found" calibration performed because according to a daily ZS check SPAN was low: 294.4/383, -23.13%. The second SPAN check was 343.6/383, -10.28%. The NOx analyzer check required As Soon As Possible.

Station: LICA MASKWA Daily: 2016/06/22 Type: AVG 1 Min. [1 Min.]



API 200E NO-NO2-NOx Analyzer Calibration

Date:	June 23, 2016	**Barometric Pressure:**	0.934 atm
Company/Airshed:	LICA	**Station Temperature °C:**	23
Location/Station Name:	Maskwa	**Weather Conditions:**	Mainly sunny
Start/End Time 24 hr. (mst):	12:12 / 14:55	**Calibration Purpose:**	shut down
G.P.T. to be used for Ozone?	No	**Performed By/Reviewer:**	Alex Yakupov / Trina Whitsitt
Calibration Method:	Gas Dilution & Varying UV Lamp Power	**Cal Gas Expiry Date:**	December 2, 2023

Analyzer:

Serial Number:	592
Last Calibration Date:	June 22, 2016
Range ppb:	1000

Correction Factors:

	Previous C.F.:	As Found C.F.:	New C.F.:
NO =	1.036	1.030	n/a
NO_2 =	1.010	1.022	n/a
NOx =	1.037	1.044	n/a

Calibrator:

Flow Meter ID's:	n/a	
Make & Model:	SABIO 2010 D	
Serial #:	11900613	
Cal Gas Cylinder I.D. # :	LL119346	
NO/NOx Gas Conc. (ppm):	50.0	50.0

Standard Calibration Points for a Range of: 1000 ppb

Point	Target NO (ppb)	Target NO_2 (ppb)	Cc Ozone ?
High	**780**	**500**	**n/a**
Mid	**380**	**275**	**n/a**
Low	**190**	**100**	**n/a**
Extra Point #1	**n/a**	**n/a**	**n/a**
Extra Point #2	**n/a**	**n/a**	**n/a**

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

Calibrator Flow Rates (cc/min)				Calculated NO	Calculated NOx	Indicated NO	Indicated NOx	NO C.F.	NOx C.F.
Point	**Diluent**	**Cal Gas**	**Total Flow**	**(ppb)**	**(ppb)**	**(ppb)**	**(ppb)**		
as found zero	4999	0.0	4999	0	0	-1.0	-1.0	n/a	n/a
as found high	4922	78.0	5000	780.0	780.0	756.0	746.0	1.030	1.044
mid	4962	38.00	5000	380.0	380.0	366.0	363.0	1.035	1.044
low	4981	19.00	5000	190.0	190.0	185.0	185.0	1.022	1.022
							Average C.F.=	1.029	1.037

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

Calibrator Flow Rates (cc/min)				Calibrator Setting	Indicated NO	Indicated NOx	Indicated NO_2	NO drop	NO_2 gain	NO_2 C.F.
Point	**Diluent**	**Cal Gas**	**Total Flow**	**volts or ppb**	**(ppb)**	**(ppb)**	**(ppb)**	**(ppb)**	**(ppb)**	**(ppb)**
NOx reference	4922	78.00	5000	0.0	756.0	752.0	-0.4	-1.0	-0.4	
as found high NO2	4922	78.00	5000	515.0	273.0	747.0	472.0	483.0	472.4	1.022
gpt mid	4922	78.00	5000	290.0	473.0	749.0	276.0	283.0	276.4	1.024
gpt low	4922	78.00	5000	100.0	649.0	749.0	100.0	107.0	100.4	1.066
								Average NO_2 C.F.=		1.037

Linear Regression/Calibration Results:

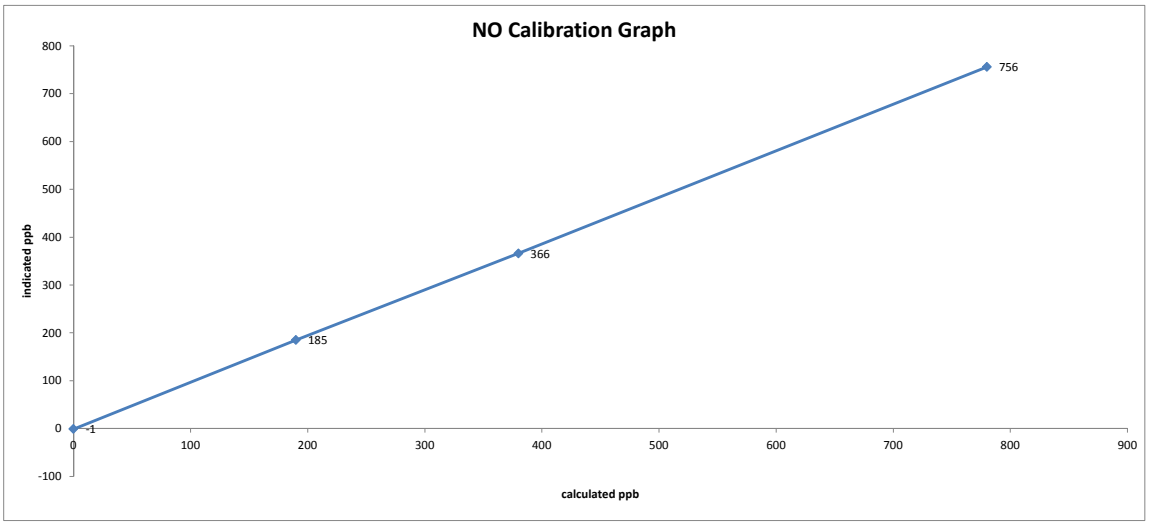
	NO	NOx	NO_2	LIMITS
Correlation Coeffecient =	**1.000**	**1.000**	**1.000**	**> or = 0.995**
Slope =	**1.031**	**1.046**	**1.020**	**0.90-1.10**
b (Intercept as % of full scale)=	**-0.07%**	**0.06%**	**-0.15%**	**± 3% F.S.**
% change in C.F. from last cal=	**0.54%**	**-1.23%**	**-0.69%**	**± 10%**
NO2 converter effeciency			**1.04**	**0.96 to 1.04**

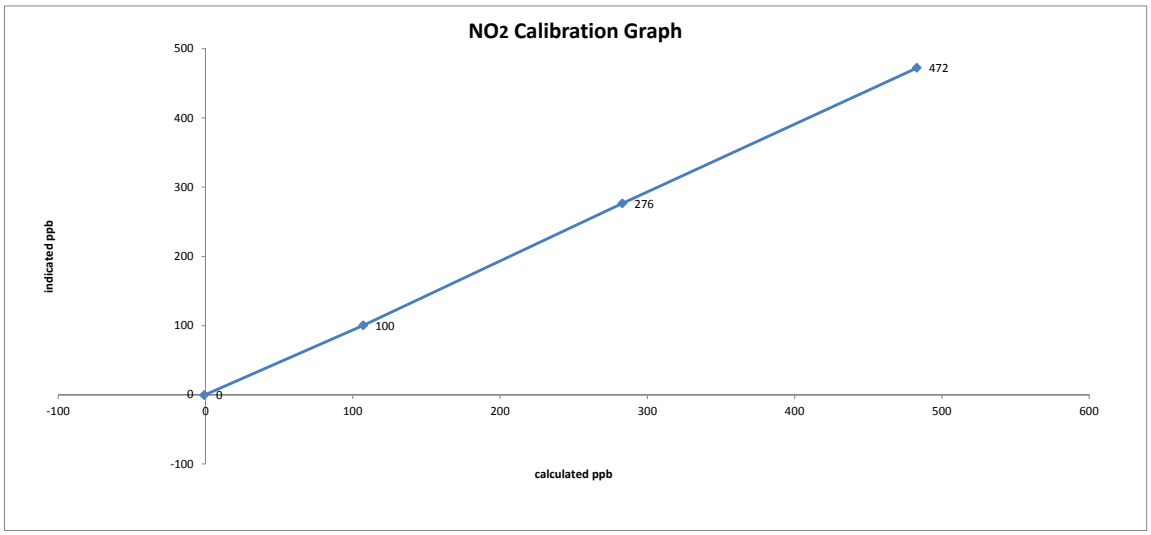
As found:		As left:	
NOx SLOPE:	1.050	NOx SLOPE:	n/a
NOx OFFS:	4.0	NOx OFFS:	n/a
NO SLOPE:	1.049	NO SLOPE:	n/a
NO OFFS:	0.7	NO OFFS:	n/a
SAMP FLW:	461	SAMP FLW:	n/a
OZONE FL:	74	OZONE FL:	n/a
PMT:	22.0	PMT:	n/a
NORM PMT:	3.2	NORM PMT:	n/a
AZERO:	21.5	AZERO:	n/a
HVPS:	670	HVPS:	n/a
RCELL TEMP:	50.1	RCELL TEMP:	n/a
BOX TEMP:	30.3	BOX TEMP:	n/a
PMT TEMP:	6.9	PMT TEMP:	n/a
IZS TEMP:	40.2	IZS TEMP:	n/a
MOLY TEMP:	314.1	MOLY TEMP:	n/a
RCEL:	4.5	RCEL:	n/a
SAMP:	26.9	SAMP:	n/a
Internal Span NO:	8.4	Internal Span NO:	n/a
Internal Span NO2:	375	Internal Span NO2:	n/a
Internal Span NOx:	383	Internal Span NOx:	n/a

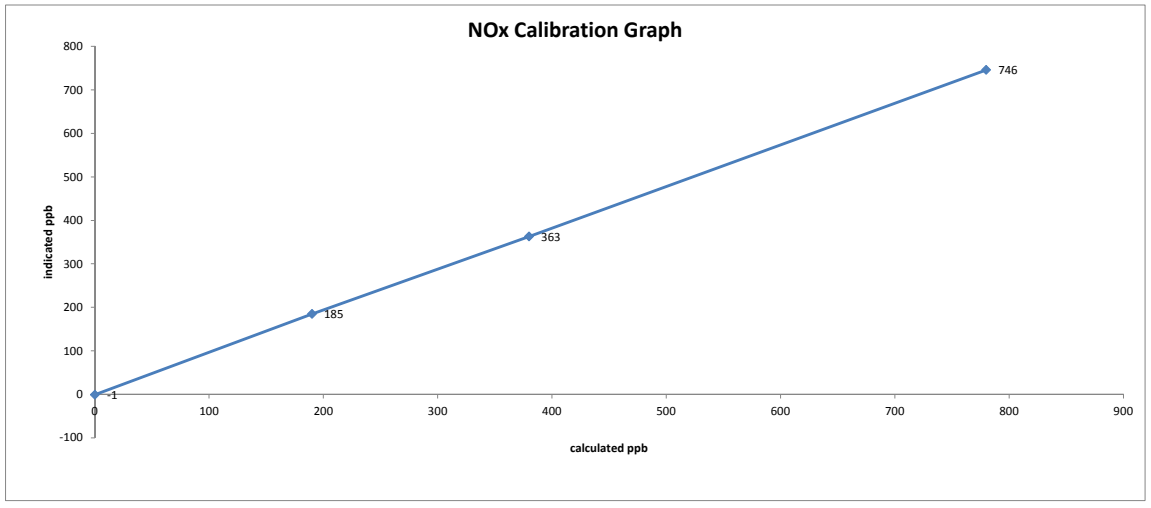
Comments:

RELAY BOARD WARNING and AZERO WARNING found on the screen on arrival. "Shutdown" calibration performed because according to a daily ZS check SPAN was low again. The analyzer requires replacement and repair As Soon As Possible.

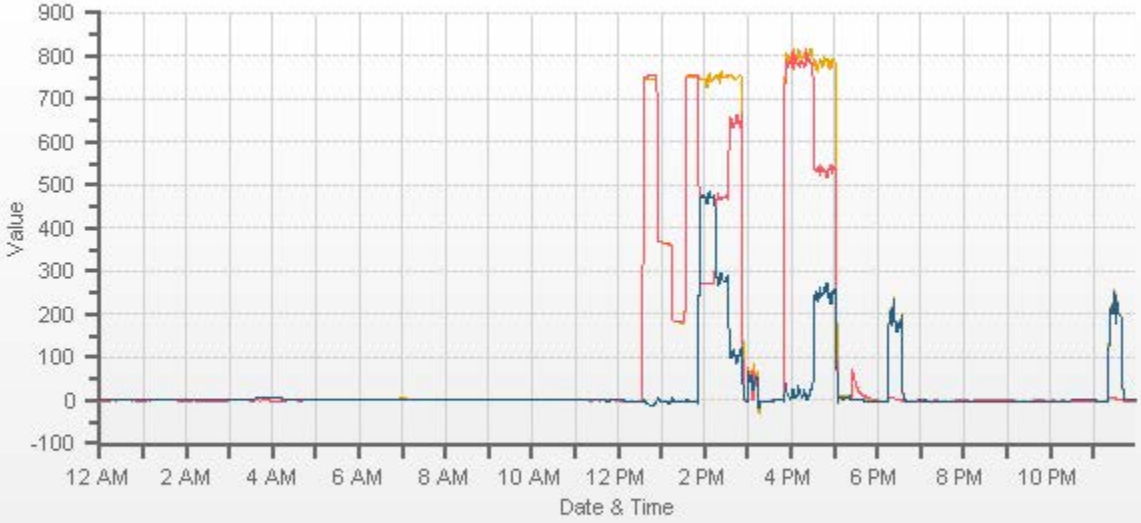
Date:	June 23, 2016	Start/End Time 24 hr. (mst):	12:12 / 14:55
Company/Airshed:	LICA	Calibration Purpose:	shut down
Location/Station Name:	Maskwa	Calibration Method:	Gas Dilution & Varying UV Lamp Power







Station: LICA MASKWA Daily: 2016/06/23 Type: AVG 1 Min. [1 Min.]



API 200A NO-NO2-NOx Analyzer Calibration

Date:	June 24, 2016	**Barometric Pressure:**	27.61 inHg
Company/Airshed:	LICA	**Station Temperature °C:**	22
Location/Station Name:	Maskwa	**Weather Conditions:**	Mix of sun and clouds
Start/End Time 24 hr. (mst):	15:52 / 20:14	**Calibration Purpose:**	installation
G.P.T. to be used for Ozone?	No	**Performed By/Reviewer:**	Alex Yakupov / Tom Bourque
Calibration Method:	Gas Dilution & Varying UV Lamp Power	**Cal Gas Expiry Date:**	May 23, 2019

Analyzer:

Serial Number:	2166
Last Calibration Date:	n/a
Range ppb:	1000

Correction Factors:

	Previous C.F.:	As Found C.F.:	New C.F.:
NO =	n/a	n/a	1.000
NO_2 =	n/a	n/a	1.000
NOx =	n/a	n/a	0.999

Calibrator:

Flow Meter ID's:	n/a	
Make & Model:	SABIO 2010 D	
Serial #:	11900613	
Cal Gas Cylinder I.D. # :	LL119346	
NO/NOx Gas Conc. (ppm):	50.0	50.0

Standard Calibration Points for a Range of: 1000 ppb

Point	Target NO (ppb)	Target NO_2 (ppb)	Cc Ozone ?
High	780	500	n/a
Mid	380	275	n/a
Low	190	100	n/a
Extra Point #1	n/a	n/a	n/a
Extra Point #2	n/a	n/a	n/a

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

Calibrator Flow Rates (cc/min)				Calculated NO	Calculated NOx	Indicated NO	Indicated NOx	NO C.F.	NOx C.F.
Point	**Diluent**	**Cal Gas**	**Total Flow**	**(ppb)**	**(ppb)**	**(ppb)**	**(ppb)**		
adjusted zero	4999	0.0	4999	0	0	0.0	0.0	n/a	n/a
adjusted high	4922	78.0	5000	780.0	780.0	780.0	781.0	1.000	0.999
mid	4962	38.00	5000	380.0	380.0	376.0	376.0	1.011	1.011
low	4981	19.00	5000	190.0	190.0	185.0	185.0	1.027	1.027
calibrator zero	4999	0.00	4999	0.0	0.0	0.0	0.0	n/a	n/a
							Average C.F.=	1.013	1.012

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

Calibrator Flow Rates (cc/min)				Calibrator Setting	Indicated NO	Indicated NOx	Indicated NO_2	NO drop	NO_2 gain	NO_2 C.F.
Point	**Diluent**	**Cal Gas**	**Total Flow**	**volts or ppb**	**(ppb)**	**(ppb)**	**(ppb)**	**(ppb)**	**(ppb)**	**(ppb)**
NOx reference	4922	78.00	5000	0.0	780.0	780.0	0.0	0.0	0.0	
adjusted high NO2	4922	78.00	5000	510.0	269.0	780.0	511.0	511.0	511.0	1.000
gpt mid	4922	78.00	5000	275.0	505.0	779.0	274.0	275.0	274.0	1.004
gpt low	4922	78.00	5000	100.0	682.0	780.0	97.0	98.0	97.0	1.010
								Average NO_2 C.F.=		1.005

Linear Regression/Calibration Results:

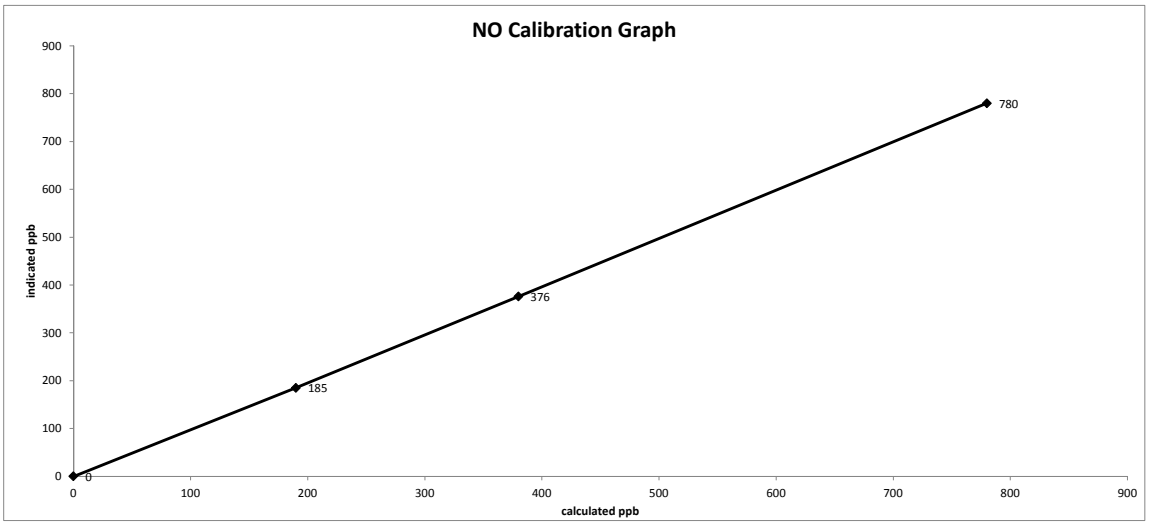
	NO	NOx	NO_2	LIMITS
Correlation Coeffecient =	**1.000**	**1.000**	**1.000**	**> or = 0.995**
Slope =	**0.998**	**0.997**	**1.000**	**.95-1.05**
b (Intercept as % of full scale)=	**-0.28%**	**-0.30%**	**-0.06%**	**± 3% F.S.**
% change in C.F. from last cal=	**n/a**	**n/a**	**n/a**	**± 10%**
NO2 converter effeciency			**1.01**	**0.96 to 1.04**

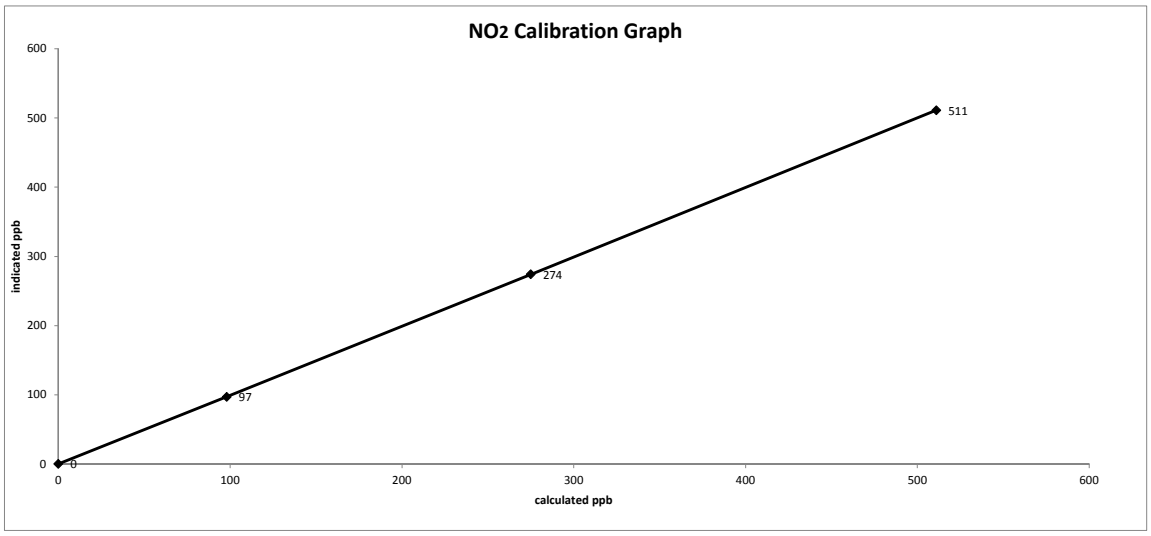
As found:		As left:	
NOx SLOPE:	n/a	NOx SLOPE:	0.996
NOx OFFS:	n/a	NOx OFFS:	-0.8
NO SLOPE:	n/a	NO SLOPE:	0.979
NO OFFS:	n/a	NO OFFS:	-3.9
SAMP FLW:	n/a	SAMP FLW:	513
OZONE FL:	n/a	OZONE FL:	77
NORM PMT:	n/a	NORM PMT:	-0.8
AZERO:	n/a	AZERO:	28.8
HVPS:	n/a	HVPS:	716
DCPS:	n/a	DCPS:	2626
RCELL:	n/a	RCELL:	49.8
BOX TEMP:	n/a	BOX TEMP:	29.5
IZS TEMP:	n/a	IZS TEMP:	45.0
MOLY TEMP:	n/a	MOLY TEMP:	315.7
RCEL:	n/a	RCEL:	5.1
SAMP:	n/a	SAMP:	27.8
Internal Span NO:	n/a	Internal Span NO:	7.6
Internal Span NO2:	n/a	Internal Span NO2:	413
Internal Span NOx:	n/a	Internal Span NOx:	421

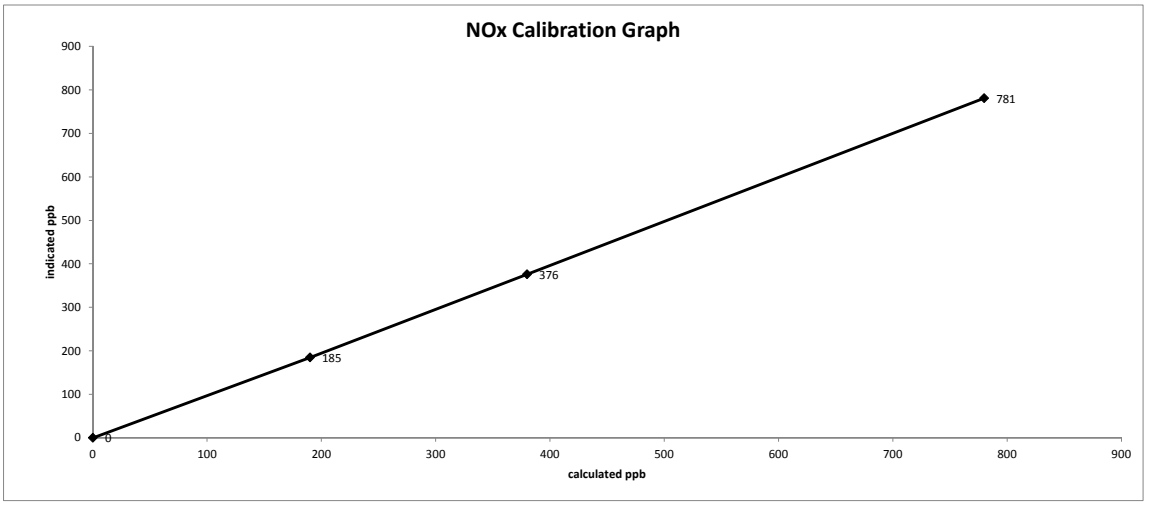
Comments:

Sample inlet filter was changed. Before the calibration starded calibration equipment had been cross-checked and a different ZERO Air generator was used for the instalation calibration.

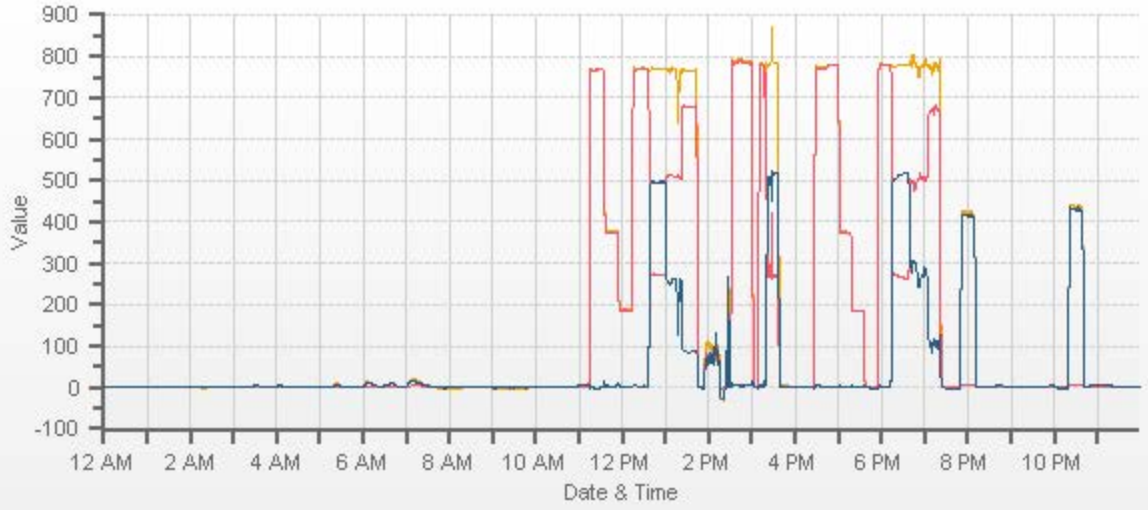
Date:	**June 24, 2016**	**Start/End Time 24 hr. (mst):**	**15:52 / 20:14**
Company/Airshed:	**LICA**	**Calibration Purpose:**	**installation**
Location/Station Name:	**Maskwa**	**Calibration Method:**	**Gas Dilution & Varying UV Lamp Power**







Station: LICA MASKWA Daily: 2016/06/24 Type: AVG 1 Min. [1 Min.]



API 200A NO-NO2-NOx Analyzer Calibration

Date:	June 25, 2016	**Barometric Pressure:**	0.917 atm
Company/Airshed:	LICA	**Station Temperature °C:**	22
Location/Station Name:	Maskwa	**Weather Conditions:**	A few clouds and light rain showers
Start/End Time 24 hr. (mst):	13:39 / 19:02	**Calibration Purpose:**	repeat
G.P.T. to be used for Ozone?	No	**Performed By/Reviewer:**	Alex Yakupov / Tom Bourque
Calibration Method:	Gas Dilution & Gas Phase Titration	**Cal Gas Expiry Date:**	May 23, 2019

Analyzer:

Serial Number:	2166
Last Calibration Date:	June 24, 2016
Range ppb:	1000

Correction Factors:

	Previous C.F.:	As Found C.F.:	New C.F.:
NO =	1.000	1.005	0.998
NO_2 =	1.005	1.002	1.002
NOx =	0.999	1.006	0.998

Calibrator:

Flow Meter ID's:	n/a
Make & Model:	API Model 700
Serial #:	627
Cal Gas Cylinder I.D. # :	LL119346
NO/NOx Gas Conc. (ppm):	50.0 / 50.0

Standard Calibration Points for a Range of: 1000 ppb

Point	Target NO (ppb)	Target NO_2 (ppb)	Cc Ozone ?
High	780	500	n/a
Mid	380	275	n/a
Low	190	100	n/a
Extra Point #1	n/a	n/a	n/a
Extra Point #2	n/a	n/a	n/a

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

Calibrator Flow Rates (cc/min)				Calculated NO	Calculated NOx	Indicated NO	Indicated NOx	NO C.F.	NOx C.F.
Point	**Diluent**	**Cal Gas**	**Total Flow**	**(ppb)**	**(ppb)**	**(ppb)**	**(ppb)**		
as found zero	5000	0.0	5000	0	0	1.0	0.0	n/a	n/a
as found high	4924	78.0	5002	779.7	779.7	777.0	775.0	1.005	1.006
adjusted zero	5000	0.00	5000	0.0	0.0	0.0	0.0	n/a	n/a
adjusted high	4924	78.00	5002	779.7	779.7	781.0	781.0	0.998	0.998
mid	4966	38.00	5004	379.7	379.7	376.0	376.0	1.010	1.010
low	4982	19.00	5001	190.0	190.0	185.0	185.0	1.027	1.027
calibrator zero	5000	0.00	5000	0	0	0.0	0.0	n/a	n/a
							Average C.F.=	1.012	1.012

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

Calibrator Flow Rates (cc/min)				Calibrator Setting	Indicated NO	Indicated NOx	Indicated NO_2	NO drop	NO_2 gain	NO_2 C.F.
Point	**Diluent**	**Cal Gas**	**Total Flow**	**volts or ppb**	**(ppb)**	**(ppb)**	**(ppb)**	**(ppb)**	**(ppb)**	**(ppb)**
NOx reference	4924	78.00	5002	0.0	780.0	780.0	0.0	0.0	0.0	
as found high NO2	4924	78.00	5002	500.0	268.0	779.0	511.0	512.0	511.0	1.002
adjusted high NO2	4924	78.00	5002	500.0	268.0	779.0	511.0	512.0	511.0	1.002
gpt mid	4924	78.00	5002	265.0	508.0	780.0	272.0	272.0	272.0	1.000
gpt low	4924	78.00	5002	98.0	680.0	780.0	100.0	100.0	100.0	1.000
								Average NO_2 C.F.=		1.001

Linear Regression/Calibration Results:

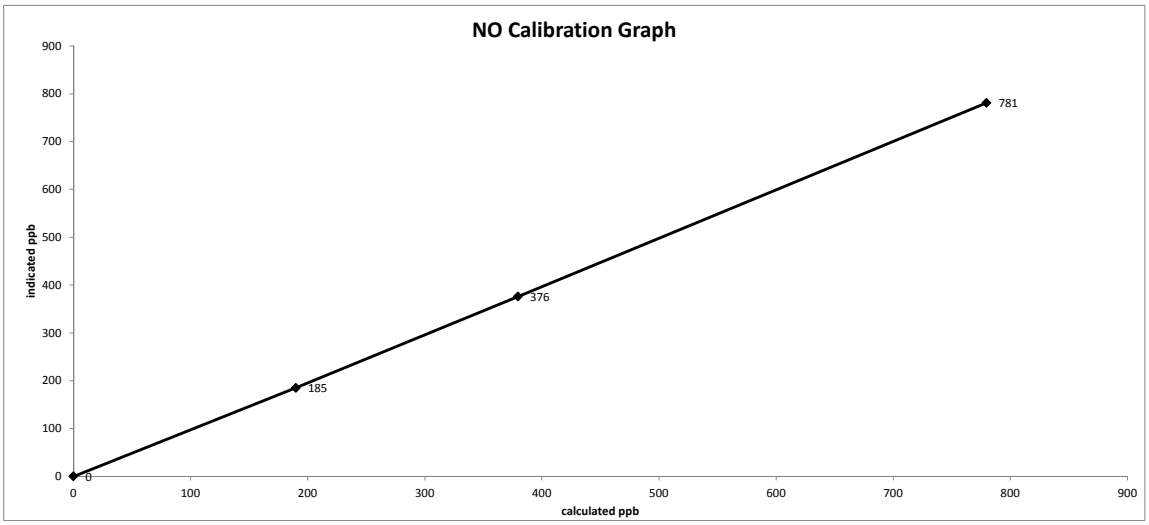
	NO	NOx	NO_2	LIMITS
Correlation Coeffecient =	**1.000**	**1.000**	**1.000**	**> or = 0.995**
Slope =	**0.996**	**0.996**	**1.002**	**.95-1.05**
b (Intercept as % of full scale)=	**-0.30%**	**-0.30%**	**0.02%**	**± 3% F.S.**
% change in C.F. from last cal=	**-0.48%**	**-0.71%**	**0.30%**	**± 10%**
NO2 converter effeciency			**1.00**	**0.96 to 1.04**

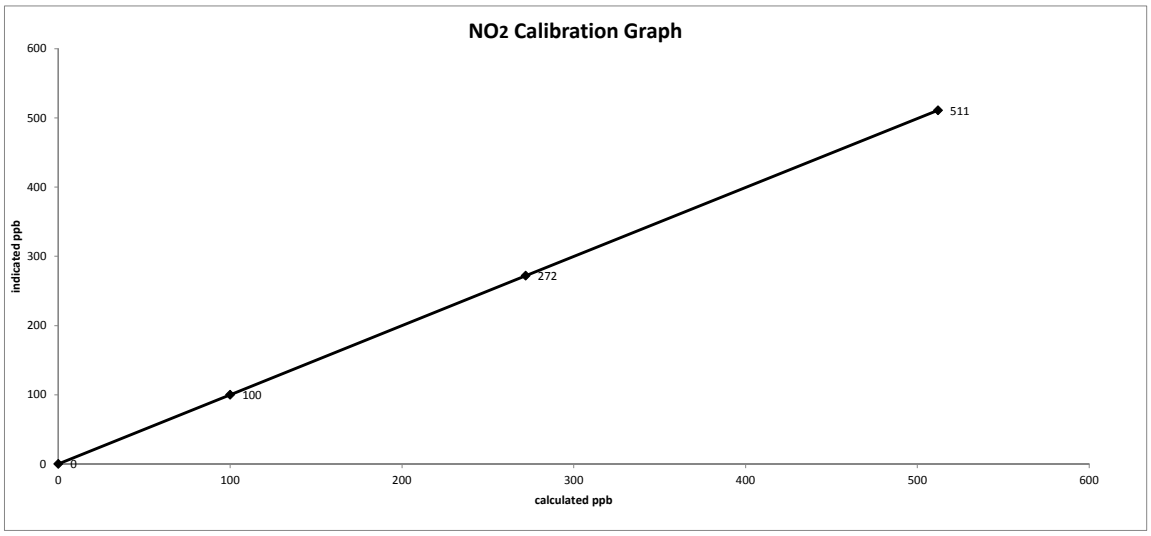
As found:		As left:	
NOx SLOPE:	0.996	NOx SLOPE:	1.001
NOx OFFS:	-0.8	NOx OFFS:	-0.6
NO SLOPE:	0.979	NO SLOPE:	0.985
NO OFFS:	-3.9	NO OFFS:	-1.8
SAMP FLW:	513	SAMP FLW:	513
OZONE FL:	77	OZONE FL:	77
NORM PMT:	-2.5	NORM PMT:	15.8
AZERO:	24.5	AZERO:	24.5
HVPS:	716	HVPS:	716
DCPS:	2627	DCPS:	2628
RCELL:	50.7	RCELL:	50.7
BOX TEMP:	28.9	BOX TEMP:	29.1
IZS TEMP:	45.1	IZS TEMP:	45.0
MOLY TEMP:	315.6	MOLY TEMP:	315.5
RCEL:	5.1	RCEL:	5.1
SAMP:	27.7	SAMP:	27.7
Internal Span NO:	7.6	Internal Span NO:	7.6
Internal Span NO2:	413	Internal Span NO2:	413
Internal Span NOx:	421	Internal Span NOx:	421

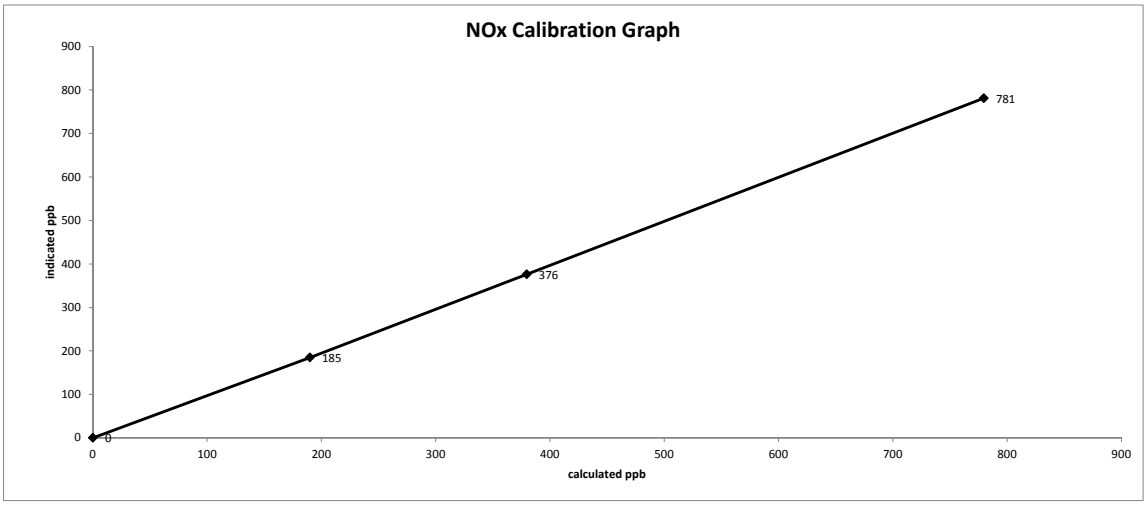
Comments:

Sample inlet filter changed on June 24, 2016. Full Repeat calibration completed with a different calibrator (API 700), which proved to be good during the previous REPEAT GPT calibration.

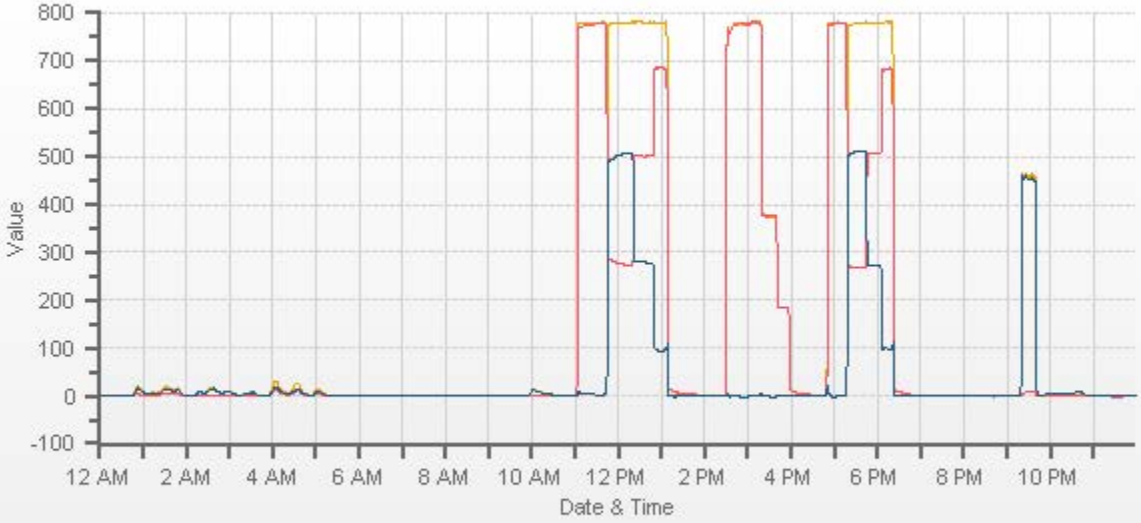
Date:	**June 25, 2016**	**Start/End Time 24 hr. (mst):**	**13:39 / 19:02**
Company/Airshed:	**LICA**	**Calibration Purpose:**	**repeat**
Location/Station Name:	**Maskwa**	**Calibration Method:**	**Gas Dilution & Gas Phase Titration**







Station: LICA MASKWA Daily: 2016/06/25 Type: AVG 1 Min. [1 Min.]



WIND SYSTEM

Met One Instruments

Sonic Wind Sensor Certificate of Calibration

Sensor Model No.: 50.5H
Sensor Serial No.: H10703
Sensor Output Swing 0V - 1.0V
Sensor Output Range: 0 - 50.0 MPS
Customer: Maxxam Analytics
Sales Order No.: 115635
Tested per PO: 35-62828
Calibration Date: 03/30/2016
Calibrated by: David Frith DF
QC Inspection Byron Davidson

Instrument Condition Within Tolerance: As Found ___ As Left X
Corrective Action: No Adjustment ___ Adjust X Repair ___
Preventative Maintenance ___

As Found Test Date: N/A As Left Test Date 03/30/2016

Quality Control Manual Revision: September 16, 2013 MP42201 Rev. G.
All Work Performed per Customer Purchase Order Requirements.
Calibration Document No. 50.5-6100

Test Equipment Used for Calibration of Instruments

Description	Manufacturer	Model No.	Serial No.	Cal Date	Cal Due	Voltage Accuracy	Time Base Accuracy
Data Acquition	Campbell Scientific	CR1000	6569	4/06/2015	4/06/2018	+/- 3mV	< 6 ppm
NIST Cupset	Met One Instruments	170-41	3309	4/24/2012	4/24/2017	Accuracy < 0.15 mph or 1% WS	

Environmental Data: Temperature 65 to 80 Deg F Vibration none
Humidity 20 to 70% Radiation none

The standards used for calibration have accuracies equal to or greater than the instruments tested. These standards are on record and are traceable to NIST to the extent allowed by the institute's calibration facility. Unless otherwise stated heron, all instruments are calibrated to meet the manufacturer's published specifications. The calibration system complies with MIL-STD-45662A (8/1/88). Instrument's accuracy meets the requirements of Regulatory Guide 1.23 (2/72). Compliant with IS) 9001:2008 requirements

METEOROLOGICAL SYSTEM CHECK

ALBERTA VERIFICATION and IN-HOUSE PROPAGATION OF UNCERTAINTY of LABORATORY BAROMETER

Typically, the difference between the working & reference Barometer readings should agree to within 35 mbar.
However, other limits (may be tighter or wider) for certain protocols or methods may be applied if technically justified and approved by the department manager/supervisor and QA.
Document the reason for limits other than 35 mbar in the comment section below.
Barometer MU is valid for one year.

Date:	02/08/2016
Analyst :	BW/JL
Lab / Section:	Air Services Lab
Range of Use (mbar):	875 to 925

Location of verification:	Air Services Lab
Humidity:	NA
Temperature:	20 C
Reference Barometer - u_r:	0.35

	Reference Barometer	Working Barometer	Timer (Optional)
Make & Model Number:	Traceable 02-406	Traceable 02-406	
Serial Number:	140125985	130168457	
Maxxam ID:	4299	5544	
Calibration Due:	02/24/2016	02/07/2017	

	Barometer in Use		Reference Barometer	
	Time	Reading (mbar)	Reading (mbar)	Correction Factor of Reference, if applicable (mbar)
1st	14:35	872	874	
2nd	14:40	872	874	
3rd	14:45	872	874	
4th	14:50	872	874	0
5th	14:55	872	874	
6th	15:00	872	874	
7th	15:05	872	874	

	Difference (mbar) (Working - Corrected Reference)	Average Difference (mbar)	| Diff - Mean |	(Diff - Mean)^2	Maximum Acceptable Difference (mbar)	Acceptable Reading (Y/N)
1			0.000	0.000		Y
2			0.000	0.000		Y
3			0.000	0.000		Y
4		2.000	0.000	0.000	35	Y
5			0.000	0.000		Y
6			0.000	0.000		Y
7			0.000	0.000		Y
Sum d:	-14.000		Sum s:	0.000		
Mean:	-2.000		Std Dev: s_p	0.000		

Combined Standard Uncertainty

$u_c = \sqrt{(u_r)^2 + (s_p)^2}$ 0.350

Expanded Uncertainty

$k = 2$ $U = k\,(u_c)$ 0.700

Comments:

Supervisor Signature: _____

Date: 03/15/2015

QA (calc chk/inventory update)

Signature: _____

Date: _____

CALIBRATORS

aemera.org

Calibrator Performance Audit

OZONE

File No. 2015-163

Company: Maxxam **Operator:** Chris Wesson

Calibrator:		**Flow Measurement Device:**	
Make/Model	Sabio 2010D	Make/Model	NA
Serial Number	11900613	Serial Number	NA
Oven Temperature	49.8	Temperature (°C)	24
Last Verification Date	May 21, 2015	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	% Difference 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)

O_3		**LIMITS**
Correlation=	1.0000	**≥ 0.995**
m (Slope)=	1.0119	**0.90-1.10**
b (Intercept % of FS)=	-0.0724	**± 3% F.S.**

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

COMMENTS:

Auditor: Shea Beaton Date: March 30, 2016

Operator Signature: Location: McIntyre Center Edmonton

aemera.org

Calibrator Performance Audit

Oxides Of Nitrogen

File No. 2015-119

Company Maxxam **Operator:** Chris Wesson

Calibrator:		**Flow Measurement Device:**	
Make/Model	API 700	Make/Model	NA
Serial Number	627	Serial Number	NA
Last Verification Date	April 1 2015	Temperature (°C)	NA
NO Cylinder S/N	LL119317	Barometric Pressure	NA
NO/NOX Concentration	50.3/50.3		

Dilution Flow (sccm)

Pt. #1 5000 Pt. #2 5000 Pt. #3 5000

Gas Flow (sccm)

Pt. #1 77.5 Pt. #2 37.8 Pt. #3 18.9

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO_2	NOx	NO	NOx
5007	0.0	0.000	0.000	0.000	0.000	0.000	Limit ± 10%	
5003	77.5	0.779	0.779	0.787	-0.001	0.786	1%	1%
5004	37.8	0.380	0.380	0.383	0.000	0.383	1%	1%
5001	18.9	0.190	0.190	0.191	0.000	0.191	1%	1%
						Absolute Average Percent Difference	1%	1%

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

NO		**LIMITS**	**NOx**	
Correlation=	1.0000	**≥ 0.990**	Correlation=	1.0000
m (Slope)=	1.0106	**0.90-1.10**	m (Slope)=	1.0092
b (Intercept % of FS)=	-0.0566	**± 3% F.S.**	b (Intercept % of FS)=	-0.0368

Flow	O_3 Conc	NO Decrease	NO	NO2	NOX	% Diff. Vs Audit gas	
						NO_2	% Diff. Limit
5003	0	0.000	0.787	0.001	0.788		
5003	0.5	0.493	0.294	0.498	0.792	1%	± 10%
5003	0.25	0.256	0.531	0.262	0.792	2%	± 10%
5003	0.1	0.108	0.679	0.110	0.789	1%	± 10%
					Absolute Average Percent Difference	1.2%	± 10%

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

NO_2		**LIMITS**
Correlation=	1.0000	**≥ 0.995**
m (Slope)=	1.0089	**0.90-1.10**
b (Intercept % of FS)=	0.1591	**± 3% F.S.**

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

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

Auditor: Shea Beaton Date: February 3, 2016

Operator Signature: Location: McIntyre Center Edmonton

CALIBRATION GASES

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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	Gas Flow/	Concentration	Cylinder
Dilution	Gas	Concentration (PPM)	Dilution Flow	Factor	Concentration
4952	0.0	0.000			
4946	79.54	0.793	0.01608	62.183	49.3
4941	39.35	0.396	0.00796	125.565	49.7
4940	19.57	0.195	0.00396	252.427	49.2
				Average Cylinder Concentration:	**49.4**

Previous Stated Concentration PPM: 50.0

Percent variance from Stated: **1.2**

Meets Manufacturer Tolerance. Use manufacturers stated concentration [X] **COMMENTS:** SO2/NO blend 50.0ppm NO

<=5% Outside Manufacturer Tolerance. Use manufacturers concentration [ ]

> 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder [ ]

Auditor: Shea Beaton Date: February 2, 2016

Operator Signature: Location: McIntyre Center Edmonton

Alberta Government

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

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

Previous Stated Concentration PPM: 10.0

Percent variance from Stated: **1.1**

Meets Manufacturer Tolerance. Use manufacturers stated concentration [X] **COMMENTS:**

< =5% Outside Manufacturer Tolerance. Use manufacturers concentration [ ]

> 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder [ ]

Auditor: Al Clark Date: December 16, 2014

Operator Signature: Location: McIntyre Center Edmonton

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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.	698mmHg

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

	CH4	C3H8
Previous Stated Concentration PPM:	606	212
Percent variance from Stated:	**0.3**	**1.6**

Cylinder gas tolerances based on CH4 only

Meets Manufacturer Tolerance. Use manufacturers stated concentration [X] **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

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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:

Make/Model	Thermo 146i		
Serial Number	AMU 1809		
Last Verification Date	February 2, 2016		
Gas Type	NO	Conc.	48.79
Cylinder Number	CAL018024		

Flow Measurement Device:

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

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/	Concentration	Cylinder Concentration	
Dilution	Gas	NO	NOX	Dilution Flow	Factor	NO	NOX
4952	0.0	0.000	0.000				
4946	79.54	0.809	0.809	0.01608	62.183	50.3	50.3
4941	39.35	0.403	0.402	0.00796	125.565	50.6	50.5
4940	19.57	0.200	0.200	0.00396	252.427	50.5	50.5
					Average Cylinder Concentration:	**50.5**	**50.4**

	NO	NOx
Previous Stated Concentration PPM:	50.0	50.0
Percent variance from Stated:	**0.9**	**0.8**

Cylinder gas tolerances based on NO only

Meets Manufacturer Tolerance. Use manufacturers stated concentration [X] **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: 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**
Wunmi Adekanmbi	**Project Manager Assistant, Customer Service, Air Services**
Is an External Party Certifying the Report? (If 'Yes', fill in the fields below for the external person.	
☐ **Yes** ■ **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

26-07-2016

Report Issued Date (dd-mm-yyyy)

APPENDIX IV
DATA VALIDATION CERTIFICATION FORM

Validation Certificate Form

Client:	Lakeland Industry & Community Association	**Project #:**	2833-2016-06-30- C
Site:	Maskwa Site	**Contact:**	Mike Bisaga

Level 0 Preliminary Verification		**Date**	15-July-2016
Level 1 Primary Validation		**Date**	15-July-2016
Level 2 Final Validation		**Date**	26-July-2016
Level 3 Independent Data Review		**Date**	26-July-2016
Post-Final Validation	**NA**	**Date**	**NA**

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

Maxxam
A Bureau Veritas Group Company

maxxam.ca

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#1 2080 39 Ave. NE, Calgary
AB T2E 6P7

Toll Free 800-386-7247
Fax 403-219-3673

AMBIENT AIR MONITORING MONTHLY DATA REPORT

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

ST. LINA SITE

JOB #:2833-2016-06-31- C

June 2016

Prepared for:

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

Attention: MIKE BISAGA

DATE: **August 2, 2016**

Prepared by:

Wunmi Adekanmbi, M.Sc.
Project Manager Assistant, Customer Service, Air Services

Reviewed by:

Cheri Sinclair, B.Sc.
Supervisor, Customer Service, Air Services

SUMMARY

In June 2016, the Air Services Group of Maxxam Analytics conducted an ambient air monitoring program at the St. Lina Site of 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 AMD's 90% requirement.

An internal station audit was conducted on June 21. Audit results are included in this report.

All Parameters: Maximum Instantaneous data collected on June 2 at hour 12 and June 22 at hour 21 were invalidated as the analyzers and wind system were recovering from short power outages.

THC: Thirty-seven hours of data collected between June 8 and June 10 were invalidated due to low gas pressure.

NOX/NO/NO2: The monthly calibration was repeated on June 28 to address concerns arising from suspect calibrator issues.

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 St. Lina Site						MAXIMUM VALUES							OPERATIONAL TIME (%)
						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	1.9	1	0	8.7	SSE	0.8	17	99.2
H2S (PPB)	10	3	0	0	0.1	1.3	28	5	4.4	SSW	0.3	28	100.0
THC (PPM)	-	-	-	-	1.89	2.35	6	5	10.2	SSE	1.98	21	94.6
NO2 (PPB)	159	-	0	-	1.2	6.2	8	6	5.9	NE	2.5	28	98.3
NO (PPB)	-	-	-	-	0.1	1.5	30	14	16.9	SE	0.3	2, 12	98.3
NOX (PPB)	-	-	-	-	1.3	6.6	6, 8	5, 6	10.2 5.9	SSE NE	2.6	28	98.3
O3 (PPB)	82	-	0	-	34.9	64.6	6	12	16.9	SSE	50.2	4	99.2
PM2.5 (UG/M3)	80	30	0	0	4.1	18.9	28	15	9.8	W	8.0	8, 28	97.1
RELATIVE HUMIDITY (%)	-	-	-	-	59.9	91	9, 25	VAR	VAR	VAR	86.6	9	100.0
BAROMETRIC PRESSURE (MILIBAR)	-	-	-	-	930	942	27, 29	VAR	VAR	VAR	941	27	100.0
AMBIENT TEMPERATURE (DEG C)	-	-	-	-	16.9	30.9	28	12	10.1	SW	22.0	7	100.0
PRECIPITATION (MM)	-	-	-	-	0.1	3.8	24	1	6.2	SW	0.5	11	100.0
VECTOR WS (KPH)	-	-	-	-	10.0	27.3	15	6	-	SW	17.9	17	100.0
VECTOR WD (DEG)	-	-	-	-	-	-	-	-	-	-	-	-	100.0

NA-NOT AVAILABLE VAR-VARIOUS

SOUR GAS PROCESSING INDUSTRY
MONTHLY REPORT SUMMARY

St. Lina Site	Lakeland Industry & Community Association
Plant Name / Location	Company

Licence Number	Report Date	
	YEAR	MONTH
N/A	2016	June

CONTINUOUS AMBIENT MONITORING

			ONE - HOUR AVERAGE			24 - HOUR AVERAGE		
PARAMTER	STN NO.	% TIME OPERATIONAL	MAXIMUM CONC. (PPM)		NO. READINGS > REGULATION	MAXIMUM CONC. (PPM)		NO. READINGS > REGULATION
SO2	1	99.2	0.002		0	0.0008		0
H2S	1	100.0	0.001		0	0.0003		0
THC	1	94.6	2.35		-	1.98		-
NOX	1	98.3	0.0066		-	0.0026		-
NO	1	98.3	0.0015		-	0.0003		-
NO2	1	98.3	0.0062		0	0.0025		-
O3	1	99.2	0.065		0	0.0502		-
PM2.5	1	97.1	18.9	ug/m3	0	8.0	ug/m3	0
RH	1	100.0	91	%	-	86.6	%	-
BP	1	100.0	942	MB	-	941	MB	-
Ambient TPX	1	100.0	30.9	Deg C	-	22.0	Deg C	-
PRECIPITATION	1	100.0	3.8	MM		0.5	MM	
Wind Speed	1	100.0	27.3	KPH	-	17.9	KPH	-
Wind Direction	1	100.0	-		-	-		-

	FOR ALBERTA ENVIRONMENT USE ONLY
SIGNATURE OF COMPANY REPRESENTATIVE	

Exceedence Summary Report

SO_2 1- Hour Exceedences

No Exceedences Recorded During the Month

SO_2 24- Hour Exceedences

No Exceedences Recorded During the Month

H2S 1- Hour Exceedences

No Exceedences Recorded During the Month

H2S 24- Hour Exceedences

No Exceedences Recorded During the Month

NO2 1- Hour Exceedences

No Exceedences Recorded During the Month

PM2.5 1- Hour Exceedences

No Exceedences Recorded During the Month

PM2.5 24- Hour Exceedences

No Exceedences Recorded During the Month

O3 1- Hour Exceedences

No Exceedences Recorded During the Month

TABLE OF CONTENTS

1.0 Discussion

This monthly report consists of data for parameters Sulphur Dioxide (SO2), Hydrogen Sulphide (H2S), Total Hydrocarbon (THC), Oxides of Nitrogen (NOx), Nitric Oxides (NO), Nitrogen Dioxide (NO2), Ozone (O3), Particulate Matter 2.5 (PM2.5), Relative Humidity (RH), Barometric Pressure (BP), Precipitation, Ambient Temperature (AmbTPX), Wind Speed (WS), Wind Direction (WD) and Standard Deviation Wind Direction (STDWD).

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

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

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

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

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

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

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

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

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

Trailer inspection was conducted on June 17.

SULPHUR DIOXIDE (SO2)
The analyzer was working well throughout the month. The routine monthly calibration was performed on June 17. The channel was placed in "maintenance" mode for few hours on June 20 and June 29 while work was being done on the Ozone channel. Maximum Instantaneous data collected on June 2 at hour 12 and June 22 at hour 21 were invalidated as the analyzer was recovering from short power outages.

HYDROGEN SULPHIDE (H2S)
The analyzer was working well throughout the month. The routine monthly calibration was performed on June 17. An internal quality audit was conducted on June 21. Audit results are included in this report. Maximum Instantaneous data collected on June 2 at hour 12 and June 22 at hour 21 were invalidated as the analyzer was recovering from short power outages.

TOTAL HYDROCARBONS (THC)
The analyzer started recording lower than historical readings, consistent with low gas pressure, late in the evening on June 8. The Hydrogen and span gas cylinders were replaced on June 10. A successful zero/span check was performed after the cylinders were replaced. Thirty-seven hours data collected from June 8 at hour 20 to June 10 at hour 8 were invalidated due to this event. Maximum Instantaneous data collected on June 2 at hour 12 and June 22 at hour 21 were invalidated as the analyzer was recovering from short power outages.
The routine monthly calibration was performed on June 20.

NITROGEN DIOXIDE (NO2)
The routine monthly calibration was performed on June 17. The calibration was successful. The channel was placed in "maintenance" mode for few hours on June 21 for a calibrator cross-check. There were suspicions about the calibrator that was used for the June 17 calibration. As a precaution, the monthly calibration was repeated on June 28 using a different calibrator. The calibration met AMD requirements.
Maximum Instantaneous data collected on June 2 at hour 12 and June 22 at hour 21 were invalidated as the analyzer was recovering from short power outages.

OZONE (O3)
The routine monthly calibration was performed on June 20. The channel was placed in "maintenance" mode for few hours on June 17 while work was being done on the SO2 channel. The analyzer spanned high on June 28 as the pump for the zero/span system required maintenance. The pump was rebuilt on June 29. A successful zero/span check was completed afterwards. No data was discarded. Maximum Instantaneous data collected on June 2 at hour 12 and June 22 at hour 21 were invalidated as the analyzer was recovering from short power outages.

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

Two Teom audits were performed this month: one was completed on June 14, and the other audit was performed on 28. Both the inlet filter and the FDMS filter were replaced during the audits.

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

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

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

The wind system was working well throughout the month.

Maximum instantaneous data collected on June 14 at hour 13 was invalidated due to a spike; reason unknown. Maximum Instantaneous data collected on June 2 at hour 12 and June 22 at hour 21 were invalidated as the wind system was recovering from short power outages.

RELATIVE HUMIDITY (RH)

The humidity sensor was working well throughout the month.

BAROMETRIC PRESSURE (BP)

The pressure sensor was working well throughout the month.

PRECIPITATION

The rain gauge system working well throughout the month.

AMBIENT TEMPERATURE (TPX)

The temperature sensor was working well throughout the month.

2.0 Project Personnel

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

3.0 Plant Monthly Required AMD Summary

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

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

4.0 Calculations and Results

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

5.0 Methods and Procedures

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

Maxxam AIR SOP-00208: RM Young Monitor Calibration
Maxxam AIR SOP-00209: Ambient H2S Monitoring
Maxxam AIR SOP-00211: Ambient SO2 Monitoring
Maxxam AIR SOP-00212: Ambient O3 Monitoring
Maxxam AIR SOP-00213: Ambient NO/NO2/NOx 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 Flourescent Analyzer
Hydrogen Sulphide - API 101E UV Flourescent Analyzer
Total Hydrocarbons - Thermo 51C FID Analyzer
Oxides of Nitrogen - API 200E Chemiluminescent Analyzer
Ozone - Thermo 49i Photometric Analyzer
Particulate Matter (PM2.5) - R&P 1405F Teom Unit
Wind System - Met One Unit
Relative Humidity - Met One Unit
Barometric Pressure - Met One Unit
Ambient Temperature - Met One Unit
Precipitation - Met One Unit
Datalogger - ESC 8832

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

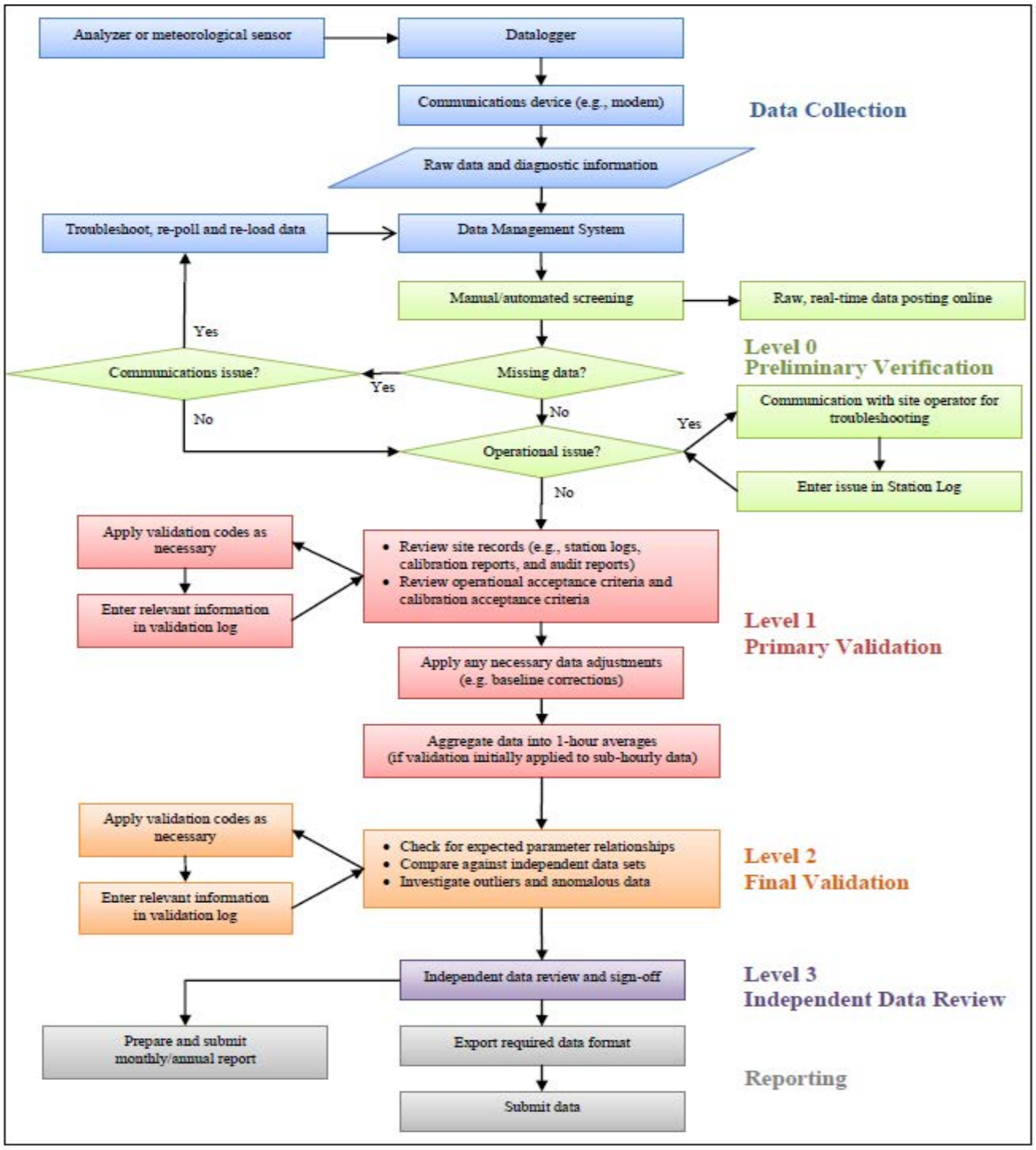
Level 0 Preliminary Verification
Level 0 data are raw data obtained directly from the data acquisition system (DAS). Under the step of Level 0, these data undergo a certain amount of manual or automated screening and flagging. It included a) identification of periods of missing data; b) verification 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

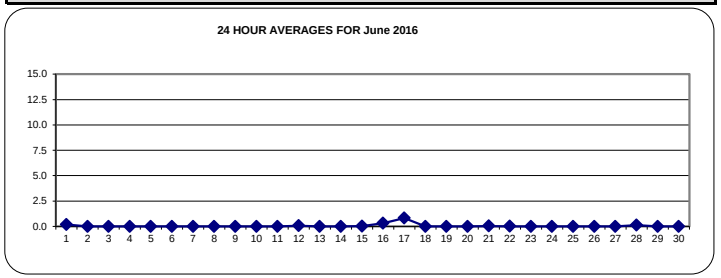
SULPHUR DIOXIDE (SO2) hourly averages in ppb

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	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	***1.9***	0.0	0.0	0.0	**S**	0.0	0.0	0.0	0.0	1.0	0.8	0.3	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	***1.9***	0.2	24
2	0.0	0.0	0.0	**S**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	**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
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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
5	**S**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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
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	**S**	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	**S**	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	**S**	0.0	0.0	0.0	0.0	0.0	0.0	24
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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
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	**S**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**S**	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	0.1	0.1	0.2	0.0	0.1	0.6	0.1	0.2	0.2	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	0.6	0.1	24
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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
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	**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
15	0.0	0.0	0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**S**	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
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.9	0.6	0.6	0.2	**S**	0.3	0.3	0.2	0.3	0.3	0.3	0.4	0.5	0.7	0.8	0.8	0.0	0.9	0.3	24
17	0.9	1.2	1.2	1.3	1.4	1.4	1.6	1.6	1.7	1.7	**C**	**C**	**C**	**C**	**C**	**C**	0.0	0.0	0.0	0.0	0.0	0.0	**S**	0.0	0.0	1.7	***0.8***	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	**S**	0.0	0.0	0.0	0.0	0.0	24
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**S**	0.0	0.0	0.0	0.0	0.0	0.0	24
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**Y**	**Y**	0.0	0.0	0.0	**S**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22
21	0.0	0.0	0.0	0.0	0.2	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	**S**	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	24
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**S**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	24
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**S**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**S**	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	**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
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**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
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	**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
28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.9	1.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	**S**	0.0	0.0	1.1	0.1	24
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**Y**	**Y**	**Y**	**S1**	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	20
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**S**	0.0	0.0	0.0	0.0	0.0	0.0	24
HOURLY MAX	1.9	1.2	1.2	1.3	1.4	1.4	1.6	1.6	1.7	1.7	1.1	0.3	0.5	0.3	0.3	0.2	0.3	0.3	0.3	0.4	0.5	0.7	0.8	0.8				
HOURLY AVG	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				

STATUS FLAG CODES

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

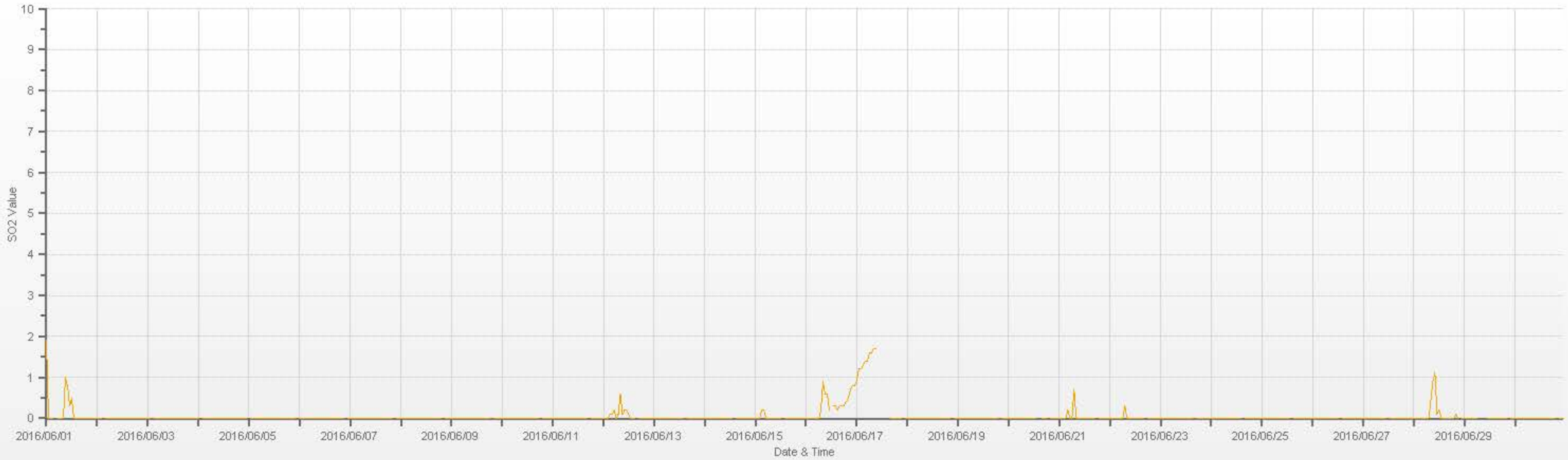


OBJECTIVE LIMIT: **ALBERTA ENVIRONMENT:** 1-HR 172 PPB | 24-HR 48 PPB

MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:			0				
NUMBER OF 24-HR EXCEEDENCES:			0				
NUMBER OF NON-ZERO READINGS:			51				
MINIMUM 1-HR AVERAGE	0.0	PPB	@ HOUR(S)	VAR	ON DAY(S)	ALL	
MAXIMUM 1-HR AVERAGE:	1.9	PPB	@ HOUR(S)	0	ON DAY(S)	1	
MAXIMUM 24-HR AVERAGE:	0.8	PPB			ON DAY(S)	17	
					VAR-VARIOUS		
IZS CALIBRATION TIME:	31	HRS	OPERATIONAL TIME:			714	HRS
MONTHLY CALIBRATION TIME:	6	HRS	AMD OPERATION UPTIME:			99.2	%
STANDARD DEVIATION:	0.22		MONTHLY AVERAGE:			0.0	PPB

SO2[ppb] Station: LICA ST. LINA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



SULPHUR DIOXIDE MAX instantaneous maximum in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	3.0	3.0	3.1	3.0	**S**	3.1	3.1	3.3	3.4	5.7	5.2	4.5	5.1	4.2	4.0	3.8	3.6	3.7	3.6	3.6	3.5	3.4	3.6	3.6	3.0	5.7	3.7	24
2	3.5	3.6	3.5	**S**	3.7	3.8	3.7	3.8	3.9	3.8	3.9	4.3	**P**	4.1	4.1	4.0	4.0	4.0	4.0	3.8	3.9	3.7	3.5	3.3	3.3	4.3	3.8	23
3	3.5	3.5	**S**	3.4	3.6	3.3	3.3	3.0	3.2	3.3	3.1	3.1	3.1	3.0	3.0	3.1	3.1	3.1	3.1	3.2	3.0	3.0	3.1	3.1	3.0	3.6	3.2	24
4	3.1	**S**	3.0	2.8	2.8	2.7	2.8	2.7	2.8	2.8	2.7	2.8	3.1	2.9	2.9	2.8	3.1	3.0	2.9	3.1	2.9	2.9	2.9	2.9	2.7	3.1	2.9	24
5	**S**	3.0	3.1	2.9	3.0	2.9	3.1	3.1	3.1	3.3	3.1	3.0	3.2	3.2	3.1	3.0	3.0	3.4	3.1	3.1	3.1	3.1	3.3	**S**	2.9	3.4	3.1	24
6	3.0	3.0	3.3	3.1	3.0	3.2	3.1	3.3	3.5	3.4	3.9	3.7	4.0	3.9	4.0	4.1	4.2	3.9	3.7	3.8	3.9	3.9	**S**	3.6	3.0	4.2	3.6	24
7	3.9	3.9	3.9	4.0	4.0	3.9	3.9	4.1	4.1	4.2	4.0	4.0	4.0	3.8	3.9	4.0	3.9	3.9	4.1	3.8	3.9	**S**	3.8	3.9	3.8	4.2	4.0	24
8	4.0	3.8	3.8	3.8	4.0	4.1	4.1	4.2	4.3	4.3	4.1	4.3	4.3	4.2	4.1	4.1	4.3	4.3	4.3	4.3	**S**	4.4	4.3	4.4	3.8	4.4	4.2	24
9	4.4	4.6	4.4	4.5	4.5	4.5	4.6	4.6	4.5	4.5	4.6	4.6	4.4	4.6	4.4	4.4	4.3	4.3	4.4	**S**	4.1	4.1	4.0	4.0	4.0	4.6	4.4	24
10	3.8	3.8	3.8	3.8	3.8	3.7	3.5	3.6	3.6	3.5	3.5	3.5	3.4	3.3	3.3	3.3	3.6	3.7	**S**	3.4	3.5	3.5	3.6	3.5	3.3	3.8	3.6	24
11	3.4	3.5	3.7	3.5	3.6	3.6	3.6	3.3	3.6	3.6	3.6	3.8	3.7	3.8	3.8	3.8	3.8	**S**	3.8	3.8	4.4	4.7	4.3	4.7	3.3	4.7	3.8	24
12	4.5	4.5	4.4	4.9	4.9	5.1	4.8	5.1	5.4	5.1	5.5	5.5	5.0	4.3	4.1	4.1	**S**	4.3	4.1	4.3	4.1	4.2	4.1	4.1	4.1	5.5	4.6	24
13	4.1	4.0	4.1	3.9	4.1	3.9	3.9	4.0	4.1	4.0	4.1	4.1	4.1	4.1	4.2	**S**	4.7	4.5	4.4	4.4	4.4	4.3	4.6	4.5	3.9	4.7	4.2	24
14	4.3	4.5	4.6	4.7	4.7	4.7	4.6	4.9	5.1	5.1	4.9	4.7	4.9	5.0	**S**	4.7	4.7	4.7	4.8	5.0	4.9	4.9	4.7	4.7	4.3	5.1	4.8	24
15	4.9	5.0	5.1	5.5	5.6	5.1	5.1	4.7	4.7	4.8	4.6	4.6	4.9	**S**	4.7	4.6	4.6	4.9	4.7	4.7	4.5	4.6	4.7	4.6	4.5	5.6	4.8	24
16	4.7	4.4	4.7	4.4	4.6	4.5	4.9	5.2	***6.2***	5.8	5.6	5.2	**S**	5.0	5.1	4.6	4.6	4.7	4.6	4.5	4.4	4.6	4.8	4.6	4.4	***6.2***	4.9	24
17	4.6	4.7	4.5	4.5	4.5	4.4	4.4	4.4	4.3	4.3	**C**	**C**	**C**	**C**	**C**	**C**	1.6	1.7	1.4	1.5	1.6	1.6	**S**	1.6	1.4	4.7	3.3	24
18	1.9	1.6	1.6	1.6	1.7	1.9	1.9	1.7	1.6	1.8	1.7	1.7	1.7	1.7	1.7	1.8	1.8	2.0	1.7	1.9	1.7	**S**	2.2	2.1	1.6	2.2	1.8	24
19	2.1	2.1	2.1	1.9	1.7	1.6	1.7	1.8	1.8	1.8	1.8	1.9	1.7	1.7	1.4	1.3	1.6	1.5	1.7	1.6	**S**	1.4	1.5	1.5	1.3	2.1	1.7	24
20	1.4	1.4	1.2	1.5	1.2	1.4	1.4	1.3	1.3	1.4	1.3	1.4	1.4	1.3	**Y**	**Y**	1.3	1.6	1.4	**S**	1.3	1.3	1.6	1.6	1.2	1.6	1.4	22
21	1.5	1.5	1.5	1.6	3.3	3.0	2.7	4.2	2.0	2.0	2.3	2.7	2.3	2.0	2.3	2.2	2.2	2.1	**S**	2.0	1.9	1.9	2.0	2.1	1.5	4.2	2.2	24
22	1.9	1.9	1.9	2.2	2.0	1.9	2.5	2.9	2.7	2.6	2.5	2.3	2.3	2.1	2.1	2.4	2.2	**S**	2.1	2.1	2.3	**P**	2.0	2.1	1.9	2.9	2.2	23
23	2.0	2.0	2.0	2.1	2.1	2.2	2.7	2.8	2.6	2.7	2.4	2.3	2.4	2.4	2.3	2.3	**S**	2.4	2.6	2.5	2.5	2.4	2.3	2.3	2.0	2.8	2.4	24
24	2.3	2.2	2.2	2.5	2.2	2.4	2.3	2.5	2.3	2.5	2.3	2.5	2.4	2.5	2.3	**S**	2.3	2.4	2.5	2.5	2.6	2.4	2.4	2.3	2.2	2.6	2.4	24
25	2.3	2.6	2.5	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	**S**	1.9	2.1	2.0	1.9	2.0	2.0	2.0	2.0	1.9	1.9	2.6	2.2	24
26	1.9	1.9	1.7	1.7	1.7	1.9	1.7	1.6	1.7	1.8	1.8	1.6	1.7	**S**	1.7	1.7	1.8	1.7	1.8	1.7	1.5	1.6	1.7	1.5	1.5	1.9	1.7	24
27	1.8	1.8	1.5	1.5	1.6	1.9	1.9	2.1	2.3	2.0	1.8	1.7	**S**	1.7	1.5	1.5	1.7	1.9	1.7	1.8	1.7	1.7	1.7	2.0	1.5	2.3	1.8	24
28	2.0	2.3	2.1	2.1	2.1	2.1	2.1	2.5	3.1	3.9	4.2	3.2	3.2	2.6	2.5	2.3	2.4	2.5	2.3	2.6	2.8	2.7	**S**	2.7	2.0	4.2	2.6	24
29	2.6	2.6	2.3	2.6	2.4	2.4	2.3	**Y**	**Y**	**Y**	**S1**	2.1	2.1	2.3	2.4	2.2	2.3	2.4	2.3	2.2	2.3	**S**	2.3	2.2	2.1	2.6	2.3	20
30	2.2	2.1	2.3	2.4	2.4	2.5	2.3	2.4	2.6	2.4	2.5	2.5	2.6	2.5	2.9	3.1	2.7	2.5	2.5	2.8	**S**	2.7	2.6	2.7	2.1	3.1	2.5	24
HOURLY MAX	4.9	5.0	5.1	5.5	5.6	5.1	5.1	5.2	6.2	5.8	5.6	5.5	5.1	5.0	5.1	4.7	4.7	4.9	4.8	5.0	4.9	4.9	4.8	4.7				
HOURLY AVG	3.1	3.1	3.0	3.1	3.1	3.1	3.1	3.3	3.3	3.4	3.3	3.2	3.2	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	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: 675

MAXIMUM INSTANTANEOUS VALUE: 6.2 PPB @ HOUR(S) 8 ON DAY(S) 16

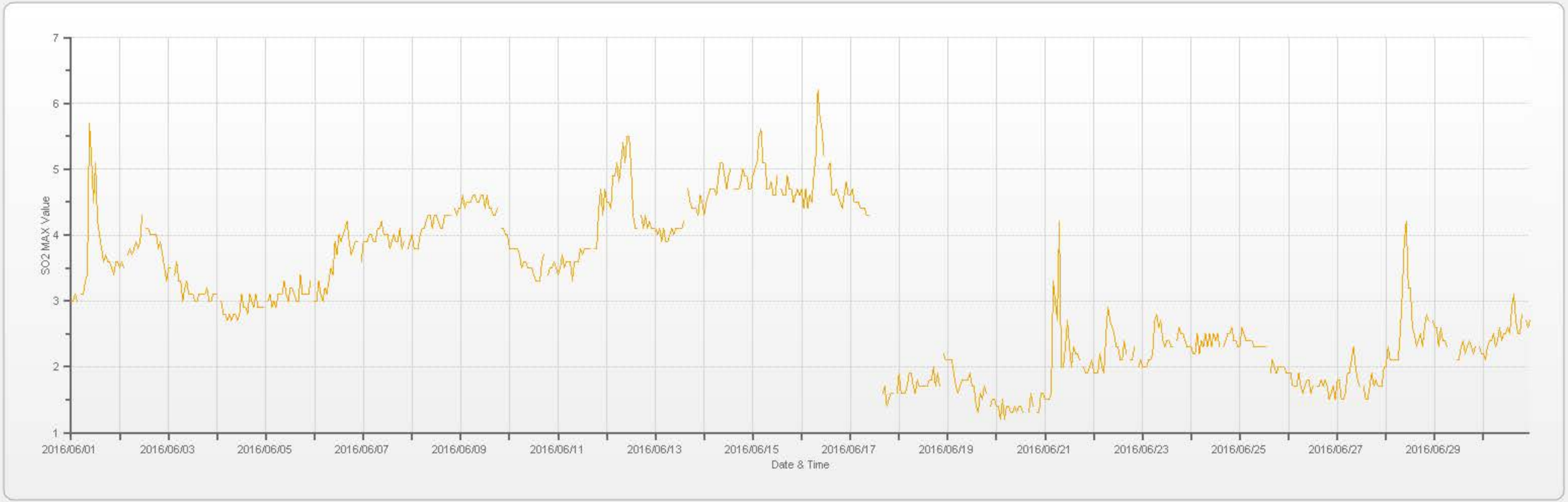
VAR-VARIOUS

IZS CALIBRATION TIME: 31 HRS OPERATIONAL TIME: 712 HRS

MONTHLY CALIBRATION TIME: 6 HRS

STANDARD DEVIATION: 1.12

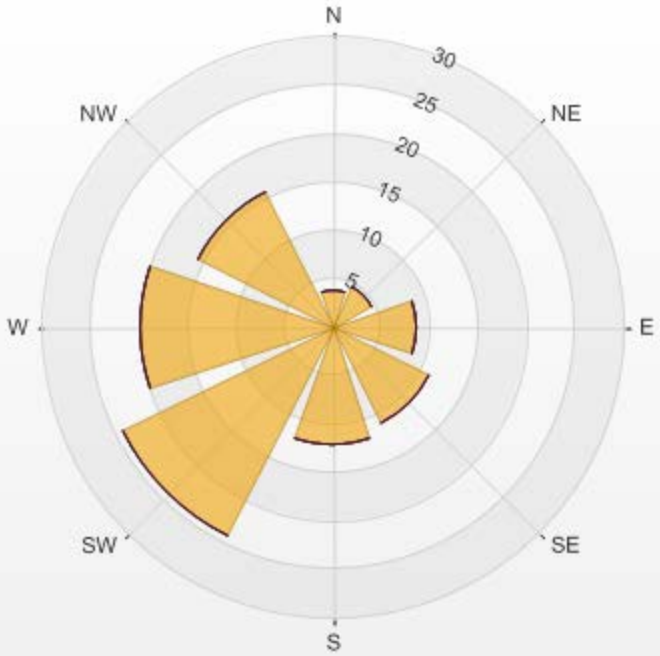
SO2 MAX[ppb] Station: LICA ST. LINA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



Wind: LICA ST. LINA Monitor: SO2 [ppb] Monthly: 06/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
Calm: 0.00% Valid Data: 94.03% Calm Avg: 0.00

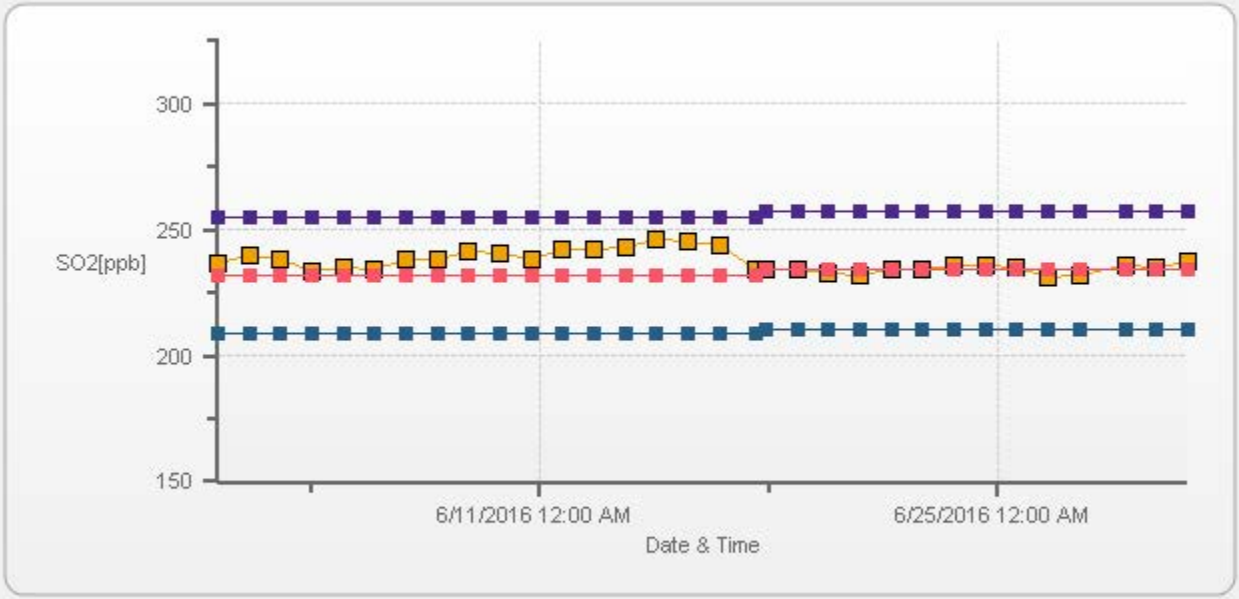
Direction	0.0-20.0	20.0-60.0	60.0-110.0	110.0-170.0	170.0-340.0	>340.0	Total
N	3.84	0	0	0	0	0	3.84
NE	4.58	0	0	0	0	0	4.58
E	8.57	0	0	0	0	0	8.57
SE	11.08	0	0	0	0	0	11.08
S	12.26	0	0	0	0	0	12.26
SW	24.22	0	0	0	0	0	24.22
W	19.94	0	0	0	0	0	19.94
NW	15.51	0	0	0	0	0	15.51
Summary	100	0	0	0	0	0	100

LICA ST. LINA 2016/06/01 12:00 AM - 2016/06/30 11:00 PM Calm: 0.00%



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

SO2[ppb] Calibration: LICA ST. LINA Monthly: 06/2016 Type: Span



HYDROGEN SULPHIDE

HYDROGEN SULPHIDE (H2S) hourly averages in ppb

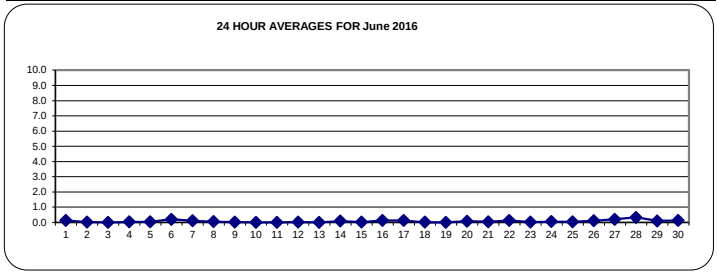
MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	0.8	0.0	0.1	0.5	S	1.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.1	24
2	0.0	0.0	0.0	S	0.0	0.0	0.2	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	0.2	0.0	24
3	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
4	0.0	S	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	24
5	S	0.0	0.0	0.3	0.2	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.3	0.0	24
6	0.0	0.1	0.1	0.6	1.1	1.1	1.0	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.1	0.0	1.1	0.2	24
7	0.0	0.0	0.0	0.0	0.7	0.7	0.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.7	0.1	24
8	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.5	0.0	24
9	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	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.1	0.0	24
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	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	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	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	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	S	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	0.1	0.8	0.5	0.3	0.1	0.0	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	0.0	0.8	0.1	24
15	0.0	0.0	0.2	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	0.0	0.0	0.2	0.0	24
16	0.0	0.1	0.1	0.2	0.6	0.6	0.6	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	0.0	0.0	0.0	0.0	0.6	0.1	24
17	0.2	0.1	0.1	0.2	0.4	0.5	0.2	0.1	0.1	0.1	C	C	C	C	C	C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.5	0.1	24
18	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	S	0.0	0.0	0.0	0.1	0.0	24
19	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	S	0.0	0.0	0.0	0.0	0.1	0.0	24
20	0.0	0.0	0.0	0.0	0.7	0.0	0.1	0.4	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	0.7	0.1	24
21	0.0	0.0	0.0	0.0	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.1	Q	Q	Q	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	24
22	0.2	0.1	0.2	0.0	0.6	0.8	0.5	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.1	24
23	0.0	0.1	0.1	0.1	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	0.0	0.0	0.0	0.2	0.0	24
24	0.0	0.1	0.3	0.4	0.2	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	0.4	0.0	24
25	0.0	0.1	0.2	0.1	0.3	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	0.0	0.0	0.0	0.0	0.0	0.3	0.0	24
26	0.0	0.0	0.1	0.2	0.2	0.3	0.4	0.7	0.3	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	0.1	0.0	0.7	0.1	24
27	0.3	0.4	0.2	0.9	1.1	0.7	0.7	0.3	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	1.1	0.2	24
28	0.5	1.0	1.0	1.1	0.8	***1.3***	0.8	0.7	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	S	0.0	0.0	***1.3***	***0.3***	24
29	0.6	0.8	0.1	0.1	0.2	0.3	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	0.8	0.1	24
30	0.0	0.0	0.0	0.2	0.4	0.8	0.8	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.8	0.1	24
HOURLY MAX	0.8	1.0	1.0	1.1	1.1	1.3	1.0	0.7	0.5	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1				
HOURLY AVG	0.1	0.1	0.1	0.2	0.3	0.3	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				

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

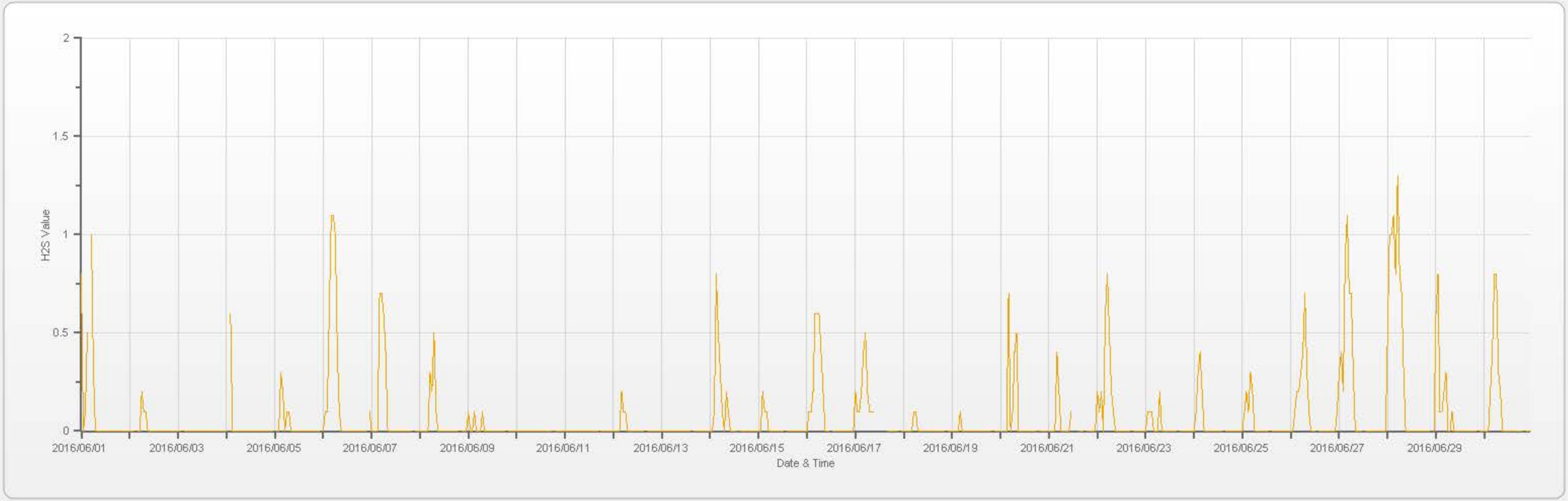
OBJECTIVE LIMIT: **ALBERTA ENVIRONMENT:** 1-HR 10 PPB | 24-HR 3 PPB



MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:			0				
NUMBER OF 24-HR EXCEEDENCES:			0				
NUMBER OF NON-ZERO READINGS:			134				
MINIMUM 1-HR AVERAGE	0.0	PPB	@ HOUR(S)	VAR	ON DAY(S)	ALL	
MAXIMUM 1-HR AVERAGE:	1.3	PPB	@ HOUR(S)	5	ON DAY(S)	28	
MAXIMUM 24-HR AVERAGE:	0.3	PPB			ON DAY(S)	28	
					VAR-VARIOUS		
IZS CALIBRATION TIME:	31	HRS	OPERATIONAL TIME:			720	HRS
MONTHLY CALIBRATION TIME:	6	HRS	AMD OPERATION UPTIME:			100.0	%
STANDARD DEVIATION:	0.19		MONTHLY AVERAGE:			0.1	PPB

H2S[ppb] Station: LICA ST. LINA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



HYDROGEN SULPHIDE MAX instantaneous maximum in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	1.2	1.0	1.1	2.1	**S**	2.5	1.5	1.1	0.9	0.9	0.9	0.9	0.8	0.8	0.9	0.9	1.0	1.0	1.0	0.9	0.9	1.0	1.0	1.0	0.8	2.5	1.1	24
2	1.2	1.1	1.2	**S**	1.4	1.5	1.5	1.5	1.4	1.2	1.1	1.0	**P**	1.2	1.0	1.1	1.0	1.1	1.0	1.2	1.1	1.2	1.1	1.1	1.0	1.5	1.2	23
3	1.1	1.1	**S**	1.0	1.0	1.0	1.0	0.9	0.8	0.8	0.9	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.7	0.7	0.7	0.9	0.9	0.7	1.1	0.8	24
4	1.0	**S**	2.4	1.1	0.8	0.7	0.7	0.6	0.6	0.6	0.6	0.5	0.6	0.5	0.6	0.7	0.6	0.6	0.6	0.6	0.7	0.6	0.7	0.6	0.5	2.4	0.7	24
5	**S**	0.8	1.1	1.2	1.5	0.9	1.0	1.0	0.9	0.6	0.7	0.6	0.6	0.7	0.6	0.7	0.6	0.6	0.6	0.6	0.7	0.7	0.7	**S**	0.6	1.5	0.8	24
6	1.1	1.0	1.1	1.9	2.3	2.2	2.1	1.5	1.2	1.1	0.9	0.9	0.9	0.9	1.0	0.9	1.0	1.0	1.0	1.0	1.1	1.2	**S**	1.4	0.9	2.3	1.2	24
7	1.2	1.2	1.3	1.3	2.5	2.1	2.0	1.7	1.3	1.2	1.1	1.1	1.0	0.9	0.9	0.9	1.0	0.9	1.0	1.1	1.1	**S**	1.0	1.0	0.9	2.5	1.3	24
8	1.0	1.3	1.1	1.2	1.2	2.1	2.1	2.5	1.6	1.4	1.5	1.4	1.1	1.2	1.2	1.2	1.2	1.2	1.4	1.5	**S**	1.3	1.3	1.4	1.0	2.5	1.4	24
9	1.8	1.5	1.6	1.6	1.6	1.5	1.6	1.6	1.5	1.4	1.4	1.4	1.4	1.4	1.4	1.2	1.2	1.2	1.3	**S**	1.1	1.2	1.2	1.2	1.1	1.8	1.4	24
10	1.3	1.1	1.2	1.2	1.2	1.1	1.0	1.0	0.9	1.0	0.9	0.9	0.9	0.8	0.9	0.9	0.8	0.9	**S**	0.8	0.9	1.0	0.9	1.0	0.8	1.3	1.0	24
11	1.0	1.1	1.1	1.1	1.4	1.3	1.2	1.1	1.0	1.1	1.1	1.2	1.4	1.2	1.3	1.2	1.4	**S**	1.4	1.4	1.4	1.1	1.2	1.2	1.0	1.4	1.2	24
12	1.3	1.4	1.4	1.5	1.7	1.6	1.5	1.4	1.4	1.3	1.2	1.2	1.2	1.2	1.1	1.1	**S**	1.2	1.3	1.2	1.2	1.1	1.1	1.3	1.1	1.7	1.3	24
13	1.5	1.4	1.4	1.2	1.3	1.3	1.5	1.1	1.2	1.0	1.1	1.1	1.1	1.1	1.1	**S**	1.2	1.2	1.2	1.2	1.3	1.4	1.4	1.3	1.0	1.5	1.2	24
14	1.4	1.4	2.0	2.6	***2.7***	2.0	1.9	1.7	1.8	1.9	1.7	1.4	1.4	1.3	**S**	1.4	1.4	1.4	1.5	1.4	1.4	1.4	1.5	1.5	1.3	***2.7***	1.7	24
15	1.5	1.7	1.8	1.7	1.7	1.6	1.6	1.6	1.5	1.4	1.4	1.4	1.4	**S**	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.4	1.5	1.4	1.3	1.8	1.5	24
16	1.6	1.7	1.8	1.8	2.3	2.2	2.2	2.0	2.0	1.7	1.4	1.3	**S**	1.4	1.3	1.7	1.5	1.4	1.3	1.4	1.3	1.3	1.3	1.4	1.3	2.3	1.6	24
17	1.5	1.3	1.3	1.6	1.6	1.7	1.6	1.2	1.2	1.2	**C**	**C**	**C**	**C**	**C**	**C**	0.5	0.5	0.5	0.4	0.5	0.5	**S**	0.6	0.4	1.7	1.0	24
18	0.5	0.6	0.6	0.7	0.8	1.0	1.0	0.8	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.5	0.5	0.5	0.4	0.5	0.6	**S**	0.6	0.7	0.4	1.0	0.6	24
19	0.7	0.6	0.7	0.8	0.8	0.8	0.6	0.6	0.7	0.5	0.6	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.5	0.3	**S**	0.4	0.4	0.4	0.3	0.8	0.5	24
20	0.4	0.6	0.4	1.0	2.0	0.9	1.2	1.6	1.7	0.5	0.3	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.3	**S**	0.4	0.4	0.4	0.4	0.3	2.0	0.6	24
21	0.4	0.5	0.5	0.9	1.5	1.1	0.8	0.6	0.7	0.7	0.9	1.0	**Q**	**Q**	**Q**	**Q**	0.6	0.5	**S**	0.6	0.7	0.7	0.6	0.7	0.4	1.5	0.7	24
22	1.2	1.0	1.2	1.1	1.5	1.5	1.5	1.1	0.9	0.7	0.7	0.7	0.6	0.6	0.6	0.5	0.5	**S**	0.6	0.7	0.6	**P**	0.6	0.7	0.5	1.5	0.9	23
23	0.7	1.3	1.2	1.2	1.2	1.2	1.3	1.5	0.8	0.7	0.7	0.7	0.7	0.7	0.6	0.7	**S**	0.8	0.7	0.7	0.7	0.9	0.9	0.9	0.6	1.5	0.9	24
24	0.8	1.7	1.5	2.1	1.4	1.3	1.1	1.0	1.1	1.0	0.9	0.8	0.8	0.8	0.7	**S**	0.7	0.7	0.8	0.8	0.8	0.8	0.9	1.0	0.7	2.1	1.0	24
25	1.1	1.2	1.2	1.2	1.3	1.3	1.0	0.9	0.8	0.8	0.7	0.7	0.6	0.6	**S**	0.8	0.6	0.7	0.6	0.6	0.7	0.6	0.7	0.7	0.6	1.3	0.8	24
26	0.8	0.8	0.9	1.0	1.1	1.0	1.3	1.5	1.2	0.9	0.6	0.5	0.5	**S**	0.5	0.5	0.5	0.4	0.4	0.5	0.5	0.6	0.6	0.8	0.4	1.5	0.8	24
27	1.0	1.1	0.9	1.7	1.7	1.5	1.6	1.4	0.5	0.5	0.3	0.4	**S**	0.3	0.3	0.4	0.3	0.4	0.4	0.4	0.6	0.6	0.6	1.2	0.3	1.7	0.8	24
28	1.5	2.0	2.1	2.0	1.9	2.3	1.8	1.5	1.4	0.8	0.6	0.6	0.6	0.7	0.6	0.6	0.6	0.7	0.6	0.9	0.6	0.6	**S**	0.9	0.6	2.3	1.1	24
29	2.0	1.9	1.2	1.0	1.1	1.8	1.3	0.8	1.0	0.7	0.6	0.6	0.5	0.6	0.6	0.5	0.6	0.6	0.5	0.5	0.7	**S**	0.5	0.6	0.5	2.0	0.9	24
30	0.9	1.0	1.1	1.1	1.4	1.7	1.7	1.3	1.1	1.0	0.9	0.7	0.8	0.7	1.2	1.3	0.8	0.8	0.7	0.7	**S**	0.8	1.0	0.8	0.7	1.7	1.0	24
HOURLY MAX	2.0	2.0	2.4	2.6	2.7	2.5	2.2	2.5	2.0	1.9	1.7	1.4	1.4	1.4	1.4	1.7	1.5	1.4	1.5	1.5	1.4	1.4	1.5	1.5				
HOURLY AVG	1.1	1.2	1.3	1.4	1.5	1.5	1.4	1.3	1.1	1.0	0.9	0.9	0.8	0.8	0.8	0.9	0.8	0.8	0.8	0.9	0.9	0.9	0.9	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: 677

MAXIMUM INSTANTANEOUS VALUE: 2.7 PPB @ HOUR(S) 4 ON DAY(S) 14

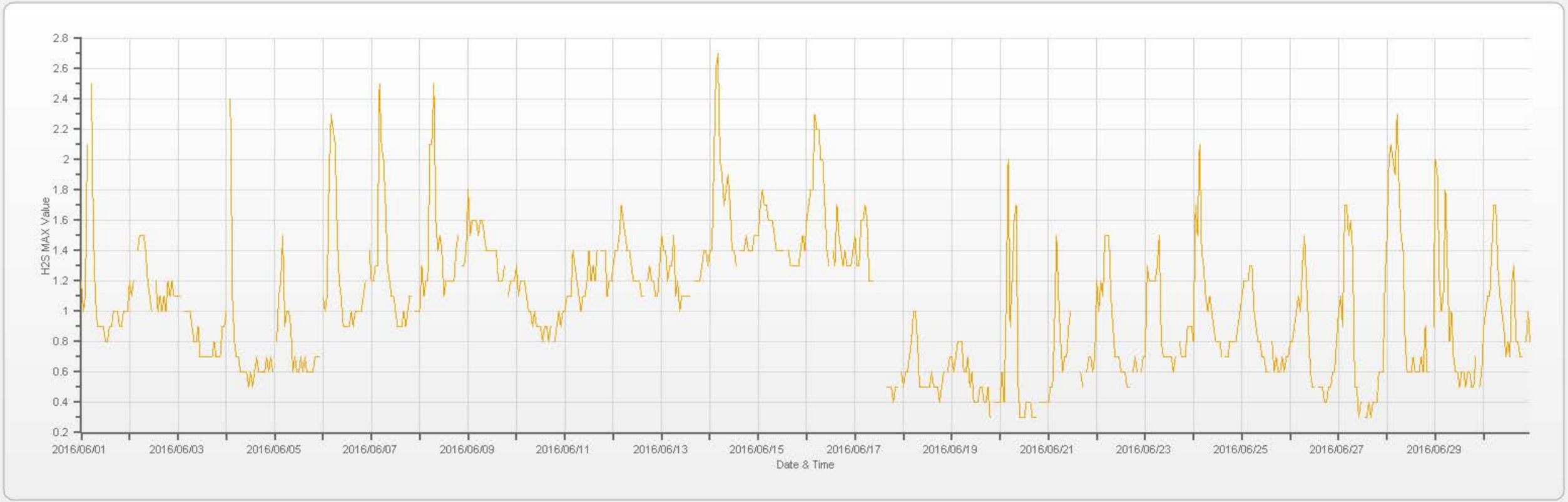
VAR-VARIOUS

IZS CALIBRATION TIME: 31 HRS OPERATIONAL TIME: 718 HRS

MONTHLY CALIBRATION TIME: 6 HRS

STANDARD DEVIATION: 0.44

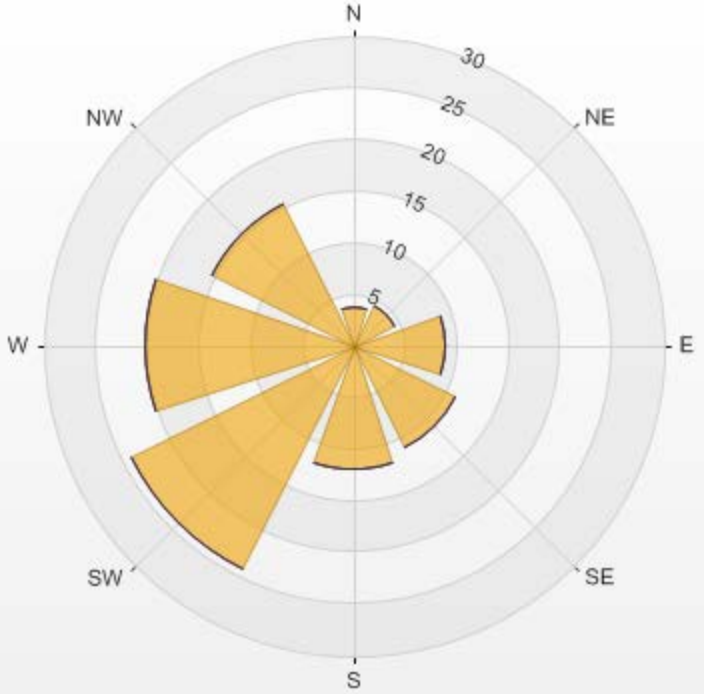
H2S MAX[ppb] Station: LICA ST. LINA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



Wind: LICA ST. LINA Monitor: H2S [ppb] Monthly: 06/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
Calm: 0.00% Valid Data: 94.44% Calm Avg: 0.00

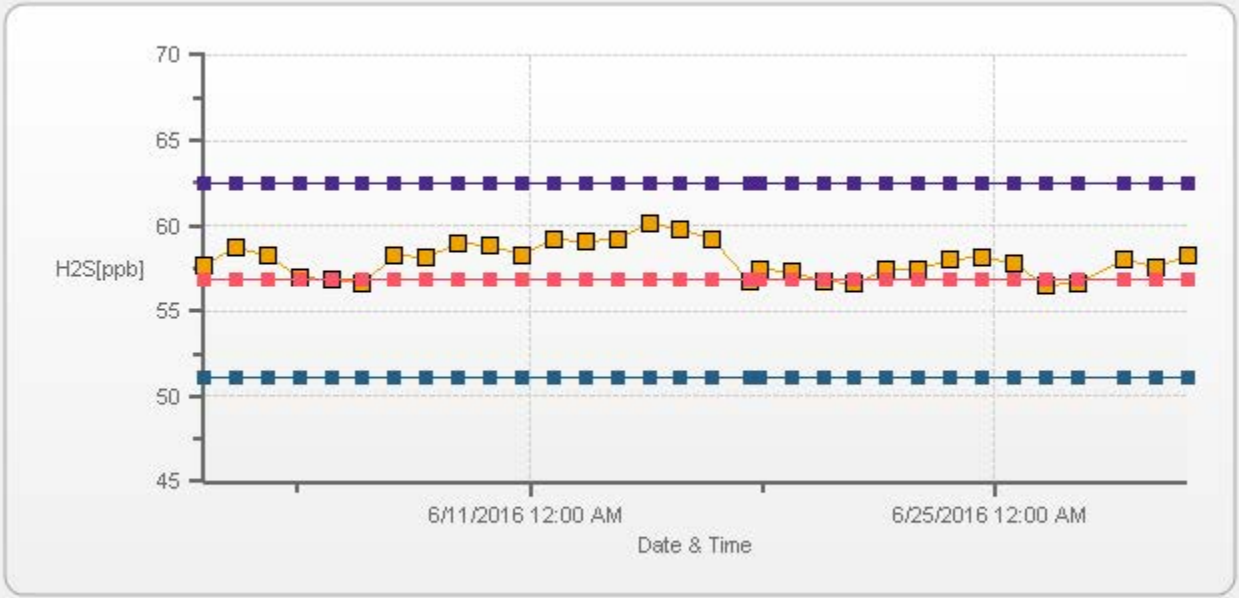
Direction	0.0-3.0	3.0-10.0	10.0-50.0	>50.0	Total
N	3.82	0	0	0	3.82
NE	4.41	0	0	0	4.41
E	8.97	0	0	0	8.97
SE	11.03	0	0	0	11.03
S	12.06	0	0	0	12.06
SW	24.12	0	0	0	24.12
W	20.15	0	0	0	20.15
NW	15.44	0	0	0	15.44
Summary	100	0	0	0	100

LICA ST. LINA 2016/06/01 12:00 AM - 2016/06/30 11:00 PM Calm: 0.00%



% Icon Classes (ppb)	100	0.0-3.0	0	3.0-10.0	0	10.0-50.0	0	>50.0

H2S[ppb] Calibration: LICA ST. LINA Monthly: 06/2016 Type: Span



TOTAL HYDROCARBON

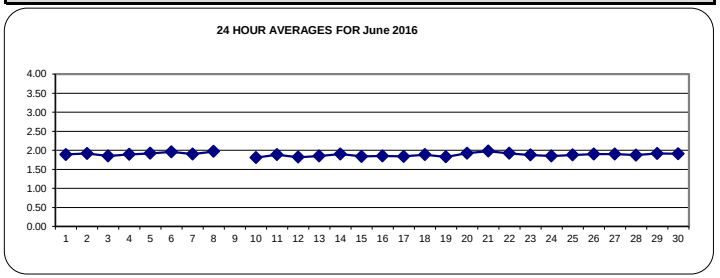
TOTAL HYDROCARBONS (THC) hourly averages in ppm

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	2.03	1.94	1.93	1.94	S	1.97	1.92	1.87	1.89	1.90	1.88	1.87	1.85	1.86	1.85	1.85	1.85	1.86	1.85	1.86	1.86	1.86	1.87	1.91	1.85	2.03	1.89	24
2	1.97	1.95	1.93	S	2.02	2.06	2.03	2.01	1.99	1.95	1.96	1.90	1.91	1.91	1.86	1.88	1.85	1.84	1.84	1.92	1.81	1.79	1.82	1.84	1.79	2.06	1.91	24
3	1.80	1.81	S	1.80	1.82	1.83	1.84	1.85	1.87	1.86	1.85	1.85	1.86	1.86	1.86	1.86	1.87	1.86	1.87	1.90	1.94	1.90	1.83	1.84	1.80	1.94	1.85	24
4	1.85	S	1.94	1.91	1.83	1.84	1.87	1.84	1.82	1.84	1.86	1.89	1.90	1.90	1.91	1.93	1.93	1.92	1.91	1.91	1.95	1.96	1.92	1.88	1.82	1.96	1.89	24
5	S	1.89	1.94	1.97	1.95	1.98	1.94	1.97	1.95	1.91	1.90	1.90	1.90	1.91	1.92	1.91	1.92	1.92	1.94	1.93	1.87	1.88	1.86	S	1.86	1.98	1.92	24
6	1.87	1.89	1.91	1.98	2.14	***2.35***	2.26	2.16	2.12	2.05	1.99	1.91	1.88	1.88	1.84	1.83	1.81	1.81	1.82	1.84	1.89	1.90	S	1.94	1.81	***2.35***	1.96	24
7	1.97	2.05	2.02	2.04	2.04	2.01	1.97	1.92	1.88	1.90	1.86	1.82	1.80	1.80	1.82	1.82	1.79	1.79	1.84	1.95	1.94	S	1.86	1.81	1.79	2.05	1.90	24
8	1.82	1.87	1.84	1.97	1.90	2.21	2.30	2.20	2.13	2.16	2.02	1.94	1.90	1.93	1.93	1.89	1.86	1.87	1.87	1.83	X	X	X	X	1.82	2.30	1.97	20
9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				
10	X	X	X	X	X	X	X	X	X	Y	S1	1.76	1.78	1.77	1.79	1.80	1.81	1.82	S	1.80	1.81	1.82	1.86	1.91	1.76	1.91	1.81	13
11	1.92	1.93	1.93	2.04	2.10	2.09	2.02	1.91	1.87	1.86	1.87	1.87	1.87	1.85	1.84	1.85	1.85	S	1.79	1.80	1.79	1.77	1.78	1.78	1.77	2.10	1.89	24
12	1.79	1.79	1.81	1.82	1.81	1.81	1.83	1.82	1.83	1.83	1.85	1.84	1.84	1.82	1.82	1.83	S	1.79	1.80	1.82	1.83	1.83	1.81	1.83	1.79	1.85	1.82	24
13	1.86	1.87	1.87	1.85	1.86	1.86	1.85	1.85	1.84	1.85	1.84	1.83	1.83	1.83	1.83	S	1.83	1.82	1.84	1.84	1.87	1.88	1.90	1.91	1.82	1.91	1.85	24
14	1.91	1.93	1.91	1.99	1.97	1.91	1.94	2.08	2.06	2.02	1.92	1.84	1.85	1.84	S	1.83	1.82	1.82	1.82	1.83	1.84	1.89	1.86	1.86	1.82	2.08	1.90	24
15	1.85	1.92	1.87	1.78	1.78	1.79	1.80	1.80	1.81	1.80	1.84	1.86	1.86	S	1.84	1.85	1.86	1.86	1.86	1.88	1.86	1.84	1.85	1.85	1.78	1.92	1.84	24
16	1.86	1.86	1.88	1.89	1.91	1.92	1.93	1.92	1.90	1.89	1.84	1.87	S	1.85	1.82	1.85	1.82	1.80	1.79	1.79	1.79	1.82	1.81	1.81	1.79	1.93	1.85	24
17	1.81	1.79	1.80	1.79	1.79	1.80	1.80	1.80	1.81	1.82	1.82	1.85	1.86	1.87	1.87	1.88	1.87	1.87	1.89	1.90	1.89	1.86	S	1.86	1.79	1.90	1.84	24
18	1.88	1.87	1.88	1.89	1.90	1.91	1.93	1.92	1.91	1.89	1.88	1.88	1.86	1.86	1.87	1.86	1.86	1.85	1.85	1.88	1.97	S	1.86	1.91	1.85	1.97	1.89	24
19	1.86	1.82	1.78	1.84	1.81	1.80	1.83	1.82	1.80	1.78	1.79	1.81	1.79	1.81	1.85	1.85	1.86	1.86	1.86	1.89	S	1.86	1.84	1.86	1.78	1.89	1.83	24
20	1.86	1.89	1.92	1.96	1.95	1.97	1.94	1.99	1.98	1.96	1.92	C	C	C	C	1.89	1.92	1.94	1.93	S	1.92	1.91	1.88	1.86	1.86	1.99	1.93	24
21	1.88	1.92	1.93	2.05	2.08	2.16	2.16	2.09	2.08	2.10	2.02	1.99	1.95	1.92	1.86	1.85	1.91	1.93	S	1.88	1.92	1.95	1.95	1.92	1.85	2.16	***1.98***	24
22	1.92	1.90	1.92	1.98	1.99	1.97	1.99	1.96	1.96	1.91	1.90	1.91	1.91	1.89	1.89	1.89	1.88	S	1.97	1.89	1.88	1.88	1.88	1.89	1.88	1.99	1.92	24
23	1.88	1.84	1.88	1.88	1.89	1.92	1.92	1.94	1.89	1.86	1.88	1.89	1.87	1.86	1.86	1.87	S	1.85	1.95	1.93	1.87	1.82	1.83	1.82	1.82	1.95	1.88	24
24	1.86	1.82	1.92	1.84	1.84	1.87	1.89	1.88	1.88	1.85	1.84	1.83	1.82	1.82	1.83	S	1.82	1.82	1.82	1.85	1.86	1.88	1.90	1.90	1.82	1.92	1.85	24
25	1.89	1.92	1.89	1.87	1.91	1.91	1.87	1.85	1.89	1.88	1.86	1.88	1.86	1.84	S	1.83	1.84	1.85	1.85	1.87	1.93	1.92	1.89	1.91	1.83	1.93	1.88	24
26	1.93	2.00	1.93	1.95	1.92	1.88	1.92	1.99	1.98	1.91	1.90	1.88	1.86	S	1.83	1.82	1.82	1.83	1.87	1.88	1.90	1.90	1.90	1.91	1.82	2.00	1.90	24
27	1.93	1.94	1.95	1.99	2.02	1.92	1.91	1.95	1.91	1.90	1.87	1.86	S	1.83	1.82	1.82	1.82	1.83	1.85	1.87	1.94	1.92	1.96	1.95	1.82	2.02	1.90	24
28	1.98	1.99	2.04	2.04	1.95	2.09	2.04	1.92	1.75	1.79	1.77	1.74	1.74	***1.73***	1.76	1.79	1.79	1.81	1.89	1.86	1.89	1.87	S	1.89	***1.73***	2.09	1.87	24
29	1.94	2.01	1.99	2.04	2.18	2.12	1.98	1.92	1.90	1.88	1.85	1.84	1.83	1.84	1.83	1.84	1.84	1.83	1.84	1.88	1.88	S	1.89	1.89	1.83	2.18	1.91	24
30	1.92	1.93	1.97	2.04	2.14	2.10	2.04	1.97	1.96	1.91	1.89	1.87	1.85	1.84	1.86	1.86	1.87	1.81	1.78	1.78	S	1.89	1.82	1.85	1.78	2.14	1.91	24
HOURLY MAX	2.03	2.05	2.04	2.05	2.18	2.35	2.30	2.20	2.13	2.16	2.02	1.99	1.95	1.93	1.93	1.93	1.93	1.94	1.97	1.95	1.97	1.96	1.96	1.95				
HOURLY AVG	1.89	1.90	1.91	1.93	1.94	1.97	1.95	1.94	1.92	1.90	1.88	1.86	1.86	1.85	1.85	1.85	1.85	1.85	1.86	1.87	1.88	1.87	1.87	1.87				

STATUS FLAG CODES

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

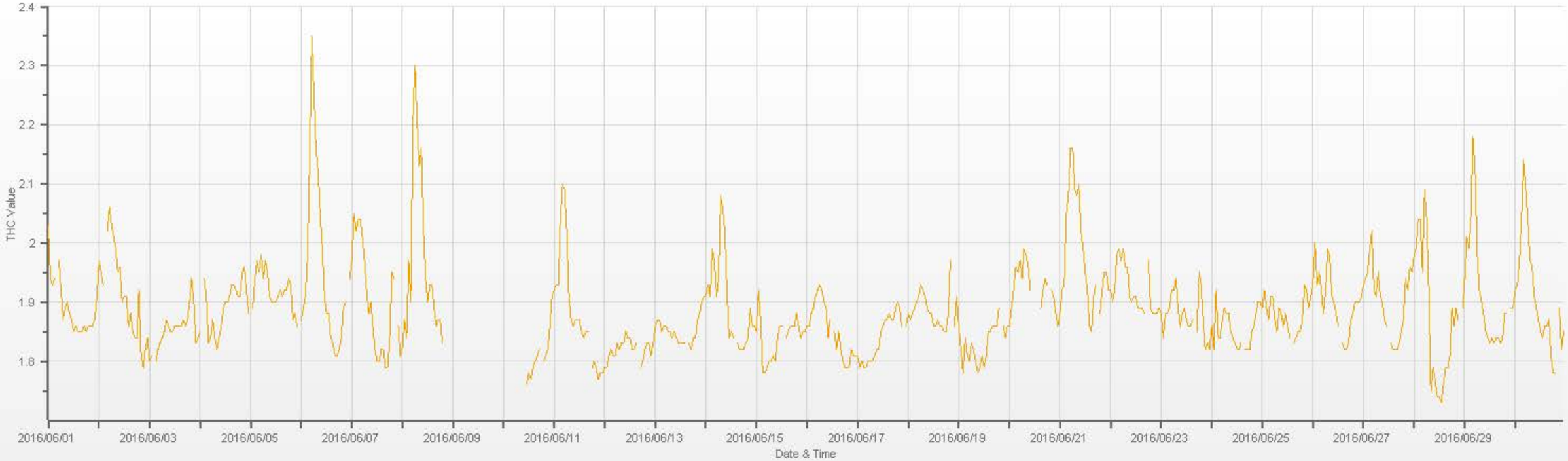


MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:		648				
MINIMUM 1-HR AVERAGE	1.73	PPM	@ HOUR(S)	13	ON DAY(S)	28
MAXIMUM 1-HR AVERAGE:	2.35	PPM	@ HOUR(S)	5	ON DAY(S)	6
MAXIMUM 24-HR AVERAGE:	1.98	PPM			ON DAY(S)	21
					VAR-VARIOUS	

IZS CALIBRATION TIME:	29	HRS	OPERATIONAL TIME:	681	HRS
MONTHLY CALIBRATION TIME:	4	HRS	AMD OPERATION UPTIME:	94.6	%
STANDARD DEVIATION:	0.08		MONTHLY AVERAGE:	1.89	PPM

THC[ppm] Station: LICA ST. LINA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



TOTAL HYDROCARBONS MAX instantaneous maximum in ppm

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	2.06	2.06	2.08	2.07	**S**	2.09	2.05	2.00	2.01	2.01	1.98	1.97	1.96	1.96	1.95	1.96	1.95	1.95	1.94	1.95	1.94	1.94	1.93	2.01	1.93	2.09	1.99	24
2	2.04	2.04	2.01	**S**	2.14	2.12	2.09	2.09	2.07	2.03	2.06	1.98	**P**	2.12	1.92	1.95	1.92	1.91	1.92	***5.49***	1.92	1.96	2.22	2.06	1.91	***5.49***	2.18	23
3	1.89	1.89	**S**	1.89	1.89	1.92	2.00	2.01	2.04	2.04	2.00	1.98	2.04	2.03	2.08	2.04	2.07	2.09	2.12	2.51	2.57	2.72	2.08	2.04	1.89	2.72	2.08	24
4	2.20	**S**	2.48	2.20	2.04	2.03	2.23	2.08	2.04	2.03	2.06	2.09	2.14	2.12	2.11	2.13	2.20	2.14	2.12	2.18	2.32	2.26	2.08	2.04	2.03	2.48	2.14	24
5	**S**	2.08	2.29	2.26	2.27	2.26	2.23	2.20	2.17	2.12	2.11	2.08	2.08	2.14	2.17	2.17	2.20	2.25	2.62	2.38	2.04	2.04	2.03	**S**	2.03	2.62	2.19	24
6	2.05	2.04	2.08	2.14	2.48	2.48	2.44	2.29	2.27	2.17	2.14	2.04	1.98	1.96	1.95	1.92	1.89	1.89	1.89	1.92	1.98	1.97	**S**	2.11	1.89	2.48	2.09	24
7	2.08	2.17	2.12	2.11	2.14	2.11	2.05	2.00	1.99	2.06	2.01	1.92	1.91	1.91	1.89	1.95	1.88	1.86	2.26	2.48	2.41	**S**	2.11	1.91	1.86	2.48	2.06	24
8	1.92	1.98	1.89	2.53	2.04	2.39	2.63	2.51	2.26	2.30	2.23	2.01	1.94	1.95	1.95	1.92	1.88	1.89	1.89	1.83	**X**	**X**	**X**	**X**	1.83	2.63	2.10	20
9	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**				
10	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**Y**	1.00	2.08	2.08	2.06	2.05	2.04	2.02	2.01	**S**	1.98	2.00	2.00	2.04	2.05	1.00	2.08	1.95	14
11	2.05	2.06	2.05	2.23	2.23	2.20	2.18	2.02	1.95	1.92	1.95	1.95	1.92	1.91	1.87	1.86	1.86	**S**	1.80	1.83	1.83	1.79	1.79	1.79	1.79	2.23	1.96	24
12	1.80	1.80	1.83	1.83	1.82	1.83	1.83	1.83	1.86	1.85	1.86	1.86	1.85	1.83	1.85	2.08	**S**	1.80	1.82	1.83	1.92	1.88	1.86	1.85	1.80	2.08	1.85	24
13	1.86	1.88	1.88	1.86	1.86	1.86	1.85	1.88	1.88	1.89	1.86	1.86	1.83	1.83	1.83	**S**	1.86	1.83	1.83	1.83	1.88	1.88	2.51	2.20	1.83	2.51	1.90	24
14	2.04	1.91	1.91	1.96	1.98	1.86	1.95	2.08	2.05	2.00	1.92	1.80	1.79	1.77	**S**	1.77	1.77	1.77	1.77	1.77	1.80	1.85	1.80	1.83	1.77	2.08	1.88	24
15	1.83	1.86	1.85	1.73	1.71	1.72	1.73	1.74	1.76	1.74	1.79	1.80	1.79	**S**	1.77	1.80	1.80	1.80	1.80	1.82	1.83	1.77	1.80	1.79	1.71	1.86	1.78	24
16	1.80	1.80	1.83	1.85	1.86	1.88	1.88	1.88	1.86	1.86	1.80	1.83	**S**	1.82	1.77	1.85	1.82	1.77	1.77	1.77	1.77	1.80	1.79	1.79	1.77	1.88	1.82	24
17	1.80	1.79	1.79	1.77	1.80	1.80	1.80	1.92	1.82	1.86	1.88	1.89	1.92	1.92	1.96	1.95	1.95	1.96	1.93	1.95	1.95	1.91	**S**	1.92	1.77	1.96	1.88	24
18	1.92	1.92	2.36	2.23	1.95	1.97	1.98	2.03	2.02	1.99	2.03	1.94	1.95	1.98	1.99	1.95	2.03	1.91	1.91	2.60	2.53	**S**	2.06	2.14	1.91	2.60	2.06	24
19	2.17	2.29	1.98	2.11	2.08	1.89	1.92	1.94	1.99	1.92	1.92	2.00	1.92	1.95	2.00	2.00	2.02	2.00	2.05	2.08	**S**	2.12	2.04	2.11	1.89	2.29	2.02	24
20	2.09	2.11	2.58	2.72	2.11	2.88	2.04	2.12	2.11	2.11	2.04	**C**	**C**	**C**	**C**	2.05	2.11	2.23	2.33	**S**	2.26	2.03	2.01	2.00	2.00	2.88	2.21	24
21	2.01	2.04	2.08	2.18	2.23	2.27	2.27	2.23	2.22	2.23	2.14	2.09	2.32	2.11	1.97	2.02	1.98	2.01	**S**	1.95	2.80	2.57	2.23	2.11	1.95	2.80	2.18	24
22	2.00	1.98	2.01	2.06	2.08	2.06	2.08	2.04	2.04	2.00	1.99	1.98	1.98	1.98	2.21	2.08	1.97	**S**	3.99	2.03	1.95	**P**	2.01	2.14	1.95	3.99	2.12	23
23	2.03	1.92	1.95	1.95	1.98	2.21	1.98	2.01	2.11	2.86	1.95	1.93	1.92	1.92	1.92	2.00	**S**	1.96	2.23	2.60	2.15	1.86	1.89	1.89	1.86	2.86	2.05	24
24	2.08	1.95	2.75	1.89	1.89	1.91	2.05	2.05	2.01	1.98	2.03	1.95	1.93	1.86	1.92	**S**	1.92	1.92	1.96	1.99	2.23	2.20	2.20	2.08	1.86	2.75	2.03	24
25	2.08	2.12	2.08	2.08	2.11	2.11	1.98	1.91	2.02	2.05	1.95	1.98	1.96	1.92	**S**	1.95	2.08	1.98	2.02	2.11	2.18	2.79	2.01	2.01	1.91	2.79	2.06	24
26	2.39	2.44	2.39	2.21	2.29	2.14	2.18	2.23	2.14	2.08	2.08	2.17	2.02	**S**	1.99	1.98	1.98	2.00	2.03	2.04	2.07	2.06	2.06	2.06	1.98	2.44	2.13	24
27	2.08	2.09	2.11	2.18	2.18	2.12	2.15	2.14	2.14	2.11	2.08	2.04	**S**	2.09	2.01	2.05	2.03	2.05	2.14	2.01	2.14	2.08	2.38	2.30	2.01	2.38	2.12	24
28	2.12	2.11	2.23	2.18	2.17	2.32	2.22	2.12	1.89	1.93	1.92	1.89	1.85	1.83	1.86	2.06	1.96	1.95	2.17	2.14	2.14	2.11	**S**	2.24	1.83	2.32	2.06	24
29	2.05	4.06	2.80	2.72	2.33	2.26	2.18	2.02	2.01	1.98	1.95	1.94	1.93	1.93	1.93	1.95	1.95	1.93	1.95	1.99	1.99	**S**	1.99	1.99	1.93	4.06	2.17	24
30	2.02	2.08	2.09	2.20	2.26	2.20	2.14	2.08	2.06	2.01	1.97	1.94	1.92	1.91	2.05	2.03	1.92	1.92	1.83	1.85	**S**	2.05	1.99	2.35	1.83	2.35	2.04	24
HOURLY MAX	2.39	4.06	2.80	2.72	2.48	2.88	2.63	2.51	2.27	2.86	2.23	2.17	2.32	2.14	2.21	2.17	2.20	2.25	3.99	5.49	2.80	2.79	2.51	2.35				
HOURLY AVG	2.02	2.09	2.13	2.12	2.07	2.10	2.08	2.05	2.03	2.04	1.96	1.96	1.96	1.95	1.96	1.98	1.96	1.95	2.08	2.18	2.10	2.07	2.04	2.03				

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: 647

MAXIMUM INSTANTANEOUS VALUE: 5.49 PPM @ HOUR(S) 19 ON DAY(S) 2

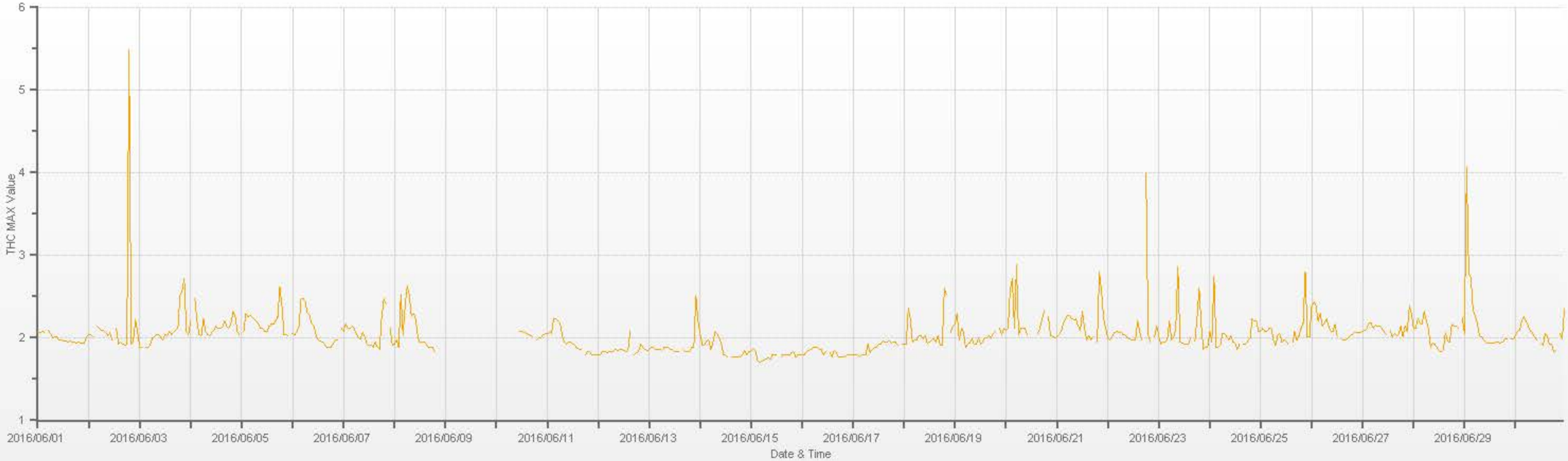
VAR-VARIOUS

IZS CALIBRATION TIME: 29 HRS OPERATIONAL TIME: 680 HRS

MONTHLY CALIBRATION TIME: 4 HRS

STANDARD DEVIATION: 0.26

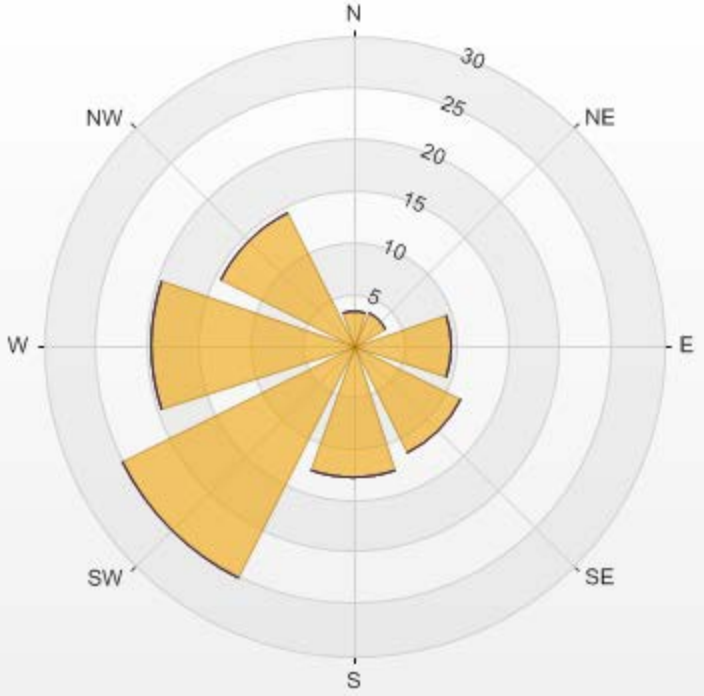
THC MAX[ppm] Station: LICA ST. LINA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



Wind: LICA ST. LINA Monitor: THC [ppm] Monthly: 06/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
Calm: 0.00% Valid Data: 90.00% Calm Avg: 0.00

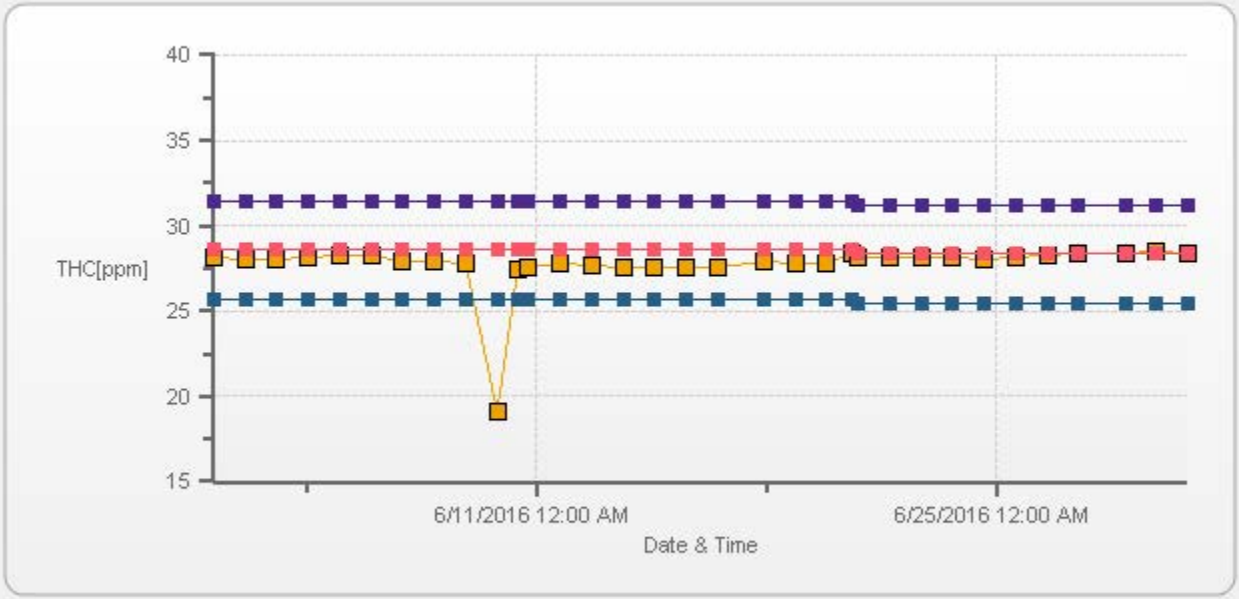
Direction	0.0-3.0	3.0-10.0	10.0-50.0	>50.0	Total
N	3.4	0	0	0	3.4
NE	3.55	0	0	0	3.55
E	9.41	0	0	0	9.41
SE	11.57	0	0	0	11.57
S	12.81	0	0	0	12.81
SW	25.15	0	0	0	25.15
W	19.6	0	0	0	19.6
NW	14.51	0	0	0	14.51
Summary	100	0	0	0	100

LICA ST. LINA 2016/06/01 12:00 AM - 2016/06/30 11:00 PM Calm: 0.00%



% Icon Classes (ppm)	100	0.0-3.0	0	3.0-10.0	0	10.0-50.0	0	>50.0

THC[ppm] Calibration: LICA ST. LINA Monthly: 06/2016 Type: Span



OXIDES OF NITROGEN

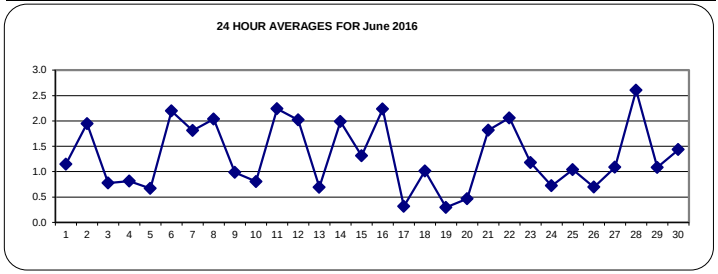
OXIDES OF NITROGEN (NOx) hourly averages in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	1.2	1.2	1.3	1.1	**S**	1.5	1.4	2.0	1.0	1.5	0.9	1.1	1.3	0.9	1.2	1.0	0.8	1.0	0.6	0.8	0.8	1.0	1.3	1.5	0.6	2.0	1.1	24
2	2.3	1.9	1.6	**S**	2.5	3.6	3.7	2.5	2.4	2.5	2.4	1.8	1.7	1.6	1.2	1.2	0.9	0.7	1.7	2.2	1.7	1.6	1.6	1.5	0.7	3.7	1.9	24
3	1.5	1.4	**S**	0.7	0.9	0.8	1.0	0.7	1.1	0.4	0.6	0.3	0.6	0.3	0.4	0.5	0.8	0.6	1.1	0.5	0.9	0.4	0.9	1.5	0.3	1.5	0.8	24
4	1.6	**S**	2.0	0.7	0.6	0.5	0.5	0.5	0.3	0.2	0.6	0.3	0.5	0.5	0.4	0.7	0.7	0.7	0.8	1.1	2.6	1.0	1.0	0.9	0.2	2.6	0.8	24
5	**S**	0.9	0.7	0.9	0.8	1.0	0.9	1.1	1.1	1.1	0.7	0.7	0.4	0.4	0.3	0.6	0.2	0.7	0.4	0.8	0.9	0.1	0.0	**S**	0.0	1.1	0.7	24
6	1.4	2.2	2.9	2.6	4.1	***6.6***	5.5	4.3	3.7	2.8	1.7	1.1	0.9	0.8	0.7	0.9	0.7	0.6	0.8	0.9	1.4	1.6	**S**	2.3	0.6	***6.6***	2.2	24
7	3.2	4.1	4.4	5.1	4.7	4.6	4.3	3.9	2.1	1.3	0.7	0.3	0.0	0.1	0.0	0.2	0.1	0.0	0.0	0.3	2.0	**S**	0.3	0.0	0.0	5.1	1.8	24
8	0.0	0.2	0.0	0.4	1.2	6.1	***6.6***	3.9	3.4	5.1	2.1	1.3	1.4	1.5	1.6	1.8	2.1	1.8	1.2	1.1	**S**	1.3	1.3	1.5	0.0	***6.6***	2.0	24
9	1.4	2.0	1.6	1.4	1.7	2.0	2.1	1.3	0.8	0.9	0.6	0.7	0.7	0.9	0.5	0.3	0.6	0.5	0.4	**S**	0.7	0.6	0.6	0.4	0.3	2.1	1.0	24
10	0.7	0.9	0.7	0.6	0.7	0.6	0.5	0.2	0.5	0.4	0.7	0.4	0.3	0.6	0.4	0.2	0.6	0.5	**S**	0.9	1.1	1.8	2.5	2.7	0.2	2.7	0.8	24
11	2.8	2.8	2.6	4.3	5.1	4.4	3.4	2.0	1.8	1.7	1.7	1.9	1.8	1.5	1.1	1.1	1.4	**S**	1.2	0.9	1.6	2.3	1.9	2.2	0.9	5.1	2.2	24
12	2.6	2.8	3.3	3.3	2.8	2.2	2.1	2.2	2.5	2.1	2.8	2.6	3.1	1.1	0.4	0.6	**S**	0.8	0.9	1.1	1.5	1.7	2.3	1.7	0.4	3.3	2.0	24
13	1.9	1.1	0.8	1.0	0.7	0.5	0.7	0.3	0.2	0.0	0.4	0.0	0.1	0.1	0.0	**S**	0.5	0.6	0.3	0.3	1.4	2.2	1.4	1.4	0.0	2.2	0.7	24
14	1.4	2.2	2.1	2.1	1.7	1.4	1.5	3.6	4.2	3.9	2.4	1.0	1.2	1.0	**S**	1.4	1.3	1.2	1.3	1.8	2.6	2.2	2.2	2.0	1.0	4.2	2.0	24
15	1.8	2.5	2.4	3.4	2.5	1.4	1.2	0.8	1.0	1.0	0.9	1.2	1.0	**S**	0.7	0.8	0.4	0.5	0.5	0.7	1.1	0.9	1.7	1.8	0.4	3.4	1.3	24
16	2.1	2.5	2.5	2.9	3.6	3.9	4.0	4.1	4.1	2.9	2.4	2.0	**S**	1.8	1.0	2.9	2.0	1.1	1.4	1.2	1.5	1.0	0.5	0.0	0.0	4.1	2.2	24
17	0.2	0.1	0.0	0.3	0.1	0.2	0.2	0.0	0.1	0.0	**C**	**C**	**C**	**C**	**C**	**C**	**C**	**C**	0.4	0.3	0.3	0.7	**S**	1.8	0.0	1.8	0.3	24
18	2.0	2.1	1.7	1.7	1.8	2.3	2.7	1.4	0.8	0.1	0.2	0.5	0.2	0.1	0.1	0.1	0.2	0.1	0.3	0.8	1.1	**S**	1.7	1.3	0.1	2.7	1.0	24
19	0.6	0.3	0.6	0.4	0.8	0.6	0.5	0.3	0.7	0.6	0.3	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**S**	0.4	0.3	0.2	0.0	0.8	0.3	24
20	0.0	0.4	0.2	0.3	1.0	1.0	1.0	1.0	0.9	0.4	0.0	0.8	0.4	0.4	0.2	0.1	0.1	0.6	0.0	**S**	0.9	0.4	0.3	0.3	0.0	1.0	0.5	24
21	0.5	0.9	1.3	3.0	3.5	3.8	3.0	2.2	2.3	2.1	1.4	1.7	**Y**	**Y**	**Y**	0.7	0.6	1.3	**S**	1.9	1.6	1.4	1.4	1.7	0.5	3.8	1.8	21
22	2.3	2.1	2.3	2.7	3.8	3.0	3.4	4.9	4.1	2.7	1.5	1.3	1.2	1.3	1.4	1.4	1.1	**S**	1.3	1.2	1.1	1.2	1.1	1.0	1.0	4.9	2.1	24
23	1.2	1.5	1.6	1.6	1.7	1.7	1.9	3.1	2.0	1.8	1.0	0.7	0.4	0.2	0.4	1.4	**S**	0.9	0.9	0.3	0.4	0.7	1.0	0.7	0.2	3.1	1.2	24
24	0.6	0.7	0.8	0.8	1.0	1.6	1.0	0.6	0.4	0.5	0.7	0.3	0.4	0.2	0.0	**S**	1.0	0.1	0.6	0.8	1.4	1.3	1.2	0.6	0.0	1.6	0.7	24
25	1.2	1.1	0.9	1.2	0.7	1.0	1.0	1.2	1.4	1.1	0.9	0.6	0.3	0.6	**S**	0.8	0.9	0.8	0.9	1.5	1.2	1.5	1.8	1.3	0.3	1.8	1.0	24
26	1.2	0.8	1.1	0.9	0.6	1.1	0.8	0.6	0.5	0.1	0.2	0.0	0.1	**S**	0.5	0.3	0.3	0.1	0.1	0.5	1.3	1.9	1.6	1.4	0.0	1.9	0.7	24
27	1.4	1.6	1.4	1.5	2.2	2.3	2.0	2.2	1.8	1.4	0.7	0.5	**S**	0.5	0.1	0.3	0.5	0.4	0.0	0.1	0.4	0.7	1.3	1.7	0.0	2.3	1.1	24
28	2.1	2.5	2.6	3.0	2.5	2.6	2.9	2.8	3.6	**C1**	**C1**	**C1**	**C1**	**C1**	**C1**	**C1**	**C1**	**C1**	1.6	4.4	2.3	1.7	**S**	1.9	1.6	4.4	***2.6***	15
29	2.4	2.7	1.4	2.0	4.3	3.8	2.0	1.5	1.2	0.5	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.3	**S**	1.1	0.5	0.0	4.3	1.1	24
30	0.5	0.8	0.9	1.8	3.1	3.6	2.4	0.7	1.1	0.7	0.5	0.2	0.3	0.6	3.5	2.3	1.0	1.1	1.8	0.7	**S**	2.7	1.5	1.2	0.2	3.6	1.4	24
HOURLY MAX	3.2	4.1	4.4	5.1	5.1	6.6	6.6	4.9	4.2	5.1	2.8	2.6	3.1	1.8	3.5	2.9	2.1	1.8	1.8	4.4	2.6	2.7	2.5	2.7				
HOURLY AVG	1.5	1.6	1.6	1.8	2.1	2.3	2.1	1.9	1.7	1.4	1.0	0.8	0.7	0.7	0.6	0.8	0.7	0.6	0.7	1.0	1.3	1.3	1.3	1.3				

STATUS FLAG CODES

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

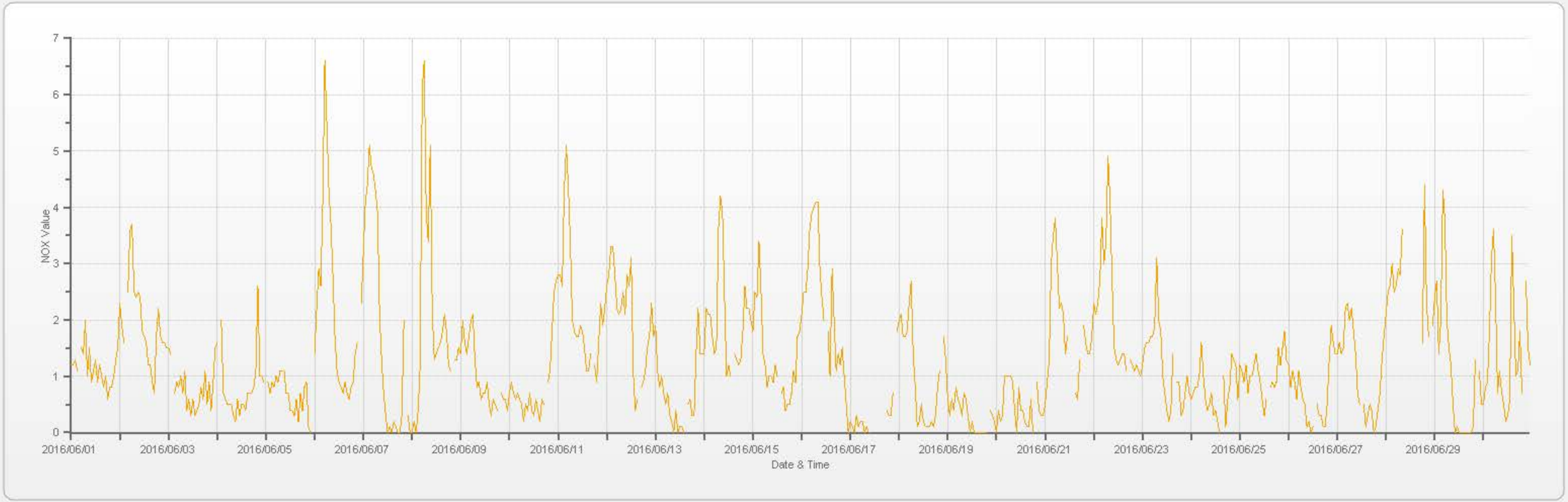


MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:			632				
MINIMUM 1-HR AVERAGE	0.0	PPB	@ HOUR(S)	VAR	ON DAY(S)	VAR	
MAXIMUM 1-HR AVERAGE:	6.6	PPB	@ HOUR(S)	5 , 6	ON DAY(S)	6 , 8	
MAXIMUM 24-HR AVERAGE:	2.6	PPB			ON DAY(S)	28	
					VAR-VARIOUS		

IZS CALIBRATION TIME:	31	HRS	OPERATIONAL TIME:	708	HRS
MONTHLY CALIBRATION TIME:	8	HRS	AMD OPERATION UPTIME:	98.3	%
STANDARD DEVIATION:	1.10		MONTHLY AVERAGE:	1.3	PPB

NOX[ppb] Station: LICA ST. LINA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



OXIDES OF NITROGEN MAX instantaneous maximum in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	1.7	1.9	2.2	1.9	**S**	2.2	2.1	5.0	1.8	2.4	1.9	1.8	3.0	2.0	2.0	2.2	1.5	1.8	1.7	1.7	1.7	2.0	2.3	3.0	1.5	5.0	2.2	24
2	3.2	2.9	2.6	**S**	3.4	4.6	7.0	3.4	3.3	3.4	3.4	2.7	P	2.6	2.1	2.0	1.8	1.5	6.5	10.5	2.8	2.4	2.7	2.4	1.5	10.5	3.5	23
3	2.2	2.0	**S**	1.8	1.6	1.7	23.0	2.4	3.9	1.8	2.2	1.7	1.5	1.3	1.6	2.6	2.1	16.0	3.1	1.8	3.5	1.4	2.1	2.9	1.3	23.0	3.7	24
4	3.0	**S**	3.3	2.1	1.6	1.5	10.2	1.4	1.1	1.2	1.6	1.1	2.2	2.2	1.2	1.7	1.7	1.4	1.6	2.4	7.1	2.0	2.8	2.6	1.1	10.2	2.5	24
5	**S**	1.8	1.5	1.6	1.7	2.0	1.7	3.7	1.9	1.9	1.7	2.0	1.5	1.5	1.5	2.9	1.9	2.1	1.8	5.2	4.9	1.1	1.3	**S**	1.1	5.2	2.1	24
6	3.4	3.3	5.2	4.8	7.3	8.3	7.1	5.5	4.9	4.1	2.8	2.4	1.9	1.9	1.9	2.6	1.8	1.9	1.9	2.3	2.8	2.8	**S**	3.4	1.8	8.3	3.7	24
7	5.0	5.4	5.8	6.6	6.3	7.2	6.5	6.7	3.8	2.8	2.2	1.6	1.3	1.3	1.3	1.7	1.4	1.4	1.4	2.5	63.6	**S**	1.7	1.4	1.3	63.6	6.0	24
8	1.1	1.5	1.4	1.6	4.6	8.4	8.9	7.0	5.7	7.8	4.3	2.7	2.7	2.8	3.0	3.0	3.3	3.3	2.4	2.5	**S**	2.4	2.6	2.4	1.1	8.9	3.7	24
9	2.5	3.2	2.6	2.6	2.9	2.8	3.9	2.6	1.9	1.7	1.8	1.6	1.6	1.9	1.3	1.4	1.6	1.3	1.3	**S**	1.6	1.6	1.7	1.3	1.3	3.9	2.0	24
10	1.3	1.6	1.6	1.3	1.4	1.4	1.8	0.9	1.1	1.0	1.7	1.0	1.1	1.2	1.3	0.9	1.2	1.2	**S**	1.8	2.1	2.9	3.2	3.2	0.9	3.2	1.6	24
11	3.5	3.4	3.7	5.1	6.0	5.2	4.8	3.1	2.6	2.6	2.6	2.8	2.7	2.5	2.0	2.0	2.3	**S**	2.3	1.8	2.8	3.2	2.9	2.9	1.8	6.0	3.2	24
12	3.7	3.9	4.2	3.9	3.7	3.4	2.9	2.9	4.1	2.9	3.9	3.7	4.3	2.1	1.2	1.7	**S**	1.8	2.3	2.0	2.4	2.9	6.4	2.8	1.2	6.4	3.2	24
13	2.8	2.2	1.7	1.9	1.7	1.8	2.3	1.3	1.2	1.0	3.1	1.3	2.5	3.4	1.1	**S**	2.3	25.9	1.5	1.5	3.2	3.4	2.9	2.9	1.0	25.9	3.2	24
14	2.6	3.3	3.4	3.3	2.8	2.6	3.0	5.2	5.3	4.9	3.7	2.1	2.2	2.0	**S**	5.4	2.5	2.0	2.4	2.7	3.8	3.0	3.4	2.9	2.0	5.4	3.2	24
15	3.3	3.3	3.1	4.2	3.9	2.2	2.0	1.5	2.2	2.3	1.6	2.6	2.5	**S**	1.5	1.9	1.5	1.3	1.8	1.3	1.8	2.0	2.6	2.7	1.3	4.2	2.3	24
16	3.0	3.3	3.3	3.9	5.0	5.6	5.0	5.8	5.6	4.4	3.4	22.6	**S**	5.2	3.4	5.1	4.2	2.0	3.1	2.4	3.1	3.0	2.3	1.2	1.2	22.6	4.6	24
17	1.4	1.2	0.9	1.8	1.3	1.3	1.3	1.5	2.0	1.3	**C**	**C**	**C**	**C**	**C**	**C**	**C**	**C**	1.9	1.6	1.6	2.4	**S**	3.6	0.9	3.6	1.7	24
18	3.4	4.0	3.0	2.9	3.0	3.5	4.0	2.9	2.4	1.3	1.8	29.1	1.8	1.4	1.3	1.3	1.8	1.6	1.7	2.7	4.4	**S**	3.6	3.2	1.3	29.1	3.7	24
19	1.8	1.7	1.9	1.5	2.1	2.0	2.0	1.6	1.8	2.1	1.4	1.1	1.4	1.2	1.4	1.3	1.1	1.0	1.0	1.3	**S**	2.4	1.7	1.4	1.0	2.4	1.6	24
20	1.1	1.6	1.3	1.8	2.9	3.0	2.6	2.6	3.9	2.6	2.2	3.5	2.6	3.0	2.1	2.0	1.5	3.2	1.6	**S**	5.3	2.4	1.4	1.4	1.1	5.3	2.4	24
21	1.8	2.2	2.6	4.6	5.8	5.5	4.1	4.4	3.5	3.3	2.6	3.0	**Y**	**Y**	**Y**	**Y**	1.8	2.3	**S**	4.0	4.0	2.4	2.2	3.0	1.8	5.8	3.3	20
22	3.3	3.2	3.5	3.8	5.1	4.3	6.7	6.0	5.8	3.9	2.8	3.3	2.3	2.8	2.7	2.5	2.1	**S**	2.9	2.6	2.4	P	2.4	2.4	2.1	6.7	3.5	23
23	2.4	2.8	2.8	3.3	3.6	5.0	4.7	5.2	4.1	4.2	2.6	2.2	1.9	1.8	3.7	21.5	**S**	5.1	4.8	2.4	2.4	2.4	2.6	2.4	1.8	21.5	4.1	24
24	2.5	2.2	2.1	2.4	2.7	3.5	3.4	2.3	1.8	2.3	2.6	2.0	2.0	1.6	1.4	**S**	3.1	1.6	3.2	2.4	5.0	3.2	4.6	1.9	1.4	5.0	2.6	24
25	3.0	2.2	2.2	2.5	1.8	2.4	2.0	2.5	3.0	2.2	3.0	1.8	1.3	1.5	**S**	1.9	2.7	1.7	1.8	4.5	2.5	3.1	2.8	2.5	1.3	4.5	2.4	24
26	2.4	1.9	2.3	2.4	1.8	4.1	2.0	1.9	2.2	1.7	2.2	1.5	2.1	**S**	2.0	1.9	2.4	1.7	1.8	2.1	3.2	5.0	2.8	2.7	1.5	5.0	2.4	24
27	3.0	2.8	2.6	2.6	4.4	5.2	3.7	4.3	4.3	3.0	2.4	1.7	**S**	2.7	1.3	1.4	2.0	2.4	2.0	1.9	1.6	1.8	2.5	3.0	1.3	5.2	2.7	24
28	3.7	3.9	3.9	4.1	3.6	3.8	4.6	6.3	22.6	**C1**	**C1**	**C1**	**C1**	**C1**	**C1**	**C1**	**C1**	**C1**	5.5	***96.8***	4.1	4.6	**S**	2.8	2.8	***96.8***	12.2	15
29	3.3	4.1	2.4	3.6	5.7	4.6	3.7	2.0	1.8	1.4	0.3	1.2	0.3	0.2	0.3	0.0	0.2	0.5	0.2	0.3	2.1	**S**	1.4	0.7	0.0	5.7	1.8	24
30	0.6	1.3	1.4	2.4	3.7	4.1	3.4	1.1	1.6	0.9	0.8	0.5	0.9	1.4	48.9	93.6	2.2	13.6	12.1	1.1	**S**	3.4	2.1	1.4	0.5	93.6	8.8	24
HOURLY MAX	5.0	5.4	5.8	6.6	7.3	8.4	23.0	7.0	22.6	7.8	4.3	29.1	4.3	5.2	48.9	93.6	4.2	25.9	12.1	96.8	63.6	5.0	6.4	3.6				
HOURLY AVG	2.6	2.7	2.7	3.0	3.5	3.8	4.7	3.4	3.7	2.6	2.4	3.7	2.0	2.1	3.7	6.6	2.0	3.8	2.7	5.9	5.4	2.7	2.6	2.4				

STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS: 665

MAXIMUM INSTANTANEOUS VALUE: 96.8 PPB @ HOUR(S) 19 ON DAY(S) 28

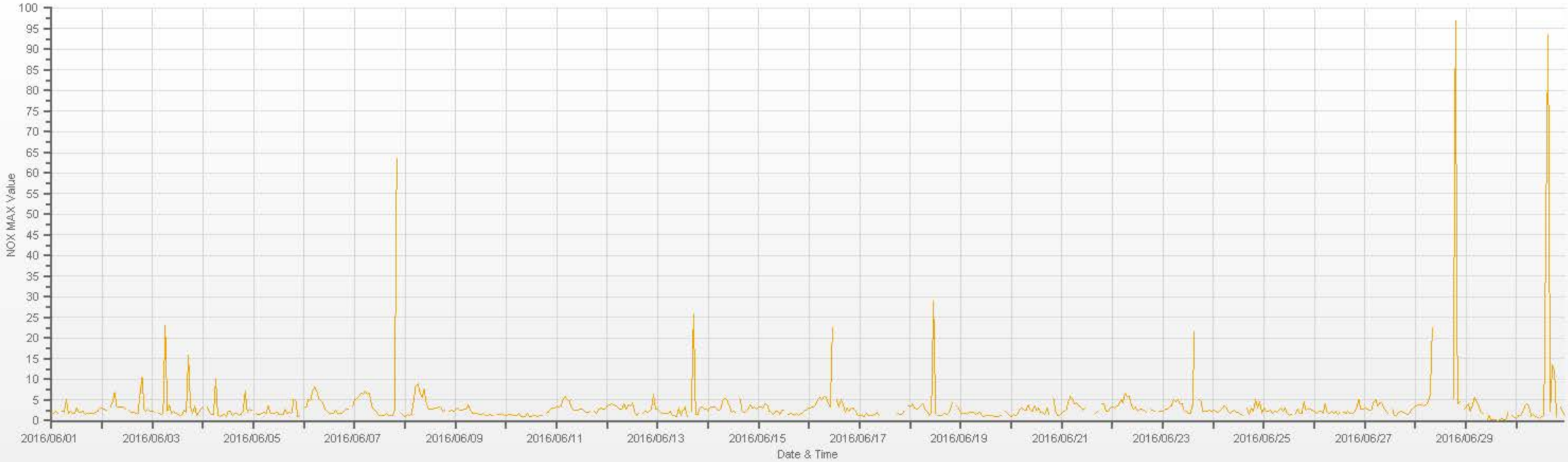
VAR-VARIOUS

IZS CALIBRATION TIME: 31 HRS OPERATIONAL TIME: 705 HRS

MONTHLY CALIBRATION TIME: 8 HRS

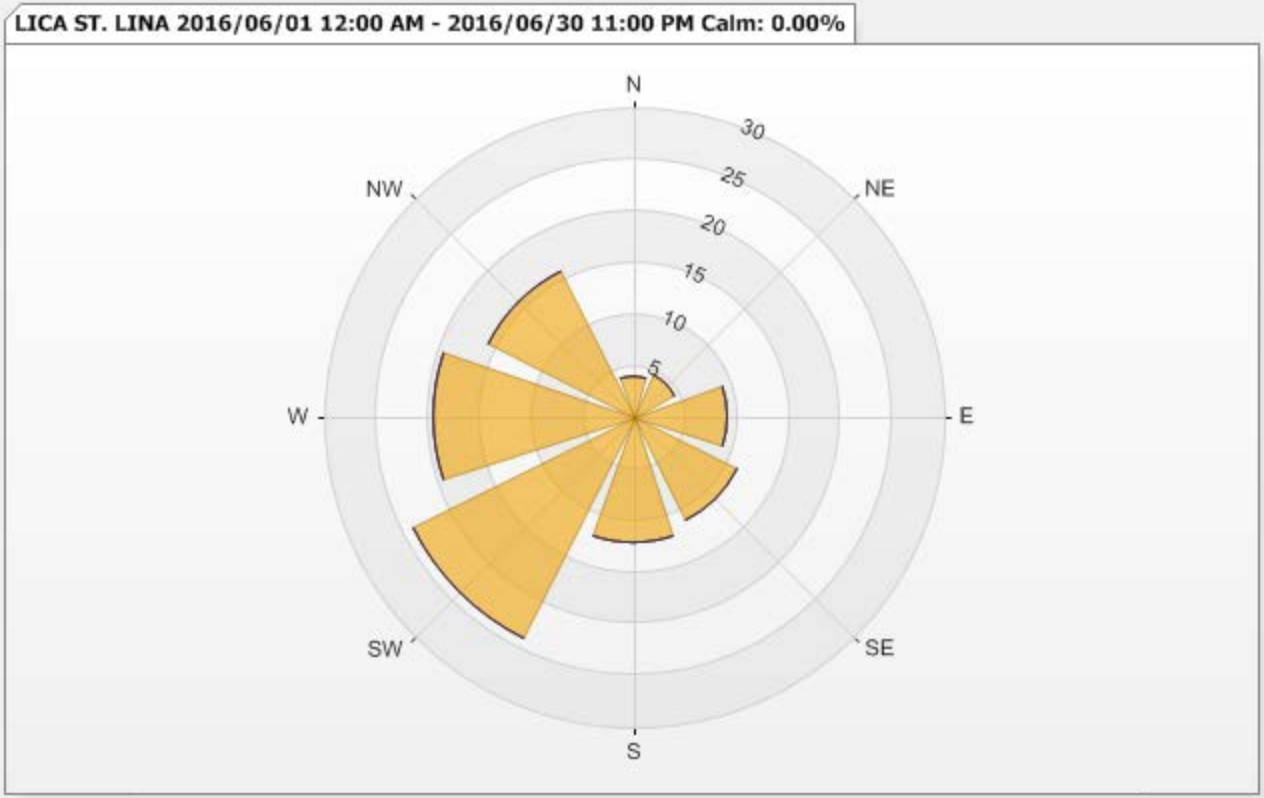
STANDARD DEVIATION: 6.39

NOX MAX[ppb] Station: LICA ST. LINA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]

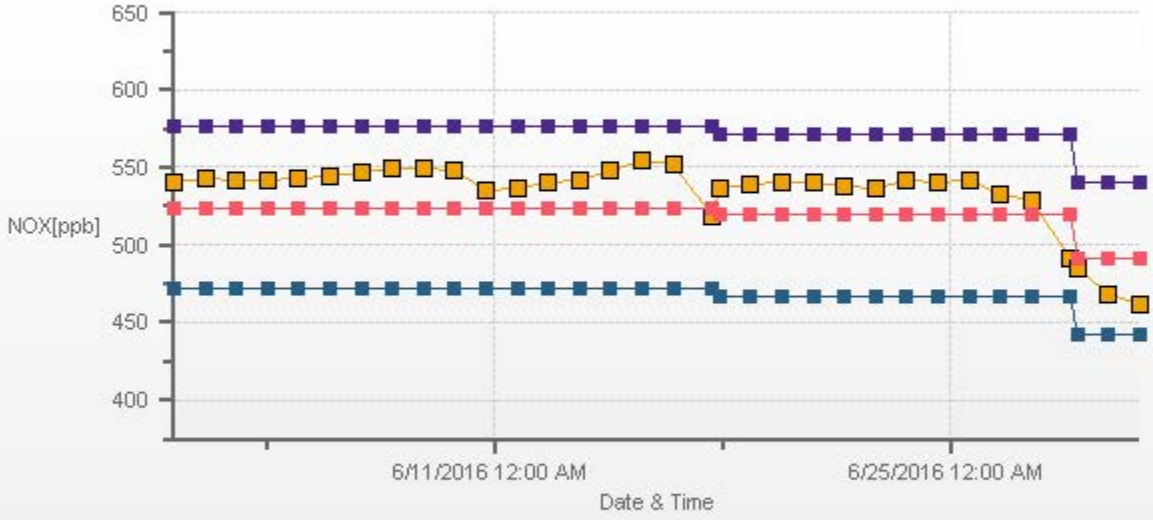


Wind: LICA ST. LINA Monitor: NOX [ppb] Monthly: 06/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
Calm: 0.00% Valid Data: 92.92% Calm Avg: 0.00

Direction	0.0-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	3.89	0	0	0	3.89
NE	4.48	0	0	0	4.48
E	9.12	0	0	0	9.12
SE	11.21	0	0	0	11.21
S	12.26	0	0	0	12.26
SW	23.92	0	0	0	23.92
W	19.43	0	0	0	19.43
NW	15.7	0	0	0	15.7
Summary	100	0	0	0	100


LICA ST. LINA 2016/06/01 12:00 AM - 2016/06/30 11:00 PM Calm: 0.00%
N
NE
E
SE
S
SW
W
NW
30
25
20
15
10
5
% Icon Classes (ppb)
100 0.0-50.0
0 50.0-110.0
0 110.0-210.0
0 >210.0

NOX[ppb] Calibration: LICA ST. LINA Monthly: 06/2016 Type: Span



NITRIC OXIDES

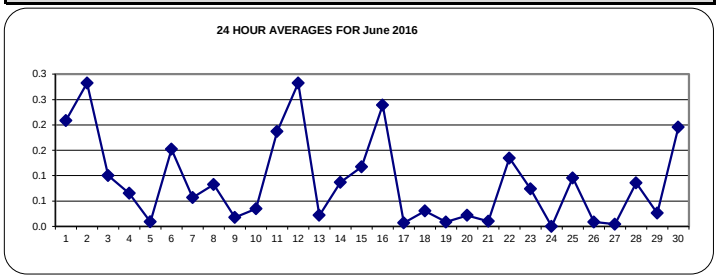
NITRIC OXIDE (NO) hourly averages in ppb

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	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	0.0	0.1	0.1	0.2	S	0.4	0.3	0.7	0.3	0.5	0.0	0.3	0.3	0.1	0.4	0.2	0.1	0.3	0.2	0.1	0.0	0.0	0.2	0.0	0.0	0.7	0.2	24
2	0.1	0.1	0.0	S	0.2	0.7	1.3	0.8	0.8	0.6	0.6	0.3	0.1	0.3	0.2	0.1	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	1.3	***0.3***	24
3	0.0	0.0	S	0.0	0.0	0.0	0.4	0.4	0.5	0.1	0.2	0.0	0.3	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.5	0.1	24
4	0.0	S	0.3	0.1	0.1	0.1	0.2	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.0	0.0	0.0	0.0	0.3	0.1	24
5	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	0.1	0.0	0.0	S	0.0	0.1	0.0	24
6	0.1	0.0	0.0	0.0	0.0	0.6	0.8	0.8	0.8	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.8	0.2	24
7	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	S	0.1	0.0	0.0	0.6	0.1	24
8	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.2	1.0	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	1.0	0.1	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	0.2	0.0	0.0	0.0	0.0	0.0	S	0.2	0.0	0.0	0.0	0.0	0.2	0.0	24
10	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	S	0.1	0.0	0.1	0.2	0.0	0.0	0.2	0.0	24
11	0.1	0.1	0.1	0.2	0.1	0.0	0.0	0.0	0.1	0.3	0.3	0.4	0.4	0.4	0.2	0.2	0.2	S	0.3	0.2	0.2	0.1	0.1	0.3	0.0	0.4	0.2	24
12	0.4	0.1	0.2	0.2	0.0	0.3	0.4	0.5	0.6	0.6	1.0	0.5	0.8	0.1	0.0	0.0	S	0.3	0.0	0.0	0.1	0.1	0.2	0.1	0.0	1.0	***0.3***	24
13	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2	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
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.7	0.8	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	0.8	0.1	24
15	0.1	0.0	0.0	0.0	0.2	0.2	0.2	0.1	0.2	0.3	0.1	0.4	0.3	S	0.2	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.4	0.1	24
16	0.0	0.0	0.0	0.0	0.2	0.6	1.1	1.2	1.2	0.4	0.2	0.0	S	0.2	0.0	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.2	24
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	C	C	C	C	C	C	C	C	0.0	0.0	0.0	0.0	0.0	S	0.1	0.0	0.1	0.0	24
18	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.5	0.0	24
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.1	0.0	0.0	0.0	0.1	0.0	24
20	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.1	0.0	0.2	0.0	24
21	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	Y	Y	Y	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	21
22	0.0	0.0	0.1	0.0	0.1	0.1	0.6	0.9	0.8	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.2	0.0	0.0	0.0	0.2	0.0	0.0	0.9	0.1	24
23	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.8	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.1	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.1	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	S	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	0.2	0.4	0.2	0.2	0.1	0.0	0.1	S	0.3	0.1	0.1	0.1	0.2	0.1	0.0	0.1	0.0	0.0	0.4	0.1	24
26	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	S	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	0.1	0.0	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	24
28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	C1	C1	C1	C1	C1	C1	C1	C1	C1	0.0	0.0	0.0	0.0	S	0.0	0.0	1.2	0.1	15
29	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	S	0.2	0.0	0.0	0.2	0.0	24
30	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.0	0.2	0.1	0.1	0.0	0.0	0.1	***1.5***	1.2	0.0	0.0	0.3	0.0	S	0.0	0.0	0.0	0.0	***1.5***	0.2	24
HOURLY MAX	0.4	0.2	0.3	0.2	0.2	0.7	1.3	1.2	1.2	1.0	1.0	0.5	0.8	0.4	1.5	1.2	0.2	0.3	0.3	0.2	0.4	0.1	0.2	0.3				
HOURLY AVG	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.0				

STATUS FLAG CODES

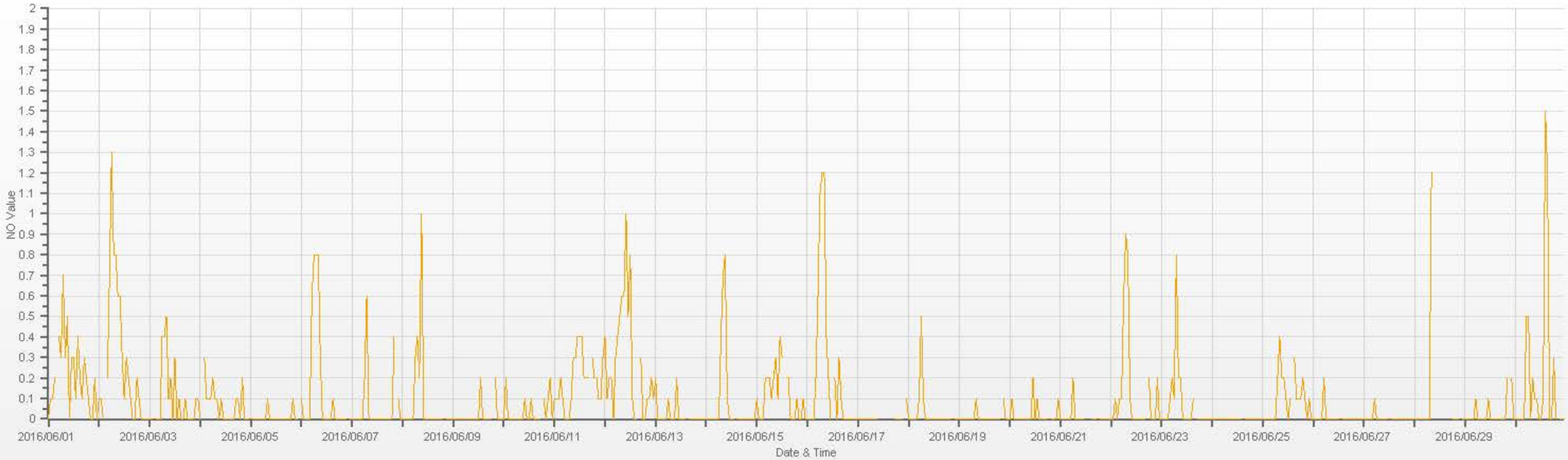
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:			205				
MINIMUM 1-HR AVERAGE	0.0	PPB	@ HOUR(S)	VAR	ON DAY(S)	ALL	
MAXIMUM 1-HR AVERAGE:	1.5	PPB	@ HOUR(S)	14	ON DAY(S)	30	
MAXIMUM 24-HR AVERAGE:	0.3	PPB			ON DAY(S)	2, 12	
					VAR-VARIOUS		
IZS CALIBRATION TIME:	31	HRS	OPERATIONAL TIME:			708	HRS
MONTHLY CALIBRATION TIME:	8	HRS	AMD OPERATION UPTIME:			98.3	%
STANDARD DEVIATION:	0.20		MONTHLY AVERAGE:			0.1	PPB

NO[ppb] Station: LICA ST. LINA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



NITRIC OXIDE MAX instantaneous maximum in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	0.3	0.0	0.2	0.4	**S**	0.4	0.2	1.4	0.5	0.5	0.1	0.2	0.3	0.2	0.5	0.5	0.2	0.2	0.2	0.2	0.0	0.0	0.3	0.0	0.0	1.4	0.3	24
2	0.0	0.2	0.2	**S**	0.2	0.8	3.0	0.9	0.9	0.8	0.6	0.5	**P**	0.3	0.5	0.0	0.0	0.3	0.5	1.3	0.0	0.0	0.2	0.2	0.0	3.0	0.5	23
3	0.0	0.4	**S**	0.2	0.2	0.1	21.0	1.1	2.1	0.7	0.8	0.3	0.5	0.2	0.2	0.4	0.2	6.6	0.0	0.5	0.2	0.0	0.3	0.4	0.0	21.0	1.6	24
4	0.3	**S**	0.5	0.2	0.3	0.3	6.7	0.5	0.3	0.2	0.3	0.3	0.4	0.4	0.0	0.4	0.3	0.4	0.6	0.2	1.0	0.3	0.3	0.3	0.0	6.7	0.6	24
5	**S**	0.2	0.1	0.1	0.4	0.2	0.3	0.7	0.3	0.2	0.1	0.3	0.0	0.2	0.3	0.8	0.0	0.5	0.2	1.1	0.4	0.0	0.2	**S**	0.0	1.1	0.3	24
6	0.5	0.3	0.2	0.2	0.4	1.0	1.1	1.1	1.2	0.8	0.3	0.3	0.2	0.1	0.2	0.3	0.2	0.0	0.3	0.1	0.2	0.2	**S**	0.1	0.0	1.2	0.4	24
7	0.5	0.0	0.2	0.2	0.2	0.4	1.0	1.9	0.2	0.4	0.5	0.0	0.3	0.3	0.0	0.4	0.4	0.4	0.1	0.4	31.9	**S**	0.6	0.2	0.0	31.9	1.8	24
8	0.0	0.2	0.2	0.1	0.1	0.6	1.5	2.4	0.8	1.6	0.3	0.3	0.3	0.3	0.4	0.6	0.5	0.5	0.1	0.0	**S**	0.3	0.3	0.0	0.0	2.4	0.5	24
9	0.0	0.3	0.6	0.4	0.0	0.0	0.5	0.6	0.2	0.2	0.1	0.2	0.2	0.4	0.2	0.2	0.1	0.2	0.2	**S**	0.4	0.2	0.3	0.2	0.0	0.6	0.2	24
10	0.2	0.3	0.3	0.0	0.2	0.4	0.2	0.2	0.1	0.0	0.3	0.0	0.0	0.2	0.2	0.0	0.0	0.1	**S**	0.4	0.0	0.3	0.2	0.2	0.0	0.4	0.2	24
11	0.0	0.0	0.2	0.3	0.0	0.2	0.3	0.1	0.5	0.5	0.5	0.5	0.4	0.6	0.3	0.2	0.2	**S**	0.5	0.4	0.2	0.2	0.0	0.3	0.0	0.6	0.3	24
12	0.3	0.0	0.3	0.2	0.1	0.4	0.4	0.8	1.1	0.6	1.3	0.8	1.0	0.1	0.0	0.4	**S**	0.4	0.2	0.2	0.5	0.4	1.9	0.2	0.0	1.9	0.5	24
13	0.4	0.2	0.0	0.3	0.0	0.5	0.7	0.3	0.3	0.2	1.5	0.4	0.4	1.1	0.0	**S**	0.3	8.0	0.4	0.0	0.1	0.2	0.2	0.5	0.0	8.0	0.7	24
14	0.0	0.1	0.2	0.2	0.0	0.4	0.4	0.9	1.0	1.1	0.6	0.1	0.1	0.0	**S**	0.8	0.2	0.2	0.0	0.2	0.2	0.0	0.2	0.0	0.0	1.1	0.3	24
15	0.3	0.4	0.2	0.2	0.4	0.5	0.5	0.2	0.5	0.8	0.2	0.4	0.3	**S**	0.1	0.5	0.1	0.0	0.1	0.3	0.3	0.2	0.2	0.2	0.0	0.8	0.3	24
16	0.1	0.2	0.2	0.2	0.6	1.0	1.5	2.0	2.1	1.0	0.6	9.7	**S**	1.5	0.6	1.0	0.6	0.3	0.6	0.3	0.7	1.0	0.9	0.2	0.1	9.7	1.2	24
17	0.3	0.4	0.0	0.5	0.4	0.3	0.4	1.0	1.6	0.4	**C**	**C**	**C**	**C**	**C**	**C**	**C**	**C**	0.9	0.4	0.1	0.3	**S**	0.8	0.0	1.6	0.5	24
18	0.0	0.2	0.0	0.1	0.2	0.8	1.0	0.4	0.4	0.0	0.2	9.8	0.2	0.1	0.3	0.2	0.6	0.2	0.3	0.5	0.2	**S**	0.5	0.4	0.0	9.8	0.7	24
19	0.2	0.0	0.4	0.0	0.3	0.2	0.0	0.1	0.4	0.2	0.4	0.0	0.3	0.2	0.0	0.1	0.2	0.1	0.0	0.0	**S**	0.5	0.1	0.4	0.0	0.5	0.2	24
20	0.1	0.4	0.2	0.4	0.3	0.5	0.4	0.4	0.9	0.4	0.1	1.2	0.7	0.8	0.6	0.3	0.3	0.0	0.2	**S**	1.0	0.2	0.5	0.5	0.0	1.2	0.5	24
21	0.3	0.2	0.3	0.4	0.2	0.1	0.5	0.4	0.2	0.2	0.1	0.5	**Y**	**Y**	**Y**	**Y**	0.0	0.0	**S**	0.2	0.2	0.3	0.0	0.4	0.0	0.5	0.2	20
22	0.3	0.2	0.3	0.3	0.8	0.4	2.0	1.0	0.9	0.6	0.0	0.0	0.0	0.1	0.2	0.0	0.3	**S**	0.5	0.2	0.1	**P**	0.4	0.2	0.0	2.0	0.4	23
23	0.2	0.3	0.2	0.4	0.4	1.1	0.8	1.3	0.7	1.0	0.1	0.2	0.0	0.0	0.9	9.7	**S**	0.8	0.8	0.4	0.3	0.0	0.2	0.0	0.0	9.7	0.9	24
24	0.0	0.0	0.2	0.2	0.2	0.4	0.3	0.2	0.1	0.3	0.2	0.5	0.2	0.0	0.0	**S**	0.7	0.1	0.4	0.2	1.1	0.3	1.2	0.0	0.0	1.2	0.3	24
25	0.5	0.0	0.2	0.0	0.2	0.0	0.1	0.3	0.8	0.2	0.9	0.2	0.0	0.2	**S**	0.4	0.2	0.0	0.1	0.5	0.3	0.0	0.3	0.2	0.0	0.9	0.2	24
26	0.0	0.0	0.2	0.2	0.0	0.9	0.4	0.2	0.2	0.0	0.5	0.1	0.4	**S**	0.2	0.2	0.1	0.0	0.2	0.2	0.2	0.2	0.0	0.2	0.0	0.9	0.2	24
27	0.0	0.3	0.3	0.0	0.8	1.8	0.8	0.6	0.9	0.2	0.2	0.2	**S**	0.7	0.2	0.2	0.4	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.4	24
28	0.2	0.1	0.0	0.3	0.2	0.4	0.7	2.4	12.6	**C1**	**C1**	**C1**	**C1**	**C1**	**C1**	**C1**	**C1**	**C1**	1.2	13.4	1.1	2.2	**S**	0.8	0.0	13.4	2.5	15
29	0.9	0.9	0.9	1.1	1.4	1.1	1.2	1.1	1.2	1.1	0.9	1.3	1.0	0.9	0.7	0.9	0.7	0.9	0.9	0.7	1.3	**S**	1.3	0.9	0.7	1.4	1.0	24
30	0.9	1.0	0.8	0.7	1.0	1.6	2.0	0.8	1.1	1.3	1.0	1.1	1.0	1.5	28.6	***62.0***	1.1	2.6	9.2	0.9	**S**	1.3	1.0	1.2	0.7	***62.0***	5.4	24
HOURLY MAX	0.9	1.0	0.9	1.1	1.4	1.8	21.0	2.4	12.6	1.6	1.5	9.8	1.0	1.5	28.6	62.0	1.1	8.0	9.2	13.4	31.9	2.2	1.9	1.2				
HOURLY AVG	0.2	0.2	0.3	0.3	0.3	0.6	1.7	0.8	1.1	0.5	0.5	1.1	0.3	0.4	1.4	3.2	0.3	0.9	0.7	0.8	1.6	0.3	0.4	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: 567

MAXIMUM INSTANTANEOUS VALUE: 62.0 PPB @ HOUR(S) 15 ON DAY(S) 30

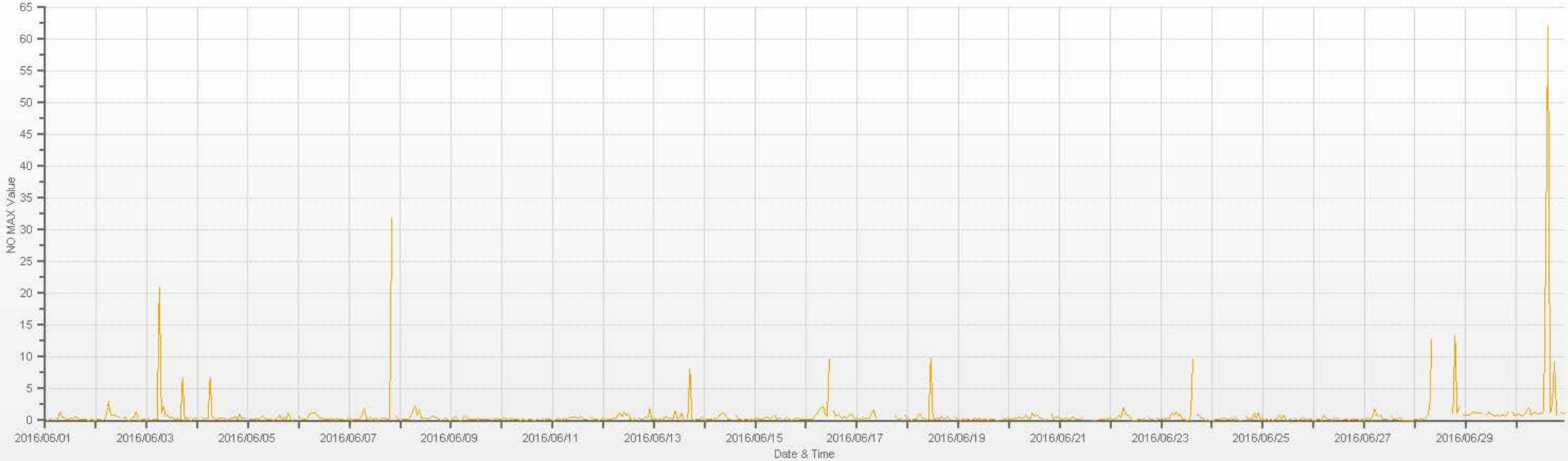
VAR-VARIOUS

IZS CALIBRATION TIME: 31 HRS OPERATIONAL TIME: 705 HRS

MONTHLY CALIBRATION TIME: 8 HRS

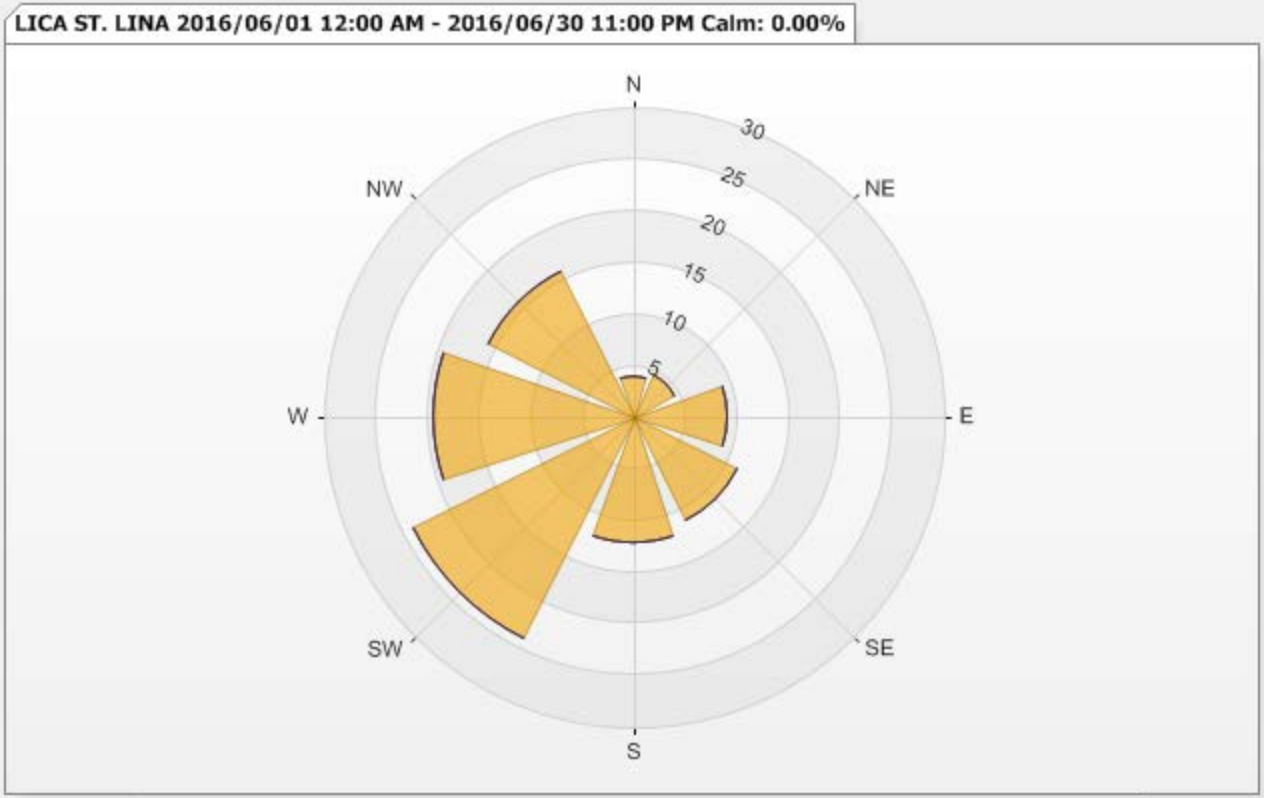
STANDARD DEVIATION: 3.20

NO MAX[ppb] Station: LICA ST. LINA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



Wind: LICA ST. LINA Monitor: NO [ppb] Monthly: 06/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
Calm: 0.00% Valid Data: 92.92% Calm Avg: 0.00

Direction	0.0-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	3.89	0	0	0	3.89
NE	4.48	0	0	0	4.48
E	9.12	0	0	0	9.12
SE	11.21	0	0	0	11.21
S	12.26	0	0	0	12.26
SW	23.92	0	0	0	23.92
W	19.43	0	0	0	19.43
NW	15.7	0	0	0	15.7
Summary	100	0	0	0	100


LICA ST. LINA 2016/06/01 12:00 AM - 2016/06/30 11:00 PM Calm: 0.00%
N
NE
E
SE
S
SW
W
NW
30
25
20
15
10
5
% Icon Classes (ppb)
100 0.0-50.0
0 50.0-110.0
0 110.0-210.0
0 >210.0

NITROGEN DIOXIDE

NITROGEN DIOXIDE (NO2) hourly averages in ppb

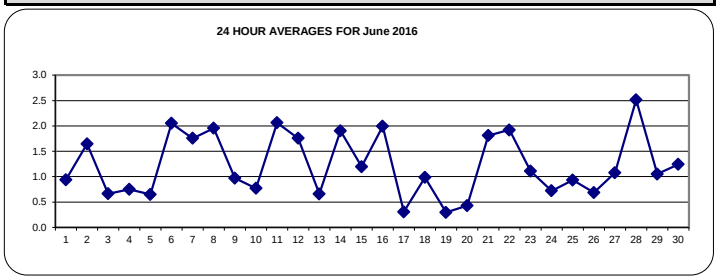
MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	1.2	1.1	1.2	0.9	**S**	1.1	1.2	1.3	0.7	1.0	0.9	0.8	1.0	0.9	0.7	0.7	0.7	0.7	0.4	0.7	0.8	1.0	1.1	1.5	0.4	1.5	0.9	24
2	2.2	1.7	1.6	**S**	2.3	2.9	2.4	1.7	1.5	1.8	1.8	1.5	1.6	1.3	0.9	1.1	0.9	0.7	1.5	2.1	1.7	1.6	1.6	1.5	0.7	2.9	1.6	24
3	1.5	1.4	**S**	0.7	0.9	0.7	0.6	0.3	0.5	0.4	0.4	0.3	0.2	0.3	0.3	0.5	0.8	0.5	1.1	0.4	0.9	0.4	0.8	1.4	0.2	1.5	0.7	24
4	1.6	**S**	1.7	0.7	0.5	0.5	0.3	0.4	0.2	0.2	0.5	0.3	0.5	0.5	0.4	0.7	0.7	0.6	0.6	1.1	2.4	1.0	1.0	0.9	0.2	2.4	0.8	24
5	**S**	0.9	0.7	0.9	0.8	1.0	0.9	1.0	0.9	1.1	0.7	0.7	0.4	0.4	0.3	0.6	0.2	0.6	0.4	0.8	0.9	0.1	0.0	**S**	0.0	1.1	0.7	24
6	1.3	2.2	2.9	2.6	4.1	6.1	4.7	3.5	2.9	2.5	1.7	1.1	0.9	0.8	0.7	0.9	0.7	0.6	0.8	0.9	1.4	1.6	**S**	2.3	0.6	6.1	2.1	24
7	3.2	4.1	4.4	5.1	4.7	4.6	4.1	3.3	2.1	1.3	0.7	0.3	0.0	0.1	0.0	0.2	0.1	0.0	0.0	0.3	1.6	**S**	0.2	0.0	0.0	5.1	1.8	24
8	0.0	0.2	0.0	0.4	1.2	6.1	***6.2***	3.6	3.2	4.1	2.1	1.3	1.4	1.5	1.6	1.8	2.1	1.8	1.2	1.1	**S**	1.3	1.3	1.5	0.0	***6.2***	2.0	24
9	1.4	2.0	1.6	1.4	1.7	2.0	2.1	1.3	0.8	0.9	0.6	0.7	0.7	0.7	0.5	0.3	0.6	0.5	0.4	**S**	0.5	0.6	0.6	0.4	0.3	2.1	1.0	24
10	0.7	0.7	0.7	0.6	0.7	0.6	0.5	0.2	0.5	0.4	0.6	0.4	0.3	0.5	0.4	0.2	0.6	0.5	**S**	0.8	1.1	1.7	2.3	2.7	0.2	2.7	0.8	24
11	2.7	2.8	2.6	4.1	5.0	4.4	3.4	2.0	1.7	1.4	1.5	1.5	1.4	1.1	0.9	0.9	1.2	**S**	0.9	0.7	1.3	2.2	1.9	1.9	0.7	5.0	2.1	24
12	2.3	2.7	3.1	3.1	2.8	1.9	1.8	1.7	1.9	1.6	1.8	2.0	2.3	1.0	0.4	0.6	**S**	0.6	0.9	1.1	1.5	1.6	2.1	1.6	0.4	3.1	1.8	24
13	1.8	1.1	0.8	0.9	0.7	0.5	0.5	0.2	0.2	0.0	0.2	0.0	0.1	0.1	0.0	**S**	0.5	0.6	0.3	0.3	1.4	2.2	1.4	1.4	0.0	2.2	0.7	24
14	1.4	2.2	2.1	2.1	1.7	1.4	1.5	3.2	3.6	3.1	2.3	1.0	1.2	1.0	**S**	1.4	1.3	1.2	1.3	1.8	2.6	2.2	2.2	2.0	1.0	3.6	1.9	24
15	1.7	2.5	2.4	3.4	2.3	1.3	1.0	0.6	0.8	0.7	0.8	0.9	0.7	**S**	0.5	0.6	0.4	0.5	0.5	0.6	1.0	0.9	1.6	1.8	0.4	3.4	1.2	24
16	2.1	2.5	2.5	2.8	3.4	3.4	2.9	2.9	2.9	2.5	2.2	2.0	**S**	1.6	1.0	2.6	1.9	1.1	1.4	1.2	1.5	1.0	0.5	0.0	0.0	3.4	2.0	24
17	0.2	0.1	0.0	0.3	0.1	0.2	0.2	0.0	0.1	0.0	**C**	**C**	**C**	**C**	**C**	**C**	**C**	**C**	0.4	0.3	0.3	0.7	**S**	1.7	0.0	1.7	0.3	24
18	2.0	2.1	1.7	1.7	1.8	2.2	2.2	1.4	0.8	0.1	0.2	0.5	0.2	0.1	0.1	0.1	0.2	0.1	0.3	0.8	1.1	**S**	1.7	1.3	0.1	2.2	1.0	24
19	0.6	0.3	0.6	0.4	0.8	0.6	0.5	0.3	0.7	0.6	0.3	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**S**	0.4	0.3	0.2	0.0	0.8	0.3	24
20	0.0	0.3	0.2	0.3	1.0	1.0	1.0	1.0	0.9	0.4	0.0	0.6	0.4	0.3	0.1	0.1	0.1	0.6	0.0	**S**	0.9	0.3	0.2	0.2	0.0	1.0	0.4	24
21	0.5	0.9	1.3	3.0	3.5	3.8	2.9	2.2	2.3	2.1	1.4	1.7	**Y**	**Y**	**Y**	0.7	0.6	1.3	**S**	1.9	1.6	1.4	1.4	1.7	0.5	3.8	1.8	21
22	2.3	2.1	2.3	2.7	3.6	2.9	2.8	4.0	3.2	2.6	1.5	1.3	1.2	1.3	1.4	1.3	1.1	**S**	1.1	1.2	1.1	1.2	1.0	1.0	1.0	4.0	1.9	24
23	1.2	1.5	1.6	1.6	1.6	1.5	1.8	2.3	1.8	1.7	1.0	0.7	0.4	0.2	0.4	1.3	**S**	0.9	0.9	0.3	0.4	0.7	1.0	0.7	0.2	2.3	1.1	24
24	0.6	0.7	0.8	0.8	1.0	1.6	1.0	0.6	0.4	0.5	0.7	0.3	0.4	0.2	0.0	**S**	1.0	0.1	0.6	0.8	1.4	1.3	1.2	0.6	0.0	1.6	0.7	24
25	1.2	1.1	0.9	1.2	0.7	1.0	1.0	1.0	1.0	0.9	0.7	0.5	0.3	0.4	**S**	0.6	0.7	0.7	0.8	1.3	1.1	1.5	1.6	1.3	0.3	1.6	0.9	24
26	1.2	0.8	1.1	0.9	0.6	0.9	0.8	0.6	0.5	0.1	0.2	0.0	0.1	**S**	0.5	0.3	0.3	0.1	0.1	0.5	1.3	1.9	1.6	1.4	0.0	1.9	0.7	24
27	1.4	1.6	1.4	1.5	2.2	2.2	1.9	2.2	1.8	1.4	0.7	0.5	**S**	0.5	0.1	0.3	0.5	0.4	0.0	0.1	0.4	0.7	1.3	1.7	0.0	2.2	1.1	24
28	2.1	2.5	2.6	3.0	2.5	2.6	2.9	2.8	2.4	**C1**	**C1**	**C1**	**C1**	**C1**	**C1**	**C1**	**C1**	**C1**	1.6	4.3	2.3	1.7	**S**	1.9	1.6	4.3	***2.5***	15
29	2.4	2.7	1.4	2.0	4.3	3.7	2.0	1.5	1.1	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.1	**S**	0.9	0.5	0.0	4.3	1.1	24
30	0.5	0.8	0.9	1.8	3.1	3.1	1.9	0.7	0.9	0.6	0.5	0.2	0.3	0.5	2.0	1.2	1.0	1.1	1.5	0.7	**S**	2.6	1.5	1.2	0.2	3.1	1.2	24
HOURLY MAX	3.2	4.1	4.4	5.1	5.0	6.1	6.2	4.0	3.6	4.1	2.3	2.0	2.3	1.6	2.0	2.6	2.1	1.8	1.6	4.3	2.6	2.6	2.3	2.7				
HOURLY AVG	1.4	1.6	1.6	1.8	2.1	2.2	1.9	1.6	1.4	1.2	0.9	0.8	0.6	0.6	0.5	0.7	0.7	0.6	0.7	0.9	1.2	1.3	1.2	1.3				

STATUS FLAG CODES

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

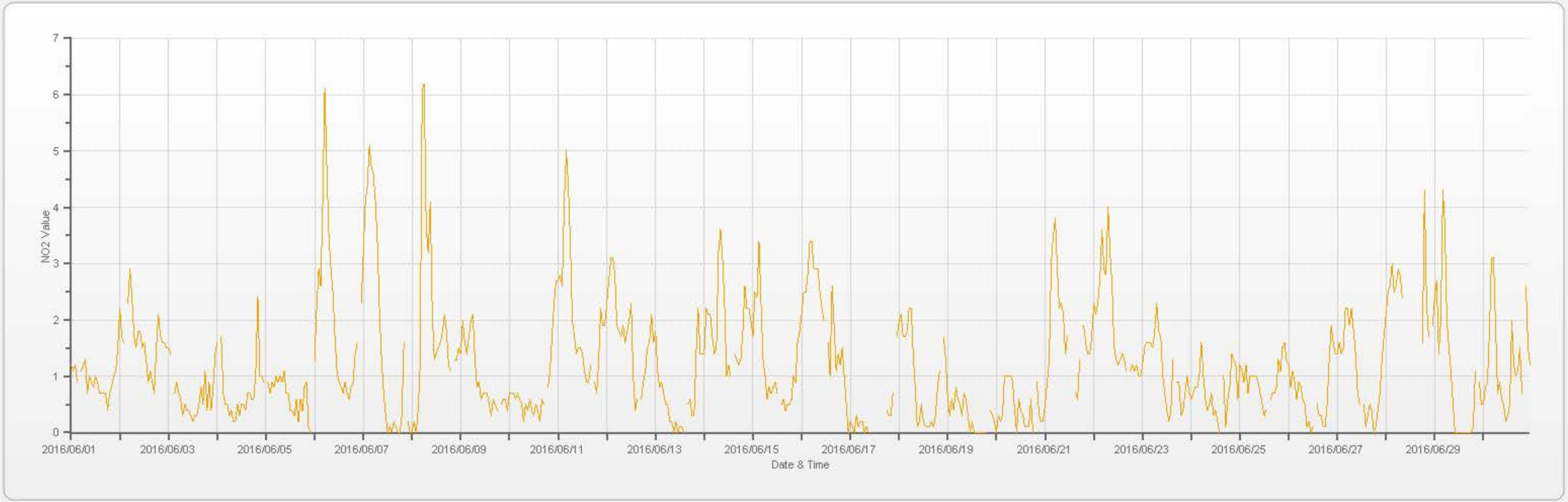
OBJECTIVE LIMIT: **ALBERTA ENVIRONMENT:** 1-HR 159 PPB



MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:			0				
NUMBER OF NON-ZERO READINGS:			631				
MINIMUM 1-HR AVERAGE	0.0	PPB	@ HOUR(S)	VAR	ON DAY(S)	VAR	
MAXIMUM 1-HR AVERAGE:	6.2	PPB	@ HOUR(S)	6	ON DAY(S)	8	
MAXIMUM 24-HR AVERAGE:	2.5	PPB			ON DAY(S)	28	
					VAR-VARIOUS		
IZS CALIBRATION TIME:	31	HRS	OPERATIONAL TIME:			708	HRS
MONTHLY CALIBRATION TIME:	8	HRS	AMD OPERATION UPTIME:			98.3	%
STANDARD DEVIATION:	1.02		MONTHLY AVERAGE:			1.2	PPB

NO2[ppb] Station: LICA ST. LINA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



NITROGEN DIOXIDE MAX instantaneous maximum in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	1.9	1.9	2.0	1.9	**S**	1.7	2.1	3.2	1.6	1.7	1.5	1.3	2.2	1.8	1.5	1.7	1.3	1.3	1.3	1.4	1.8	1.9	2.1	2.9	1.3	3.2	1.8	24
2	3.2	2.8	2.8	**S**	3.6	3.6	3.8	2.5	2.6	2.6	2.6	2.1	**P**	2.4	1.5	1.5	1.5	1.2	5.5	9.0	2.7	2.3	2.1	2.1	1.2	9.0	2.9	23
3	2.1	1.8	**S**	1.2	1.2	1.3	4.7	1.1	1.9	1.2	1.5	1.2	1.1	0.8	1.1	1.7	1.5	8.7	2.7	1.2	3.1	1.2	1.8	2.6	0.8	8.7	2.0	24
4	2.7	**S**	2.7	2.1	1.3	1.3	3.9	1.0	0.7	0.7	1.2	0.7	1.5	1.4	0.8	1.0	1.0	1.0	1.2	2.0	5.9	1.9	2.4	2.5	0.7	5.9	1.8	24
5	**S**	1.2	1.5	1.4	1.3	1.6	1.3	2.8	1.2	1.6	1.4	1.5	1.2	1.2	1.0	1.7	1.5	1.5	1.0	3.5	4.1	0.9	1.0	**S**	0.9	4.1	1.6	24
6	2.8	3.4	4.8	4.2	7.0	7.5	6.0	4.5	3.7	3.2	2.6	2.0	1.7	1.7	1.8	2.0	1.8	1.7	1.4	1.9	2.5	2.7	**S**	3.4	1.4	7.5	3.2	24
7	4.7	5.4	5.4	6.2	6.2	6.5	5.3	4.8	3.3	2.2	2.0	1.5	1.1	1.1	1.1	1.2	1.2	1.2	1.2	2.0	32.3	**S**	1.2	1.0	1.0	32.3	4.3	24
8	1.2	1.3	1.3	1.4	4.4	7.6	7.8	5.7	4.5	5.8	4.1	2.1	2.3	2.6	2.7	2.8	2.8	2.8	2.2	2.3	**S**	2.3	2.2	2.8	1.2	7.8	3.3	24
9	2.4	2.9	2.6	2.3	2.6	2.6	3.4	2.2	1.7	1.9	1.8	1.3	1.2	1.1	1.0	1.1	1.3	1.3	1.0	**S**	1.6	1.0	1.2	1.0	1.0	3.4	1.8	24
10	1.5	1.2	1.2	1.1	1.1	1.1	1.5	1.0	0.8	1.0	1.2	1.0	1.0	0.9	1.0	1.1	1.1	1.1	**S**	1.2	2.1	2.6	3.1	3.3	0.8	3.3	1.4	24
11	3.3	3.4	3.4	4.9	5.7	5.3	4.7	2.7	2.2	2.0	2.2	2.5	2.2	2.2	1.6	1.6	1.9	**S**	2.0	1.6	2.6	3.0	2.8	2.5	1.6	5.7	2.9	24
12	3.4	3.5	3.8	3.5	3.6	2.7	2.2	2.4	2.7	2.3	2.4	2.8	3.4	1.8	1.0	1.1	**S**	1.0	1.6	1.7	2.2	2.5	4.4	2.5	1.0	4.4	2.5	24
13	2.5	1.9	1.9	1.5	1.4	1.4	1.3	1.0	1.0	0.9	1.2	1.2	1.5	1.6	0.9	**S**	1.9	17.3	1.2	1.4	3.0	3.2	2.8	2.5	0.9	17.3	2.4	24
14	2.8	3.5	2.8	3.3	2.5	2.1	2.5	4.1	4.0	3.7	3.0	1.8	2.2	1.8	**S**	4.0	2.4	1.9	2.5	2.4	3.4	3.2	3.1	2.8	1.8	4.1	2.9	24
15	3.0	2.9	3.2	4.3	3.4	2.1	1.5	1.2	1.6	1.3	1.4	1.7	1.7	**S**	1.1	1.0	1.1	1.2	1.5	1.1	1.8	1.7	2.4	2.3	1.0	4.3	1.9	24
16	2.7	2.9	3.0	3.8	4.0	4.2	3.3	3.3	3.4	3.1	2.6	14.4	**S**	3.2	2.7	3.8	3.4	1.7	2.5	2.1	2.4	2.0	1.3	1.2	1.2	14.4	3.3	24
17	1.1	1.2	1.2	1.1	1.2	1.1	1.2	1.2	0.9	1.1	**C**	**C**	**C**	**C**	**C**	**C**	**C**	**C**	1.0	1.5	1.5	2.1	**S**	2.8	0.9	2.8	1.3	24
18	3.4	3.8	2.8	2.8	2.8	3.2	2.9	2.3	1.8	1.2	1.5	22.9	1.5	1.2	1.0	1.3	1.0	1.2	1.1	2.7	3.9	**S**	3.0	2.8	1.0	22.9	3.1	24
19	2.0	1.7	1.7	1.5	1.7	1.7	1.7	1.2	1.4	1.5	1.2	1.3	1.1	1.0	1.2	0.9	0.9	0.9	0.8	1.2	**S**	2.1	1.5	1.4	0.8	2.1	1.4	24
20	1.2	1.3	1.4	1.7	2.6	2.3	2.6	2.0	2.3	1.6	1.7	2.1	1.5	2.0	1.6	1.8	1.2	2.4	1.5	**S**	4.0	2.1	1.0	1.2	1.0	4.0	1.9	24
21	1.5	2.1	2.6	4.6	5.5	4.9	3.9	3.6	3.2	2.8	2.1	2.5	**Y**	**Y**	**Y**	**Y**	1.7	2.3	**S**	3.6	3.5	2.1	2.1	2.6	1.5	5.5	3.0	20
22	3.1	3.2	3.2	3.8	4.5	3.9	4.3	4.7	4.7	3.2	2.6	2.7	2.1	2.3	2.4	2.3	1.9	**S**	2.6	2.5	1.9	**P**	2.3	2.6	1.9	4.7	3.0	23
23	2.5	2.7	2.9	2.8	3.1	3.5	3.5	3.8	3.2	3.4	2.4	2.2	1.9	1.6	2.1	11.9	**S**	3.7	3.5	1.9	1.9	2.1	2.3	2.3	1.6	11.9	3.1	24
24	2.3	2.2	2.1	2.0	2.2	3.0	2.6	2.0	1.6	1.9	2.3	1.5	1.7	1.5	1.3	**S**	2.1	1.6	2.5	1.9	3.4	2.7	3.1	1.9	1.3	3.4	2.1	24
25	2.3	2.1	2.1	2.2	1.9	2.1	2.1	2.1	2.0	1.6	1.7	1.7	1.4	1.5	**S**	1.3	2.3	1.6	1.7	3.5	2.1	2.6	2.7	2.4	1.3	3.5	2.0	24
26	2.3	2.1	2.0	1.9	1.8	3.0	1.5	1.6	1.9	1.5	1.6	1.3	1.7	**S**	1.7	1.7	1.7	1.7	1.7	1.8	2.6	4.2	3.0	2.7	1.3	4.2	2.0	24
27	2.8	2.9	2.5	2.9	3.5	3.3	2.8	3.3	3.2	2.8	2.1	1.3	**S**	1.6	1.1	1.2	1.7	1.6	1.9	1.7	1.9	1.8	2.6	2.6	1.1	3.5	2.3	24
28	3.2	3.4	3.7	4.1	3.7	3.2	3.4	4.2	13.7	**C1**	**C1**	**C1**	**C1**	**C1**	**C1**	**C1**	**C1**	**C1**	4.0	***85.2***	2.9	2.7	**S**	2.4	2.4	***85.2***	10.0	15
29	2.8	3.2	1.3	2.7	4.9	3.6	2.2	1.4	0.9	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	**S**	0.4	0.4	0.0	4.9	1.1	24
30	0.2	0.6	0.9	1.9	2.7	2.8	1.6	0.8	0.7	0.4	0.1	0.1	0.0	0.2	32.7	32.7	1.3	11.0	4.6	0.7	**S**	2.8	1.4	1.1	0.0	32.7	4.4	24
HOURLY MAX	4.7	5.4	5.4	6.2	7.0	7.6	7.8	5.7	13.7	5.8	4.1	22.9	3.4	3.2	32.7	32.7	3.4	17.3	5.5	85.2	32.3	4.2	4.4	3.4				
HOURLY AVG	2.4	2.5	2.5	2.7	3.2	3.1	3.1	2.6	2.6	2.0	1.9	2.8	1.6	1.5	2.6	3.3	1.6	2.8	2.0	5.1	3.8	2.3	2.2	2.2				

STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS: 655

MAXIMUM INSTANTANEOUS VALUE: 85.2 PPB @ HOUR(S) 19 ON DAY(S) 28

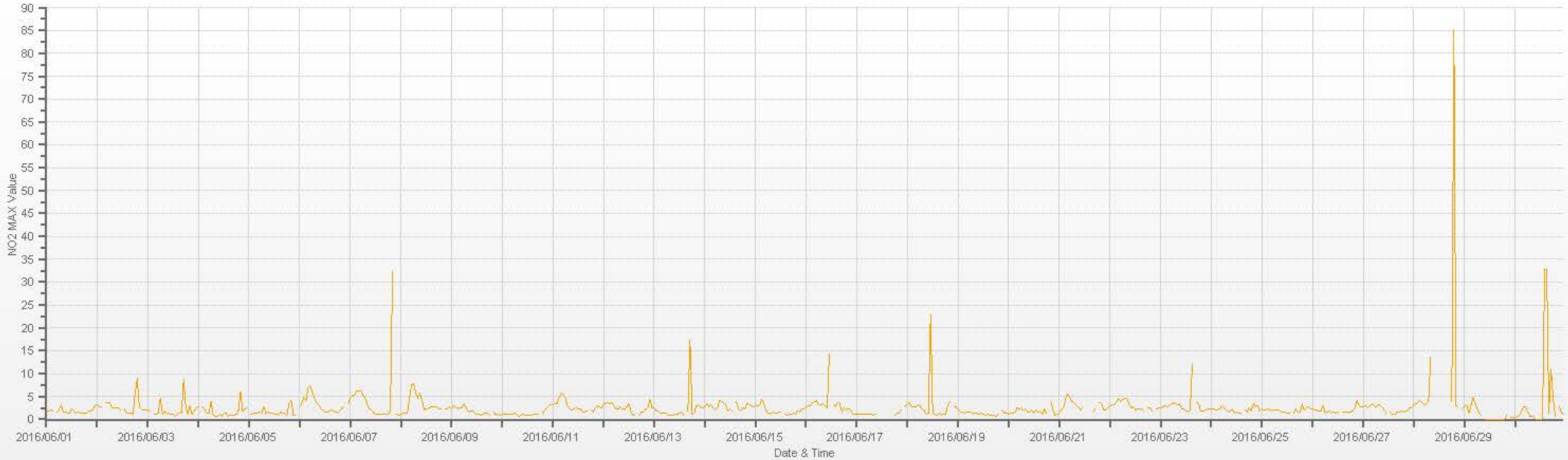
VAR-VARIOUS

IZS CALIBRATION TIME: 31 HRS OPERATIONAL TIME: 705 HRS

MONTHLY CALIBRATION TIME: 8 HRS

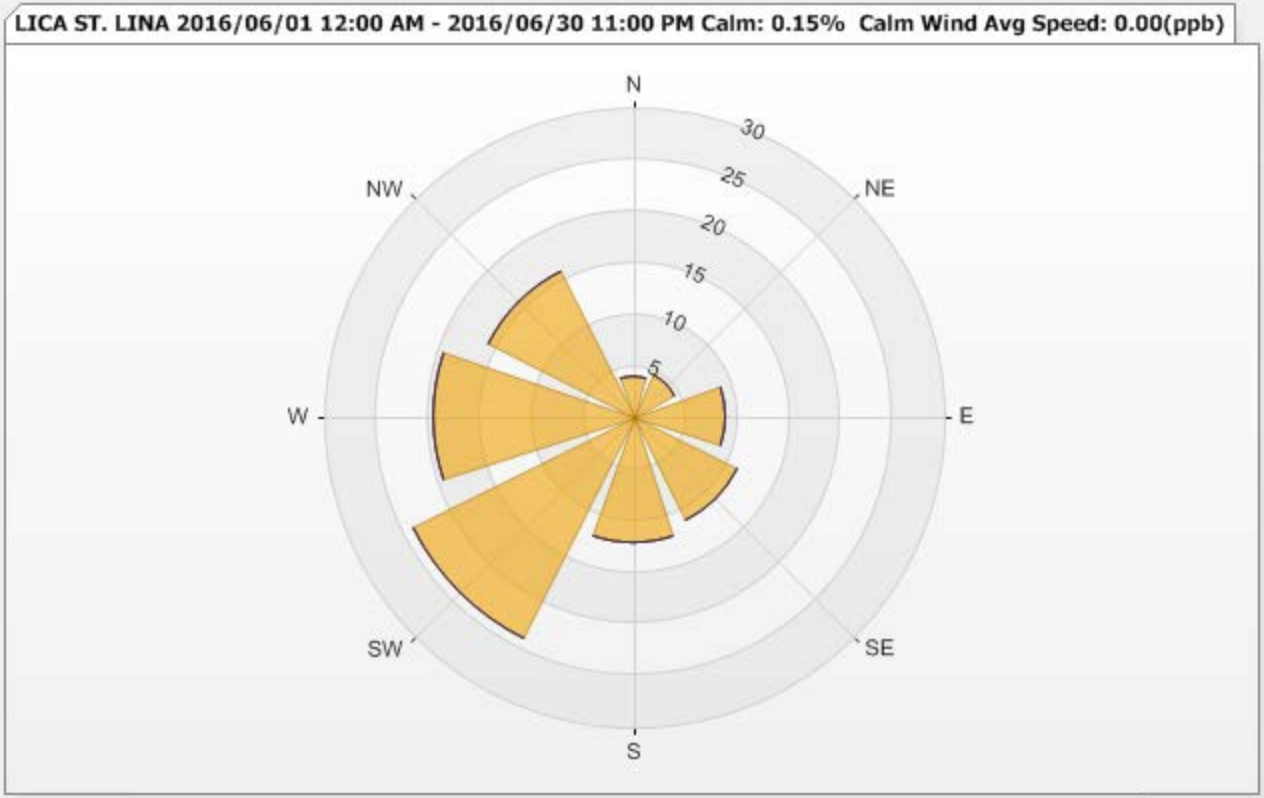
STANDARD DEVIATION: 4.18

NO2 MAX[ppb] Station: LICA ST. LINA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]

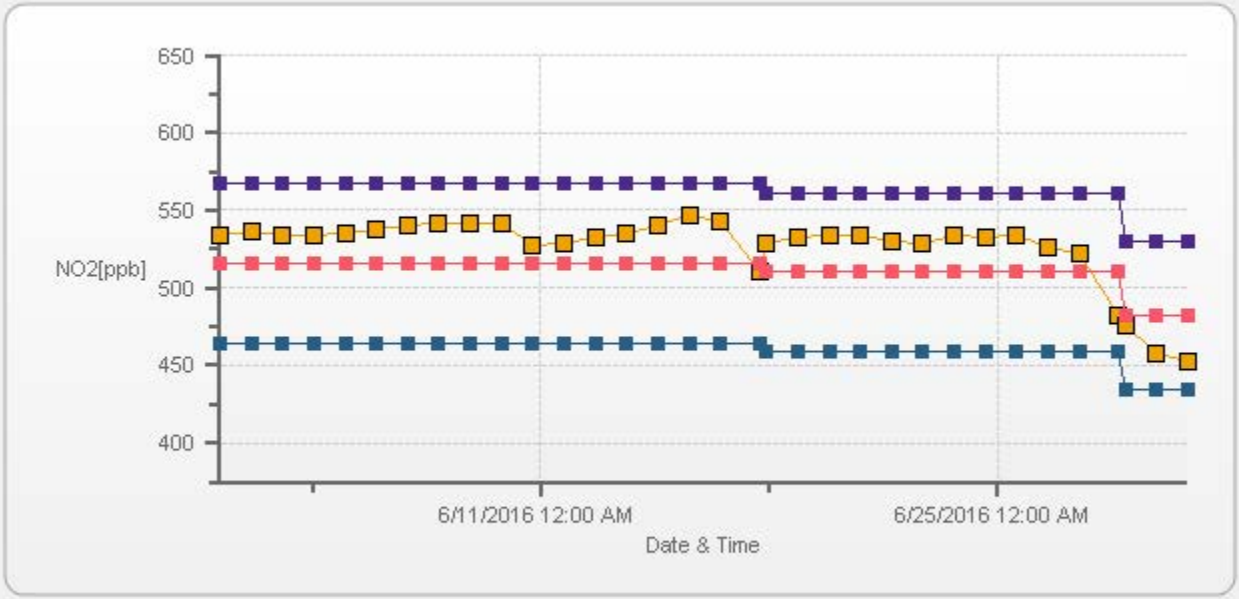


Wind: LICA ST. LINA Monitor: NO2 [ppb] Monthly: 06/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
Calm: 0.15% Valid Data: 92.92% Calm Avg: 0.00

Direction	0.0-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	3.89	0	0	0	3.89
NE	4.48	0	0	0	4.48
E	8.97	0	0	0	8.97
SE	11.21	0	0	0	11.21
S	12.26	0	0	0	12.26
SW	23.92	0	0	0	23.92
W	19.43	0	0	0	19.43
NW	15.7	0	0	0	15.7
Summary	100	0	0	0	100


LICA ST. LINA 2016/06/01 12:00 AM - 2016/06/30 11:00 PM Calm: 0.15% Calm Wind Avg Speed: 0.00(ppb)
N
NE
E
SE
S
SW
W
NW
30
25
20
15
10
5
% Icon Classes (ppb)
100 0.0-50.0
0 50.0-110.0
0 110.0-210.0
0 >210.0

NO2[ppb] Calibration: LICA ST. LINA Monthly: 06/2016 Type: Span



OZONE

OZONE (O3) hourly averages in ppb

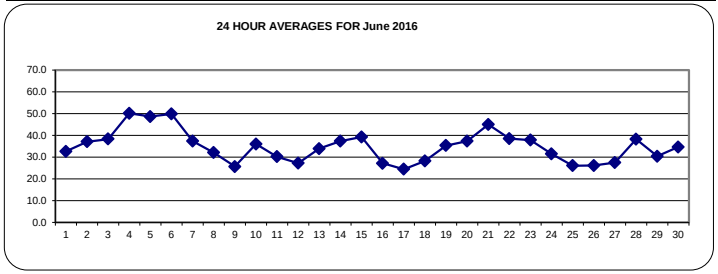
MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	23.8	22.5	23.2	22.7	**S**	18.3	19.3	23.3	27.4	29.7	34.2	37.6	40.0	41.4	42.0	42.7	42.1	41.5	40.9	38.8	36.9	35.8	34.8	33.0	18.3	42.7	32.7	24
2	26.9	26.6	27.2	**S**	24.4	23.6	20.9	20.6	25.0	28.3	35.5	46.5	50.7	53.2	51.2	51.1	47.9	48.1	44.3	44.0	44.3	39.4	37.6	36.3	20.6	53.2	37.1	24
3	34.0	31.5	**S**	28.3	25.2	23.1	23.5	27.7	30.7	32.7	35.0	39.0	44.9	47.4	46.3	45.4	46.3	47.9	47.3	47.1	46.4	48.1	44.2	39.8	23.1	48.1	38.3	24
4	40.5	**S**	29.1	34.7	32.4	32.2	34.6	39.3	43.7	50.6	55.8	57.8	57.5	57.6	59.8	62.0	62.7	62.8	59.9	56.7	55.3	57.2	56.5	55.8	29.1	62.8	***50.2***	24
5	**S**	54.5	53.1	52.5	49.6	50.1	46.4	43.5	45.5	50.1	52.7	53.7	53.1	49.4	47.5	46.7	47.1	46.9	46.7	45.0	42.0	46.2	48.8	**S**	42.0	54.5	48.7	24
6	42.1	38.3	37.2	35.0	31.4	28.3	29.0	33.0	42.4	48.4	55.0	61.1	***64.6***	64.4	64.5	63.5	63.3	62.9	60.8	59.5	57.4	55.5	**S**	50.9	28.3	***64.6***	49.9	24
7	45.8	39.9	35.2	31.7	28.8	26.0	25.7	28.0	36.6	41.3	39.8	39.8	42.0	43.4	42.1	41.9	41.5	41.5	40.9	37.3	35.2	**S**	38.0	38.9	25.7	45.8	37.4	24
8	39.6	38.3	37.6	32.2	31.0	22.8	20.8	20.2	23.9	29.7	28.9	29.0	35.8	35.0	34.2	32.9	29.9	31.1	36.8	41.9	**S**	36.8	36.4	34.4	20.2	41.9	32.1	24
9	31.4	31.8	32.5	29.8	25.8	22.7	21.0	18.9	20.7	20.7	23.6	25.2	29.8	25.9	26.9	28.1	23.5	25.6	22.5	**S**	24.8	26.1	26.4	27.3	18.9	32.5	25.7	24
10	31.8	34.9	36.5	37.3	34.9	34.5	35.5	35.6	38.6	40.3	40.2	38.7	37.4	35.8	36.0	37.8	37.9	38.7	**S**	36.0	33.2	34.0	32.2	31.2	31.2	40.3	36.0	24
11	31.2	30.1	28.9	25.1	22.4	23.1	27.6	32.0	30.8	29.7	28.5	28.5	28.1	29.0	30.4	30.6	28.7	**S**	37.3	37.0	34.8	34.4	34.5	32.8	22.4	37.3	30.2	24
12	30.5	26.5	23.8	24.7	23.5	24.9	23.0	26.3	28.3	31.1	29.2	27.3	24.7	29.1	31.1	28.6	**S**	29.4	29.3	29.8	28.5	26.9	26.1	24.2	23.0	31.1	27.3	24
13	21.2	22.5	23.9	25.2	25.0	23.9	25.3	29.9	32.0	33.1	34.5	37.3	39.0	39.6	40.1	**S**	45.6	42.7	45.4	43.9	40.9	37.3	37.3	35.0	21.2	45.6	33.9	24
14	32.1	33.1	34.1	32.5	33.2	32.7	31.8	30.4	27.3	28.4	37.5	45.4	47.3	50.2	**S**	47.0	46.3	41.0	39.0	39.1	34.4	38.1	38.8	39.9	27.3	50.2	37.4	24
15	40.0	35.7	32.1	26.1	35.1	35.4	35.6	35.8	36.9	38.8	40.4	39.7	42.4	**S**	42.9	44.2	45.5	47.3	46.1	46.5	43.6	40.2	37.4	34.9	26.1	47.3	39.2	24
16	31.7	28.6	26.1	23.6	20.6	18.6	19.6	22.1	25.7	29.9	32.5	35.2	**S**	33.4	32.8	24.7	32.4	33.3	33.5	31.1	27.8	20.7	21.2	20.5	18.6	35.2	27.2	24
17	20.2	20.1	19.4	19.4	19.5	18.6	18.2	19.0	19.7	21.2	24.5	27.5	29.1	31.2	**Y**	**Y**	32.0	31.3	31.5	30.2	28.6	25.9	**S**	26.4	18.2	32.0	24.5	22
18	26.1	24.6	23.3	24.0	22.2	20.2	19.8	22.4	26.6	29.9	30.0	30.1	31.1	32.1	32.7	33.4	34.4	33.9	31.9	30.0	32.0	**S**	31.2	27.6	19.8	34.4	28.2	24
19	30.2	32.3	33.5	29.9	24.9	26.7	31.4	36.6	35.7	38.4	37.9	37.7	36.9	40.5	39.6	38.5	39.7	39.6	37.9	38.3	**S**	37.1	35.1	35.0	24.9	40.5	35.4	24
20	36.1	32.8	31.7	30.7	22.5	24.9	20.3	21.6	31.8	36.6	43.2	**C**	**C**	**C**	**C**	**C**	47.9	48.5	48.4	**S**	46.5	49.4	50.1	49.9	20.3	50.1	37.4	24
21	49.0	47.5	45.3	43.4	41.9	37.8	36.8	41.4	41.7	44.8	50.9	55.4	51.8	44.1	48.1	51.2	51.1	48.3	**S**	42.5	40.4	42.2	41.9	37.9	36.8	55.4	45.0	24
22	30.8	32.2	31.0	26.8	22.3	22.7	23.4	25.9	28.9	38.3	43.5	47.2	46.7	47.7	46.1	49.5	51.9	**S**	48.2	45.6	48.2	43.6	44.2	41.0	22.3	51.9	38.5	24
23	41.6	32.1	28.7	28.9	28.1	26.7	29.8	27.5	32.6	37.4	41.5	42.8	43.2	45.1	45.8	43.9	**S**	44.1	42.8	44.3	44.7	44.1	36.6	39.3	26.7	45.8	37.9	24
24	39.1	33.2	29.5	27.9	30.8	25.1	22.4	23.9	23.8	28.9	34.7	35.4	35.5	34.5	39.9	**S**	37.0	38.2	36.6	37.4	32.7	27.0	23.2	27.6	22.4	39.9	31.5	24
25	28.8	23.9	19.9	17.6	16.8	16.9	20.3	21.3	20.8	22.1	26.0	28.1	24.9	26.3	**S**	31.3	35.7	36.2	37.3	32.6	30.4	27.3	27.3	28.3	16.8	37.3	26.1	24
26	27.5	23.9	24.4	21.5	22.1	18.4	17.4	17.2	21.3	27.4	30.4	34.1	35.7	**S**	34.9	35.6	35.1	33.4	29.5	27.4	24.0	20.4	19.2	20.2	17.2	35.7	26.1	24
27	18.7	19.1	19.7	***15.6***	15.8	16.6	16.2	23.3	29.4	32.5	34.3	33.0	**S**	33.4	32.5	33.2	33.6	33.7	33.5	31.9	30.2	31.4	32.4	32.9	***15.6***	34.3	27.5	24
28	27.6	28.3	26.4	25.3	29.4	19.0	22.1	28.5	36.1	43.7	48.5	51.1	51.4	48.0	49.7	49.0	47.1	48.5	46.0	40.9	39.9	39.8	**S**	34.4	19.0	51.4	38.3	24
29	30.5	24.2	31.4	27.2	16.8	18.7	22.7	**Y**	**Y**	**Y**	**S1**	33.1	35.6	35.8	36.0	36.5	36.1	35.4	34.2	31.5	29.3	**S**	31.0	31.9	16.8	36.5	30.4	20
30	32.0	29.9	27.6	24.7	21.2	21.6	24.6	27.9	30.9	34.7	37.2	38.8	39.4	39.5	39.3	37.7	35.6	43.7	48.1	44.4	**S**	37.9	39.5	42.0	21.2	48.1	34.7	24
HOURLY MAX	49.0	54.5	53.1	52.5	49.6	50.1	46.4	43.5	45.5	50.6	55.8	61.1	64.6	64.4	64.5	63.5	63.3	62.9	60.8	59.5	57.4	57.2	56.5	55.8				
HOURLY AVG	32.4	31.0	30.1	28.4	26.8	25.1	25.5	27.7	30.9	34.4	37.4	39.2	40.7	40.5	41.2	41.0	41.4	41.3	40.6	39.7	37.5	37.1	35.6	34.8				

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 82 PPB

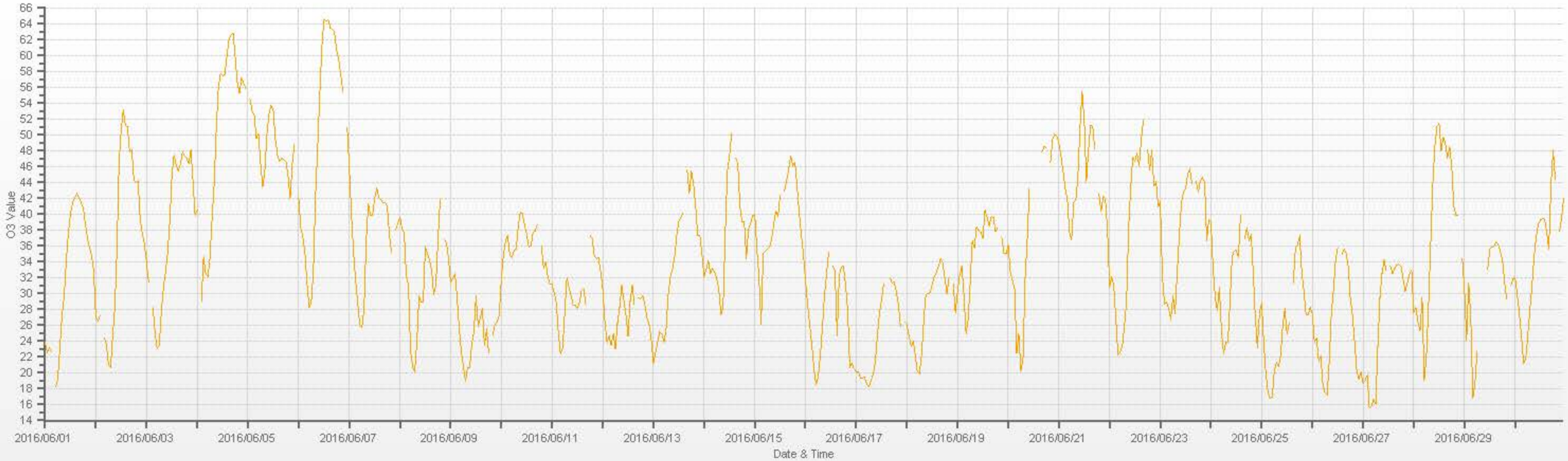


MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0					
NUMBER OF NON-ZERO READINGS:	678					
MINIMUM 1-HR AVERAGE	15.6	PPB	@ HOUR(S)	3	ON DAY(S)	27
MAXIMUM 1-HR AVERAGE:	64.6	PPB	@ HOUR(S)	12	ON DAY(S)	6
MAXIMUM 24-HR AVERAGE:	50.2	PPB			ON DAY(S)	4
					VAR-VARIOUS	

IZS CALIBRATION TIME:	31	HRS	OPERATIONAL TIME:	714	HRS
MONTHLY CALIBRATION TIME:	5	HRS	AMD OPERATION UPTIME:	99.2	%
STANDARD DEVIATION:	9.96		MONTHLY AVERAGE:	34.9	PPB

O3[ppb] Station: LICA ST. LINA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



OZONE MAX instantaneous maximum in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	24.3	23.5	24.7	24.2	**S**	19.9	21.8	26.1	29.2	33.1	37.0	39.7	43.1	43.4	44.2	44.7	44.3	43.6	43.1	40.6	39.8	37.5	36.7	34.8	19.9	44.7	34.8	24
2	32.2	30.3	29.3	**S**	26.4	26.5	23.5	23.8	28.0	32.2	43.5	50.3	**P**	55.6	54.6	53.5	52.1	50.6	50.2	48.1	46.6	43.5	39.1	38.7	23.5	55.6	39.9	23
3	35.5	33.5	**S**	30.1	27.6	24.4	26.7	30.5	32.2	34.4	37.3	42.5	47.3	49.4	48.9	46.9	48.8	49.9	49.3	48.7	48.7	49.4	49.1	45.0	24.4	49.9	40.7	24
4	44.2	**S**	37.6	37.5	34.3	34.2	37.5	42.6	49.2	56.0	58.4	59.7	60.0	59.3	62.8	64.0	64.6	64.5	63.0	58.4	57.3	58.5	58.1	58.0	34.2	64.6	53.0	24
5	**S**	56.2	54.9	54.0	52.9	51.7	50.6	46.9	47.6	53.5	55.0	56.0	55.7	52.3	49.6	48.6	49.2	49.8	48.9	47.5	45.6	48.0	51.1	**S**	45.6	56.2	51.2	24
6	49.5	40.9	40.9	37.0	35.3	30.0	30.9	39.9	47.3	52.4	58.9	64.6	***66.8***	66.1	66.4	65.9	65.0	64.8	62.7	61.1	59.0	57.2	**S**	53.4	30.0	***66.8***	52.9	24
7	50.7	43.0	37.9	33.1	32.7	28.5	30.6	32.6	41.4	45.5	43.9	42.5	45.5	45.5	45.4	46.0	44.3	43.1	43.3	40.3	37.0	**S**	39.7	40.1	28.5	50.7	40.5	24
8	41.4	40.5	38.9	37.7	33.1	26.5	23.0	23.5	25.6	33.6	33.9	35.7	38.4	37.8	36.5	35.7	31.7	34.4	43.0	43.7	**S**	39.2	37.4	36.5	23.0	43.7	35.1	24
9	33.0	33.4	33.9	32.4	28.5	25.1	25.0	20.1	22.9	21.9	24.6	28.5	32.4	31.1	30.4	30.9	26.8	27.6	25.1	**S**	26.8	27.6	28.5	29.8	20.1	33.9	28.1	24
10	35.1	36.4	38.5	38.9	36.8	36.1	37.2	38.3	42.2	43.2	42.2	41.0	39.8	38.4	39.8	40.3	40.8	41.0	**S**	39.3	35.2	36.1	33.9	32.4	32.4	43.2	38.4	24
11	32.5	31.4	11.0	27.8	24.4	24.6	31.8	34.3	32.5	31.4	30.6	30.1	30.1	32.7	33.1	33.4	31.2	**S**	46.7	45.6	40.6	38.6	37.1	35.1	11.0	46.7	32.5	24
12	33.0	29.8	25.8	26.1	26.4	26.8	25.7	29.2	32.6	33.8	31.3	29.8	27.7	32.2	33.1	31.7	**S**	33.5	33.5	33.4	30.8	29.5	27.7	26.2	25.7	33.8	30.0	24
13	23.3	24.2	25.6	26.7	26.4	26.5	29.4	32.9	33.6	35.1	38.5	40.1	41.5	42.5	41.8	**S**	48.6	47.1	47.9	47.3	44.2	39.8	42.7	40.3	23.3	48.6	36.8	24
14	34.6	35.1	36.5	34.8	35.3	35.1	34.2	33.7	29.6	33.4	45.4	47.7	50.4	52.9	**S**	50.8	49.8	46.6	43.7	42.3	36.6	41.4	41.4	43.0	29.6	52.9	40.6	24
15	42.2	38.3	35.1	31.5	38.1	37.5	37.2	38.3	39.7	42.3	42.6	42.2	44.3	**S**	45.0	46.0	48.5	49.3	48.7	48.1	47.5	42.2	39.7	37.2	31.5	49.3	41.8	24
16	34.2	31.1	28.5	26.8	23.0	20.5	21.9	25.4	29.3	33.4	37.0	38.7	**S**	36.1	35.3	35.1	35.7	35.4	36.2	33.2	31.7	23.8	23.0	21.9	20.5	38.7	30.3	24
17	21.6	21.5	20.9	20.7	20.7	20.2	19.6	20.7	21.3	24.4	26.2	30.5	32.5	33.4	**Y**	**Y**	33.9	33.0	33.4	32.5	30.8	28.2	**S**	28.4	19.6	33.9	26.4	22
18	27.8	26.5	24.7	26.4	24.7	23.4	21.9	25.5	30.0	31.8	32.3	32.4	33.4	33.8	34.7	35.2	36.1	36.6	34.2	33.7	34.3	**S**	34.4	32.7	21.9	36.6	30.7	24
19	32.2	34.8	36.1	34.3	27.7	31.2	36.9	39.1	37.7	41.4	39.7	39.6	38.7	42.7	41.0	40.6	41.5	41.0	39.7	39.8	**S**	38.8	37.2	37.2	27.7	42.7	37.8	24
20	39.2	39.9	36.2	39.8	30.3	26.9	22.3	27.7	36.5	41.7	47.9	**C**	**C**	**C**	**C**	**C**	49.3	50.2	50.3	**S**	50.0	49.8	50.4	50.0	22.3	50.4	41.0	24
21	49.3	48.7	46.1	44.6	44.9	39.3	38.8	44.1	43.6	49.0	55.3	58.4	56.6	53.8	50.9	52.7	53.4	49.0	**S**	45.1	42.3	42.6	42.6	42.5	38.8	58.4	47.5	24
22	32.2	34.4	31.7	30.2	25.2	23.5	25.0	27.3	35.8	41.4	47.0	49.2	48.4	50.9	49.1	52.6	54.7	**S**	53.5	52.6	54.0	**P**	45.9	44.8	23.5	54.7	41.3	23
23	43.9	37.1	31.0	31.2	33.6	36.6	33.0	29.7	35.1	40.2	43.4	45.0	44.4	48.9	48.5	47.5	**S**	47.1	45.2	45.1	47.2	46.8	41.4	41.7	29.7	48.9	41.0	24
24	40.0	34.7	32.2	30.9	33.0	27.7	24.2	24.7	25.9	33.8	35.9	36.3	37.7	37.9	42.7	**S**	38.7	40.5	37.3	38.5	36.2	29.8	24.7	28.5	24.2	42.7	33.6	24
25	30.4	25.9	21.1	18.2	16.8	17.0	22.6	22.2	21.7	23.7	28.0	29.6	28.1	27.3	**S**	35.2	38.9	36.6	37.8	36.5	31.2	28.3	28.4	28.9	16.8	38.9	27.6	24
26	28.9	26.8	26.4	23.7	24.2	20.4	18.6	18.3	25.8	33.9	34.6	36.8	37.6	**S**	39.0	37.9	37.0	36.3	33.9	30.8	26.4	21.8	20.4	21.5	18.3	39.0	28.7	24
27	20.7	23.3	23.4	18.2	17.3	19.4	17.9	26.5	33.4	34.7	36.6	35.1	**S**	35.2	34.2	35.1	35.2	35.1	34.7	33.4	31.6	33.1	33.8	37.1	17.3	37.1	29.8	24
28	29.5	30.3	28.7	27.9	32.1	29.4	25.5	31.5	41.6	48.5	50.2	54.7	53.5	52.1	52.2	50.8	48.2	51.7	47.6	45.1	41.6	41.1	**S**	36.8	25.5	54.7	41.3	24
29	35.4	30.9	32.7	30.8	22.2	19.8	24.4	**Y**	**Y**	**Y**	**S1**	34.7	36.3	36.2	36.5	36.7	36.9	35.8	35.3	33.1	30.1	**S**	31.2	32.2	19.8	36.9	32.2	20
30	33.4	30.8	28.1	26.8	22.1	22.6	26.2	29.4	32.5	36.2	38.4	39.0	39.4	39.7	40.5	38.5	36.9	48.9	50.1	49.0	**S**	40.3	41.4	43.8	22.1	50.1	36.3	24
HOURLY MAX	50.7	56.2	54.9	54.0	52.9	51.7	50.6	46.9	49.2	56.0	58.9	64.6	66.8	66.1	66.4	65.9	65.0	64.8	63.0	61.1	59.0	58.5	58.1	58.0				
HOURLY AVG	34.8	33.6	31.7	31.1	29.5	27.7	28.1	30.5	33.9	37.8	40.5	41.7	42.7	43.2	43.7	43.7	43.6	43.7	43.5	42.6	40.1	39.0	37.7	37.2				

STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS: 676

MAXIMUM INSTANTANEOUS VALUE: 66.8 PPB @ HOUR(S) 12 ON DAY(S) 6

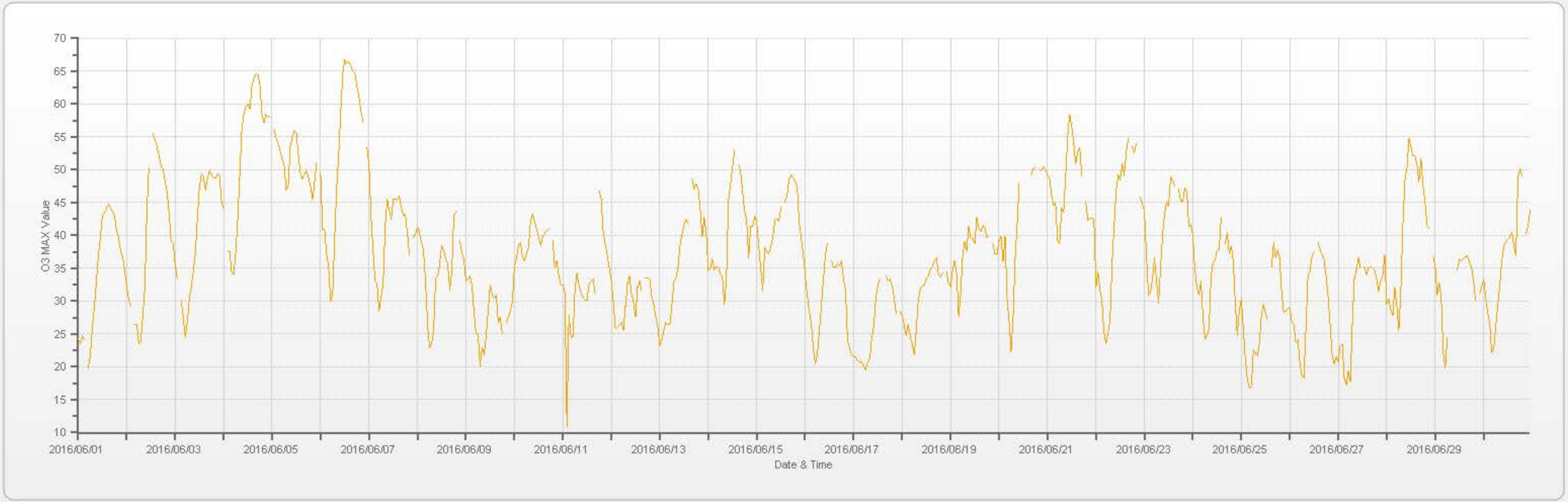
VAR-VARIOUS

IZS CALIBRATION TIME: 31 HRS OPERATIONAL TIME: 712 HRS

MONTHLY CALIBRATION TIME: 5 HRS

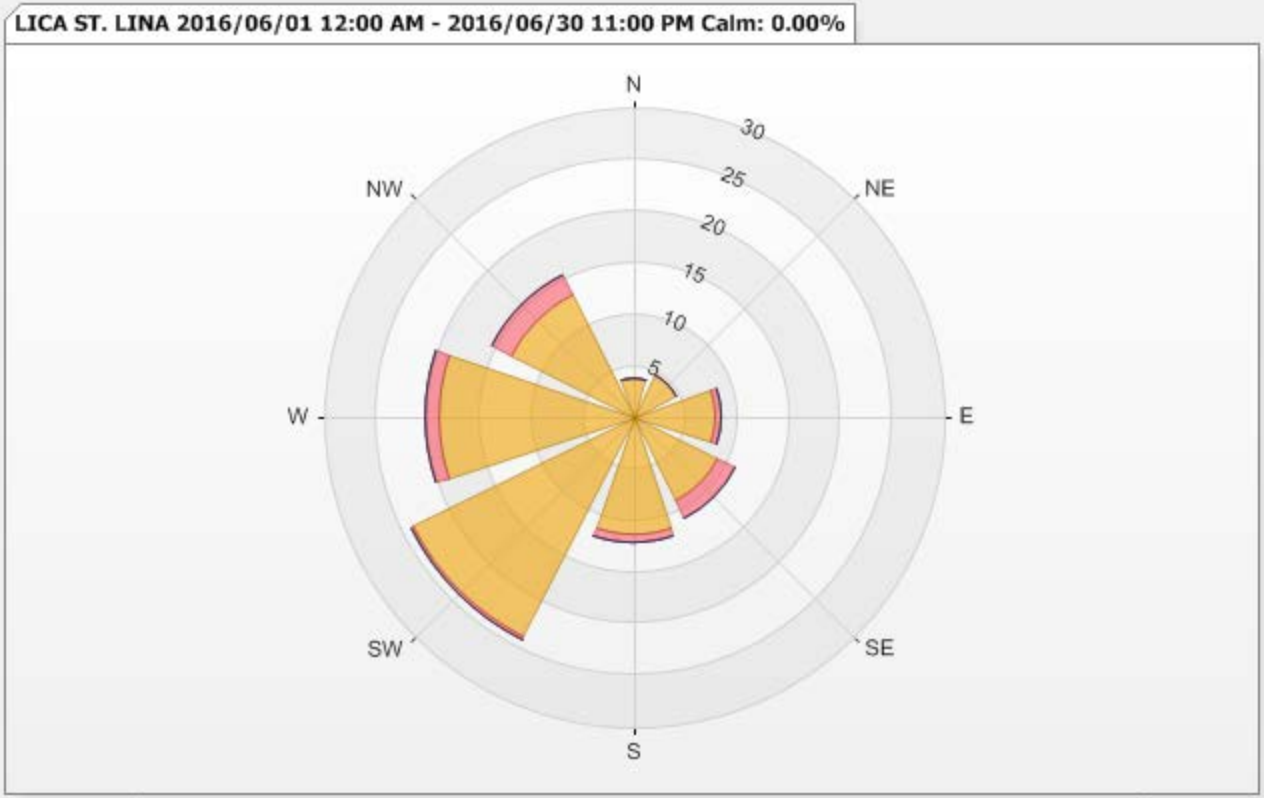
STANDARD DEVIATION: 10.12

O3 MAX[ppb] Station: LICA ST. LINA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]

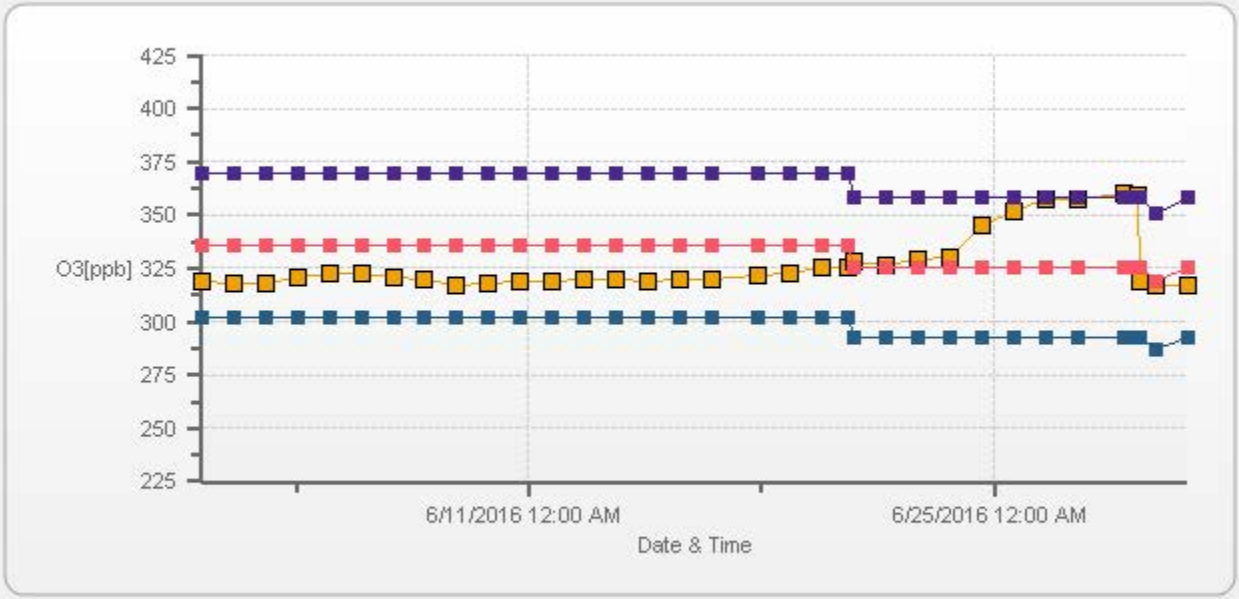


Wind: LICA ST. LINA Monitor: O3 [ppb] Monthly: 06/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
Calm: 0.00% Valid Data: 94.17% Calm Avg: 0.00

Direction	0.0-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	3.69	0.15	0	0	3.84
NE	4.57	0	0	0	4.57
E	7.96	0.59	0	0	8.55
SE	9	2.06	0	0	11.06
S	11.36	0.88	0	0	12.24
SW	23.89	0.29	0	0	24.18
W	18.88	1.33	0	0	20.21
NW	13.27	2.06	0	0	15.33
Summary	92.62	7.36	0	0	100


LICA ST. LINA 2016/06/01 12:00 AM - 2016/06/30 11:00 PM Calm: 0.00%
N
NE
E
SE
S
SW
W
NW
30
25
20
15
10
5
% Icon Classes (ppb)
93 0.0-50.0
7 50.0-110.0
0 110.0-210.0
0 >210.0

O3[ppb] Calibration: LICA ST. LINA Monthly: 06/2016 Type: Span



PARTICULATE MATTER 2.5

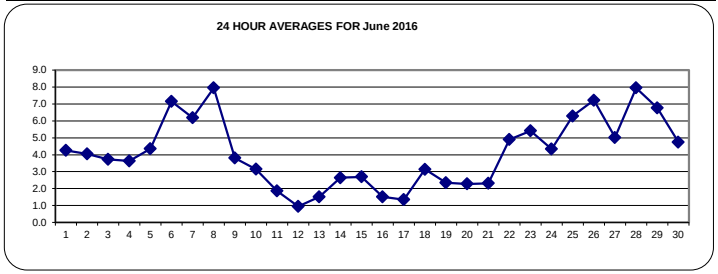
PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM2.5) hourly averages in ug/m3

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	1.9	3.5	5.0	5.9	3.5	4.0	2.9	0.0	5.0	2.5	0.0	6.4	3.5	4.0	5.0	6.4	13.5	4.5	0.4	2.9	8.0	5.0	2.9	5.4	0.0	13.5	4.3	24
2	2.9	3.5	4.0	2.4	4.0	4.5	5.9	X	X	7.9	1.0	6.9	3.9	2.4	1.9	5.0	7.5	2.4	5.4	3.5	4.5	1.9	5.4	2.4	1.0	7.9	4.1	22
3	2.9	4.0	4.0	3.5	1.9	3.5	5.9	0.0	0.4	6.4	X	2.4	6.9	7.9	5.9	0.0	1.9	0.0	2.4	3.4	4.5	5.0	5.4	7.5	0.0	7.9	3.7	23
4	5.9	2.4	6.4	6.9	1.9	4.0	5.4	0.0	0.0	2.4	0.4	1.0	2.4	7.5	5.4	5.4	6.4	5.0	2.4	5.4	0.4	5.4	2.9	1.9	0.0	7.5	3.6	24
5	4.0	1.9	5.0	5.0	2.9	4.5	5.0	11.4	2.4	6.9	1.9	0.4	4.0	5.9	7.5	2.4	4.5	8.0	4.0	0.0	2.4	4.5	4.5	5.4	0.0	11.4	4.4	24
6	4.0	5.9	5.9	12.0	9.5	4.5	6.4	10.5	9.9	9.0	5.4	6.9	8.5	10.9	5.9	9.9	9.5	6.4	5.4	3.5	5.4	9.9	5.0	1.5	1.5	12.0	7.2	24
7	6.9	9.5	7.9	4.5	6.9	4.5	3.0	10.9	5.9	6.9	8.0	2.9	0.9	7.5	6.9	0.0	8.0	8.0	1.5	4.5	4.5	6.9	13.0	9.0	0.0	13.0	6.2	24
8	6.9	1.9	4.0	5.0	9.9	11.5	10.5	5.0	9.5	13.0	6.9	13.5	11.5	9.0	9.9	4.0	11.9	10.5	6.9	6.9	9.5	6.9	3.5	2.9	1.9	13.5	***8.0***	24
9	9.0	1.4	2.4	10.9	5.9	7.9	16.0	7.5	4.0	5.9	1.5	1.5	0.0	2.9	1.0	0.0	3.5	1.4	1.0	1.9	0.9	2.9	0.0	1.9	0.0	16.0	3.8	24
10	0.9	0.0	0.0	4.4	5.0	1.4	0.4	1.9	2.9	7.5	4.5	X	11.9	9.5	X	0.0	3.5	0.9	4.5	1.5	1.4	2.4	1.4	3.4	0.0	11.9	3.2	22
11	3.9	0.0	0.0	4.0	0.9	4.0	0.0	0.0	1.4	2.9	0.9	0.0	1.4	5.0	0.0	2.4	2.4	1.9	5.9	0.9	1.9	0.0	1.4	3.4	0.0	5.9	1.9	24
12	0.9	0.0	0.4	0.0	2.4	0.0	0.0	0.0	0.9	0.0	X	1.5	0.0	2.4	0.0	2.4	0.9	1.4	1.9	2.4	1.4	0.0	1.9	0.9	0.0	2.4	0.9	23
13	1.9	0.9	1.9	0.4	0.0	0.0	1.4	0.4	X	0.0	0.4	0.0	X	9.5	0.0	0.0	2.9	0.0	0.0	1.9	2.4	1.4	7.9	0.0	0.0	9.5	1.5	22
14	3.5	1.9	4.4	2.4	0.4	1.9	1.5	2.9	5.9	5.0	3.5	1.4	C	C	4.4	3.5	2.4	1.9	4.5	0.0	0.9	0.0	4.4	1.4	0.0	5.9	2.6	24
15	1.4	1.9	3.5	0.9	0.0	0.9	0.0	0.0	0.0	6.9	10.9	2.4	X	X	X	4.4	10.4	3.9	0.0	1.9	0.4	X	X	1.4	0.0	10.9	2.7	19
16	3.4	2.4	2.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	0.0	7.9	2.4	5.9	1.9	0.0	X	0.9	2.4	1.4	0.4	0.0	0.0	7.9	1.5	23
17	0.0	0.0	0.0	3.9	0.4	0.9	X	0.0	0.9	0.0	0.4	0.0	0.0	0.0	6.9	0.0	0.0	2.4	9.0	0.9	0.0	2.9	0.4	1.9	0.0	9.0	1.3	23
18	1.4	0.4	2.9	0.4	0.9	4.0	2.9	7.5	0.0	2.4	6.9	5.4	5.0	0.0	X	0.4	4.0	4.5	0.0	4.5	1.4	5.9	5.9	5.4	0.0	7.5	3.1	23
19	3.9	0.0	0.4	0.0	1.4	3.4	0.9	0.0	4.0	4.4	0.9	2.4	3.5	3.4	5.9	7.5	1.5	2.4	0.0	1.9	2.4	0.9	2.9	X	0.0	7.5	2.3	23
20	3.5	1.9	3.5	3.5	2.4	3.0	1.4	4.5	0.0	5.0	0.0	0.0	0.0	0.0	4.0	5.9	2.4	1.9	3.5	1.9	3.0	1.4	1.9	0.0	0.0	5.9	2.3	24
21	0.4	2.9	1.9	1.4	5.0	5.4	2.9	1.4	0.0	2.9	X	0.0	0.9	0.0	2.9	0.0	5.9	5.4	1.4	2.4	4.0	2.4	0.9	2.9	0.0	5.9	2.3	23
22	6.9	4.5	4.0	5.0	5.0	5.9	3.5	7.5	5.4	7.5	9.0	4.5	0.0	9.0	5.9	7.5	1.9	6.9	6.4	4.5	4.5	0.0	0.0	2.4	0.0	9.0	4.9	24
23	2.4	4.0	3.4	3.4	2.4	9.0	5.4	11.4	9.5	7.9	4.5	5.4	6.4	9.0	X	4.0	3.5	7.5	2.4	3.9	7.5	1.9	4.0	5.9	1.9	11.4	5.4	23
24	3.5	3.4	0.0	1.9	5.0	3.4	1.4	7.5	2.9	0.9	6.4	6.4	5.4	5.4	6.4	1.4	6.4	5.9	1.4	7.9	0.4	6.4	6.4	8.0	0.0	8.0	4.3	24
25	5.4	5.9	4.5	3.5	6.9	1.9	5.0	5.0	4.0	12.4	9.0	7.5	14.9	3.4	9.5	7.5	2.4	2.4	0.9	6.9	9.5	6.4	10.4	5.9	0.9	14.9	6.3	24
26	9.9	8.4	9.9	7.5	3.5	9.5	3.9	9.9	9.5	11.9	12.5	2.9	4.0	4.0	11.5	7.5	8.4	7.9	4.0	8.0	6.9	7.9	4.0	0.0	0.0	12.5	7.2	24
27	8.0	5.0	6.4	6.4	4.0	5.9	0.0	6.4	2.4	6.4	6.4	5.4	4.0	7.5	6.9	9.9	1.5	2.4	1.4	4.0	1.9	9.0	7.5	1.9	0.0	9.9	5.0	24
28	7.9	7.5	9.0	9.9	3.5	10.4	15.5	9.4	16.9	C	0.0	0.0	0.0	X	17.9	***18.9***	X	0.0	3.0	7.5	9.0	7.5	8.4	4.9	0.0	***18.9***	***8.0***	22
29	7.0	8.4	4.4	6.4	0.5	7.5	7.5	11.4	9.4	5.9	6.4	7.5	14.4	6.9	12.4	3.9	6.4	5.4	0.0	5.0	7.5	4.9	6.4	6.9	0.0	14.4	6.8	24
30	2.9	3.9	2.4	3.4	7.5	6.9	7.5	6.4	10.4	7.9	2.4	5.4	4.4	6.4	1.9	7.9	4.9	1.4	1.4	1.9	3.4	2.4	2.9	7.9	1.4	10.4	4.7	24
HOURLY MAX	9.9	9.5	9.9	12.0	9.9	11.5	16.0	11.4	16.9	13.0	12.5	13.5	14.9	10.9	17.9	18.9	13.5	10.5	9.0	8.0	9.5	9.9	13.0	9.0				
HOURLY AVG	4.1	3.2	3.7	4.2	3.5	4.5	4.2	4.8	4.4	5.5	4.1	3.5	4.4	5.5	5.7	4.5	4.8	3.8	2.8	3.4	3.7	3.9	4.2	3.5				

STATUS FLAG CODES

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

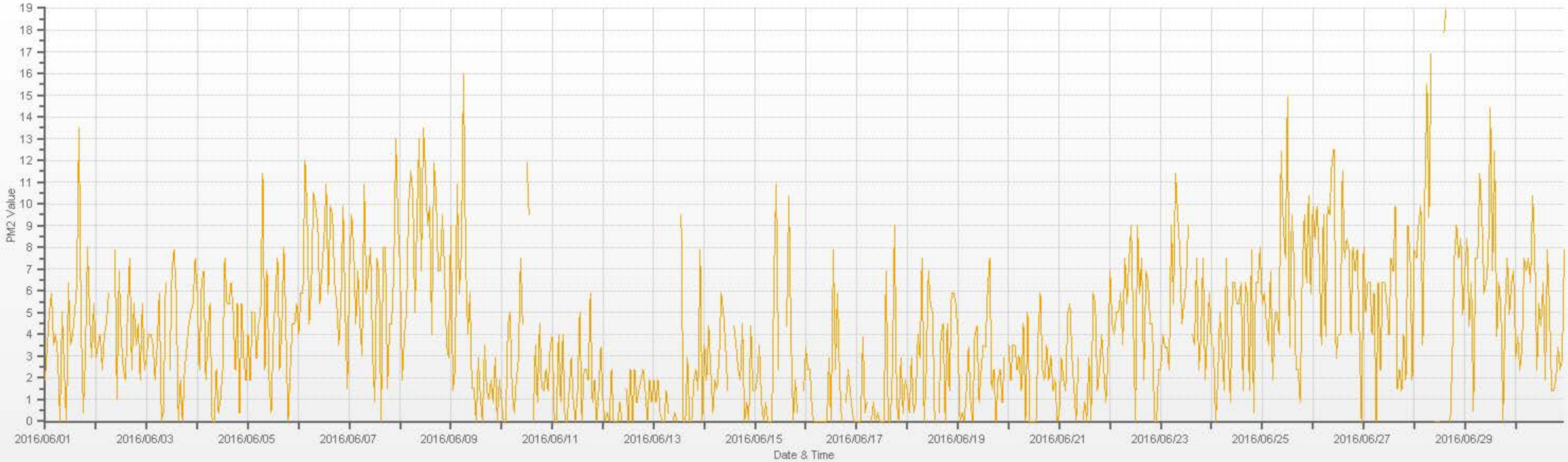


OBJECTIVE LIMIT: **ALBERTA ENVIRONMENT:** 1-HR 80 ug/m3 | 24-HR 30 ug/m3

MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:			0				
NUMBER OF 24-HR EXCEEDENCES:			0				
NUMBER OF NON-ZERO READINGS:			600				
MINIMUM 1-HR AVERAGE	0.0	ug/m3	@ HOUR(S)	VAR	ON DAY(S)	VAR	
MAXIMUM 1-HR AVERAGE:	18.9	ug/m3	@ HOUR(S)	15	ON DAY(S)	28	
MAXIMUM 24-HR AVERAGE:	8.0	ug/m3			ON DAY(S)	8, 28	
					VAR-VARIOUS		
			OPERATIONAL TIME:			699	HRS
MONTHLY CALIBRATION TIME:	3	HRS	AMD OPERATION UPTIME:			97.1	%
STANDARD DEVIATION:	3.38		MONTHLY AVERAGE:			4.1	ug/m3

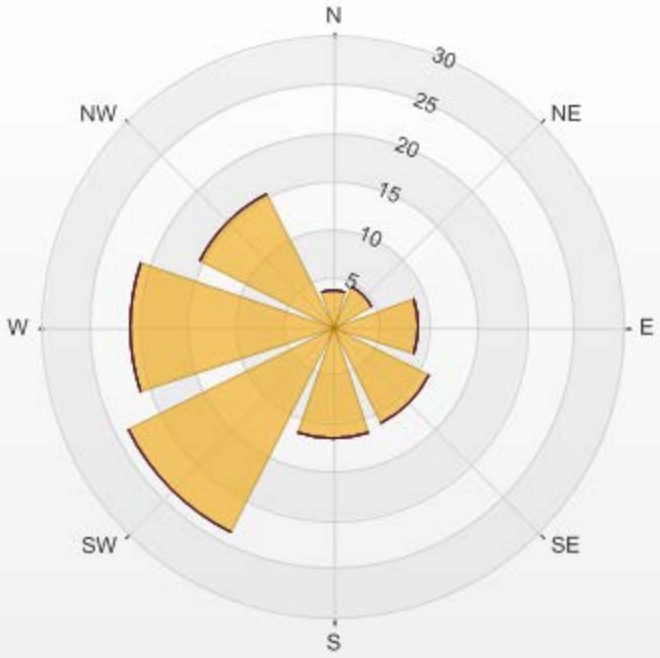
PM2[ug/m3(L)] Station: LICA ST. LINA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



Wind: LICA ST. LINA Monitor: PM2 [ug/m3(L)] Monthly: 06/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
Calm: 0.00% Valid Data: 96.67% 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	3.88	0	0	0	0	0	3.88
NE	4.6	0	0	0	0	0	4.6
E	8.91	0	0	0	0	0	8.91
SE	11.06	0	0	0	0	0	11.06
S	11.49	0	0	0	0	0	11.49
SW	23.71	0	0	0	0	0	23.71
W	20.98	0	0	0	0	0	20.98
NW	15.37	0	0	0	0	0	15.37
Summary	100	0	0	0	0	0	100

LICA ST. LINA 2016/06/01 12:00 AM - 2016/06/30 11:00 PM Calm: 0.00%



%	Icon	Classes (ug/m3(L))									
100		0.0-30.0	0		30.0-60.0	0		60.0-80.0	0		80.0-120.0	0		120.0-240.0	0		>240.0

WIND SPEED

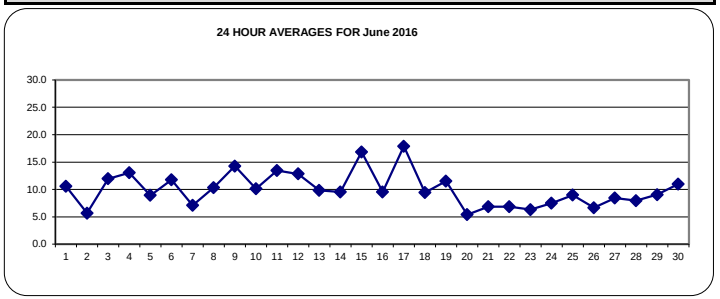
WIND SPEED (WS) hourly averages in km/hr

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	8.7	8.7	8.7	8.5	10.0	9.8	8.5	9.0	10.8	12.2	13.8	14.0	13.4	12.3	11.8	15.5	11.4	12.9	12.0	8.5	6.8	8.6	9.0	8.8	6.8	15.5	10.6	24
2	6.2	7.0	7.4	6.1	5.9	5.9	2.4	2.6	2.2	4.1	4.3	3.9	4.8	3.7	4.3	5.8	4.1	4.0	3.2	10.8	15.9	4.5	9.1	7.4	2.2	15.9	5.7	24
3	9.4	7.6	9.3	10.9	11.6	11.5	11.8	15.3	15.3	14.3	16.3	16.9	18.2	22.4	18.1	16.0	14.1	13.6	9.3	5.3	4.8	4.4	4.3	5.8	4.3	22.4	11.9	24
4	6.7	6.4	8.9	10.5	11.5	10.3	11.0	13.4	16.7	19.0	20.1	18.6	17.5	18.5	18.9	17.7	16.2	15.2	12.7	9.4	7.6	9.0	8.3	9.0	6.4	20.1	13.0	24
5	9.3	10.6	10.6	11.4	8.9	11.3	7.1	9.4	9.3	9.3	11.8	12.0	10.7	12.5	12.4	9.6	9.1	7.4	5.9	4.1	5.2	5.8	4.5	5.5	4.1	12.5	8.9	24
6	6.2	7.4	7.7	10.0	10.3	10.2	8.9	8.5	11.1	11.3	12.6	16.3	16.9	17.5	18.8	16.4	17.3	15.7	12.0	11.6	9.4	11.6	9.7	4.7	4.7	18.8	11.8	24
7	6.8	6.3	9.7	7.3	6.3	4.9	6.4	6.8	7.7	7.6	7.0	7.6	11.1	9.6	6.2	6.2	4.8	5.9	4.2	5.6	7.2	8.4	9.1	7.8	4.2	11.1	7.1	24
8	6.8	6.6	6.1	6.3	7.5	8.1	5.9	6.9	7.7	10.0	7.9	12.7	12.9	12.5	11.1	12.5	12.4	14.1	13.1	14.2	13.9	14.0	12.4	12.3	5.9	14.2	10.3	24
9	12.8	15.8	14.7	12.5	8.4	5.9	4.5	11.7	12.1	18.7	22.8	21.7	18.0	18.9	17.0	17.8	15.3	16.4	13.4	12.6	14.5	12.5	11.4	12.5	4.5	22.8	14.2	24
10	12.3	12.2	14.2	12.5	13.2	15.0	14.7	13.9	14.7	13.6	10.2	7.0	7.0	5.3	4.9	5.7	6.8	6.7	7.6	6.9	6.7	9.5	10.4	11.8	4.9	15.0	10.1	24
11	10.4	9.7	6.8	7.8	9.7	12.5	12.3	15.1	12.0	11.6	13.2	14.1	16.5	19.7	19.4	17.1	16.6	14.5	15.5	12.1	13.0	13.8	15.5	14.2	6.8	19.7	13.5	24
12	13.0	12.2	11.8	14.1	11.8	12.3	9.6	14.9	13.7	20.8	25.2	23.7	18.5	22.4	19.3	2.9	5.8	3.3	7.5	16.8	9.2	6.8	6.8	5.7	2.9	25.2	12.8	24
13	7.4	8.9	10.0	10.9	10.8	10.1	10.7	12.3	14.4	13.8	12.6	15.2	15.6	13.6	13.3	11.8	9.4	6.0	3.2	5.1	8.1	5.7	4.8	2.5	2.5	15.6	9.8	24
14	7.7	9.6	11.6	13.0	13.3	11.5	11.2	12.5	10.2	8.3	8.5	10.2	8.1	10.8	7.8	9.2	8.7	3.0	6.7	8.7	7.8	10.4	8.7	11.3	3.0	13.3	9.5	24
15	12.2	11.9	13.0	14.3	16.2	23.8	***27.3***	25.5	21.5	16.5	16.7	17.0	17.9	16.6	20.3	21.1	20.5	17.0	18.4	15.3	10.6	10.2	10.6	9.5	9.5	***27.3***	16.8	24
16	10.1	9.8	8.0	8.4	9.6	6.3	5.8	5.6	6.1	5.2	3.6	4.7	5.9	5.9	8.9	8.0	14.3	13.8	15.8	13.2	10.9	11.0	17.2	20.5	3.6	20.5	9.5	24
17	19.1	21.9	19.2	21.2	23.9	21.7	20.9	22.2	23.1	21.2	18.9	21.1	22.7	21.0	19.0	15.9	16.8	14.5	17.7	12.7	10.0	7.9	8.0	8.7	7.9	23.9	***17.9***	24
18	10.9	9.8	8.3	9.7	9.7	9.7	9.0	8.1	8.5	9.0	7.7	16.4	12.7	12.3	12.3	11.6	10.5	10.2	8.0	5.3	4.2	4.8	7.6	9.3	4.2	16.4	9.4	24
19	6.1	6.5	7.5	8.2	8.3	7.0	8.7	9.5	11.1	13.2	13.9	14.8	18.1	21.3	16.6	14.1	16.0	16.9	13.7	10.4	8.0	7.9	9.0	9.1	6.1	21.3	11.5	24
20	8.2	7.4	7.1	5.6	6.1	4.5	4.6	4.0	4.4	8.2	8.1	5.9	7.3	6.6	5.8	5.3	3.7	3.6	2.6	4.8	4.0	***0.9***	4.2	6.6	***0.9***	8.2	5.4	24
21	8.6	9.2	9.2	8.9	8.0	8.2	7.6	7.2	8.2	6.5	6.0	3.9	4.7	5.3	4.7	3.7	6.8	10.9	7.6	6.5	5.4	6.2	7.4	3.2	3.2	10.9	6.8	24
22	5.5	6.6	5.9	6.0	5.8	6.2	6.0	4.0	5.8	7.7	7.9	10.1	9.5	9.3	5.1	7.8	9.0	6.6	3.0	1.8	6.0	8.4	12.2	7.7	1.8	12.2	6.8	24
23	4.8	7.6	9.7	9.1	8.0	7.7	10.1	9.9	3.2	2.9	3.2	4.0	4.2	4.0	4.5	4.6	5.2	5.3	5.1	4.8	10.0	9.1	2.6	11.8	2.6	11.8	6.3	24
24	7.9	6.2	1.8	8.0	7.6	11.9	7.5	6.1	8.0	8.0	8.5	7.3	5.7	8.0	8.3	6.1	8.2	7.9	9.4	9.5	6.3	6.8	6.1	8.8	1.8	11.9	7.5	24
25	8.4	7.7	6.5	5.9	6.5	9.2	9.2	9.3	9.8	9.4	11.0	13.1	11.7	13.1	10.1	10.0	11.2	9.7	9.5	6.4	7.2	6.9	7.0	6.4	5.9	13.1	9.0	24
26	6.3	7.5	8.0	7.9	7.4	6.4	4.5	2.8	1.4	3.7	3.5	1.5	4.0	4.1	13.8	10.3	12.5	12.8	9.8	6.8	5.7	6.1	6.7	6.3	1.4	13.8	6.7	24
27	6.6	7.8	7.2	6.3	8.0	7.7	6.3	9.7	7.4	5.4	9.2	13.3	11.6	10.0	10.8	12.3	14.7	11.1	9.5	7.3	5.6	6.2	4.6	4.2	4.2	14.7	8.5	24
28	6.7	6.7	5.8	5.7	7.1	4.4	5.2	5.9	8.9	8.9	8.6	10.0	10.1	13.3	12.6	9.8	10.4	7.7	7.5	8.8	8.0	8.5	8.0	2.2	2.2	13.3	8.0	24
29	3.5	3.8	4.8	4.3	6.0	8.4	10.2	10.4	12.0	11.7	11.0	11.3	11.6	9.5	9.7	8.7	9.1	9.6	8.7	7.3	8.8	11.8	12.6	12.3	3.5	12.6	9.0	24
30	11.4	9.2	9.1	8.8	8.3	8.7	12.2	12.7	14.2	16.4	15.3	17.0	18.8	19.6	16.9	15.1	12.1	9.9	4.7	3.4	5.6	2.3	7.3	4.6	2.3	19.6	11.0	24
HOURLY MAX	19.1	21.9	19.2	21.2	23.9	23.8	27.3	25.5	23.1	21.2	25.2	23.7	22.7	22.4	20.3	21.1	20.5	17.0	18.4	16.8	15.9	14.0	17.2	20.5				
HOURLY AVG	8.7	9.0	9.0	9.3	9.5	9.7	9.3	10.2	10.4	11.0	11.3	12.2	12.2	12.7	12.1	11.0	11.1	10.2	9.2	8.5	8.2	8.0	8.5	8.4				

STATUS FLAG CODES

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

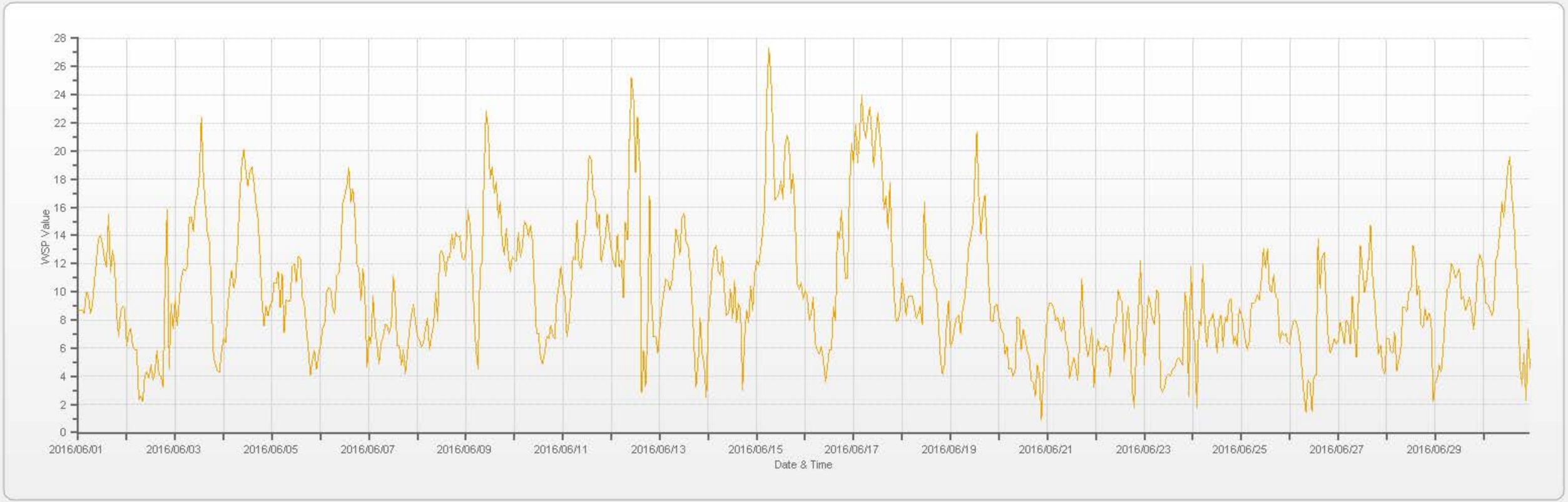


LAST CALIBRATION:	August 28, 2014
DECLINATION :	MAGNETIC DECLINATION 19 DEGREE EAST

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:			720					
MINIMUM 1-HR AVERAGE		0.9	KPH	@ HOUR(S)	21	ON DAY(S)	20	
MAXIMUM 1-HR AVERAGE:		27.3	KPH	@ HOUR(S)	6	ON DAY(S)	15	
MAXIMUM 24-HR AVERAGE:		17.9	KPH			ON DAY(S)	17	
						VAR-VARIOUS		
				OPERATIONAL TIME:			720	HRS
MONTHLY CALIBRATION TIME:	0	HRS		AMD OPERATION UPTIME:			100.0	%
STANDARD DEVIATION:	4.61			MONTHLY AVERAGE:			10.0	KPH

WSP[kph] Station: LICA ST. LINA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



VECTOR WIND SPEED MAX instantaneous maximum in km/hr

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	14.0	12.6	12.6	13.3	16.7	17.0	17.2	28.7	30.4	37.6	36.5	35.7	35.0	34.2	35.0	46.1	35.7	35.4	29.1	21.4	28.4	18.7	19.0	17.4	12.6	46.1	26.2	24
2	16.8	14.8	16.3	10.6	12.4	14.6	8.3	11.6	10.8	13.6	13.8	14.3	**P**	21.1	22.0	19.8	23.5	15.4	11.9	61.2	47.0	30.8	24.9	19.4	8.3	61.2	19.8	23
3	19.4	14.8	18.6	21.3	20.0	24.7	26.0	38.3	39.9	40.1	48.4	45.3	55.8	53.6	49.3	44.5	36.0	32.9	28.3	15.1	9.4	7.2	7.0	8.8	7.0	55.8	29.4	24
4	10.7	10.9	26.0	25.2	20.8	20.4	23.4	38.6	53.0	60.0	48.3	47.3	55.4	47.9	43.6	44.9	45.7	42.5	32.8	26.9	22.5	19.9	18.1	16.4	10.7	60.0	33.4	24
5	17.7	21.0	20.2	24.6	20.5	24.4	17.7	23.2	21.9	28.1	30.5	28.9	31.1	40.5	37.0	30.2	30.0	22.3	17.1	10.7	6.6	7.5	6.6	7.2	6.6	40.5	21.9	24
6	15.3	13.1	15.3	20.3	19.3	19.4	16.6	25.4	30.0	30.6	32.7	45.6	43.2	49.7	49.0	47.1	48.8	43.2	32.9	29.2	24.1	26.9	26.9	13.8	13.1	49.7	29.9	24
7	18.4	15.3	28.9	22.7	14.8	13.7	18.3	15.3	16.7	21.3	25.4	26.7	33.1	30.5	22.8	24.5	19.1	21.0	16.5	12.7	13.8	15.1	17.9	14.6	12.7	33.1	20.0	24
8	11.8	12.0	10.5	12.3	13.8	15.7	19.5	40.6	26.2	23.2	31.2	36.9	34.0	32.0	31.1	36.0	29.9	37.2	42.7	43.1	42.4	39.6	31.7	33.3	10.5	43.1	28.6	24
9	33.7	42.2	43.1	35.0	24.2	17.3	18.9	33.6	33.2	40.4	49.1	54.0	43.7	49.6	48.9	52.8	45.4	38.9	39.7	36.9	36.6	41.4	33.2	32.1	17.3	54.0	38.5	24
10	38.6	38.4	38.6	33.8	36.7	38.8	39.2	39.1	45.1	43.7	32.2	23.8	26.7	19.3	27.3	21.2	21.7	31.5	18.7	20.1	13.8	19.0	22.0	24.9	13.8	45.1	29.8	24
11	23.4	21.8	15.9	15.7	22.0	28.9	39.9	39.7	31.6	28.8	31.2	35.8	45.2	50.7	***68.6***	41.5	54.8	43.7	43.0	32.3	52.5	37.1	42.1	36.9	15.7	***68.6***	36.8	24
12	32.5	27.9	28.1	32.8	27.5	31.7	24.8	31.8	34.9	51.8	51.6	51.5	39.7	49.6	51.8	20.3	35.8	12.6	26.0	43.2	28.2	13.9	11.1	9.4	9.4	51.8	32.0	24
13	13.3	17.0	19.2	18.3	19.2	19.9	24.9	31.9	39.1	30.8	33.3	38.3	39.1	37.4	33.0	30.6	26.0	20.1	11.0	9.7	15.5	22.7	22.1	9.6	9.6	39.1	24.3	24
14	16.4	24.4	32.1	44.6	42.9	26.7	29.7	33.9	30.4	22.8	30.3	34.6	26.9	**X**	31.1	35.2	33.0	13.1	17.5	18.8	18.3	24.0	23.1	32.1	13.1	44.6	27.9	23
15	30.4	28.8	35.2	43.2	42.4	60.1	64.6	64.9	53.6	49.4	49.8	43.1	55.1	46.4	57.5	64.3	57.3	50.5	50.8	42.4	32.8	19.8	30.4	21.4	19.8	64.9	***45.6***	24
16	18.1	20.9	17.2	18.1	17.2	13.9	15.5	16.6	17.9	15.9	10.5	12.4	14.1	12.0	18.0	26.8	38.4	39.5	40.6	34.0	30.8	26.8	33.2	41.0	10.5	41.0	22.9	24
17	36.7	44.5	43.7	41.5	49.3	43.0	49.3	55.6	53.5	57.7	53.2	51.5	65.3	54.6	53.5	47.0	52.7	43.9	46.6	23.6	18.6	16.5	16.4	20.3	16.4	65.3	43.3	24
18	24.0	24.0	28.3	30.5	14.1	17.7	16.0	24.5	19.0	23.8	26.0	34.2	39.8	35.0	29.3	26.0	26.9	22.7	17.7	13.8	8.0	10.0	13.3	22.9	8.0	39.8	22.8	24
19	16.7	14.5	19.8	19.4	19.7	17.7	29.3	29.5	29.3	33.0	41.3	40.0	50.3	59.7	41.5	54.6	46.8	50.9	40.0	24.2	16.1	15.7	17.7	17.6	14.5	59.7	31.1	24
20	16.1	13.7	11.6	10.2	9.6	10.3	13.1	9.0	19.3	18.8	25.6	20.8	23.7	21.2	47.9	20.5	14.4	13.5	13.6	9.2	6.8	4.5	6.8	9.6	4.5	47.9	15.4	24
21	11.6	12.6	18.8	14.4	13.5	15.9	17.3	18.4	21.9	17.3	20.8	15.2	30.4	15.7	15.5	19.4	31.1	28.8	19.0	28.8	13.5	13.7	15.0	17.0	11.6	31.1	18.6	24
22	10.7	11.5	11.6	11.5	11.3	11.6	16.2	11.4	16.3	26.9	26.3	27.4	24.1	29.4	15.3	36.8	30.3	18.4	16.1	17.1	28.4	**P**	31.6	21.3	10.7	36.8	20.1	23
23	18.0	18.7	19.1	14.7	16.7	13.9	19.2	18.1	12.1	13.4	18.2	18.4	17.5	17.9	17.5	16.2	16.6	16.6	11.3	7.2	57.2	28.8	11.4	35.0	7.2	57.2	18.9	24
24	25.1	17.7	8.2	14.4	15.7	23.4	21.1	17.3	18.4	21.8	22.3	20.8	28.7	25.4	26.7	25.0	27.2	30.2	27.5	26.4	17.0	18.2	18.9	19.3	8.2	30.2	21.5	24
25	21.5	17.4	16.5	16.0	14.6	21.5	24.3	25.8	26.3	24.3	31.4	31.4	32.0	33.8	33.5	37.1	32.4	24.5	30.2	18.4	14.9	14.2	14.1	13.7	13.7	37.1	23.7	24
26	13.1	15.3	14.7	15.8	15.3	17.5	14.5	10.5	9.4	11.7	18.7	12.5	16.5	15.8	29.1	23.1	24.7	26.2	18.2	15.0	11.5	11.7	11.3	9.6	9.4	29.1	15.9	24
27	10.8	13.0	13.1	10.5	12.2	10.6	11.2	17.8	16.1	19.1	22.4	31.6	30.0	27.8	32.2	28.9	31.7	26.5	23.2	16.2	9.2	9.4	8.3	9.2	8.3	32.2	18.4	24
28	8.6	9.9	9.4	12.0	10.1	10.3	11.2	13.6	20.5	21.1	24.0	28.2	24.3	33.0	33.7	26.0	23.3	19.2	15.6	18.5	18.3	15.8	16.3	7.7	7.7	33.7	17.9	24
29	8.1	62.3	11.0	8.8	14.6	22.8	24.3	30.3	42.1	33.3	33.7	34.5	35.9	30.7	30.7	27.1	27.6	29.7	23.3	18.6	19.9	24.6	26.5	25.9	8.1	62.3	26.9	24
30	25.2	18.5	18.4	18.5	16.5	22.1	43.1	39.6	33.9	39.8	40.1	39.9	42.1	45.6	43.4	37.9	32.4	37.0	22.2	8.4	12.5	10.7	17.5	15.3	8.4	45.6	28.4	24
HOURLY MAX	38.6	62.3	43.7	44.6	49.3	60.1	64.6	64.9	53.6	60.0	53.2	54.0	65.3	59.7	68.6	64.3	57.3	50.9	50.8	61.2	57.2	41.4	42.1	41.0				
HOURLY AVG	19.2	21.0	20.7	21.0	20.1	21.5	23.8	27.8	28.4	30.0	32.0	32.7	35.8	35.2	35.9	33.7	33.3	29.6	26.1	23.4	22.5	19.5	19.8	19.4				

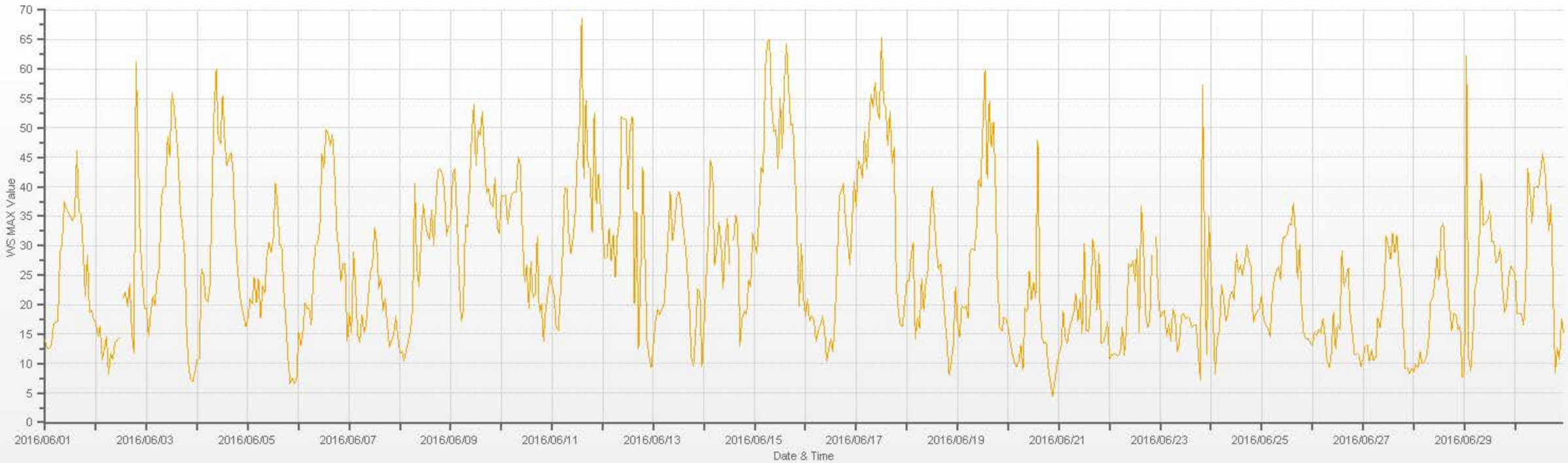
STATUS FLAG CODES

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

MAXIMUM INSTANTANEOUS VALUE:	68.6	KPH	@ HOUR(S)	14	ON DAY(S)	11
				VAR-VARIOUS		
OPERATIONAL TIME:					717	HRS

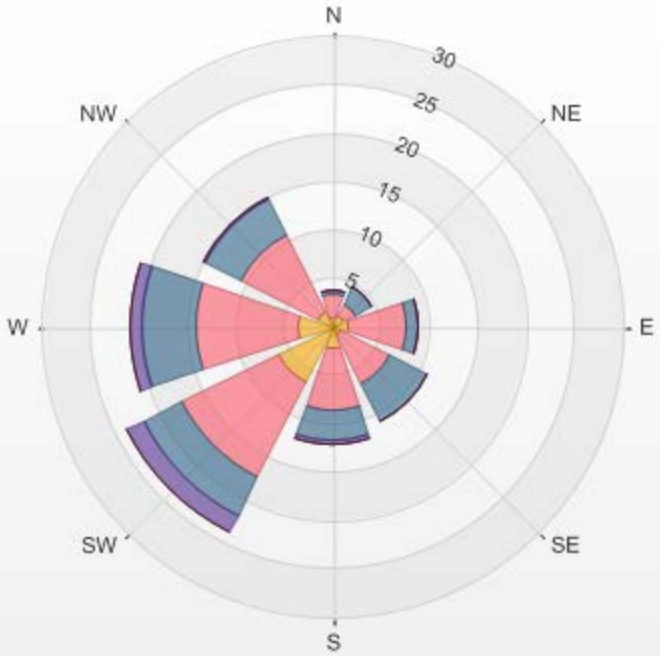
WS MAX[kph] Station: LICA ST. LINA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



Wind: LICA ST. LINA Monitor: WSP [kph] Monthly: 06/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
Calm: 0.00% Valid Data: 100.00% Calm Avg: 0.00

Direction	0.0-6.0	6.0-12.0	12.0-20.0	20.0-29.0	29.0-39.0	>39.0	Total
N	0.83	2.64	0.42	0	0	0	3.89
NE	1.25	1.39	1.94	0	0	0	4.58
E	1.67	5.97	1.25	0	0	0	8.89
SE	1.11	5.56	4.17	0	0	0	10.84
S	2.22	6.39	3.19	0.42	0	0	12.22
SW	6.39	10.97	4.44	1.94	0	0	23.74
W	3.61	10.42	5.56	1.39	0	0	20.98
NW	1.81	8.75	4.17	0.14	0	0	14.87
Summary	18.89	52.09	25.14	3.89	0	0	100

LICA ST. LINA 2016/06/01 12:00 AM - 2016/06/30 11:00 PM Calm: 0.00%



%	Icon	Classes (kph)									
52		6.0-12.0	25		12.0-20.0	4		20.0-29.0	0		29.0-39.0	0		>39.0
19		0.0-6.0									

WIND DIRECTION

WIND DIRECTION (WD) hourly averages

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

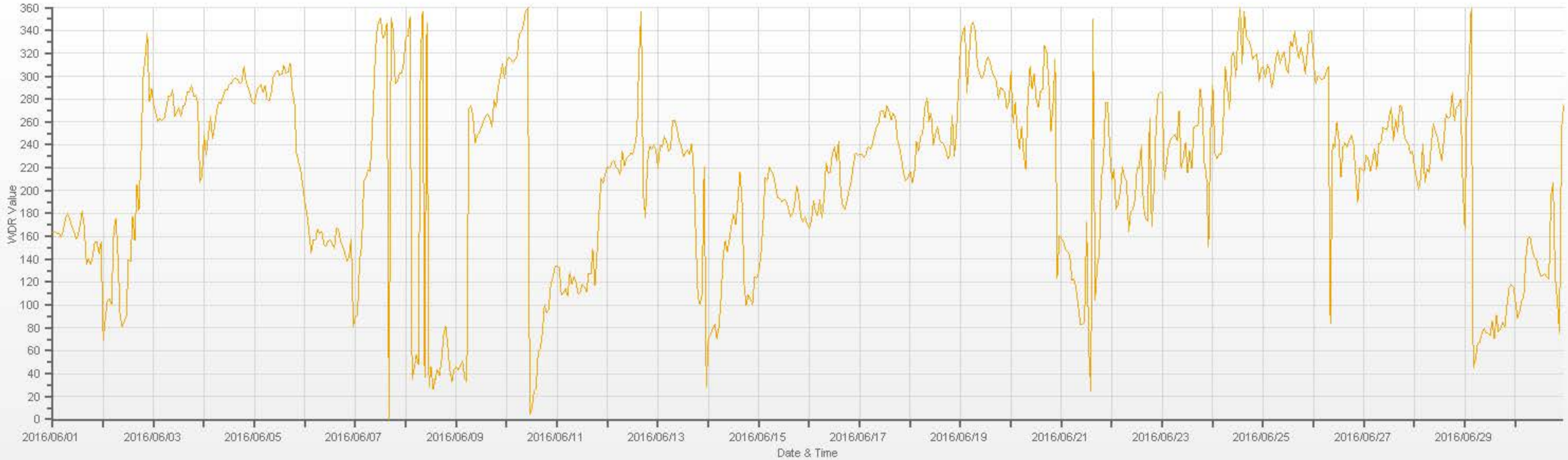
STATUS FLAG CODES

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

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

MONTHLY CALIBRATION TIME:	0	HRS	OPERATIONAL TIME:	720	HRS
STANDARD DEVIATION:	80.75		AMD OPERATION UPTIME:	100.0	%

WDR[Deg] Station: LICA ST. LINA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



STANDARD DEVIATION WIND DIRECTION

STANDARD DEVIATION WIND DIRECTION (STDWD) hourly averages in degrees

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	
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	RDGS.
DAY																									
1	8	6	6	7	10	11	14	20	18	18	22	22	22	21	24	20	22	19	19	18	27	11	12	12	24
2	36	14	11	10	12	13	27	36	46	32	36	45	40	49	46	32	38	37	25	21	18	29	18	17	24
3	15	12	10	11	11	11	16	18	19	20	20	21	22	20	21	21	22	22	20	16	8	7	10	6	24
4	8	13	13	14	10	12	18	19	20	19	20	21	21	21	20	21	20	20	20	19	16	13	13	11	24
5	11	13	13	14	18	13	18	18	22	25	23	24	26	27	25	32	29	20	21	14	4	4	6	8	24
6	10	11	11	10	11	12	12	14	17	19	22	20	20	21	19	21	19	19	17	16	16	15	15	22	24
7	23	15	19	19	18	15	13	17	23	26	26	29	23	24	30	28	32	24	21	12	10	10	11	10	24
8	10	11	11	9	11	12	42	32	23	19	29	21	21	20	20	17	16	18	20	20	18	20	19	19	24
9	19	17	18	19	18	21	42	16	17	12	13	13	16	17	17	17	17	15	18	17	18	21	19	17	24
10	18	19	18	20	18	18	18	21	20	23	31	35	33	40	40	34	28	27	18	16	13	11	13	15	24
11	16	15	13	10	15	15	20	17	18	17	16	17	18	18	19	17	19	18	19	18	21	20	19	17	24
12	16	15	13	14	15	16	19	12	16	16	14	13	13	14	15	36	40	34	16	16	37	9	7	9	24
13	9	8	8	8	8	12	14	19	20	18	17	18	21	22	19	25	26	24	19	12	9	21	37	15	24
14	12	15	17	18	16	19	18	19	17	21	27	27	30	25	21	21	22	25	17	15	16	17	16	16	24
15	17	16	18	19	20	15	15	17	19	21	23	23	22	22	22	20	19	21	20	20	14	12	13	14	24
16	9	12	15	12	11	16	21	21	26	27	28	26	19	17	12	21	18	18	18	19	19	14	12	11	24
17	12	11	13	12	12	11	12	13	14	16	18	20	18	18	19	22	22	19	14	11	9	12	14	15	24
18	15	16	19	15	7	9	12	21	24	25	31	17	26	26	26	25	22	14	11	10	12	15	9	16	24
19	15	16	17	16	17	18	20	23	23	21	21	21	20	21	20	23	20	20	18	16	13	12	9	11	24
20	12	12	7	18	13	17	20	20	25	23	32	39	33	45	53	40	50	47	37	9	6	23	7	5	24
21	5	5	9	8	8	11	15	20	26	26	31	52	55	18	24	41	34	18	19	23	17	12	13	51	24
22	13	12	12	10	13	11	21	20	24	25	29	28	22	25	34	26	22	23	26	49	24	32	15	25	24
23	18	11	12	8	14	12	13	13	44	56	53	57	53	55	41	39	32	29	11	7	14	19	23	16	24
24	17	24	43	8	9	11	19	21	18	21	24	28	32	23	24	29	25	28	20	18	18	17	17	16	24
25	17	16	17	18	17	17	18	20	18	18	20	21	20	20	19	25	19	19	19	15	14	13	14	18	24
26	12	12	11	13	13	16	28	38	52	43	41	58	49	37	16	20	17	15	11	11	12	13	7	8	24
27	7	6	7	8	6	4	10	14	19	35	28	20	27	24	22	21	20	22	18	10	4	8	8	24	24
28	5	6	9	11	5	15	10	17	15	24	24	30	21	18	12	15	16	15	13	13	12	12	12	26	24
29	22	50	12	13	16	15	19	21	25	26	26	26	27	27	28	29	27	24	22	17	12	13	14	14	24
30	14	14	14	11	12	17	17	19	19	19	21	21	20	20	19	17	18	21	33	16	12	33	22	45	24

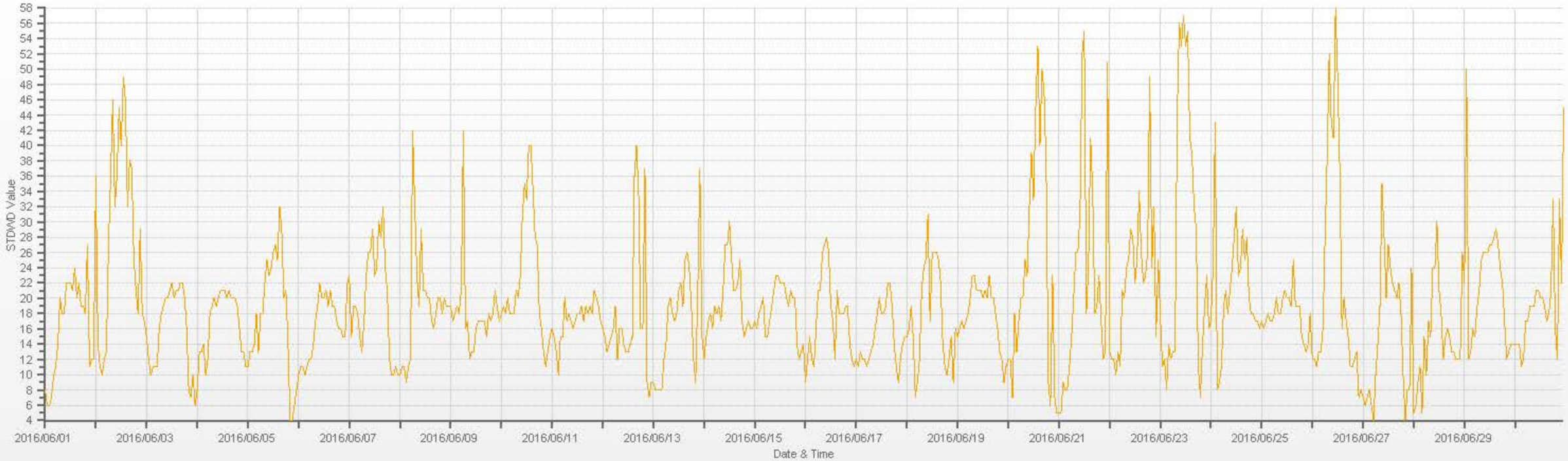
STATUS FLAG CODES

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: 581 HRS

STDWD[Deg] Station: LICA ST. LINA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



RELATIVE HUMIDITY

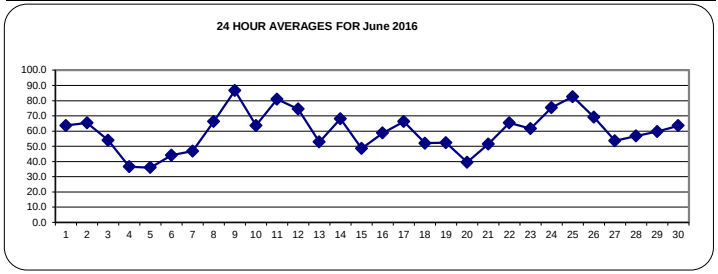
RELATIVE HUMIDITY (RH) hourly averages in %

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	67	71	73	75	79	79	76	70	65	60	52	48	48	46	43	45	49	53	58	64	73	76	78	79	43	79	63.6	24
2	85	88	87	88	90	84	75	71	66	64	57	49	43	41	35	38	36	35	40	50	81	88	90	90	35	90	65.5	24
3	90	89	89	87	86	85	74	65	59	52	47	42	35	31	31	31	29	28	30	34	39	40	47	57	28	90	54.0	24
4	57	61	68	57	64	58	52	46	40	31	24	22	21	21	18	16	***15***	16	22	27	30	33	37	41	***15***	68	36.5	24
5	43	43	46	47	52	46	44	44	40	33	28	25	24	25	24	25	26	29	28	31	42	41	35	43	24	52	36.0	24
6	48	54	53	57	59	57	56	52	43	40	37	34	32	33	34	34	34	35	38	41	46	47	46	49	32	59	44.1	24
7	51	57	60	63	69	72	71	64	52	46	40	32	28	28	31	31	30	31	34	40	47	48	49	49	28	72	46.8	24
8	45	48	50	61	60	64	68	70	67	64	67	67	58	60	64	70	77	65	67	72	76	82	83	87	45	87	66.3	24
9	***91***	***91***	***91***	***91***	***91***	***91***	90	***91***	***91***	90	86	81	79	79	73	76	87	85	85	86	87	89	89	89	73	***91***	***86.6***	24
10	89	88	87	88	88	85	81	74	68	61	55	51	47	47	45	42	42	43	48	54	59	58	62	65	42	89	63.6	24
11	66	69	73	76	77	79	84	83	84	86	87	85	84	82	78	83	84	83	85	81	81	81	85	87	66	87	81.0	24
12	86	87	88	85	84	79	80	75	70	64	61	66	73	67	63	64	78	72	71	66	72	76	80	80	61	88	74.5	24
13	82	77	77	75	73	65	56	51	48	46	43	37	38	37	36	36	35	35	37	45	53	55	59	72	35	82	52.8	24
14	77	74	75	76	75	70	65	61	66	61	51	45	46	43	46	52	69	81	82	80	85	84	86	84	43	86	68.1	24
15	80	83	85	85	80	73	67	63	58	55	47	41	32	30	27	25	24	23	22	21	27	35	40	43	21	85	48.6	24
16	48	53	57	62	67	63	58	51	45	40	39	35	39	44	47	56	61	77	81	82	82	80	70	72	35	82	58.7	24
17	73	73	74	75	78	83	80	76	73	76	75	68	61	61	55	51	46	45	46	52	61	69	70	71	45	83	66.3	24
18	71	72	74	74	78	69	60	56	52	48	45	39	35	33	31	31	31	37	43	48	51	54	54	64	31	78	52.1	24
19	70	72	73	78	84	75	65	59	59	54	53	47	46	31	32	33	29	30	34	36	43	48	53	51	29	84	52.3	24
20	50	59	61	64	77	63	60	55	40	34	24	23	25	25	23	22	23	24	25	33	35	34	33	35	22	77	39.5	24
21	39	41	45	46	50	50	50	48	45	43	37	36	54	62	44	33	38	50	55	61	72	77	78	80	33	80	51.4	24
22	87	86	85	87	88	78	69	65	67	59	52	47	45	50	50	50	47	48	52	60	59	71	81	85	45	88	65.3	24
23	83	88	90	90	87	79	70	65	58	55	49	45	42	37	36	37	36	41	45	47	56	75	84	84	36	90	61.6	24
24	87	89	90	90	89	87	85	82	82	80	73	65	61	65	54	58	60	58	64	67	73	81	85	85	54	90	75.4	24
25	85	88	90	***91***	***91***	***91***	89	89	89	87	79	71	77	79	81	73	72	72	69	76	82	86	87	87	69	***91***	82.5	24
26	88	89	89	90	90	84	75	70	66	63	56	53	47	48	50	47	48	54	64	69	73	79	83	83	47	90	69.1	24
27	86	87	84	84	87	77	66	57	52	46	39	36	33	31	33	30	31	30	32	39	49	55	61	61	30	87	53.6	24
28	73	77	80	81	77	73	61	53	47	42	39	33	30	31	45	46	47	47	51	57	62	65	69	76	30	81	56.8	24
29	78	84	79	80	84	76	70	66	61	56	53	49	44	43	42	41	42	43	46	56	61	60	59	58	41	84	59.6	24
30	60	64	67	72	79	78	73	68	63	59	55	52	47	43	44	51	55	57	64	69	73	75	77	80	43	80	63.5	24
HOURLY MAX	91	91	91	91	91	91	90	91	91	90	87	85	84	82	81	83	87	85	85	86	87	89	90	90				
HOURLY AVG	71.2	73.4	74.7	75.8	77.8	73.8	69.0	64.7	60.5	56.5	51.7	47.5	45.8	45.1	43.8	44.2	46.0	47.6	50.6	54.8	61.0	64.7	67.0	69.6				

STATUS FLAG CODES

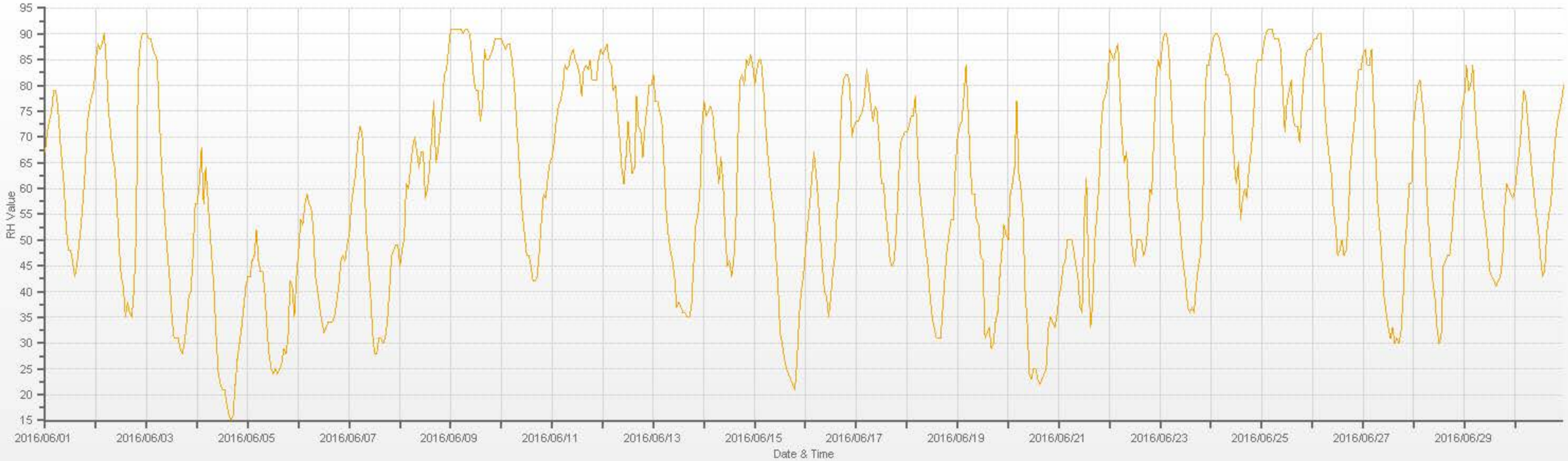
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	15	%	@ HOUR(S)	16	ON DAY(S)	4	
MAXIMUM 1-HR AVERAGE:	91	%	@ HOUR(S)	VAR	ON DAY(S)	9 , 25	
MAXIMUM 24-HR AVERAGE:	86.6	%			ON DAY(S)	9	
					VAR-VARIOUS		
			OPERATIONAL TIME:			720	HRS
			AMD OPERATION UPTIME:			100.0	%
STANDARD DEVIATION:	19.54		MONTHLY AVERAGE:			60	%

RH[%RH] Station: LICA ST. LINA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



BAROMETRIC PRESSURE

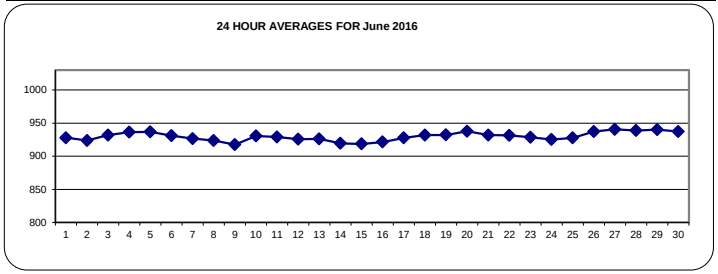
BAROMETRIC PRESSURE (BP) hourly averages in millibar

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	932	931	931	930	930	929	929	929	930	929	929	929	928	928	928	928	927	927	926	925	925	924	924	924	924	932	928	24
2	924	923	923	922	922	922	923	923	924	924	924	925	925	924	925	924	924	924	924	924	924	924	925	925	922	925	924	24
3	926	926	926	927	928	928	929	930	931	932	933	933	934	934	935	935	935	935	935	936	935	934	934	934	926	936	932	24
4	934	934	935	935	936	936	936	937	937	937	938	938	938	938	937	937	937	937	937	937	936	936	935	935	934	938	936	24
5	935	935	935	935	935	936	936	937	938	938	938	938	938	938	938	938	938	938	938	938	937	936	935	935	935	938	937	24
6	934	934	934	933	933	933	933	933	934	933	933	933	932	932	931	930	930	929	929	928	927	926	926	927	926	934	931	24
7	926	926	924	924	924	925	925	926	926	927	927	928	928	928	928	928	928	928	928	928	927	926	926	926	924	928	927	24
8	925	925	925	925	925	925	925	926	926	925	926	925	926	926	924	924	922	922	922	921	920	920	920	919	919	926	924	24
9	918	917	916	915	915	915	915	915	915	915	916	916	917	917	918	918	918	919	919	919	920	921	922	922	915	922	917	24
10	923	924	925	926	926	927	928	929	930	931	932	933	933	934	934	934	934	934	933	933	932	932	932	933	923	934	931	24
11	933	932	931	932	932	932	932	931	931	931	931	930	930	929	928	928	927	927	926	925	926	925	925	925	925	933	929	24
12	925	925	925	925	925	925	925	925	926	926	926	926	925	926	926	926	926	926	926	926	926	926	926	926	925	926	926	24
13	926	926	926	926	926	926	927	928	928	928	928	928	928	928	928	928	927	927	926	926	924	923	923	922	922	928	926	24
14	921	921	920	919	919	919	919	919	920	920	921	921	921	921	921	920	920	920	919	919	918	918	917	916	916	921	920	24
15	916	915	***914***	***914***	915	916	916	917	918	919	920	920	921	921	921	921	921	920	921	921	921	920	920	920	***914***	921	919	24
16	920	920	920	920	920	920	921	922	923	923	923	923	923	922	922	922	922	921	921	921	921	922	922	922	920	923	922	24
17	922	922	922	922	922	923	923	924	925	926	927	928	930	931	932	932	933	933	933	933	933	931	931	931	922	933	928	24
18	931	930	930	931	930	931	932	933	933	934	934	934	934	933	933	933	933	933	932	932	930	930	929	929	929	934	932	24
19	929	928	928	928	928	928	929	930	931	931	932	932	932	933	934	935	935	935	936	936	936	936	936	936	928	936	932	24
20	936	936	936	936	936	936	937	938	939	940	940	940	940	940	940	940	939	939	939	938	937	935	935	934	934	940	938	24
21	934	933	933	932	932	932	932	933	933	933	933	933	932	931	931	932	932	931	931	931	930	930	930	930	930	934	932	24
22	930	930	930	929	930	930	931	932	932	932	933	933	933	933	933	933	932	932	932	931	931	931	930	930	929	933	931	24
23	929	929	929	929	928	929	929	930	930	931	931	931	931	930	930	929	929	929	928	927	926	926	925	924	924	931	929	24
24	925	924	924	924	923	923	923	924	924	925	925	926	926	926	927	927	927	927	927	926	926	926	926	926	923	927	925	24
25	925	925	925	925	925	925	926	926	927	927	927	928	928	928	928	929	929	929	931	931	931	931	932	932	925	932	928	24
26	932	932	933	933	933	934	935	936	937	938	939	939	939	940	940	940	940	940	940	939	939	939	939	939	932	940	937	24
27	939	939	939	939	939	939	940	941	***942***	***942***	***942***	***942***	***942***	***942***	***942***	***942***	***942***	941	941	941	941	940	939	939	939	***942***	***941***	24
28	939	938	938	938	938	938	939	939	940	941	941	941	940	940	939	939	938	939	939	938	938	938	938	938	938	941	939	24
29	937	937	938	938	938	938	939	940	941	941	***942***	***942***	***942***	***942***	***942***	***942***	***942***	***942***	***942***	941	940	940	940	940	937	***942***	940	24
30	940	939	939	938	938	938	938	939	939	939	939	939	938	937	937	937	937	936	935	935	934	934	934	934	934	940	937	24
HOURLY MAX	940	939	939	939	939	939	940	941	942	942	942	942	942	942	942	942	942	942	942	941	941	940	940	940				
HOURLY AVG	929	929	928	928	928	929	929	930	930	931	931	931	931	931	931	931	931	931	931	930	930	929	929	929				

STATUS FLAG CODES

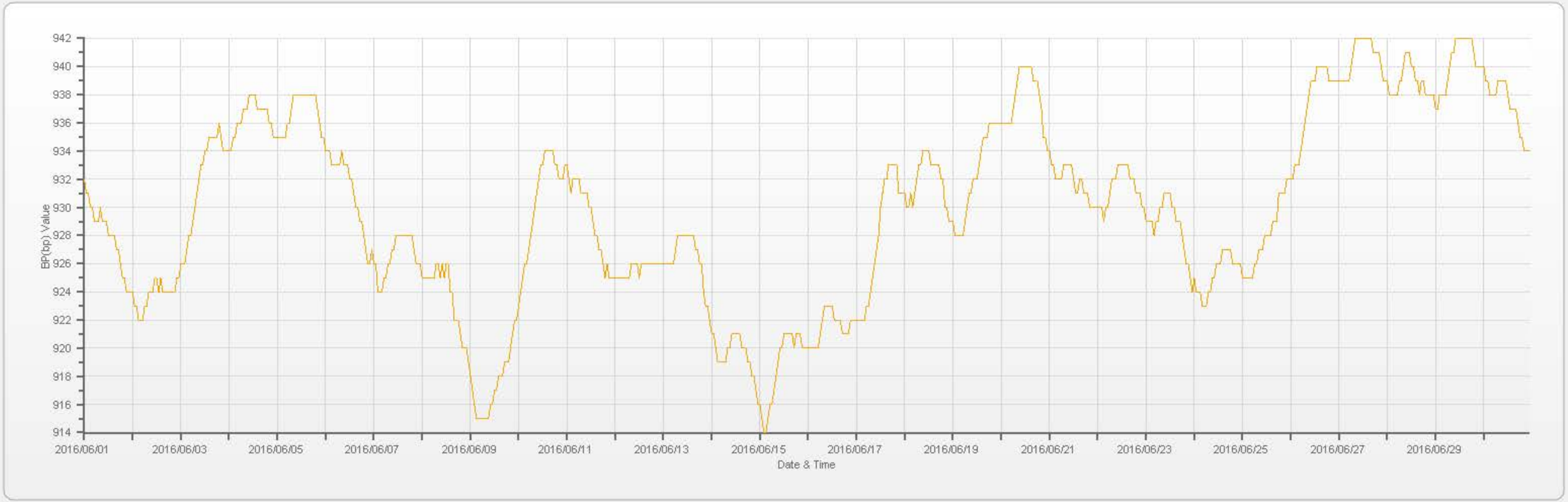
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	914	MB	@ HOUR(S)	2 , 3	ON DAY(S)	15 , 15	
MAXIMUM 1-HR AVERAGE:	942	MB	@ HOUR(S)	VAR	ON DAY(S)	27 , 29	
MAXIMUM 24-HR AVERAGE:	941	MB			ON DAY(S)	27	
					VAR-VARIOUS		
			OPERATIONAL TIME:			720	HRS
			AMD OPERATION UPTIME:			100.0	%
STANDARD DEVIATION:	6.67		MONTHLY AVERAGE:			930	MB

BP(bp)[mb] Station: LICA ST. LINA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



AMBIENT TEMPERATURE

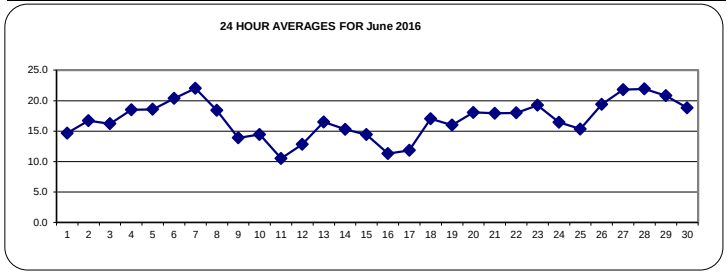
AMBIENT TEMPERATURE (AmbTPX) hourly averages in Degrees Celsius

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	10.6	9.9	9.6	9.3	8.8	9.3	11.0	13.3	14.6	16.1	18.0	18.9	18.7	19.1	21.2	20.4	19.7	19.0	17.2	15.9	14.3	12.9	12.1	11.9	8.8	21.2	14.7	24
2	10.6	9.9	9.8	9.6	9.2	11.1	14.2	16.7	18.9	19.6	21.4	21.6	22.7	22.8	24.1	23.5	23.7	23.6	22.5	19.2	12.6	11.7	11.3	10.6	9.2	24.1	16.7	24
3	10.0	9.8	9.8	9.9	9.6	9.7	12.5	14.3	15.5	17.2	18.6	19.4	20.2	20.7	20.9	20.9	21.8	21.6	21.1	20.2	18.0	16.8	16.0	14.4	9.6	21.8	16.2	24
4	13.9	13.3	12.6	14.2	13.3	14.8	17.0	18.7	19.9	20.5	21.2	21.9	22.5	23.4	23.7	23.7	23.5	22.9	21.8	20.2	17.5	15.8	14.4	13.7	12.6	23.7	18.5	24
5	12.9	12.5	11.9	11.5	10.6	12.6	15.5	16.8	19.1	21.4	22.5	23.0	23.7	24.0	24.1	24.4	23.9	22.5	22.7	21.8	18.1	16.6	17.3	16.2	10.6	24.4	18.6	24
6	15.1	14.0	13.7	12.6	12.4	13.8	15.1	17.7	20.0	21.6	23.6	24.3	25.2	25.5	25.9	26.2	25.9	25.5	24.8	23.5	21.9	20.7	20.5	19.4	12.4	26.2	20.4	24
7	18.6	17.4	16.6	16.2	15.8	16.1	17.3	20.3	24.3	25.4	25.2	27.6	27.1	26.2	26.0	25.6	26.7	26.1	25.0	24.1	21.7	20.5	19.9	19.3	15.8	27.6	***22.0***	24
8	19.4	18.7	17.6	16.0	16.6	16.1	16.6	16.6	17.3	19.0	18.7	20.2	22.4	21.8	20.9	20.1	19.1	21.5	20.4	18.7	17.5	15.9	15.5	15.1	15.1	22.4	18.4	24
9	14.7	14.6	14.9	15.0	15.1	15.2	15.6	14.3	13.8	14.2	14.4	15.2	15.6	15.9	16.6	15.7	13.7	13.8	12.7	12.0	11.0	10.1	9.7	9.6	9.6	16.6	13.9	24
10	9.2	9.2	9.1	8.9	8.9	9.2	9.7	11.6	13.3	15.5	17.1	18.3	19.3	19.5	19.8	19.9	19.8	19.3	17.7	16.4	14.9	13.8	13.4	12.9	8.9	19.9	14.4	24
11	12.7	12.1	11.0	10.4	10.3	10.3	9.6	9.5	9.5	9.3	9.5	9.6	9.8	10.6	11.6	10.7	11.1	11.6	10.6	11.3	11.5	10.4	9.4	9.3	9.3	12.7	10.5	24
12	9.2	8.6	8.4	9.0	9.0	9.9	9.9	12.1	14.0	15.1	15.9	14.7	13.6	15.8	16.5	16.9	13.5	15.1	14.8	15.8	13.9	12.9	11.9	11.3	8.4	16.9	12.8	24
13	10.4	10.3	9.4	9.0	8.8	11.5	14.9	15.9	17.1	18.4	20.0	21.0	21.0	21.6	21.9	22.0	22.3	21.5	19.7	18.5	16.4	15.4	15.3	13.5	8.8	22.3	16.5	24
14	12.3	12.2	12.2	12.3	12.0	13.4	15.2	16.0	15.0	17.2	19.7	20.6	21.2	21.6	20.7	19.0	15.6	14.5	14.4	13.8	13.0	12.3	11.3	11.5	11.3	21.6	15.3	24
15	11.9	11.1	10.1	9.2	8.2	9.3	10.8	12.7	12.9	14.1	16.2	16.7	18.4	19.2	19.2	19.5	19.1	19.3	19.1	17.6	15.6	13.4	11.9	10.8	8.2	19.5	14.4	24
16	9.4	8.3	7.2	6.0	***5.1***	7.5	10.1	12.9	15.7	16.6	16.1	17.0	16.5	15.8	15.0	14.0	11.7	9.4	9.1	9.5	9.6	9.3	9.9	9.2	***5.1***	17.0	11.3	24
17	8.6	8.6	8.6	8.5	8.6	8.3	9.0	10.0	10.9	11.2	11.5	12.9	14.2	13.4	14.6	16.2	17.0	17.1	16.7	15.8	13.2	10.5	9.7	9.3	8.3	17.1	11.9	24
18	9.4	9.0	8.3	8.6	7.6	10.8	14.4	16.9	18.9	20.4	21.6	22.9	23.1	23.4	24.2	23.6	23.2	21.6	20.2	18.8	16.9	15.7	15.2	14.3	7.6	24.2	17.0	24
19	13.3	12.4	12.3	11.6	10.7	12.4	14.6	16.2	16.7	17.7	17.6	17.9	17.5	18.8	19.3	19.6	20.2	20.2	19.5	18.4	16.3	14.5	13.1	12.8	10.7	20.2	16.0	24
20	12.5	11.0	10.5	9.8	8.4	12.5	15.2	18.0	20.7	20.8	21.4	22.4	22.7	23.3	23.8	24.0	23.4	23.1	21.9	20.8	18.2	16.8	16.4	15.9	8.4	24.0	18.1	24
21	14.4	14.0	13.1	12.4	12.9	14.1	15.9	19.6	21.2	22.6	23.8	23.7	18.8	18.7	23.5	25.5	24.0	20.6	18.9	17.4	14.9	13.9	13.5	12.6	12.4	25.5	17.9	24
22	11.3	11.6	11.6	10.8	10.5	13.8	16.9	18.6	18.3	20.9	23.0	24.2	24.7	22.8	23.2	23.1	22.9	22.5	21.3	19.6	18.4	15.2	13.6	13.1	10.5	24.7	18.0	24
23	13.1	11.8	10.9	10.6	11.1	13.7	17.0	19.8	21.7	22.4	23.9	25.3	25.9	26.0	25.8	25.7	25.7	25.0	22.6	21.3	19.1	15.4	14.2	14.1	10.6	26.0	19.3	24
24	13.6	13.4	12.9	12.3	12.1	12.9	13.7	15.1	15.2	15.6	17.7	20.1	21.3	19.8	21.5	21.4	20.8	20.3	18.6	17.0	16.0	15.2	14.4	13.6	12.1	21.5	16.4	24
25	13.3	12.5	12.3	12.8	12.8	13.3	13.8	13.9	14.0	14.7	16.8	18.7	18.2	17.7	17.1	19.1	17.6	17.6	18.2	16.5	15.4	14.3	13.7	13.6	12.3	19.1	15.3	24
26	13.5	13.1	13.3	12.8	12.6	14.2	17.1	19.2	21.0	21.5	23.3	23.3	25.2	24.6	26.0	26.0	25.4	23.5	21.1	19.6	19.0	17.9	16.8	15.8	12.6	26.0	19.4	24
27	14.7	13.9	13.9	13.8	12.8	15.7	19.8	22.5	24.2	25.7	26.4	26.8	27.7	27.3	27.4	27.3	27.5	26.8	25.8	24.6	21.8	19.9	18.5	18.6	12.8	27.7	21.8	24
28	16.7	16.1	15.5	15.2	15.7	17.6	21.6	24.4	26.6	27.4	28.9	29.7	***30.9***	29.9	23.1	22.6	23.2	23.6	22.2	21.1	19.8	19.1	18.6	17.2	15.2	***30.9***	21.9	24
29	16.9	15.9	16.3	15.8	14.5	16.4	18.2	20.0	21.5	23.2	24.5	25.1	25.4	26.1	26.3	26.0	25.5	24.7	23.4	20.9	19.1	18.4	17.9	17.2	14.5	26.3	20.8	24
30	16.3	15.0	14.3	13.3	13.0	14.7	17.4	19.4	20.7	21.7	23.0	23.9	24.2	24.3	24.0	22.0	21.3	20.7	18.8	17.9	16.9	16.7	16.4	15.5	13.0	24.3	18.8	24
HOURLY MAX	19.4	18.7	17.6	16.2	16.6	17.6	21.6	24.4	26.6	27.4	28.9	29.7	30.9	29.9	27.4	27.3	27.5	26.8	25.8	24.6	21.9	20.7	20.5	19.4				
HOURLY AVG	13.0	12.3	11.9	11.6	11.2	12.7	14.7	16.4	17.8	18.9	20.1	20.9	21.3	21.3	21.6	21.5	21.0	20.5	19.4	18.3	16.4	15.1	14.4	13.7				

STATUS FLAG CODES

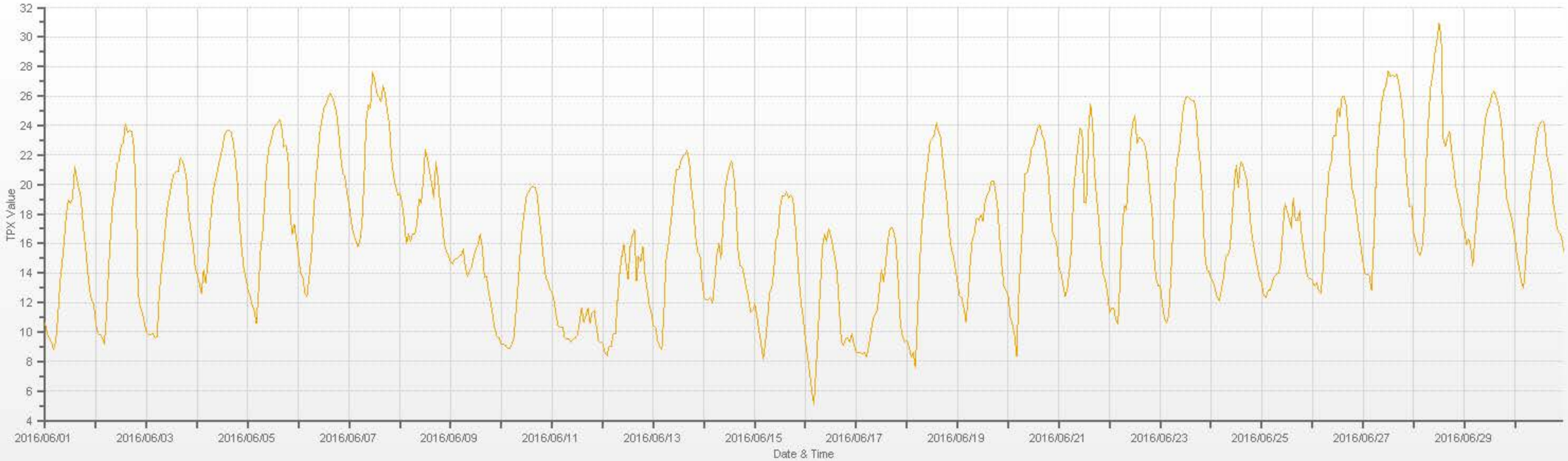
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	5.1	°C	@ HOUR(S)	4	ON DAY(S)	16	
MAXIMUM 1-HR AVERAGE:	30.9	°C	@ HOUR(S)	12	ON DAY(S)	28	
MAXIMUM 24-HR AVERAGE:	22.0	°C			ON DAY(S)	7	
					VAR-VARIOUS		
			OPERATIONAL TIME:			720	HRS
			AMD OPERATION UPTIME:			100.0	%
STANDARD DEVIATION:	5.08		MONTHLY AVERAGE:			16.9	°C

TPX[C°] Station: LICA ST. LINA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



PRECIPITATION

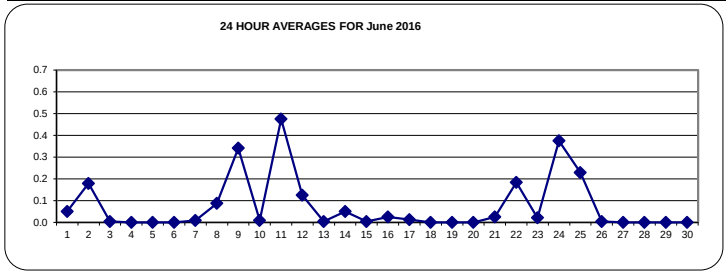
PRECIPITATION hourly averages (mm)

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	1.2	0.1	24
2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7	0.5	0.0	0.0	0.0	3.7	0.2	24
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	0.0	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
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.0	0.0	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	0.1	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	0.1	0.0	24
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.8	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.8	0.1	24
9	3.5	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.1	0.0	0.0	0.0	0.0	0.1	0.0	2.1	0.9	0.0	0.1	0.0	0.4	0.3	0.2	0.1	0.0	3.5	0.3	24
10	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	24
11	0.0	0.0	0.0	0.0	0.0	0.2	1.9	0.0	0.8	1.3	1.0	0.2	0.0	0.0	0.0	1.4	0.0	3.2	1.3	0.0	0.0	0.0	0.0	0.1	0.0	3.2	***0.5***	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	0.2	0.0	0.0	0.0	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.1	24
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	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	0.1	0.6	0.4	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.6	0.1	24
15	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	24
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	24
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	24
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	24
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1	1.0	0.3	0.0	3.1	0.2	24
23	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	0.4	0.0	0.4	0.0	24
24	2.4	***3.8***	2.7	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	***3.8***	0.4	24
25	0.0	0.0	0.0	0.0	0.2	0.1	0.0	1.3	0.8	0.0	0.0	0.0	0.6	1.4	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.2	24
26	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	0.1	0.0	24
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
HOURLY MAX	3.5	3.8	2.7	0.1	0.2	0.2	1.9	1.3	0.8	1.3	1.0	0.2	0.6	1.4	1.1	2.1	2.8	3.2	1.3	0.1	3.7	3.1	1.0	0.6				
HOURLY AVG	0.2	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.2	0.1	0.0	0.0	0.2	0.1	0.0	0.1				

STATUS FLAG CODES

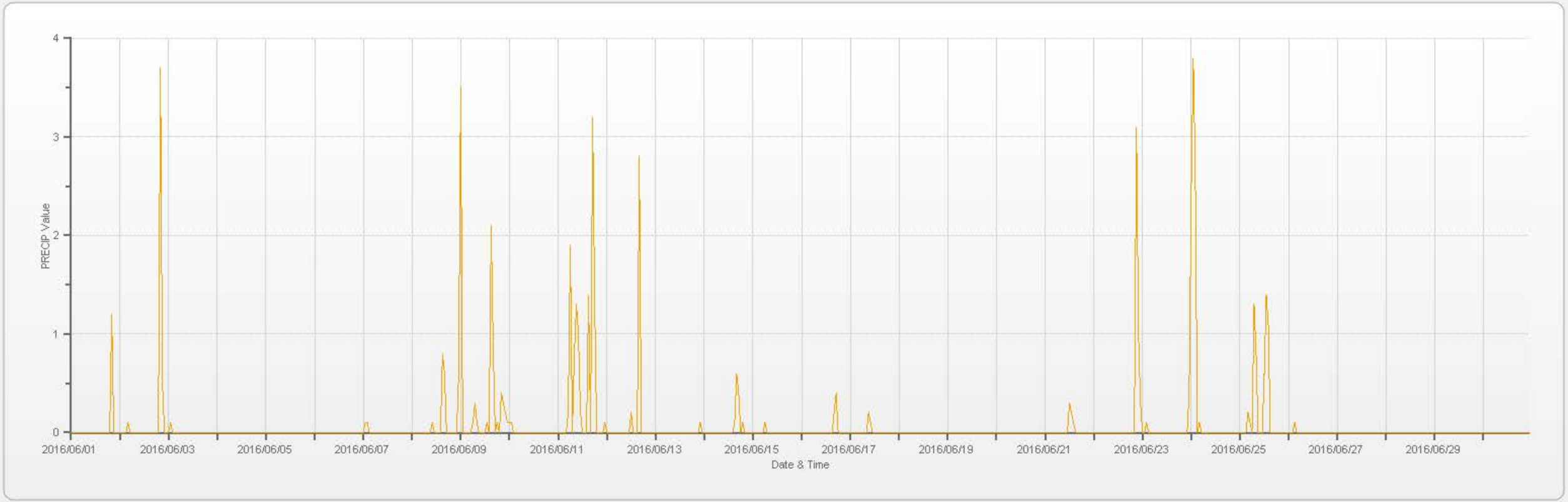
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:		0.0	MM	@ HOUR(S)	VAR	ON DAY(S)	ALL
MAXIMUM 1-HR AVERAGE:		3.8	MM	@ HOUR(S)	1	ON DAY(S)	24
MAXIMUM 24-HR AVERAGE:		0.5	MM			ON DAY(S)	11
MONTHLY TOTAL	53.1	MM				VAR-VARIOUS	
				OPERATIONAL TIME:		720	HRS
				AMD OPERATION UPTIME:		100.0	%
STANDARD DEVIATION:	0.38			MONTHLY AVERAGE:		0.1	MM

PRECIP[mm] Station: LICA ST. LINA Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



APPENDIX II
EQUIPMENT CALIBRATION RESULTS

SULPHUR DIOXIDE

API 100E Sulphur Dioxide Analyzer Calibration

Date:	June 17, 2016	**Barometric Pressure:**	0.918 atm
Company/Airshed:	LICA	**Station Temperature °C:**	22
Location/Station Name:	St. Lina	**Weather Conditions:**	A few clouds and light rain showers
Parameter:	Sulphur Dioxide	**Calibration Purpose:**	routine monthly
Start Time 24 hr. (mst):	10:08	**Performed By/Reviewer:**	Alex Yakupov / Tom Bourque
End Time 24 hr. (mst):	15:35	**Cal Gas Expiry Date:**	December 2, 2023
Calibration Method:	Gas Dilution	**Converter Model & s/n (if applicable):**	n/a

Analyzer:

Serial Number:	468	**Range ppb:**	1000
Last Calibration Date:	May 12, 2016	**As Found C.F.:**	0.991
Previous C.F.:	1.000	**New C.F.:**	0.999

Calibrator:

Flow Meter ID's:	n/a
Make & Model:	SABIO D 2010
Serial #:	11900613
Cal Gas Cylinder I.D. # :	LL119346
Cal Gas Conc. (ppm):	50.0

Standard Calibration Points for Ranges

Point	Sulphur Dioxide Standard Calibration Points
High	**780**
Mid	**380**
Low	**190**

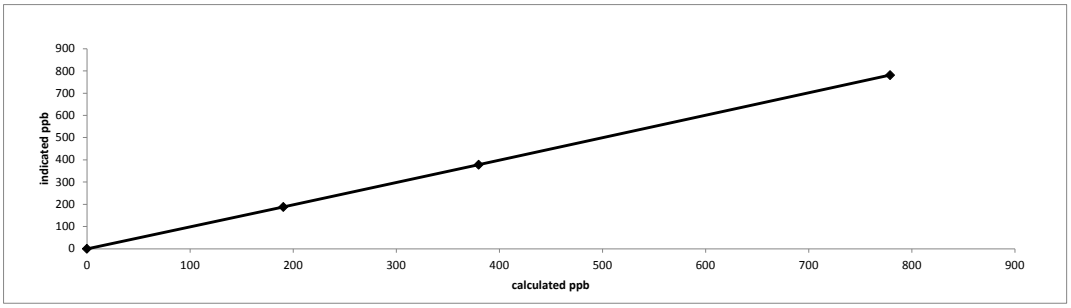
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors (C.F.):
Point	**Diluent**	**Cal Gas**	**Total**	**(ppb)**	**(ppb)**	
as found zero	4999	0.00	4999	0.0	3.0	N/A
as found high	4922	78.00	5000	780.0	790.0	0.991
adjusted zero	4999	0.00	4999	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	378.0	1.005
low	4981	19.00	5000	190.0	188.0	1.011
calibrator zero	4999	0.00	4999	0.0	0.0	n/a
					Average C.F.=	1.005

Linear Regression/Calibration Results:

		LIMITS
Correlation Coeffecient =	**1.000**	**> or = 0.995**
Slope =	**0.998**	**.95-1.05**
b (Intercept as % of full scale)=	**0.14%**	**± 3% F.S.**
% change in C.F. from last cal=	**0.89%**	**± 10%**

API 100E Sulphur Dioxide Analyzer Calibration

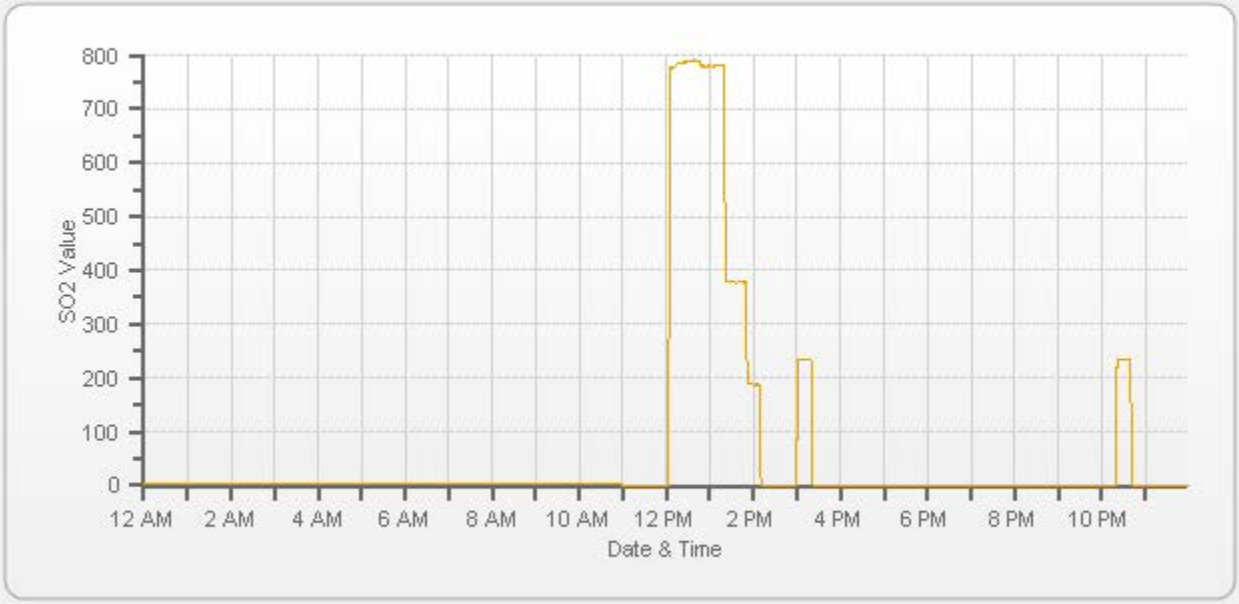


	As found:		**As left:**
SLOPE:	1.018	SLOPE:	1.006
OFFSET:	99.2	OFFSET:	103.7
HVPS:	647	HVPS:	647
RCELL TEMP:	50.0	RCELL TEMP:	50.0
BOX TEMP:	30.2	BOX TEMP:	29.4
PMT TEMP:	7.8	PMT TEMP:	7.8
IZS TEMP:	40.0	IZS TEMP:	40.0
PRES:	24.0	PRES:	24.0
SAMP FL:	572	SAMP FL:	574
NORM PMT:	104.3	NORM PMT:	103.5
UV LAMP:	3280.1	UV LAMP:	3279.1
LAMP RATIO:	93.8	LAMP RATIO:	93.7
STR. LGT	50.5	STR. LGT	52.2
DRK PMT:	5.5	DRK PMT:	5.7
DRK LMP:	6.6	DRK LMP:	6.8
Internal Span:	232	Internal Span:	234

Comments:

Sample inlet filter changed.

SO2[ppb] Station: LICA ST. LINA Daily: 2016/06/17 Type: AVG 1 Min. [1 Min.]



HYDROGEN SULPHIDE

API 101E Hydrogen Sulphide Analyzer Calibration

Date:	June 17, 2016	**Barometric Pressure:**	0.918 atm
Company/Airshed:	LICA	**Station Temperature °C:**	22
Location/Station Name:	St. Lina	**Weather Conditions:**	A few clouds and light rain showers
Parameter:	Hydrogen Sulphide	**Calibration Purpose:**	routine monthly
Start Time 24 hr. (mst):	10:08	**Performed By/Reviewer:**	Alex Yakupov / Tom Bourque
End Time 24 hr. (mst):	15:25	**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:	May 12, 2016	**As Found C.F.:**	1.002
Previous C.F.:	1.000	**New C.F.:**	0.997

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

Standard Calibration Points for Ranges

Point	Hydrogen Sulphide Standard Calibration Points
High	78
Mid	38
Low	19

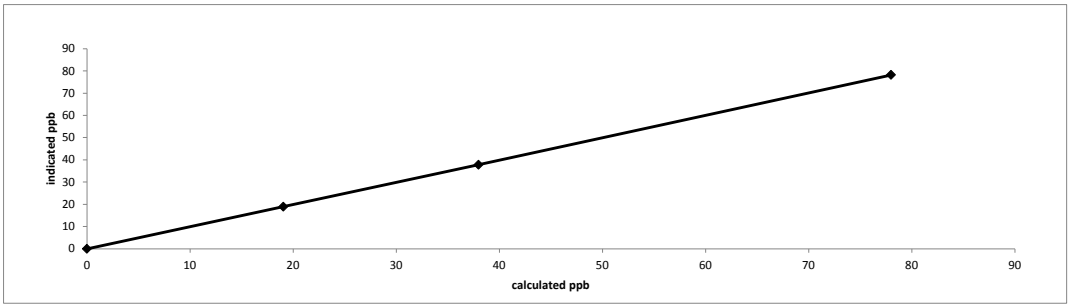
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

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	1.0	N/A
as found high	7443	58.50	7502	78.0	78.8	1.002
adjusted zero	7498	0.00	7498	0.0	0.0	n/a
adjusted high	7443	58.50	7502	78.0	78.2	0.997
mid	7475	28.50	7504	38.0	37.8	1.005
low	7490	14.30	7504	19.1	18.9	1.008
calibrator zero	7498	0.00	7498	0.0	0.0	n/a
					Average C.F.=	1.003

Linear Regression/Calibration Results:

		LIMITS
Correlation Coeffecient =	**1.000**	**> or = 0.995**
Slope =	**0.997**	**.95-1.05**
b (Intercept as % of full scale)=	**0.14%**	**± 3% F.S.**
% change in C.F. from last cal=	**-0.24%**	**± 10%**

API 101E Hydrogen Sulphide Analyzer Calibration

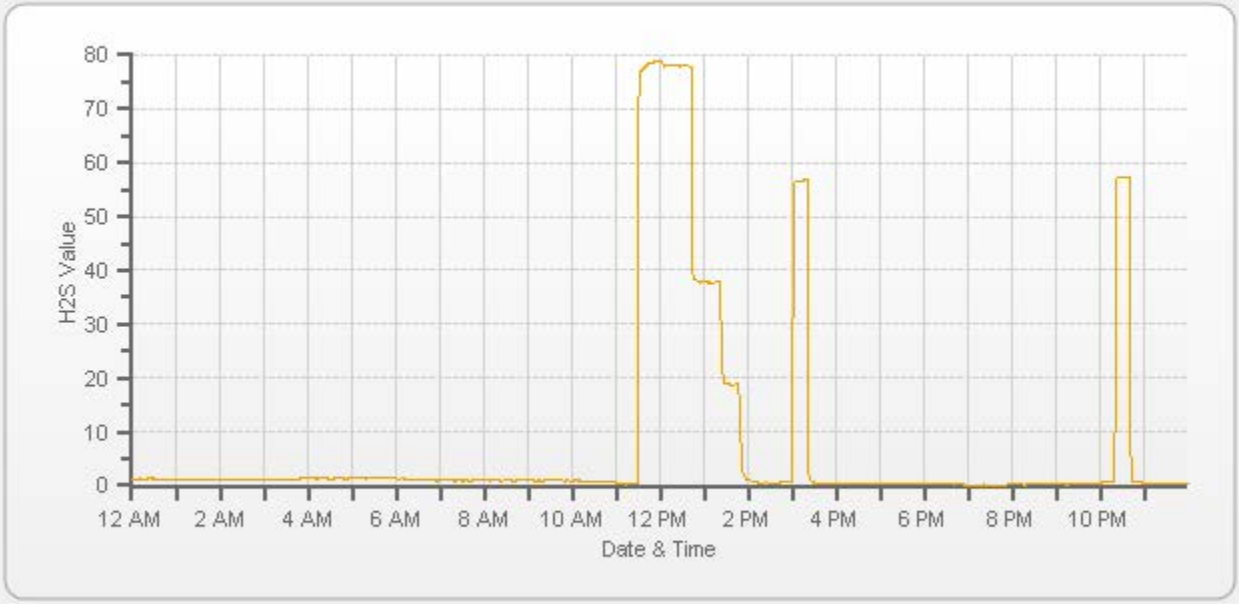


	As found:		**As left:**
SLOPE:	1.094	SLOPE:	1.092
OFFSET:	36.4	OFFSET:	37.3
HVPS:	651	HVPS:	651
RCELL TEMP:	50.0	RCELL TEMP:	50.0
BOX TEMP:	30.6	BOX TEMP:	30.0
PMT TEMP:	7.9	PMT TEMP:	7.9
IZS TEMP:	48.0	IZS TEMP:	48.0
Converter Temp:	314.7	Converter Temp:	315.2
PRES:	20.3	PRES:	20.4
SAMP FL:	515	SAMP FL:	517
UV LAMP:	3152.8	UV LAMP:	3155.1
LAMP RATIO:	90.0	LAMP RATIO:	90.1
STR. LGT	19.9	STR. LGT	20.4
DRK PMT:	0.2	DRK PMT:	0.2
DRK LMP:	0.3	DRK LMP:	0.4
Internal Span:	56.8	Internal Span:	56.8

Comments:

Sample inlet filter changed. NO EV change made. The EV did not change after post-calibration ZS check

H2S[ppb] Station: LICA ST. LINA Daily: 2016/06/17 Type: AVG 1 Min. [1 Min.]



TOTAL HYDROCARBON

Thermo 51C Total Hydrocarbon Analyzer Calibration

Date:	June 20, 2016	**Barometric Pressure:**	0.928 atm
Company/Airshed:	LICA	**Station Temperature °C:**	22
Location/Station Name:	St. Lina	**Weather Conditions:**	Mainly clear
Parameter:	Total Hydrocarbon	**Calibration Purpose:**	routine monthly
Start/End Time 24 hr. (mst):	11:35 / 14:47	**Performed By/Reviewer:**	Alex Yakupov / Tom Bourque
Calibration Method:	Gas Dilution	**Cal Gas Expiry Date:**	November 25, 2023

Analyzer:

Serial Number:	51CLT-77021-384	**Range ppm:**	50
Last Calibration Date:	May 12, 2016	**As Found C.F.:**	1.013
Previous Cal High Point C.F.:	1.000	**New C.F.:**	1.002

Calibrator:

Flow Meter ID's:	n/a	
Make & Model:	API 700	
Serial #:	627	
Cal Gas Cylinder I.D. # :	LL165372	
CH_4/C_3H_8 Cylinder Conc. (ppm):	606.0	212.0
CH_4 as propane/total CH_4 equivilants (ppm):	583.0	1189.0

Standard Calibration Points for a Range of 50 ppm

Point	Target ppm
High	38
Mid	18
Low	9

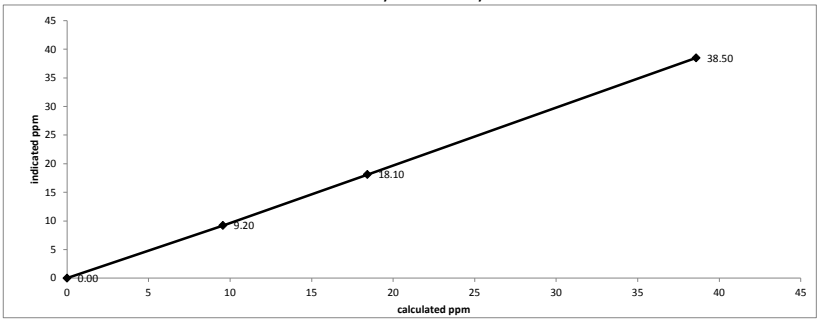
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors:
Point	**Diluent**	**Cal Gas**	**Total**	**(ppm)**	**(ppm)**	
as found zero	2000	0.00	2000	0.0	0.00	n/a
as found high	1938	65.00	2003	38.58	38.10	1.013
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	18.10	1.018
low	1986	16.10	2002	9.56	9.20	1.039
calibrator zero	2000	0.00	2000	0.0	0.00	n/a
					Average C.F.=	1.020

Linear Regression/Calibration Results:

		LIMITS
Correlation Coeffecient =	**1.000**	**> or = 0.995**
Slope =	**1.000**	**.95-1.05**
b (Intercept as % of full scale)=	**0.39%**	**± 3% F.S.**
% change in C.F. from last cal=	**-1.27%**	**± 10%**

Thermo 51C Total Hydrocarbon Analyzer Calibration

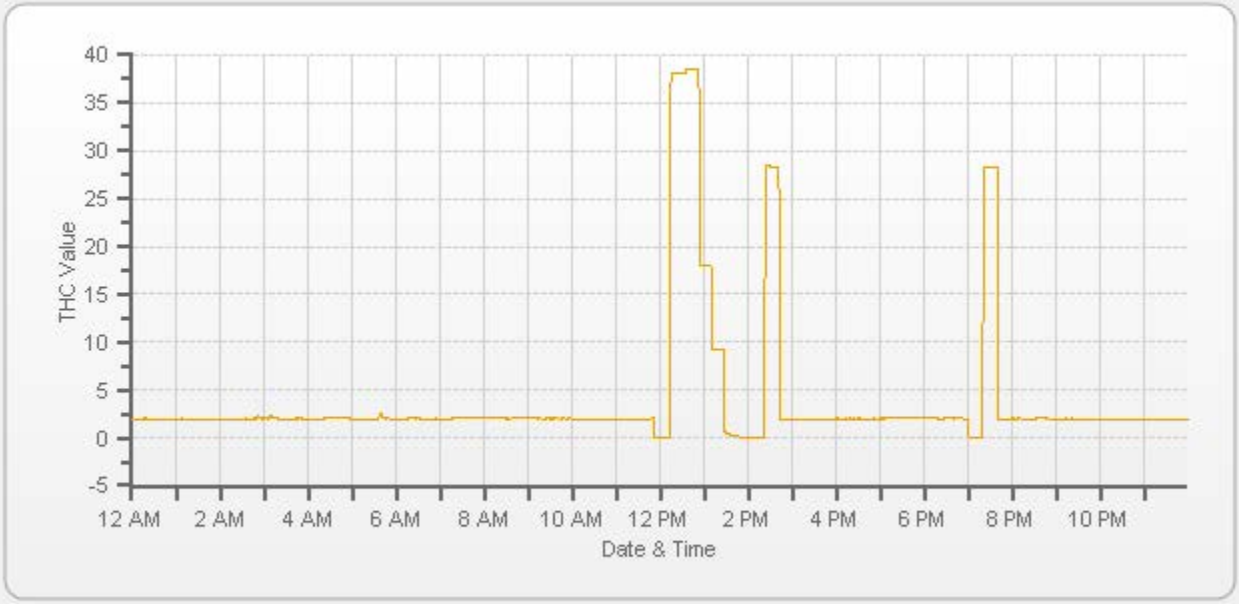


As found:		As left:	
H2 cylinder (psi):	1600	H2 cylinder (psi):	1600
H2 cylinder reg set (psi):	22	H2 cylinder reg set (psi):	22
Span Cylinder (psi):	1800	Span Cylinder (psi):	1800
Span Cylinder Reg Set (psi):	22	Span Cylinder Reg Set (psi):	22
Zero Air Gen Pressure:	44	Zero Air Gen Pressure:	44
measurement alarms:	None	measurement alarms:	None
service alarms:	None	service alarms:	None
cnt:	1622	cnt:	1881
rng:	1	rng:	1
try:	2	try:	2
flm:	187.7	flm:	187.2
det:	125.3	det:	125.5
Flame:	187	Flame:	187
Filter:	125	Filter:	125
Base:	125	Base:	125
Sample psi:	06.90	Sample psi:	06.90
Internal Air Pressure:	19	Internal Air	19
Internal Fuel Pressure:	13	Internal Fuel Pressure:	13
Intenal Pressure Gauge psi:	27	Intenal Pressure Gauge psi:	27
Internal Span:	28.57	Internal Span:	28.33

Comments:

Sample inlet filter changed. No ZERO adjustment made.

THC[ppm] Station: LICA ST. LINA Daily: 2016/06/20 Type: AVG 1 Min. [1 Min.]



NITROGEN DIOXIDE

API 200E NO-NO2-NOx Analyzer Calibration

Date:	June 17, 2016	**Barometric Pressure:**	0.918 atm
Company/Airshed:	LICA	**Station Temperature °C:**	22
Location/Station Name:	St. Lina	**Weather Conditions:**	A few clouds and light rain showers
Start/End Time 24 hr. (mst):	10:08 / 17:43	**Calibration Purpose:**	routine monthly
G.P.T. to be used for Ozone?	No	**Performed By/Reviewer:**	Alex Yakupov / Tom Bourque
Calibration Method:	Gas Dilution & Varying UV Lamp Power	**Cal Gas Expiry Date:**	December 2, 2023

Analyzer:

Serial Number:	594
Last Calibration Date:	May 12, 2016
Range ppb:	1000

Correction Factors:

	Previous C.F.:	As Found C.F.:	New C.F.:
NO =	0.997	0.989	0.996
NO_2 =	1.004	1.000	1.000
NOx =	0.997	0.989	0.997

Calibrator:

Flow Meter ID's:	n/a	
Make & Model:	SABIO 2010 D	
Serial #:	11900613	
Cal Gas Cylinder I.D. # :	LL119346	
NO/NOx Gas Conc. (ppm):	50.0	50.0

Standard Calibration Points for a Range of: 1000 ppb

Point	Target NO (ppb)	Target NO_2 (ppb)	Cc Ozone ?
High	780	500	n/a
Mid	380	275	n/a
Low	190	100	n/a
Extra Point #1	n/a	n/a	n/a
Extra Point #2	n/a	n/a	n/a

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

Calibrator Flow Rates (cc/min)				Calculated NO	Calculated NOx	Indicated NO	Indicated NOx	NO C.F.	NOx C.F.
Point	Diluent	Cal Gas	Total Flow	(ppb)	(ppb)	(ppb)	(ppb)		
as found zero	4999	0.0	4999	0	0	2.0	2.0	n/a	n/a
as found high	4922	78.0	5000	780.0	780.0	791.0	791.0	0.989	0.989
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	783.0	782.0	0.996	0.997
mid	4962	38.00	5000	380.0	380.0	379.0	380.0	1.003	1.000
low	4981	19.00	5000	190.0	190.0	188.0	188.0	1.011	1.011
calibrator zero	4999	0.00	4999	0	0	0.0	0.0	n/a	n/a
							Average C.F.=	1.003	1.003

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

Calibrator Flow Rates (cc/min)				Calibrator Setting	Indicated NO	Indicated NOx	Indicated NO_2	NO drop	NO_2 gain	NO_2 C.F.
Point	Diluent	Cal Gas	Total Flow	volts or ppb	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)
NOx reference	4922	78.00	5000	0.0	784.0	782.0	-2.0	0.0	-2.0	
as found high NO2	4922	78.00	5000	510.0	277.0	783.0	505.0	507.0	507.0	1.000
adjusted high NO2	4922	78.00	5000	510.0	277.0	783.0	505.0	507.0	507.0	1.000
gpt mid	4922	78.00	5000	270.0	508.0	783.0	273.0	276.0	275.0	1.004
gpt low	4922	78.00	5000	100.0	680.0	781.0	100.0	104.0	102.0	1.020
								Average NO_2 C.F.=		1.008

Linear Regression/Calibration Results:

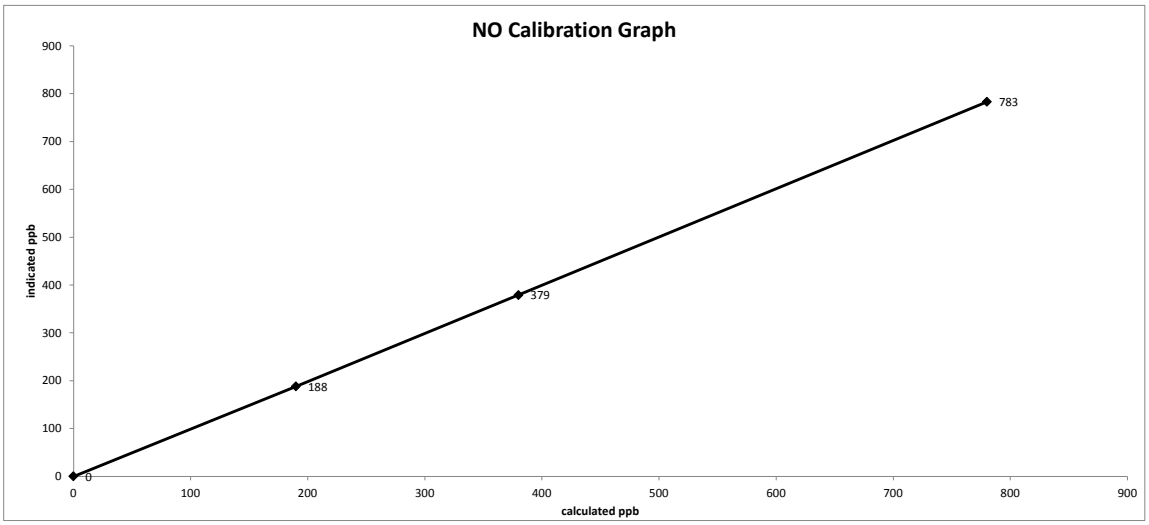
	NO	NOx	NO_2	LIMITS
Correlation Coeffecient =	1.000	1.000	1.000	> or = 0.995
Slope =	0.995	0.996	0.996	.95-1.05
b (Intercept as % of full scale)=	-0.16%	-0.12%	-0.22%	± 3% F.S.
% change in C.F. from last cal=	0.84%	0.84%	0.40%	± 10%
NO2 converter effeciency			1.01	0.96 to 1.04

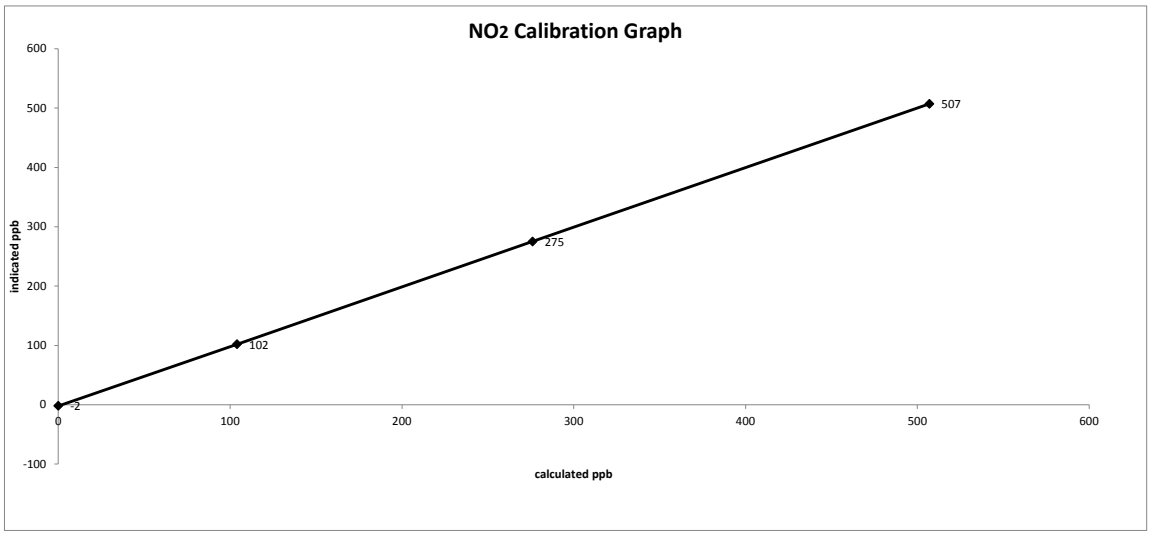
As found:		As left:	
NOx SLOPE:	0.980	NOx SLOPE:	0.967
NOx OFFS:	1.0	NOx OFFS:	0.5
NO SLOPE:	0.985	NO SLOPE:	0.970
NO OFFS:	0.0	NO OFFS:	0.0
SAMP FLW:	452	SAMP FLW:	453
OZONE FL:	78	OZONE FL:	78
PMT:	28.4	PMT:	19.8
NORM PMT:	2.1	NORM PMT:	2.7
AZERO:	19.0	AZERO:	18.5
HVPS:	771	HVPS:	771
RCELL TEMP:	50.0	RCELL TEMP:	50.0
BOX TEMP:	37.2	BOX TEMP:	36.2
PMT TEMP:	6.8	PMT TEMP:	6.8
IZS TEMP:	45.2	IZS TEMP:	45.1
MOLY TEMP:	316.2	MOLY TEMP:	314.8
RCEL:	7.2	RCEL:	7.3
SAMP:	26.3	SAMP:	26.4
Internal Span NO:	8.3	Internal Span NO:	8.2
Internal Span NO2:	515.3	Internal Span NO2:	510
Internal Span NOx:	523.6	Internal Span NOx:	519

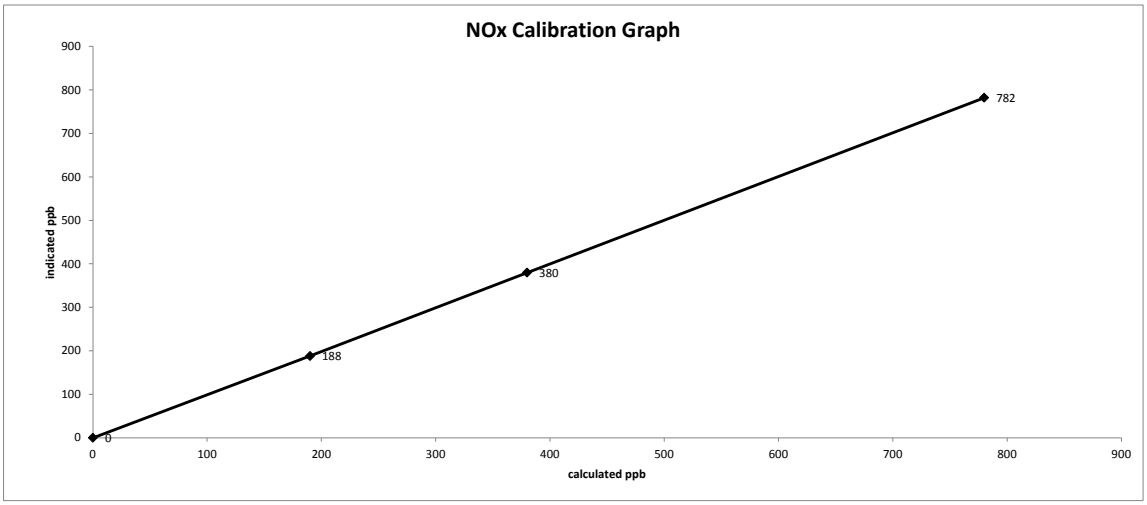
Comments:

Sample inlet filter changed. No NO2 adjustment made.

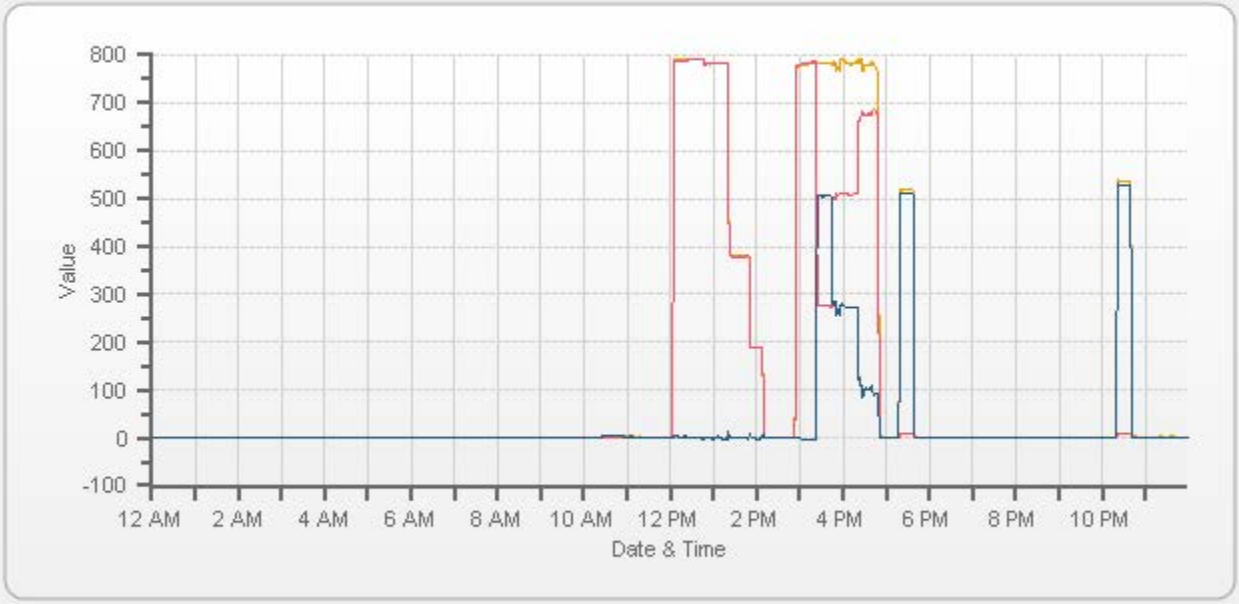
Date:	**June 17, 2016**	**Start/End Time 24 hr. (mst):**	**10:08 / 17:43**
Company/Airshed:	**LICA**	**Calibration Purpose:**	**routine monthly**
Location/Station Name:	**St. Lina**	**Calibration Method:**	**Gas Dilution & Varying UV Lamp Power**







Station: LICA ST. LINA Daily: 2016/06/17 Type: AVG 1 Min. [1 Min.]



API 200E NO-NO2-NOx Analyzer Calibration

Date:	June 28, 2016	**Barometric Pressure:**	0.927 atm
Company/Airshed:	LICA	**Station Temperature °C:**	24
Location/Station Name:	St. Lina	**Weather Conditions:**	Mainly sunny
Start/End Time 24 hr. (mst):	9:43 / 17:28	**Calibration Purpose:**	repeat
G.P.T. to be used for Ozone?	No	**Performed By/Reviewer:**	Alex Yakupov / Tom Bourque
Calibration Method:	Gas Dilution & Gas Phase Titration	**Cal Gas Expiry Date:**	December 2, 2023

Analyzer:

Serial Number:	594
Last Calibration Date:	June 17, 2016
Range ppb:	1000

Correction Factors:

	Previous C.F.:	As Found C.F.:	New C.F.:
NO =	0.996	1.014	0.998
NO_2 =	1.000	1.004	1.004
NOx =	0.997	1.023	0.997

Calibrator:

Flow Meter ID's:	n/a	
Make & Model:	API Model 700	
Serial #:	627	
Cal Gas Cylinder I.D. # :	LL119346	
NO/NOx Gas Conc. (ppm):	50.0	50.0

Standard Calibration Points for a Range of: 1000 ppb

Point	Target NO (ppb)	Target NO_2 (ppb)	Cc Ozone ?
High	**780**	**500**	**n/a**
Mid	**380**	**275**	**n/a**
Low	**190**	**100**	**n/a**
Extra Point #1	**n/a**	**n/a**	**n/a**
Extra Point #2	**n/a**	**n/a**	**n/a**

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

Calibrator Flow Rates (cc/min)				Calculated NO	Calculated NOx	Indicated NO	Indicated NOx	NO C.F.	NOx C.F.
Point	**Diluent**	**Cal Gas**	**Total Flow**	**(ppb)**	**(ppb)**	**(ppb)**	**(ppb)**		
as found zero	5000	0.0	5000	0	0	-1.0	0.0	n/a	n/a
as found high	4924	78.0	5002	779.7	779.7	768.0	762.0	1.014	1.023
adjusted zero	5000	0.00	5000	0.0	0.0	0.0	0.0	n/a	n/a
adjusted high	4924	78.00	5002	779.7	779.7	781.0	782.0	0.998	0.997
mid	4966	38.00	5004	379.7	379.7	379.0	379.0	1.002	1.002
low	4982	19.00	5001	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.=	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_2	NO drop	NO_2 gain	NO_2 C.F.
Point	**Diluent**	**Cal Gas**	**Total Flow**	**volts or ppb**	**(ppb)**	**(ppb)**	**(ppb)**	**(ppb)**	**(ppb)**	**(ppb)**
NOx reference	4924	78.00	5002	0.0	786.0	786.0	0.0	0.0	0.0	
as found high NO2	4924	78.00	5002	550.0	295.0	786.0	489.0	491.0	489.0	1.004
adjusted high NO2	4924	78.00	5002	550.0	295.0	786.0	489.0	491.0	489.0	1.004
gpt mid	4924	78.00	5002	300.0	508.0	789.0	280.0	278.0	280.0	0.993
gpt low	4924	78.00	5002	100.0	693.0	791.0	97.0	93.0	97.0	0.959
								Average NO_2 C.F.=		0.985

Linear Regression/Calibration Results:

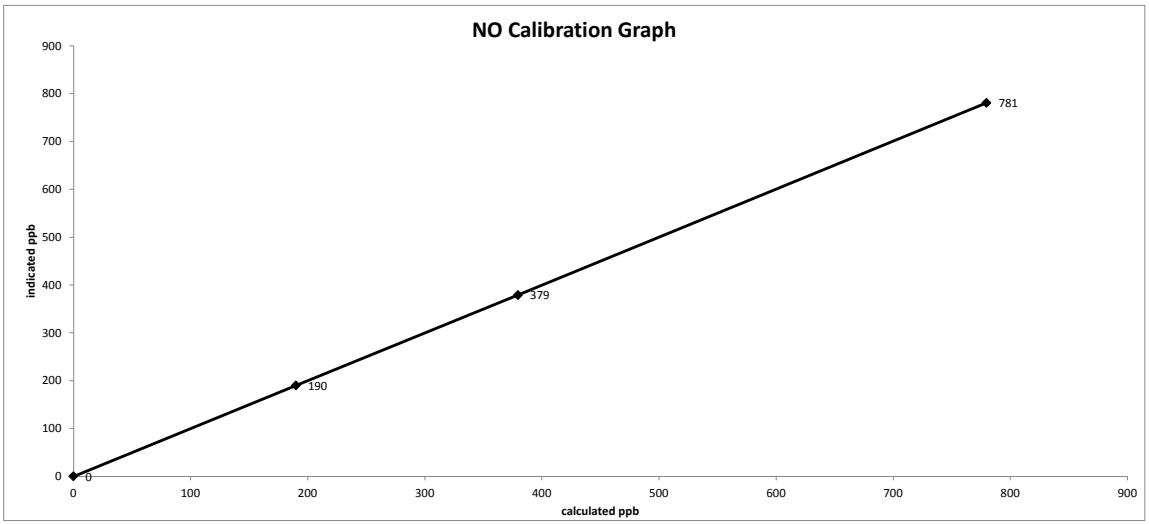
	NO	NOx	NO_2	LIMITS
Correlation Coeffecient =	**1.000**	**1.000**	**1.000**	**> or = 0.995**
Slope =	**0.998**	**0.997**	**1.006**	**.95-1.05**
b (Intercept as % of full scale)=	**-0.04%**	**-0.06%**	**0.24%**	**± 3% F.S.**
% change in C.F. from last cal=	**-1.80%**	**-2.63%**	**-0.41%**	**± 10%**
NO2 converter effeciency			**0.99**	**0.96 to 1.04**

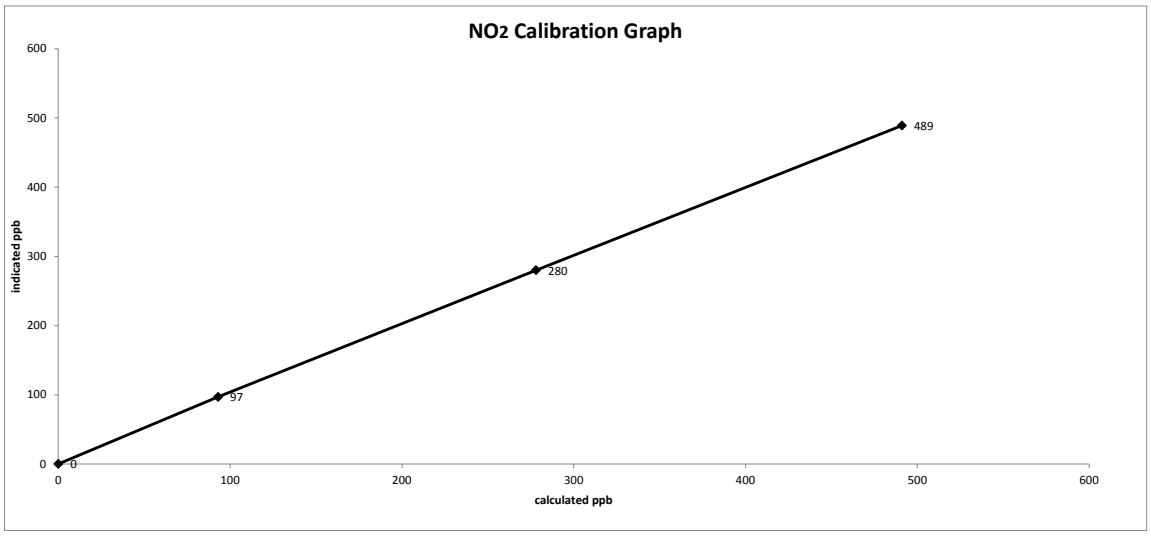
	As found:		As left:
NOx SLOPE:	0.967	NOx SLOPE:	0.991
NOx OFFS:	0.5	NOx OFFS:	0.8
NO SLOPE:	0.970	NO SLOPE:	0.984
NO OFFS:	0.0	NO OFFS:	-1.4
SAMP FLW:	458	SAMP FLW:	457
OZONE FL:	78	OZONE FL:	78
PMT:	19.2	PMT:	33.4
NORM PMT:	2.3	NORM PMT:	21.1
AZERO:	27.6	AZERO:	27.6
HVPS:	771	HVPS:	771
RCELL TEMP:	50.0	RCELL TEMP:	50.0
BOX TEMP:	38.7	BOX TEMP:	38.7
PMT TEMP:	8.6	PMT TEMP:	8.8
IZS TEMP:	45.2	IZS TEMP:	45.2
MOLY TEMP:	315.6	MOLY TEMP:	314.3
RCEL:	7.2	RCEL:	7.1
SAMP:	26.6	SAMP:	26.6
Internal Span NO:	8.2	Internal Span NO:	9.5
Internal Span NO2:	510	Internal Span NO2:	482
Internal Span NOx:	519	Internal Span NOx:	491

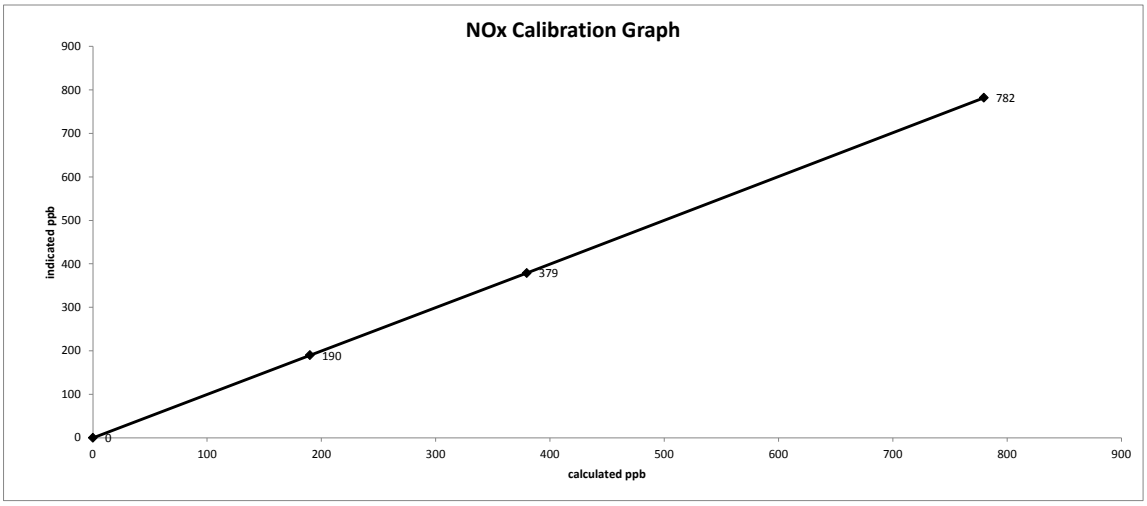
Comments:

Sample inlet filter changed on June 17, 2016. No NO2 adjustment made. ZERO Air scrubber renewed.

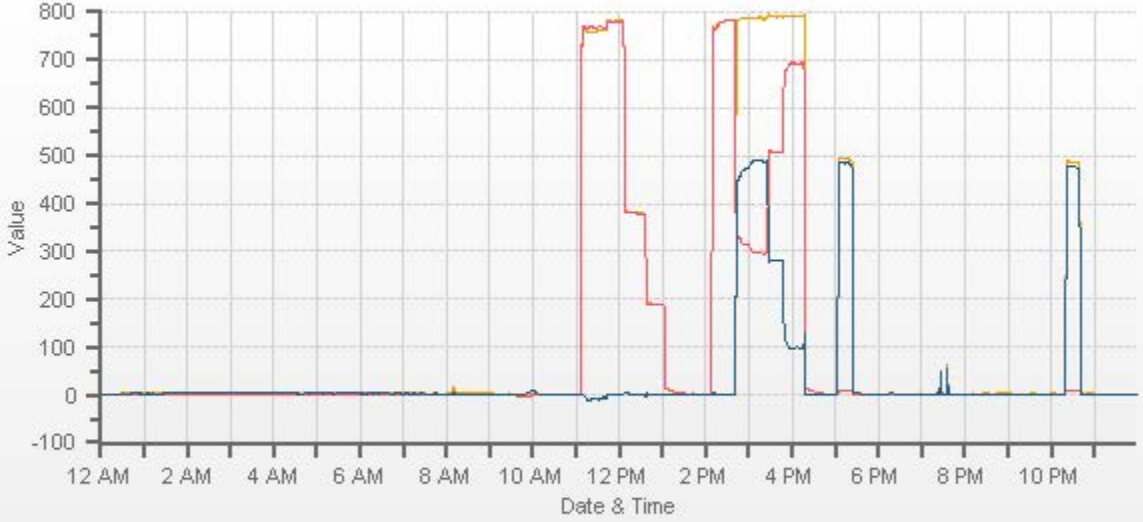
Date:	**June 28, 2016**	**Start/End Time 24 hr. (mst):**	**9:43 / 17:28**
Company/Airshed:	**LICA**	**Calibration Purpose:**	**repeat**
Location/Station Name:	**St. Lina**	**Calibration Method:**	**Gas Dilution & Gas Phase Titration**







Station: LICA ST. LINA Daily: 2016/06/28 Type: AVG 1 Min. [1 Min.]



OZONE

Thermo 49i Ozone Analyzer Calibration

Date:	June 20, 2016	**Barometric Pressure:**	0.928 atm
Company/Airshed:	LICA	**Station Temperature °C:**	22
Location/Station Name:	St. Lina	**Weather Conditions:**	Mainly clear
Start/End Time 24 hr. (mst):	11:35 / 15:17	**Calibration Purpose:**	routine monthly
Ozone Calibration Method:	Varying UV Lamp Power	**Performed By/Reviewer:**	Alex Yakupov / Tom Bourque
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:	May 12, 2016	**As Found C.F.:**	1.008
Previous Cal High Point C.F.:	1.000	**New C.F.:**	1.000

Calibrator:

Flow Meter ID's:	n/a
Make & Model:	SABIO 2010 D
Serial #:	11900613
Cal Gas Cylinder I.D. # :	n/a

Point	AMD Required Range of Ozone Calibration Points
High	300-400 ppb
Mid	150-200 ppb
Low	50-75 ppb

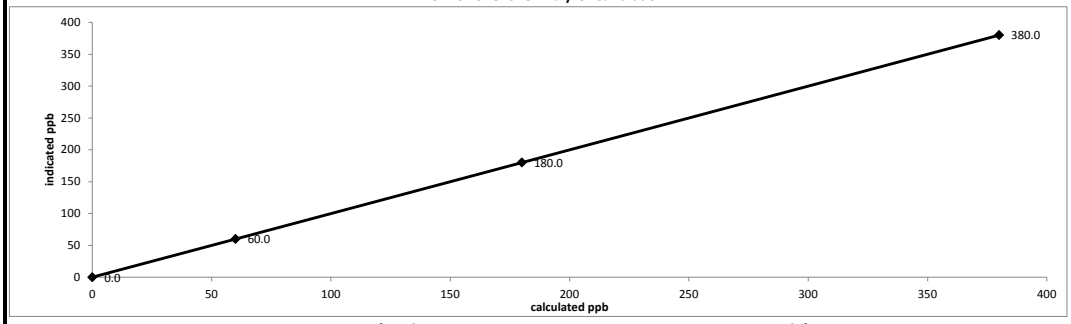
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

	Calibrator Flow Rate (cc/min)		Calculated Concentration:	Corrected Calculated Conentration:	Indicated Concentration:	Correction Factors:
Point	**Total Flow @ Point Start**	**Total Flow @ Point Finish**	**(ppb)**	**(ppb)**	**(ppb)**	
as found zero	5000	5000	0.0	n/a	1.0	n/a
as found high	5000	5000	380.0	380.0	378.0	1.008
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	180.0	1.000
low	5000	5000	60.0	60.0	60.0	1.000
calibrator zero	5000	5000	0.0	n/a	0.0	n/a
					Average C.F.=	1.000

Linear Regression/Calibration Results:

		LIMITS
Correlation Coeffecient =	**1.000**	**> or = 0.995**
Slope =	**1.000**	**.95-1.05**
b (Intercept as % of full scale)=	**0.00%**	**± 3% F.S.**
% change in C.F. from last cal=	**-0.80%**	**± 10%**

Thermo 49i Ozone Analyzer Calibration



As found:		As left:	
O3 Bkg:	-0.9	O3 Bkg:	0.2
O3 Coef:	0.971	O3 Coef:	0.997
Photo Lamp	9.4	Photo Lamp	9.4
O3 Lamp	7.8	O3 Lamp	7.8
Bench:	26.5	Bench:	27.9
Bench Lamp:	53.6	Bench Lamp:	53.6
O3 Lamp:	67.8	O3 Lamp:	67.8
Pressure:	682.3	Pressure:	682.9
Cell A lpm:	0.730	Cell A lpm:	0.730
Cell B lpm:	0.726	Cell B lpm:	0.725
O3 ppb:	1.3	O3 ppb:	0.0
Cell A ppb:	-3.6	Cell A ppb:	5.5
Cell B ppb:	6.2	Cell B ppb:	-5.5
Cell A int:	58454	Cell A int:	58441
Cell B int:	73151	Cell B int:	73128
Internal Span:	336	Internal Span:	325.5

Comments:

Sample inlet filter changed.

O3[ppb] Station: LICA ST. LINA Daily: 2016/06/20 Type: AVG 1 Min. [1 Min.]

PARTICULATE MATTER

R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date:	June 14, 2016	**Performed By/Reviewer:**	Alex Yakupov / Tom Bourque
Company:	LICA	**Start Time (mst):**	13:10
Station Name/Location:	St. Lina	**End Time (mst):**	14:21
Previous Audit Date:	May 24, 2016	**Calibration Purpose:**	Bi-monthly #1
Parameter:	PM 2.5	**Weather Conditions:**	Mix of sun and clouds

1400A Information and Status:

Serial Number:	1405A208301003	**As Found Filter Loading %:**	36.60
Ko Factor:	13125.0	**As Left Filter Loading %:**	17.97
Ambient Temperature °C:	20.60	**As Found Noise:**	0.005
Ambient Pressure atm:	0.914	**As Left Noise:**	0.000
Main Flow Reading lpm:	3.00	**Pump Vacuum:**	0.25
Aux Flow Reading lpm:	13.67	**Warnings:**	None

Reference Standards:

	Flow:	**Pressure:**	**Temperature:**
Make:	Dwyer	Fisher	Fisher
Model:	475 Mark III	FB 1291	FB 1291
Serial Number:	#2	130168457	130168457
Calibration Date:	January 15, 2016	February 17, 2016	February 17, 2016

As found leak check:

		Base	**Zero**	**Reference**	**Zero**
PM 2.5 Flow	actual	0.00	-0.16	0.00	-0.16
	limit	0.15		0.15	
Bypass Flow	actual	0.00	-1.65	0.00	-1.65
	limit	0.60		0.60	

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

		Base	**Zero**	**Reference**	**Zero**
PM 2.5 Flow	actual	0.00	-0.16	0.00	-0.16
	limit	0.15		0.15	
Bypass Flow	actual	0.00	-1.65	0.00	-1.65
	limit	0.60		0.60	

As found temperature and pressure:

	tolerance +/- 2.0°C		**tolerance +/- 0.01 atm**
1405F temperature °C:	20.6	**1405F pressure atm:**	0.914
reference temperature °C:	20.5	**reference pressure:**	0.909
difference °C:	-0.1	**difference :**	0.005

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

	tolerance +/- 2.0°C		**tolerance +/- 0.01 atm**
1405F temperature °C:	20.6	**1405F pressure atm:**	0.909
reference temperature °C:	20.5	**reference pressure:**	0.909
difference °C:	-0.1	**difference :**	0.000

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:	3.00	**1400A total/aux flow lpm:**	16.67
reference main flow lpm:	3.03	**reference total/aux flow lpm:**	16.75
difference lpm:	0.03	**difference lpm:**	0.08

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:	3.00	**1400A total/aux flow lpm:**	16.67
reference main flow lpm:	3.03	**reference total/aux flow lpm:**	16.75
difference lpm:	0.03	**difference lpm:**	0.08

K_o Audit:

Last K_o audit date:	May 13, 2016
1405F K_o factor:	13125.0
Measured K_o factor:	13229.8000
% difference:	0.80

Comments:

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

R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date:	June 28, 2016	**Performed By/Reviewer:**	Alex Yakupov / Tom Bourque
Company:	LICA	**Start Time (mst):**	9:54
Station Name/Location:	St. Lina	**End Time (mst):**	10:37
Previous Audit Date:	June 14, 2016	**Calibration Purpose:**	Bi-monthly #2
Parameter:	PM 2.5	**Weather Conditions:**	Mainly sunny

1400A Information and Status:

Serial Number:	1405A208301003	**As Found Filter Loading %:**	23.89
Ko Factor:	13125.0	**As Left Filter Loading %:**	19.20
Ambient Temperature °C:	28.20	**As Found Noise:**	0.010
Ambient Pressure atm:	0.927	**As Left Noise:**	0.000
Main Flow Reading lpm:	3.00	**Pump Vacuum:**	0.25
Aux Flow Reading lpm:	13.67	**Warnings:**	None

Reference Standards:

	Flow:	**Pressure:**	**Temperature:**
Make:	Dwyer	Fisher	Fisher
Model:	475 Mark III	FB 1291	FB 1291
Serial Number:	#2	130168457	130168457
Calibration Date:	January 15, 2016	February 17, 2016	February 17, 2016

As found leak check:

		Base	**Zero**	**Reference**	**Zero**
PM 2.5 Flow	actual	0.00	-0.17	0.00	-0.17
	limit	0.15		0.15	
Bypass Flow	actual	0.00	-1.73	0.00	-1.73
	limit	0.60		0.60	

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

		Base	**Zero**	**Reference**	**Zero**
PM 2.5 Flow	actual	0.00	-0.17	0.00	-0.17
	limit	0.15		0.15	
Bypass Flow	actual	0.00	-1.73	0.00	-1.73
	limit	0.60		0.60	

As found temperature and pressure:

	tolerance +/- 2.0°C		**tolerance +/- 0.01 atm**
1405F temperature °C:	28.2	**1405F pressure atm:**	0.927
reference temperature °C:	27.7	**reference pressure:**	0.927
difference °C:	-0.5	**difference :**	0.000

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

	tolerance +/- 2.0°C		**tolerance +/- 0.01 atm**
1405F temperature °C:	27.7	**1405F pressure atm:**	0.927
reference temperature °C:	27.7	**reference pressure:**	0.927
difference °C:	0.0	**difference :**	0.000

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:	3.00	**1400A total/aux flow lpm:**	16.67
reference main flow lpm:	3.01	**reference total/aux flow lpm:**	16.55
difference lpm:	0.01	**difference lpm:**	-0.12

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:	3.00	**1400A total/aux flow lpm:**	16.67
reference main flow lpm:	3.01	**reference total/aux flow lpm:**	16.55
difference lpm:	0.01	**difference lpm:**	-0.12

K_o Audit:

Last K_o audit date:	May 13, 2016
1405F K_o factor:	13125.0
Measured K_o factor:	13229.8000
% difference:	0.80

Comments:

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

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 X

Sensor Model No.: 50.5H
Sensor Output Swing: 0V - 1.0V
Customer: Maxxam Analytics
Tested per PO: 35-56587
Calibrated by: David Frith DF

Sensor Serial No.: H12635
Sensor Output Range 0 - 50 MPS
Sales Order No.: 104703
Calibration Date: 08/28/2014

QC Inspection Byron Dawson

CALIBRATORS

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Calibrator Performance Audit

OZONE

File No. 2015-163

Company: Maxxam **Operator:** Chris Wesson

Calibrator:		**Flow Measurement Device:**	
Make/Model	Sabio 2010D	Make/Model	NA
Serial Number	11900613	Serial Number	NA
Oven Temperature	49.8	Temperature (°C)	24
Last Verification Date	May 21, 2015	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	% Difference 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)

O_3		**LIMITS**
Correlation=	1.0000	**≥ 0.995**
m (Slope)=	1.0119	**0.90-1.10**
b (Intercept % of FS)=	-0.0724	**± 3% F.S.**

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

COMMENTS:

Auditor: Shea Beaton Date: March 30, 2016

Operator Signature: Location: McIntyre Center Edmonton

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Calibrator Performance Audit

Oxides Of Nitrogen

File No. 2015-119

Company Maxxam **Operator:** Chris Wesson

Calibrator:		**Flow Measurement Device:**	
Make/Model	API 700	Make/Model	NA
Serial Number	627	Serial Number	NA
Last Verification Date	April 1 2015	Temperature (°C)	NA
NO Cylinder S/N	LL119317	Barometric Pressure	NA
NO/NOX Concentration	50.3/50.3		

Dilution Flow (sccm)

Pt. #1 5000 Pt. #2 5000 Pt. #3 5000

Gas Flow (sccm)

Pt. #1 77.5 Pt. #2 37.8 Pt. #3 18.9

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO_2	NOx	NO	NOx
5007	0.0	0.000	0.000	0.000	0.000	0.000	Limit ± 10%	
5003	77.5	0.779	0.779	0.787	-0.001	0.786	1%	1%
5004	37.8	0.380	0.380	0.383	0.000	0.383	1%	1%
5001	18.9	0.190	0.190	0.191	0.000	0.191	1%	1%
						Absolute Average Percent Difference	1%	1%

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

NO		**LIMITS**	**NOx**	
Correlation=	1.0000	**≥ 0.990**	Correlation=	1.0000
m (Slope)=	1.0106	**0.90-1.10**	m (Slope)=	1.0092
b (Intercept % of FS)=	-0.0566	**± 3% F.S.**	b (Intercept % of FS)=	-0.0368

Flow	O_3 Conc	NO Decrease	NO	NO2	NOX	% Diff. Vs Audit gas	
						NO_2	% Diff. Limit
5003	0	0.000	0.787	0.001	0.788	1%	± 10%
5003	0.5	0.493	0.294	0.498	0.792	2%	± 10%
5003	0.25	0.256	0.531	0.262	0.792	1%	± 10%
5003	0.1	0.108	0.679	0.110	0.789	1.2%	± 10%
					Absolute Average Percent Difference		

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

NO_2		**LIMITS**
Correlation=	1.0000	**≥ 0.995**
m (Slope)=	1.0089	**0.90-1.10**
b (Intercept % of FS)=	0.1591	**± 3% F.S.**

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

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

Auditor: T. Shea Beaton Date: February 3, 2016

Operator Signature: Location: McIntyre Center Edmonton

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Calibrator Performance Audit

Oxides Of Nitrogen

File No. 2016-094A

Company	Maxxam	**Operator:**	Christopher Wesson

Calibrator:		**Flow Measurement Device:**	
Make/Model	Sabio 2010	Make/Model	N/A
Serial Number	042531101(0911)	Serial Number	N/A
Last Verification Date	December 2014	Temperature (°C)	N/A
NO Cylinder S/N	LI42475	Barometric Pressure	N/A
NO/NOX Concentration			

Dilution Flow (sccm)

Pt. #1 5000 Pt. #2 5000 Pt. #3 5000

Gas Flow (sccm)

Pt. #1 80 Pt. #2 40 Pt. #3 20

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO_2	NOx	NO	NOx
5001	0.0	0.000	0.000	0.000	0.000	0.000	Limit ± 10%	
4999	80.4	0.780	0.780	0.802	-0.003	0.799	3%	2%
5000	39.2	0.380	0.380	0.391	-0.001	0.390	3%	3%
4999	19.6	0.190	0.190	0.195	-0.001	0.194	3%	2%
					Absolute Average Percent Difference		3%	2%

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)=	1.0284	**0.90-1.10**	m (Slope)=	1.0247
b (Intercept % of FS)=	-0.0085	**± 3% F.S.**	b (Intercept % of FS)=	-0.0097

Flow	O_3 Conc	NO Decrease	NO	NO2	NOX	% Diff. Vs Audit gas	
4999	0.000	0.000	0.802	-0.001	0.801	NO_2	% Diff. Limit
4999		#VALUE!	Not completed O3 gen system issue.			#VALUE!	± 10%
4999		0.802				-100%	± 10%
4999		0.802				-100%	± 10%
					Absolute Average Percent Difference	#VALUE!	± 10%

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

	NO_2	**LIMITS**
Correlation=	#VALUE!	**≥ 0.995**
m (Slope)=	#VALUE!	**0.90-1.10**
b (Intercept % of FS)=	#VALUE!	**± 3% F.S.**

AENV Standards Audit Calibrator		**NO_X Analyzer**	
Make/Model	Teco 146i	Make/Model	Teco 42i
Serial/AMU Number	AMU 1809	Serial/AMU Number	AMU 1868
		Last Calibration Date	January 19, 2016
		Full Scale (ppm)	1.0

COMMENTS: 50.3 ppm of SO2 in cylinder.

Auditor: Al Clark Date: January 19, 2016

Operator Signature: Location: McIntyre Center Edmonton

CALIBRATION GASES

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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	Gas Flow/	Concentration	Cylinder
Dilution	Gas	Concentration (PPM)	Dilution Flow	Factor	Concentration
4952	0.0	0.000			
4946	79.54	0.793	0.01608	62.183	49.3
4941	39.35	0.396	0.00796	125.565	49.7
4940	19.57	0.195	0.00396	252.427	49.2
				Average Cylinder Concentration:	**49.4**

Previous Stated Concentration PPM: 50.0

Percent variance from Stated: **1.2**

Meets Manufacturer Tolerance. Use manufacturers stated concentration [X] **COMMENTS:** SO2/NO blend 50.0ppm NO

<=5% Outside Manufacturer Tolerance. Use manufacturers concentration [ ]

> 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder [ ]

Auditor: Shea Beaton Date: February 2, 2016

Operator Signature: Location: McIntyre Center Edmonton

Alberta Government

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

Previous Stated Concentration PPM: 10.0

Percent variance from Stated: **1.1**

Meets Manufacturer Tolerance. Use manufacturers stated concentration [X] **COMMENTS:**

< =5% Outside Manufacturer Tolerance. Use manufacturers concentration [ ]

> 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder [ ]

Auditor: Al Clark Date: December 16, 2014

Operator Signature: Location: McIntyre Center Edmonton

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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.	698mmHg

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

	CH4	C3H8
Previous Stated Concentration PPM:	606	212
Percent variance from Stated:	**0.3**	**1.6**

Cylinder gas tolerances based on CH4 only

Meets Manufacturer Tolerance. Use manufacturers stated concentration [X] **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

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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:

Make/Model	Thermo 146i		
Serial Number	AMU 1809		
Last Verification Date	February 2, 2016		
Gas Type	NO	Conc.	48.79
Cylinder Number	CAL018024		

Flow Measurement Device:

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

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/	Concentration	Cylinder Concentration	
Dilution	Gas	NO	NOX	Dilution Flow	Factor	NO	NOX
4952	0.0	0.000	0.000				
4946	79.54	0.809	0.809	0.01608	62.183	50.3	50.3
4941	39.35	0.403	0.402	0.00796	125.565	50.6	50.5
4940	19.57	0.200	0.200	0.00396	252.427	50.5	50.5
					Average Cylinder Concentration:	**50.5**	**50.4**

	NO	NOx
Previous Stated Concentration PPM:	50.0	50.0
Percent variance from Stated:	**0.9**	**0.8**

Cylinder gas tolerances based on NO only

Meets Manufacturer Tolerance. Use manufacturers stated concentration [X] **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: Location: McIntyre Center Edmonton

APPENDIX III
INTERNAL AUDIT RESULTS

COMPANY: LICA **PLANT:** St Lina **DATE:** June 21, 2016

Station Location: UTM Coordinates:
Elevation (m):
Declination:

GENERAL	Yes	No	n/a	Comments:
Has site location changed from previous audit?		x		
Is site secure?	x			
Are station operating conditions adequate?	x			
Last twelve month's of calibrations available?	x			
All applicable SOP's available in station?	x			online
Site documentation up to date?		x		Mike Bisaga's responsibility

DATA ACQUISITION	Yes	No	n/a	Comments:
Are strip charts in use?	x			
Is a digital data logger in use?	x			
Is a telemetry system for data acquisition in use?	x			

TRAILER COMPONENTS	Yes	No	n/a	Comments:
Is a glass sampling manifold installed?	x			
Is sampling manifold clean and free of chips and cracks?	x			
Is a trap in place?	x			
Are spare manifold ports capped?	x			
Is manifold pump properly installed and operative?	x			
If horizontal, is the manifold mounted at a slight			x	
Do sample lines extend halfway into manifold?	x			
Are monitor sampling lines connected to manifold?	x			
Are sampling lines clean?	x			
Are monitors properly mounted and secure?	x			
Are monitors properly exhausted from room or	x			
Are zero and span systems operational?	x			

Meteorological	Yes	No	n/a	Comments:
Is wind equipment properly oriented?	x			
Is the wind equipment functioning properly?	x			

	Indicated Value:	Audit Value:	% Difference	Scalar Difference:
Station Temperature ^{o}C	n/a	n/a	**n/a**	n/a
Barometric Pressure	n/a	n/a	**n/a**	n/a
Wind Speed (kph)	n/a	n/a	**n/a**	n/a
Wind Direction (Deg)	n/a	n/a	**n/a**	n/a
Relative Humidity %	n/a	n/a	**n/a**	n/a
Ambient Temperature ^{o}C	n/a	n/a	**n/a**	n/a
Solar Radiation kW/m^2	n/a	n/a	**n/a**	n/a
Precipitation (Tipping Bucket mm)	n/a	n/a	**n/a**	n/a

Recommendations:

AUDITOR: Tom Bourque

API 101E Hydrogen Sulphide Analyzer Audit

Date:	June 21, 2016	**Barometric Pressure:**	.937 atm
Company/Airshed:	LICA	**Station Temperature °C:**	22
Location/Station Name:	St. Lina	**Weather Conditions:**	A few clouds and light rain showers
Parameter:	Hydrogen Sulphide	**Calibration Purpose:**	shut do Audit
Start Time 24 hr. (mst):	13:13	**Performed By/Reviewer:**	Tom Bourque
End Time 24 hr. (mst):	14:32	**Cal Gas Expiry Date:**	February 15, 2017
Calibration Method:	Gas Dilution	**Converter Model & s/n (if applicable):**	n/a

Analyzer:

Serial Number:	509	**Range ppb:**	100
Last Calibration Date:	June 17, 2016	**As Found C.F.:**	0.965
Previous C.F.:	0.997	**New C.F.:**	n/a

Calibrator:

Flow Meter ID's:	n/a
Make & Model:	Sabio 2010
Serial #:	042531101(0911)
Cal Gas Cylinder I.D. # :	LL36837
Cal Gas Conc. (ppm):	9.88

Standard Calibration Points for Ranges

Point	Hydrogen Sulphide Standard Calibration Points
High	**78**
Mid	**38**
Low	**19**

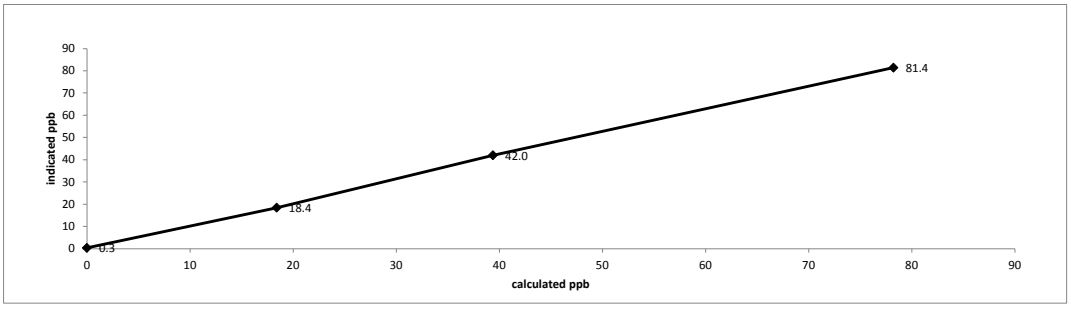
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors (C.F.):
Point	**Diluent**	**Cal Gas**	**Total**	**(ppb)**	**(ppb)**	
as found zero	4995	0.00	4995	0.0	0.3	N/A
as found high	4999	39.90	5039	78.2	81.4	0.965
mid	4997	20.00	5017	39.4	42.0	0.945
low	7500	14.00	7514	18.4	18.4	1.017
					Average C.F.=	0.976

Linear Regression/Calibration Results:

		LIMITS
Correlation Coeffecient =	**1.000**	**> or = 0.995**
Slope =	**0.959**	**0.90-1.10**
b (Intercept as % of full scale)=	**-0.05%**	**± 3% F.S.**
% change in C.F. from last cal=	**3.22%**	**± 10%**

API 101E Hydrogen Sulphide Analyzer Audit

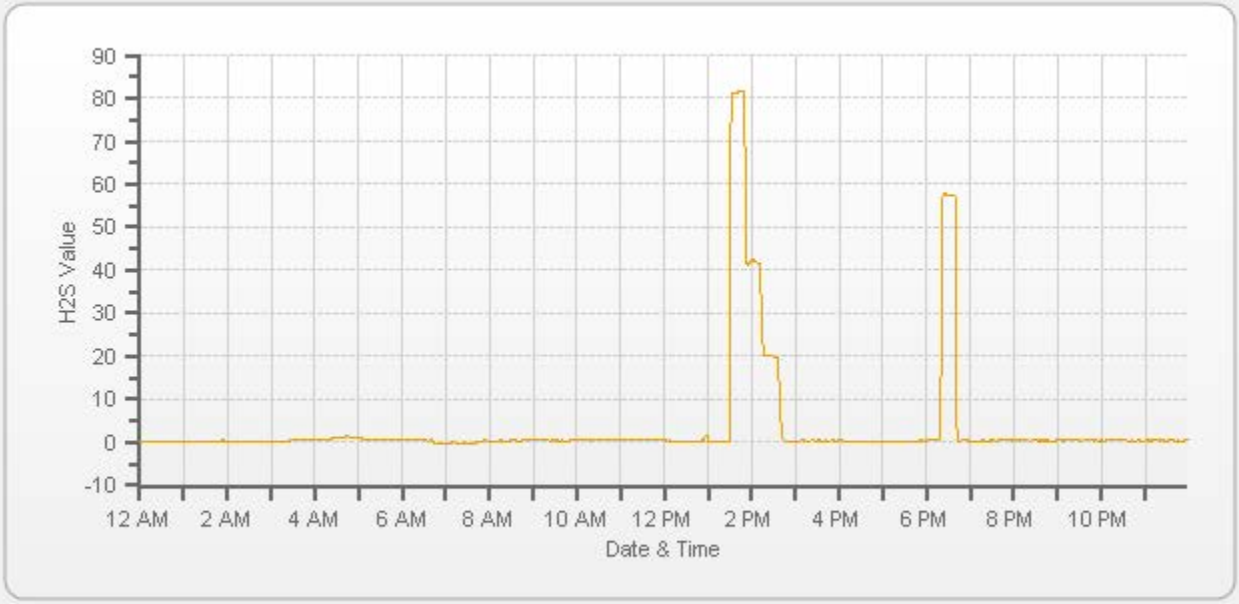


	As found:	As left:
SLOPE:	1.092	n/a
OFFSET:	37.3	n/a
HVPS:	651	n/a
RCELL TEMP:	50.0	n/a
BOX TEMP:	30.8	n/a
PMT TEMP:	7.9	n/a
IZS TEMP:	48.0	n/a
Converter Temp:	314.1	n/a
PRES:	20.3	n/a
SAMP FL:	515	n/a
UV LAMP:	3147	n/a
LAMP RATIO:	89.9	n/a
STR. LGT	20.4	n/a
DRK PMT:	.2	n/a
DRK LMP:	.5	n/a
Internal Span:	56.8	n/a

Comments:

Use source testing SO2 in N2 50.2 ppm cylinder # DT0008954 for scrubber challenge run 780 ppb SO2, based on AEP scrubber challenge protocol of duplicating SO2 calibration high point, run 780 ppb for 10 minutes, result = 0.3 ppb, no adjustments made to analyzer

H2S[ppb] Station: LICA ST. LINA Daily: 2016/06/21 Type: AVG 1 Min. [1 Min.]



APPENDIX IV
REPORT CERTIFICATION FORM

Report Certification Form

Alberta Airshed (if applicable)	EPA Approval or Code of Practice Registration # (if applicable)
YES	NA
Company Name (if applicable)	Industrial Operation Name (if applicable)
Lakeland Industry & Community Association	St. Lina Site
Name of the Representative of the Person Responsible (Last, First, Middle)	Position / Title of the Representative of the Person Responsible
Wunmi Adekanmbi	Project Manager Assistant, Customer Service, Air Services
Is an External Party Certifying the Report? (If 'Yes', fill in the fields below for the external person. ☐ Yes ■ 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

02-08-2016

Report Issued Date (dd-mm-yyyy)

APPENDIX V
DATA VALIDATION CERTIFICATION FORM

Maxxam
A Bureau Veritas Group Company

Validation Certificate Form

Client: Lakeland Industry & Community Association	**Project #:** 2833-2016-06-31- C
Site: St. Lina Site	**Contact:** Mike Bisaga

Level 0 Preliminary Verification	[signature]	**Date** 15-July-2016
Level 1 Primary Validation	[signature]	**Date** 15-July-2016
Level 2 Final Validation	[signature]	**Date** 02-Aug-2016
Level 3 Independent Data Review for	[signature]	**Date** 02-Aug-2016
Post-Final Validation	NA	**Date** NA

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

maxxam.ca

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AB T2E 6P7

Toll Free 800-386-7247
Fax 403-219-3673

AMBIENT AIR MONITORING MONTHLY DATA REPORT

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

BONNYVILLE

JOB #:2833-2016-06-37- C

June 2016

Prepared for:

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

Attention: MIKE BISAGA

DATE: **August 3, 2016**

Prepared by:

Wunmi Adekanmbi, M.Sc.
Project Manager Assistant, Customer Service, Air Services

Reviewed by:

Cheri Sinclair, B.Sc.
Supervisor, Customer Service, Air services

SUMMARY

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

The location of the monitoring program was moved from the Elk Point site to the Bonnyville site as per client's request. The AQM trailer was installed at Bonnyville on May 30. The analyzers were installed on June 1 after power was connected to the station. The analyzers were allowed time to stabilize overnight and installation calibrations were perormed on June 2.

All data collected this month, with the exception of H2S, were within the objectives outlined in the AMD 1989, AMD 2006 and AMD 2015.

Fifty-two 1-hr and eight 24-hr contraventions were recorded for H2S this month. The contraventions were reported to AEP. Details are recorded in the Exceedance Summary Report.

The operational uptime for all analyzers and meteorological system, except PM2.5, was above the 90% requirement. The operational uptime for PM2.5 June was 83.5%. AEP reference #: 314530.

H2S: The analyzer spanned high on June 8. Following a successful shut-down calibration on June 9, the sample pump was rebuilt. A post-repair calibration was then completed.

NOX/NO/NO2: The monthly calibration was repeated on June 27 to address concerns arising from suspect calibrator issues.

PM 2.5: The Teom unit was not functional until June 4. Forty-two hours of data were invalidated due to two separate maintenance events this month. As a result, the operational uptime for this month was 83.5%.

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, Bonnyville.

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 Bonnyville						MAXIMUM VALUES							OPERATIONAL TIME (%)
						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	22	7	6.2	SSW	0.1	16, 22	95.3
H2S (PPB)	10	3	52	8	2.4	58.1	28	4	1.6	WSW	10.4	28	94.2
THC (PPM)	-	-	-	-	2.04	3.33	21	4	0.7	NNW	2.28	21	95.0
CH4 (PPM)	-	-	-	-	2.03	3.26	21	4	0.7	NNW	2.27	21	95.0
NMHC (PPM)	-	-	-	-	0.01	1.30	29	17	7.5	ENE	0.10	29	95.0
NO2 (PPB)	159	-	0	-	2.9	20.2	8	3	3.2	N	5.4	8	94.2
NO (PPB)	-	-	-	-	0.6	7.7	21	5	1.3	N	1.4	16	94.2
NOX (PPB)	-	-	-	-	3.5	25.3	21	5	1.3	N	6.4	21	94.2
O3 (PPB)	82	-	0	-	33.6	67.7	6	15	20.5	SSE	46.4	6	94.3
PM2.5 (UG/M3)	80	30	0	0	5.0	22.6	8	12	12.3	N	9.0	8	83.5
VECTOR WS (KPH)	-	-	-	-	9.6	31.8	15	17	-	SSE	23.6	15	94.9
VECTOR WD (DEG)	-	-	-	-	-	-	-	-	-	-	-	-	94.9

NA-NOT AVAILABLE VAR-VARIOUS

Exceedence Summary Report

SO_2 1- Hour Exceedences

No Exceedences Recorded During the Month

SO_2 24- Hour Exceedences

No Exceedences Recorded During the Month

H2S 1- Hour Exceedences

DATE	HOUR	READING (ppb)	WS (kph)	WD (deg)
June 3	22	11	2.9	SW
June 3	23	15	7.6	WSW
June 4	0	11	5.2	SW
June 4	1	10	4.8	SW
June 4	2	19	7.5	SW
June 5	4	21	4.5	WSW
June 6	3	15	19.1	SE
June 6	4	16	20.5	SSE
June 7	0	13	17.9	SSE
June 7	1	17	15.9	SE
June 7	2	12	12.4	SE
June 7	3	18	12.4	SSE
June 7	4	17	9.1	SSE
June 7	6	16	5.8	SSE
June 7	21	13	0.2	WNW
June 7	22	18	1.1	WSW
June 7	23	23	9.1	S
June 8	0	18	1.8	WSW
June 20	3	24	1.1	SW
June 20	4	21	2.2	SW
June 20	5	16	1.2	WSW
June 20	22	10	1	S
June 20	23	18	2.2	WSW
June 21	0	22	0.8	S
June 22	0	10	1.8	S
June 22	1	16	5.9	SW
June 22	2	20	4.2	S
June 22	3	16	3.2	S
June 22	4	16	3.1	SSW
June 22	5	13	2.5	SW
June 23	1	13	5.2	SE
June 23	3	11	5.1	WSW
June 23	4	11	7.1	SW
June 26	3	22	0.6	WSW
June 26	4	12	3.1	SW
June 26	6	11	0.1	WNW
June 27	0	17	7.5	SSW
June 27	1	25	6.7	SW

Exceedence Summary Report

H2S 1- Hour Exceedences

DATE	HOUR	READING (ppb)	WS (kph)	WD (deg)
June 28	2	22	1.4	W
June 28	4	58	1.6	WSW
June 28	5	27	2.3	SW
June 28	6	12.6	6.2	SSW
June 30	6	11.5	10.3	SE

H2S 24- Hour Exceedences

DATE	READING (ppb)	WS (kph)	WD (deg)
June 4	3.3	12.0	WNW
June 5	7.1	7.1	NW
June 20	5.2	3.5	WNW
June 21	3.1	4.5	N
June 22	4.6	6.5	N
June 23	3	4.9	NNW
June 27	9.2	7.1	W
June 28	10.40	5.7	W

NO2 1- Hour Exceedences

No Exceedences Recorded During the Month

PM2.5 1- Hour Exceedences

No Exceedences Recorded During the Month

PM2.5 24- Hour Exceedences

No Exceedences Recorded During the Month

O3 1- Hour Exceedences

No Exceedences Recorded During the Month

Volatile Organics (VOCs) Data Summary

Sample Collected Date	Maximum reading (PPB)	Volatile Organic Compound
June 5, 2016	6.2	N-DODECANE
June 11, 2016	3.1	ACETONE
June 17, 2016	8.4	CARBON DISULFIDE
June 23, 2016	36.7	CARBON DISULFIDE
June 29, 2016	11.40	ETHANOL

Note: NA

Polycyclic Aromatic Hydrocarbons (PAHs) Data Summary

Sample Collected Date	Maximum reading (ug)	Semi-Volatile Organic
June 5, 2016	1.37	Phenanthrene
June 11, 2016	0.34	Phenanthrene
June 17, 2016	0.21	2-Methylnaphthalene
June 23, 2016	0.37	Phenanthrene
June 29, 2016	1.96	Phenanthrene

Note: NA

Volatile Organics (VOCs) Data Summary - NMHC Canister System

Sample Collected Date	Maximum reading (PPB)	Volatile Organic Compound
June 5, 2016	7.7	N-DODECANE
June 9, 2016	33.0	N-BUTANE
June 25, 2016	16.0	N-BUTANE
June 29, 2016	111.0	ETHANOL

Note: NA

TABLE OF CONTENTS

1.0 Discussion

This monthly report consists of data for parameters Sulphur Dioxide (SO2), Hydrogen Sulphide (H2S), Total Hydrocarbon (THC), Methane (CH4), Non-Methane Hydrocarbon (NMHC), Oxides of Nitrogen (NOx), Nitric Oxides (NO), Nitrogen Dioxide (NO2), Ozone (O3), Particulate Matter 2.5 (PM2.5), Wind Speed (WS), Wind Direction (WD) and Standard Deviation Wind Direction (STDWD). The results for the non-continuous VOCs, PAHs and NMHC 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/minute data have been reviewed based on daily zero/span results and multi-point calibration results. Data may be considered invalid if a zero-corrected span check in excess of +/- 10% of the span concentration (established by the previous multi-point calibration) is encountered and/or significant differences in the calibration factor occurs (greater than 10%).

Trailer inspection was completed in June 1 after the trailer was installed. On June 6, maintenance was performed on the Air Conditioning system by an HVAC technician fro Horizon Mechanical.

SULPHUR DIOXIDE (SO2)
The analyzer was installed on June 1 following the installation of the trailer on May 30 as per client's request. The analyzer was allowed time to stabilize overnight and an installation calibration was completed on June 2. Data collected on June 17 at hour 8 (and hour 7 for maximum instantaneous data) was invalidated due to a power failure.

HYDROGEN SULPHIDE (H2S)
The analyzer was installed on June 1 following the installation of the trailer on May 30 as per client's request. The analyzer was allowed time to stabilize overnight and an installation calibration was completed on June 2. The analyzer spanned high on June 8. Following a successful shut-down calibration on June 9, the sample pump was rebuilt. A post-repair calibration was then completed. As both the shut-down and post-repair calibrations met the AMD's calibration requirements, no data was discarded. Data collected on June 17 at hour 8 (and hour 7 for maximum instantaneous data) was invalidated due to a power failure.

TOTAL HYDROCARBONS (THC), METHANE (CH4), and NON-METHANE HYDROCARBONS (NMHC)
The analyzer was installed on June 1 following the installation of the trailer on May 30 as per client's request. The analyzer was allowed time to stabilize overnight and an installation calibration was completed on June 2. Data collected on June 17 at hour 8 (and hour 7 for maximum instantaneous data) was invalidated due to a power failure.

NITROGEN DIOXIDE (NO2)
The analyzer was installed on June 1 following the installation of the trailer on May 30 as per client's request. The analyzer was allowed time to stabilize overnight and an installation calibration was completed on June 2. There were suspicions about the calibrator that was used for the June 2 calibration. For verification, the monthly calibration was repeated on June 27 using a different calibrator. The calibration met AMD requirements. Data collected on June 17 at hour 8 (and hour 7 for maximum instantaneous data) was invalidated due to a power failure.

OZONE (O3)
The analyzer was installed on June 1 following the installation of the trailer on May 30 as per client's request. The analyzer was allowed time to stabilize overnight and an installation calibration was completed on June 2. Data collected on June 17 at hour 8 (and hour 7 for maximum instantaneous data) was invalidated due to a power failure.

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

The Teom unit was installed following an installation audit on June 3. The unit was not stable after installation, it was therefore placed in "maintenance" mode for monitoring purposes. The switch valve was rebuilt and the O-rings were reset on June 4. A repeat audit was performed on June 6 to confirm the Teom unit's performance and the result was good. Twenty-three hours of data collected from June 3 at hour 12 to June 4 at hour 10 were invalidated due to this issue. The second routine audit was performed on June 13, the unit generated unstable readings after the audit, possibly caused by a leak. The issue was fixed and the Teom was allowed time to stabilize. A post-repair audit was completed on June 14. Nineteen hours of data were invalidated due to this issue. Data collected on June 17 at hour 8 was invalidated due to a power failure. Both the inlet filter and the FDMS filter were replaced on June 3.

Data was corrected using Alberta Air Quality Guidelines. Data between 0 and –3 ug/m3, was corrected to 0 ug/m3. Data was below –3ug/m3 was invalidated. Twelve hours of data were invalidated as the data was below –3 ug/m3 this month.

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

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

The wind system was installed on June 2 following the installation of the trailer on May 30 as per client's request. The wind system performed well for the rest of the month. Data collected on June 17 at hour 8 (and hour 7 for maximum instantaneous data) was invalidated due to a power failure.

VOC SAMPLES

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

Samples were collected on June 5, 11, 17, 23 and 29. Analytical results are included in this report. VOC values are reported in ppb.

PAH SAMPLES

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

Samples were collected on June 5, 11, 17, 23 and 29. Analytical results are included in this report. PAH values are reported in 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.

Four canister events were recorded this month: concentrations of 0.37ppm on June 5 at 19:55, 0.71ppm on June 9 at 4:20, 0.64ppm on June 25 at 6:50 and 5.64ppm on June 29 a4 17:20 . Analytical results are included in this report. NMHC canister values are reported in ppb.

2.0 Project Personnel

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

3.0 Plant Monthly Required AMD Summary

All data collected this month, with the exception of H2S, were within the objectives outlined in the AMD 1989, AMD 2006 and AMD 2015.

Fifty-two 1-hr and eight 24-hr contraventions were recorded for H2S this month. The contraventions were reported to AEP. Details are recorded in the Exceedance Summary Report.

The operational uptime for all analyzers and meteorological system, with the exception of PM 2.5, 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-00001 - Methane, Non-Methane Hydrocarbon Analyzer Monitoring
Maxxam AIR SOP-00208: RM Young Monitor Calibration
Maxxam AIR SOP-00209: Ambient H2S Monitoring
Maxxam AIR SOP-00211: Ambient SO2 Monitoring
Maxxam AIR SOP-00212: Ambient O3 Monitoring
Maxxam AIR SOP-00213: Ambient NO/NO2/NOx 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 Flourescent Analyzer
Hydrogen Sulphide - API 101E UV Flourescent Analyzer
Methane, Non-Methane Hydrocarbon - Thermo 55i FID Analyzer
Oxides of Nitrogen - API 200E Chemiluminescent Analyzer
Ozone - Thermo 49i Photometric Analyzer
Particulate Matter (PM2.5) - 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:

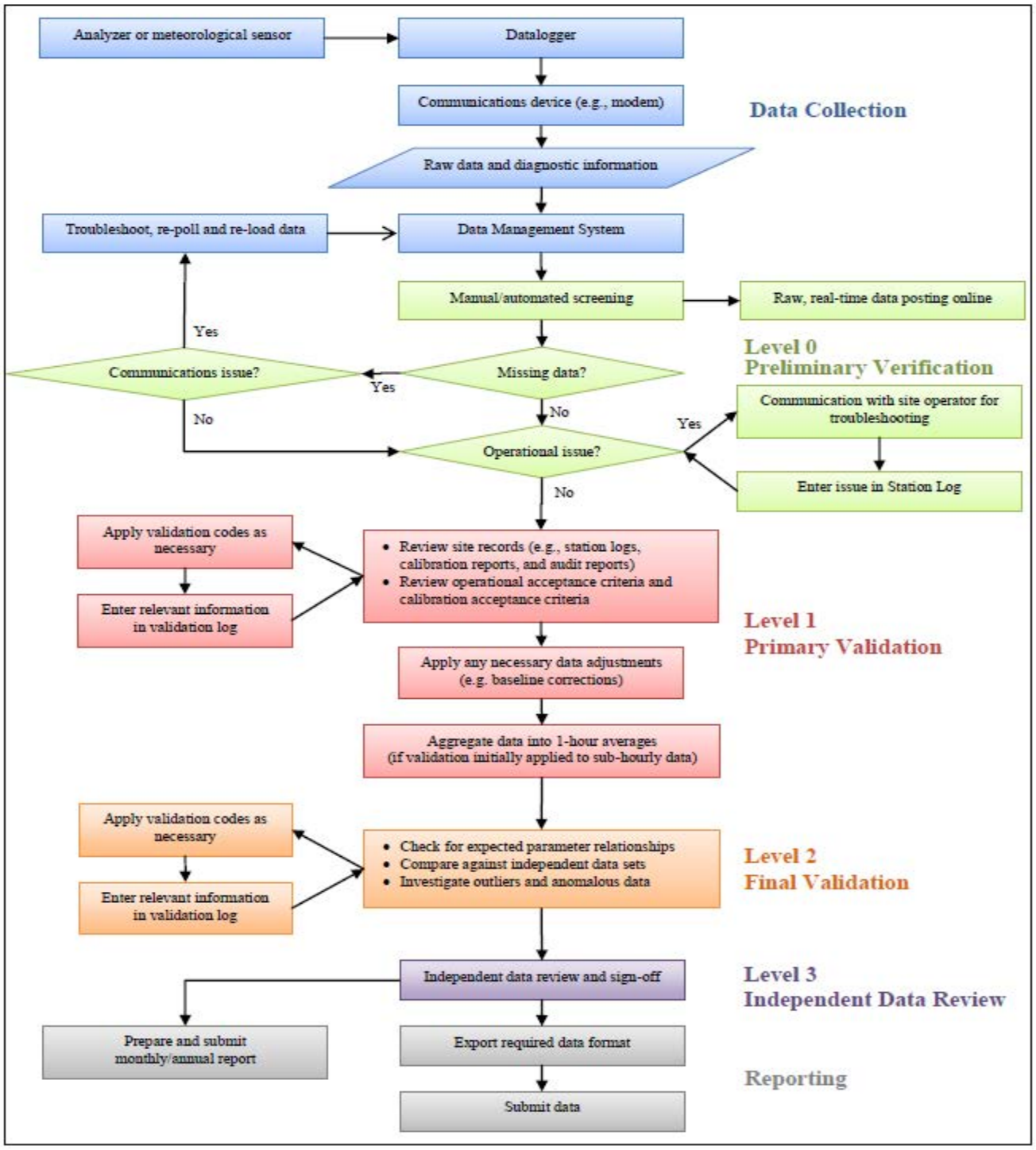
Level 0 Preliminary Verification
Level 0 data are raw data obtained directly from the data acquisition system (DAS). Under the step of Level 0, these data undergo a certain amount of manual or automated screening and flagging. It included a) identification of periods of missing data; b) verification 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	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1																												
2										C	C	C	C	C	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	15
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	S	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	S	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	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	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	S	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	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	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	0.1	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	S	0.0	0.0	0.0	0.0	0.0	24
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	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	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.2	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	S	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	S	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	S	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	0.3	0.4	0.4	0.3	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	***0.1***	24
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	P	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	23
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	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
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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
20	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	0.0	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
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	***1.5***	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	***1.5***	***0.1***	24
23	0.0	0.0	0.0	0.0	0.0	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	0.1	0.0	24
24	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
25	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
26	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
27	0.0	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	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
29	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	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
HOURLY MAX	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.6	0.4	0.4	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				
HOURLY AVG	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				

STATUS FLAG CODES

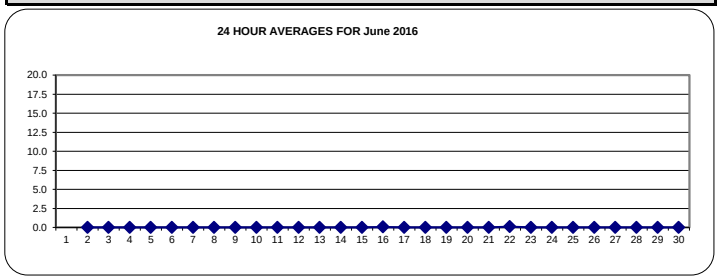
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

OBJECTIVE LIMIT: **ALBERTA ENVIRONMENT:** 1-HR 172 PPB | 24-HR 48 PPB

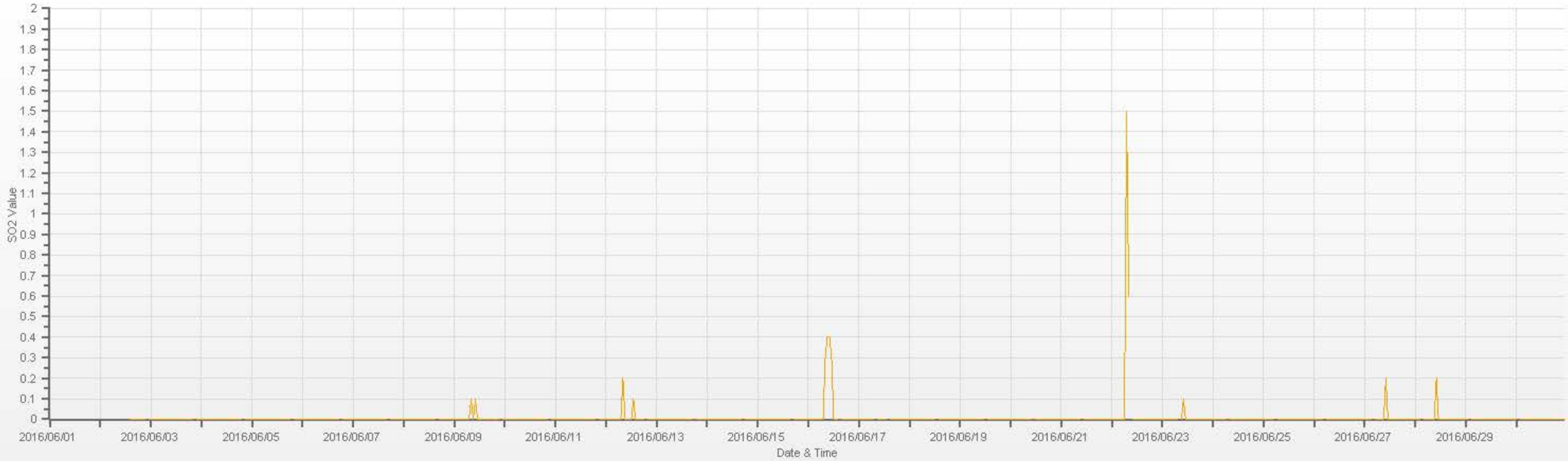
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:	0					
NUMBER OF 24-HR EXCEEDENCES:	0					
NUMBER OF NON-ZERO READINGS:	13					
MINIMUM 1-HR AVERAGE	0.0	PPB	@ HOUR(S)	VAR	ON DAY(S)	ALL
MAXIMUM 1-HR AVERAGE:	1.5	PPB	@ HOUR(S)	7	ON DAY(S)	22
MAXIMUM 24-HR AVERAGE:	0.1	PPB			ON DAY(S)	16, 22
					VAR-VARIOUS	

IZS CALIBRATION TIME:	29	HRS	OPERATIONAL TIME:	686	HRS
MONTHLY CALIBRATION TIME:	5	HRS	AMD OPERATION UPTIME:	95.3	%
STANDARD DEVIATION:	0.07		MONTHLY AVERAGE:	0.0	PPB



SO2[ppb] Station: LICA Bonnyville Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



SULPHUR DIOXIDE MAX instantaneous maximum in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1										C	C	C	C	C	C	1.9	1.9	1.6	1.9	2.2	1.9	1.7	S	1.6	1.6	2.2	1.8	15
2	1.5	1.2	1.2	1.2	1.2	1.1	1.2	1.4	1.4	1.2	1.5	1.5	1.5	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.2	S	0.8	1.1	0.8	1.5	1.3	24
3	0.9	1.0	0.9	0.7	0.9	1.0	1.2	1.2	1.0	1.2	1.3	1.4	1.4	1.4	1.2	1.3	1.5	1.6	1.5	1.5	S	1.3	1.0	0.9	0.7	1.6	1.2	24
4	0.9	0.8	0.7	0.7	0.6	0.7	1.0	1.1	1.3	1.2	1.4	1.6	1.6	1.5	1.5	1.5	1.6	1.7	1.5	S	1.6	1.7	1.5	1.3	0.6	1.7	1.3	24
5	1.3	1.5	1.9	2.4	2.0	2.1	2.1	2.3	2.3	2.1	2.1	2.3	2.4	2.0	1.9	2.1	2.3	2.3	S	2.3	2.9	2.5	2.7	2.9	1.3	2.9	2.2	24
6	2.6	2.4	2.7	2.7	3.0	2.5	2.5	2.7	2.9	2.7	3.0	3.0	2.9	2.7	2.5	2.6	2.5	S	2.7	2.7	2.8	2.8	2.8	2.5	2.4	3.0	2.7	24
7	2.5	2.4	2.6	2.7	2.7	2.5	2.8	2.7	2.6	2.6	2.7	2.6	3.0	3.5	3.3	2.7	S	3.0	3.0	2.7	2.9	2.8	3.1	3.1	2.4	3.5	2.8	24
8	2.9	2.9	3.1	3.4	3.4	3.3	3.5	3.3	3.5	3.4	3.5	3.4	3.3	3.3	3.0	2.9	2.8	2.9	2.9	2.6	2.7	2.7	S	2.2	2.2	3.5	3.1	24
9	2.3	2.2	2.1	1.9	2.0	1.7	1.7	1.6	1.7	1.6	1.8	1.5	1.5	1.7	1.7	1.6	1.5	1.5	1.6	1.7	1.5	S	1.4	1.3	1.3	2.3	1.7	24
10	1.3	1.3	1.7	1.5	1.2	1.2	1.2	1.2	1.3	1.3	1.4	1.4	1.5	1.5	1.6	1.7	1.7	2.0	2.1	2.1	S	1.9	2.3	2.3	1.2	2.3	1.6	24
11	2.3	2.2	2.4	3.2	2.9	2.7	2.6	3.2	3.4	3.3	3.3	3.3	3.0	3.1	2.9	2.5	2.3	2.5	2.4	S	2.2	2.3	2.2	2.1	2.1	3.4	2.7	24
12	2.1	2.1	2.1	2.0	2.1	1.9	2.0	2.3	2.2	2.0	2.1	2.3	2.4	2.5	2.3	2.4	2.1	2.5	S	2.5	2.5	2.6	2.7	2.8	1.9	2.8	2.3	24
13	2.7	2.8	2.8	3.0	3.0	3.1	2.9	3.5	3.5	4.1	4.1	3.7	3.4	3.6	3.7	3.5	3.2	S	3.2	3.5	3.2	3.2	3.5	3.3	2.7	4.1	3.3	24
14	3.5	3.7	3.9	3.7	3.8	3.5	3.5	3.2	3.2	4.2	3.5	3.1	3.2	3.2	3.2	3.3	S	3.2	3.3	3.5	3.2	3.1	2.9	3.1	2.9	4.2	3.4	24
15	3.0	3.0	2.7	3.1	2.9	3.0	2.9	3.8	4.2	4.1	4.0	3.8	3.7	2.9	3.1	S	2.9	2.9	2.8	2.9	2.9	2.8	2.7	2.9	2.7	4.2	3.2	24
16	2.9	3.1	2.9	3.1	3.2	3.3	2.9	P	P	2.7	2.4	2.3	2.4	2.4	S	2.0	2.1	2.2	2.2	2.1	1.9	1.9	1.9	2.1	1.9	3.3	2.5	22
17	2.0	2.1	2.0	2.1	1.8	2.1	2.2	2.5	2.6	2.5	2.2	2.2	2.4	S	2.4	2.6	2.5	2.5	2.6	2.5	2.7	2.5	2.6	2.7	1.8	2.7	2.4	24
18	2.8	2.9	3.0	3.0	2.7	2.7	2.7	2.6	2.9	2.9	2.5	2.5	S	2.5	2.5	2.2	2.3	2.3	2.1	2.0	1.8	1.7	1.7	1.7	1.7	3.0	2.4	24
19	1.6	1.6	1.7	1.6	1.7	1.8	1.8	2.0	2.0	2.0	1.9	S	1.9	2.1	2.1	2.0	2.4	2.5	2.7	2.5	2.3	2.1	2.4	2.2	1.6	2.7	2.0	24
20	2.1	2.3	2.1	2.4	2.3	2.3	2.6	2.9	3.0	3.0	S	3.1	3.5	3.3	3.3	3.0	2.9	2.8	2.7	2.9	2.5	2.5	2.5	2.5	2.1	3.5	2.7	24
21	2.1	2.3	2.5	2.2	2.4	2.3	3.3	***6.3***	4.7	S	3.1	2.9	3.2	2.9	3.1	2.8	2.8	2.7	2.6	2.5	2.5	2.5	2.5	2.5	2.1	***6.3***	2.9	24
22	2.2	2.4	2.7	2.8	2.7	2.7	2.9	3.9	S	4.1	4.1	4.2	3.8	3.7	3.6	3.4	3.4	3.4	3.4	3.5	3.9	3.3	3.2	3.4	2.2	4.2	3.3	24
23	3.3	3.4	3.4	3.3	3.5	3.3	3.3	S	3.5	3.8	3.5	3.3	3.5	3.5	3.4	3.4	3.5	3.4	3.5	3.3	3.4	3.1	3.1	3.1	3.1	3.8	3.4	24
24	3.3	3.3	3.1	3.2	3.2	3.3	S	2.8	2.7	3.0	2.9	2.8	2.9	2.9	2.9	2.9	2.7	2.6	2.7	2.5	2.4	2.3	2.2	2.4	2.2	3.3	2.8	24
25	2.2	2.4	2.5	2.5	2.6	S	2.5	2.2	2.2	2.6	2.8	2.6	2.3	2.0	2.1	2.1	1.9	2.1	2.0	2.2	1.9	1.9	2.0	2.1	1.9	2.8	2.2	24
26	2.1	1.9	2.0	2.1	S	1.9	2.3	2.3	2.4	3.1	3.2	2.7	2.2	2.1	2.2	2.1	2.2	2.2	2.1	2.3	2.2	2.1	2.1	2.1	1.9	3.2	2.3	24
27	2.4	2.5	2.4	S	2.0	2.2	2.1	2.5	2.9	2.6	4.1	3.3	2.6	2.7	2.8	3.1	2.5	2.7	2.5	2.5	2.5	2.5	2.5	2.5	2.0	4.1	2.6	24
28	2.7	2.6	S	2.1	2.2	2.3	2.3	2.2	2.2	2.1	2.0	2.0	2.0	2.1	2.0	2.1	1.6	3.0	2.1	2.1	1.7	1.7	1.7	1.8	1.6	3.0	2.1	24
29	1.9	S	1.8	2.1	2.3	2.4	2.4	2.4	2.2	2.5	2.5	2.5	2.2	2.4	2.3	2.2	2.2	2.1	2.6	2.4	2.3	2.3	2.3	2.3	1.8	2.6	2.3	24
30	3.5	3.7	3.9	3.7	3.8	3.5	3.5	6.3	4.7	4.2	4.1	4.2	3.8	3.7	3.7	3.5	3.5	3.4	3.5	3.5	3.9	3.3	3.5	3.4				
HOURLY MAX	2.3	2.3	2.3	2.4	2.4	2.3	2.4	2.6	2.6	2.7	2.7	2.6	2.6	2.6	2.5	2.4	2.3	2.4	2.4	2.5	2.4	2.4	2.3	2.3				
HOURLY AVG																												

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: 650

MAXIMUM INSTANTANEOUS VALUE: 6.3 PPB @ HOUR(S) 7 ON DAY(S) 22

VAR-VARIOUS

IZS CALIBRATION TIME: 29 HRS OPERATIONAL TIME: 685 HRS

MONTHLY CALIBRATION TIME: 6 HRS

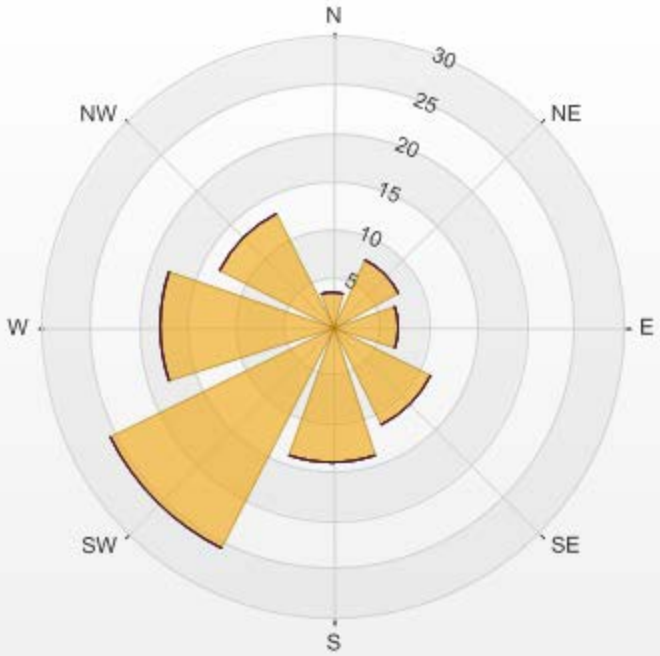
STANDARD DEVIATION: 0.73

SO2 MAX[ppb] Station: LICA Bonnyville Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]

Wind: LICA Bonnyville Monitor: SO2 [ppb] Monthly: 06/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
Calm: 0.00% Valid Data: 95.18% Calm Avg: 0.00

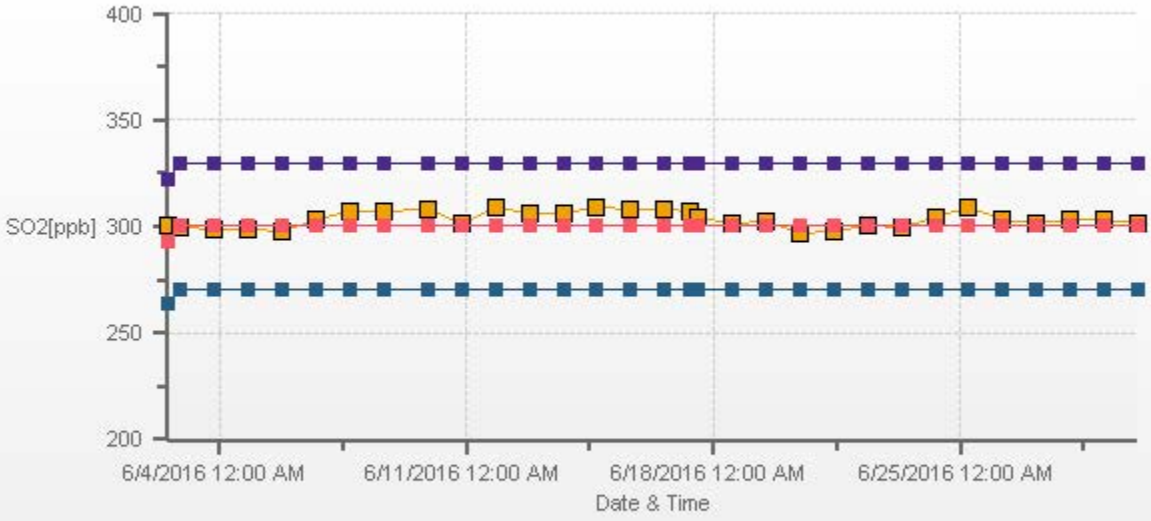
Direction	0.0-20.0	20.0-60.0	60.0-110.0	110.0-170.0	170.0-340.0	>340.0	Total
N	3.53	0	0	0	0	0	3.53
NE	7.67	0	0	0	0	0	7.67
E	6.75	0	0	0	0	0	6.75
SE	11.35	0	0	0	0	0	11.35
S	14.11	0	0	0	0	0	14.11
SW	25.61	0	0	0	0	0	25.61
W	17.79	0	0	0	0	0	17.79
NW	13.19	0	0	0	0	0	13.19
Summary	100	0	0	0	0	0	100

LICA Bonnyville 2016/06/01 12:00 AM - 2016/06/30 11:00 PM Calm: 0.00%



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

SO2[ppb] Calibration: LICA Bonnyville Monthly: 06/2016 Type: Span



HYDROGEN SULPHIDE

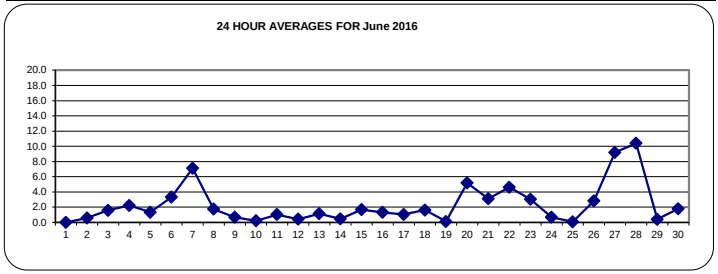
HYDROGEN SULPHIDE (H2S) hourly averages in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1																												0
2										C	C	C	C	C	0.5	0.5	0.5	0.0	0.0	0.8	0.5	0.4	S	1.9	0.0	1.9	0.6	15
3	3.0	0.6	0.6	0.7	0.7	0.3	0.3	0.1	0.1	0.4	0.3	0.2	0.2	0.2	0.2	0.4	0.2	0.3	0.3	0.5	1.4	S	10.6	14.8	0.1	14.8	1.6	24
4	10.8	10.3	18.5	4.5	1.4	2.0	0.4	S1	0.2	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	S	0.0	0.0	0.2	0.0	18.5	2.2	23
5	0.1	0.0	0.0	0.0	12.3	3.7	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	S	0.6	5.4	6.9	1.6	0.0	12.3	1.3	24
6	1.3	0.6	7.7	14.7	15.7	9.4	6.0	3.8	2.2	0.3	0.4	0.4	0.6	0.0	0.0	0.1	0.2	0.4	S	1.4	0.7	0.7	3.3	6.6	0.0	15.7	3.3	24
7	12.9	17.2	11.5	18.2	17.3	7.8	15.5	2.6	1.1	0.7	0.5	0.5	0.5	0.1	0.0	0.3	0.1	S	0.3	0.0	2.5	12.7	18.1	23.0	0.0	23.0	7.1	24
8	18.1	7.8	0.9	1.0	1.1	0.5	0.8	0.7	0.5	0.4	0.6	0.5	0.5	0.4	0.4	0.6	S	1.1	0.5	0.7	0.7	0.7	0.8	0.6	0.4	18.1	1.7	24
9	0.9	1.0	1.6	1.1	1.4	1.2	0.9	S1	0.8	1.5	C1	C1	C1	C1	C1	C1	0.0	0.0	0.5	0.0	0.0	0.0	S	0.0	0.0	1.6	0.7	17
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	1.7	3.4	0.0	3.4	0.2	24
11	5.2	3.7	1.4	1.1	1.1	2.6	1.8	1.1	0.0	1.0	3.0	0.0	0.3	0.2	0.2	0.0	0.0	0.0	0.0	0.2	S	0.4	0.2	0.1	0.0	5.2	1.0	24
12	0.2	0.5	1.9	1.7	1.9	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	S	0.0	0.2	0.8	1.8	0.0	1.9	0.4	24
13	4.6	3.3	5.5	2.7	2.7	1.2	0.5	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	2.1	0.4	3.0	0.0	5.5	1.1	24
14	0.9	0.4	0.0	0.2	0.8	0.3	0.0	0.7	1.0	0.4	0.0	0.0	0.2	0.0	0.0	0.1	0.0	S	0.3	0.0	0.7	1.8	1.5	1.1	0.0	1.8	0.5	24
15	2.9	4.4	9.0	5.8	3.8	2.5	1.0	0.3	1.0	0.0	0.2	0.4	0.0	0.0	0.0	0.0	S	0.0	0.0	0.2	0.7	2.6	1.4	2.1	0.0	9.0	1.7	24
16	3.7	3.2	2.6	3.2	3.2	4.4	5.3	1.5	0.0	1.1	0.2	0.3	0.8	0.5	0.0	S	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	5.3	1.3	24
17	1.3	1.3	0.8	0.8	1.0	0.0	0.0	0.0	P	0.0	0.1	0.4	1.1	1.1	S	0.4	1.4	0.3	0.5	1.3	2.5	2.0	2.9	3.6	0.0	3.6	1.0	23
18	3.2	3.6	4.0	1.8	3.7	3.0	0.4	0.3	0.3	0.3	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.3	1.3	1.1	9.2	4.8	0.0	9.2	1.6	24
19	1.7	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	0.0	0.0	0.3	0.4	0.0	1.7	0.1	24
20	2.7	0.3	5.5	23.9	20.8	15.8	5.1	2.6	0.7	0.3	0.3	S	0.2	0.0	0.1	0.2	0.3	0.5	0.6	1.4	3.3	6.5	10.1	17.8	0.0	23.9	5.2	24
21	21.6	7.5	4.4	8.8	6.9	4.5	3.2	1.5	0.4	0.0	S	0.3	0.2	0.6	1.3	0.2	0.2	0.5	0.6	1.1	1.8	0.6	0.4	5.2	0.0	21.6	3.1	24
22	10.3	16.1	19.8	16.4	15.5	13.1	5.5	1.2	0.9	S	0.4	0.0	0.0	0.0	0.1	0.0	0.1	0.4	0.6	2.5	0.7	0.2	1.7	0.4	0.0	19.8	4.6	24
23	5.8	13.3	3.4	11.2	10.8	2.9	2.1	0.9	S	0.4	0.3	0.5	0.4	0.4	0.5	0.4	0.3	0.8	0.6	1.2	2.9	5.0	4.6	0.9	0.3	13.3	3.0	24
24	0.9	5.1	0.5	4.4	0.5	0.5	0.7	S	0.1	0.6	0.5	0.0	0.0	0.3	0.4	0.1	0.0	0.3	0.2	0.2	0.3	0.2	0.0	0.0	0.0	5.1	0.7	24
25	0.2	0.1	0.7	0.1	0.1	0.0	S	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.1	24
26	0.0	0.0	3.5	22.0	11.8	S	10.6	4.8	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.6	1.6	5.2	4.5	0.0	22.0	2.8	24
27	17.1	24.7	25.9	23.9	S	28.2	11.8	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	11.5	22.4	40.8	0.0	40.8	9.2	24
28	44.8	54.6	21.9	S	***58.1***	26.9	12.6	2.4	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.8	0.0	0.3	1.6	1.4	2.7	9.7	0.0	***58.1***	10.4	24
29	2.0	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	1.7	4.0	1.5	0.0	4.0	0.4	24
30	1.2	S	3.7	2.5	1.9	3.0	11.5	9.2	1.5	1.6	0.6	0.2	0.1	0.0	0.0	0.2	0.3	0.6	0.0	1.5	0.0	0.1	0.6	0.9	0.0	11.5	1.8	24
HOURLY MAX	44.8	54.6	25.9	23.9	58.1	28.2	15.5	9.2	2.2	1.6	3.0	0.5	1.1	1.1	1.3	0.6	1.4	1.1	0.6	2.5	4.7	12.7	22.4	40.8				
HOURLY AVG	6.3	6.7	5.8	6.3	7.2	5.0	3.6	1.4	0.5	0.3	0.3	0.1	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.5	1.0	2.2	4.1	5.2				

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

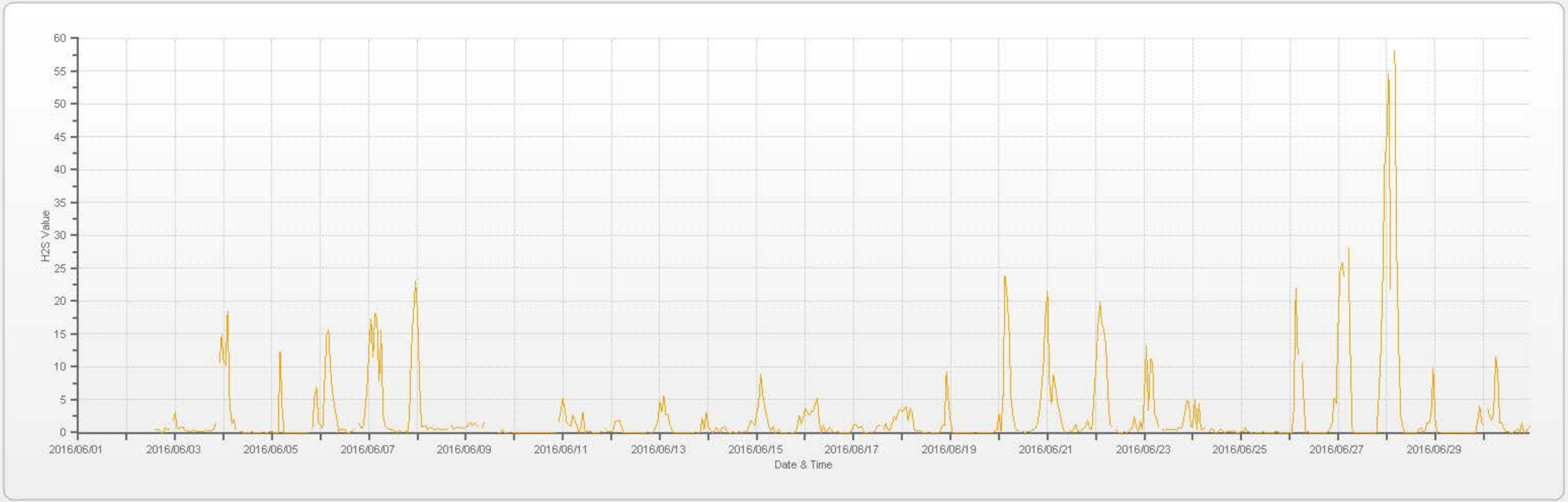


OBJECTIVE LIMIT: **ALBERTA ENVIRONMENT:** 1-HR 10 PPB | 24-HR 3 PPB

MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:			52				
NUMBER OF 24-HR EXCEEDENCES:			8				
NUMBER OF NON-ZERO READINGS:			416				
MINIMUM 1-HR AVERAGE	0.0	PPB	@ HOUR(S)	VAR	ON DAY(S)	VAR	
MAXIMUM 1-HR AVERAGE:	58.1	PPB	@ HOUR(S)	4	ON DAY(S)	28	
MAXIMUM 24-HR AVERAGE:	10.4	PPB			ON DAY(S)	28	
					VAR-VARIOUS		
IZS CALIBRATION TIME:	29	HRS	OPERATIONAL TIME:			678	HRS
MONTHLY CALIBRATION TIME:	5	HRS	AMD OPERATION UPTIME:			94.2	%
STANDARD DEVIATION:	5.94		MONTHLY AVERAGE:			2.4	PPB

H2S[ppb] Station: LICA Bonnyville Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



HYDROGEN SULPHIDE MAX instantaneous maximum in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1										C	C	C	C	C	0.9	0.8	0.8	0.3	0.6	1.5	1.0	0.6	S	5.7	0.3	5.7	1.4	15
2	6.7	0.8	0.8	1.1	1.1	0.7	0.7	0.4	0.7	0.7	0.7	0.5	0.5	0.4	0.4	1.1	0.5	0.5	0.5	0.9	9.8	S	22.3	23.7	0.4	23.7	3.3	24
3	30.6	49.6	48.5	11.4	3.0	3.3	0.7	S1	0.5	0.5	0.5	2.5	0.7	0.9	1.7	1.3	1.4	0.4	0.8	1.2	S	1.3	0.8	2.4	0.4	49.6	7.5	23
4	1.0	1.0	1.2	0.8	37.3	20.3	0.6	0.4	0.5	0.7	0.6	0.5	0.5	0.6	0.6	0.7	0.5	0.6	0.5	S	3.1	8.6	15.8	3.5	0.4	37.3	4.3	24
5	5.0	3.5	24.0	45.3	49.8	28.8	13.4	8.4	5.5	1.4	1.5	1.7	1.3	1.2	0.6	0.7	0.9	1.0	S	2.6	2.1	1.4	7.0	12.7	0.6	49.8	9.6	24
6	23.2	27.3	21.3	32.4	34.1	14.9	45.0	5.4	2.0	1.8	1.2	1.1	1.2	1.0	0.6	1.0	1.0	S	1.3	0.7	19.4	50.5	36.1	47.2	0.6	50.5	16.1	24
7	51.2	17.6	3.5	1.9	2.1	1.2	1.5	1.3	1.1	1.0	1.3	1.1	1.0	0.9	1.0	1.3	S	2.4	1.1	1.3	1.2	1.2	1.3	1.1	0.9	51.2	4.3	24
8	1.3	2.5	2.7	1.9	2.1	1.8	1.6	S1	1.8	C1	C1	C1	C1	C1	C1	C1	0.2	1.3	1.2	0.0	0.2	0.2	S	0.1	0.0	2.7	1.3	16
9	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	1.8	7.5	0.0	7.5	0.4	24
10	8.2	8.2	2.0	1.4	2.4	4.9	3.4	2.9	0.0	3.6	4.0	3.1	2.2	1.5	2.2	0.2	0.3	0.3	0.7	0.9	S	2.1	0.7	0.9	0.0	8.2	2.4	24
11	0.6	1.2	3.2	4.5	3.3	1.7	0.2	0.1	1.6	0.8	0.8	0.0	0.0	1.4	1.2	0.0	0.0	0.0	1.3	S	0.7	1.6	3.7	5.1	0.0	5.1	1.4	24
12	7.1	5.9	9.3	3.9	5.9	4.1	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.3	0.0	6.3	0.3	7.0	0.0	9.3	2.2	24
13	2.8	0.5	0.0	0.6	1.3	0.6	0.0	1.6	1.7	0.6	0.0	0.0	0.3	0.1	0.0	0.1	0.2	S	0.5	0.0	1.9	3.5	2.0	2.2	0.0	3.5	0.9	24
14	4.4	7.1	13.4	7.9	4.8	4.2	1.5	2.2	2.9	0.1	0.8	0.9	0.9	0.8	0.0	0.0	S	0.0	0.3	0.4	1.1	3.4	2.0	4.1	0.0	13.4	2.7	24
15	8.6	4.3	3.2	5.1	5.4	8.1	9.5	4.7	1.0	1.8	1.4	0.9	2.8	1.4	0.0	S	2.9	0.1	0.2	0.6	0.4	0.7	0.6	1.6	0.0	9.5	2.8	24
16	2.4	2.3	1.8	1.8	2.1	1.7	0.2	P	P	1.2	0.6	0.0	0.0	0.7	S	0.1	3.2	0.5	0.0	0.0	1.5	1.4	2.7	3.6	0.0	3.6	1.3	22
17	3.4	4.0	3.8	3.8	5.1	4.1	0.4	0.2	0.8	0.5	0.0	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	1.0	1.7	8.7	18.4	8.7	0.0	18.4	2.8	24
18	10.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	S	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	1.5	0.4	0.0	10.0	0.6	24
19	19.3	0.7	18.6	39.2	51.2	42.2	9.1	4.0	0.8	0.0	0.0	S	0.0	0.0	0.0	0.0	0.0	0.1	0.5	2.3	4.8	9.6	17.1	26.3	0.0	51.2	10.7	24
20	31.2	10.8	18.2	21.9	7.0	5.3	6.4	1.6	0.7	0.0	S	0.0	0.0	0.7	2.1	0.8	0.2	0.4	0.9	1.3	3.8	1.1	0.6	12.4	0.0	31.2	5.5	24
21	16.0	25.5	31.5	22.8	29.5	51.6	9.4	4.5	1.8	S	1.4	0.3	0.3	0.3	0.5	0.5	0.4	0.9	1.7	7.2	4.2	2.9	23.6	2.0	0.3	51.6	10.4	24
22	15.0	24.6	14.3	37.9	29.8	25.3	10.3	1.4	S	0.9	0.2	0.3	0.5	0.5	0.3	0.2	0.4	1.0	0.9	2.6	12.1	30.1	8.5	2.6	0.2	37.9	9.6	24
23	5.3	9.9	0.6	11.9	0.3	0.9	1.2	S	0.0	0.6	0.9	0.0	0.0	0.2	0.4	0.4	0.1	0.3	0.4	0.2	0.6	0.6	0.1	0.3	0.0	11.9	1.5	24
24	0.3	0.2	2.9	0.1	0.3	0.1	S	0.2	0.0	0.0	0.7	0.6	0.2	0.0	0.3	0.3	0.1	0.4	0.4	0.2	0.3	0.2	0.3	0.5	0.0	2.9	0.4	24
25	0.1	0.1	10.0	32.8	39.0	S	17.0	19.4	0.4	0.5	0.6	0.0	0.0	0.1	0.0	0.2	0.2	0.1	0.5	0.6	3.2	3.3	10.7	9.0	0.0	39.0	6.4	24
26	34.6	35.7	38.1	49.7	S	52.1	37.5	2.3	0.3	0.2	0.4	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.2	46.0	49.4	71.9	0.0	71.9	18.8	24
27	73.4	96.7	87.7	S	*104.6*	64.4	24.0	9.8	3.3	0.8	0.2	0.2	0.2	0.0	0.0	0.0	3.7	2.6	1.1	2.0	5.9	3.6	11.4	20.8	0.0	*104.6*	22.5	24
28	14.7	0.7	S	0.9	0.3	0.4	0.4	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.9	0.4	3.5	6.4	6.9	0.0	14.7	1.6	24
29	3.5	S	4.4	3.6	3.4	14.6	19.1	15.2	3.4	2.9	1.1	0.8	0.6	0.2	0.3	0.7	0.9	1.3	1.4	3.1	0.2	0.8	1.4	1.2	0.2	19.1	3.7	24
30																												
HOURLY MAX	73.4	96.7	87.7	49.7	104.6	64.4	45.0	19.4	5.5	3.6	4.0	3.1	2.8	1.5	2.2	1.3	3.7	2.6	1.7	7.2	19.4	50.5	49.4	71.9				
HOURLY AVG	13.6	12.6	13.6	12.8	15.7	13.2	8.0	3.6	1.2	0.8	0.7	0.6	0.5	0.5	0.5	0.4	0.7	0.5	0.6	1.2	3.5	7.2	9.1	10.0				

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: 525

MAXIMUM INSTANTANEOUS VALUE: 104.6 PPB @ HOUR(S) 4 ON DAY(S) 28

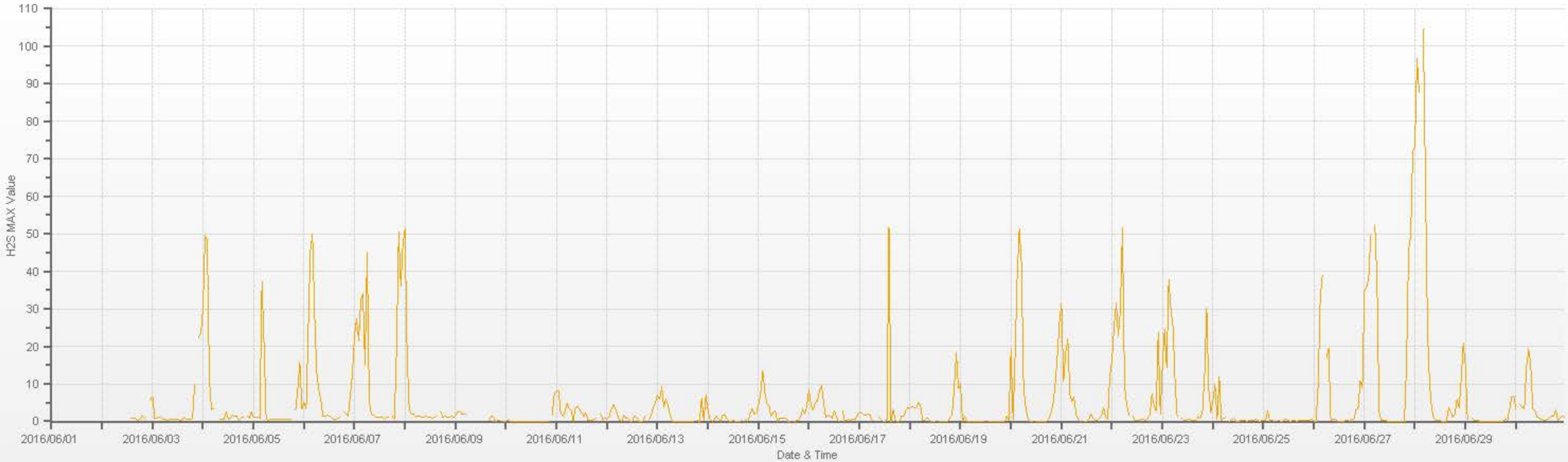
VAR-VARIOUS

IZS CALIBRATION TIME: 29 HRS OPERATIONAL TIME: 676 HRS

MONTHLY CALIBRATION TIME: 5 HRS

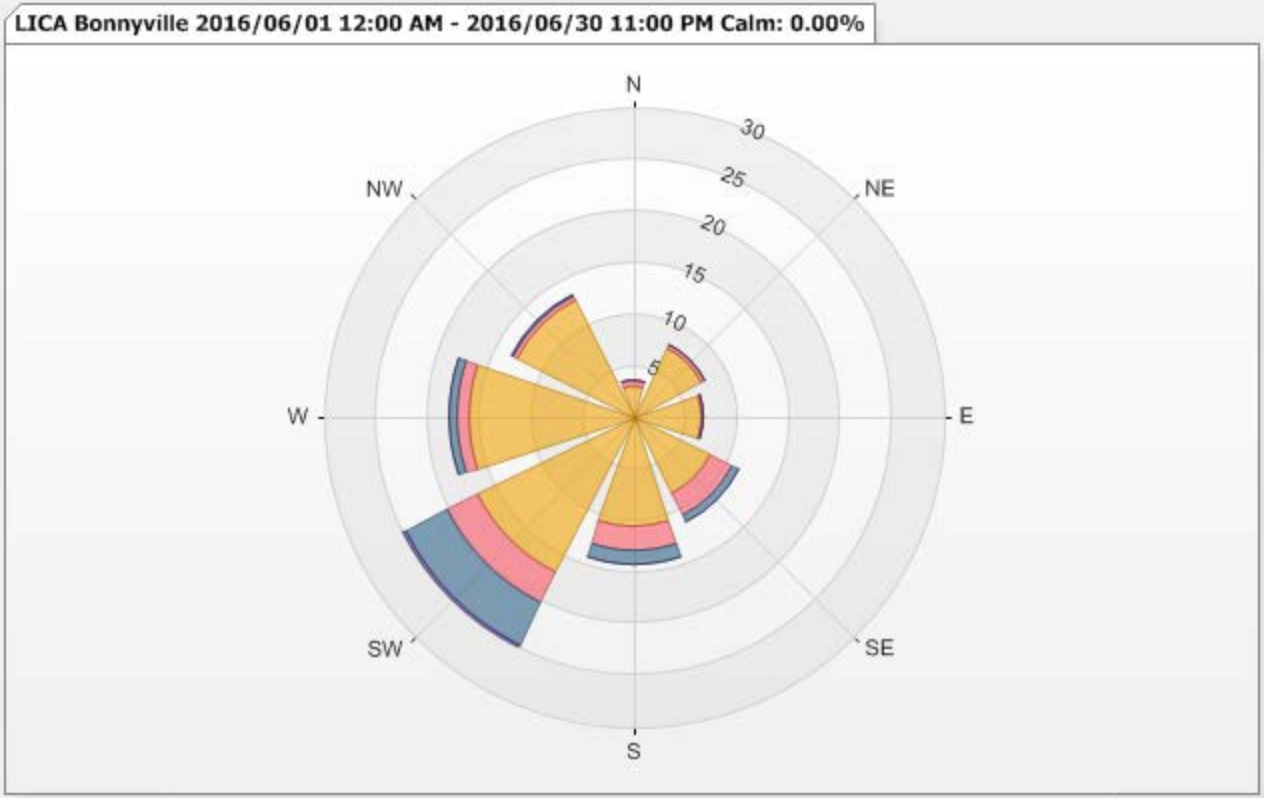
STANDARD DEVIATION: 12.52

H2S MAX[ppb] Station: LICA Bonnyville Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]

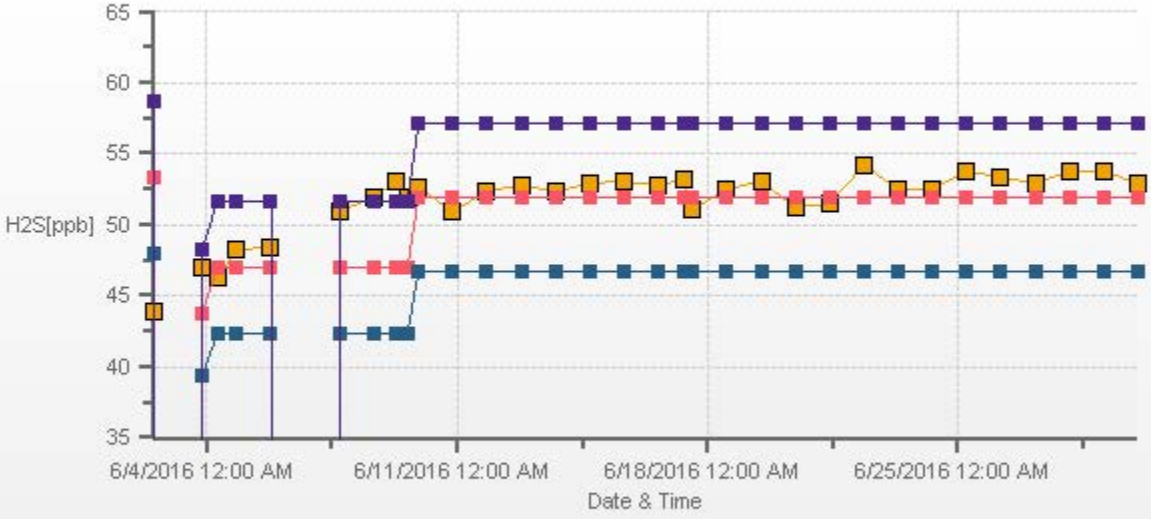


Wind: LICA Bonnyville Monitor: H2S [ppb] Monthly: 06/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
Calm: 0.00% Valid Data: 94.01% Calm Avg: 0.00

Direction	0.0-3.0	3.0-10.0	10.0-50.0	>50.0	Total
N	2.95	0.62	0	0	3.57
NE	7.45	0.31	0	0	7.76
E	6.52	0.31	0	0	6.83
SE	8.39	2.17	0.93	0	11.49
S	10.71	2.17	1.4	0	14.28
SW	16.93	3.26	4.5	0.31	25
W	15.99	1.09	0.78	0	17.86
NW	12.73	0.31	0.16	0	13.2
Summary	81.67	10.24	7.77	0.31	100


LICA Bonnyville 2016/06/01 12:00 AM - 2016/06/30 11:00 PM Calm: 0.00%
N
NE
E
SE
S
SW
W
NW
30
25
20
15
10
5
% Icon Classes (ppb)
82 0.0-3.0
10 3.0-10.0
8 10.0-50.0
0 >50.0

H2S[ppb] Calibration: LICA Bonnyville Monthly: 06/2016 Type: Span



TOTAL HYDROCARBON

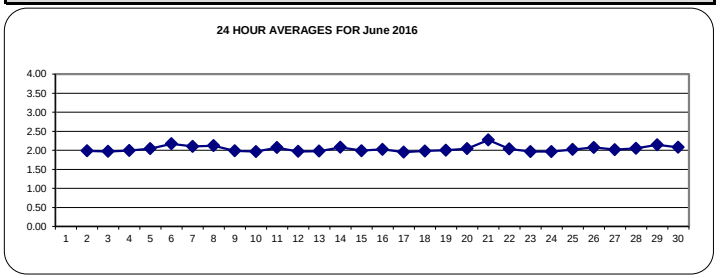
TOTAL HYDROCARBONS (THC) hourly averages in ppm

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1																												
2												**C**	**C**	**C**	**C**	**C**	**C**	1.99	1.98	2.02	2.02	1.94	**S**	1.97	1.94	2.02	1.99	13
3	1.96	1.95	1.97	1.97	1.97	1.99	1.98	1.97	1.98	1.96	1.93	1.94	1.92	1.93	1.94	1.95	1.94	1.91	1.92	1.95	1.98	**S**	2.20	2.11	1.91	2.20	1.97	24
4	2.13	2.18	2.19	2.06	1.98	2.02	1.98	1.95	1.95	1.95	1.95	1.95	1.96	1.96	1.95	1.95	1.95	1.96	1.96	1.96	**S**	1.96	2.00	2.03	1.95	2.19	2.00	24
5	2.03	2.09	2.13	2.08	2.09	2.06	2.06	2.05	2.07	2.04	1.98	1.95	1.96	1.94	1.95	1.95	1.96	1.96	1.96	**S**	2.01	2.11	2.19	2.36	1.94	2.36	2.04	24
6	2.31	2.11	2.17	2.36	2.48	2.57	2.52	2.36	2.28	2.20	2.13	2.10	2.04	2.00	1.98	1.99	2.00	1.99	**S**	1.99	2.02	2.11	2.12	2.14	1.98	2.57	2.17	24
7	2.09	2.09	2.11	2.14	2.15	2.14	2.22	2.19	2.19	2.13	2.03	2.00	2.01	1.95	1.96	1.95	1.93	**S**	1.93	1.95	2.04	2.41	2.38	2.30	1.93	2.41	2.10	24
8	2.23	2.31	2.45	2.79	2.57	2.32	2.18	2.08	2.05	2.03	2.03	2.03	2.01	1.97	1.96	1.98	**S**	2.00	1.99	1.98	1.96	1.96	1.96	1.97	1.96	2.79	2.12	24
9	1.96	1.96	1.97	1.99	2.46	2.00	2.01	2.00	2.02	2.00	1.97	1.94	1.95	1.93	1.94	1.94	1.94	1.94	1.95	1.95	1.96	1.97	**S**	1.96	1.93	2.46	1.99	24
10	1.97	1.96	1.96	1.95	1.95	1.96	1.93	1.94	1.95	1.93	1.94	1.95	1.94	1.95	1.95	1.97	1.96	1.95	1.98	1.98	2.03	**S**	2.07	2.04	1.93	2.07	1.97	24
11	2.05	2.15	2.20	2.21	2.27	2.31	2.13	2.09	2.10	2.02	2.00	2.02	2.03	2.02	2.01	1.98	2.01	2.01	2.01	2.00	**S**	2.04	1.97	1.97	1.97	2.31	2.07	24
12	1.97	1.99	1.98	1.98	1.97	1.98	1.95	1.95	1.95	1.97	1.96	1.96	1.95	1.95	1.94	1.94	1.93	1.94	1.95	**S**	1.97	2.06	2.01	2.05	1.93	2.06	1.97	24
13	2.03	2.05	2.05	2.00	2.00	2.00	1.97	1.96	1.94	1.93	1.92	1.93	1.91	1.92	1.91	1.91	1.91	1.91	**S**	1.94	1.98	2.06	2.17	2.14	1.91	2.17	1.98	24
14	2.16	2.16	2.12	2.11	2.09	2.07	2.04	2.06	2.07	2.14	2.19	2.16	2.09	2.02	1.99	2.00	1.97	**S**	1.96	1.99	2.05	2.08	2.09	2.16	1.96	2.19	2.08	24
15	2.22	2.08	2.08	2.08	1.98	1.94	1.94	1.95	1.95	1.95	1.95	1.94	1.94	1.95	1.95	1.95	**S**	1.95	1.94	1.93	1.95	1.99	2.04	2.13	1.93	2.22	1.99	24
16	2.12	2.10	2.07	2.07	2.03	2.03	2.06	2.03	2.02	2.01	2.10	2.11	2.05	1.95	1.97	**S**	1.96	1.99	2.06	1.98	1.96	1.97	1.98	1.96	1.95	2.12	2.03	24
17	1.96	1.95	1.94	1.95	1.95	1.94	1.94	***1.81***	**P**	1.95	1.94	1.94	1.94	1.93	**S**	1.94	1.94	1.94	1.93	1.95	1.97	2.04	2.07	2.03	***1.81***	2.07	1.95	23
18	2.03	2.03	2.00	1.99	2.01	2.01	1.99	1.98	1.98	1.97	1.93	1.93	1.92	**S**	1.93	1.92	1.93	1.93	1.93	1.96	1.98	2.03	2.10	2.09	1.92	2.10	1.98	24
19	2.15	2.04	2.02	2.11	2.12	2.11	2.09	1.98	1.96	1.94	1.94	1.93	**S**	1.94	1.94	1.94	1.94	1.94	1.94	1.95	1.97	1.99	2.02	2.04	1.93	2.15	2.00	24
20	2.03	2.09	2.07	2.14	2.14	2.10	2.09	2.06	1.98	1.97	1.96	**S**	1.94	1.94	1.94	1.94	1.96	1.97	1.98	1.98	2.04	2.10	2.20	2.39	1.94	2.39	2.04	24
21	2.31	2.56	2.42	2.86	***3.33***	3.00	2.84	2.72	2.29	2.03	**S**	1.97	1.98	1.99	2.00	1.99	1.97	1.97	1.97	1.97	1.98	2.02	2.09	2.07	1.97	***3.33***	***2.28***	24
22	2.19	2.19	2.17	2.19	2.17	2.11	2.08	1.96	2.00	**S**	1.96	1.91	1.92	1.92	1.95	1.93	1.93	1.94	1.98	2.00	2.09	2.14	2.08	1.97	1.91	2.19	2.03	24
23	2.02	1.99	2.01	2.03	1.99	2.00	1.97	1.97	**S**	1.95	1.93	1.93	1.93	1.92	1.95	1.92	1.93	1.96	1.95	1.97	1.98	1.97	1.95	1.96	1.92	2.03	1.96	24
24	1.98	1.96	1.95	1.96	1.95	1.96	1.97	**S**	1.99	1.97	1.93	1.94	1.99	1.94	1.93	1.92	1.92	1.93	1.94	1.97	1.98	2.01	2.04	2.12	1.92	2.12	1.97	24
25	2.12	2.14	2.08	2.15	2.13	2.39	**S**	1.99	1.98	1.97	1.95	1.96	1.94	1.92	1.93	1.92	1.93	1.96	1.95	1.96	1.97	2.01	2.05	2.04	1.92	2.39	2.02	24
26	2.12	2.29	2.40	2.38	2.37	**S**	2.32	2.30	2.09	2.03	1.98	1.93	1.92	1.92	1.95	1.93	1.93	1.93	1.95	1.95	1.96	1.99	2.01	2.07	1.92	2.40	2.07	24
27	2.14	2.17	2.13	2.11	**S**	2.10	2.06	2.02	2.01	1.98	1.97	1.96	1.91	1.92	1.92	1.93	1.91	1.88	1.92	1.90	2.00	2.13	2.20	2.13	1.88	2.20	2.02	24
28	2.16	2.17	2.22	**S**	2.29	2.18	2.16	2.07	2.02	1.97	1.95	1.94	1.96	1.94	1.95	1.95	1.96	1.98	1.96	2.02	2.08	2.06	2.06	2.12	1.94	2.29	2.05	24
29	2.16	2.34	**S**	2.33	2.28	2.19	2.13	2.03	2.00	1.98	1.97	1.96	1.96	1.95	1.94	1.95	1.95	3.27	2.07	2.19	2.22	2.18	2.12	2.21	1.94	3.27	2.15	24
30	2.21	**S**	2.21	2.12	2.21	2.25	2.18	2.13	2.03	2.05	2.05	1.98	1.97	1.99	1.99	1.98	1.98	1.98	2.00	2.07	2.11	2.10	2.11	2.14	1.97	2.25	2.08	24
HOURLY MAX	2.31	2.56	2.45	2.86	3.33	3.00	2.84	2.72	2.29	2.20	2.19	2.16	2.09	2.02	2.01	2.00	2.01	3.27	2.07	2.19	2.22	2.41	2.38	2.39				
HOURLY AVG	2.10	2.11	2.11	2.15	2.18	2.14	2.10	2.06	2.03	2.00	1.98	1.97	1.96	1.95	1.95	1.95	1.95	2.00	1.97	1.98	2.01	2.05	2.08	2.09				

STATUS FLAG CODES

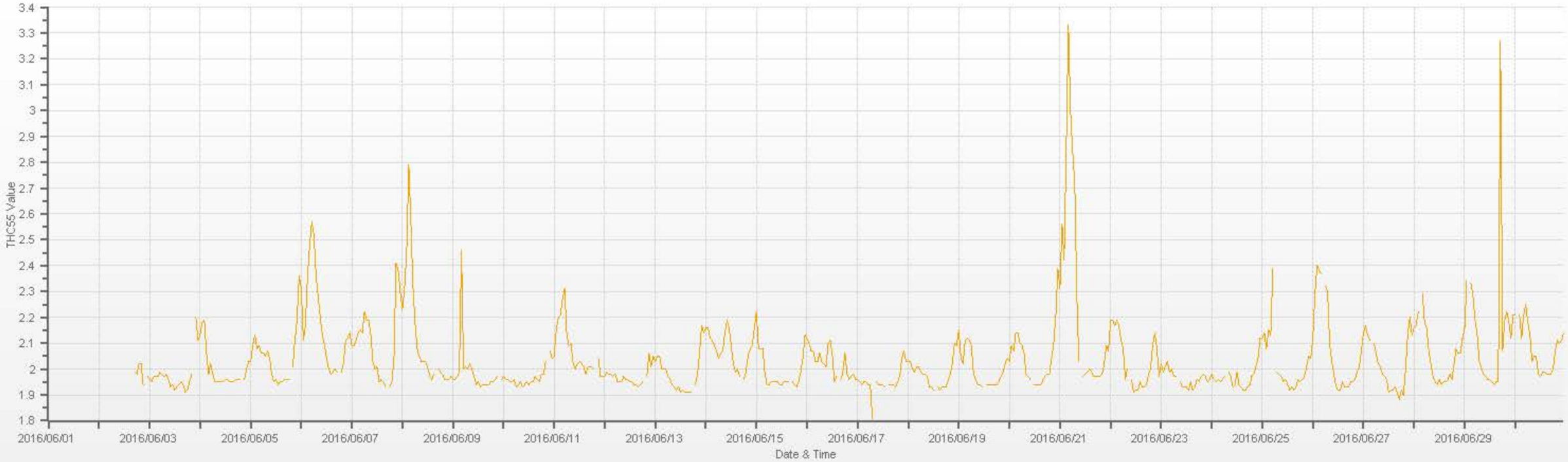
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:		649					
MINIMUM 1-HR AVERAGE	1.81	PPM	@ HOUR(S)	7	ON DAY(S)	17	
MAXIMUM 1-HR AVERAGE:	3.33	PPM	@ HOUR(S)	4	ON DAY(S)	21	
MAXIMUM 24-HR AVERAGE:	2.28	PPM			ON DAY(S)	21	
					VAR-VARIOUS		
IZS CALIBRATION TIME:	29	HRS	OPERATIONAL TIME:			684	HRS
MONTHLY CALIBRATION TIME:	6	HRS	AMD OPERATION UPTIME:			95.0	%
STANDARD DEVIATION:	0.15		MONTHLY AVERAGE:			2.04	PPM

THC55[ppm] Station: LICA Bonnyville Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



TOTAL HYDROCARBONS MAX instantaneous maximum in ppm

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1																												
2												C	C	C	C	C	C	2.03	2.02	2.40	2.26	1.98	S	2.01	1.98	2.40	2.12	13
3	2.02	2.00	2.01	1.99	2.02	2.02	2.03	2.03	2.02	1.99	2.00	1.98	2.00	1.99	2.21	2.03	1.98	1.99	1.99	1.98	2.15	S	2.26	2.23	1.98	2.26	2.04	24
4	2.25	2.48	2.30	2.24	2.07	2.13	2.02	1.98	1.98	1.99	1.98	1.98	2.09	1.99	1.97	1.98	2.00	2.00	2.00	2.00	S	2.03	2.04	2.08	1.97	2.48	2.07	24
5	2.13	2.24	2.18	2.13	2.12	2.12	2.09	2.07	2.09	2.08	2.04	2.00	1.98	1.99	1.98	1.99	1.99	1.99	1.99	S	2.11	2.24	2.40	2.74	1.98	2.74	2.12	24
6	2.68	2.47	2.27	2.67	2.57	2.74	2.81	2.44	2.36	2.31	2.17	2.15	2.09	2.12	2.04	2.03	2.03	2.03	S	2.04	2.12	2.38	2.36	2.20	2.03	2.81	2.31	24
7	2.15	2.15	2.16	2.20	2.22	2.22	2.42	2.40	2.25	2.26	2.31	2.04	2.06	1.98	2.08	1.99	1.98	S	1.97	1.99	2.45	2.86	2.53	2.48	1.97	2.86	2.22	24
8	2.34	2.61	2.75	3.13	2.93	2.51	2.41	2.20	2.12	2.13	2.07	2.19	2.04	2.10	2.10	2.08	S	2.11	2.09	2.09	2.02	1.98	2.00	2.00	1.98	3.13	2.26	24
9	2.00	2.00	2.00	2.03	3.81	2.11	2.11	2.13	2.11	2.09	2.18	2.13	1.98	1.96	1.97	1.97	1.97	1.97	1.97	1.99	1.99	2.00	S	2.01	1.96	3.81	2.11	24
10	1.99	1.99	1.98	1.99	1.99	2.01	1.98	1.97	1.97	1.97	1.97	1.96	1.97	2.36	2.08	2.15	2.11	2.06	2.14	2.05	2.21	S	2.30	2.18	1.96	2.36	2.06	24
11	2.13	2.54	2.62	2.66	2.47	2.57	2.27	2.17	2.23	2.15	2.04	2.19	2.17	2.15	2.17	2.09	2.09	2.10	2.06	2.12	S	2.14	2.05	2.03	2.03	2.66	2.23	24
12	2.04	2.07	2.01	2.01	2.03	2.01	1.98	1.99	1.98	2.01	2.00	1.98	1.98	1.98	1.98	1.96	1.95	1.98	2.00	S	2.53	3.62	2.13	2.17	1.95	3.62	2.10	24
13	2.09	2.10	2.09	2.01	2.04	2.03	2.01	2.18	1.98	1.96	1.96	2.28	1.98	1.95	1.94	1.96	1.94	1.94	S	2.02	2.09	2.18	2.43	2.62	1.94	2.62	2.08	24
14	2.41	2.44	2.22	2.22	2.28	2.32	2.17	2.19	2.20	2.22	2.24	2.29	2.19	2.19	2.19	2.51	2.02	S	2.14	2.07	2.42	2.27	2.14	2.41	2.02	2.51	2.25	24
15	2.26	2.15	2.13	2.12	2.07	1.97	1.97	1.97	1.98	1.99	1.97	1.97	1.98	1.97	1.97	1.97	S	1.98	1.96	1.95	2.01	2.04	2.14	2.18	1.95	2.26	2.03	24
16	2.18	2.13	2.11	2.13	2.12	2.07	2.09	2.06	2.17	2.03	2.32	2.27	2.19	2.00	2.02	S	2.11	2.07	2.16	2.01	2.01	2.02	2.02	2.01	2.00	2.32	2.10	24
17	1.99	1.98	1.96	1.97	1.97	1.97	1.96	P	P	2.13	1.96	1.96	1.97	1.95	S	1.95	1.98	1.96	1.96	1.96	2.02	2.14	2.16	2.09	1.95	2.16	2.00	22
18	2.06	2.06	2.04	2.04	2.04	2.03	2.02	2.02	2.02	2.00	1.97	1.96	1.94	S	1.98	1.95	2.03	1.95	1.97	2.01	2.02	2.27	2.20	2.21	1.94	2.27	2.03	24
19	2.30	2.18	2.08	2.28	2.17	2.22	2.15	2.03	2.00	1.97	1.97	1.96	S	1.96	2.06	1.97	1.96	1.98	1.98	1.97	2.01	2.02	2.08	2.07	1.96	2.30	2.06	24
20	2.09	2.68	2.14	2.20	2.18	2.14	2.14	2.12	2.06	2.01	1.99	S	1.96	1.96	2.03	1.97	2.00	2.02	2.02	2.03	2.09	2.24	2.84	2.68	1.96	2.84	2.16	24
21	2.63	3.43	2.83	3.39	3.60	3.33	3.24	3.00	2.63	2.37	S	2.04	2.08	2.03	2.10	2.15	2.09	2.07	2.02	2.04	2.04	2.15	2.24	2.18	2.02	3.60	2.51	24
22	2.40	2.35	2.38	2.99	2.50	2.15	2.15	2.07	2.04	S	2.00	1.96	1.97	1.96	2.01	1.97	1.96	1.99	2.02	2.10	2.65	2.29	2.33	2.01	1.96	2.99	2.18	24
23	2.51	2.09	2.13	2.14	2.04	2.19	2.00	2.02	S	1.99	1.96	2.01	2.12	1.95	3.18	1.96	1.97	2.39	2.39	2.06	2.14	2.10	2.10	2.02	1.95	3.18	2.15	24
24	2.02	1.99	1.99	2.00	2.00	1.98	2.06	S	2.12	2.07	2.03	1.98	2.19	2.06	1.97	1.96	1.94	1.95	1.97	2.13	2.01	2.22	2.11	2.17	1.94	2.22	2.04	24
25	2.31	2.22	2.27	2.22	2.23	3.52	S	2.06	2.02	1.99	1.98	1.98	1.97	1.96	1.95	1.95	1.97	2.15	1.99	2.23	2.13	2.22	2.23	2.11	1.95	3.52	2.16	24
26	2.25	2.38	2.92	2.56	2.51	S	2.42	2.42	2.22	2.09	2.14	1.99	1.95	1.97	2.00	2.01	2.01	2.01	1.97	2.00	2.04	2.16	2.14	2.17	1.95	2.92	2.19	24
27	2.29	2.23	2.27	2.17	S	2.21	2.15	2.09	2.08	2.06	2.31	2.02	1.98	2.06	1.96	1.97	1.96	1.97	2.09	1.96	2.23	2.34	2.34	2.25	1.96	2.34	2.13	24
28	2.41	2.26	2.34	S	2.37	2.29	2.25	2.23	2.17	2.02	2.00	1.99	2.02	2.03	2.00	2.09	2.19	2.08	2.06	2.17	2.56	2.11	2.25	2.25	1.99	2.56	2.18	24
29	2.73	2.56	S	2.47	2.38	2.34	2.19	2.09	2.14	2.09	2.07	2.20	2.10	2.09	2.02	2.10	2.09	***23.80***	2.65	2.96	2.65	3.04	2.54	2.76	2.02	***23.80***	3.31	24
30	2.94	S	2.46	2.36	2.56	2.53	2.44	2.31	2.13	2.16	2.11	2.10	2.10	2.09	2.23	2.05	2.05	2.14	2.19	2.22	2.21	2.44	2.22	2.30	2.05	2.94	2.28	24
HOURLY MAX	2.94	3.43	2.92	3.39	3.81	3.52	3.24	3.00	2.63	2.37	2.32	2.29	2.19	2.36	3.18	2.51	2.19	23.80	2.65	2.96	2.65	3.62	2.84	2.76				
HOURLY AVG	2.27	2.29	2.25	2.31	2.34	2.29	2.20	2.16	2.12	2.08	2.06	2.06	2.04	2.03	2.08	2.03	2.01	2.84	2.07	2.09	2.19	2.28	2.24	2.23				

STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS: 648

MAXIMUM INSTANTANEOUS VALUE: 23.80 PPM @ HOUR(S) 17 ON DAY(S) 29

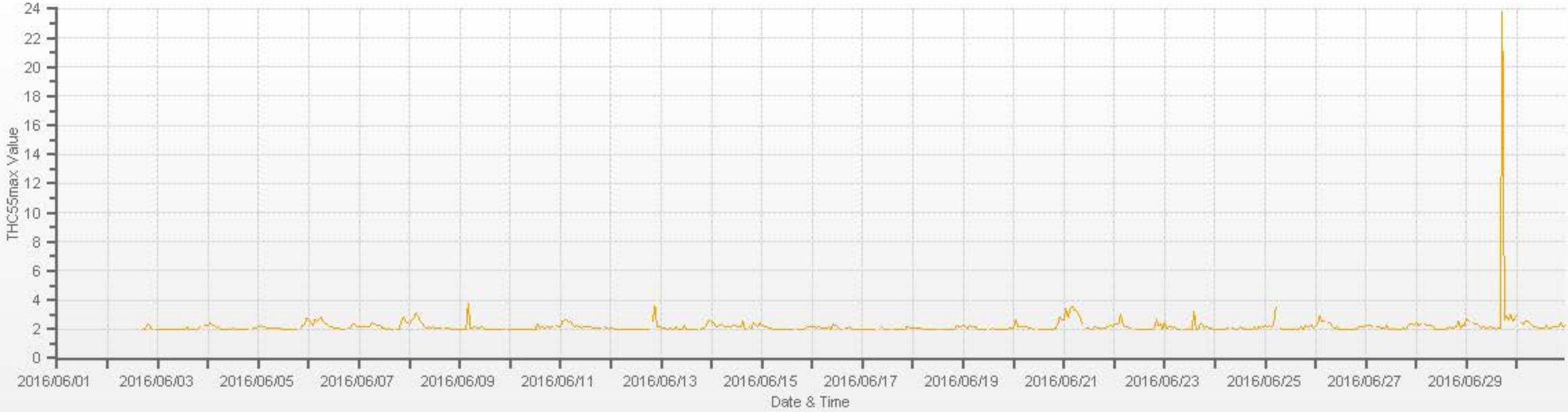
VAR-VARIOUS

IZS CALIBRATION TIME: 29 HRS OPERATIONAL TIME: 683 HRS

MONTHLY CALIBRATION TIME: 6 HRS

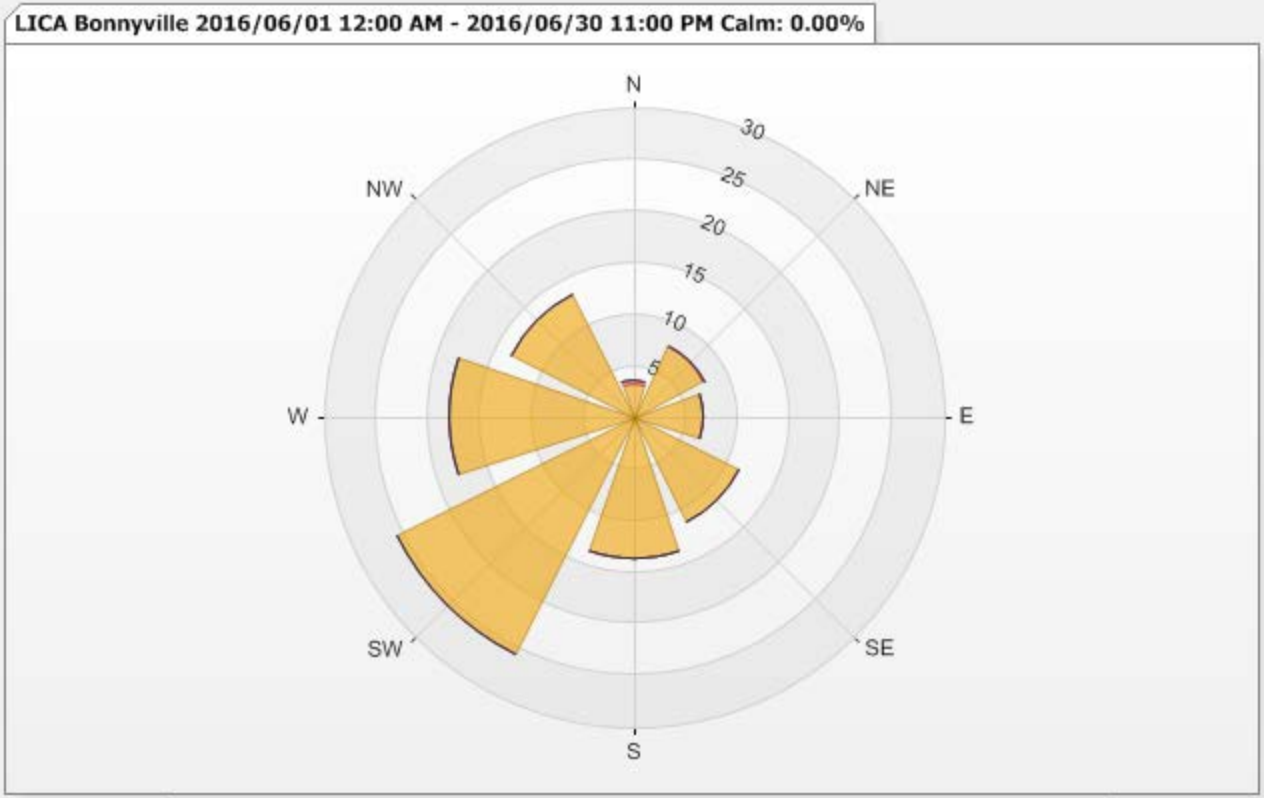
STANDARD DEVIATION: 0.89

THC55max[ppm] Station: LICA Bonnyville Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]

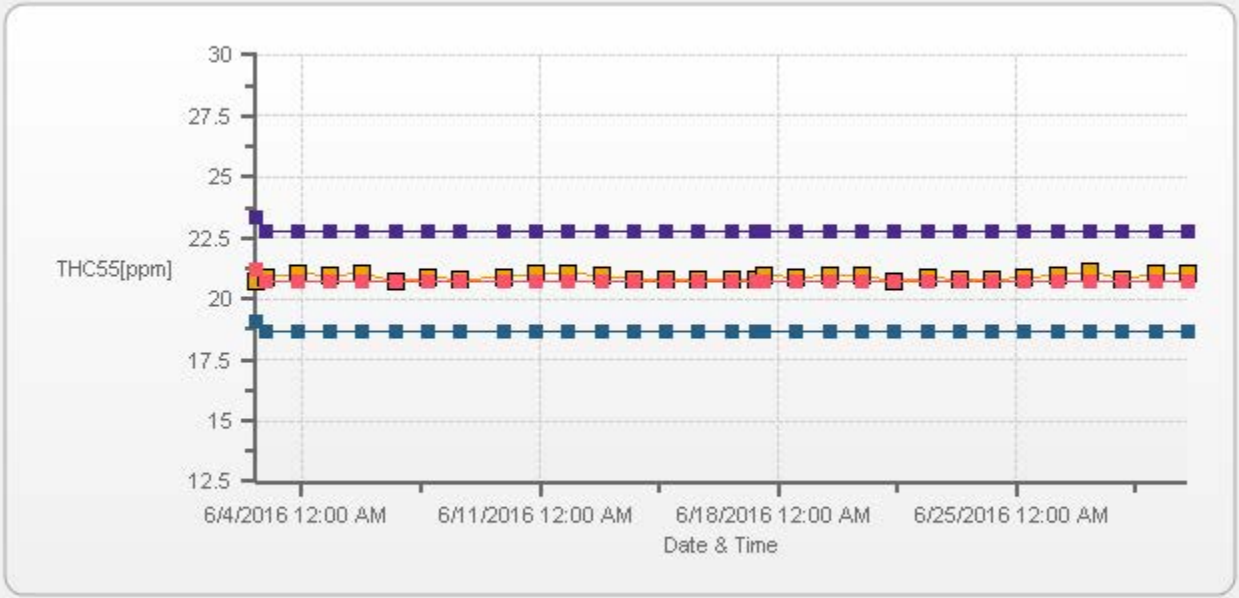


Wind: LICA Bonnyville Monitor: THC55 [ppm] Monthly: 06/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
Calm: 0.00% Valid Data: 94.74% Calm Avg: 0.00

Direction	0.0-3.0	3.0-10.0	10.0-50.0	>50.0	Total
N	3.24	0.31	0	0	3.55
NE	7.55	0.15	0	0	7.7
E	6.78	0	0	0	6.78
SE	11.4	0	0	0	11.4
S	13.71	0	0	0	13.71
SW	25.73	0	0	0	25.73
W	17.87	0	0	0	17.87
NW	13.25	0	0	0	13.25
Summary	100	0.46	0	0	100


LICA Bonnyville 2016/06/01 12:00 AM - 2016/06/30 11:00 PM Calm: 0.00%
N
NE
E
SE
S
SW
W
NW
30
25
20
15
10
5
% Icon Classes (ppm)
100 0.0-3.0
0 3.0-10.0
0 10.0-50.0
0 >50.0

THC55[ppm] Calibration: LICA Bonnyville Monthly: 06/2016 Type: Span



METHANE

METHANE (CH4) hourly averages in ppm

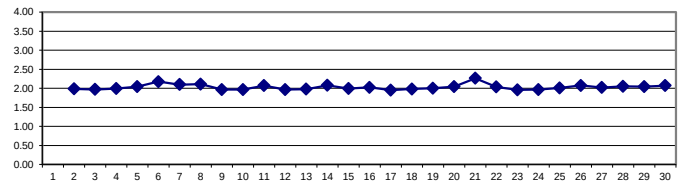
MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1																												
2												**C**	**C**	**C**	**C**	**C**	**C**	1.99	1.98	2.02	2.02	1.94	**S**	1.97	1.94	2.02	1.99	13
3	1.96	1.95	1.97	1.97	1.97	1.98	1.98	1.97	1.98	1.96	1.93	1.94	1.92	1.93	1.94	1.94	1.94	1.91	1.92	1.95	1.98	**S**	2.20	2.12	1.91	2.20	1.97	24
4	2.13	2.18	2.19	2.06	1.98	2.01	1.98	1.95	1.95	1.95	1.95	1.95	1.96	1.96	1.95	1.95	1.95	1.96	1.96	1.96	**S**	1.96	1.99	2.04	1.95	2.19	2.00	24
5	2.03	2.10	2.14	2.08	2.10	2.07	2.06	2.06	2.07	2.04	1.98	1.95	1.96	1.94	1.95	1.95	1.96	1.96	1.96	**S**	2.01	2.12	2.19	2.36	1.94	2.36	2.05	24
6	2.31	2.11	2.18	2.36	2.48	2.57	2.52	2.36	2.29	2.21	2.14	2.11	2.04	1.99	1.98	1.99	2.00	1.99	**S**	1.99	2.02	2.12	2.12	2.15	1.98	2.57	2.18	24
7	2.10	2.10	2.11	2.14	2.16	2.14	2.22	2.19	2.19	2.13	2.02	2.00	2.01	1.95	1.96	1.95	1.93	**S**	1.93	1.95	2.03	2.37	2.37	2.30	1.93	2.37	2.10	24
8	2.23	2.29	2.38	2.72	2.52	2.31	2.17	2.08	2.05	2.03	2.03	2.03	2.01	1.97	1.96	1.97	**S**	2.00	1.99	1.97	1.96	1.96	1.96	1.97	1.96	2.72	2.11	24
9	1.96	1.96	1.97	1.99	1.99	2.00	2.01	2.00	2.02	2.00	1.97	1.93	1.95	1.93	1.94	1.94	1.94	1.94	1.95	1.95	1.96	1.97	**S**	1.96	1.93	2.02	1.97	24
10	1.97	1.96	1.96	1.95	1.95	1.96	1.93	1.94	1.95	1.93	1.94	1.95	1.94	1.95	1.95	1.97	1.96	1.95	1.98	1.98	2.03	**S**	2.07	2.04	1.93	2.07	1.97	24
11	2.05	2.15	2.20	2.21	2.28	2.32	2.13	2.10	2.10	2.02	2.00	2.01	2.04	2.02	2.01	1.98	2.01	2.01	2.01	2.00	**S**	2.04	1.97	1.97	1.97	2.32	2.07	24
12	1.97	1.99	1.98	1.98	1.97	1.98	1.95	1.94	1.95	1.97	1.96	1.95	1.95	1.95	1.94	1.94	1.93	1.94	1.95	**S**	1.97	2.05	2.01	2.05	1.93	2.05	1.97	24
13	2.03	2.06	2.05	2.00	2.00	2.00	1.97	1.96	1.94	1.93	1.92	1.92	1.91	1.92	1.91	1.91	1.91	1.91	**S**	1.94	1.98	2.06	2.18	2.14	1.91	2.18	1.98	24
14	2.17	2.17	2.13	2.11	2.10	2.07	2.05	2.06	2.07	2.15	2.20	2.16	2.10	2.02	1.99	2.00	1.97	**S**	1.95	1.99	2.05	2.09	2.10	2.16	1.95	2.20	2.08	24
15	2.22	2.09	2.09	2.09	1.97	1.94	1.94	1.95	1.95	1.95	1.95	1.94	1.94	1.95	1.95	1.95	**S**	1.95	1.94	1.93	1.95	1.99	2.04	2.14	1.93	2.22	1.99	24
16	2.13	2.11	2.07	2.08	2.03	2.03	2.06	2.03	2.02	2.01	2.10	2.11	2.05	1.95	1.97	**S**	1.96	1.99	2.06	1.97	1.96	1.97	1.98	1.96	1.95	2.13	2.03	24
17	1.96	1.95	1.94	1.95	1.95	1.94	1.94	***1.81***	**P**	1.95	1.94	1.94	1.94	1.94	**S**	1.94	1.94	1.94	1.93	1.95	1.97	2.04	2.07	2.03	***1.81***	2.07	1.95	23
18	2.03	2.03	2.00	1.99	2.01	2.01	1.99	1.98	1.98	1.97	1.93	1.93	1.92	**S**	1.93	1.92	1.93	1.93	1.93	1.96	1.98	2.01	2.10	2.10	1.92	2.10	1.98	24
19	2.15	2.04	2.03	2.11	2.12	2.11	2.09	1.98	1.96	1.94	1.94	1.93	**S**	1.94	1.94	1.94	1.94	1.94	1.94	1.95	1.97	1.99	2.02	2.05	1.93	2.15	2.00	24
20	2.03	2.09	2.07	2.15	2.15	2.11	2.10	2.06	1.98	1.97	1.96	**S**	1.94	1.94	1.94	1.94	1.96	1.97	1.97	1.98	2.04	2.10	2.20	2.38	1.94	2.38	2.04	24
21	2.31	2.49	2.40	2.82	***3.26***	2.96	2.84	2.72	2.29	2.03	**S**	1.97	1.98	1.99	2.00	1.99	1.97	1.97	1.97	1.97	1.98	2.02	2.09	2.08	1.97	***3.26***	***2.27***	24
22	2.19	2.20	2.17	2.20	2.17	2.12	2.09	1.96	2.00	**S**	1.96	1.91	1.92	1.92	1.95	1.93	1.93	1.94	1.98	2.00	2.09	2.14	2.08	1.97	1.91	2.20	2.04	24
23	2.02	1.99	2.00	2.03	1.99	1.99	1.97	1.97	**S**	1.95	1.93	1.93	1.93	1.92	1.92	1.92	1.93	1.94	1.94	1.96	1.97	1.97	1.95	1.95	1.92	2.03	1.96	24
24	1.98	1.96	1.95	1.95	1.94	1.96	1.97	**S**	1.99	1.96	1.92	1.94	1.97	1.94	1.93	1.92	1.92	1.93	1.94	1.97	1.98	2.00	2.05	2.12	1.92	2.12	1.96	24
25	2.12	2.14	2.08	2.15	2.13	2.17	**S**	1.99	1.98	1.97	1.95	1.96	1.94	1.92	1.93	1.92	1.92	1.96	1.95	1.95	1.96	1.98	2.03	2.04	1.92	2.17	2.01	24
26	2.12	2.30	2.38	2.38	2.36	**S**	2.32	2.30	2.10	2.03	1.97	1.93	1.92	1.92	1.95	1.93	1.93	1.93	1.94	1.95	1.96	1.99	2.01	2.08	1.92	2.38	2.07	24
27	2.15	2.17	2.13	2.11	**S**	2.11	2.07	2.02	2.01	1.98	1.96	1.96	1.91	1.92	1.92	1.93	1.91	1.88	1.92	1.90	2.00	2.14	2.21	2.14	1.88	2.21	2.02	24
28	2.16	2.17	2.22	**S**	2.29	2.19	2.16	2.06	2.02	1.97	1.95	1.94	1.96	1.93	1.95	1.95	1.96	1.97	1.96	2.02	2.07	2.07	2.06	2.12	1.93	2.29	2.05	24
29	2.16	2.33	**S**	2.32	2.27	2.19	2.13	2.03	1.99	1.98	1.97	1.95	1.96	1.94	1.94	1.95	1.95	1.95	1.95	1.98	2.00	2.03	2.03	2.07	1.94	2.33	2.05	24
30	2.14	**S**	2.18	2.12	2.20	2.22	2.17	2.13	2.03	2.05	2.05	1.97	1.97	1.99	1.98	1.97	1.97	1.98	2.00	2.07	2.11	2.09	2.11	2.14	1.97	2.22	2.07	24
HOURLY MAX	2.31	2.49	2.40	2.82	3.26	2.96	2.84	2.72	2.29	2.21	2.20	2.16	2.10	2.02	2.01	2.00	2.01	2.01	2.06	2.07	2.11	2.37	2.37	2.38				
HOURLY AVG	2.10	2.11	2.11	2.15	2.16	2.13	2.10	2.06	2.03	2.00	1.98	1.97	1.96	1.95	1.95	1.95	1.95	1.95	1.96	1.97	2.00	2.04	2.08	2.09				

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

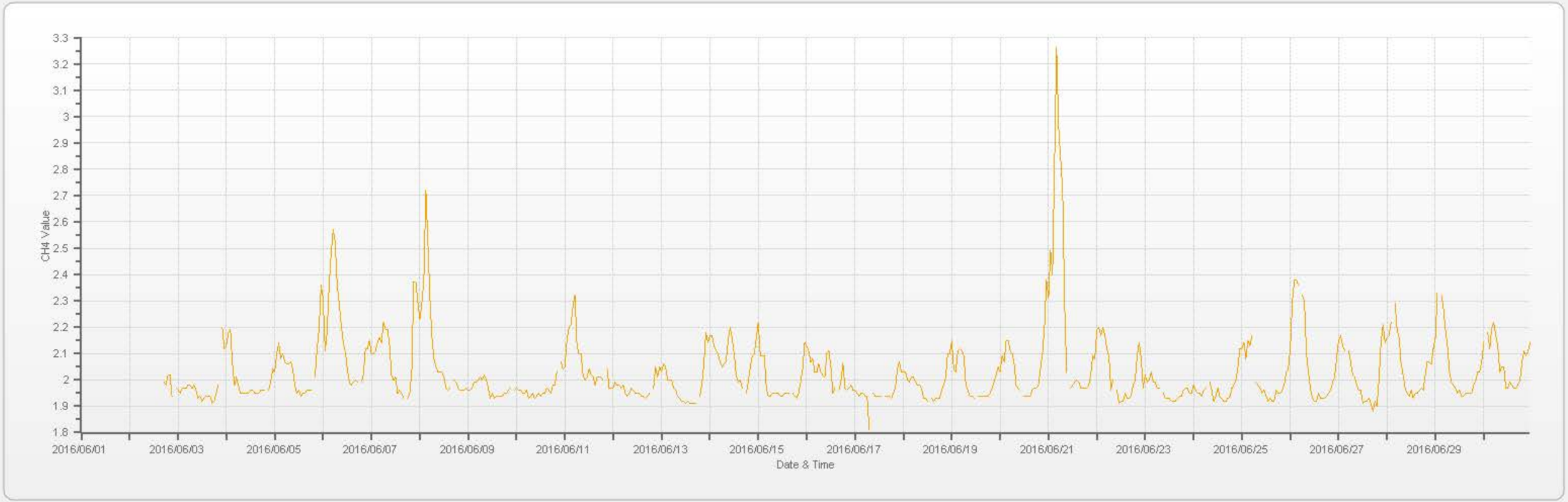
24 HOUR AVERAGES FOR June 2016



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:		649					
MINIMUM 1-HR AVERAGE	1.81	PPM	@ HOUR(S)	7	ON DAY(S)	17	
MAXIMUM 1-HR AVERAGE:	3.26	PPM	@ HOUR(S)	4	ON DAY(S)	21	
MAXIMUM 24-HR AVERAGE:	2.27	PPM			ON DAY(S)	21	
					VAR-VARIOUS		
IZS CALIBRATION TIME:	29	HRS	OPERATIONAL TIME:			684	HRS
MONTHLY CALIBRATION TIME:	6	HRS	AMD OPERATION UPTIME:			95.0	%
STANDARD DEVIATION:	0.14		MONTHLY AVERAGE:			2.03	PPM

CH4[ppm] Station: LICA Bonnyville Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



METHANE MAX instantaneous maximum in ppm

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1																												
2												C	C	C	C	C	C	2.03	2.02	2.09	2.11	1.98	S	2.02	1.98	2.11	2.04	13
3	2.02	2.00	2.01	1.99	2.02	2.02	2.01	2.01	2.02	1.99	2.00	1.99	2.00	1.99	1.99	1.99	1.98	1.99	1.99	1.98	2.16	S	2.26	2.22	1.98	2.26	2.03	24
4	2.25	2.30	2.30	2.24	2.07	2.05	2.02	1.98	1.98	1.99	1.98	1.97	1.98	1.98	1.97	1.98	2.00	2.00	2.01	2.01	S	2.03	2.05	2.09	1.97	2.30	2.05	24
5	2.14	2.16	2.18	2.14	2.13	2.12	2.09	2.08	2.10	2.08	2.04	2.00	1.99	1.99	1.98	1.99	1.99	1.99	2.00	S	2.12	2.24	2.40	2.74	1.98	2.74	2.12	24
6	2.58	2.47	2.28	2.67	2.57	2.75	2.81	2.45	2.36	2.32	2.18	2.16	2.10	2.03	2.04	2.03	2.03	2.03	S	2.04	2.12	2.38	2.20	2.20	2.03	2.81	2.30	24
7	2.15	2.15	2.16	2.21	2.22	2.21	2.32	2.26	2.25	2.26	2.08	2.04	2.07	1.98	2.00	1.99	1.98	S	1.97	1.99	2.36	2.59	2.48	2.45	1.97	2.59	2.18	24
8	2.34	2.43	2.63	2.96	2.81	2.41	2.24	2.11	2.09	2.08	2.08	2.09	2.05	2.04	2.00	2.00	S	2.09	2.09	2.10	2.02	1.98	2.00	2.01	1.98	2.96	2.20	24
9	2.00	2.00	2.01	2.03	2.02	2.06	2.06	2.04	2.06	2.10	2.02	1.99	1.98	1.96	1.96	1.96	1.97	1.97	1.96	1.99	1.99	2.00	S	2.01	1.96	2.10	2.01	24
10	1.99	2.00	1.98	1.99	1.99	2.01	1.98	1.97	1.97	1.96	1.96	1.96	1.97	1.98	2.09	2.15	2.12	2.06	2.14	2.05	2.22	S	2.31	2.18	1.96	2.31	2.04	24
11	2.14	2.53	2.62	2.61	2.47	2.57	2.27	2.18	2.24	2.16	2.04	2.11	2.17	2.16	2.10	2.09	2.10	2.11	2.06	2.13	S	2.10	2.05	2.03	2.03	2.62	2.22	24
12	2.04	2.08	2.01	2.01	2.03	2.01	1.98	1.98	1.98	2.01	2.00	1.98	1.98	1.98	1.98	1.96	1.95	1.98	2.00	S	2.53	3.42	2.13	2.17	1.95	3.42	2.10	24
13	2.10	2.11	2.10	2.01	2.04	2.03	2.01	1.97	1.99	1.96	1.96	1.95	1.98	1.94	1.94	1.95	1.93	1.94	S	2.02	2.09	2.19	2.44	2.62	1.93	2.62	2.06	24
14	2.42	2.45	2.21	2.22	2.28	2.22	2.17	2.19	2.20	2.21	2.24	2.21	2.17	2.10	2.10	2.51	2.02	S	2.15	2.07	2.35	2.27	2.14	2.37	2.02	2.51	2.23	24
15	2.26	2.15	2.14	2.13	2.07	1.97	1.96	1.97	1.98	1.99	1.98	1.96	1.98	1.97	1.97	1.97	S	1.98	1.96	1.95	2.01	2.04	2.14	2.18	1.95	2.26	2.03	24
16	2.18	2.14	2.12	2.14	2.13	2.08	2.09	2.06	2.06	2.03	2.32	2.27	2.20	2.00	2.02	S	2.12	2.07	2.16	2.01	2.02	2.02	2.02	2.01	2.00	2.32	2.10	24
17	1.98	1.98	1.96	1.97	1.97	1.96	1.95	P	P	2.14	1.96	1.97	1.97	1.95	S	1.95	1.98	1.95	1.96	1.96	2.03	2.14	2.17	2.10	1.95	2.17	2.00	22
18	2.06	2.06	2.05	2.04	2.04	2.03	2.02	2.02	2.02	2.00	1.97	1.95	1.94	S	1.98	1.94	1.95	1.95	1.97	2.01	2.02	2.13	2.21	2.22	1.94	2.22	2.03	24
19	2.30	2.19	2.08	2.18	2.18	2.17	2.16	2.03	2.01	1.97	1.96	1.96	S	1.96	1.96	1.96	1.96	1.98	1.98	1.97	2.01	2.03	2.09	2.08	1.96	2.30	2.05	24
20	2.10	2.63	2.15	2.21	2.19	2.14	2.14	2.13	2.02	2.01	1.99	S	1.96	1.96	1.97	1.96	2.01	2.02	2.02	2.03	2.09	2.25	2.75	2.61	1.96	2.75	2.15	24
21	2.59	3.33	2.83	3.24	***3.43***	3.16	3.13	2.94	2.63	2.37	S	2.04	2.09	2.03	2.11	2.10	2.09	2.08	2.03	2.04	2.05	2.16	2.23	2.19	2.03	***3.43***	2.47	24
22	2.32	2.35	2.26	2.91	2.49	2.16	2.16	2.08	2.04	S	2.00	1.96	1.97	1.96	2.01	1.97	1.96	1.99	2.02	2.11	2.59	2.28	2.22	2.01	1.96	2.91	2.17	24
23	2.51	2.10	2.05	2.15	2.04	2.04	2.00	2.02	S	2.00	1.96	2.01	2.12	1.94	2.00	1.96	1.96	2.00	1.98	2.06	2.10	2.10	2.04	1.99	1.94	2.51	2.05	24
24	2.02	2.00	1.99	2.00	2.00	1.98	2.01	S	2.02	2.02	1.94	1.98	2.04	1.96	1.96	1.96	1.93	1.95	1.97	1.99	2.01	2.06	2.12	2.18	1.93	2.18	2.00	24
25	2.17	2.22	2.18	2.21	2.18	2.20	S	2.06	2.02	1.99	1.98	1.98	1.97	1.95	1.94	1.94	1.97	2.15	1.99	2.04	2.01	2.05	2.06	2.10	1.94	2.22	2.06	24
26	2.26	2.36	2.73	2.49	2.45	S	2.42	2.42	2.22	2.10	2.03	1.99	1.95	1.96	2.00	2.01	2.01	2.01	1.98	2.00	2.04	2.16	2.15	2.17	1.95	2.73	2.17	24
27	2.25	2.23	2.20	2.18	S	2.17	2.16	2.09	2.09	2.06	2.04	2.02	1.98	1.98	1.96	1.97	1.96	1.97	1.96	1.96	2.19	2.34	2.34	2.25	1.96	2.34	2.10	24
28	2.41	2.26	2.34	S	2.37	2.29	2.21	2.19	2.09	2.02	2.00	1.99	2.01	1.97	2.00	2.10	2.20	2.04	2.06	2.14	2.45	2.12	2.25	2.25	1.97	2.45	2.16	24
29	2.66	2.53	S	2.39	2.35	2.35	2.20	2.10	2.07	2.10	2.08	2.20	2.09	2.09	2.02	2.11	2.09	2.20	2.09	2.11	2.12	2.22	2.22	2.37	2.02	2.66	2.21	24
30	2.25	S	2.27	2.24	2.41	2.37	2.44	2.25	2.13	2.17	2.12	2.07	2.03	2.09	2.09	2.05	2.05	2.15	2.16	2.22	2.21	2.29	2.20	2.26	2.03	2.44	2.20	24
HOURLY MAX	2.66	3.33	2.83	3.24	3.43	3.16	3.13	2.94	2.63	2.37	2.32	2.27	2.20	2.16	2.11	2.51	2.20	2.20	2.16	2.22	2.59	3.42	2.75	2.74				
HOURLY AVG	2.23	2.27	2.22	2.28	2.26	2.20	2.19	2.14	2.10	2.08	2.03	2.03	2.03	2.00	2.01	2.02	2.01	2.03	2.03	2.04	2.15	2.21	2.21	2.21				

STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS: 648

MAXIMUM INSTANTANEOUS VALUE: 3.43 PPM @ HOUR(S) 4 ON DAY(S) 21

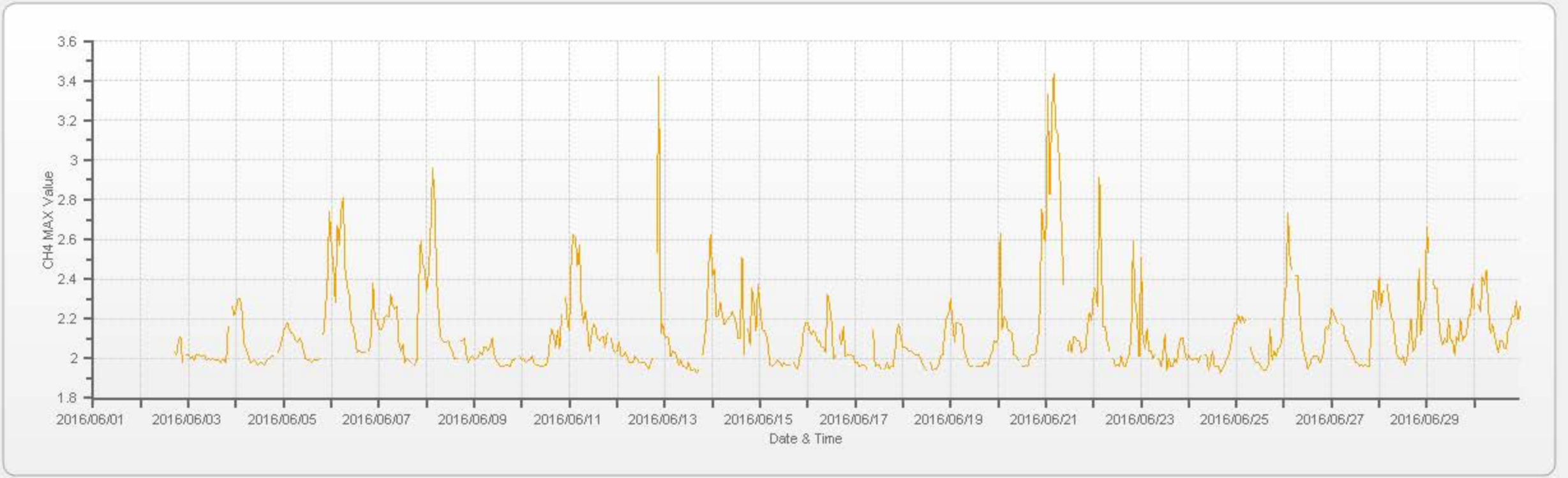
VAR-VARIOUS

IZS CALIBRATION TIME: 29 HRS OPERATIONAL TIME: 683 HRS

MONTHLY CALIBRATION TIME: 6 HRS

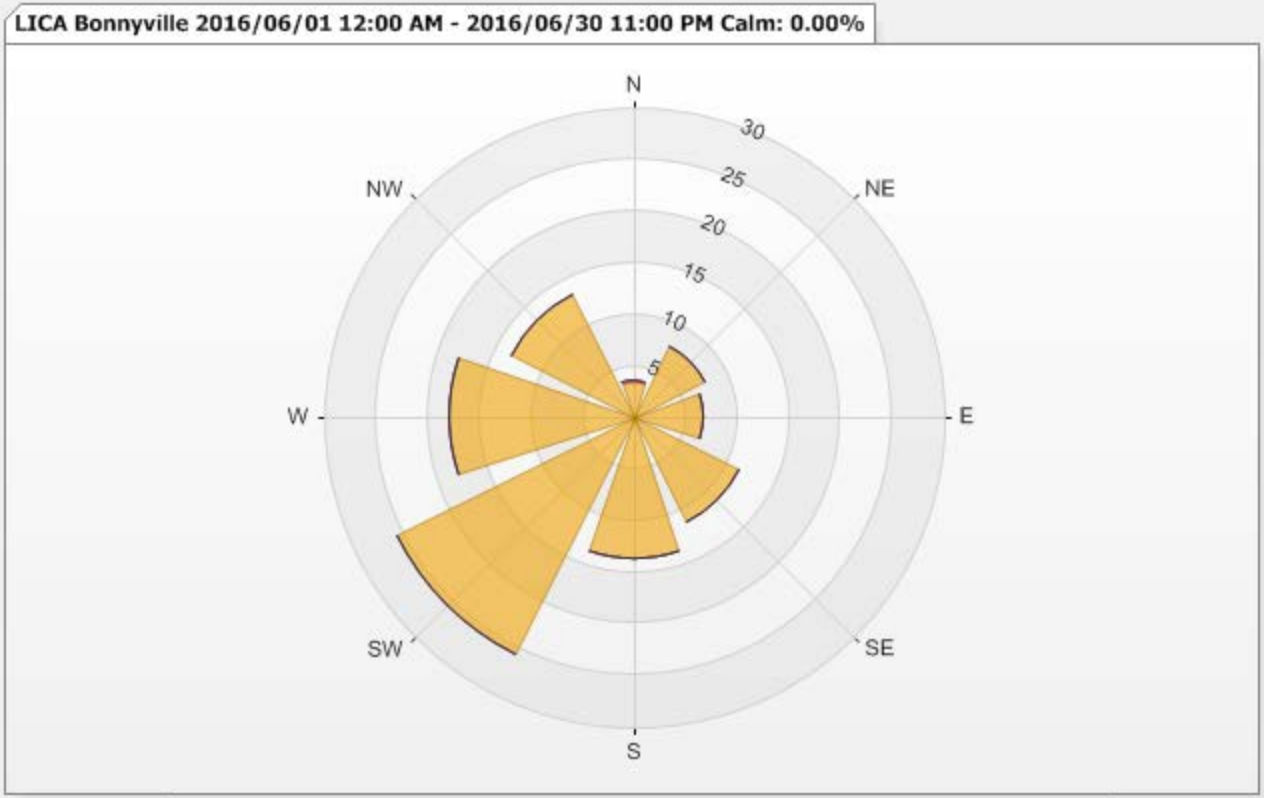
STANDARD DEVIATION: 0.21

CH4 MAX[ppm] Station: LICA Bonnyville Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]

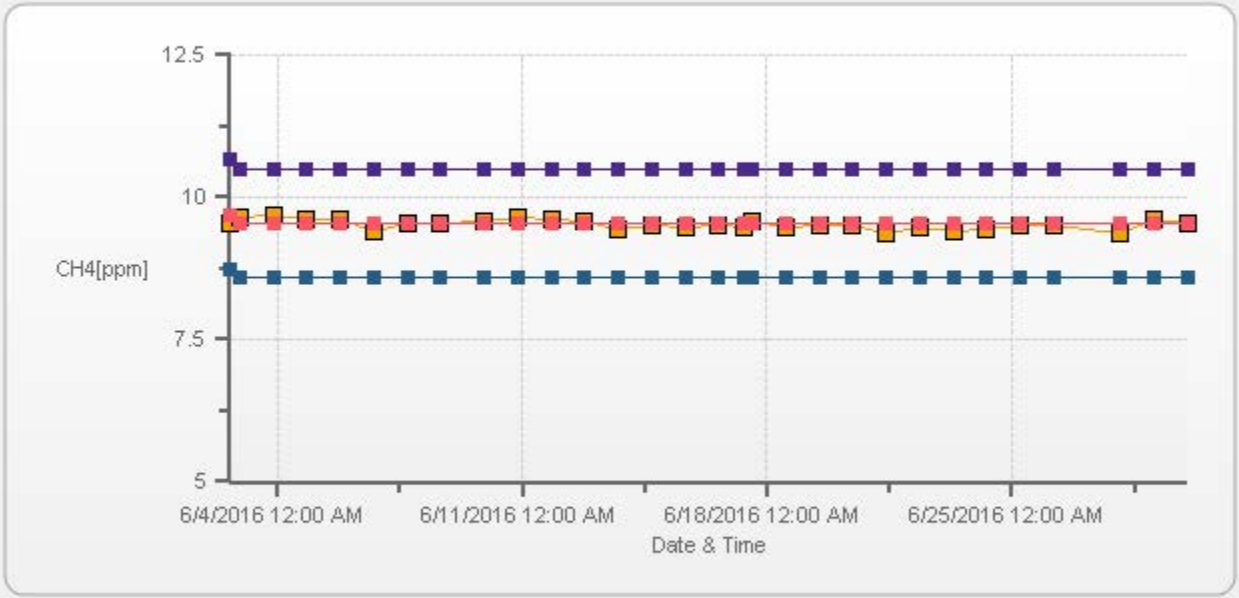


Wind: LICA Bonnyville Monitor: CH4 [ppm] Monthly: 06/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
Calm: 0.00% Valid Data: 94.74% Calm Avg: 0.00

Direction	0.0-3.0	3.0-10.0	10.0-50.0	>50.0	Total
N	3.39	0.15	0	0	3.54
NE	7.7	0	0	0	7.7
E	6.78	0	0	0	6.78
SE	11.4	0	0	0	11.4
S	13.71	0	0	0	13.71
SW	25.73	0	0	0	25.73
W	17.87	0	0	0	17.87
NW	13.25	0	0	0	13.25
Summary	100	0.15	0	0	100


LICA Bonnyville 2016/06/01 12:00 AM - 2016/06/30 11:00 PM Calm: 0.00%
N
NE
E
SE
S
SW
W
NW
30
25
20
15
10
5
% Icon Classes (ppm)
100 0.0-3.0
0 3.0-10.0
0 10.0-50.0
0 >50.0

CH4[ppm] Calibration: LICA Bonnyville Monthly: 06/2016 Type: Span



NON-METHANE HYDROCARBON

NON-METHANE HYDROCARBONS (NMHC) hourly averages in ppm

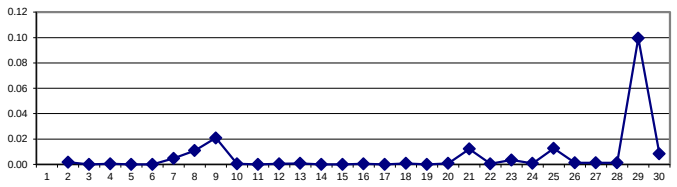
MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1																												
2												C	C	C	C	C	C	0.00	0.00	0.01	0.00	0.00	S	0.00	0.00	0.01	0.00	13
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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	24
4	0.00	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	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.01	0.00	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	S	0.00	0.00	0.00	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	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
7	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.01	0.05	0.01	0.01	0.00	0.05	0.00	24
8	0.00	0.02	0.07	0.08	0.05	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.01	24
9	0.00	0.00	0.00	0.00	0.48	0.00	0.00	0.00	0.00	0.00	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	0.48	0.02	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	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.01	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	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	24
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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	0.01	0.00	0.00	0.00	0.01	0.00	24
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	24
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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	24
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	24
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	P	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23
18	0.00	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	0.02	0.00	0.00	0.00	0.02	0.00	24
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
20	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	0.01	0.01	0.00	0.01	0.00	24
21	0.01	0.07	0.02	0.04	0.08	0.04	0.01	0.01	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.01	24
22	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	0.01	0.00	0.00	0.00	0.00	0.01	0.00	24
23	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	24
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	24
25	0.01	0.00	0.00	0.00	0.00	0.22	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.02	0.00	0.00	0.22	0.01	24
26	0.00	0.00	0.02	0.00	0.00	S	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	0.00	0.00	0.00	0.02	0.00	24
27	0.00	0.00	0.01	0.00	S	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	24
28	0.00	0.00	0.00	S	0.00	0.00	0.00	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	0.02	0.00	0.00	0.00	0.00	0.02	0.00	24
29	0.01	0.01	S	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	***1.30***	0.13	0.21	0.22	0.16	0.09	0.14	0.00	***1.30***	***0.10***	24
30	0.07	S	0.03	0.01	0.02	0.03	0.01	0.00	0.00	0.00	0.00	0.01	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	0.07	0.01	24
HOURLY MAX	0.07	0.07	0.07	0.08	0.48	0.22	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.03	0.00	0.00	1.30	0.13	0.21	0.22	0.16	0.09	0.14				
HOURLY AVG	0.00	0.00	0.01	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.01	0.01	0.01	0.01	0.00	0.01				

STATUS FLAG CODES

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

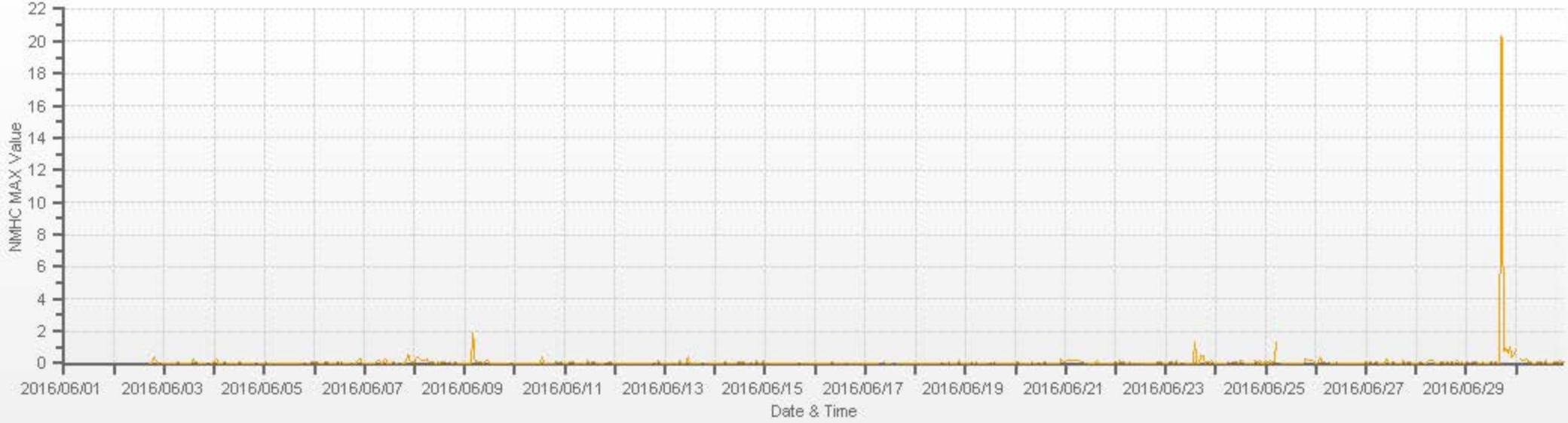
24 HOUR AVERAGES FOR June 2016



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:			73					
MINIMUM 1-HR AVERAGE	0.00	PPM	@ HOUR(S)	VAR	ON DAY(S)	ALL		
MAXIMUM 1-HR AVERAGE:	1.30	PPM	@ HOUR(S)	17	ON DAY(S)	29		
MAXIMUM 24-HR AVERAGE:	0.10	PPM			ON DAY(S)	29		
					VAR-VARIOUS			
IZS CALIBRATION TIME:	29	HRS	OPERATIONAL TIME:			684	HRS	
MONTHLY CALIBRATION TIME:	6	HRS	AMD OPERATION UPTIME:			95.0	%	
STANDARD DEVIATION:	0.06		MONTHLY AVERAGE:			0.01	PPM	

NMHC MAX[ppm] Station: LICA Bonnyville Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



NON-METHANE HYDROCARBONS MAX instantaneous maximum in ppm

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1																												0
2												C	C	C	C	C	C	0.00	0.00	0.36	0.16	0.00	S	0.00	0.00	0.36	0.09	13
3	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.07	0.00	0.03	0.00	0.00	0.00	0.00	0.26	0.09	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.26	0.02	24
4	0.06	0.29	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.29	0.03	24
5	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.12	0.00	0.12	0.01	24
6	0.11	0.08	0.00	0.02	0.00	0.09	0.10	0.00	0.00	0.00	0.00	0.05	0.00	0.11	0.00	0.00	0.00	0.00	S	0.00	0.00	0.16	0.24	0.00	0.00	0.24	0.04	24
7	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.18	0.00	0.09	0.24	0.00	0.00	0.00	0.12	0.00	0.00	S	0.00	0.00	0.15	0.58	0.12	0.13	0.00	0.58	0.08	24
8	0.08	0.35	0.35	0.22	0.21	0.20	0.25	0.13	0.07	0.12	0.00	0.14	0.00	0.11	0.13	0.09	S	0.14	0.00	0.13	0.07	0.00	0.00	0.00	0.00	0.35	0.12	24
9	0.00	0.00	0.00	0.00	1.83	0.11	0.12	0.10	0.11	0.00	0.19	0.20	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	1.83	0.12	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	0.39	0.00	0.00	0.00	0.00	0.00	0.00	0.09	S	0.06	0.03	0.00	0.39	0.02	24
11	0.00	0.00	0.09	0.07	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.00	0.12	0.12	0.00	0.00	0.00	0.00	0.00	S	0.10	0.09	0.00	0.00	0.16	0.04	24
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.20	0.00	0.00	0.00	0.20	0.01	24
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.00	0.00	0.00	0.33	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	0.33	0.02	24
14	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.11	0.06	0.10	0.10	0.00	0.00	S	0.00	0.00	0.15	0.00	0.00	0.15	0.00	0.15	0.03	24
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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	24
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	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	0.13	0.01	24
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	P	P	0.13	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	0.13	0.01	22
18	0.00	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	0.11	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.17	0.01	24
19	0.00	0.00	0.00	0.12	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.02	24
20	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	S	0.04	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.14	0.00	0.24	0.03	24
21	0.11	0.22	0.16	0.18	0.18	0.17	0.16	0.11	0.06	0.00	S	0.00	0.04	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.07	24
22	0.12	0.00	0.21	0.10	0.11	0.00	0.00	0.10	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.12	0.13	0.00	0.00	0.21	0.04	24
23	0.03	0.00	0.11	0.11	0.00	0.22	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	1.27	0.00	0.00	0.46	0.46	0.00	0.09	0.00	0.15	0.04	0.00	1.27	0.13	24
24	0.00	0.00	0.00	0.00	0.00	0.00	0.09	S	0.12	0.09	0.10	0.00	0.19	0.12	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.22	0.00	0.00	0.00	0.22	0.05	24
25	0.18	0.00	0.16	0.00	0.10	1.33	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.18	0.18	0.17	0.08	0.00	1.33	0.12	24
26	0.00	0.10	0.41	0.12	0.10	S	0.13	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41	0.04	24
27	0.12	0.00	0.14	0.00	S	0.07	0.00	0.00	0.00	0.00	0.28	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.18	0.00	0.13	0.07	0.00	0.00	0.00	0.28	0.05	24
28	0.00	0.00	0.09	S	0.00	0.00	0.16	0.15	0.18	0.00	0.00	0.00	0.07	0.10	0.00	0.11	0.00	0.11	0.00	0.14	0.17	0.00	0.09	0.00	0.00	0.18	0.06	24
29	0.13	0.13	S	0.12	0.11	0.09	0.00	0.00	0.10	0.00	0.01	0.00	0.12	0.00	0.07	0.00	0.00	***20.33***	0.74	0.92	0.64	0.99	0.38	0.59	0.00	***20.33***	1.11	24
30	0.84	S	0.30	0.18	0.21	0.28	0.14	0.13	0.00	0.00	0.12	0.13	0.12	0.00	0.15	0.00	0.00	0.00	0.09	0.09	0.10	0.17	0.12	0.14	0.00	0.84	0.14	24
HOURLY MAX	0.84	0.35	0.41	0.22	1.83	1.33	0.25	0.23	0.18	0.13	0.28	0.33	0.19	0.39	1.27	0.15	0.11	20.33	0.74	0.92	0.64	0.99	0.38	0.59				
HOURLY AVG	0.06	0.05	0.07	0.05	0.11	0.11	0.05	0.05	0.03	0.02	0.04	0.04	0.03	0.04	0.09	0.02	0.00	0.78	0.05	0.08	0.08	0.11	0.07	0.05				

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: 195

MAXIMUM INSTANTANEOUS VALUE: 20.33 PPM @ HOUR(S) 17 ON DAY(S) 29

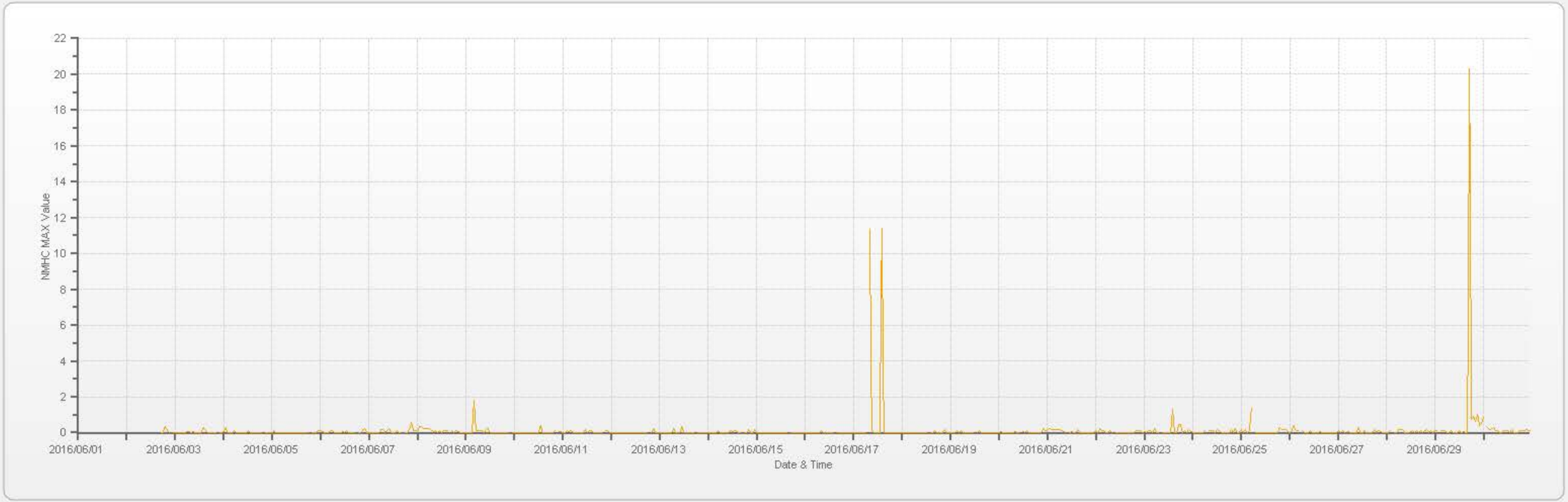
VAR-VARIOUS

IZS CALIBRATION TIME: 29 HRS OPERATIONAL TIME: 683 HRS

MONTHLY CALIBRATION TIME: 6 HRS

STANDARD DEVIATION: 0.81

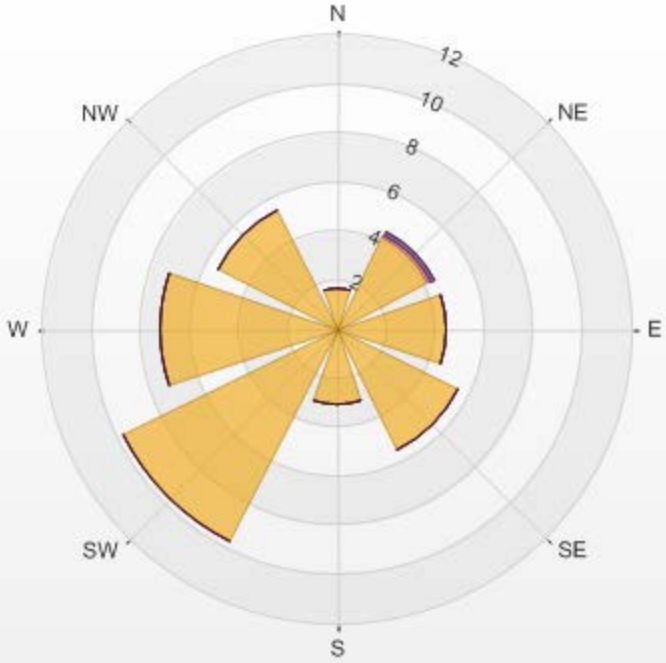
NMHC MAX[ppm] Station: LICA Bonnyville Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



Wind: LICA Bonnyville Monitor: NMHC [ppm] Monthly: 06/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
Calm: 58.40% Valid Data: 94.74% Calm Avg: 0.00

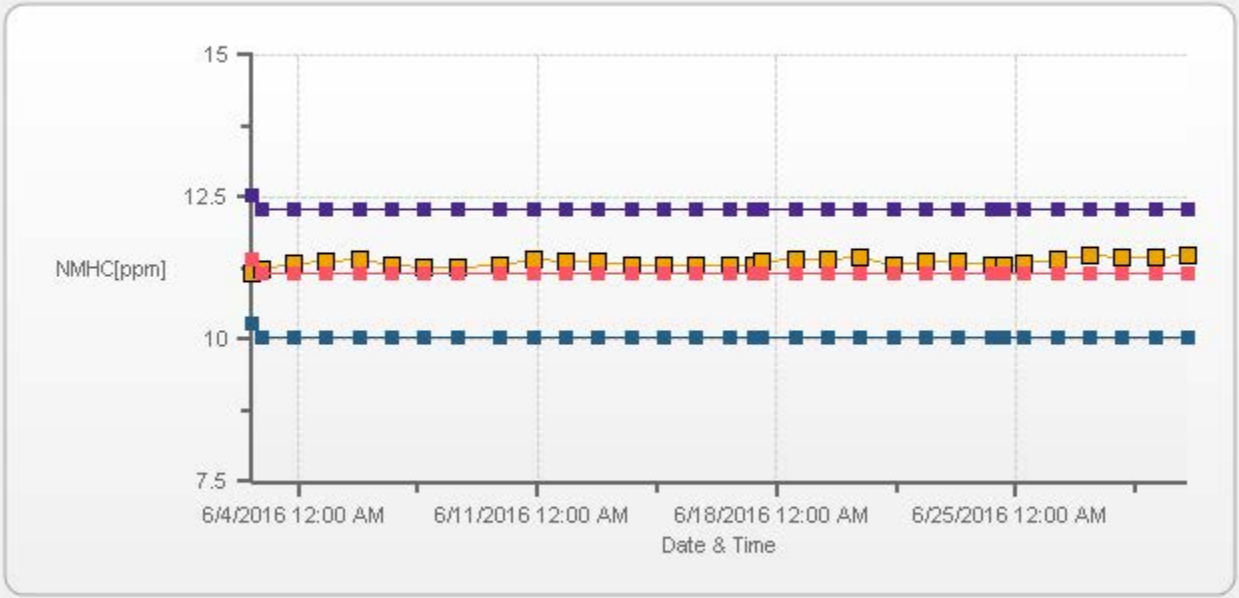
Direction	0.0-0.3	0.3-0.5	0.5-1.0	1.0-2.0	2.0-4.0	>4.0	Total
N	1.69	0	0	0	0	0	1.69
NE	4.16	0.15	0	0.15	0	0	4.46
E	4.47	0	0	0	0	0	4.47
SE	5.55	0	0	0	0	0	5.55
S	3.08	0	0	0	0	0	3.08
SW	9.71	0	0	0	0	0	9.71
W	7.24	0	0	0	0	0	7.24
NW	5.39	0	0	0	0	0	5.39
Summary	41.29	0.15	0	0.15	0	0	41.59

LICA Bonnyville 2016/06/01 12:00 AM - 2016/06/30 11:00 PM Calm: 58.40% Calm Wind Avg Speed: 0.00 (ppm)



% Icon Classes (ppm)	41	0.0-0.3	0	0.3-0.5	0	0.5-1.0	0	1.0-2.0	0	2.0-4.0	0	>4.0

NMHC[ppm] Calibration: LICA Bonnyville Monthly: 06/2016 Type: Span



OXIDES OF NITROGEN

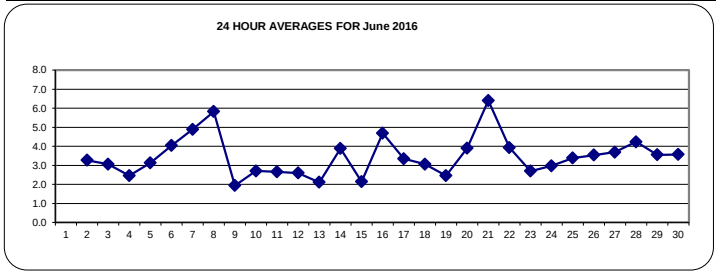
OXIDES OF NITROGEN (NOx) hourly averages in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1																												
2										C	C	C	C	C	C	C	C	2.0	2.6	7.1	2.8	1.4	S	3.7	1.4	7.1	3.3	15
3	2.8	2.0	2.7	2.9	3.3	3.6	4.8	4.1	3.1	2.8	2.1	2.1	1.7	1.6	1.4	2.0	2.4	2.0	1.9	2.2	5.0	S	8.0	5.9	1.4	8.0	3.1	24
4	6.4	5.1	5.2	3.0	1.6	3.6	2.0	1.6	1.4	1.5	1.3	1.4	1.3	1.6	1.5	1.9	1.3	1.3	1.4	1.4	S	3.8	3.0	4.0	1.3	6.4	2.5	24
5	5.2	4.9	4.9	4.0	3.4	3.0	2.4	2.4	2.9	2.3	1.9	1.1	1.0	1.3	0.9	1.0	1.0	1.1	1.2	S	6.6	4.6	7.3	7.7	0.9	7.7	3.1	24
6	5.8	2.2	2.2	3.9	5.5	6.3	6.2	6.9	4.7	5.9	3.4	4.3	2.8	1.4	3.2	2.5	2.4	1.4	S	2.6	6.6	6.2	3.5	3.0	1.4	6.9	4.0	24
7	2.7	3.2	3.4	3.8	4.8	4.6	4.8	7.3	5.6	4.1	3.4	3.3	3.0	2.6	3.2	3.7	2.6	S	3.0	3.7	9.1	9.2	11.8	9.7	2.6	11.8	4.9	24
8	8.7	8.0	16.9	21.3	12.9	8.9	5.3	5.3	4.2	3.9	4.0	4.6	3.7	3.3	3.4	3.4	S	3.3	2.6	2.7	2.1	2.0	1.8	1.7	1.7	21.3	5.8	24
9	1.9	1.8	1.2	1.2	1.4	2.9	3.6	5.0	4.1	2.7	1.8	1.7	1.9	1.8	1.4	1.4	1.2	1.0	1.2	1.4	1.2	1.1	S	1.7	1.0	5.0	1.9	24
10	1.4	1.1	1.0	1.3	1.2	1.9	3.4	2.3	3.5	3.2	3.0	3.2	2.8	2.6	3.1	2.3	1.9	2.3	2.5	4.9	3.5	S	6.3	3.4	1.0	6.3	2.7	24
11	1.9	2.4	3.3	4.1	5.0	5.3	2.5	2.1	2.7	2.2	1.6	3.3	4.0	2.0	2.1	1.5	1.5	2.0	2.2	1.5	S	3.5	2.4	2.1	1.5	5.3	2.7	24
12	2.1	3.4	1.7	2.4	2.6	1.8	1.0	1.7	2.4	2.5	2.4	1.6	1.8	2.6	1.5	***0.7***	***0.7***	1.1	2.6	S	6.1	4.8	2.6	9.6	***0.7***	9.6	2.6	24
13	3.0	2.7	2.2	1.2	1.2	1.7	1.6	2.3	1.2	1.0	1.0	1.5	1.4	1.1	1.3	1.9	0.9	1.0	S	2.9	5.2	5.1	3.7	3.4	0.9	5.2	2.1	24
14	3.2	3.1	3.4	2.7	2.6	3.0	2.5	8.0	3.4	5.9	6.1	6.3	4.1	4.4	4.0	2.1	1.9	S	3.3	4.3	5.8	3.7	2.7	2.8	1.9	8.0	3.9	24
15	2.9	2.0	2.0	2.7	2.6	1.6	1.6	1.6	1.4	1.7	2.2	2.2	1.3	1.7	3.2	1.5	S	2.4	1.9	1.4	1.4	3.1	2.9	4.0	1.3	4.0	2.1	24
16	4.1	3.5	3.3	5.8	4.6	5.8	5.5	5.5	6.6	6.1	8.0	10.0	5.7	2.0	3.5	S	5.6	3.0	4.0	2.5	3.4	3.6	3.2	2.6	2.0	10.0	4.7	24
17	2.1	1.7	1.6	2.2	2.7	2.2	2.1	3.7	P	3.9	3.4	4.3	3.4	2.2	S	3.4	2.6	2.1	1.8	1.3	1.4	6.3	15.3	3.8	1.3	15.3	3.3	23
18	2.4	2.4	2.2	3.2	3.6	3.9	4.0	3.1	3.2	2.3	1.7	1.2	0.9	S	1.8	1.4	1.1	1.0	1.5	1.9	3.7	6.2	4.6	13.2	0.9	13.2	3.1	24
19	5.8	2.6	2.5	4.7	4.3	5.0	3.6	1.8	1.4	1.5	1.1	1.4	S	2.7	1.3	1.4	1.6	0.8	1.1	1.7	1.9	3.1	2.6	2.7	0.8	5.8	2.5	24
20	2.0	2.2	2.7	2.7	7.5	5.3	6.3	7.1	2.4	2.4	1.4	S	2.4	1.7	3.8	1.6	2.9	2.7	1.4	1.6	3.7	5.4	12.2	8.4	1.4	12.2	3.9	24
21	7.0	8.0	7.4	11.0	16.1	***25.3***	13.9	10.8	4.2	2.0	S	2.7	3.4	3.7	6.5	3.1	3.2	2.8	1.8	1.4	2.0	2.7	4.5	3.9	1.4	***25.3***	***6.4***	24
22	2.7	4.5	4.0	5.2	5.1	6.8	7.9	6.3	4.0	S	2.0	4.6	2.7	2.2	2.2	4.2	2.5	1.6	1.5	2.8	6.1	5.9	3.9	1.8	1.5	7.9	3.9	24
23	2.1	1.3	2.4	2.6	2.6	4.6	3.9	4.0	S	4.5	3.1	3.2	2.2	1.3	2.0	2.5	1.9	1.5	2.6	2.9	4.5	2.6	1.7	2.0	1.3	4.6	2.7	24
24	2.2	2.1	2.2	1.7	2.2	3.7	4.5	S	4.3	4.5	2.8	2.8	3.1	2.0	2.4	2.3	2.4	2.4	2.4	2.5	3.8	3.8	3.6	4.6	1.7	4.6	3.0	24
25	3.5	4.5	3.0	5.1	5.7	5.4	S	3.3	3.3	2.9	2.7	2.4	1.8	1.9	1.5	1.7	1.6	2.4	2.4	3.7	4.2	5.4	5.7	3.7	1.5	5.7	3.4	24
26	4.8	9.0	7.8	6.7	6.4	S	7.3	7.6	4.3	3.7	2.6	1.4	0.9	1.0	1.0	1.2	1.1	1.3	1.2	1.3	1.5	2.3	2.4	4.6	0.9	9.0	3.5	24
27	3.9	3.6	3.6	3.2	S	5.7	5.5	4.3	3.4	2.2	1.7	C1	C1	C1	C1	C1	C1	C1	C1	2.3	3.7	5.1	4.0	3.2	1.7	5.7	3.7	16
28	3.4	4.7	6.0	S	7.7	6.2	5.4	6.0	3.2	2.9	2.5	2.5	2.7	2.0	2.7	4.9	4.5	2.8	3.8	4.2	7.9	5.0	2.6	3.8	2.0	7.9	4.2	24
29	3.8	7.5	S	6.4	7.4	6.3	3.7	3.6	3.0	2.8	2.7	3.2	3.3	2.8	2.9	3.7	3.1	2.8	1.2	0.8	2.0	4.9	2.5	1.3	0.8	7.5	3.6	24
30	2.1	S	3.8	3.8	4.0	4.0	4.9	5.2	5.9	3.9	3.3	3.4	3.4	2.5	3.6	2.9	2.1	2.2	4.3	3.1	2.9	3.1	3.7	4.1	2.1	5.9	3.6	24
HOURLY MAX	8.7	9.0	16.9	21.3	16.1	25.3	13.9	10.8	6.6	6.1	8.0	10.0	5.7	4.4	6.5	4.9	5.6	3.3	4.3	7.1	9.1	9.2	15.3	13.2				
HOURLY AVG	3.6	3.7	3.8	4.4	4.7	5.1	4.5	4.6	3.5	3.2	2.7	3.1	2.6	2.2	2.5	2.3	2.2	1.9	2.2	2.6	4.0	4.2	4.8	4.4				

STATUS FLAG CODES

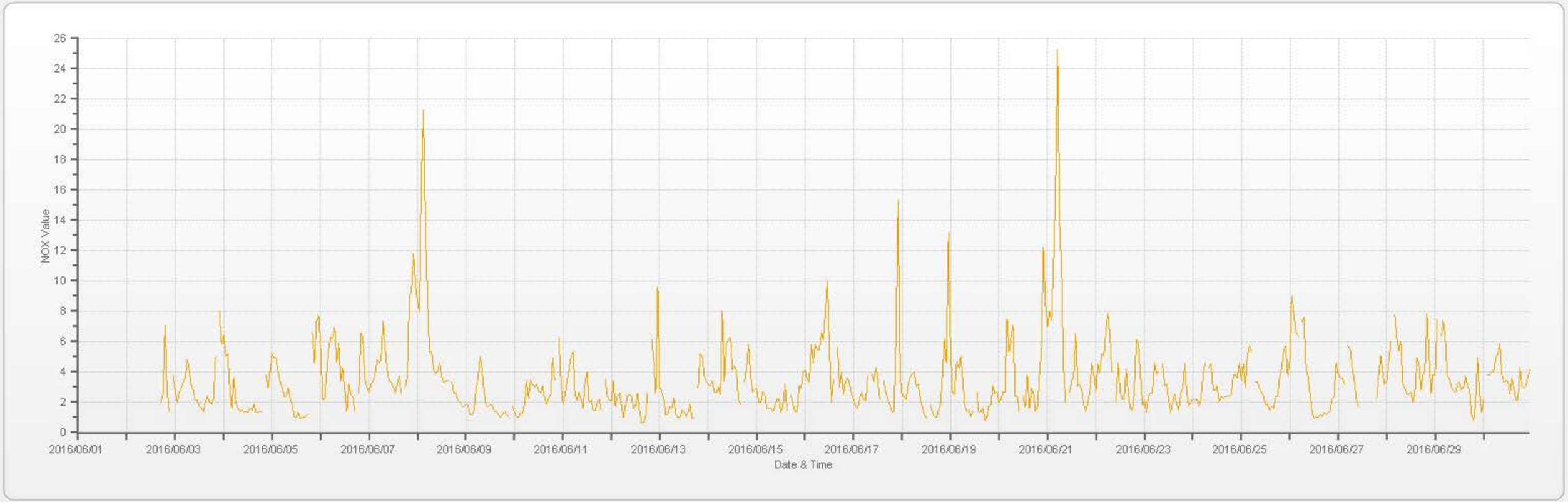
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:			641				
MINIMUM 1-HR AVERAGE	0.7	PPB	@ HOUR(S)	15 , 16	ON DAY(S)	12 , 12	
MAXIMUM 1-HR AVERAGE:	25.3	PPB	@ HOUR(S)	5	ON DAY(S)	21	
MAXIMUM 24-HR AVERAGE:	6.4	PPB			ON DAY(S)	21	
					VAR-VARIOUS		
IZS CALIBRATION TIME:	29	HRS	OPERATIONAL TIME:			678	HRS
MONTHLY CALIBRATION TIME:	8	HRS	AMD OPERATION UPTIME:			94.2	%
STANDARD DEVIATION:	2.44		MONTHLY AVERAGE:			3.5	PPB

NOX[ppb] Station: LICA Bonnyville Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



OXIDES OF NITROGEN MAX instantaneous maximum in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1																												
2										C	C	C	C	C	C	C	C	4.4	7.3	41.4	5.6	1.7	S	5.8	1.7	41.4	11.0	15
3	4.0	2.4	3.6	3.6	5.2	5.5	6.6	5.6	4.2	3.5	2.7	3.3	2.9	2.1	1.5	2.4	3.2	2.5	2.4	3.2	29.2	S	12.7	8.4	1.5	29.2	5.2	24
4	21.7	6.1	5.2	4.8	1.7	6.7	2.5	2.1	1.8	2.4	1.4	1.9	1.9	2.5	2.9	2.2	1.8	1.7	1.4	2.0	S	5.0	4.2	4.5	1.4	21.7	3.8	24
5	6.9	5.9	7.7	5.8	6.3	4.6	2.9	3.4	3.4	2.5	2.3	1.4	1.3	1.6	1.2	1.3	1.3	1.2	1.8	S	15.5	6.3	31.3	8.2	1.2	31.3	5.4	24
6	8.5	4.5	3.1	5.0	5.9	6.8	7.0	21.6	16.3	23.1	6.5	23.7	6.5	2.1	25.0	11.4	4.1	2.2	S	4.1	50.0	11.6	4.7	3.2	2.1	50.0	11.2	24
7	2.8	3.3	3.4	5.1	7.5	5.9	6.3	10.8	18.6	5.0	4.6	4.1	3.3	3.1	3.8	8.0	2.9	S	3.7	5.1	12.4	29.7	13.6	11.6	2.8	29.7	7.6	24
8	10.3	13.5	21.7	29.4	27.6	11.7	6.1	6.5	14.2	4.6	4.8	5.3	4.7	3.3	4.5	3.9	S	4.4	2.8	10.3	3.3	1.9	1.8	1.7	1.7	29.4	8.6	24
9	2.1	2.1	1.3	1.0	1.5	4.0	4.3	6.6	4.5	5.0	2.5	2.3	2.5	16.4	2.3	2.6	2.1	1.3	1.4	2.3	1.7	1.5	S	1.9	1.0	16.4	3.2	24
10	1.6	1.0	1.4	1.7	1.4	2.6	4.6	2.6	8.3	6.0	3.8	4.8	3.3	7.2	4.3	5.4	2.0	2.5	3.3	47.4	5.4	S	24.9	6.6	1.0	47.4	6.6	24
11	15.4	3.4	4.9	7.2	31.0	49.8	2.9	2.5	3.9	3.9	3.4	14.9	41.0	3.5	9.2	1.6	11.5	14.3	3.7	2.8	S	4.1	8.9	4.4	1.6	49.8	10.8	24
12	4.4	5.5	2.1	2.5	3.7	2.2	1.6	2.4	2.7	3.7	4.7	2.0	2.3	3.7	1.7	1.1	0.9	5.8	6.2	S	49.4	25.5	17.0	20.0	0.9	49.4	7.4	24
13	4.4	2.9	2.5	1.2	1.2	2.2	2.5	3.7	1.5	1.3	2.6	1.9	12.9	2.7	3.5	15.1	1.3	1.6	S	5.2	21.7	7.4	4.3	9.1	1.2	21.7	4.9	24
14	3.5	3.5	3.8	3.5	3.2	4.1	18.6	26.4	5.7	33.3	24.3	16.7	8.6	33.2	17.2	5.3	4.7	S	4.3	6.4	31.8	5.4	3.1	3.5	3.1	33.3	11.7	24
15	3.0	2.4	2.1	2.8	3.8	2.6	8.9	1.9	1.4	1.9	4.0	18.8	2.3	13.3	15.7	2.6	S	14.5	3.3	1.9	1.6	23.6	4.1	4.3	1.4	23.6	6.1	24
16	5.4	3.3	3.2	10.9	9.4	12.6	7.3	27.0	9.0	7.7	27.4	41.2	12.5	16.5	25.7	S	14.1	10.6	18.0	2.7	3.9	4.6	4.9	2.2	2.2	41.2	12.2	24
17	1.7	1.1	0.8	1.3	2.2	1.7	1.1	P	P	5.0	3.4	5.6	5.9	4.5	S	4.7	3.1	3.6	2.7	2.7	2.6	23.1	27.5	13.9	0.8	27.5	5.6	22
18	2.8	2.9	2.2	4.4	17.5	5.3	5.2	3.7	6.2	6.7	3.2	1.7	1.4	S	3.1	2.1	1.7	1.9	2.9	3.1	6.6	8.3	29.4	25.9	1.4	29.4	6.4	24
19	11.2	5.7	3.8	5.7	6.4	5.9	4.2	2.0	1.9	2.3	2.1	2.7	S	3.5	1.9	2.4	3.6	1.6	1.4	3.0	2.3	3.5	3.2	29.7	1.4	29.7	4.8	24
20	2.7	2.5	2.9	3.2	16.3	9.3	28.2	10.8	4.1	4.0	2.1	S	4.1	3.4	23.9	2.7	18.0	5.6	2.9	15.4	6.0	15.0	***56.2***	18.9	2.1	***56.2***	11.2	24
21	13.9	12.6	10.5	15.5	32.6	33.3	21.9	18.3	7.1	4.1	S	5.5	32.0	41.4	30.7	5.7	9.0	18.3	3.6	2.1	3.2	4.6	7.9	4.9	2.1	41.4	14.7	24
22	5.9	9.0	5.6	12.8	19.0	13.0	32.5	10.2	6.4	S	2.6	11.6	18.7	18.1	9.7	6.8	3.9	10.2	11.7	14.5	37.4	7.7	5.6	2.4	2.4	37.4	12.0	24
23	4.7	2.1	3.6	4.7	4.1	5.9	5.3	6.3	S	20.5	6.9	5.6	3.6	2.5	5.6	5.0	3.3	3.2	12.7	5.5	6.2	4.9	2.3	2.3	2.1	20.5	5.5	24
24	2.8	3.0	2.2	2.3	3.4	4.7	6.6	S	4.6	5.5	3.6	4.0	4.0	2.4	3.7	3.3	3.2	2.4	11.8	3.1	4.3	4.5	3.6	5.5	2.2	11.8	4.1	24
25	4.9	5.5	3.8	5.3	7.1	6.0	S	4.2	3.7	3.4	5.1	2.8	2.3	2.8	2.3	1.7	1.9	3.0	4.5	7.4	6.3	6.7	6.8	5.5	1.7	7.4	4.5	24
26	6.9	9.7	9.1	7.2	8.2	S	8.7	10.0	5.3	7.3	20.4	1.6	1.5	1.6	1.2	1.6	16.3	2.5	1.9	1.5	1.5	4.9	5.5	13.8	1.2	20.4	6.4	24
27	8.3	3.9	4.6	3.3	S	8.6	38.5	21.2	29.7	4.8	4.6	C1	C1	C1	C1	C1	C1	C1	C1	C1	10.0	29.8	6.0	4.4	3.3	38.5	12.7	15
28	4.2	5.5	7.3	S	11.4	29.8	17.2	17.6	3.9	4.0	3.9	4.2	4.8	3.5	5.0	9.3	7.3	4.9	20.0	8.9	29.0	8.9	3.0	4.8	3.0	29.8	9.5	24
29	4.7	10.7	S	8.1	8.8	7.6	4.3	4.1	4.5	15.1	4.3	24.0	4.0	18.2	4.2	11.2	24.0	17.1	2.4	2.6	2.6	17.1	28.4	2.0	2.0	28.4	10.0	24
30	2.1	S	3.9	4.9	5.0	5.0	34.6	14.7	34.9	9.7	15.5	13.7	12.0	4.0	9.8	19.6	4.0	4.3	25.5	4.3	5.0	3.2	4.7	4.6	2.1	34.9	10.7	24
HOURLY MAX	21.7	13.5	21.7	29.4	32.6	49.8	38.5	27.0	34.9	33.3	27.4	41.2	41.0	41.4	30.7	19.6	24.0	18.3	25.5	47.4	50.0	29.8	56.2	29.7				
HOURLY AVG	6.1	5.0	4.7	6.0	9.3	9.5	10.8	9.5	8.0	7.3	6.4	8.7	7.7	8.4	8.4	5.3	6.0	5.6	6.3	8.0	13.1	10.0	12.1	8.1				

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: 639

MAXIMUM INSTANTANEOUS VALUE: 56.2 PPB @ HOUR(S) 22 ON DAY(S) 20

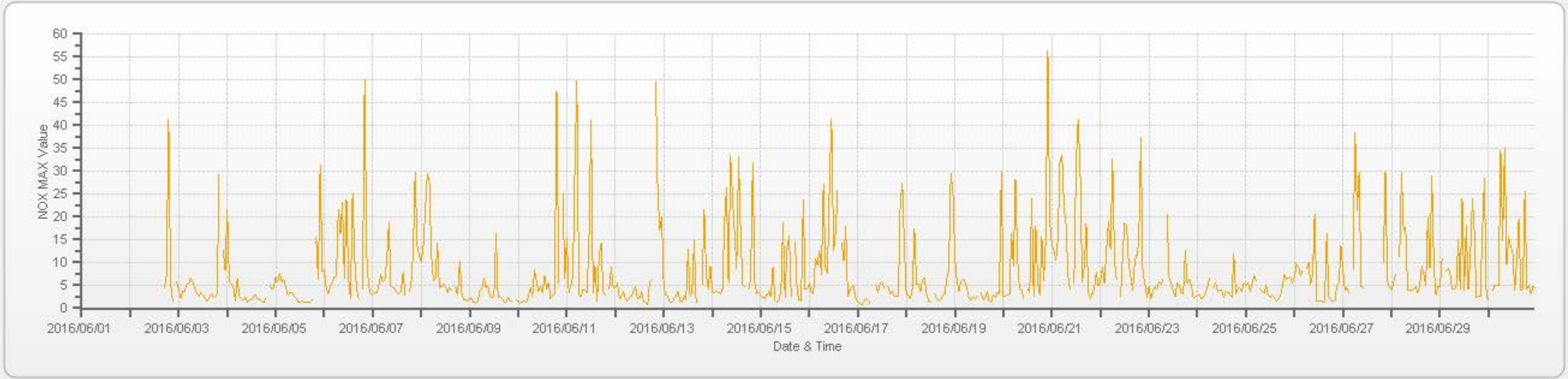
VAR-VARIOUS

IZS CALIBRATION TIME: 29 HRS OPERATIONAL TIME: 676 HRS

MONTHLY CALIBRATION TIME: 8 HRS

STANDARD DEVIATION: 8.72

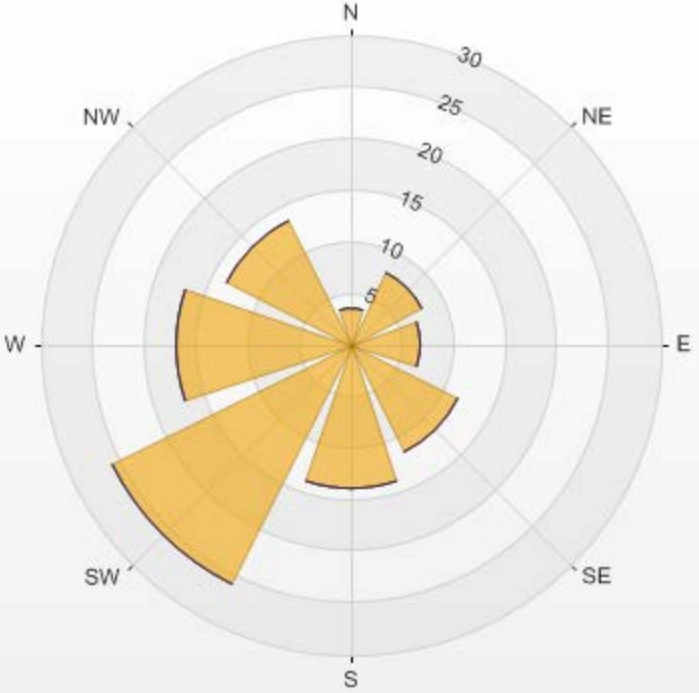
NOX MAX[ppb] Station: LICA Bonnyville Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



Wind: LICA Bonnyville Monitor: NOX [ppb] Monthly: 06/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
Calm: 0.00% Valid Data: 93.58% Calm Avg: 0.00

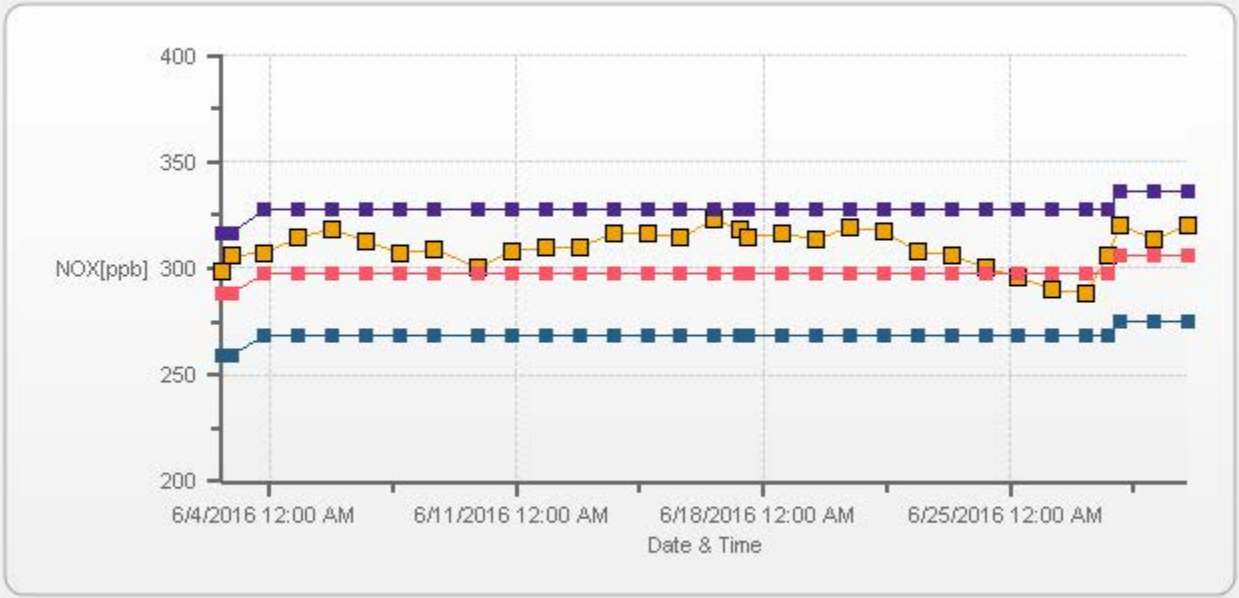
Direction	0.0-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	3.59	0	0	0	3.59
NE	7.8	0	0	0	7.8
E	6.86	0	0	0	6.86
SE	11.54	0	0	0	11.54
S	13.88	0	0	0	13.88
SW	25.9	0	0	0	25.9
W	17	0	0	0	17
NW	13.42	0	0	0	13.42
Summary	100	0	0	0	100

LICA Bonnyville 2016/06/01 12:00 AM - 2016/06/30 11:00 PM Calm: 0.00%



%	Icon	Classes (ppb)								
100		0.0-50.0	0		50.0-110.0	0		110.0-210.0	0	>210.0

NOX[ppb] Calibration: LICA Bonnyville Monthly: 06/2016 Type: Span



NITRIC OXIDES

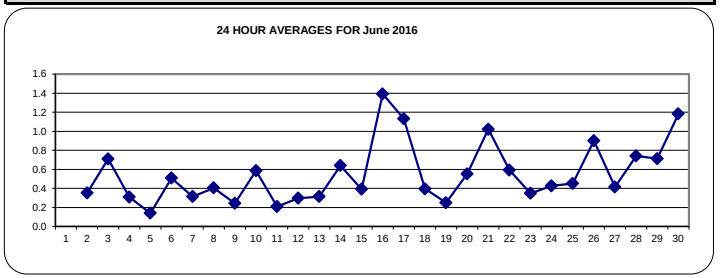
NITRIC OXIDE (NO) hourly averages in ppb

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	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1																												
2										C	C	C	C	C	C	C	C	0.0	0.0	1.8	0.0	0.1	S	0.2	0.0	1.8	0.4	15
3	0.2	0.0	0.1	0.0	0.1	0.3	1.1	1.5	1.2	1.1	0.9	1.0	0.9	0.8	0.7	1.0	1.1	0.9	0.8	0.4	0.9	S	0.9	0.4	0.0	1.5	0.7	24
4	0.3	0.1	0.0	0.0	0.0	0.4	0.4	0.4	0.4	0.6	0.4	0.5	0.5	0.5	0.5	0.6	0.4	0.4	0.4	0.1	S	0.2	0.0	0.0	0.0	0.6	0.3	24
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.4	0.3	0.2	0.0	0.1	0.1	0.1	0.0	0.0	0.0	S	1.2	0.1	0.1	0.0	0.0	1.2	0.1	24
6	0.0	0.0	0.0	0.0	0.0	0.5	1.1	1.8	1.2	1.7	0.7	1.0	0.4	0.0	0.8	0.6	0.5	0.0	S	0.3	1.0	0.1	0.0	0.0	0.0	1.8	0.5	24
7	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.7	1.4	0.7	0.6	0.0	0.0	0.2	0.3	0.5	0.2	S	0.5	0.4	0.2	0.1	0.0	0.0	0.0	1.7	0.3	24
8	0.0	0.0	0.0	1.1	0.6	0.8	0.4	0.5	0.5	0.5	0.7	0.6	0.7	0.6	0.6	0.5	S	0.8	0.1	0.1	0.1	0.1	0.0	0.0	0.0	1.1	0.4	24
9	0.1	0.0	0.0	0.0	0.0	0.1	0.5	0.7	0.3	0.9	0.3	0.3	0.5	0.3	0.3	0.4	0.1	0.1	0.2	0.2	0.0	0.0	S	0.3	0.0	0.9	0.2	24
10	0.0	0.0	0.0	0.2	0.0	0.3	0.7	0.6	1.1	0.9	0.9	0.9	0.8	0.9	0.8	0.9	0.5	0.8	0.6	1.0	0.3	S	0.9	0.4	0.0	1.1	0.6	24
11	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.2	0.3	0.9	0.8	0.2	0.4	0.2	0.3	0.4	0.5	0.0	S	0.3	0.0	0.0	0.0	0.9	0.2	24
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.7	0.8	0.2	0.4	0.6	0.1	0.0	0.0	0.1	0.5	S	1.4	0.5	0.2	0.7	0.0	1.4	0.3	24
13	0.2	0.0	0.0	0.0	0.0	0.3	0.4	0.6	0.2	0.3	0.4	0.6	0.5	0.4	0.5	0.7	0.2	0.2	S	0.7	0.9	0.1	0.0	0.0	0.0	0.9	0.3	24
14	0.0	0.0	0.0	0.0	0.0	0.1	0.2	2.8	0.7	1.7	1.7	2.1	1.0	1.3	1.0	0.4	0.0	S	0.7	0.2	0.8	0.0	0.0	0.0	0.0	2.8	0.6	24
15	0.0	0.0	0.0	0.0	0.1	0.0	0.4	0.7	0.3	0.4	0.8	0.8	0.4	0.6	1.2	0.5	S	0.8	0.6	0.4	0.2	0.6	0.1	0.1	0.0	1.2	0.4	24
16	0.4	0.2	0.1	0.3	0.4	1.3	1.8	2.4	2.5	2.3	2.9	3.9	2.2	0.9	1.5	S	2.1	0.9	1.3	1.2	0.8	1.0	0.7	0.9	0.1	3.9	***1.4***	24
17	0.9	0.8	0.9	0.8	1.2	1.3	1.4	2.6	P	2.0	1.7	1.8	1.5	0.7	S	0.8	0.7	0.4	0.3	0.1	0.1	1.3	3.6	0.0	0.0	3.6	1.1	23
18	0.0	0.0	0.0	0.0	0.0	0.4	1.1	1.0	1.1	0.8	0.6	0.3	0.2	S	0.5	0.4	0.2	0.2	0.4	0.1	0.4	0.0	0.1	1.3	0.0	1.3	0.4	24
19	0.2	0.0	0.0	0.0	0.1	0.6	0.7	0.5	0.5	0.6	0.4	0.5	S	0.7	0.2	0.3	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.2	24
20	0.0	0.0	0.0	0.0	0.3	1.0	1.8	2.4	0.5	0.4	0.2	S	0.8	0.4	1.2	0.2	0.8	0.8	0.0	0.0	0.0	0.0	1.9	0.0	0.0	2.4	0.6	24
21	0.0	0.0	0.0	0.3	2.7	***7.7***	4.4	2.9	0.8	0.3	S	0.9	0.4	0.6	1.2	0.4	0.7	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	***7.7***	1.0	24
22	0.0	0.0	0.0	0.0	0.3	1.0	2.1	2.1	1.0	S	0.8	2.1	1.2	0.7	0.6	0.3	0.5	0.2	0.1	0.2	0.4	0.0	0.0	0.0	0.0	2.1	0.6	24
23	0.0	0.0	0.0	0.0	0.0	0.2	0.5	1.2	S	1.5	0.9	0.9	0.4	0.1	0.5	0.6	0.4	0.2	0.3	0.0	0.3	0.0	0.0	0.0	0.0	1.5	0.3	24
24	0.0	0.0	0.0	0.0	0.0	0.2	0.6	S	1.2	1.3	0.7	0.8	0.9	0.6	0.8	0.7	0.7	0.5	0.3	0.1	0.2	0.2	0.0	0.0	0.0	1.3	0.4	24
25	0.1	0.0	0.0	0.0	0.4	0.6	S	0.6	0.8	1.0	1.0	0.7	0.6	0.7	0.5	0.6	0.4	0.5	0.3	0.5	0.5	0.2	0.2	0.2	0.0	1.0	0.5	24
26	0.1	0.4	0.3	0.4	0.8	S	3.0	3.7	1.8	1.8	1.1	0.6	0.5	0.7	0.9	0.8	0.6	0.6	0.5	0.5	0.3	0.4	0.5	0.4	0.1	3.7	0.9	24
27	0.2	0.2	0.3	0.3	S	0.8	1.3	1.5	1.1	0.3	0.0	C1	C1	C1	C1	C1	C1	C1	C1	0.0	0.0	0.2	0.0	0.0	0.0	1.5	0.4	16
28	0.0	0.2	0.5	S	0.8	1.1	1.6	2.0	1.0	0.9	0.8	0.8	0.8	0.4	0.5	0.4	1.1	0.6	1.0	0.6	0.8	0.6	0.3	0.2	0.0	2.0	0.7	24
29	0.1	0.1	S	0.2	0.9	1.2	1.0	1.3	1.2	1.1	1.2	1.1	1.4	1.1	0.9	1.3	1.1	1.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	1.4	0.7	24
30	0.0	S	0.5	0.3	0.3	0.6	1.8	2.2	3.0	2.2	1.4	1.6	1.7	1.3	1.8	1.2	1.0	1.2	1.8	0.9	0.7	0.4	0.7	0.6	0.0	3.0	1.2	24
HOURLY MAX	0.9	0.8	0.9	1.1	2.7	7.7	4.4	3.7	3.0	2.3	2.9	3.9	2.2	1.3	1.8	1.3	2.1	1.2	1.8	1.8	1.4	1.3	3.6	1.3				
HOURLY AVG	0.1	0.1	0.1	0.1	0.3	0.8	1.1	1.4	1.0	1.0	0.8	1.0	0.8	0.6	0.7	0.6	0.6	0.5	0.4	0.4	0.4	0.2	0.4	0.2				

STATUS FLAG CODES

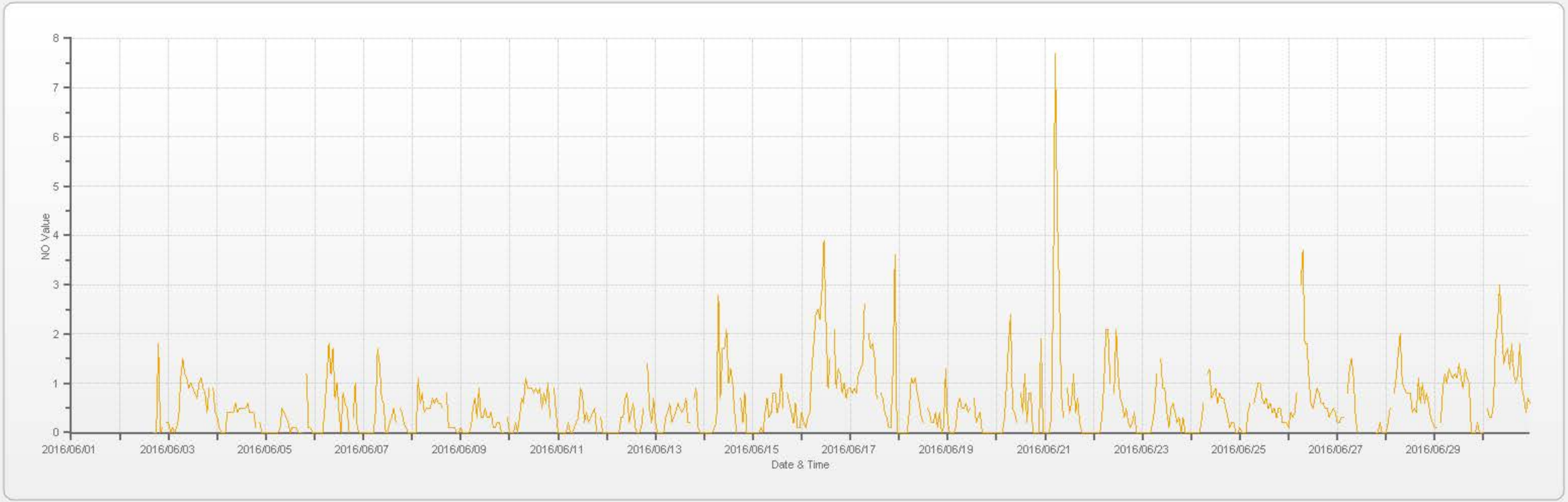
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:			473				
MINIMUM 1-HR AVERAGE	0.0	PPB	@ HOUR(S)	VAR	ON DAY(S)	VAR	
MAXIMUM 1-HR AVERAGE:	7.7	PPB	@ HOUR(S)	5	ON DAY(S)	21	
MAXIMUM 24-HR AVERAGE:	1.4	PPB			ON DAY(S)	16	
					VAR-VARIOUS		
IZS CALIBRATION TIME:	29	HRS		OPERATIONAL TIME:		678	HRS
MONTHLY CALIBRATION TIME:	8	HRS		AMD OPERATION UPTIME:		94.2	%
STANDARD DEVIATION:	0.69			MONTHLY AVERAGE:		0.6	PPB

NO[ppb] Station: LICA Bonnyville Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



NITRIC OXIDE MAX instantaneous maximum in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1																												
2										C	C	C	C	C	C	C	C	1.6	3.3	29.4	1.1	0.8	S	1.2	0.8	29.4	6.2	15
3	0.9	0.7	0.7	0.6	0.8	1.1	2.2	2.8	1.9	1.8	1.7	2.0	1.7	1.5	1.4	1.6	1.9	1.3	1.3	1.2	16.5	S	2.7	2.0	0.6	16.5	2.2	24
4	6.4	1.1	0.7	0.7	0.7	1.3	1.1	1.0	1.0	1.5	1.3	1.3	1.3	1.6	1.8	1.5	1.3	1.2	1.3	1.0	S	1.0	0.7	0.7	0.7	6.4	1.4	24
5	0.6	0.4	0.8	0.8	0.9	0.9	1.0	1.4	1.6	1.5	1.3	1.3	1.0	1.2	1.1	1.1	1.0	1.0	1.0	S	4.1	1.5	12.8	0.8	0.4	12.8	1.7	24
6	0.8	0.9	0.5	0.8	1.0	1.8	2.2	11.9	10.5	9.7	2.9	12.9	2.6	1.3	14.4	4.7	2.1	1.0	S	2.5	26.1	1.5	0.9	0.8	0.5	26.1	4.9	24
7	0.8	0.8	0.7	1.8	1.6	1.5	2.3	4.6	11.5	2.0	3.3	0.8	0.8	1.1	1.1	3.5	1.2	S	1.5	1.2	0.9	14.5	1.9	0.7	0.7	14.5	2.6	24
8	0.6	0.8	0.7	7.9	6.8	2.7	1.4	1.7	4.8	1.7	1.7	2.1	1.9	2.0	1.8	1.3	S	2.3	1.4	2.9	1.5	1.0	0.7	0.8	0.6	7.9	2.2	24
9	1.1	1.0	0.6	0.7	0.7	1.2	1.3	2.3	1.7	3.6	2.2	1.8	2.4	6.9	1.6	2.1	1.2	1.2	1.0	1.4	1.0	0.9	S	1.5	0.6	6.9	1.7	24
10	1.0	1.0	1.0	1.2	1.0	1.2	1.8	1.9	4.3	2.7	2.1	2.6	1.9	3.0	2.1	2.9	1.6	2.1	2.1	13.9	1.6	S	9.7	3.5	1.0	13.9	2.9	24
11	6.8	0.8	0.6	1.3	27.8	***36.4***	1.2	0.6	1.9	1.3	2.5	11.3	6.8	1.9	3.3	1.3	8.0	8.5	2.1	1.5	S	1.8	2.7	1.0	0.6	***36.4***	5.7	24
12	1.3	0.9	0.6	0.7	1.4	0.8	1.5	1.9	1.5	2.7	2.8	1.4	1.4	2.2	1.4	1.0	0.8	3.6	3.7	S	24.0	13.7	14.4	4.1	0.6	24.0	3.8	24
13	2.4	1.0	1.0	0.7	0.9	1.9	1.8	2.3	1.5	1.6	2.6	1.9	5.8	2.1	2.3	5.4	1.4	1.9	S	3.2	13.0	1.5	1.0	2.5	0.7	13.0	2.6	24
14	0.8	0.8	0.7	1.3	1.1	1.5	5.1	15.8	5.3	6.0	10.8	11.9	3.8	21.2	9.1	6.8	2.8	S	2.9	1.6	16.9	1.0	0.8	1.0	0.7	21.2	5.6	24
15	1.0	1.0	0.9	1.0	1.8	1.3	6.7	2.9	1.7	2.1	2.7	11.4	2.4	7.9	9.6	1.9	S	7.6	2.1	5.4	1.3	6.3	1.3	1.1	0.9	11.4	3.5	24
16	1.6	1.1	1.0	1.4	1.5	3.2	3.7	11.6	4.1	4.6	13.3	24.9	9.0	6.6	10.9	S	5.8	3.5	11.1	2.3	2.3	1.5	1.0	1.0	1.0	24.9	5.5	24
17	1.1	1.1	1.2	0.9	1.3	1.6	1.3	P	P	2.9	2.4	2.9	3.1	2.6	S	2.1	2.1	2.1	1.5	1.8	1.6	17.0	8.9	2.2	0.9	17.0	2.9	22
18	0.6	0.8	0.9	1.0	14.7	1.9	2.5	2.4	3.5	7.0	2.4	1.6	1.4	S	2.0	1.9	1.6	1.8	2.1	1.9	2.9	1.0	14.5	7.6	0.6	14.7	3.4	24
19	3.6	1.0	0.9	1.0	2.7	2.3	1.8	1.6	1.7	1.8	1.6	1.5	S	2.1	1.3	1.6	2.0	1.2	1.2	1.2	0.8	0.8	0.7	14.1	0.7	14.1	2.1	24
20	0.9	0.9	0.6	0.6	2.7	4.2	16.5	5.0	2.2	2.3	1.9	S	3.7	2.5	13.3	2.1	11.9	3.4	1.9	8.6	1.5	1.7	31.3	1.4	0.6	31.3	5.3	24
21	1.2	1.0	0.9	4.2	13.0	13.3	9.6	7.8	3.0	2.7	S	3.3	7.0	17.9	17.3	2.5	8.0	5.6	1.4	1.3	1.2	0.9	1.6	1.0	0.9	17.9	5.5	24
22	0.8	1.0	0.9	1.5	5.3	3.8	14.4	4.9	3.1	S	2.6	6.6	16.9	8.1	4.9	2.0	2.7	8.6	7.9	9.2	16.7	1.7	1.1	0.9	0.8	16.9	5.5	24
23	1.0	0.8	1.1	1.5	1.3	1.8	2.3	4.0	S	10.5	3.8	3.4	2.4	1.9	3.5	7.1	2.2	2.1	8.0	1.5	2.6	1.0	1.0	1.0	0.8	10.5	2.9	24
24	1.1	1.0	1.2	1.1	0.9	1.6	2.0	S	2.4	2.5	2.1	1.9	2.2	1.5	2.1	1.9	1.8	1.5	4.0	1.1	1.2	1.1	1.0	1.0	0.9	4.0	1.7	24
25	0.9	0.8	0.8	0.9	1.3	1.8	S	1.8	1.8	2.0	3.3	1.7	1.7	2.0	1.6	1.4	1.3	1.5	1.9	1.9	3.0	1.2	1.1	1.0	0.8	3.3	1.6	24
26	1.0	1.3	1.1	1.3	1.7	S	5.1	6.3	3.3	5.4	12.3	1.4	1.4	1.5	2.0	1.7	5.4	1.6	1.7	1.4	1.2	2.5	2.8	2.7	1.0	12.3	2.9	24
27	1.3	0.9	1.1	1.1	S	2.2	23.6	15.1	19.3	3.7	4.2	C1	C1	C1	C1	C1	C1	C1	C1	C1	5.3	18.1	1.7	1.3	0.9	23.6	7.1	15
28	1.2	1.2	1.3	S	2.0	18.4	10.0	9.7	2.3	1.9	2.2	2.7	2.9	2.6	1.7	1.5	3.1	2.3	7.7	2.0	8.8	2.8	1.6	1.2	1.2	18.4	4.0	24
29	0.9	1.3	S	1.9	2.2	2.5	2.0	2.4	2.3	6.0	2.8	2.9	2.7	14.1	2.1	3.5	10.9	8.0	1.2	1.2	1.2	9.3	20.5	0.6	0.6	20.5	4.5	24
30	0.4	S	1.4	1.6	1.3	1.5	22.1	8.4	20.8	7.3	3.3	9.2	8.8	2.6	8.2	12.6	3.2	3.5	14.4	2.0	2.2	1.2	1.3	1.3	0.4	22.1	6.0	24
HOURLY MAX	6.8	1.3	1.4	7.9	27.8	36.4	23.6	15.8	20.8	10.5	13.3	24.9	16.9	21.2	17.3	12.6	11.9	8.6	14.4	29.4	26.1	18.1	31.3	14.1				
HOURLY AVG	1.5	0.9	0.9	1.5	3.6	4.2	5.4	5.1	4.6	3.7	3.6	4.9	3.7	4.6	4.7	3.0	3.4	3.1	3.5	3.9	5.9	4.0	5.2	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: 639

MAXIMUM INSTANTANEOUS VALUE: 36.4 PPB @ HOUR(S) 5 ON DAY(S) 11

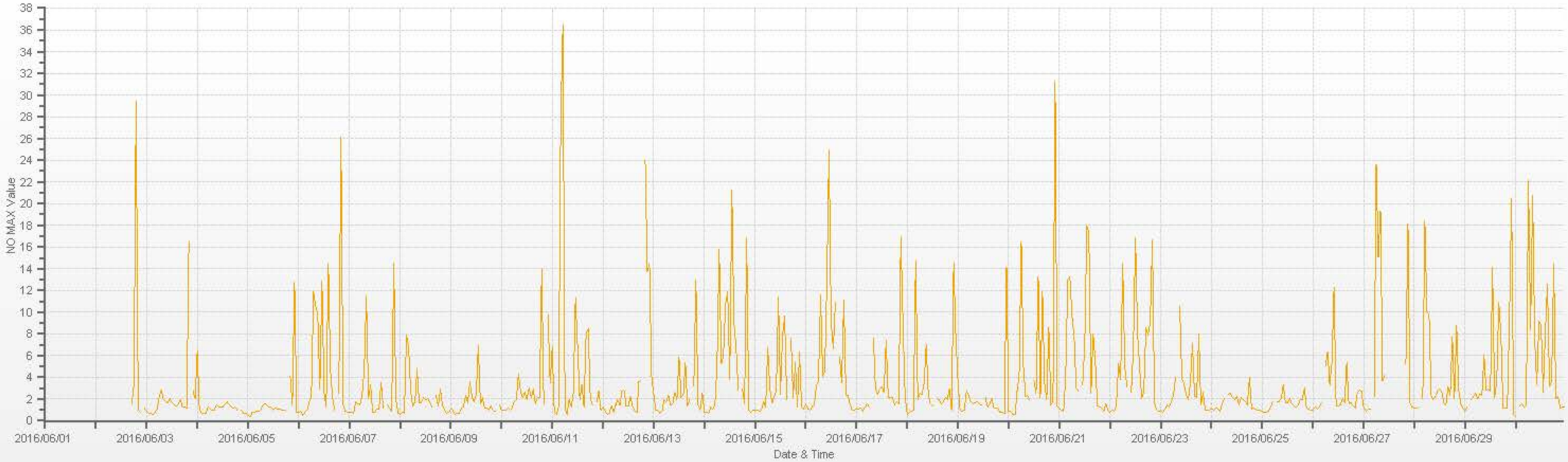
VAR-VARIOUS

IZS CALIBRATION TIME: 29 HRS OPERATIONAL TIME: 676 HRS

MONTHLY CALIBRATION TIME: 8 HRS

STANDARD DEVIATION: 4.76

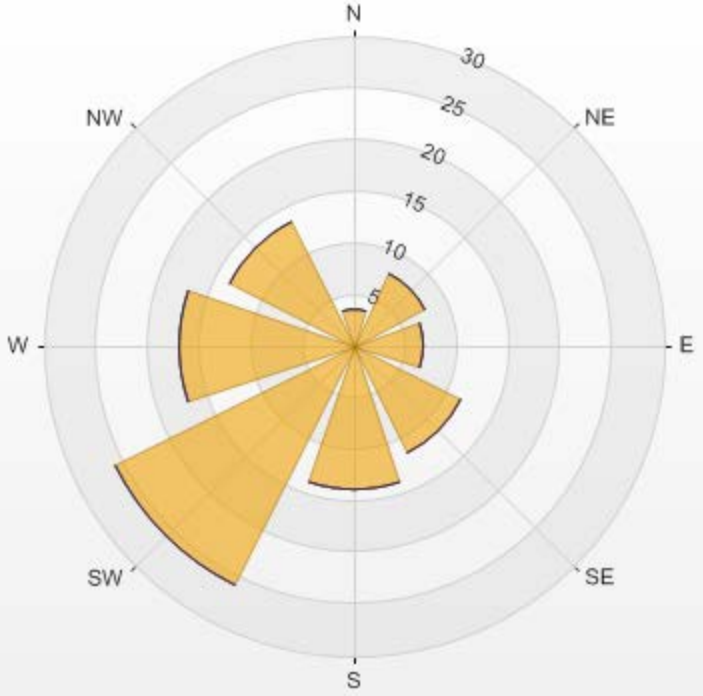
NO MAX[ppb] Station: LICA Bonnyville Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



Wind: LICA Bonnyville Monitor: NO [ppb] Monthly: 06/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
Calm: 0.00% Valid Data: 93.58% Calm Avg: 0.00

Direction	0.0-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	3.59	0	0	0	3.59
NE	7.8	0	0	0	7.8
E	6.86	0	0	0	6.86
SE	11.54	0	0	0	11.54
S	13.88	0	0	0	13.88
SW	25.9	0	0	0	25.9
W	17	0	0	0	17
NW	13.42	0	0	0	13.42
Summary	100	0	0	0	100

LICA Bonnyville 2016/06/01 12:00 AM - 2016/06/30 11:00 PM Calm: 0.00%



% Icon Classes (ppb)	100	0.0-50.0	0	50.0-110.0	0	110.0-210.0	0	>210.0

NITROGEN DIOXIDE

NITROGEN DIOXIDE (NO2) hourly averages in ppb

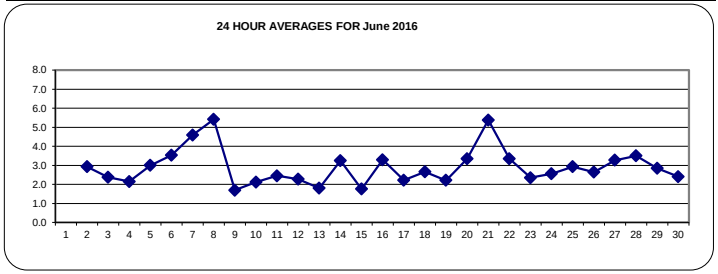
MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1																												
2										C	C	C	C	C	C	C	C	2.0	2.6	5.4	2.8	1.3	S	3.5	1.3	5.4	2.9	15
3	2.7	2.0	2.6	2.9	3.2	3.3	3.7	2.6	1.9	1.8	1.2	1.1	0.8	0.8	0.7	1.0	1.4	1.1	1.1	1.7	4.1	S	7.2	5.5	0.7	7.2	2.4	24
4	6.0	5.0	5.1	3.0	1.6	3.2	1.6	1.2	1.0	1.0	0.9	1.0	0.8	1.1	1.0	1.3	0.9	0.9	1.0	1.2	S	3.6	3.0	4.0	0.8	6.0	2.1	24
5	5.2	4.9	4.9	4.0	3.4	3.0	2.4	2.3	2.4	2.0	1.5	0.9	1.0	1.1	0.8	0.9	1.0	1.1	1.2	S	5.4	4.5	7.3	7.7	0.8	7.7	3.0	24
6	5.8	2.2	2.2	3.9	5.5	5.8	5.1	5.1	3.5	4.2	2.7	3.3	2.4	1.4	2.4	1.9	1.9	1.4	S	2.3	5.6	6.1	3.5	3.0	1.4	6.1	3.5	24
7	2.7	3.2	3.4	3.8	4.8	4.6	4.4	5.6	4.3	3.4	2.9	3.3	3.0	2.4	2.9	3.2	2.4	S	2.5	3.4	8.9	9.1	11.8	9.7	2.4	11.8	4.6	24
8	8.7	8.0	16.9	***20.2***	12.3	8.1	4.9	4.8	3.7	3.4	3.3	4.0	3.0	2.6	2.8	2.9	S	2.5	2.5	2.6	2.1	1.9	1.7	1.7	1.7	***20.2***	***5.4***	24
9	1.8	1.8	1.2	1.2	1.4	2.9	3.1	4.2	3.8	1.8	1.5	1.4	1.4	1.4	1.1	1.0	1.1	0.9	1.0	1.2	1.2	1.1	S	1.4	0.9	4.2	1.7	24
10	1.3	1.1	1.0	1.1	1.2	1.7	2.8	1.7	2.3	2.3	2.1	2.3	1.9	1.8	2.3	1.5	1.4	1.5	1.9	3.8	3.2	S	5.4	3.0	1.0	5.4	2.1	24
11	1.9	2.4	3.3	4.1	5.0	5.1	2.5	2.1	2.6	2.0	1.3	2.4	3.2	1.8	1.7	1.3	1.2	1.5	1.7	1.5	S	3.2	2.4	2.1	1.2	5.1	2.4	24
12	2.1	3.4	1.7	2.4	2.6	1.8	1.0	1.4	2.0	1.8	1.6	1.3	1.4	2.0	1.3	0.7	0.7	1.0	2.0	S	4.7	4.3	2.4	8.8	0.7	8.8	2.3	24
13	2.8	2.7	2.2	1.2	1.2	1.4	1.1	1.8	1.0	0.7	0.6	0.9	0.9	0.7	0.8	1.2	0.7	0.8	S	2.3	4.3	5.0	3.7	3.4	0.6	5.0	1.8	24
14	3.2	3.1	3.4	2.7	2.6	2.9	2.4	5.2	2.7	4.2	4.4	4.2	3.1	3.0	3.0	1.7	1.9	S	2.6	4.0	5.0	3.7	2.7	2.8	1.7	5.2	3.2	24
15	2.9	2.0	2.0	2.7	2.5	1.6	1.2	0.9	1.1	1.3	1.4	1.4	0.9	1.2	2.0	1.0	S	1.6	1.3	1.0	1.2	2.5	2.8	3.8	0.9	3.8	1.8	24
16	3.7	3.3	3.3	5.5	4.2	4.5	3.7	3.2	4.1	3.8	5.2	6.0	3.5	1.1	1.9	S	3.4	2.1	2.6	1.3	2.5	2.6	2.5	1.7	1.1	6.0	3.3	24
17	1.2	0.8	0.6	1.4	1.5	0.9	0.7	1.1	P	1.9	1.7	2.5	2.0	1.5	S	2.6	1.9	1.7	1.5	1.2	1.4	5.0	11.8	3.8	0.6	11.8	2.2	23
18	2.4	2.4	2.2	3.2	3.6	3.5	2.9	2.1	2.1	1.4	1.0	0.9	0.6	S	1.3	1.0	0.8	0.8	1.2	1.8	3.3	6.2	4.5	11.9	0.6	11.9	2.7	24
19	5.6	2.6	2.5	4.7	4.2	4.3	2.9	1.3	0.9	0.9	0.7	1.0	S	2.0	1.1	1.1	1.1	0.8	1.1	1.7	1.9	3.1	2.6	2.7	0.7	5.6	2.2	24
20	2.0	2.2	2.7	2.7	7.2	4.3	4.5	4.7	1.9	1.9	1.2	S	1.5	1.3	2.7	1.4	2.1	1.8	1.4	1.6	3.7	5.4	10.2	8.4	1.2	10.2	3.3	24
21	7.0	8.0	7.4	10.7	13.4	17.5	9.5	7.9	3.4	1.6	S	1.8	3.0	3.1	5.3	2.7	2.5	2.6	1.8	1.4	2.0	2.7	4.5	3.9	1.4	17.5	5.4	24
22	2.7	4.5	4.0	5.2	4.7	5.9	5.9	4.2	2.9	S	1.2	2.6	1.5	1.5	1.6	3.8	2.0	1.4	1.5	2.6	5.7	5.9	3.9	1.8	1.2	5.9	3.3	24
23	2.1	1.3	2.4	2.6	2.6	4.5	3.4	2.8	S	3.0	2.1	2.3	1.8	1.3	1.5	1.8	1.5	1.3	2.3	2.9	4.2	2.6	1.7	2.0	1.3	4.5	2.3	24
24	2.2	2.1	2.2	1.7	2.2	3.5	3.8	S	3.1	3.2	2.1	2.0	2.3	1.4	1.6	1.7	1.7	1.9	2.1	2.4	3.7	3.6	3.6	4.6	1.4	4.6	2.6	24
25	3.4	4.5	3.0	5.1	5.4	4.8	S	2.7	2.5	1.9	1.7	1.7	1.3	1.2	1.0	1.1	1.2	1.9	2.1	3.3	3.6	5.1	5.5	3.5	1.0	5.5	2.9	24
26	4.7	8.6	7.6	6.2	5.6	S	4.3	3.9	2.5	1.9	1.5	0.8	0.3	0.4	***0.2***	0.4	0.5	0.8	0.7	0.9	1.2	1.8	1.9	4.2	***0.2***	8.6	2.6	24
27	3.7	3.4	3.2	2.9	S	4.9	4.1	2.8	2.3	1.9	1.7	C1	C1	C1	C1	C1	C1	C1	C1	2.3	3.7	4.9	4.0	3.2	1.7	4.9	3.3	16
28	3.4	4.5	5.6	S	6.9	5.1	3.8	4.0	2.1	2.1	1.7	1.7	1.9	1.6	2.3	4.5	3.5	2.2	2.8	3.6	7.1	4.4	2.2	3.5	1.6	7.1	3.5	24
29	3.7	7.5	S	6.2	6.5	5.0	2.8	2.3	1.8	1.7	1.5	2.0	2.0	1.7	2.0	2.4	1.9	1.8	1.2	0.8	2.0	4.7	2.5	1.3	0.8	7.5	2.8	24
30	2.1	S	3.3	3.6	3.7	3.4	3.1	3.0	2.9	1.8	2.0	1.8	1.7	1.2	1.8	1.7	1.2	1.0	2.5	2.2	2.3	2.6	2.9	3.5	1.0	3.7	2.4	24
HOURLY MAX	8.7	8.6	16.9	20.2	13.4	17.5	9.5	7.9	4.3	4.2	5.2	6.0	3.5	3.1	5.3	4.5	3.5	2.6	2.8	5.4	8.9	9.1	11.8	11.9				
HOURLY AVG	3.5	3.6	3.7	4.3	4.4	4.4	3.4	3.1	2.5	2.2	1.9	2.1	1.8	1.6	1.8	1.8	1.6	1.5	1.8	2.2	3.6	4.0	4.4	4.2				

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

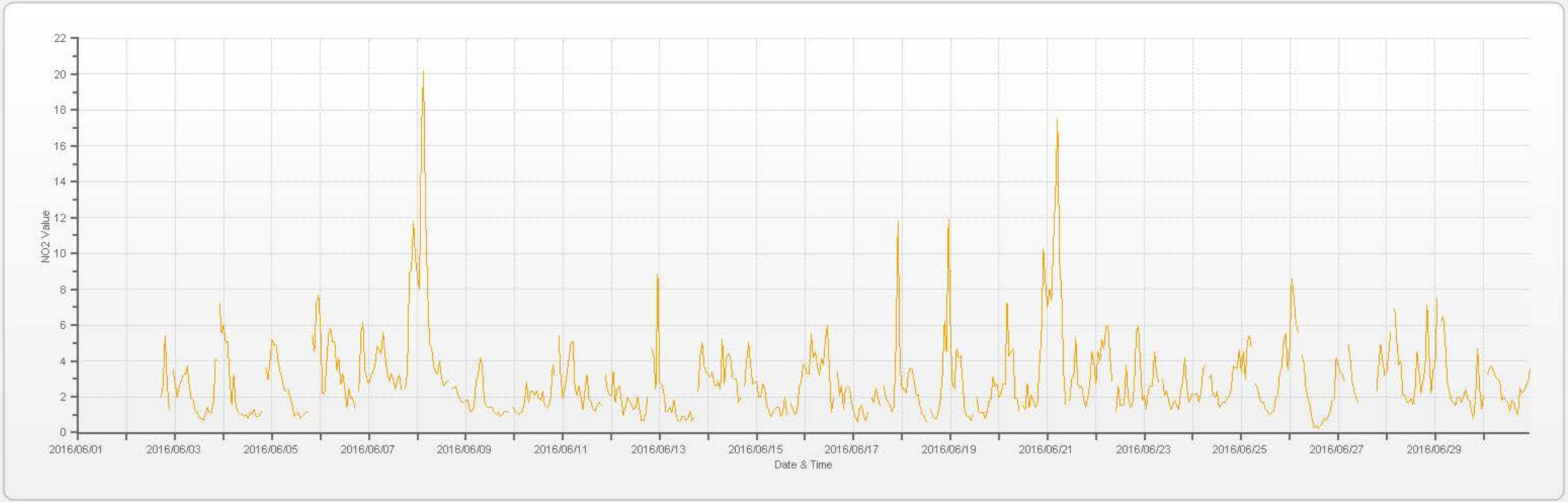
OBJECTIVE LIMIT: **ALBERTA ENVIRONMENT:** 1-HR 159 PPB



MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:			0				
NUMBER OF NON-ZERO READINGS:			641				
MINIMUM 1-HR AVERAGE	0.2	PPB	@ HOUR(S)	14	ON DAY(S)	26	
MAXIMUM 1-HR AVERAGE:	20.2	PPB	@ HOUR(S)	3	ON DAY(S)	8	
MAXIMUM 24-HR AVERAGE:	5.4	PPB			ON DAY(S)	8	
					VAR-VARIOUS		
IZS CALIBRATION TIME:	29	HRS	OPERATIONAL TIME:			678	HRS
MONTHLY CALIBRATION TIME:	8	HRS	AMD OPERATION UPTIME:			94.2	%
STANDARD DEVIATION:	2.18		MONTHLY AVERAGE:			2.9	PPB

NO2[ppb] Station: LICA Bonnyville Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



NITROGEN DIOXIDE MAX instantaneous maximum in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1																												
2										C	C	C	C	C	C	C	C	3.1	4.8	29.2	5.5	1.7	S	5.2	1.7	29.2	8.3	15
3	3.4	2.4	3.4	3.3	4.7	5.1	4.8	3.4	2.7	2.3	1.6	2.0	1.9	1.6	1.1	1.7	2.0	1.7	2.0	2.9	13.0	S	10.5	6.6	1.1	13.0	3.7	24
4	18.2	5.4	5.0	4.7	1.8	6.0	2.2	1.6	1.2	1.7	1.3	1.5	1.3	1.5	1.7	1.5	1.3	1.5	1.2	1.7	S	4.2	4.2	4.5	1.2	18.2	3.3	24
5	6.8	5.9	6.9	5.3	6.2	3.8	2.3	2.5	2.6	1.9	1.8	0.9	1.0	1.2	0.6	0.8	0.9	0.9	1.5	S	12.4	5.4	19.0	8.2	0.6	19.0	4.3	24
6	8.5	4.0	3.1	4.7	5.6	5.6	5.4	14.1	9.8	13.5	3.9	12.4	4.9	1.3	13.3	8.2	3.1	1.9	S	2.7	26.4	10.7	4.3	2.9	1.3	26.4	7.4	24
7	2.9	3.1	3.2	4.0	6.7	5.5	4.6	6.3	11.0	3.7	3.4	3.9	2.9	2.7	3.4	5.3	2.5	S	2.4	5.0	12.2	18.6	13.3	11.9	2.4	18.6	6.0	24
8	10.1	12.9	21.6	22.1	20.7	9.3	5.2	5.5	9.8	3.9	3.7	4.8	3.5	2.9	3.6	3.3	S	3.3	2.5	9.8	2.5	1.7	1.8	1.6	1.6	22.1	7.2	24
9	1.9	1.9	1.4	1.2	1.4	3.5	3.6	5.2	4.2	2.5	1.5	1.1	1.5	11.5	1.6	1.3	1.4	1.0	1.1	1.7	1.3	1.3	S	1.5	1.0	11.5	2.4	24
10	1.3	0.9	0.8	1.3	0.9	1.9	3.3	1.7	4.7	4.0	2.5	2.9	2.3	5.1	2.8	3.2	1.4	1.5	2.5	33.8	4.7	S	15.1	3.7	0.8	33.8	4.4	24
11	10.0	3.4	4.5	6.4	6.0	14.9	2.5	2.2	2.6	2.7	1.8	7.7	***36.2***	1.8	6.3	1.0	3.7	6.3	2.1	1.6	S	3.1	7.9	4.2	1.0	***36.2***	6.0	24
12	4.4	5.2	1.8	2.2	2.7	1.6	0.9	1.7	2.0	2.2	2.4	1.1	1.3	2.2	0.8	0.6	0.6	2.2	3.1	S	25.7	12.7	6.0	16.4	0.6	25.7	4.3	24
13	3.0	2.9	2.1	1.2	0.9	1.2	1.6	2.3	1.2	0.8	0.6	1.0	9.3	1.4	1.7	10.2	0.7	0.9	S	3.7	11.3	6.6	4.1	7.0	0.6	11.3	3.3	24
14	3.2	3.1	3.7	3.3	2.9	3.1	13.5	11.2	2.7	27.9	16.7	8.6	5.2	12.2	9.8	3.3	2.4	S	3.4	5.2	15.3	5.0	3.1	3.1	2.4	27.9	7.3	24
15	2.8	2.0	1.9	2.6	3.3	2.2	7.1	0.8	0.7	1.1	2.5	7.7	0.8	10.1	10.3	1.4	S	8.4	2.1	1.2	1.0	17.7	3.7	3.9	0.7	17.7	4.1	24
16	4.8	3.5	3.1	10.1	9.0	9.8	5.2	15.9	5.8	4.5	15.5	22.1	6.2	10.6	15.4	S	8.4	7.5	7.9	2.0	3.1	4.3	4.5	1.8	1.8	22.1	7.9	24
17	1.6	0.8	0.6	1.2	1.4	0.8	0.7	P	P	2.3	2.3	3.5	3.3	2.7	S	3.2	1.9	2.7	1.7	1.4	1.5	17.5	19.2	11.8	0.6	19.2	3.9	22
18	2.3	2.5	2.0	3.7	7.8	3.6	2.9	2.1	3.6	5.2	1.7	1.0	0.7	S	1.7	1.1	0.9	1.2	1.4	1.9	4.8	7.8	14.5	18.1	0.7	18.1	4.0	24
19	8.0	5.4	3.4	5.4	4.2	4.5	2.9	1.4	1.3	1.2	1.2	2.0	S	2.3	1.0	1.1	2.1	0.9	1.0	2.2	2.1	3.2	3.1	17.2	0.9	17.2	3.4	24
20	2.0	2.3	2.7	2.7	13.7	5.4	13.1	6.4	2.9	2.5	1.4	S	2.3	1.8	17.7	1.3	9.2	2.9	2.1	7.7	5.4	13.3	30.6	18.3	1.3	30.6	7.3	24
21	13.5	12.3	9.8	12.0	19.3	20.3	12.8	10.7	4.6	2.4	S	3.4	26.2	27.7	14.2	4.1	7.6	13.2	2.7	1.6	2.6	4.3	6.8	4.9	1.6	27.7	10.3	24
22	5.5	8.4	5.3	12.1	14.1	9.7	18.8	6.0	4.2	S	1.4	6.3	2.9	10.5	8.0	6.0	3.3	6.8	9.1	11.0	22.4	7.0	5.3	2.1	1.4	22.4	8.1	24
23	4.3	1.8	3.1	3.5	3.7	4.6	4.1	3.8	S	11.5	3.9	3.2	2.1	1.3	3.0	2.9	2.1	1.7	5.3	4.5	5.1	4.2	2.2	2.2	1.3	11.5	3.7	24
24	2.1	2.3	1.7	1.9	3.2	3.7	5.6	S	3.6	3.9	2.3	2.7	2.4	1.8	2.5	2.4	2.4	1.9	8.2	2.7	3.9	3.9	3.4	5.1	1.7	8.2	3.2	24
25	4.5	5.2	3.8	5.1	6.8	5.2	S	2.9	2.5	2.2	2.4	1.8	1.1	1.7	1.3	1.2	1.2	2.6	3.3	5.8	4.9	6.4	6.4	5.1	1.1	6.8	3.6	24
26	6.4	9.2	8.7	6.5	7.0	S	4.4	4.5	2.9	3.2	9.7	1.2	0.8	0.9	0.4	0.9	11.9	1.7	1.2	1.2	1.3	2.7	3.9	11.5	0.4	11.9	4.4	24
27	7.5	3.6	3.9	3.0	S	7.1	16.8	9.3	14.4	2.7	2.2	C1	C1	C1	C1	C1	C1	C1	C1	C1	6.7	16.5	5.2	4.2	2.2	16.8	7.4	15
28	4.0	5.1	6.8	S	9.9	15.4	11.3	12.5	2.7	3.1	2.6	2.4	3.2	2.5	4.3	8.4	5.5	3.4	13.4	7.3	21.7	7.2	2.7	4.1	2.4	21.7	6.9	24
29	4.5	9.8	S	6.4	7.0	5.8	3.6	2.5	2.9	9.7	2.3	21.5	2.2	5.6	2.7	9.4	13.1	9.8	1.8	1.9	3.9	10.8	10.5	2.3	1.8	21.5	6.5	24
30	2.3	S	2.9	3.7	3.8	4.1	14.0	6.9	21.0	5.1	12.5	8.4	7.9	2.0	2.7	15.2	2.1	1.3	14.7	3.0	3.5	2.9	4.1	4.1	1.3	21.0	6.4	24
HOURLY MAX	18.2	12.9	21.6	22.1	20.7	20.3	18.8	15.9	21.0	27.9	16.7	22.1	36.2	27.7	17.7	15.2	13.1	13.2	14.7	33.8	26.4	18.6	30.6	18.3				
HOURLY AVG	5.4	4.6	4.3	5.2	6.5	6.1	6.4	5.5	4.9	4.7	3.9	5.2	5.1	4.9	5.1	3.8	3.7	3.5	3.9	5.9	8.3	7.4	8.0	6.7				

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: 639

MAXIMUM INSTANTANEOUS VALUE: 36.2 PPB @ HOUR(S) 12 ON DAY(S) 11

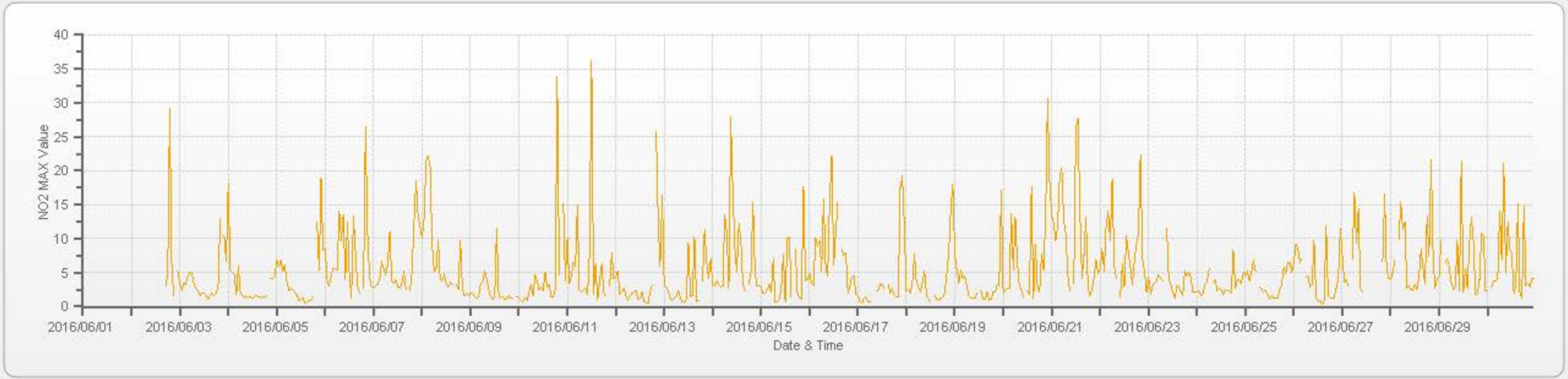
VAR-VARIOUS

IZS CALIBRATION TIME: 29 HRS OPERATIONAL TIME: 676 HRS

MONTHLY CALIBRATION TIME: 8 HRS

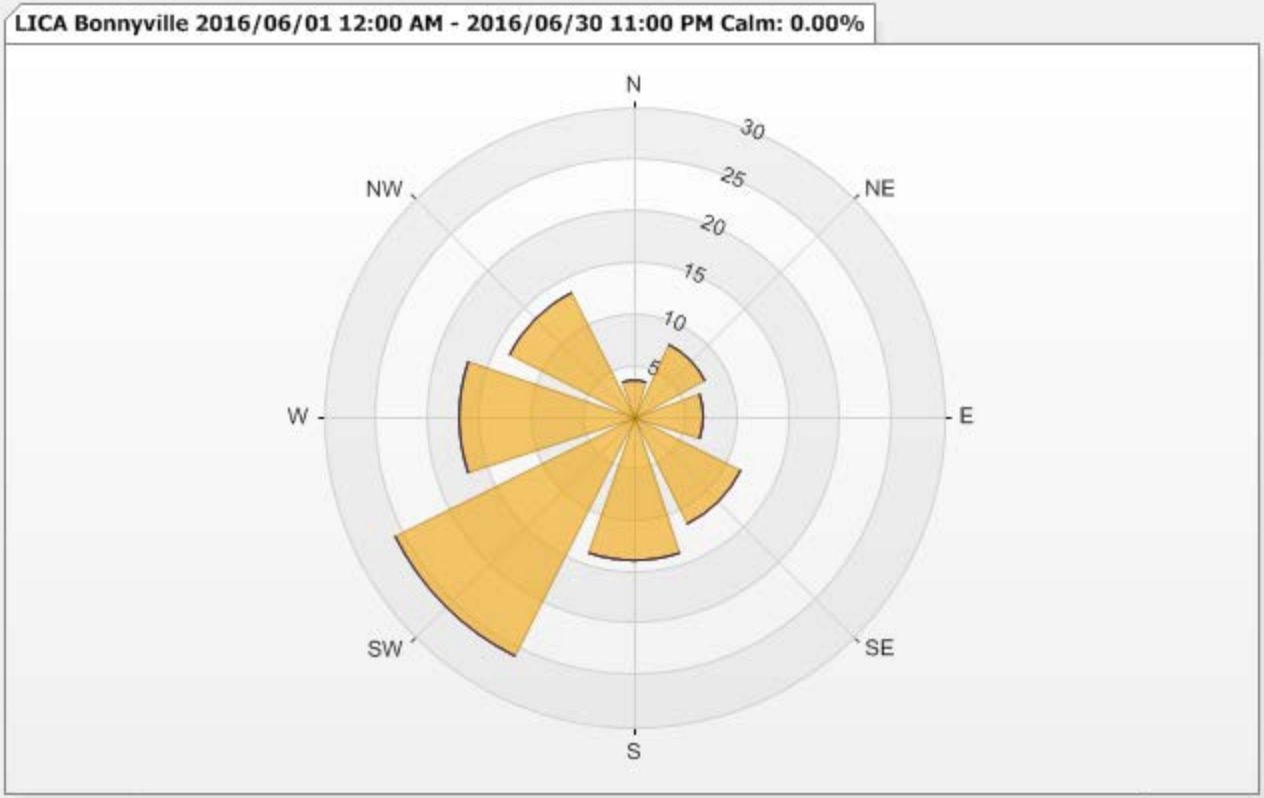
STANDARD DEVIATION: 5.32

NO2 MAX[ppb] Station: LICA Bonnyville Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]

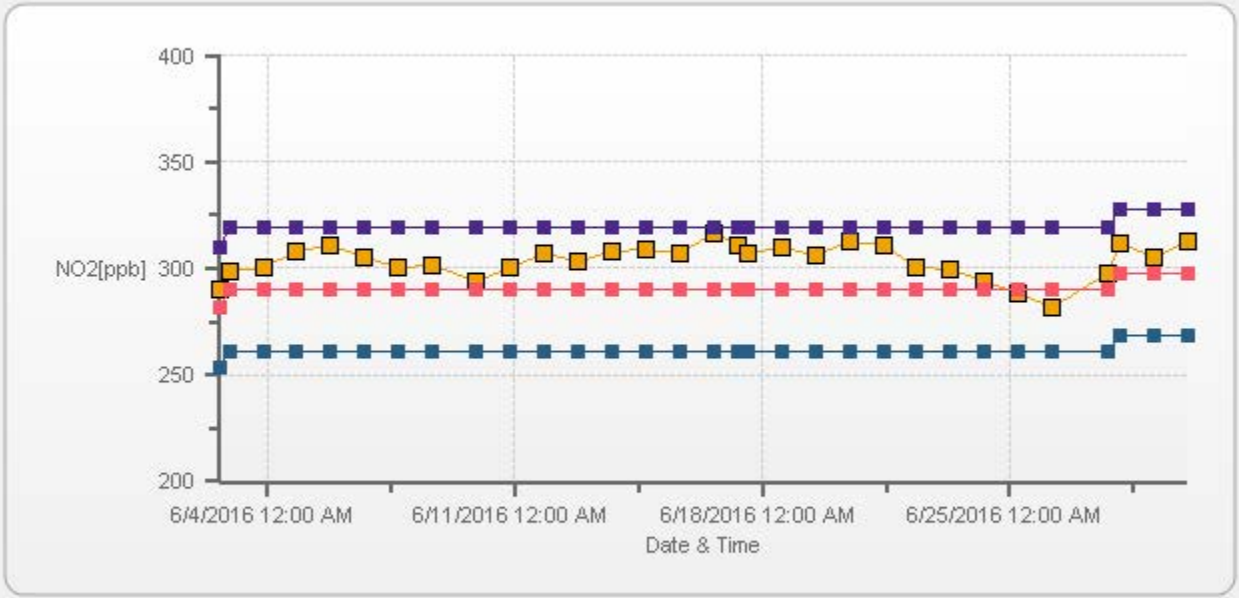


Wind: LICA Bonnyville Monitor: NO2 [ppb] Monthly: 06/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
Calm: 0.00% Valid Data: 93.58% Calm Avg: 0.00

Direction	0.0-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	3.59	0	0	0	3.59
NE	7.8	0	0	0	7.8
E	6.86	0	0	0	6.86
SE	11.54	0	0	0	11.54
S	13.88	0	0	0	13.88
SW	25.9	0	0	0	25.9
W	17	0	0	0	17
NW	13.42	0	0	0	13.42
Summary	100	0	0	0	100


LICA Bonnyville 2016/06/01 12:00 AM - 2016/06/30 11:00 PM Calm: 0.00%
N
NE
E
SE
S
SW
W
NW
30
25
20
15
10
5
% Icon Classes (ppb)
100 0.0-50.0
0 50.0-110.0
0 110.0-210.0
0 >210.0

NO2[ppb] Calibration: LICA Bonnyville Monthly: 06/2016 Type: Span



OZONE

OZONE (O3) hourly averages in ppb

MST

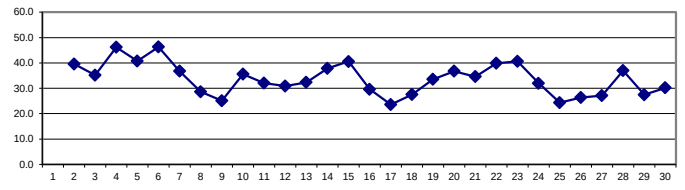
HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1																												
2																	C	C	C	C	37.7	40.6	S	40.4	37.7	40.6	39.6	8
3	35.0	33.8	30.6	28.0	26.7	22.8	20.8	23.5	26.8	30.6	33.9	35.2	38.1	43.4	48.0	47.8	45.5	46.5	47.1	45.8	40.6	S	29.5	30.0	20.8	48.0	35.2	24
4	27.4	28.0	23.7	29.7	33.4	30.3	33.3	37.1	43.6	48.1	53.7	55.1	55.2	57.4	59.2	59.4	59.2	59.8	59.8	57.7	S	52.6	50.8	47.4	23.7	59.8	46.2	24
5	45.5	42.6	41.8	42.6	40.4	41.1	41.7	41.6	41.4	44.0	45.6	43.8	46.0	46.1	43.5	42.5	43.3	43.9	43.8	S	33.5	31.4	26.0	23.8	23.8	46.1	40.7	24
6	26.1	28.1	27.9	26.0	24.0	24.0	26.2	31.9	38.7	46.1	52.7	56.4	61.7	65.1	66.9	***67.7***	66.1	65.4	S	62.9	55.5	51.7	49.1	46.0	24.0	***67.7***	***46.4***	24
7	43.2	38.2	33.3	31.1	30.5	30.6	29.6	28.4	32.5	40.1	47.0	51.9	52.5	46.0	45.9	43.5	46.3	S	43.7	40.4	30.2	21.7	18.6	20.3	18.6	52.5	36.8	24
8	20.7	18.6	8.3	6.5	14.0	21.0	26.9	28.0	30.7	30.8	31.1	31.1	33.4	35.1	33.6	34.5	S	45.7	42.5	35.9	34.4	32.0	32.0	31.3	6.5	45.7	28.6	24
9	29.2	29.9	31.4	26.9	24.5	21.3	21.0	21.6	22.8	18.2	23.9	25.4	26.2	31.9	30.7	28.7	25.0	26.4	23.3	21.3	21.7	22.4	S	23.8	18.2	31.9	25.1	24
10	24.3	26.4	30.8	33.2	36.7	37.4	37.8	37.5	36.0	38.4	42.2	42.0	41.6	40.1	37.6	39.2	37.6	37.9	38.1	34.9	31.1	S	28.1	29.1	24.3	42.2	35.6	24
11	31.3	29.2	27.8	25.7	25.2	25.8	30.9	33.1	33.7	34.5	38.1	34.1	32.4	34.8	35.7	35.1	33.7	29.9	28.9	35.0	S	28.1	37.8	37.6	25.2	38.1	32.1	24
12	35.9	34.2	31.1	28.5	27.7	29.5	34.2	34.7	33.7	34.1	34.3	32.9	30.6	28.3	32.4	33.2	33.2	34.8	35.8	S	28.8	23.6	23.4	16.1	16.1	35.9	30.9	24
13	18.7	17.7	18.8	22.5	22.9	23.2	25.5	28.7	31.0	32.7	34.1	35.7	37.9	39.8	40.9	41.4	42.2	43.1	S	45.4	38.6	35.1	33.1	35.1	17.7	45.4	32.4	24
14	36.5	34.1	33.4	31.4	29.8	30.2	34.6	31.5	34.2	32.9	33.5	39.7	48.3	50.7	52.5	52.7	49.3	S	44.7	39.4	36.4	31.9	32.3	31.6	29.8	52.7	37.9	24
15	31.3	35.9	35.8	29.2	32.4	37.8	37.4	36.9	38.5	41.2	42.8	43.6	42.7	42.6	43.6	44.4	S	48.1	50.4	50.6	47.9	43.5	40.4	36.4	29.2	50.6	40.6	24
16	34.1	32.1	29.4	24.2	25.6	23.2	22.7	25.5	24.3	26.0	24.2	24.9	33.8	43.3	41.0	S	34.9	34.3	34.4	34.2	30.7	27.7	26.8	23.7	22.7	43.3	29.6	24
17	19.2	19.5	20.2	18.4	17.9	19.0	19.7	21.2	P	18.1	20.7	22.6	25.5	30.1	S	31.5	32.0	31.5	31.3	30.3	29.1	20.7	16.2	23.4	16.2	32.0	23.6	23
18	26.2	26.2	25.6	22.8	20.0	19.5	21.5	23.5	26.1	31.0	35.3	35.9	34.0	S	32.0	32.9	34.0	33.8	33.7	31.5	27.0	23.2	22.1	15.3	15.3	35.9	27.5	24
19	20.6	27.7	27.5	23.6	22.1	20.4	26.6	34.8	33.7	36.5	36.2	36.1	S	40.7	41.6	39.8	39.4	40.1	39.2	39.6	38.2	37.4	36.5	34.3	20.4	41.6	33.6	24
20	33.2	31.1	27.9	22.8	21.6	23.8	23.8	27.0	36.4	38.4	42.0	S	44.0	45.3	46.9	49.7	50.1	51.2	51.4	48.8	41.7	34.1	28.9	24.8	21.6	51.4	36.7	24
21	22.2	17.9	22.6	10.6	7.1	8.9	18.3	26.1	36.4	48.5	S	53.4	53.0	50.6	43.3	47.5	44.8	45.2	44.9	46.3	43.6	39.6	33.1	31.5	7.1	53.4	34.6	24
22	31.8	27.0	27.6	27.0	29.2	26.4	25.7	38.3	36.5	S	49.6	50.7	52.1	53.7	52.6	47.6	51.0	51.2	51.2	46.2	41.1	28.9	33.9	38.5	25.7	53.7	39.9	24
23	37.6	36.0	31.5	30.7	32.0	28.9	31.1	33.0	S	41.1	47.5	48.1	49.2	48.2	48.3	48.5	49.8	49.7	47.3	43.5	38.7	38.8	39.5	35.1	28.9	49.8	40.6	24
24	34.6	32.5	32.7	32.3	32.9	30.6	26.0	S	29.2	33.5	39.7	38.9	35.2	35.9	38.7	38.4	37.1	35.9	32.8	29.4	24.5	22.3	22.8	19.9	19.9	39.7	32.0	24
25	20.0	18.0	22.2	19.4	16.3	14.6	S	19.9	19.1	23.0	24.6	24.2	27.8	32.2	36.7	40.5	38.9	33.0	30.5	27.3	23.2	18.8	15.0	15.6	14.6	40.5	24.4	24
26	13.6	6.5	7.6	***5.8***	6.1	S	8.4	11.5	22.3	27.8	35.7	35.2	36.4	38.6	41.0	41.1	41.1	39.4	37.0	33.7	29.3	30.9	33.1	25.5	***5.8***	41.1	26.4	24
27	20.3	18.4	17.6	16.5	S	16.2	19.1	23.2	26.9	34.1	38.5	38.1	35.5	33.4	34.3	35.2	34.4	34.1	32.0	29.9	24.7	20.5	20.0	21.8	16.2	38.5	27.2	24
28	24.2	22.4	18.9	S	16.9	21.8	24.5	31.0	38.4	43.8	49.0	51.2	50.1	50.7	47.9	46.3	46.5	46.0	46.7	43.2	33.8	32.8	33.9	30.6	16.9	51.2	37.0	24
29	27.7	19.5	S	11.8	11.7	16.5	20.9	24.3	27.3	30.5	32.0	33.2	34.1	34.7	34.1	33.2	33.9	33.8	33.8	31.5	28.2	24.8	26.7	28.2	11.7	34.7	27.5	24
30	26.4	S	22.1	21.6	22.4	23.8	26.4	28.9	33.3	35.3	37.2	36.4	35.5	36.5	37.3	37.0	35.5	35.0	32.7	31.0	28.6	26.9	24.2	20.7	20.7	37.3	30.2	24
HOURLY MAX	45.5	42.6	41.8	42.6	40.4	41.1	41.7	41.6	43.6	48.5	53.7	56.4	61.7	65.1	66.9	67.7	66.1	65.4	59.8	62.9	55.5	52.6	50.8	47.4				
HOURLY AVG	28.5	27.1	26.2	24.0	24.1	24.8	26.5	29.0	32.1	34.8	38.0	39.1	40.5	42.0	42.5	42.2	41.7	41.4	39.9	39.1	34.0	31.2	30.1	28.9				

STATUS FLAG CODES

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

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

24 HOUR AVERAGES FOR June 2016

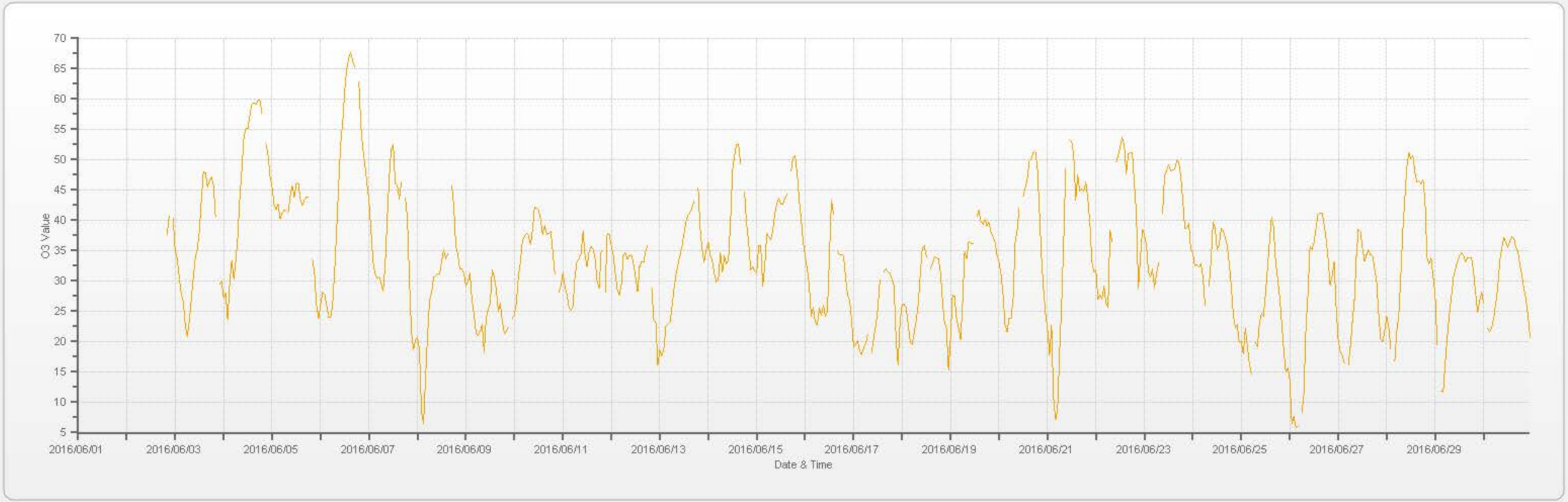


MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDENCES:		0				
NUMBER OF NON-ZERO READINGS:		646				
MINIMUM 1-HR AVERAGE	5.8	PPB	@ HOUR(S)	3	ON DAY(S)	26
MAXIMUM 1-HR AVERAGE:	67.7	PPB	@ HOUR(S)	15	ON DAY(S)	6
MAXIMUM 24-HR AVERAGE:	46.4	PPB			ON DAY(S)	6
					VAR-VARIOUS	

IZS CALIBRATION TIME:	29	HRS	OPERATIONAL TIME:	679	HRS
MONTHLY CALIBRATION TIME:	4	HRS	AMD OPERATION UPTIME:	94.3	%
STANDARD DEVIATION:	10.55		MONTHLY AVERAGE:	33.6	PPB

O3[ppb] Station: LICA Bonnyville Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



OZONE MAX instantaneous maximum in ppb

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1																												
2																	C	C	C	C	41.1	43.3	S	41.8	41.1	43.3	42.1	8
3	39.5	34.9	32.8	29.4	28.8	24.1	22.2	25.1	29.6	31.5	35.9	36.6	40.7	46.5	50.0	52.1	46.8	47.4	48.1	47.3	44.1	S	32.3	32.2	22.2	52.1	37.3	24
4	28.7	30.3	26.0	32.6	34.3	32.8	36.1	39.9	47.0	53.1	55.9	56.4	57.7	59.2	60.7	61.4	60.1	61.2	60.8	59.8	S	53.7	52.4	48.8	26.0	61.4	48.2	24
5	49.5	45.6	45.0	44.4	43.7	44.2	43.5	42.5	43.5	45.7	46.8	45.1	48.7	49.2	44.7	43.4	44.4	44.8	44.8	S	41.7	35.1	30.7	26.0	26.0	49.5	43.2	24
6	28.5	29.2	28.4	27.3	25.1	25.7	30.6	38.4	42.0	51.0	55.6	60.1	63.7	66.7	***69.2***	68.7	68.1	66.7	S	64.7	61.6	54.0	50.4	47.4	25.1	***69.2***	48.8	24
7	45.8	40.8	35.7	31.7	32.2	32.6	30.3	30.4	35.3	44.6	49.8	54.7	55.3	47.3	48.8	47.1	48.0	S	45.0	42.2	35.6	24.8	23.5	22.3	22.3	55.3	39.3	24
8	23.0	22.2	11.5	10.3	19.1	25.3	27.5	29.8	31.5	31.0	32.1	32.1	33.8	35.3	34.1	34.7	S	47.6	45.2	36.8	36.5	32.0	32.9	32.3	10.3	47.6	30.3	24
9	29.7	30.3	32.6	29.1	25.4	22.3	21.6	23.8	23.3	20.8	25.4	26.0	27.0	34.4	32.0	30.6	26.1	28.2	25.1	21.6	21.9	23.4	S	24.3	20.8	34.4	26.3	24
10	24.9	29.2	31.5	34.9	38.1	38.4	39.3	38.4	36.9	41.7	43.9	43.8	42.8	42.5	39.0	43.0	38.8	39.0	39.8	39.8	33.5	S	30.3	31.0	24.9	43.9	37.4	24
11	32.3	30.6	29.9	27.7	26.6	30.2	31.9	35.4	34.7	37.2	39.6	36.1	34.6	36.4	37.7	36.2	35.1	32.2	29.4	48.8	S	37.6	39.3	39.5	26.6	48.8	34.7	24
12	36.5	35.9	33.2	29.0	28.2	31.5	35.3	35.1	34.7	36.2	36.1	33.7	32.0	30.3	34.4	34.7	35.9	41.2	37.5	S	33.2	25.7	25.7	21.8	21.8	41.2	32.9	24
13	19.8	18.3	21.6	23.5	23.8	24.3	28.4	30.4	31.9	33.1	35.4	36.5	39.4	41.1	41.7	42.3	42.9	45.0	S	47.6	41.5	36.3	34.7	40.2	18.3	47.6	33.9	24
14	39.6	35.3	35.1	32.6	30.7	35.0	35.9	35.3	35.9	34.9	36.2	45.3	51.9	52.8	54.3	56.6	51.6	S	46.8	44.2	40.0	35.4	34.1	34.4	30.7	56.6	40.6	24
15	33.4	37.4	37.1	33.1	38.7	39.1	38.5	37.8	40.6	42.3	43.9	45.9	44.1	43.5	45.2	45.6	S	49.5	52.0	52.0	49.4	46.7	41.7	37.8	33.1	52.0	42.4	24
16	34.9	33.4	31.0	27.8	28.7	27.0	25.3	26.7	26.0	27.5	27.0	28.7	41.7	44.7	43.2	S	37.2	35.6	36.2	35.9	32.9	29.2	28.0	26.7	25.3	44.7	32.0	24
17	19.9	20.5	20.8	19.2	18.8	19.9	19.9	P	P	18.7	24.3	24.1	28.7	33.1	S	33.2	33.1	33.1	32.8	31.5	31.8	25.2	25.7	25.7	18.7	33.2	25.7	22
18	26.8	27.2	26.8	26.7	21.6	20.5	23.1	24.6	28.8	34.2	36.5	36.8	35.6	S	33.4	34.1	35.1	34.7	35.4	33.8	29.1	26.4	25.4	23.3	20.5	36.8	29.6	24
19	24.1	29.4	29.4	25.7	24.4	22.9	35.0	37.6	35.7	39.0	38.1	37.4	S	45.8	42.9	41.4	41.2	41.2	41.2	41.2	39.8	38.4	37.8	36.6	22.9	45.8	35.9	24
20	35.6	33.5	33.5	25.1	26.1	26.7	29.4	32.1	38.7	41.2	44.4	S	45.6	46.7	50.0	50.9	52.0	53.2	53.1	51.8	47.1	41.4	40.4	33.4	25.1	53.2	40.5	24
21	31.6	23.8	30.4	25.1	9.3	12.7	22.5	32.5	45.0	51.2	S	57.4	55.6	54.9	46.5	50.1	48.6	46.4	45.8	47.8	46.7	41.7	36.5	34.3	9.3	57.4	39.0	24
22	34.0	29.7	30.3	32.3	33.5	30.8	30.3	41.2	38.5	S	51.6	52.5	53.7	55.5	54.2	52.2	53.2	52.3	52.2	50.4	45.9	31.5	40.3	40.8	29.7	55.5	42.9	24
23	41.0	38.7	37.6	33.4	34.0	30.3	32.4	35.1	S	47.7	50.0	50.0	50.7	48.9	49.1	50.0	50.7	50.4	50.0	48.3	41.4	42.2	42.4	36.7	30.3	50.7	43.1	24
24	35.9	35.3	35.1	33.8	35.3	33.7	28.4	S	31.4	41.4	41.2	44.1	37.2	37.5	41.4	40.6	38.4	37.8	34.5	32.9	25.4	24.6	23.4	22.9	22.9	44.1	34.4	24
25	21.0	21.3	23.3	20.7	17.7	16.2	S	20.2	19.5	26.0	26.4	25.8	30.2	35.3	38.3	41.9	41.4	35.9	32.2	32.3	27.3	21.8	17.8	17.3	16.2	41.9	26.5	24
26	15.7	9.0	26.7	8.2	7.8	S	9.4	17.3	25.8	34.5	37.6	36.0	37.8	40.0	42.5	42.4	41.8	41.5	38.8	36.5	31.8	35.4	35.6	31.0	7.8	42.5	29.7	24
27	24.6	19.1	18.9	17.3	S	18.0	22.2	25.2	29.5	40.3	39.7	40.6	36.6	34.9	36.5	36.8	35.3	35.7	33.7	32.0	29.0	24.3	23.1	23.7	17.3	40.6	29.4	24
28	26.0	24.4	21.6	S	19.1	24.5	26.4	35.6	42.7	47.0	51.2	53.2	51.8	52.8	52.2	54.0	50.3	49.7	49.8	48.2	39.3	35.0	35.4	31.7	19.1	54.0	40.1	24
29	29.5	23.8	S	12.6	14.9	18.9	23.2	26.3	29.1	32.3	33.1	35.3	35.6	36.2	36.3	34.2	35.0	38.1	35.0	33.9	29.7	27.8	28.2	29.7	12.6	38.1	29.5	24
30	27.7	S	22.9	22.6	23.3	25.8	28.0	32.1	35.1	37.5	37.9	37.6	36.8	38.1	38.4	38.4	36.7	36.2	34.6	32.0	30.3	28.0	26.7	23.5	22.6	38.4	31.7	24
HOURLY MAX	49.5	45.6	45.0	44.4	43.7	44.2	43.5	42.5	47.0	53.1	55.9	60.1	63.7	66.7	69.2	68.7	68.1	66.7	60.8	64.7	61.6	54.0	52.4	48.8				
HOURLY AVG	30.7	29.2	29.2	26.5	26.3	27.2	28.8	31.9	34.3	37.8	39.8	41.2	42.6	44.1	44.3	44.3	43.4	43.3	41.5	42.1	37.3	34.1	33.1	31.6				

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: 645

MAXIMUM INSTANTANEOUS VALUE: 69.2 PPB @ HOUR(S) 14 ON DAY(S) 6

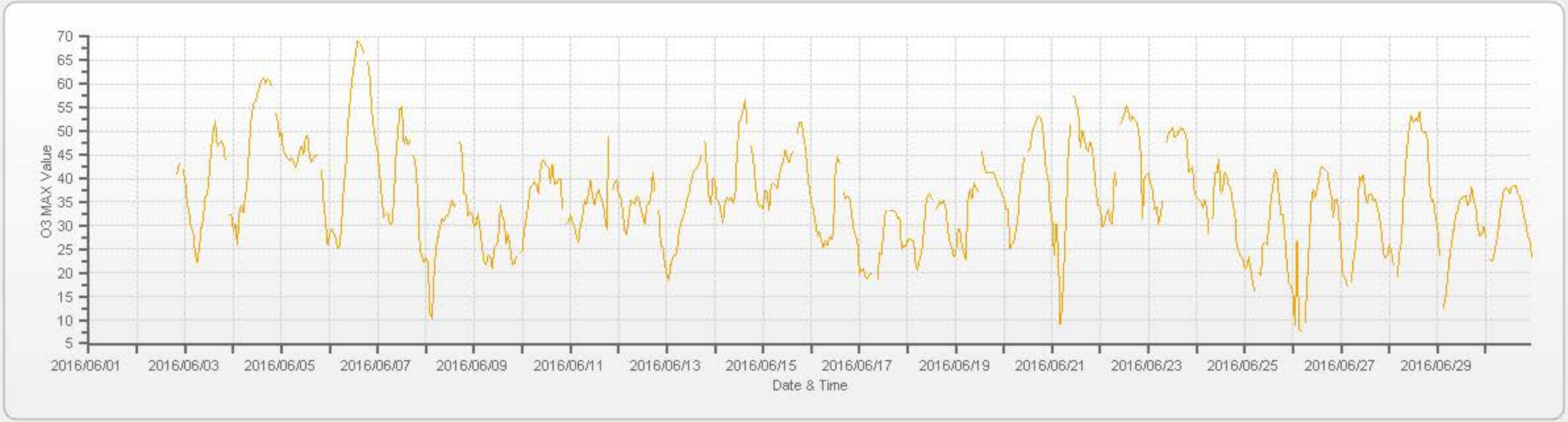
VAR-VARIOUS

IZS CALIBRATION TIME: 29 HRS OPERATIONAL TIME: 678 HRS

MONTHLY CALIBRATION TIME: 4 HRS

STANDARD DEVIATION: 10.48

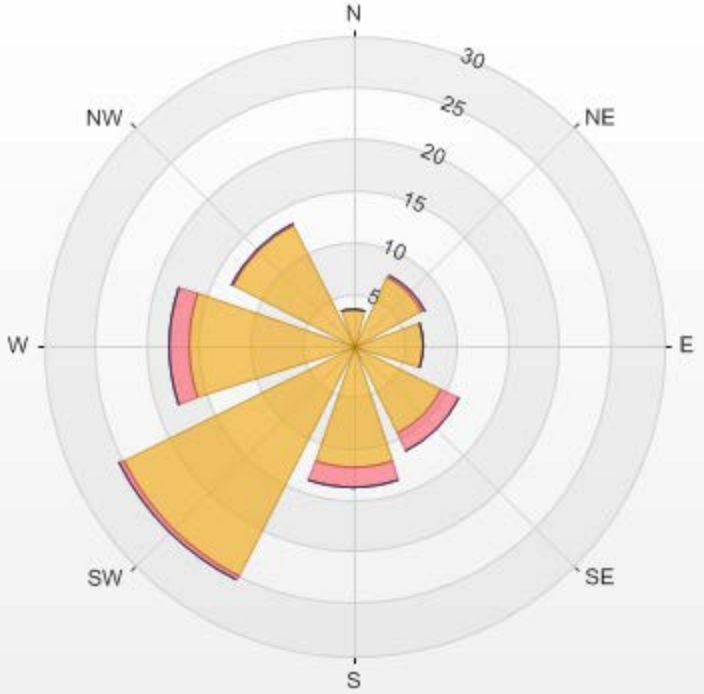
O3 MAX[ppb] Station: LICA Bonnyville Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



Wind: LICA Bonnyville Monitor: O3 [ppb] Monthly: 06/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
Calm: 0.00% Valid Data: 94.31% Calm Avg: 0.00

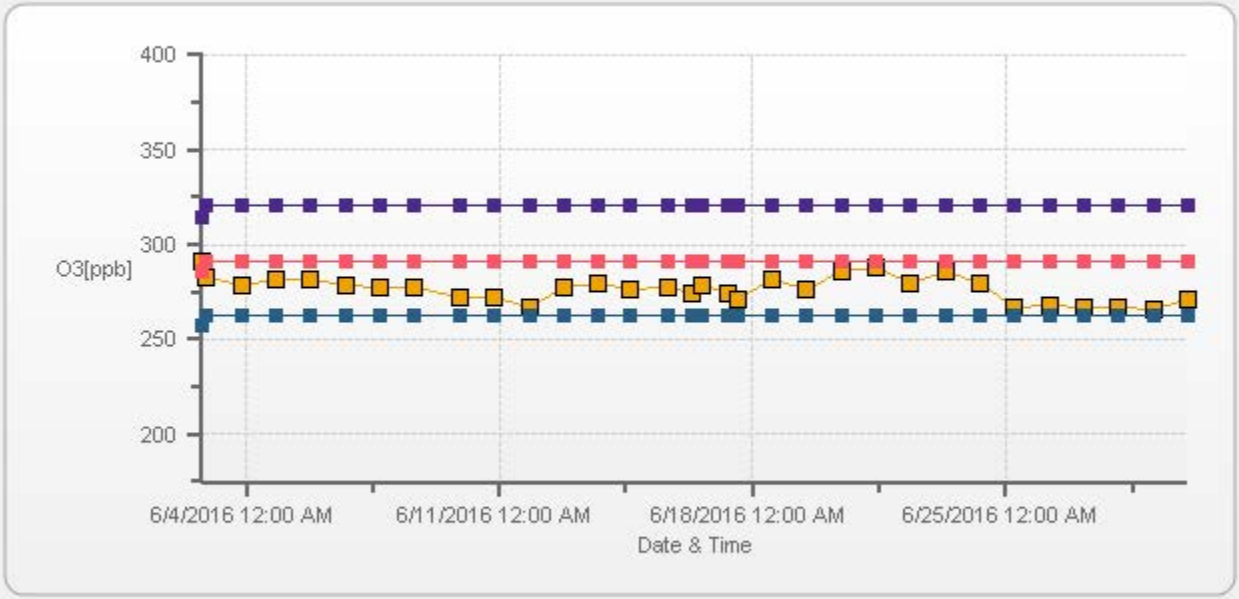
Direction	0.0-50.0	50.0-110.0	110.0-210.0	>210.0	Total
N	3.56	0	0	0	3.56
NE	7.43	0.31	0	0	7.74
E	6.81	0	0	0	6.81
SE	9.44	2.01	0	0	11.45
S	11.76	2.01	0	0	13.77
SW	24.92	0.46	0	0	25.38
W	15.94	2.01	0	0	17.95
NW	13	0.31	0	0	13.31
Summary	92.86	7.11	0	0	100

LICA Bonnyville 2016/06/01 12:00 AM - 2016/06/30 11:00 PM Calm: 0.00%



%	Icon	Classes (ppb)							
93		0.0-50.0	7	50.0-110.0	0	110.0-210.0	0	>210.0

O3[ppb] Calibration: LICA Bonnyville Monthly: 06/2016 Type: Span



PARTICULATE MATTER 2.5

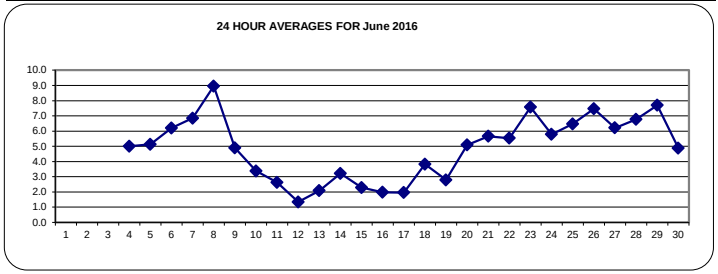
PARTICULATE MATTER 2.5 (LESS THAN 2.5 MICRONS) (PM2.5) hourly averages in ug/m3

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1																												
2																												
3									C	C	C	C	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y				4
4	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	0.7	4.2	7.7	7.2	3.2	6.2	7.7	4.2	3.7	5.1	8.7	1.7	4.7	0.7	8.7	5.0	13
5	10.2	14.7	11.7	7.7	10.7	7.2	3.2	5.6	1.6	1.6	3.7	2.2	0.0	1.6	4.7	2.7	0.7	4.2	2.2	0.1	9.2	5.2	4.7	7.7	0.0	14.7	5.1	24
6	2.2	7.2	0.0	6.2	7.2	4.2	6.2	2.7	3.2	6.6	12.7	20.2	6.2	C1	C1	8.7	7.7	8.6	2.7	2.2	2.7	6.2	5.1	7.7	0.0	20.2	6.2	22
7	2.2	3.7	8.7	3.2	14.7	8.7	4.7	3.7	2.2	5.6	11.2	15.7	12.7	7.2	6.2	5.1	0.1	0.2	5.6	7.7	9.7	11.2	8.2	6.2	0.1	15.7	6.9	24
8	6.7	11.2	9.2	7.2	8.2	9.6	10.6	11.7	10.6	9.7	4.2	7.7	***22.6***	10.6	7.7	7.7	11.7	7.7	10.6	12.1	1.1	3.7	3.2	9.6	1.1	***22.6***	***9.0***	24
9	11.2	10.1	5.6	5.1	12.7	12.1	10.6	11.2	12.1	2.2	6.7	0.7	0.0	0.0	1.6	2.2	2.2	0.7	0.0	0.7	0.0	X	X	0.0	0.0	12.7	4.9	22
10	4.1	0.0	0.0	X	0.0	2.7	0.7	3.2	5.1	3.2	1.1	1.6	4.1	2.2	4.7	9.7	0.0	3.7	6.2	2.2	7.2	5.1	6.2	4.7	0.0	9.7	3.4	23
11	0.0	3.7	3.7	0.7	3.2	2.7	10.2	X	9.7	0.0	X	2.2	0.0	0.0	0.0	0.0	1.7	0.2	4.2	7.2	1.7	4.2	0.0	X	0.0	10.2	2.6	21
12	4.2	2.2	0.7	0.2	1.7	0.0	3.7	1.7	0.0	X	0.7	0.0	0.2	1.2	2.2	3.7	2.7	1.1	0.0	0.2	0.7	3.7	0.0	0.0	0.0	4.2	1.3	23
13	0.7	4.7	1.1	0.7	0.0	2.2	X	3.7	2.6	3.1	C1	C1	C1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	0.0	4.7	2.1	9
14	Y	Y	Y	Y	Y	Y	Y	Y	C1	C1	C1	0.1	1.1	3.1	8.7	2.2	7.7	0.0	3.2	1.6	0.0	2.6	8.2	3.2	0.0	8.7	3.2	13
15	5.6	0.1	3.7	4.7	3.1	2.2	4.1	0.0	0.0	2.2	0.0	0.0	0.0	2.2	1.1	2.6	7.2	4.1	0.0	2.6	2.2	4.1	1.6	1.6	0.0	7.2	2.3	24
16	3.2	3.1	0.7	0.0	0.0	3.2	1.6	0.0	0.0	0.0	0.0	7.7	7.7	0.7	3.7	0.0	0.2	5.1	3.7	0.7	0.7	3.7	0.7	1.1	0.0	7.7	2.0	24
17	0.0	2.2	0.0	0.0	1.1	0.7	0.7	0.0	P	3.2	2.2	3.7	0.0	4.7	1.7	2.7	0.0	3.7	3.7	6.7	2.7	4.7	0.0	0.7	0.0	6.7	2.0	23
18	5.2	5.2	3.2	0.0	4.2	8.2	2.7	4.1	0.7	0.7	1.6	0.0	4.1	7.7	0.0	0.0	X	6.2	6.6	4.2	3.7	6.7	7.7	5.2	0.0	8.2	3.8	23
19	6.2	3.7	2.7	2.7	7.2	2.2	0.0	0.0	X	4.1	4.7	0.0	4.1	0.2	3.2	5.1	7.7	0.0	2.2	0.0	4.7	0.2	3.2	0.0	0.0	7.7	2.8	23
20	1.7	1.7	5.7	7.8	7.3	6.7	5.1	5.6	0.7	1.6	4.2	3.7	2.2	X	3.1	1.6	4.7	5.6	6.2	6.2	4.7	9.2	19.2	2.7	0.7	19.2	5.1	23
21	7.7	8.2	0.0	5.2	12.7	5.7	2.7	3.2	9.1	8.6	0.6	6.1	7.7	4.7	5.6	8.7	3.2	16.7	3.7	0.0	5.7	0.2	3.7	6.2	0.0	16.7	5.7	24
22	4.7	3.2	3.2	5.7	1.7	7.2	9.6	5.6	5.1	0.0	5.1	0.1	2.1	6.1	14.1	11.1	9.1	6.1	4.1	6.2	9.2	3.2	4.7	5.7	0.0	14.1	5.5	24
23	7.7	11.7	6.7	5.2	11.7	8.7	3.1	3.1	6.6	6.6	4.1	3.6	6.6	8.1	9.6	7.2	8.7	7.2	10.6	10.1	14.7	13.7	2.7	3.7	2.7	14.7	7.6	24
24	5.7	3.7	3.2	3.2	6.2	2.2	0.0	6.6	2.2	5.1	7.7	2.1	8.6	3.6	5.1	8.1	7.7	10.1	7.7	17.7	5.2	3.2	6.2	7.7	0.0	17.7	5.8	24
25	10.2	7.7	10.7	5.7	7.7	9.2	7.7	9.2	7.2	4.7	5.1	4.7	11.2	7.2	2.6	0.0	3.2	3.2	2.2	3.7	5.7	14.7	7.2	4.7	0.0	14.7	6.5	24
26	7.7	0.0	6.7	5.7	3.2	5.2	5.2	6.7	6.6	7.1	5.1	2.6	9.1	9.6	10.6	9.6	10.1	10.1	10.1	11.2	5.1	11.2	9.7	11.2	0.0	11.2	7.5	24
27	11.2	8.2	8.2	11.2	7.7	5.7	7.7	5.6	6.1	6.1	7.2	0.1	2.2	8.2	10.1	5.7	3.2	5.6	0.7	5.7	3.7	11.2	4.1	3.7	0.1	11.2	6.2	24
28	6.7	5.1	3.2	9.7	8.2	11.2	10.6	5.1	7.2	6.7	6.2	5.7	9.7	7.2	0.0	X	5.1	8.2	6.2	5.1	7.2	7.2	7.2	7.2	0.0	11.2	6.8	23
29	2.7	12.2	7.7	6.7	6.7	6.2	12.7	8.2	4.7	9.6	3.1	10.5	9.2	9.6	5.7	9.2	8.1	10.6	6.6	7.2	5.6	5.6	7.2	9.2	2.7	12.7	7.7	24
30	2.7	5.7	1.7	1.7	3.6	5.7	7.7	9.0	5.2	5.1	5.1	9.1	5.7	6.1	8.2	6.2	1.1	2.8	4.5	2.6	6.6	4.2	6.6	0.0	0.0	9.1	4.9	24
HOURLY MAX	11.2	14.7	11.7	11.2	14.7	12.1	12.7	11.7	12.1	9.7	12.7	20.2	22.6	10.6	14.1	11.1	11.7	16.7	10.6	17.7	14.7	14.7	19.2	11.2				
HOURLY AVG	5.2	5.6	4.3	4.4	6.0	5.6	5.5	4.8	4.7	4.3	4.4	4.3	5.4	5.0	5.1	4.9	4.8	5.4	4.5	4.9	4.8	6.1	5.2	4.6				

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

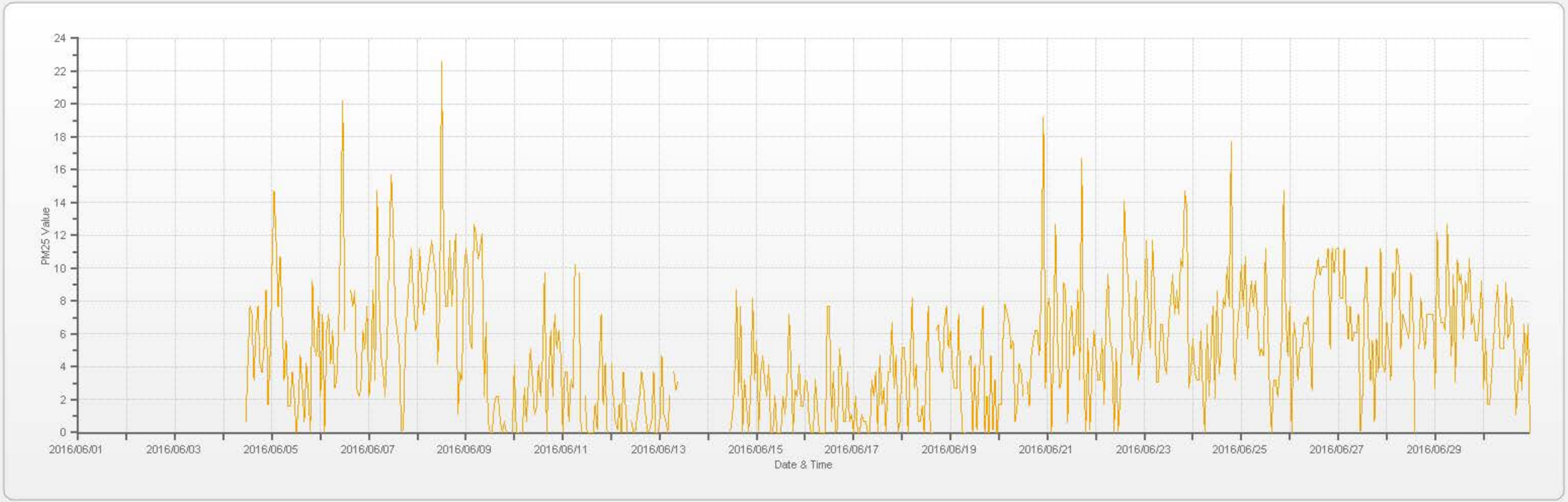


OBJECTIVE LIMIT: **ALBERTA ENVIRONMENT:** 1-HR 80 ug/m3 | 24-HR 30 ug/m3

MONTHLY SUMMARY

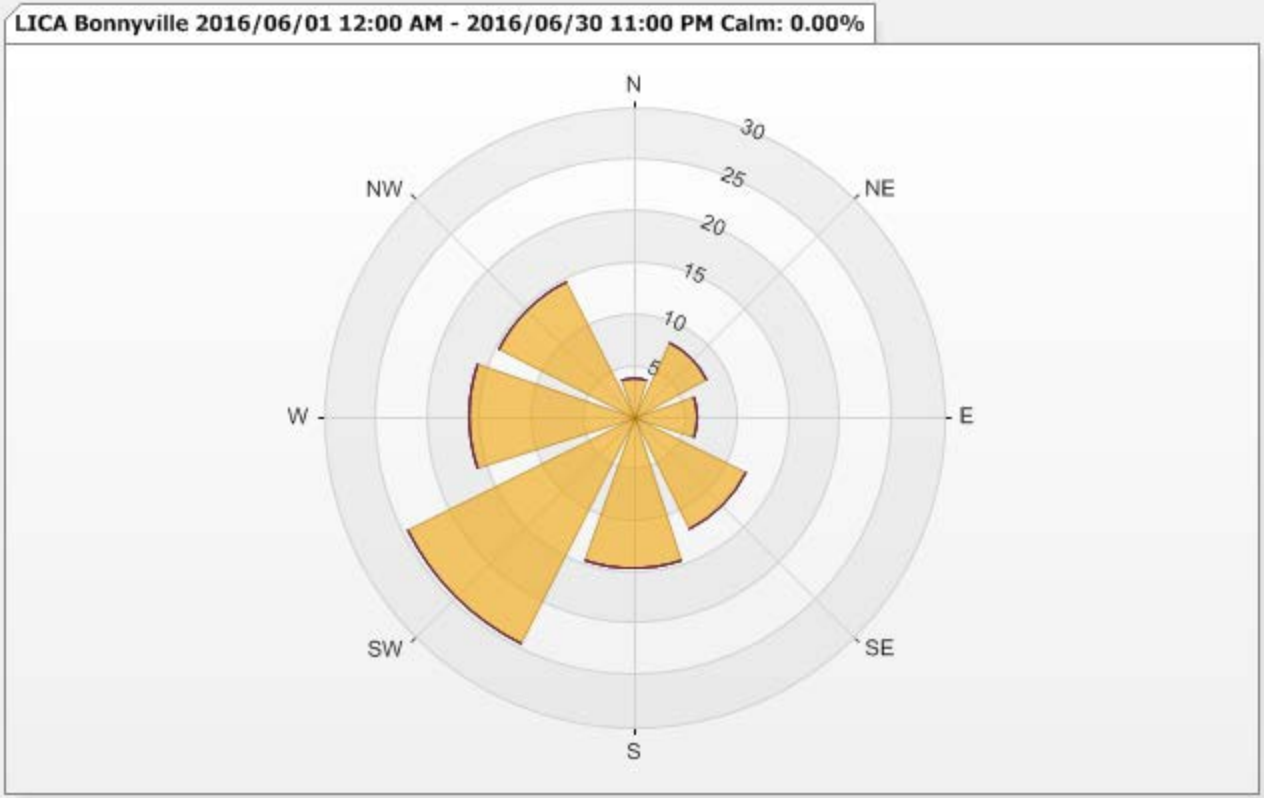
NUMBER OF 1-HR EXCEEDENCES:			0				
NUMBER OF 24-HR EXCEEDENCES:			0				
NUMBER OF NON-ZERO READINGS:			532				
MINIMUM 1-HR AVERAGE	0.0	ug/m3	@ HOUR(S)	VAR	ON DAY(S)	VAR	
MAXIMUM 1-HR AVERAGE:	22.6	ug/m3	@ HOUR(S)	12	ON DAY(S)	8	
MAXIMUM 24-HR AVERAGE:	9.0	ug/m3			ON DAY(S)	8	
					VAR-VARIOUS		
			OPERATIONAL TIME:			601	HRS
MONTHLY CALIBRATION TIME:	4	HRS	AMD OPERATION UPTIME:			83.5	%
STANDARD DEVIATION:	3.74		MONTHLY AVERAGE:			5.0	ug/m3

PM25[ug/m3(L)] Station: LICA Bonnyville Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



Wind: LICA Bonnyville Monitor: PM25 [ug/m3(L)] Monthly: 06/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
Calm: 0.00% Valid Data: 87.30% Calm Avg: 0.00

Direction	0.0-60.0	60.0-80.0	80.0-120.0	120.0-240.0	>240.0	Total
N	3.85	0	0	0	0	3.85
NE	8.03	0	0	0	0	8.03
E	6.19	0	0	0	0	6.19
SE	12.21	0	0	0	0	12.21
S	14.72	0	0	0	0	14.72
SW	24.58	0	0	0	0	24.58
W	15.89	0	0	0	0	15.89
NW	14.55	0	0	0	0	14.55
Summary	100	0	0	0	0	100


LICA Bonnyville 2016/06/01 12:00 AM - 2016/06/30 11:00 PM Calm: 0.00%
N
NE
E
SE
S
SW
W
NW
30
25
20
15
10
5
% Icon Classes (ug/m3(L))
100 0.0-60.0
0 60.0-80.0
0 80.0-120.0
0 120.0-240.0
0 >240.0

WIND SPEED

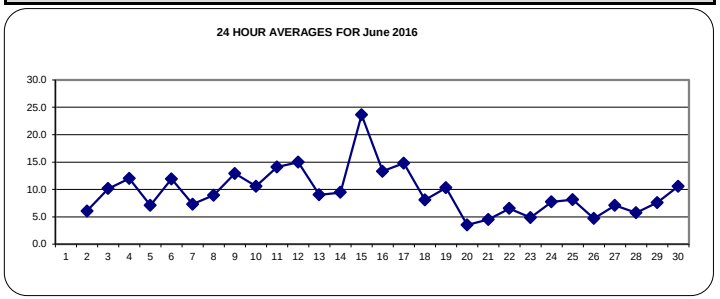
WIND SPEED (WS) hourly averages in km/hr

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1																												
2													5.6	5.6	4.5	6.2	2.4	1.1	3.3	4.2	10.2	17.9	7.7	4.0	1.1	17.9	6.1	12
3	6.2	6.4	5.9	6.6	7.6	9.3	8.7	10.7	12.2	10.9	12.7	13.6	15.6	15.2	17.7	17.9	15.3	14.7	13.1	8.3	3.5	4.0	2.9	4.5	2.9	17.9	10.1	24
4	5.2	4.8	7.5	7.7	8.2	6.5	8.0	11.6	14.6	16.6	16.4	16.4	17.4	18.0	16.2	17.6	17.4	18.1	19.2	13.0	8.4	7.5	7.2	4.4	4.4	19.2	12.0	24
5	3.9	3.1	3.6	4.3	4.5	4.6	5.7	5.8	6.9	8.3	11.2	13.7	15.1	13.2	12.3	11.4	10.0	10.2	7.5	5.5	1.8	1.5	0.5	5.1	0.5	15.1	7.1	24
6	7.3	6.6	7.5	6.9	5.2	2.0	4.1	4.8	8.9	11.1	16.4	16.9	17.8	17.3	19.1	20.5	20.1	18.7	18.0	12.9	8.4	9.5	12.1	13.6	2.0	20.5	11.9	24
7	17.9	15.9	12.4	12.4	9.1	7.9	5.8	4.9	9.6	7.7	5.0	4.0	7.4	9.2	8.3	8.2	6.8	7.2	6.3	4.1	1.2	0.2	1.1	2.7	0.2	17.9	7.3	24
8	1.8	1.1	3.6	3.2	5.3	6.3	8.0	6.7	5.8	7.9	8.0	10.3	12.3	13.5	13.2	13.2	11.6	12.8	11.2	12.9	15.1	11.1	9.7	10.0	1.1	15.1	8.9	24
9	8.4	7.6	12.0	13.9	12.9	7.8	6.3	2.2	6.3	15.0	18.0	18.5	16.9	16.3	18.9	19.0	15.7	14.3	13.8	11.9	12.2	14.0	14.0	13.7	2.2	19.0	12.9	24
10	13.2	14.9	12.7	13.7	15.1	12.8	15.3	15.5	14.4	13.3	13.1	9.7	9.1	8.8	8.6	5.4	9.1	8.1	7.8	6.4	6.7	5.3	6.6	8.0	5.3	15.5	10.6	24
11	10.0	8.7	6.0	5.2	5.9	10.4	14.3	15.4	11.7	8.9	13.7	14.1	13.2	14.9	17.1	19.1	20.6	15.7	17.9	16.9	15.0	20.9	22.6	20.0	5.2	22.6	14.1	24
12	18.2	21.2	18.8	17.3	14.4	16.1	17.7	15.1	12.2	18.5	21.9	19.6	21.3	18.6	16.1	16.5	14.0	13.4	14.1	14.3	3.2	5.5	6.4	5.3	3.2	21.9	15.0	24
13	5.6	6.1	6.8	7.6	7.3	7.3	10.3	10.6	11.1	13.1	12.8	13.5	15.1	15.0	13.0	10.7	8.9	7.7	6.0	0.9	4.7	5.4	5.4	12.0	0.9	15.1	9.0	24
14	6.1	8.4	7.5	9.0	9.1	10.6	13.5	11.4	12.2	8.8	6.6	6.8	10.0	13.4	16.8	20.4	18.9	10.0	2.9	4.3	3.6	5.4	4.3	6.7	2.9	20.4	9.4	24
15	12.4	13.4	18.9	25.6	26.1	21.8	23.9	26.9	29.8	31.0	24.9	25.9	23.5	25.9	26.9	27.0	31.7	***31.8***	30.8	23.8	20.7	13.5	14.9	15.5	12.4	***31.8***	***23.6***	24
16	18.6	21.5	18.1	13.1	12.5	9.3	6.0	2.2	2.6	1.3	5.8	6.3	11.2	11.1	12.8	5.1	11.5	19.6	24.1	23.0	22.8	22.1	20.8	18.1	1.3	24.1	13.3	24
17	16.5	15.8	19.3	21.4	22.4	19.1	18.9	18.6	**P**	13.3	15.4	15.0	14.0	14.9	16.2	15.8	13.4	11.0	11.6	9.7	8.5	8.4	10.7	10.6	8.4	22.4	14.8	23
18	10.9	14.1	15.5	6.6	10.2	8.0	8.1	6.5	3.9	5.7	10.0	11.1	11.5	8.9	7.8	7.8	10.5	10.9	8.5	5.8	3.8	2.4	1.8	4.1	1.8	15.5	8.1	24
19	7.8	3.8	4.9	4.6	6.1	6.8	8.9	12.2	9.9	10.7	11.4	13.8	16.1	13.0	18.3	16.4	15.9	16.9	15.5	11.1	8.3	6.7	4.6	3.9	3.8	18.3	10.3	24
20	3.7	1.4	1.3	1.1	2.2	1.2	2.6	3.8	4.9	3.5	3.7	4.6	3.8	5.4	5.6	3.6	5.7	5.3	4.7	7.2	5.6	2.0	1.0	0.6	0.6	7.2	3.5	24
21	0.8	***0.1***	0.2	1.1	0.7	1.3	5.1	4.0	4.0	6.0	4.4	4.6	4.1	0.4	6.0	5.4	10.1	10.3	11.0	14.3	8.1	1.6	2.4	1.9	***0.1***	14.3	4.5	24
22	1.8	5.9	4.2	3.2	3.1	2.5	1.8	6.2	7.3	11.4	11.1	11.6	12.1	9.0	13.5	1.8	9.2	11.3	12.3	2.4	2.5	4.4	3.8	4.0	1.8	13.5	6.5	24
23	7.6	5.2	3.1	5.1	7.1	5.1	4.4	4.7	4.2	4.0	4.0	3.4	3.8	5.5	2.7	5.2	4.8	6.2	6.0	4.6	3.2	8.1	1.9	6.7	1.9	8.1	4.9	24
24	5.1	6.0	8.5	7.6	6.9	6.4	7.9	9.9	9.7	9.4	9.1	7.3	8.7	8.6	10.5	9.0	7.5	9.2	8.9	8.4	6.2	6.0	3.3	5.6	3.3	10.5	7.7	24
25	6.9	5.0	2.7	5.6	8.4	7.7	8.5	9.9	11.2	13.6	13.8	12.0	12.6	13.7	15.7	13.3	11.4	9.4	1.2	3.1	1.9	1.0	2.2	3.7	1.0	15.7	8.1	24
26	3.9	3.7	0.6	0.6	3.1	1.6	***0.1***	2.3	3.8	2.7	3.5	3.3	2.4	2.5	5.8	5.7	8.4	9.6	11.3	9.4	5.1	7.9	6.9	8.8	***0.1***	11.3	4.7	24
27	7.5	6.7	7.9	7.3	6.8	7.4	6.5	3.8	3.2	5.2	5.8	7.9	9.5	10.3	11.1	11.3	11.3	10.5	9.4	6.0	3.5	4.1	2.8	4.7	2.8	11.3	7.1	24
28	5.5	6.1	1.4	0.5	1.6	2.3	6.2	5.4	7.0	8.2	8.4	10.0	11.5	7.8	4.1	11.3	4.4	9.4	6.1	2.8	3.1	5.8	4.8	4.0	0.5	11.5	5.7	24
29	2.6	3.0	5.5	4.4	3.9	5.7	9.5	9.8	10.1	11.7	12.7	11.7	9.0	8.0	9.6	7.4	6.9	7.5	8.3	8.6	7.2	6.7	6.3	6.2	2.6	12.7	7.6	24
30	5.0	4.4	6.8	5.8	6.7	7.2	10.3	13.5	17.1	16.5	17.1	15.7	16.9	15.7	14.7	16.3	14.6	11.2	9.9	8.3	4.7	5.7	4.2	5.3	4.2	17.1	10.6	24
HOURLY MAX	18.6	21.5	19.3	25.6	26.1	21.8	23.9	26.9	29.8	31.0	24.9	25.9	23.5	25.9	26.9	27.0	31.7	31.8	30.8	23.8	22.8	22.1	22.6	20.0				
HOURLY AVG	7.9	7.9	8.0	7.9	8.3	7.7	8.8	9.1	9.4	10.5	11.3	11.5	12.0	11.7	12.5	12.0	12.0	11.8	11.1	9.1	7.2	7.4	6.7	7.4				

STATUS FLAG CODES

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

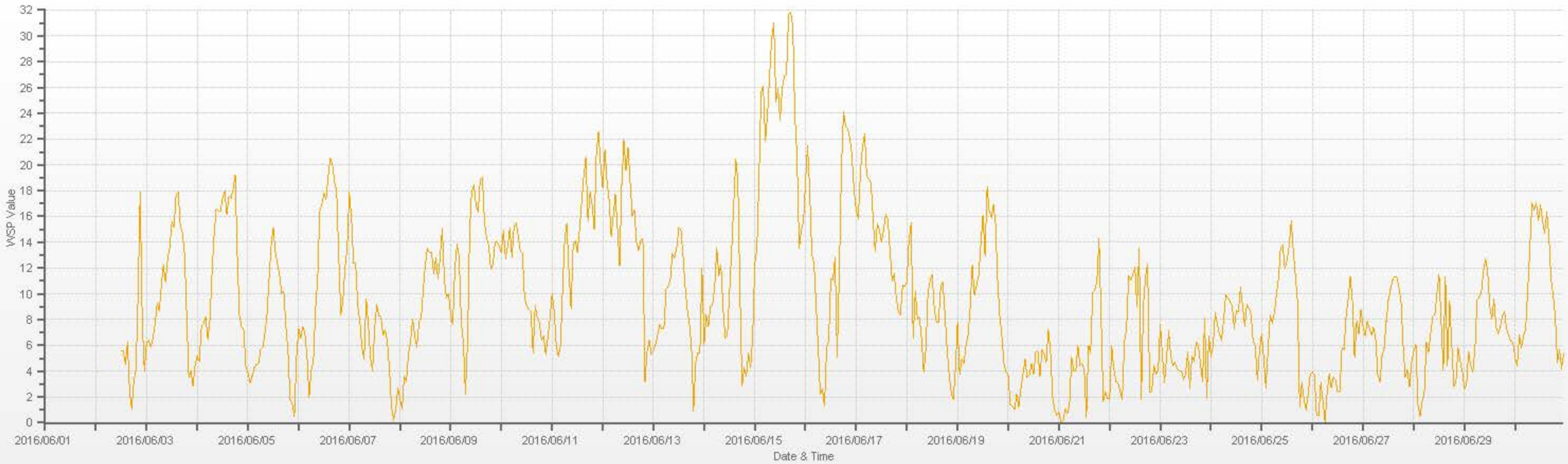


LAST CALIBRATION:	January 26, 2016
DECLINATION :	MAGNETIC DECLINATION 19 DEGREE EAST

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:		683					
MINIMUM 1-HR AVERAGE	0.1	KPH	@ HOUR(S)	1 , 6	ON DAY(S)	21 , 26	
MAXIMUM 1-HR AVERAGE:	31.8	KPH	@ HOUR(S)	17	ON DAY(S)	15	
MAXIMUM 24-HR AVERAGE:	23.6	KPH			ON DAY(S)	15	
					VAR-VARIOUS		
			OPERATIONAL TIME:			683	HRS
MONTHLY CALIBRATION TIME:	0	HRS	AMD OPERATION UPTIME:			94.9	%
STANDARD DEVIATION:	5.87		MONTHLY AVERAGE:			9.6	KPH

WSP[kph] Station: LICA Bonnyville Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



VECTOR WIND SPEED MAX instantaneous maximum in km/hr

MST

HOUR START	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HOUR	
HOUR END	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	RDGS.
DAY																												
1																												
2													19.3	14.2	15.1	18.8	9.8	10.3	10.1	10.1	39.3	50.2	24.5	15.4	9.8	50.2	19.8	12
3	14.6	18.0	16.0	17.5	20.4	23.4	24.3	25.6	28.7	37.0	33.2	37.5	38.5	40.1	46.5	52.1	39.0	38.7	38.0	24.4	12.6	7.5	6.4	9.8	6.4	52.1	27.1	24
4	11.1	12.9	16.9	21.2	20.9	16.2	21.3	35.4	40.4	42.0	42.4	44.3	45.8	44.9	44.1	42.7	42.1	45.7	46.9	38.8	19.5	16.9	17.3	11.8	11.1	46.9	30.9	24
5	9.9	8.6	14.3	12.1	10.4	16.3	13.6	14.0	17.6	20.3	29.5	34.0	39.4	31.3	33.3	38.3	25.7	25.0	17.0	15.9	6.9	5.7	12.0	14.2	5.7	39.4	19.4	24
6	15.5	13.3	15.5	15.0	11.0	13.7	16.9	13.2	18.8	26.9	28.7	33.2	34.6	35.5	40.7	38.1	38.1	34.4	34.0	23.6	17.6	19.5	25.1	39.0	11.0	40.7	25.1	24
7	33.1	33.8	28.6	26.3	19.1	13.5	11.0	14.1	19.5	17.4	14.0	13.8	27.1	23.1	20.0	17.8	14.6	15.7	12.1	9.3	5.3	2.5	5.9	6.2	2.5	33.8	16.8	24
8	5.2	6.1	9.7	8.3	13.4	20.5	19.1	18.7	16.5	19.3	17.1	23.0	28.4	33.4	30.4	30.7	32.9	32.6	33.2	32.8	36.8	29.5	23.8	22.3	5.2	36.8	22.7	24
9	24.2	19.8	31.8	30.1	29.7	23.0	15.2	10.3	17.9	32.9	40.7	39.1	40.1	37.8	47.7	45.3	39.3	34.8	34.9	30.5	30.9	32.2	33.6	30.8	10.3	47.7	31.4	24
10	33.9	37.6	34.8	35.6	37.0	30.3	37.8	34.0	31.9	31.9	32.5	31.0	30.8	25.3	27.8	21.1	33.1	24.3	19.3	14.6	14.9	10.9	15.0	19.2	10.9	37.8	27.7	24
11	20.3	17.6	16.7	14.5	14.5	26.7	31.2	36.9	26.0	23.2	34.0	33.9	32.4	40.5	37.9	46.8	47.2	45.1	41.9	45.4	37.9	40.0	40.4	31.1	14.5	47.2	32.6	24
12	36.5	35.0	31.5	31.0	25.5	29.3	40.3	40.2	28.1	42.6	41.5	37.2	42.1	38.8	37.9	40.2	40.2	39.1	23.5	37.3	19.8	12.7	13.7	10.4	10.4	42.6	32.3	24
13	10.2	9.9	13.0	15.6	18.6	16.3	22.8	27.7	26.6	26.3	30.4	31.3	32.6	33.2	37.0	26.0	21.7	19.3	17.2	9.1	10.1	12.0	13.6	36.9	9.1	37.0	21.6	24
14	20.2	19.3	17.9	21.4	25.1	24.9	29.5	27.2	29.9	18.8	15.1	18.1	22.5	28.4	40.1	***60.5***	38.1	27.7	13.2	14.5	12.6	14.5	12.2	19.2	12.2	***60.5***	23.8	24
15	30.4	26.7	42.1	40.0	48.4	41.7	42.6	48.4	52.0	54.5	45.9	48.2	44.7	49.8	53.7	50.2	54.8	55.0	51.6	47.0	30.7	24.1	24.9	27.0	24.1	55.0	***43.1***	24
16	32.4	30.8	31.3	26.0	25.4	18.5	12.2	7.6	8.9	6.1	14.9	14.5	23.5	24.5	34.6	42.7	28.4	35.7	39.7	40.2	38.8	35.3	32.8	28.8	6.1	42.7	26.4	24
17	30.8	32.6	38.8	38.4	37.4	47.3	42.9	**P**	**P**	40.1	44.4	38.4	37.1	41.6	42.6	43.2	31.6	28.1	28.4	25.0	22.8	12.9	20.7	16.5	12.9	47.3	33.7	22
18	18.6	21.4	24.5	23.3	17.8	15.1	15.9	15.1	13.9	14.5	28.1	29.2	28.7	26.0	23.6	23.1	23.9	23.1	21.1	13.4	8.9	8.1	5.7	9.5	5.7	29.2	18.9	24
19	25.8	17.3	16.7	10.6	14.5	14.9	22.6	27.6	25.1	30.2	27.9	34.9	48.6	48.7	40.9	42.6	48.2	40.6	41.0	29.0	19.0	15.5	11.0	9.6	9.6	48.7	27.6	24
20	11.7	7.4	4.7	5.2	5.8	6.0	6.6	8.6	11.0	14.3	15.8	17.1	17.4	18.5	16.9	11.9	13.5	12.5	10.8	14.2	10.4	7.6	8.8	7.1	4.7	18.5	11.0	24
21	6.8	4.2	3.6	4.5	3.8	7.7	11.4	10.4	13.6	18.2	17.1	21.6	17.3	16.9	16.2	17.6	33.8	27.7	25.6	25.7	21.2	10.6	6.8	18.8	3.6	33.8	15.0	24
22	9.6	11.6	11.3	9.5	10.5	7.1	6.3	11.8	13.0	21.1	23.0	27.6	27.4	21.5	27.1	19.0	27.3	24.4	25.5	14.3	10.0	14.3	15.6	15.6	6.3	27.6	16.9	24
23	22.4	15.9	11.9	19.0	17.7	13.9	10.1	10.3	10.3	12.0	13.1	14.3	17.5	17.7	16.9	14.9	15.0	14.1	17.6	15.7	9.1	35.4	10.6	16.2	9.1	35.4	15.5	24
24	15.7	18.3	25.2	19.6	19.8	17.1	18.7	25.7	22.1	23.2	22.5	16.5	21.0	21.0	26.1	19.8	21.2	19.3	23.3	21.1	15.8	11.3	8.0	12.9	8.0	26.1	19.4	24
25	15.0	11.2	9.6	14.0	19.0	17.5	20.4	21.2	22.3	33.4	32.9	30.2	28.0	32.0	34.6	33.7	30.7	25.5	13.1	13.7	5.5	3.9	6.8	8.1	3.9	34.6	20.1	24
26	9.7	6.6	7.6	4.8	8.9	6.8	2.3	8.1	11.1	11.1	12.1	12.9	12.9	17.9	16.2	16.5	20.3	26.8	23.2	23.0	19.6	20.3	13.6	15.2	2.3	26.8	13.6	24
27	15.4	12.5	12.8	15.6	11.3	13.4	11.9	10.9	7.6	16.3	18.9	24.1	26.7	31.8	28.7	29.8	28.7	28.0	22.2	16.1	8.2	7.8	8.2	9.5	7.6	31.8	17.4	24
28	9.0	11.2	6.9	4.7	5.4	5.5	10.1	11.8	14.1	17.3	19.0	21.6	26.9	24.8	24.4	38.1	35.3	20.8	11.4	9.2	13.9	12.5	10.3	8.3	4.7	38.1	15.5	24
29	16.3	12.2	13.5	10.6	10.8	14.5	23.8	23.5	26.7	28.0	29.3	29.8	27.5	21.1	21.7	19.6	18.9	24.6	19.9	19.4	16.7	13.3	12.8	13.5	10.6	29.8	19.5	24
30	10.6	10.6	13.7	14.9	13.3	17.5	25.0	29.6	35.4	35.6	34.4	36.7	34.5	32.6	30.4	30.5	29.7	23.9	20.2	19.0	10.7	13.0	10.8	12.8	10.6	36.7	22.7	24
HOURLY MAX	36.5	37.6	42.1	40.0	48.4	47.3	42.9	48.4	52.0	54.5	45.9	48.2	48.6	49.8	53.7	60.5	54.8	55.0	51.6	47.0	39.3	50.2	40.4	39.0				
HOURLY AVG	18.4	17.2	18.6	18.2	18.4	18.5	20.2	21.0	21.8	25.5	27.1	28.4	30.1	30.1	31.5	32.1	30.5	28.4	25.4	22.5	18.1	17.2	15.5	17.1				

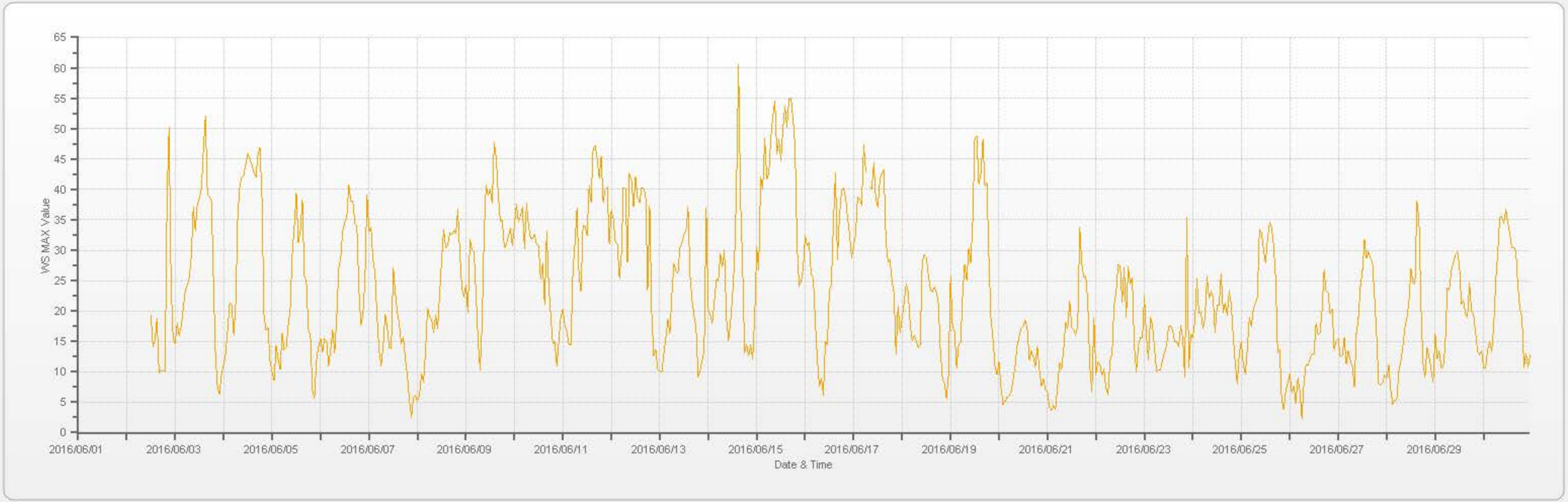
STATUS FLAG CODES

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:	60.5	KPH	@ HOUR(S)	15	ON DAY(S) 14
				VAR-VARIOUS	
OPERATIONAL TIME:				682	HRS

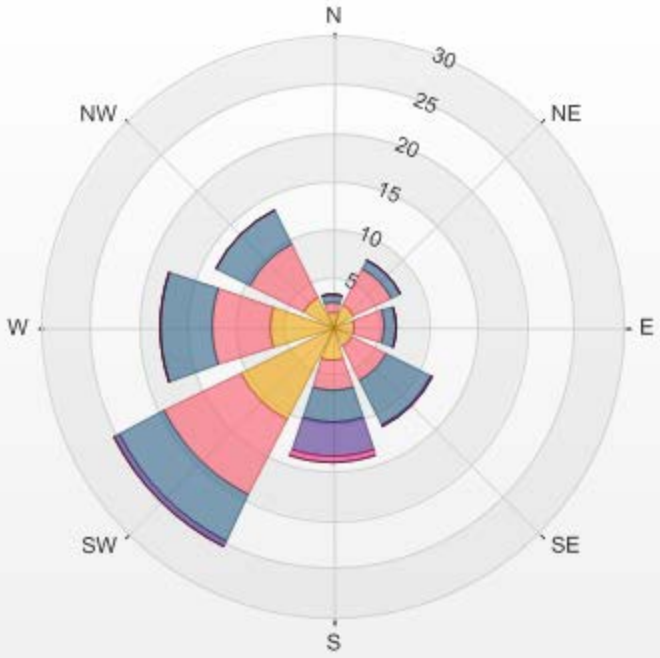
WS MAX[kph] Station: LICA Bonnyville Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



Wind: LICA Bonnyville Monitor: WSP [kph] Monthly: 06/2016 Type: WindRose Direction: Blowing From (Wind Frequency) Based On 1 Hr.
Calm: 0.00% Valid Data: 99.85% 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	1.61	0.88	0.88	0	0	0	3.37
NE	2.49	4.24	1.02	0	0	0	7.75
E	2.19	3.22	1.17	0	0	0	6.58
SE	2.19	3.95	5.12	0.29	0	0	11.55
S	3.51	3.07	3.22	3.51	0.73	0	14.04
SW	10.67	8.77	5.26	0.58	0	0	25.28
W	6.58	5.85	5.41	0	0	0	17.84
NW	3.36	6.29	3.95	0	0	0	13.6
Summary	32.6	36.27	26.03	4.38	0.73	0	100

LICA Bonnyville 2016/06/01 12:00 AM - 2016/06/30 11:00 PM Calm: 0.00%



%	Icon	Classes (kph)									
36		6.0-12.0	26		12.0-20.0	4		20.0-29.0	1		29.0-39.0	0		>39.0
33		0.0-6.0									

WIND DIRECTION

WIND DIRECTION (WD) hourly averages

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

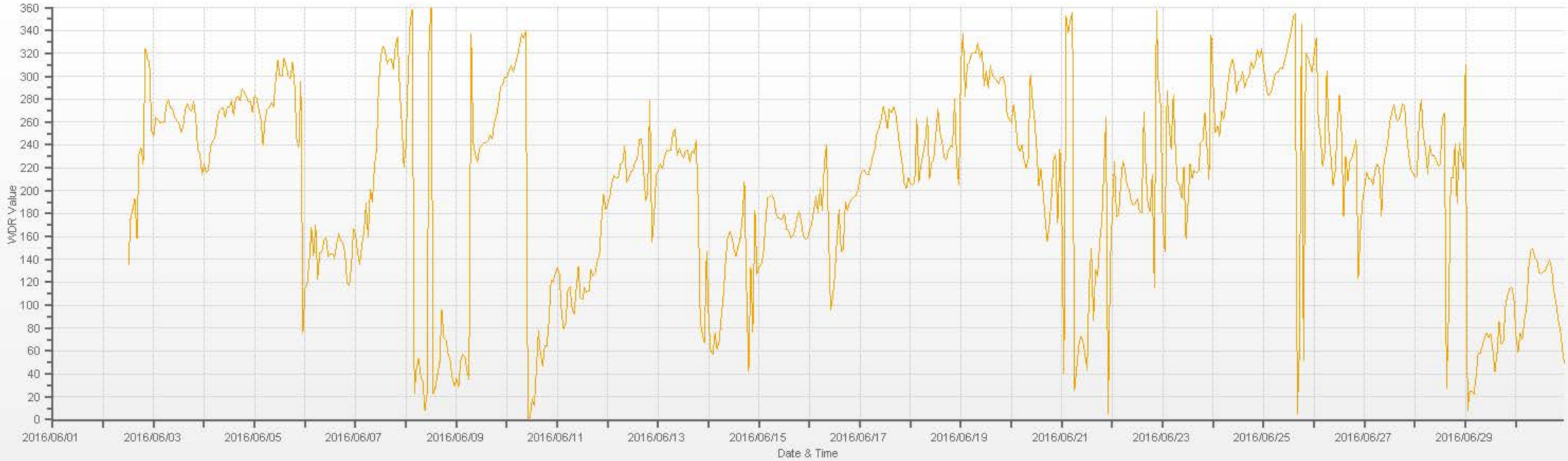
STATUS FLAG CODES

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

LAST CALIBRATION:	January 26, 2016
DECLINATION :	MAGNETIC DECLINATION 19 DEGREE EAST

MONTHLY CALIBRATION TIME:	0	HRS	OPERATIONAL TIME:	683	HRS
STANDARD DEVIATION:	83.33		AMD OPERATION UPTIME:	94.9	%

WDR[Deg] Station: LICA Bonnyville Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



STANDARD DEVIATION WIND DIRECTION

Maxxam
A Bureau Veritas Group Company

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

Bonnyville - June 2016

JOB # 2833-2016-06-37- C

STANDARD DEVIATION WIND DIRECTION (STDWD) hourly averages in degrees

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	
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	RDGS.
DAY																									
1																									
2													43	28	43	35	55	45	32	17	21	19	19	23	12
3	17	16	16	16	16	19	20	19	20	23	22	23	22	22	21	23	20	22	20	18	14	8	11	12	24
4	15	11	13	17	16	15	20	22	21	20	23	22	22	23	23	21	20	20	17	16	16	15	15	12	24
5	12	9	14	15	14	17	19	19	22	26	21	22	23	23	23	23	24	20	17	13	12	9	27	21	24
6	16	17	15	31	29	57	41	31	16	16	13	15	15	15	16	15	14	15	14	13	14	14	15	14	24
7	13	13	13	14	14	15	14	17	12	21	32	38	41	21	19	18	18	20	18	10	24	4	14	10	24
8	15	11	12	16	18	22	23	23	27	21	22	18	21	23	23	22	23	19	22	21	20	22	20	20	24
9	22	21	21	19	19	20	19	25	19	15	16	16	18	18	19	19	19	19	21	20	19	16	16	16	24
10	16	16	17	16	18	18	17	17	18	19	23	26	28	29	30	42	30	28	24	24	15	15	14	15	24
11	14	15	18	22	18	15	16	17	18	19	16	18	18	16	16	16	17	18	18	18	15	13	10	12	24
12	12	11	9	10	9	9	15	15	16	13	13	14	14	16	17	20	19	16	12	33	41	23	15	10	24
13	9	11	10	11	14	15	16	20	21	19	19	19	17	18	21	21	22	22	21	38	19	19	26	18	24
14	25	18	19	18	21	19	17	19	17	16	16	19	20	15	16	17	12	12	28	41	40	33	33	28	24
15	16	15	14	10	11	11	11	11	12	12	14	15	15	13	14	15	12	11	12	11	7	10	11	12	24
16	10	8	11	12	13	13	15	28	36	57	33	22	17	16	19	45	20	12	11	12	11	10	9	8	24
17	9	12	13	10	10	14	16	P	20	21	20	20	20	21	22	22	21	21	19	16	12	7	9	8	23
18	7	7	8	34	10	14	15	20	34	22	21	27	23	31	30	30	20	15	14	13	19	13	14	14	24
19	18	19	15	14	15	14	17	18	21	20	23	20	19	20	19	20	20	20	18	15	14	12	12	11	24
20	13	11	11	12	16	12	23	20	23	37	44	48	52	40	38	38	18	23	26	14	14	12	32	25	24
21	14	19	21	5	4	8	20	30	44	41	51	60	57	56	23	48	25	19	15	13	16	17	18	29	24
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23	28	36	27	19	17	19	18	26	30	30	43	54	52	30	55	35	33	19	17	16	17	27	59	16	24
24	18	17	18	20	17	17	19	16	17	18	19	22	22	22	20	18	22	16	16	15	14	12	9	11	24
25	13	14	11	12	14	15	16	15	16	18	17	17	18	17	20	21	22	23	35	26	10	5	10	8	24
26	11	5	25	9	25	16	15	28	32	47	18	45	53	42	34	36	18	21	16	16	17	26	18	11	24
27	12	11	9	12	9	11	14	24	29	28	35	33	30	26	22	26	25	23	18	17	13	13	13	9	24
28	7	8	22	6	8	11	13	20	16	18	21	20	19	28	34	26	48	14	13	28	51	17	17	14	24
29	58	15	17	17	14	20	19	22	23	25	22	27	28	28	25	29	31	26	23	18	14	13	14	15	24
30	15	19	16	18	14	16	17	16	15	17	17	19	19	19	19	16	15	17	16	15	19	17	19	16	24

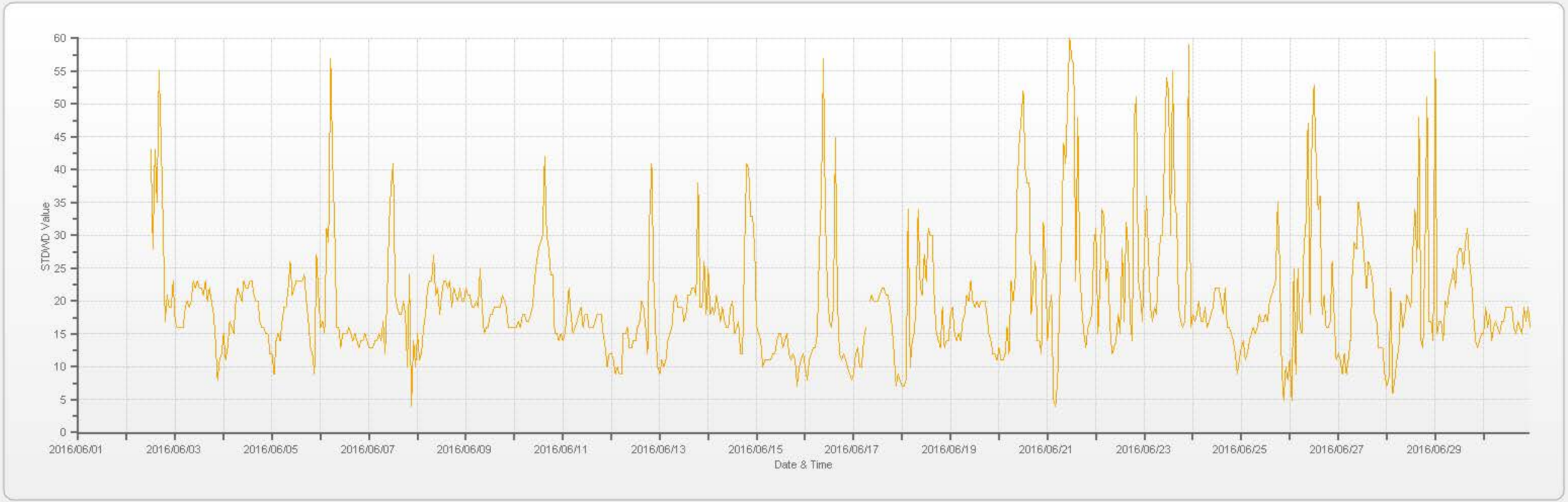
STATUS FLAG CODES

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

LAST CALIBRATION: January 26, 2016

CALIBRATION TIME: 0 HRS OPERATIONAL TIME: 582 HRS

STDWD[Deg] Station: LICA Bonnyville Monthly: 06/2016 Type: AVG 1 Hr. [1 Hr.]



APPENDIX II
NON-CONTINUOUS MONITORING DATA RESULTS

VOC RESULTS

Sample ID: 16060039-002

Customer ID: LICA

Cust Samp ID: LICA/VOC/Bonnyville/June 5, 2016

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

Client: LICA
Location: Bonnyville - AER
Station ID: LICA 37
Sample ID: LICA/VOC/Bonnyville/June 5, 2016

Sampler S/N: 6200
Canister ID: S5603
Installation Date/Time (mst): June 1, 2016 @ 18:52
Removal Date/Time (mst): June 6, 2016 @ 11:28

Date and Time Information

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
June 5, 2016	00:00	00:00 June 6, 2016	24.0

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
-28.0	+19.8

Flow Settings		
Flow Reading (sccm)	Pot Set Point	Pump Set (psi)
10.0	4.94	26

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

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

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)

Comments: Date of last Audit: April 5, 2016

Deployment Technician Signature: Alex Yakupov

Collection Technician Signature: Alex Yakupov Date: June 6, 2016

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Volatile Organics Data Results

Date: June 5 , 2016
Canister ID: S5603

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	0.05
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.02
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	0.03
1,3-Butadiene	0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	0.10
1-Hexene	0.03
1-Pentene	0.04
2,2,4-Trimethylpentane	0.07
2,2-Dimethylbutane	0.02
2,3,4-Trimethylpentane	0.03
2,3-Dimethylbutane	< 0.02
2,3-Dimethylpentane	0.06
2,4-Dimethylpentane	0.03
2-Methylheptane	0.02
2-Methylhexane	< 0.01
2-Methylpentane	0.15
3-Methylheptane	0.02
3-Methylhexane	0.05
3-Methylpentane	0.07
Acetone	3.8
Acrolein	< 0.3
Benzene	0.12
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	0.01
Carbon disulfide	0.03
Carbon tetrachloride	0.11
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.03
Chloromethane	0.70
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	0.04
cis-2-Pentene	0.03
Cyclohexane	0.05
Cyclopentane	0.04
Dibromochloromethane	< 0.01
Ethanol	1.6
Ethyl acetate	< 0.4
Ethylbenzene	0.06
Freon-11	0.31
Freon-113	0.08

Volatile Organics Data Results

Date: June 5 , 2016
Canister ID: S5603

PARAMETERS	CONCENTRATION (PPB)
Freon-114	0.03
Freon-12	0.80
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.54
Isopentane	0.77
Isoprene	0.42
Isopropyl alcohol	0.8
Isopropylbenzene	< 0.01
m,p-Xylene	0.22
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	0.09
Methylene chloride	< 0.3
n-Butane	1.32
n-Decane	< 0.06
n-Dodecane	6.2
n-Heptane	0.04
n-Hexane	0.08
n-Nonane	0.02
n-Octane	0.03
n-Pentane	0.3
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	2.3
o-Ethyltoluene	0.02
o-Xylene	0.07
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	0.19
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	0.04
trans-2-Pentene	0.05
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
Location: Bonnyville - AER
Station ID: LICA-37
Sample ID: LICA/VOC/Bonnyville/June 11, 2016

Sampler S/N: 6200
Canister ID: 14707
Installation Date/Time (mst): June 6, 2016 @ 11:28
Removal Date/Time (mst): June 13, 2016 @ 11:52

Date and Time Information

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
June 11, 2016	00:00	00:00 June 12, 2016	24.0

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
-28.0	+19.5

Flow Settings		
Flow Reading (sccm)	Pot Set Point	Pump Set (psi)
10.0	4.94	26

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

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

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)

Comments: Date of last audit: April 5, 2016

Deployment Technician Signature: Alex Yakupov

Collection Technician Signature: Alex Yakupov Date: June 13, 2016

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Sample ID: 16060175-003
Customer ID: LICA
Cust Samp ID: LICA/VOC/Bonnyville/June 11, 2016

Volatile Organics Data Results

Date: June 11 , 2016
Canister ID: 14707

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	0.05
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	0.01
2-Methylpentane	0.03
3-Methylheptane	< 0.02
3-Methylhexane	0.03
3-Methylpentane	0.02
Acetone	3.1
Acrolein	< 0.3
Benzene	< 0.01
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	0.01
Carbon disulfide	0.27
Carbon tetrachloride	0.10
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	< 0.02
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	0.03
Cyclopentane	0.01
Dibromochloromethane	< 0.01
Ethanol	0.7
Ethyl acetate	< 0.4
Ethylbenzene	0.01
Freon-11	0.29
Freon-113	0.05

Volatile Organics Data Results

Date: June 11 , 2016
Canister ID: 14707

PARAMETERS	CONCENTRATION (PPB)
Freon-114	< 0.02
Freon-12	0.52
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.18
Isopentane	0.10
Isoprene	0.07
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	< 0.3
Methyl isobutyl ketone	< 0.4
Methyl methacrylate	< 0.07
Methyl tert butyl ether	< 0.03
Methylcyclohexane	0.05
Methylcyclopentane	0.03
Methylene chloride	< 0.3
n-Butane	0.20
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	0.02
n-Hexane	0.02
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane	< 0.1
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	< 0.01
o-Xylene	0.02
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	< 0.01
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02

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

Client: LICA
Location: Bonnyville - AER
Station ID: LICA 37
Sample ID: LICA/voc/Bonnyville/June 17, 2016

Sampler S/N: 6200
Canister ID: 2421
Installation Date/Time (mst): June 13, 2016 @ 11:52
Removal Date/Time (mst): June 22, 2016 @ 14:28

Date and Time Information

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
June 17, 2016	00:00	00:00 June 18, 2016	24.0 *(1)

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
-28.0	+17.8

Flow Settings		
Flow Reading (sccm)	Pot Set Point	Pump Set (psi)
10.0	4.94	26

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

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

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)

Comments: Date of last Audit: April 5, 2016

*
(1) - Actual sampling time is 23.91 hours because of power outage event on June 17, 2016 at 08:40.

Deployment Technician Signature: Alex Yakupov

Collection Technician Signature: Alex Yakupov Date: June 22, 2016

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Sample ID: 16060297-001
Customer ID: LICA
Cust Samp ID: LICA/VOC/Bonnyville/June 17, 2016

Volatile Organics Data Results

Date: June 17 , 2016
Canister ID: 2421

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	0.02
1-Hexene	< 0.02
1-Pentene	< 0.01
2,2,4-Trimethylpentane	0.01
2,2-Dimethylbutane	< 0.01
2,3,4-Trimethylpentane	< 0.01
2,3-Dimethylbutane	< 0.02
2,3-Dimethylpentane	< 0.02
2,4-Dimethylpentane	< 0.01
2-Methylheptane	< 0.01
2-Methylhexane	< 0.01
2-Methylpentane	< 0.01
3-Methylheptane	< 0.02
3-Methylhexane	< 0.02
3-Methylpentane	< 0.01
Acetone	2.3
Acrolein	< 0.3
Benzene	< 0.01
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	8.40
Carbon tetrachloride	0.09
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	< 0.02
Chloromethane	0.60
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	< 0.02
cis-2-Pentene	< 0.02
Cyclohexane	< 0.02
Cyclopentane	< 0.01
Dibromochloromethane	< 0.01
Ethanol	1.0
Ethyl acetate	< 0.4
Ethylbenzene	0.01
Freon-11	0.28
Freon-113	0.04

Volatile Organics Data Results

Date: June 17 , 2016
Canister ID: 2421

PARAMETERS	CONCENTRATION (PPB)
Freon-114	< 0.02
Freon-12	0.66
Hexachloro-1,3-butadiene	< 0.50
Isobutane	2.41
Isopentane	0.08
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	< 0.01
Methylcyclopentane	< 0.02
Methylene chloride	< 0.3
n-Butane	0.18
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	0.01
n-Hexane	< 0.01
n-Nonane	< 0.01
n-Octane	< 0.02
n-Pentane	< 0.1
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	< 0.01
o-Xylene	0.01
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	0.03
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	< 0.01
trans-2-Pentene	< 0.02
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02

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

Client: LICA
Location: Bonnyville - AER
Station ID: LICA 37
Sample ID: LICA/VOC/Bonnyville/June 23, 2016

Sampler S/N: 6200
Canister ID: S 5662
Installation Date/Time (mst): June 22, 2016 @ 14:28
Removal Date/Time (mst): June 27, 2016 @ 12:36

Date and Time Information

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
June 23, 2016	00:00	00:00 June 24, 2016	24.0 ~~*(1)~~ A.Y.

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
-28.0	+23.6

Flow Settings		
Flow Reading (sccm)	Pot Set Point	Pump Set (psi)
10.0	4.94	26

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

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

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)

Comments: Date of last Audit : April 6, 2016

~~(*) 1 - Actual sampling time is 23.91 h because of power outage event on June 17, 2016~~ A.Y.

Deployment Technician Signature: Alex Yakupov

Collection Technician Signature: Alex Yakupov Date: June 27, 2016

Sample ID: 16060335-003

Customer ID: LICA

Cust Samp ID: LICA/VOC/Bonnyville/June 23, 2016

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Volatile Organics Data Results

Date: June 23 , 2016
Canister ID: S5662

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	0.33
1-Hexene	0.14
1-Pentene	0.03
2,2,4-Trimethylpentane	0.06
2,2-Dimethylbutane	0.12
2,3,4-Trimethylpentane	0.06
2,3-Dimethylbutane	0.96
2,3-Dimethylpentane	0.03
2,4-Dimethylpentane	0.02
2-Methylheptane	0.02
2-Methylhexane	< 0.01
2-Methylpentane	5.86
3-Methylheptane	< 0.02
3-Methylhexane	0.07
3-Methylpentane	2.29
Acetone	5.7
Acrolein	< 0.3
Benzene	0.39
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	0.03
Carbon disulfide	36.7
Carbon tetrachloride	0.09
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.02
Chloromethane	4.90
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	0.04
cis-2-Pentene	< 0.02
Cyclohexane	0.02
Cyclopentane	0.20
Dibromochloromethane	< 0.01
Ethanol	6.2
Ethyl acetate	< 0.4
Ethylbenzene	0.04
Freon-11	0.22
Freon-113	0.06

Volatile Organics Data Results

Date: June 23 , 2016
Canister ID: S5662

PARAMETERS	CONCENTRATION (PPB)
Freon-114	< 0.02
Freon-12	0.25
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.19
Isopentane	0.48
Isoprene	0.11
Isopropyl alcohol	< 0.4
Isopropylbenzene	< 0.01
m,p-Xylene	0.10
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	0.02
Methylcyclopentane	0.16
Methylene chloride	4.3
n-Butane	0.81
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	0.10
n-Hexane	0.50
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	0.04
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	0.09
Tetrahydrofuran	< 0.4
Toluene	0.80
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	0.05
trans-2-Pentene	0.02
Trichloroethylene	0.05
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02

Maxxam Analytics

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

Client: LICA
Location: Bonnyville - AER
Station ID: LICA 37
Sample ID: LICA/VOC/Bonnyville/June 29, 2016

Sampler S/N: 6200
Canister ID: S 5682
Installation Date/Time (mst): June 27, 2016 @ 12:36
Removal Date/Time (mst): June 30, 2016 @ 10:27

Date and Time Information

Sample Date:	Start Time (mst)	End Time (mst)	Elapsed Time (hours)
June 29, 2016	00:00	00:00 June 30, 2016	24.0

Canister Pressure/Vacuum	
Initial Vacuum (in. Hg)	Final Pressure (psi)
-28.0	+19.2

Flow Settings		
Flow Reading (sccm)	Pot Set Point	Pump Set (psi)
10.0	4.94	26

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

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

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)

Comments: Date of last audit : April 5, 2016

Deployment Technician Signature: Alex Yakupov

Collection Technician Signature: Alex Yakupov Date: June 30, 2016

Sample ID: 16070015-003

Customer ID: LICA

Cust Samp ID: LICA/VOC/Bonnyville/June 29, 2016

Volatile Organics Data Results

Date: June 29 , 2016
Canister ID: S5682

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	0.10
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.03
1,2-Dichloroethane	0.03
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	0.05
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.3
1,4-Dichlorobenzene	< 0.4
1,4-Dioxane	< 0.4
1-Butene	0.16
1-Hexene	0.05
1-Pentene	0.04
2,2,4-Trimethylpentane	0.58
2,2-Dimethylbutane	0.31
2,3,4-Trimethylpentane	0.01
2,3-Dimethylbutane	0.13
2,3-Dimethylpentane	0.15
2,4-Dimethylpentane	0.09
2-Methylheptane	0.12
2-Methylhexane	0.43
2-Methylpentane	0.62
3-Methylheptane	0.11
3-Methylhexane	0.49
3-Methylpentane	0.45
Acetone	5.8
Acrolein	< 0.3
Benzene	0.24
Benzyl chloride	< 0.4
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	0.38
Carbon tetrachloride	0.09
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	< 0.02
Chloromethane	0.14
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.04
cis-2-Butene	0.09
cis-2-Pentene	0.08
Cyclohexane	0.24
Cyclopentane	0.07
Dibromochloromethane	< 0.01
Ethanol	11.4
Ethyl acetate	< 0.4
Ethylbenzene	0.16
Freon-11	0.26
Freon-113	0.05

Volatile Organics Data Results

Date: June 29 , 2016
Canister ID: S5682

PARAMETERS	CONCENTRATION (PPB)
Freon-114	< 0.02
Freon-12	0.50
Hexachloro-1,3-butadiene	< 0.50
Isobutane	0.53
Isopentane	4.52
Isoprene	0.77
Isopropyl alcohol	0.9
Isopropylbenzene	0.01
m,p-Xylene	0.61
m-Diethylbenzene	< 0.04
m-Ethyltoluene	0.10
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	0.22
Methylcyclopentane	0.58
Methylene chloride	< 0.3
n-Butane	1.95
n-Decane	< 0.06
n-Dodecane	< 0.4
n-Heptane	0.29
n-Hexane	0.32
n-Nonane	0.04
n-Octane	0.09
n-Pentane	0.9
n-Propylbenzene	< 0.05
n-Undecane	< 0.5
Naphthalene	< 0.5
o-Ethyltoluene	0.03
o-Xylene	0.21
p-Diethylbenzene	< 0.04
p-Ethyltoluene	< 0.07
Styrene	< 0.04
Tetrachloroethylene	< 0.04
Tetrahydrofuran	< 0.4
Toluene	1.15
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.04
trans-2-Butene	0.15
trans-2-Pentene	0.19
Trichloroethylene	< 0.04
Vinyl acetate	< 0.4
Vinyl chloride	< 0.02

PAH RESULTS

Sample ID: 16060039-003

Customer ID: LICA

Cust Samp ID: LICA/PUF/Bonnyville/June 5, 2016

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TISCH PUF PLUS Sample Collection Data Sheet

Client:	LICA	Puf+ S/N:	9702
Location:	Bonnyville - AER	Motor S/N:	1139 / 100 - 1015
Station ID:	LICA 37	Installation Date/Time:	June 1, 2016 / 12:45
Field Sample ID:	LICA/PUF/Bonnyville/June 5, 2016	Removal Date/Time:	June 6, 2016 / 11:35

Sample Data Collection Information

Sample Date:	June 5, 2016	Average Pressure (mmHg)	705
Start Time (mst):	00:00	Average Flow (Q_{std})	229
End Time (mst):	00:00 June 6, 2016	Average Tempurature (°C)	18.8
Elapsed Time (Hours):	24.0	Volume (Vstd m^3)	330.20

Sample Recovery Checklist

	(circle one)	
Flow Rate 230 slpm +/- 0.2 slpm ?	(YES)	NO
Average temperature appears correct?	(YES)	NO
Average pressure appears correct?	(YES)	NO
Any error messages? (if yes list below)	YES	(NO)
Sample duration 24 hours?	(YES)	NO
Date of last calibration/audit:	April 5, 2016	
Other observations?		

Deployed By: Alex Yakupov

Collected By: Alex Yakupov Date: June 6, 2016

Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: June 5 , 2016
PUF S/N: 9702

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.13
2-Methylnaphthalene	0.23
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	0.04
Acenaphthylene	0.02
Acridine	< 0.01
Anthracene	0.29
Benzo(a)anthracene	0.18
Benzo(a)pyrene	0.06
Benzo(b,j,k)fluoranthene	0.13
Benzo(c)phenanthrene	0.04
Benzo(e)pyrene	0.05
Benzo(ghi)perylene	< 0.01
Chrysene	0.10
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	0.04
Fluoranthene	0.49
Fluorene	0.08
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.07
Perylene	0.01
Phenanthrene	1.37
Pyrene	0.44
Retene	0.14

Sample ID: 16060175-004

Customer ID: LICA

Cust Samp ID: LICA/PUF/Bonnyville/June 11, 2016

TISCH PUF PLUS Sample Collection Data Sheet

Client:	LICA	Puf+ S/N:	TE-09
Location:	Bonnyville - AER	Motor S/N:	1139/100-1015
Station ID:	LICA 37	Installation Date/Time:	June 6, 2016/11:35
Field Sample ID:	LICA/puf/Bonnyville/June 11, 2016	Removal Date/Time:	June 13, 2016/11:46

Sample Data Collection Information

Sample Date:	June 11, 2016	Average Pressure (mmHg)	702
Start Time (mst):	00:00	Average Flow (Q_{std})	229
End Time (mst):	0000 June 12, 2016	Average Tempurature (°C)	11.8°
Elapsed Time (Hours):	24.0	Volume (Vstd m^3)	330.20

Sample Recovery Checklist

	(circle one)	
Flow Rate 230 slpm +/- 0.2 slpm ?	(YES)	NO
Average temperature appears correct?	(YES)	NO
Average pressure appears correct?	(YES)	NO
Any error messages? (if yes list below)	YES	(NO)
Sample duration 24 hours?	(YES)	NO
Date of last calibration/audit:	April 5, 2016	
Other observations?		

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JUN 16 2016

Deployed By: Alex Yakupov

Collected By: Alex Yakupov Date: June 13, 2016

Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: June 11 , 2016
PUF S/N: TE09

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.03
2-Methylnaphthalene	0.08
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	0.15
Fluorene	0.07
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.02
Perylene	< 0.01
Phenanthrene	0.34
Pyrene	0.08
Retene	0.05

Sample ID: 16060297-002

Customer ID: LICA

Cust Samp ID: LICA/PUF/Bonnyville/June 17, 2016

TISCH PUF PLUS Sample Collection Data Sheet

Client:	LICA	Puf+ S/N:	TE-0.1
Location:	Bonnyville - AER	Motor S/N:	1139 / 100-1015
Station ID:	LICA 37	Installation Date/Time:	June 13, 2016 / 11:46
Field Sample ID:	LICA/PUF/Bonnyville/June 17, 2016	Removal Date/Time:	June 22, 2016 / 14:23

Sample Data Collection Information

Sample Date:	June 17, 2016	Average Pressure (mmHg)	701
Start Time (mst):	00:00	Average Flow (Q_{std})	229
End Time (mst):	00:00 June 18, 2016	Average Tempurature (°C)	13.2°
Elapsed Time (Hours):	24.0	Volume (Vstd m^3)	329.10

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) *(1)	NO
Date of last calibration/audit:	April 5, 2016	
Other observations?		

*(1) - Actual sampling time is 23.91 hours because of power outage event on June 17, 2016 at 08:40.

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JUN 24 2016

Deployed By: Alex Yakupov

Collected By: Alex Yakupov Date: June 22, 2016

Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: June 17 , 2016
PUF S/N: TE01

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.11
2-Methylnaphthalene	0.21
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	0.04
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.02
Perylene	< 0.01
Phenanthrene	0.14
Pyrene	0.05
Retene	0.02

Sample ID: 16060335-004

Customer ID: LICA

Cust Samp ID: LICA/PUF/Bonnyville/June 23, 2016

TISCH PUF PLUS Sample Collection Data Sheet

Client:	LICA	Puf+ S/N:	TE-02
Location:	Bonnyvill - AER	Motor S/N:	1139/100-1015
Station ID:	LICA-37	Installation Date/Time:	June 22, 2016/14:23
Field Sample ID:	LICA/PUF/Bonnyville/June 23, 2016	Removal Date/Time:	June 27, 2016/12:35

Sample Data Collection Information

Sample Date:	June 23, 2016	Average Pressure (mmHg)	700
Start Time (mst):	00:00	Average Flow (Q_{std})	229
End Time (mst):	00:00 June 24, 2016	Average Tempurature (°C)	20.3°
Elapsed Time (Hours):	24.0	Volume (Vstd m^3)	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:	April 5, 2016	
Other observations?		

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Deployed By: Alex Yakupov

Collected By: Alex Yakupov Date: June 27, 2016

Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: June 23 , 2016
PUF S/N: TE02

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.06
2-Methylnaphthalene	0.12
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	< 0.01
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	0.04
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	0.15
Fluorene	0.07
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.03
Perylene	< 0.01
Phenanthrene	0.37
Pyrene	0.09
Retene	0.04

Sample ID: 16070015-004

AIR FCD-01321/2

Customer ID: LICA

Cust Samp ID: LICA/PUF/Bonnyville/June 29, 2016

TISCH PUF PLUS Sample Collection Data Sheet

Client:	LICA	Puf+ S/N:	TE-07
Location:	Bonnyville- AER	Motor S/N:	1139/100 - 1015
Station ID:	LICA-37	Installation Date/Time:	June 27, 2016/12:35
Field Sample ID:	LICA/PUF/Bonnyville/June 29 2016	Removal Date/Time:	June 30, 2016/10:43

Sample Data Collection Information

Sample Date:	June 29, 2016	Average Pressure (mmHg)	707
Start Time (mst):	00:00	Average Flow (Q_{std})	229
End Time (mst):	00:00 June 30, 2016	Average Tempurature (°C)	20.8°
Elapsed Time (Hours):	24.0	Volume (Vstd m^3)	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:	April 5, 2016	
Other observations?		

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Deployed By: Alex Yakupov

Collected By: Alex Yakupov Date: June 30, 2016

Polycyclic Aromatic Hydrocarbons (PAHs) Data Results

Date: June 29 , 2016
PUF S/N: TE07

PARAMETERS	CONCENTRATION (UG)
1-Methylnaphthalene	0.19
2-Methylnaphthalene	0.44
3-Methylcholanthrene	< 0.01
7,12-Dimethylbenz(a)anthracene	< 0.01
Acenaphthene	0.03
Acenaphthylene	< 0.01
Acridine	< 0.01
Anthracene	0.11
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	0.02
Dibenzo(a,h)pyrene	< 0.01
Dibenzo(a,i)pyrene	< 0.01
Dibenzo(a,l)pyrene	< 0.01
Dibenzo(ah)anthracene	< 0.01
Fluoranthene	0.61
Fluorene	0.11
Indeno(1,2,3-cd)pyrene	< 0.01
Naphthalene	0.26
Perylene	< 0.01
Phenanthrene	1.96
Pyrene	0.26
Retene	0.06

NMHC CANISTER RESULTS

Sample ID: 16060039-001

Customer ID: LICA

Cust Samp ID: LICA/NMHC-VOC/Bonnyville/June 5, 2016

AIR FCD-01320/2

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VOC Sample Collection Data Sheet

Client: LICA
Location: Bonnyville
Station ID: LICA 37
Field Sample ID: LICA/NMHC-VOC/Bonnyville/June 5, 2016

Sampler S/N: n/a
Canister ID: S 5684
Canister Installation Date/Time: June 1, 2016 / 18:50
Canister Removal Date/Time: June 6, 2016 / 12:01

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
June 5, 2016	19:50	n/a	n/a

Flow Settings		
Meter Reading (sccm)	Pot Set Pt.	Pump Pressure Setting (psig)
n/a	n/a	n/a

Canister Information	
Initial Canister Vacuum (inHg)	Final Canister ~~Pressure (psig)~~ Vacuum in Hg (A.Y.)
-28.0	-5.5

Canister valve open prior to sampling?: (YES) / NO
Timer set to 0.00 minutes prior to sampling? YES / NO - n/a
Canister valve closed prior to disconnection?: (YES) / NO

Comments: NMHC - canister

Technician Signiture: Alex Yakupov **Date:** June 6, 2016

Volatile Organics Data Results (NMHC Canister System)

Date: June 5 , 2016
Canister ID: S5684

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	< 0.05
1,2,3-Trimethylbenzene	< 0.06
1,2,4-Trichlorobenzene	< 1.0
1,2,4-Trimethylbenzene	0.09
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.04
1,2-Dichloroethane	0.02
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	0.05
1,3-Butadiene	0.08
1,3-Dichlorobenzene	< 0.4
1,4-Dichlorobenzene	< 0.5
1,4-Dioxane	< 0.5
1-Butene	0.31
1-Hexene	0.04
1-Pentene	0.08
2,2,4-Trimethylpentane	0.13
2,2-Dimethylbutane	0.03
2,3,4-Trimethylpentane	0.11
2,3-Dimethylbutane	< 0.02
2,3-Dimethylpentane	0.10
2,4-Dimethylpentane	0.06
2-Methylheptane	0.05
2-Methylhexane	< 0.01
2-Methylpentane	0.33
3-Methylheptane	0.04
3-Methylhexane	0.09
3-Methylpentane	0.15
Acetone	4.9
Acrolein	< 0.4
Benzene	0.16
Benzyl chloride	< 0.5
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	0.01
Carbon disulfide	0.07
Carbon tetrachloride	0.11
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.03
Chloromethane	1.09
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.05
cis-2-Butene	0.06
cis-2-Pentene	0.06
Cyclohexane	0.05
Cyclopentane	0.07
Dibromochloromethane	< 0.01
Ethanol	2.5
Ethyl acetate	< 0.5
Ethylbenzene	0.12
Freon-11	0.32
Freon-113	0.08

Volatile Organics Data Results (NMHC Canister System)

Date: June 5 , 2016
Canister ID: S5684

PARAMETERS	CONCENTRATION (PPB)
Freon-114	0.03
Freon-12	0.62
Hexachloro-1,3-butadiene	< 0.61
Isobutane	0.69
Isopentane	1.67
Isoprene	1.09
Isopropyl alcohol	0.6
Isopropylbenzene	0.02
m,p-Xylene	0.45
m-Diethylbenzene	< 0.05
m-Ethyltoluene	< 0.10
Methyl butyl ketone	< 0.61
Methyl ethyl ketone	0.5
Methyl isobutyl ketone	< 0.5
Methyl methacrylate	< 0.09
Methyl tert butyl ether	< 0.04
Methylcyclohexane	0.05
Methylcyclopentane	0.13
Methylene chloride	< 0.4
n-Butane	2.39
n-Decane	< 0.07
n-Dodecane	7.7
n-Heptane	0.07
n-Hexane	0.15
n-Nonane	0.05
n-Octane	0.05
n-Pentane	0.7
n-Propylbenzene	< 0.06
n-Undecane	< 0.6
Naphthalene	2.7
o-Ethyltoluene	0.04
o-Xylene	0.15
p-Diethylbenzene	< 0.05
p-Ethyltoluene	< 0.09
Styrene	< 0.05
Tetrachloroethylene	< 0.05
Tetrahydrofuran	< 0.5
Toluene	0.33
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.05
trans-2-Butene	0.07
trans-2-Pentene	0.09
Trichloroethylene	< 0.05
Vinyl acetate	< 0.5
Vinyl chloride	< 0.02

Sample ID: 16060102-001

Customer ID: LICA

Cust Samp ID: LICA/NMHC-VOC/Bonnyville/June 9, 2016

AIR FCD-01320/2

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VOC Sample Collection Data Sheet

Client: LICA
Location: Bonnyville - AER
Station ID: LICA 37
Field Sample ID: LICA/NMHC-VOC/Bonnyville/June 9, 2016

Sampler S/N: n/a
Canister ID: 85593
Canister Installation Date/Time: June 6, 2016 / 12:01
Canister Removal Date/Time: June 9, 2016 / 10:57

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
~~04:20 (AY)~~ June 9, 2016	04:20	n/a	n/a

Flow Settings		
Meter Reading (sccm)	Pot Set Pt.	Pump Pressure Setting (psig)
n/a	n/a	n/a

Canister Information	
Initial Canister Vacuum (inHg)	Final Canister ~~Pressure (psig)~~ vacuum in Hg (A.Y.)
-28.0	-4.1

Canister valve open prior to sampling?: (YES) / NO
Timer set to 0.00 minutes prior to sampling? YES / NO – n/a
Canister valve closed prior to disconnection?: (YES) / NO

Comments: NMHC - canister

Technician Signiture: Alex Yakupov **Date:** June 9, 2016

Volatile Organics Data Results (NMHC Canister System)

Date: June 9 , 2016
Canister ID: S5593

PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.04
1,1,2,2-Tetrachloroethane	< 0.04
1,1,2-Trichloroethane	< 0.04
1,1-Dichloroethane	< 0.04
1,1-Dichloroethylene	< 0.07
1,2,3-Trimethylbenzene	< 0.09
1,2,4-Trichlorobenzene	< 1.4
1,2,4-Trimethylbenzene	< 0.05
1,2-Dibromoethane	< 0.04
1,2-Dichlorobenzene	< 0.05
1,2-Dichloroethane	0.02
1,2-Dichloropropane	< 0.02
1,3,5-Trimethylbenzene	< 0.04
1,3-Butadiene	0.18
1,3-Dichlorobenzene	< 0.5
1,4-Dichlorobenzene	< 0.7
1,4-Dioxane	< 0.7
1-Butene	0.35
1-Hexene	0.06
1-Pentene	0.25
2,2,4-Trimethylpentane	0.60
2,2-Dimethylbutane	0.08
2,3,4-Trimethylpentane	0.08
2,3-Dimethylbutane	0.38
2,3-Dimethylpentane	0.42
2,4-Dimethylpentane	0.23
2-Methylheptane	0.04
2-Methylhexane	0.35
2-Methylpentane	1.53
3-Methylheptane	< 0.04
3-Methylhexane	0.40
3-Methylpentane	0.81
Acetone	7.9
Acrolein	< 0.5
Benzene	0.22
Benzyl chloride	< 0.7
Bromodichloromethane	< 0.04
Bromoform	< 0.04
Bromomethane	< 0.02
Carbon disulfide	0.27
Carbon tetrachloride	0.09
Chlorobenzene	< 0.04
Chloroethane	< 0.04
Chloroform	< 0.04
Chloromethane	0.65
cis-1,2-Dichloroethene	< 0.02
cis-1,3-Dichloropropene	< 0.07
cis-2-Butene	0.12
cis-2-Pentene	0.23
Cyclohexane	0.12
Cyclopentane	0.28
Dibromochloromethane	< 0.02
Ethanol	12.6
Ethyl acetate	< 0.7
Ethylbenzene	0.06
Freon-11	0.24
Freon-113	< 0.02

Volatile Organics Data Results (NMHC Canister System)

Date: June 9 , 2016
Canister ID: S5593

PARAMETERS	CONCENTRATION (PPB)
Freon-114	< 0.04
Freon-12	0.49
Hexachloro-1,3-butadiene	< 0.90
Isobutane	8.57
Isopentane	14.6
Isoprene	0.20
Isopropyl alcohol	1.0
Isopropylbenzene	< 0.02
m,p-Xylene	0.18
m-Diethylbenzene	< 0.07
m-Ethyltoluene	< 0.14
Methyl butyl ketone	< 0.90
Methyl ethyl ketone	0.8
Methyl isobutyl ketone	< 0.7
Methyl methacrylate	< 0.13
Methyl tert butyl ether	< 0.05
Methylcyclohexane	0.04
Methylcyclopentane	0.54
Methylene chloride	< 0.5
n-Butane	33.0
n-Decane	< 0.11
n-Dodecane	< 0.7
n-Heptane	0.12
n-Hexane	0.77
n-Nonane	0.02
n-Octane	0.05
n-Pentane	5.7
n-Propylbenzene	< 0.09
n-Undecane	< 0.9
Naphthalene	< 0.9
o-Ethyltoluene	< 0.02
o-Xylene	0.07
p-Diethylbenzene	< 0.07
p-Ethyltoluene	< 0.13
Styrene	< 0.07
Tetrachloroethylene	< 0.07
Tetrahydrofuran	< 0.7
Toluene	0.50
trans-1,2-Dichloroethylene	< 0.02
trans-1,3-Dichloropropylene	< 0.07
trans-2-Butene	0.08
trans-2-Pentene	0.41
Trichloroethylene	< 0.07
Vinyl acetate	2.7
Vinyl chloride	< 0.04

Sample ID: 16060335-005

Customer ID: LICA

Cust Samp ID: LICA/NMHC-VOC/Bonnyville/June 23, 2016

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VOC Sample Collection Data Sheet

Client: LICA
Location: ~~Bonnyville~~ - AER
Station ID: LICA 37
Field Sample ID: LICA/NMHC-VOC/Bonnyville/June 25, 2016

Sampler S/N: n/a
Canister ID: H3288
Canister Installation Date/Time: June 9, 2016 / 10:58
Canister Removal Date/Time: June 27, 2016 / 12:59

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
June 25, 2016	06:45	n/a	n/a

Flow Settings		
Meter Reading (sccm)	Pot Set Pt.	Pump Pressure Setting (psig)
n/a	n/a	n/a

Canister Information	
Initial Canister Vacuum (inHg)	Final Canister ~~Pressure (psig)~~
-28.0	-2.5

vaccuum in Hg (A.Y.)

Canister valve open prior to sampling?: (YES) / NO
Timer set to 0.00 minutes prior to sampling? YES / NO - n/a
Canister valve closed prior to disconnection?: (YES) / NO

Comments: NMHC - canister

Technician Signiture: Alex Yakupov **Date:** June 27, 2016

Volatile Organics Data Results (NMHC Canister System)

Date: June 25 , 2016
Canister ID: H3288

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	< 0.05
1,2,3-Trimethylbenzene	< 0.06
1,2,4-Trichlorobenzene	< 1.0
1,2,4-Trimethylbenzene	0.04
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.04
1,2-Dichloroethane	0.02
1,2-Dichloropropane	< 0.01
1,3,5-Trimethylbenzene	< 0.02
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.4
1,4-Dichlorobenzene	< 0.5
1,4-Dioxane	< 0.5
1-Butene	0.21
1-Hexene	0.06
1-Pentene	0.20
2,2,4-Trimethylpentane	0.12
2,2-Dimethylbutane	0.03
2,3,4-Trimethylpentane	0.07
2,3-Dimethylbutane	0.15
2,3-Dimethylpentane	0.15
2,4-Dimethylpentane	0.07
2-Methylheptane	0.03
2-Methylhexane	0.12
2-Methylpentane	0.45
3-Methylheptane	< 0.02
3-Methylhexane	0.19
3-Methylpentane	0.22
Acetone	3.2
Acrolein	< 0.4
Benzene	0.25
Benzyl chloride	< 0.5
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	1.03
Carbon tetrachloride	0.09
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	< 0.02
Chloromethane	1.02
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.05
cis-2-Butene	0.04
cis-2-Pentene	0.18
Cyclohexane	0.10
Cyclopentane	0.11
Dibromochloromethane	< 0.01
Ethanol	4.1
Ethyl acetate	< 0.5
Ethylbenzene	0.04
Freon-11	0.27
Freon-113	0.06

Volatile Organics Data Results (NMHC Canister System)

Date: June 25 , 2016
Canister ID: H3288

PARAMETERS	CONCENTRATION (PPB)
Freon-114	< 0.02
Freon-12	0.46
Hexachloro-1,3-butadiene	< 0.62
Isobutane	3.59
Isopentane	4.95
Isoprene	0.48
Isopropyl alcohol	< 0.5
Isopropylbenzene	< 0.01
m,p-Xylene	0.24
m-Diethylbenzene	< 0.05
m-Ethyltoluene	< 0.10
Methyl butyl ketone	< 0.62
Methyl ethyl ketone	0.9
Methyl isobutyl ketone	< 0.5
Methyl methacrylate	< 0.09
Methyl tert butyl ether	< 0.04
Methylcyclohexane	0.15
Methylcyclopentane	0.28
Methylene chloride	1.2
n-Butane	16
n-Decane	< 0.07
n-Dodecane	< 0.5
n-Heptane	0.21
n-Hexane	0.28
n-Nonane	0.02
n-Octane	0.04
n-Pentane	1.6
n-Propylbenzene	< 0.06
n-Undecane	< 0.6
Naphthalene	< 0.6
o-Ethyltoluene	< 0.01
o-Xylene	0.09
p-Diethylbenzene	< 0.05
p-Ethyltoluene	< 0.09
Styrene	< 0.05
Tetrachloroethylene	< 0.05
Tetrahydrofuran	< 0.5
Toluene	0.66
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.05
trans-2-Butene	0.03
trans-2-Pentene	0.35
Trichloroethylene	< 0.05
Vinyl acetate	< 0.5
Vinyl chloride	< 0.02

Sample ID: 16070015-005

Customer ID: LICA

Cust Samp ID: LICA/NMHC-VOC/Bonnyville/June 29, 2016

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VOC Sample Collection Data Sheet

Client: LICA
Location: Bonnyville - AER
Station ID: LICA 37
Field Sample ID: LICA/NMHC-VOC/Bonnyville/June 29, 2016

Sampler S/N: n/a
Canister ID: S5625
Canister Installation Date/Time: June 27, 2016 / 12:59
Canister Removal Date/Time: June 30, 2016 / 10:10

Date and Time Information			
Sample Date	Start Time (MST)	End Time (MST)	Elapsed Time (Hours)
June 29, 2016	17:20	n/a	n/a

Flow Settings		
Meter Reading (sccm)	Pot Set Pt.	Pump Pressure Setting (psig)
n/a	n/a	n/a

Canister Information	
Initial Canister Vacuum (inHg)	Final Canister ~~Pressure (psig)~~
-28.0	-3.9

Vacuum in Hg A.Y.

Canister valve open prior to sampling?: (YES) / NO
Timer set to 0.00 minutes prior to sampling? YES / NO - n/a
Canister valve closed prior to disconnection?: (YES) / NO

Comments: NMHC - canister

Technician Signature: Alex Yakupov Date: June 30, 2016

Volatile Organics Data Results (NMHC Canister System)

Date: June 29 , 2016
Canister ID: S5625

PARAMETERS	CONCENTRATION (PPB)
1,1,1-Trichloroethane	< 0.02
1,1,2,2-Tetrachloroethane	< 0.02
1,1,2-Trichloroethane	< 0.02
1,1-Dichloroethane	< 0.02
1,1-Dichloroethylene	< 0.05
1,2,3-Trimethylbenzene	0.36
1,2,4-Trichlorobenzene	< 1.0
1,2,4-Trimethylbenzene	2.10
1,2-Dibromoethane	< 0.02
1,2-Dichlorobenzene	< 0.04
1,2-Dichloroethane	0.03
1,2-Dichloropropane	0.03
1,3,5-Trimethylbenzene	0.73
1,3-Butadiene	< 0.02
1,3-Dichlorobenzene	< 0.4
1,4-Dichlorobenzene	< 0.5
1,4-Dioxane	< 0.5
1-Butene	0.60
1-Hexene	0.52
1-Pentene	0.53
2,2,4-Trimethylpentane	8.32
2,2-Dimethylbutane	5.37
2,3,4-Trimethylpentane	0.10
2,3-Dimethylbutane	2.65
2,3-Dimethylpentane	1.83
2,4-Dimethylpentane	0.78
2-Methylheptane	2.03
2-Methylhexane	6.19
2-Methylpentane	9.58
3-Methylheptane	1.96
3-Methylhexane	6.45
3-Methylpentane	6.68
Acetone	7.9
Acrolein	< 0.4
Benzene	2.57
Benzyl chloride	< 0.5
Bromodichloromethane	< 0.02
Bromoform	< 0.02
Bromomethane	< 0.01
Carbon disulfide	0.11
Carbon tetrachloride	0.09
Chlorobenzene	< 0.02
Chloroethane	< 0.02
Chloroform	0.03
Chloromethane	0.52
cis-1,2-Dichloroethene	< 0.01
cis-1,3-Dichloropropene	< 0.05
cis-2-Butene	0.89
cis-2-Pentene	1.17
Cyclohexane	4.19
Cyclopentane	1.36
Dibromochloromethane	0.02
Ethanol	111
Ethyl acetate	< 0.5
Ethylbenzene	2.58
Freon-11	0.24
Freon-113	0.06

Volatile Organics Data Results (NMHC Canister System)

Date: June 29 , 2016
Canister ID: S5625

PARAMETERS	CONCENTRATION (PPB)
Freon-114	< 0.02
Freon-12	0.35
Hexachloro-1,3-butadiene	< 0.62
Isobutane	6.27
Isopentane	55.0
Isoprene	0.67
Isopropyl alcohol	0.7
Isopropylbenzene	0.12
m,p-Xylene	8.75
m-Diethylbenzene	0.06
m-Ethyltoluene	1.77
Methyl butyl ketone	< 0.62
Methyl ethyl ketone	< 0.4
Methyl isobutyl ketone	< 0.5
Methyl methacrylate	< 0.09
Methyl tert butyl ether	< 0.04
Methylcyclohexane	3.59
Methylcyclopentane	5.97
Methylene chloride	< 0.4
n-Butane	15.1
n-Decane	0.12
n-Dodecane	< 0.5
n-Heptane	4.59
n-Hexane	3.06
n-Nonane	0.52
n-Octane	1.55
n-Pentane	11.0
n-Propylbenzene	0.56
n-Undecane	< 0.6
Naphthalene	< 0.6
o-Ethyltoluene	0.52
o-Xylene	3.02
p-Diethylbenzene	0.16
p-Ethyltoluene	0.70
Styrene	< 0.05
Tetrachloroethylene	0.16
Tetrahydrofuran	< 0.5
Toluene	16.9
trans-1,2-Dichloroethylene	< 0.01
trans-1,3-Dichloropropylene	< 0.05
trans-2-Butene	1.25
trans-2-Pentene	2.65
Trichloroethylene	< 0.05
Vinyl acetate	< 0.5
Vinyl chloride	< 0.02

APPENDIX III
EQUIPMENT CALIBRATION RESULTS

SULPHUR DIOXIDE

API 100E Sulphur Dioxide Analyzer Calibration

Date:	June 2, 2016	**Barometric Pressure:**	0.936 atm
Company/Airshed:	LICA	**Station Temperature °C:**	22
Location/Station Name:	Bonnyville	**Weather Conditions:**	Mainly clear
Parameter:	Sulphur Dioxide	**Calibration Purpose:**	installation
Start Time 24 hr. (mst):	9:49	**Performed By/Reviewer:**	Alex Yakupov / Tom Bourque
End Time 24 hr. (mst):	14:01	**Cal Gas Expiry Date:**	December 2, 2023
Calibration Method:	Gas Dilution	**Converter Model & s/n (if applicable):**	n/a

Analyzer:

Serial Number:	467	**Range ppb:**	1000
Last Calibration Date:	n/a	**As Found C.F.:**	n/a
Previous C.F.:	n/a	**New C.F.:**	0.996

Calibrator:

Flow Meter ID's:	n/a
Make & Model:	SABIO 2010 D
Serial #:	11900613
Cal Gas Cylinder I.D. # :	LL119346
Cal Gas Conc. (ppm):	50.0

Standard Calibration Points for Ranges

Point	Sulphur Dioxide Standard Calibration Points
High	**780**
Mid	**380**
Low	**190**

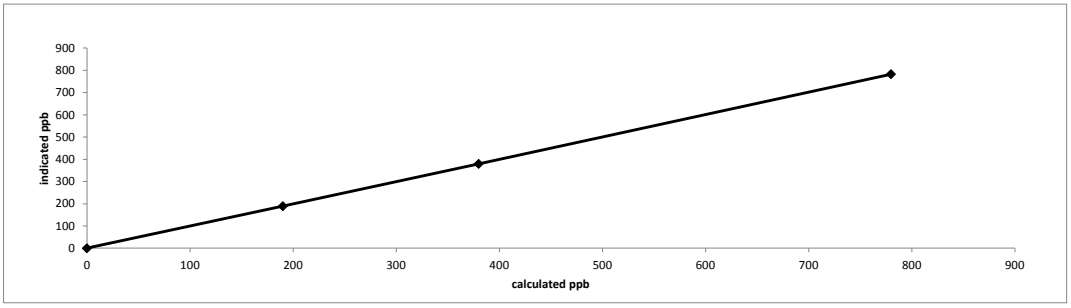
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors (C.F.):
Point	**Diluent**	**Cal Gas**	**Total**	**(ppb)**	**(ppb)**	
adjusted zero	4999	0.00	4999	0.0	0.0	N/A
adjusted high	4923	78.00	5001	779.8	783.0	0.996
mid	4962	38.00	5000	380.0	379.0	1.003
low	4981	19.00	5000	190.0	189.0	1.005
calibrator zero	4999	0.00	4999	0.0	0.0	n/a
					Average C.F.=	1.001

Linear Regression/Calibration Results:

		LIMITS
Correlation Coeffecient =	**1.000**	**> or = 0.995**
Slope =	**0.995**	**.95-1.05**
b (Intercept as % of full scale)=	**0.12%**	**± 3% F.S.**
% change in C.F. from last cal=	**n/a**	**± 10%**

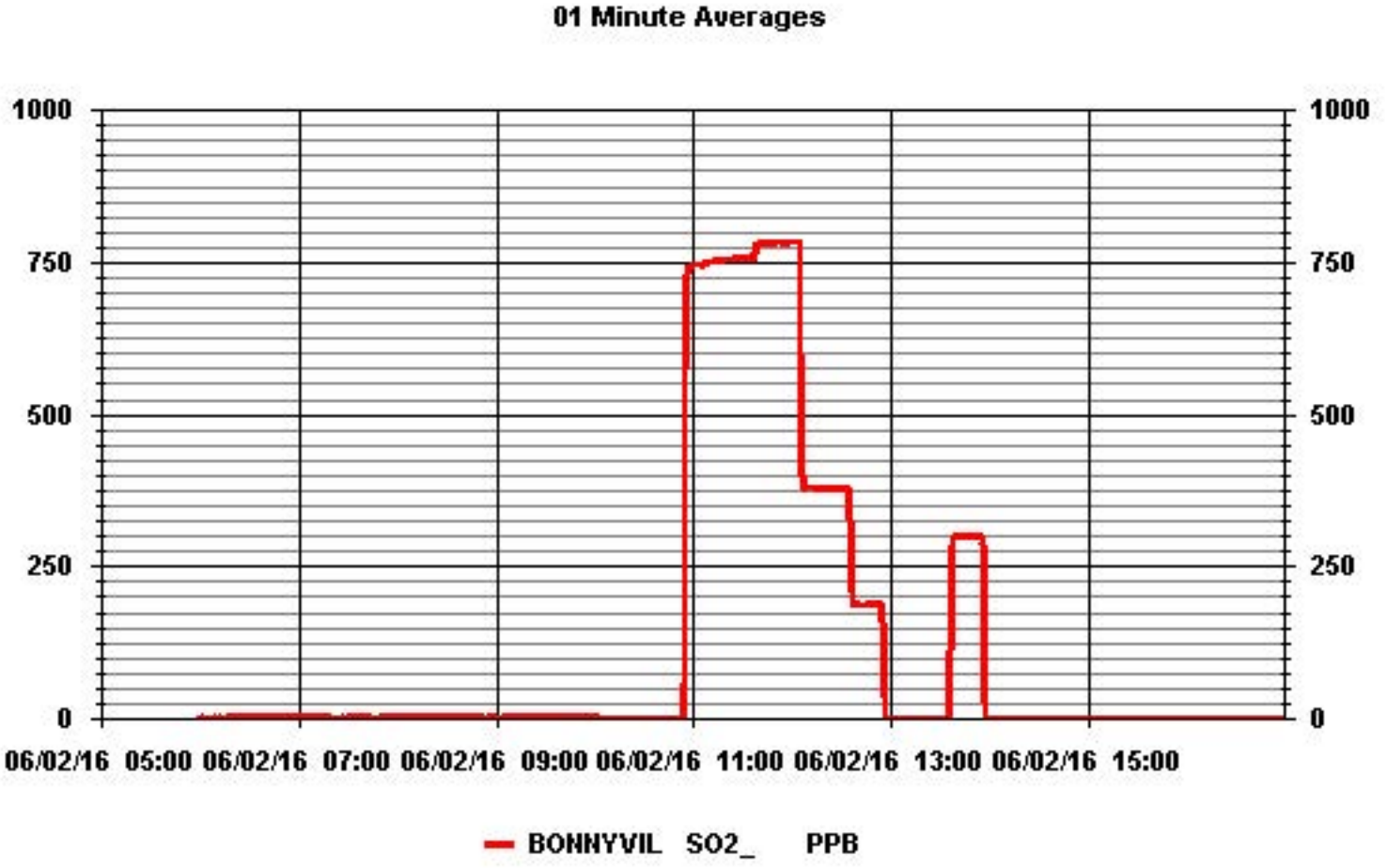
API 100E Sulphur Dioxide Analyzer Calibration



As found:		As left:	
SLOPE:	n/a	SLOPE:	1.138
OFFSET:	n/a	OFFSET:	117.5
HVPS:	n/a	HVPS:	512
RCELL TEMP:	n/a	RCELL TEMP:	50.0
BOX TEMP:	n/a	BOX TEMP:	33.0
PMT TEMP:	n/a	PMT TEMP:	8.1
IZS TEMP:	n/a	IZS TEMP:	45.0
PRES:	n/a	PRES:	24.5
SAMP FL:	n/a	SAMP FL:	618
NORM PMT:	n/a	NORM PMT:	117.7
UV LAMP:	n/a	UV LAMP:	2664.1
LAMP RATIO:	n/a	LAMP RATIO:	88.6
STR. LGT	n/a	STR. LGT	66.9
DRK PMT:	n/a	DRK PMT:	26.8
DRK LMP:	n/a	DRK LMP:	2.5
Internal Span:	n/a	Internal Span:	300

Comments:

Sample inlet filter changed.


01 Minute Averages
1000
750
500
250
0
06/02/16 05:00
06/02/16 07:00
06/02/16 09:00
06/02/16 11:00
06/02/16 13:00
06/02/16 15:00
BONNYVIL SO2_ PPB

HYDROGEN SULPHIDE

API 101E Hydrogen Sulphide Analyzer Calibration

Date:	June 2, 2016	**Barometric Pressure:**	0.936 atm
Company/Airshed:	LICA	**Station Temperature °C:**	22
Location/Station Name:	Bonnyville	**Weather Conditions:**	Mainly clear
Parameter:	Hydrogen Sulphide	**Calibration Purpose:**	installation
Start Time 24 hr. (mst):	9:49	**Performed By/Reviewer:**	Alex Yakupov / Tom Bourque
End Time 24 hr. (mst):	13:17	**Cal Gas Expiry Date:**	July 15, 2017
Calibration Method:	Gas Dilution	**Converter Model & s/n (if applicable):**	n/a

Analyzer:

Serial Number:	510	**Range ppb:**	100
Last Calibration Date:	n/a	**As Found C.F.:**	n/a
Previous C.F.:	n/a	**New C.F.:**	1.001

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

Standard Calibration Points for Ranges

Point	Hydrogen Sulphide Standard Calibration Points
High	**78**
Mid	**38**
Low	**19**

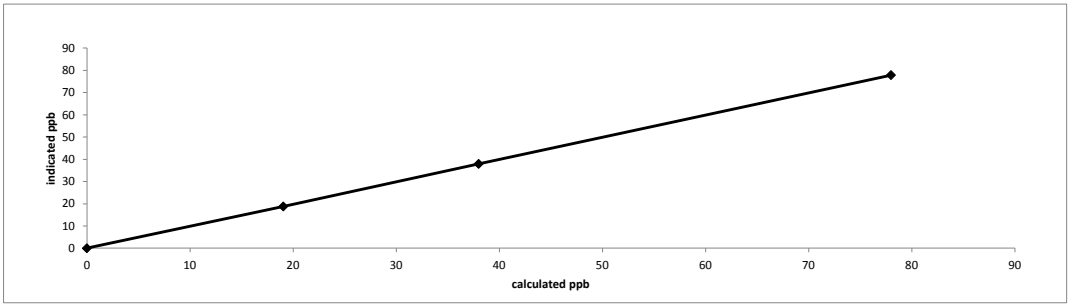
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors (C.F.):
Point	**Diluent**	**Cal Gas**	**Total**	**(ppb)**	**(ppb)**	
adjusted zero	7498	0.00	7498	0.0	0.0	N/A
adjusted high	7442	58.50	7501	78.0	77.9	1.001
mid	7471	28.50	7500	38.0	37.9	1.003
low	7491	14.30	7505	19.1	18.8	1.013
calibrator zero	7498	0.00	7498	0.0	0.0	n/a
					Average C.F.=	1.006

Linear Regression/Calibration Results:

		LIMITS
Correlation Coeffecient =	**1.000**	**> or = 0.995**
Slope =	**1.000**	**.95-1.05**
b (Intercept as % of full scale)=	**0.10%**	**± 3% F.S.**
% change in C.F. from last cal=	**n/a**	**± 10%**

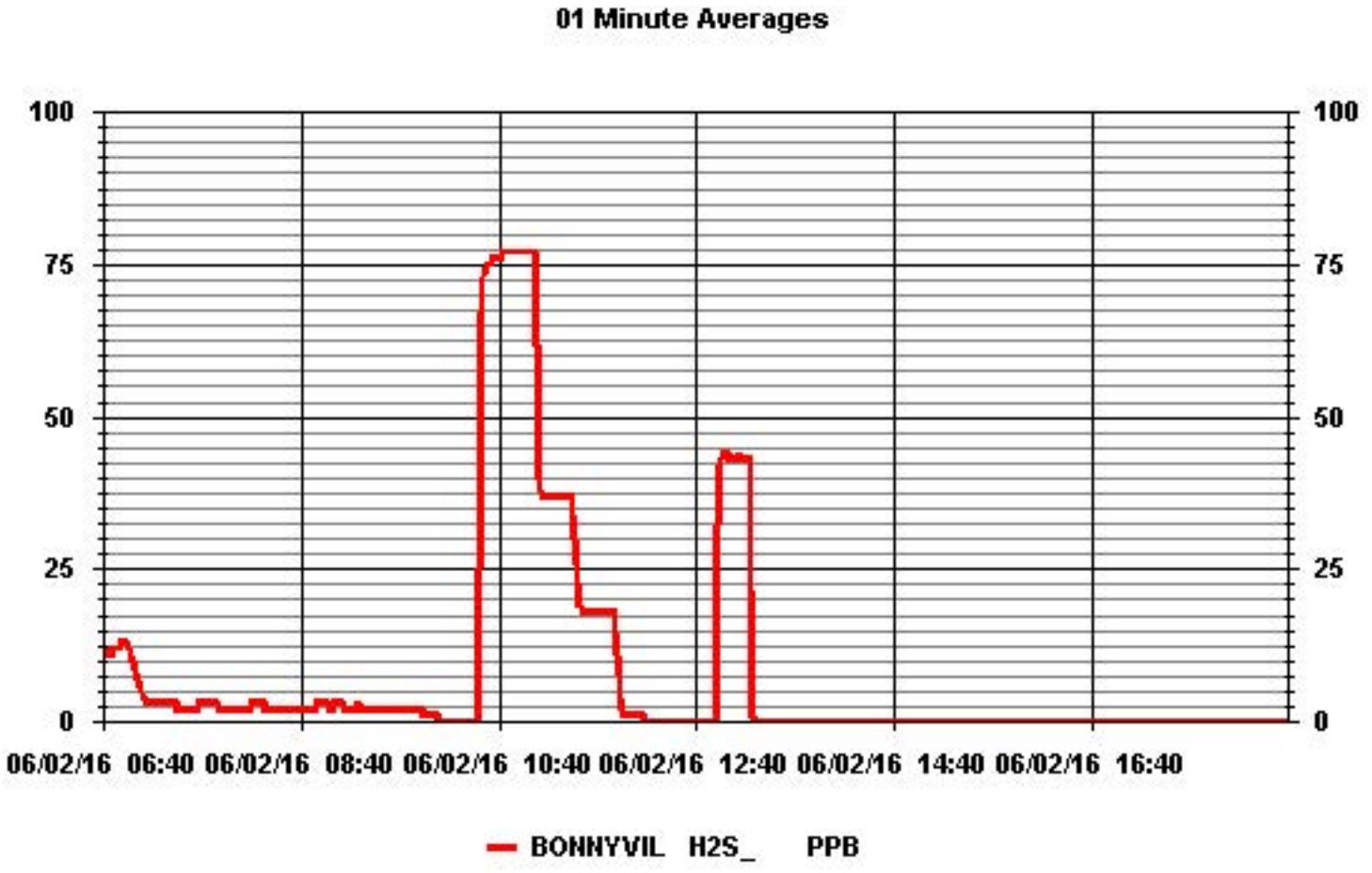
API 101E Hydrogen Sulphide Analyzer Calibration



As found:		As left:	
SLOPE:	n/a	SLOPE:	1.121
OFFSET:	n/a	OFFSET:	30.7
HVPS:	n/a	HVPS:	526
RCELL TEMP:	n/a	RCELL TEMP:	50.0
BOX TEMP:	n/a	BOX TEMP:	35.0
PMT TEMP:	n/a	PMT TEMP:	8.4
IZS TEMP:	n/a	IZS TEMP:	45.0
Converter Temp:	n/a	Converter Temp:	315.3
PRES:	n/a	PRES:	21.3
SAMP FL:	n/a	SAMP FL:	557
UV LAMP:	n/a	UV LAMP:	2566.0
LAMP RATIO:	n/a	LAMP RATIO:	80.0
STR. LGT	n/a	STR. LGT	17.2
DRK PMT:	n/a	DRK PMT:	57.9
DRK LMP:	n/a	DRK LMP:	-1.8
Internal Span:	n/a	Internal Span:	43.8

Comments:

Sample inlet filter changed.


01 Minute Averages
100
75
50
25
0
06/02/16 06:40
06/02/16 08:40
06/02/16 10:40
06/02/16 12:40
06/02/16 14:40
06/02/16 16:40
BONNYVIL H2S_ PPB

API 101E Hydrogen Sulphide Analyzer Calibration

Date:	June 9, 2016	**Barometric Pressure:**	0.921 atm
Company/Airshed:	LICA	**Station Temperature °C:**	22
Location/Station Name:	Bonnyville - AER	**Weather Conditions:**	A few clouds and light rain showers
Parameter:	Hydrogen Sulphide	**Calibration Purpose:**	shut down
Start Time 24 hr. (mst):	9:48	**Performed By/Reviewer:**	Alex Yakupov / Tom Bourque
End Time 24 hr. (mst):	11:53	**Cal Gas Expiry Date:**	July 15, 2017
Calibration Method:	Gas Dilution	**Converter Model & s/n (if applicable):**	n/a

Analyzer:

Serial Number:	510	**Range ppb:**	100
Last Calibration Date:	June 2, 2016	**As Found C.F.:**	0.991
Previous C.F.:	1.001	**New C.F.:**	n/a

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

Standard Calibration Points for Ranges

Point	Hydrogen Sulphide Standard Calibration Points
High	78
Mid	38
Low	19

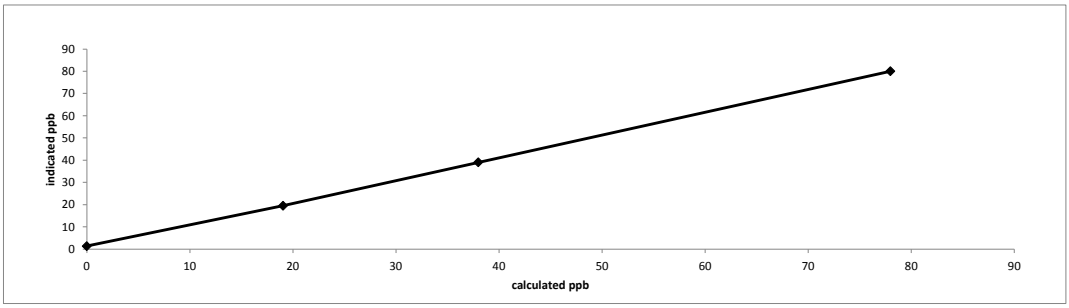
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

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	1.3	N/A
as found high	7442	58.50	7501	78.0	80.0	0.991
mid	7471	28.50	7500	38.0	39.0	1.008
low	7491	14.30	7505	19.1	19.5	1.047
					Average C.F.=	1.015

Linear Regression/Calibration Results:

		LIMITS
Correlation Coeffecient =	**1.000**	**> or = 0.995**
Slope =	**0.987**	**0.90-1.10**
b (Intercept as % of full scale)=	**-0.74%**	**± 3% F.S.**
% change in C.F. from last cal=	**1.00%**	**± 10%**

API 101E Hydrogen Sulphide Analyzer Calibration



	As found:	As left:
SLOPE:	1.121	n/a
OFFSET:	30.7	n/a
HVPS:	526	n/a
RCELL TEMP:	50.0	n/a
BOX TEMP:	33.0	n/a
PMT TEMP:	8.4	n/a
IZS TEMP:	45.0	n/a
Converter Temp:	314.4	n/a
PRES:	21.1	n/a
SAMP FL:	551	n/a
UV LAMP:	2572.2	n/a
LAMP RATIO:	81.1	n/a
STR. LGT	17.2	n/a
DRK PMT:	41.0	n/a
DRK LMP:	-2.0	n/a
Internal Span:	46.97	n/a

Comments:

Shutdown calibration performed to rebuild a sampling pump. Reason: high SPAN check results (both attempts) were over 10%. On arrival no alarms on the screen of the analyzer were found.

API 101E Hydrogen Sulphide Analyzer Calibration

Date:	June 9, 2016	**Barometric Pressure:**	0.921 atm
Company/Airshed:	LICA	**Station Temperature °C:**	22
Location/Station Name:	Bonnyville - AER	**Weather Conditions:**	A few clouds and light rain showers
Parameter:	Hydrogen Sulphide	**Calibration Purpose:**	post repair
Start Time 24 hr. (mst):	12:05	**Performed By/Reviewer:**	Alex Yakupov / Tom Bourque
End Time 24 hr. (mst):	15:25	**Cal Gas Expiry Date:**	July 15, 2017
Calibration Method:	Gas Dilution	**Converter Model & s/n (if applicable):**	n/a

Analyzer:

Serial Number:	510	**Range ppb:**	100
Last Calibration Date:	n/a	**As Found C.F.:**	n/a
Previous C.F.:	n/a	**New C.F.:**	0.995

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

Standard Calibration Points for Ranges

Point	Hydrogen Sulphide Standard Calibration Points
High	**78**
Mid	**38**
Low	**19**

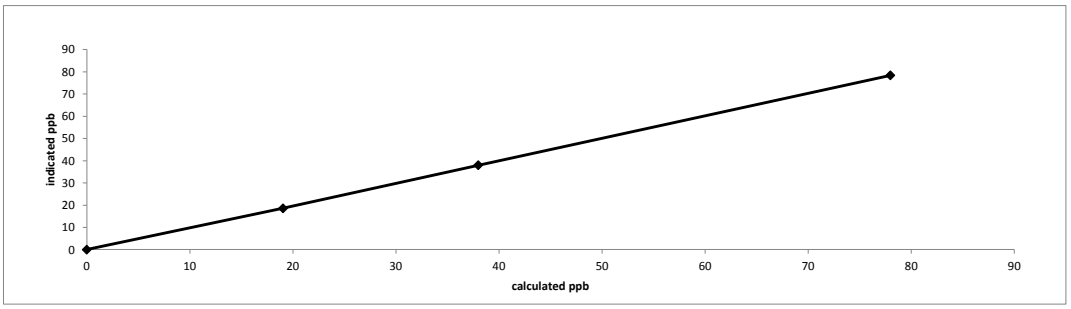
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors (C.F.):
Point	**Diluent**	**Cal Gas**	**Total**	**(ppb)**	**(ppb)**	
adjusted zero	7498	0.00	7498	0.0	0.0	N/A
adjusted high	7442	58.50	7501	78.0	78.4	0.995
mid	7471	28.50	7500	38.0	38.0	1.000
low	7491	14.30	7505	19.1	18.6	1.024
calibrator zero	7498	0.00	7498	0.0	0.0	n/a
					Average C.F.=	1.006

Linear Regression/Calibration Results:

		LIMITS
Correlation Coeffecient =	**1.000**	**> or = 0.995**
Slope =	**0.993**	**.95-1.05**
b (Intercept as % of full scale)=	**0.26%**	**± 3% F.S.**
% change in C.F. from last cal=	**n/a**	**± 10%**

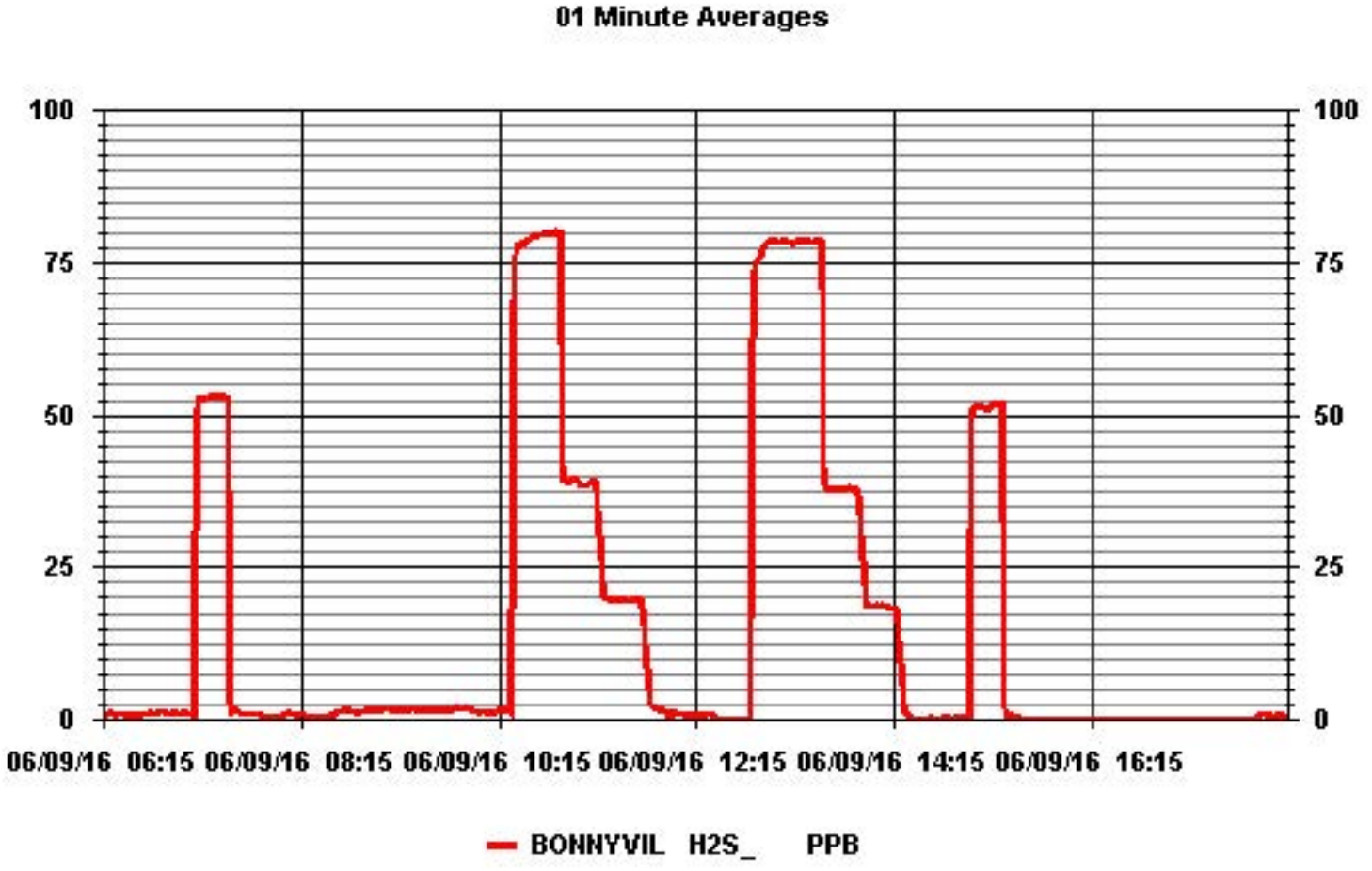
API 101E Hydrogen Sulphide Analyzer Calibration



As found:		As left:	
SLOPE:	n/a	SLOPE:	1.137
OFFSET:	n/a	OFFSET:	33.0
HVPS:	n/a	HVPS:	526
RCELL TEMP:	n/a	RCELL TEMP:	50.0
BOX TEMP:	n/a	BOX TEMP:	34.4
PMT TEMP:	n/a	PMT TEMP:	8.4
IZS TEMP:	n/a	IZS TEMP:	45.0
Converter Temp:	n/a	Converter Temp:	314.9
PRES:	n/a	PRES:	21.1
SAMP FL:	n/a	SAMP FL:	553
UV LAMP:	n/a	UV LAMP:	2569.2
LAMP RATIO:	n/a	LAMP RATIO:	80.8
STR. LGT	n/a	STR. LGT	18.8
DRK PMT:	n/a	DRK PMT:	42.3
DRK LMP:	n/a	DRK LMP:	-2.0
Internal Span:	n/a	Internal Span:	51.9

Comments:

Post-repair calibration performed after the sample pump had been rebuilt. Sample inlet filter was changed on June 2, 2016 during installation calibration. Charcoal ZERO air scrubber renewed.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100
75
50
25
0
06/09/16 06:15
06/09/16 08:15
06/09/16 10:15
06/09/16 12:15
06/09/16 14:15
06/09/16 16:15
BONNYVIL H2S_ PPB

TOTAL HYDROCARBON

Thermo 55i Methane/Non-Methane Analyzer Calibration

Date:	June 2, 2016	**Barometric Pressure:**	0.936 atm
Company/Airshed:	LICA	**Station Temperature °C:**	22
Location/Station Name:	Bonnyville	**Weather Conditions:**	Mainly clear
Parameter:	CH_4 / NMHC / THC	**Calibration Purpose:**	installation
Start/End Time 24 hr. (mst):	13:15 / 16:24	**Performed By/Reviewer:**	Alex Yakupov / Tom Bourque
Calibration Method:	Gas Dilution	**Cal Gas Expiry Date:**	November 25, 2023

Analyzer:

Serial Number:	1236656107
Last Calibration Date:	n/a
Range ppm:	20 CH4/20 NMHC/40 THC

Correction Factors:

	Previous C.F.:	As Found C.F.:	New C.F.:
CH_4 =	n/a	n/a	1.000
NMHC =	n/a	n/a	0.997
THC =	n/a	n/a	0.998

Calibrator:

Flow Meter ID's:	n/a		
Make & Model:	API 700		
Serial #:	627		
Cal Gas Cylinder I.D. # :	LL165372		
CH4 Cylinder Conc.=	606.0	212.0	**=C_3H_8 Cylinder Conc.**
CH_4 as C_3H_8=	583.0	1189.0	**=total CH_4 equivilant**

Standard Calibration Points for Analyzer Range of 20/20/40 ppm

Point	CH4	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

Calibrator Flow Rates (cc/min)										Correction Factors:		
Point	**Diluent**	**Cal Gas**	**Total Flow**	**Calculated CH_4 (ppm)**	**Calculated NMHC (ppm)**	**Calculated THC (ppm)**	**Indicated CH_4 (ppm)**	**Indicated NMHC (ppm)**	**Indicated THC (ppm)**	**CH_4**	**NMHC**	**THC**
adjusted zero	2000	0.00	2000	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
adjusted high	2000	46.00	2046	13.62	13.11	26.73	13.62	13.15	26.78	1.000	0.997	0.998
mid	2000	24.00	2024	7.19	6.91	14.10	7.19	6.92	14.11	0.999	0.999	0.999
low	2000	11.00	2011	3.31	3.19	6.50	3.31	3.22	6.53	1.001	0.990	0.996
calibrator zero	2000	0.00	2000	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
									Average C.F.=	1.000	0.995	0.998

Linear Regression/Calibration Results:

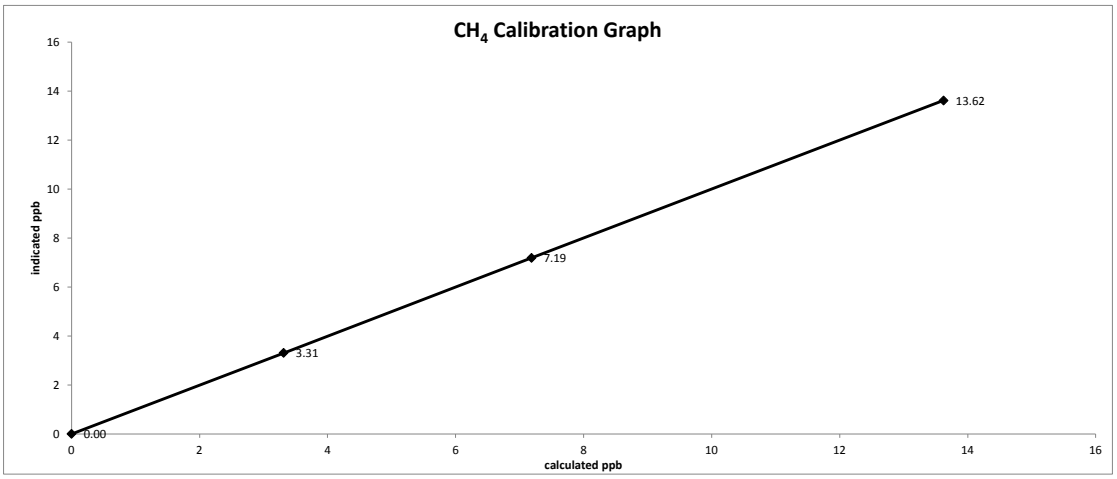
	CH_4	NMHC	THC	LIMITS
Correlation Coeffecient =	**1.000**	**1.000**	**1.000**	**> or = 0.995**
Slope =	**1.000**	**1.002**	**1.002**	**.95-1.05**
b (Intercept as % of full scale)=	**0.00%**	**0.03%**	**0.01%**	**± 3% F.S.**
% change in C.F. from last cal=	**n/a**	**n/a**	**n/a**	**± 10%**

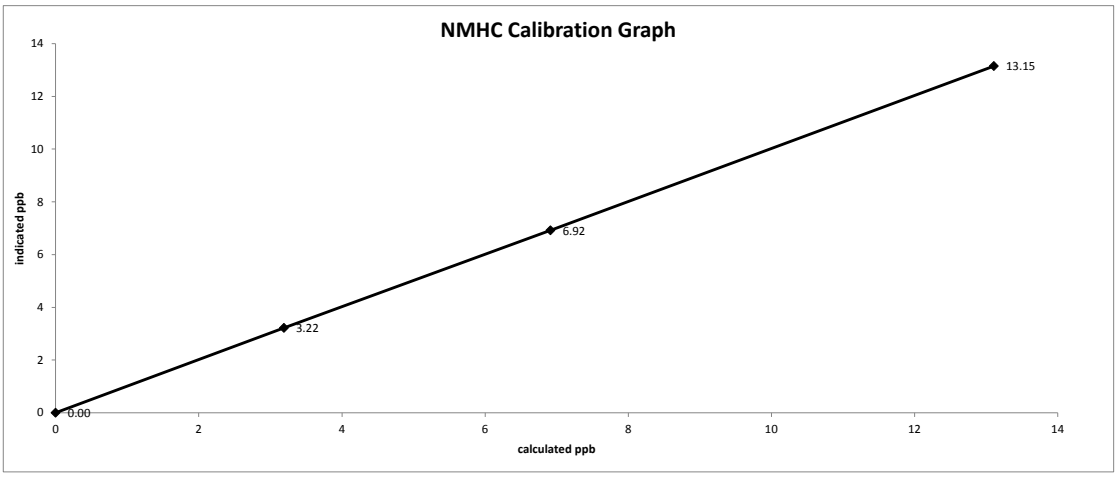
		As found:				As left:
Interface Board Voltages:	Bias Supply:	n/a		Calibration History cnt'd:	NM Peak Area:	n/a
Temperatures:	Detector Oven:	n/a		Crucial Settings:	Methane Start:	n/a
	Filter:	n/a			Methane End:	n/a
	Column Oven:	n/a			Backflush:	n/a
	Internal:	n/a			NMHV Start:	n/a
Cylinder Pressures/reg.:	Carrier:	2500	50		NMHC End:	n/a
	Fuel:	1000	50	Run History>1:	Date:	June2, 2016
	Span Gas:	1500	22		Time:	15:05
	Zero Air Generator:	45			CH_4 PK HT:	255
Internal Pressures:	Carrier:	n/a			CH_4 RT:	12.8
	Fuel:	n/a			CH_4 Baseline:	3333
	Air:	n/a			CH_4 LOD:	68
FID Status:	Status:	n/a			CH_4 SD:	22
	Counts:	n/a			CH_4 CONC:	0.18
	Flame:	n/a			NM PK HT:	46
	Det Base:	n/a			NM Peak Area:	1192
Flame and Power Stats:	Last Power On:	n/a			NM CONC:	0.18
	Flameouts:	n/a			NM Base Start:	3190
	Det Oven at Start:	n/a			NM Base End:	3201
	Col Oven at Start:	n/a			NM LOD:	17
Calibration History:	Time:	n/a			NM Start IDX:	18
	Type:	n/a			NM End IDX:	73
	Status:	n/a			NM Max Slope:	3.4e+0.0
	Check/Adjust:	n/a			NM Min Slope:	-1.9e+0.0
	CH_4 Span Conc:	n/a			NM PT Count:	48
	CH_4 SP Ratio:	n/a		Daily Zero/Span Values:	Previous CH4:	n/a
	CH_4 RT:	n/a			Previous NMHC	n/a
	CH_4 PK IDX:	n/a			Previous THC:	n/a
	CH_4 PK HT:	n/a			New CH4:	9.55
	NM Span Conc:	n/a			New NMHC	11.16
	NM SP Ratio:	n/a			New THC:	20.73

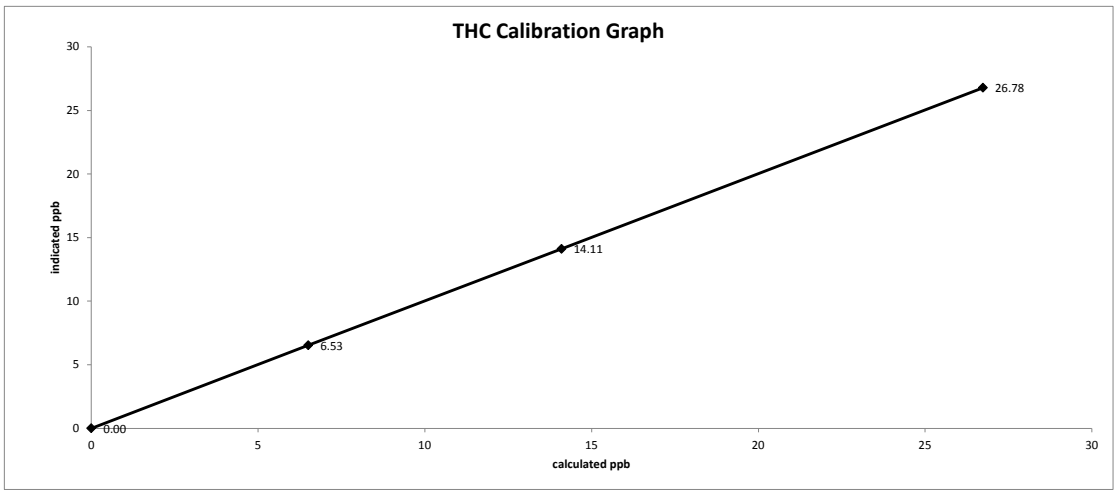
Comments:

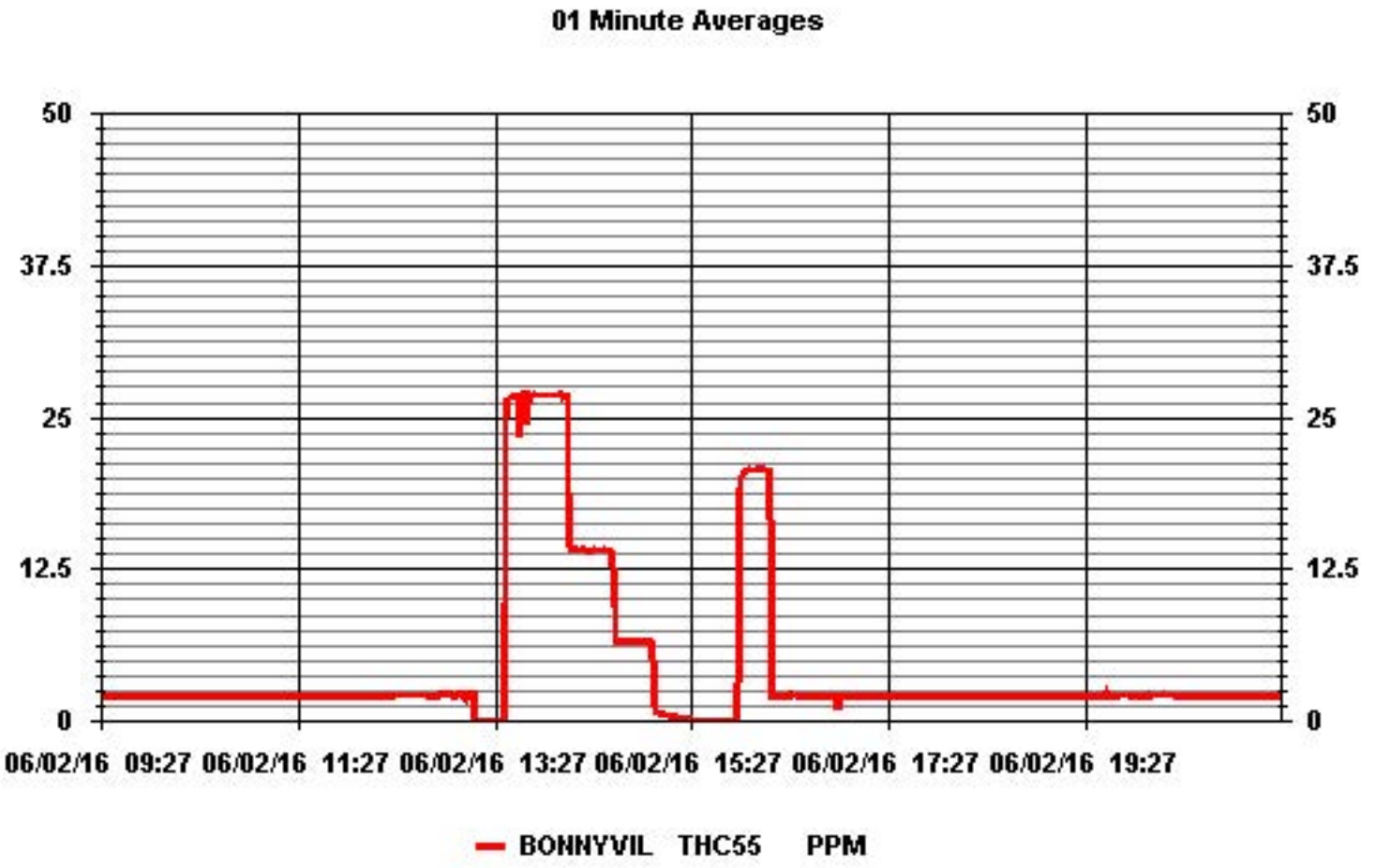
Sample inlet filter changed.

Date:	**June 2, 2016**	**Start/End Time 24 hr. (mst):**	**13:15 / 16:24**
Company/Airshed:	**LICA**	**Calibration Purpose:**	**installation**
Location/Station Name:	**Bonnyville**	**Calibration Method:**	**Gas Dilution**








01 Minute Averages
50
37.5
25
12.5
0
06/02/16 09:27
06/02/16 11:27
06/02/16 13:27
06/02/16 15:27
06/02/16 17:27
06/02/16 19:27
BONNYVIL THC55 PPM

NITROGEN DIOXIDE

API 200E NO-NO2-NOx Analyzer Calibration

Date:	June 2, 2016	**Barometric Pressure:**	0.936 atm
Company/Airshed:	LICA	**Station Temperature °C:**	22
Location/Station Name:	Bonnyville	**Weather Conditions:**	Mainly clear
Start/End Time 24 hr. (mst):	9:49 / 16:32	**Calibration Purpose:**	installation
G.P.T. to be used for Ozone?	No	**Performed By/Reviewer:**	Alex Yakupov / Tom Bourque
Calibration Method:	Gas Dilution & Varying UV Lamp Power	**Cal Gas Expiry Date:**	December 2, 2023

Analyzer:

Serial Number:	593
Last Calibration Date:	n/a
Range ppb:	1000

Correction Factors:

	Previous C.F.:	As Found C.F.:	New C.F.:
NO =	n/a	n/a	1.000
NO_2 =	n/a	n/a	0.998
NOx =	n/a	n/a	0.999

Calibrator:

Flow Meter ID's:	n/a
Make & Model:	SABIO 2010 D
Serial #:	11900613
Cal Gas Cylinder I.D. # :	LL119346
NO/NOx Gas Conc. (ppm):	50.0 / 50.0

Standard Calibration Points for a Range of: 1000 ppb

Point	Target NO (ppb)	Target NO_2 (ppb)	Cc Ozone ?
High	780	500	n/a
Mid	380	275	n/a
Low	190	100	n/a
Extra Point #1	n/a	n/a	n/a
Extra Point #2	n/a	n/a	n/a

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

Calibrator Flow Rates (cc/min)				Calculated NO	Calculated NOx	Indicated NO	Indicated NOx	NO C.F.	NOx C.F.
Point	Diluent	Cal Gas	Total Flow	(ppb)	(ppb)	(ppb)	(ppb)		
adjusted zero	4999	0.0	4999	0	0	0.0	0.0	n/a	n/a
adjusted high	4923	78.0	5001	779.8	779.8	780.0	781.0	1.000	0.999
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	190.0	190.0	1.000	1.000
calibrator zero	4999	0.00	4999	0.0	0.0	1.0	0.0	n/a	n/a
							Average C.F.=	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_2	NO drop	NO_2 gain	NO_2 C.F.
Point	Diluent	Cal Gas	Total Flow	volts or ppb	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)
NOx reference	4923	78.00	5001	0.0	780.0	780.0	0.0	0.0	0.0	
adjusted high NO2	4923	78.00	5001	510.0	278.0	781.0	503.0	502.0	503.0	0.998
gpt mid	4923	78.00	5001	277.0	503.0	780.0	276.0	277.0	276.0	1.004
gpt low	4923	78.00	5001	100.0	675.0	780.0	105.0	105.0	105.0	1.000
									Average NO_2 C.F.=	1.001

Linear Regression/Calibration Results:

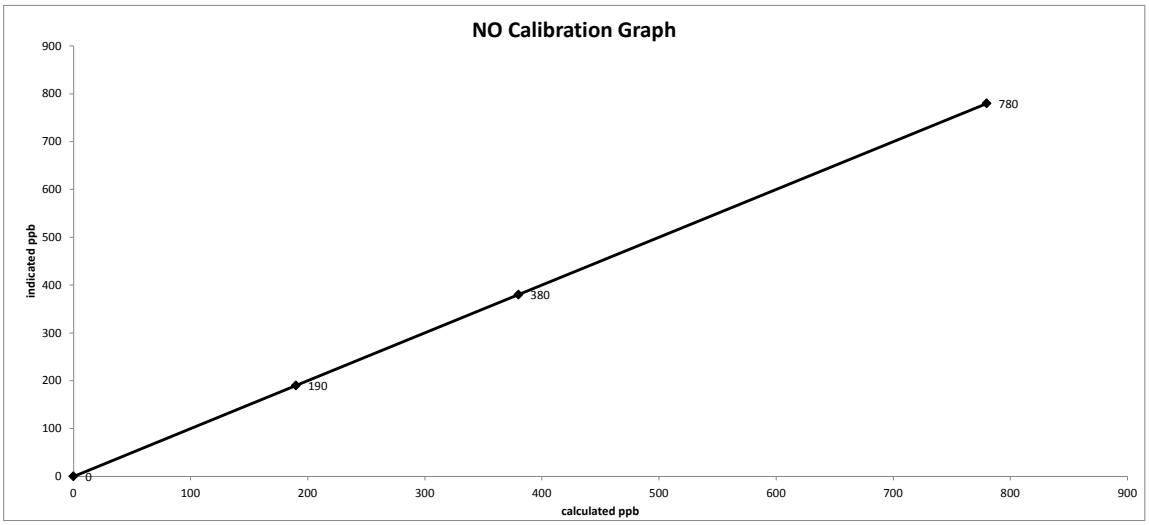
	NO	NOx	NO_2	LIMITS
Correlation Coeffecient =	1.000	1.000	1.000	> or = 0.995
Slope =	1.000	0.998	0.998	.95-1.05
b (Intercept as % of full scale)=	0.00%	-0.02%	-0.03%	± 3% F.S.
% change in C.F. from last cal=	n/a	n/a	n/a	± 10%
NO2 converter effeciency			1.00	0.96 to 1.04

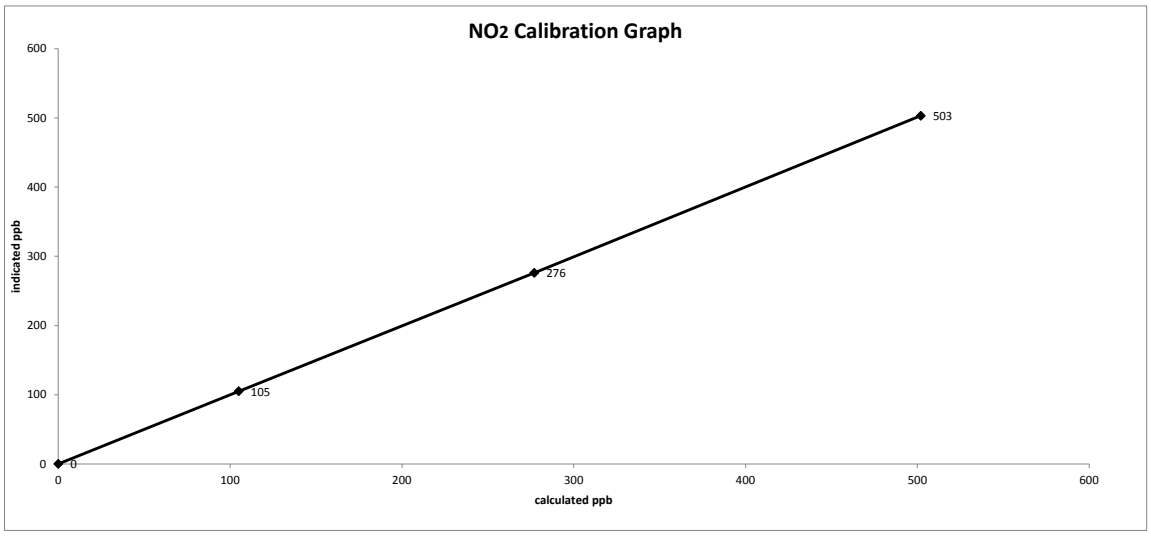
As found:		As left:	
NOx SLOPE:	n/a	NOx SLOPE:	1.023
NOx OFFS:	n/a	NOx OFFS:	2.3
NO SLOPE:	n/a	NO SLOPE:	1.021
NO OFFS:	n/a	NO OFFS:	-0.8
SAMP FLW:	n/a	SAMP FLW:	478
OZONE FL:	n/a	OZONE FL:	77
PMT:	n/a	PMT:	12.2
NORM PMT:	n/a	NORM PMT:	0.2
AZERO:	n/a	AZERO:	10.7
HVPS:	n/a	HVPS:	662
RCELL TEMP:	n/a	RCELL TEMP:	50.0
BOX TEMP:	n/a	BOX TEMP:	31.7
PMT TEMP:	n/a	PMT TEMP:	6.7
IZS TEMP:	n/a	IZS TEMP:	45.3
MOLY TEMP:	n/a	MOLY TEMP:	315.5
RCEL:	n/a	RCEL:	7.1
SAMP:	n/a	SAMP:	27.0
Internal Span NO:	n/a	Internal Span NO:	7.4
Internal Span NO2:	n/a	Internal Span NO2:	290
Internal Span NOx:	n/a	Internal Span NOx:	298

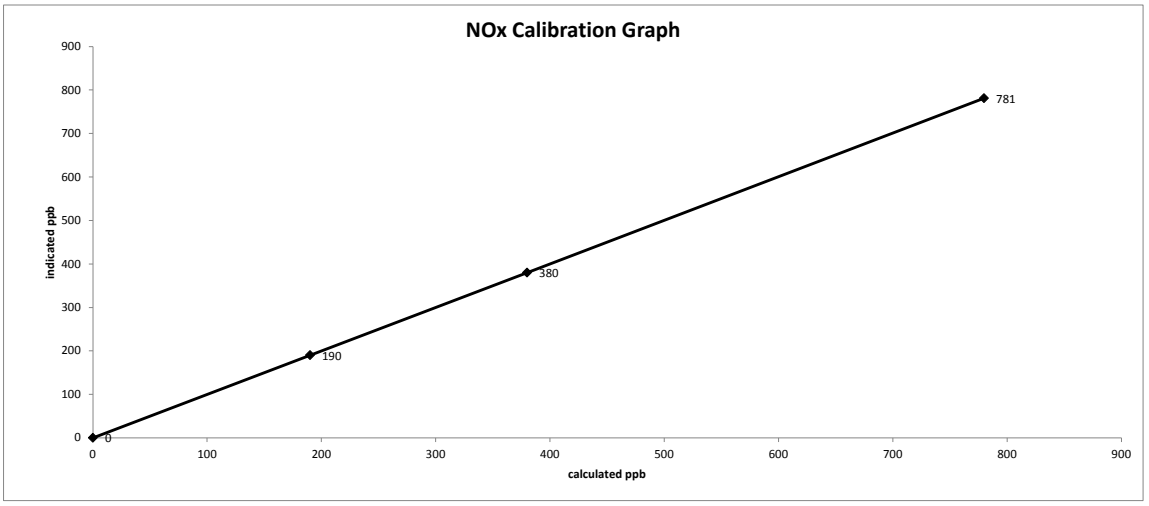
Comments:

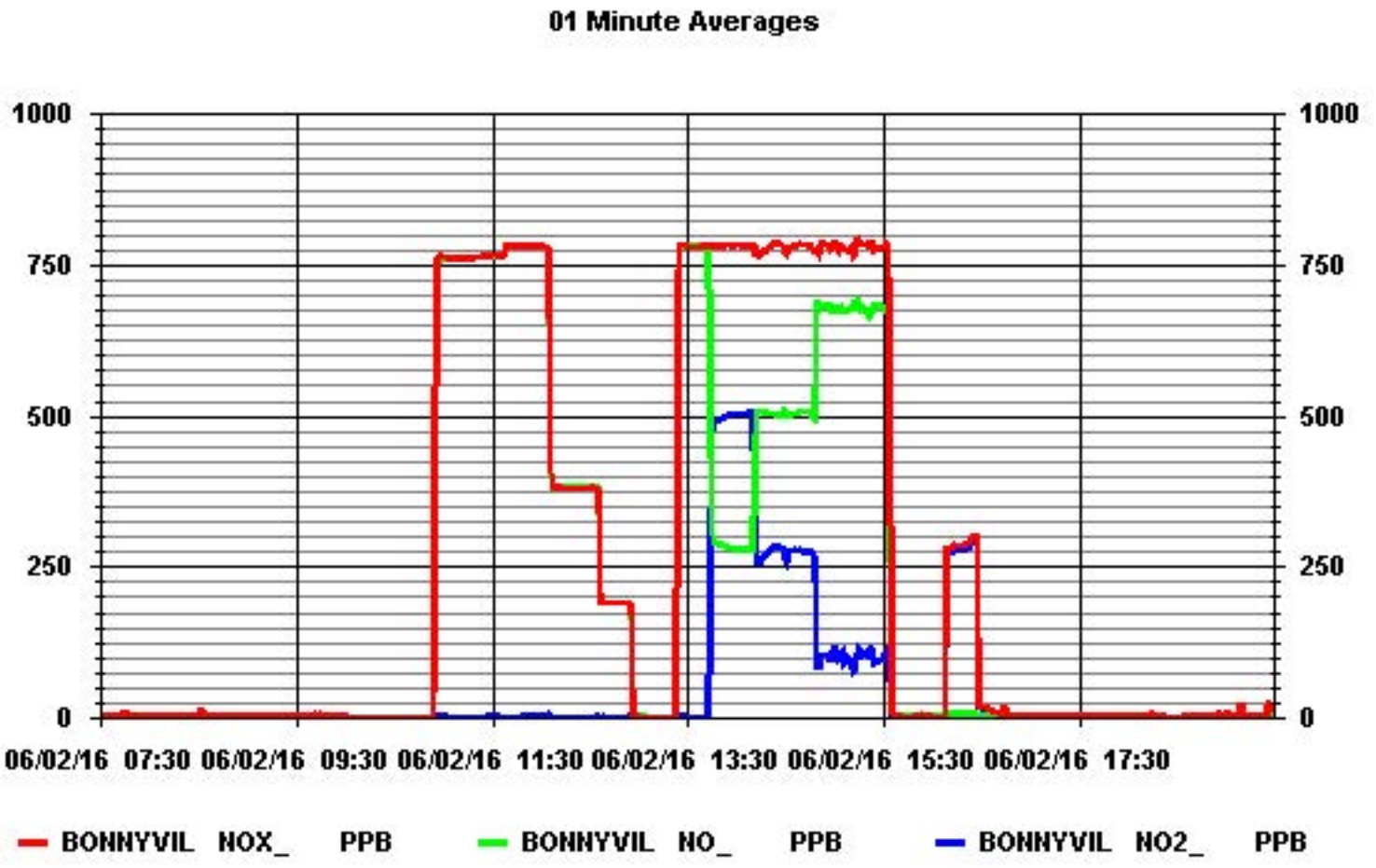
Sample inlet filter changed. No NO2 adjustment made.

Date:	**June 2, 2016**	**Start/End Time 24 hr. (mst):**	**9:49 / 16:32**
Company/Airshed:	**LICA**	**Calibration Purpose:**	**installation**
Location/Station Name:	**Bonnyville**	**Calibration Method:**	**Gas Dilution & Varying UV Lamp Power**








01 Minute Averages
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750
500
250
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06/02/16 07:30
06/02/16 09:30
06/02/16 11:30
06/02/16 13:30
06/02/16 15:30
06/02/16 17:30
BONNYVIL NOX_ PPB
BONNYVIL NO_ PPB
BONNYVIL NO2_ PPB

API 200E NO-NO2-NOx Analyzer Calibration

Date:	June 27, 2016	**Barometric Pressure:**	0.943 atm
Company/Airshed:	LICA	**Station Temperature °C:**	20
Location/Station Name:	Bonnyville - AER	**Weather Conditions:**	Sunny
Start/End Time 24 hr. (mst):	11:34 / 19:08	**Calibration Purpose:**	repeat
G.P.T. to be used for Ozone?	No	**Performed By/Reviewer:**	Alex Yakupov / Tom Bourque
Calibration Method:	Gas Dilution & Gas Phase Titration	**Cal Gas Expiry Date:**	December 2, 2023

Analyzer:

Serial Number:	593
Last Calibration Date:	June 2, 2016
Range ppb:	1000

Correction Factors:

	Previous C.F.:	As Found C.F.:	New C.F.:
NO =	1.000	1.067	1.000
NO_2 =	0.998	0.996	0.996
NOx =	1.000	1.064	0.998

Calibrator:

Flow Meter ID's:	n/a	
Make & Model:	API Model 700	
Serial #:	627	
Cal Gas Cylinder I.D. # :	LL119346	
NO/NOx Gas Conc. (ppm):	50.0	50.0

Standard Calibration Points for a Range of: 1000 ppb

Point	Target NO (ppb)	Target NO_2 (ppb)	Cc Ozone ?
High	**780**	**500**	**n/a**
Mid	**380**	**275**	**n/a**
Low	**190**	**100**	**n/a**
Extra Point #1	**n/a**	**n/a**	**n/a**
Extra Point #2	**n/a**	**n/a**	**n/a**

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

Calibrator Flow Rates (cc/min)				Calculated NO	Calculated NOx	Indicated NO	Indicated NOx	NO C.F.	NOx C.F.
Point	**Diluent**	**Cal Gas**	**Total Flow**	**(ppb)**	**(ppb)**	**(ppb)**	**(ppb)**		
as found zero	5000	0.0	5000	0	0	0.0	0.0	n/a	n/a
as found high	4924	78.0	5002	779.7	779.7	731.0	733.0	1.067	1.064
adjusted zero	5000	0.00	5000	0.0	0.0	0.0	0.0	n/a	n/a
adjusted high	4924	78.00	5002	779.7	779.7	780.0	781.0	1.000	0.998
mid	4966	38.00	5004	379.7	379.7	380.0	380.0	0.999	0.999
low	4982	19.00	5001	190.0	190.0	190.0	190.0	1.000	1.000
calibrator zero	5000	0.00	5000	0	0	1.0	0.0	n/a	n/a
							Average C.F.=	1.000	0.999

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

Calibrator Flow Rates (cc/min)				Calibrator Setting	Indicated NO	Indicated NOx	Indicated NO_2	NO drop	NO_2 gain	NO_2 C.F.
Point	**Diluent**	**Cal Gas**	**Total Flow**	**volts or ppb**	**(ppb)**	**(ppb)**	**(ppb)**	**(ppb)**	**(ppb)**	**(ppb)**
NOx reference	4924	78.00	5002	0.0	781.0	781.0	0.0	0.0	0.0	
as found high NO2	4924	78.00	5002	510.0	278.0	783.0	505.0	503.0	505.0	0.996
adjusted high NO2	4924	78.00	5002	510.0	278.0	783.0	505.0	503.0	505.0	0.996
gpt mid	4924	78.00	5002	277.0	508.0	784.0	275.0	273.0	275.0	0.993
gpt low	4924	78.00	5002	97.0	687.0	784.0	97.0	94.0	97.0	0.969
								Average NO_2 C.F.=		0.986

Linear Regression/Calibration Results:

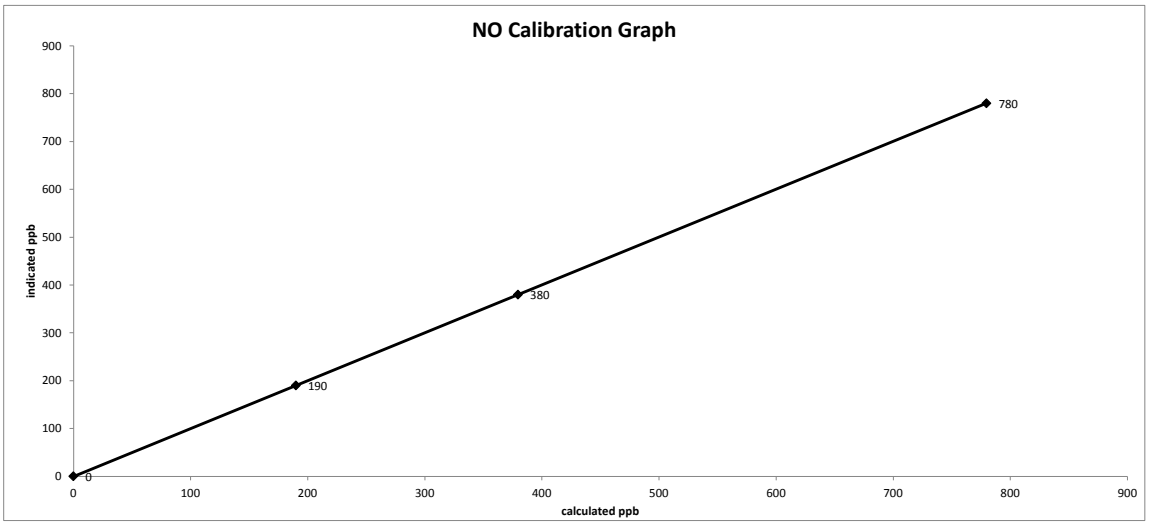
	NO	NOx	NO_2	LIMITS
Correlation Coeffecient =	**1.000**	**1.000**	**1.000**	**> or = 0.995**
Slope =	**1.000**	**0.998**	**0.998**	**.95-1.05**
b (Intercept as % of full scale)=	**0.00%**	**-0.02%**	**0.13%**	**± 3% F.S.**
% change in C.F. from last cal=	**-6.66%**	**-6.37%**	**0.20%**	**± 10%**
NO2 converter effeciency			**0.99**	**0.96 to 1.04**

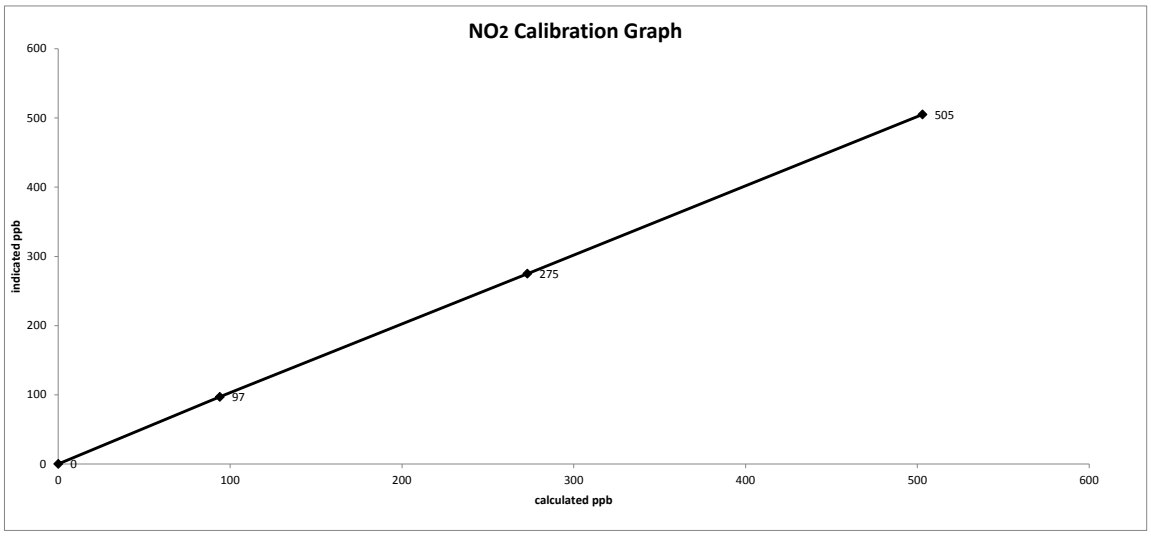
As found:		As left:	
NOx SLOPE:	1.023	NOx SLOPE:	1.089
NOx OFFS:	2.3	NOx OFFS:	2.3
NO SLOPE:	1.021	NO SLOPE:	1.087
NO OFFS:	-0.8	NO OFFS:	-0.8
SAMP FLW:	486	SAMP FLW:	487
OZONE FL:	78	OZONE FL:	78
PMT:	11.5	PMT:	9.1
NORM PMT:	9.0	NORM PMT:	3.6
AZERO:	7.1	AZERO:	7.5
HVPS:	662	HVPS:	662
RCELL TEMP:	50.0	RCELL TEMP:	50.0
BOX TEMP:	30.0	BOX TEMP:	31.8
PMT TEMP:	6.7	PMT TEMP:	6.7
IZS TEMP:	45.2	IZS TEMP:	45.2
MOLY TEMP:	314.2	MOLY TEMP:	316.0
RCEL:	6.9	RCEL:	7.1
SAMP:	27.5	SAMP:	27.6
Internal Span NO:	7.4	Internal Span NO:	8.4
Internal Span NO2:	290	Internal Span NO2:	298
Internal Span NOx:	298	Internal Span NOx:	306

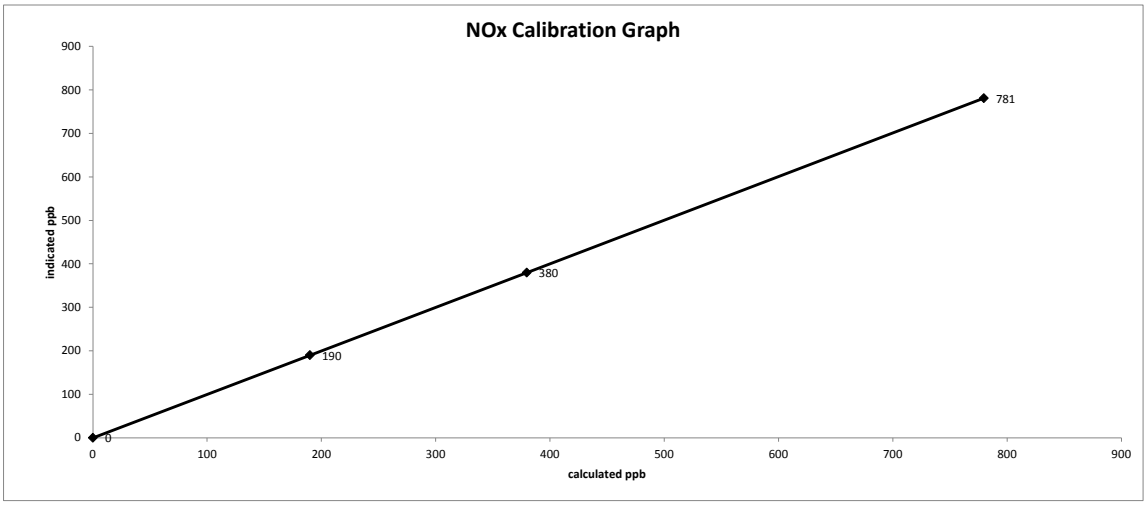
Comments:

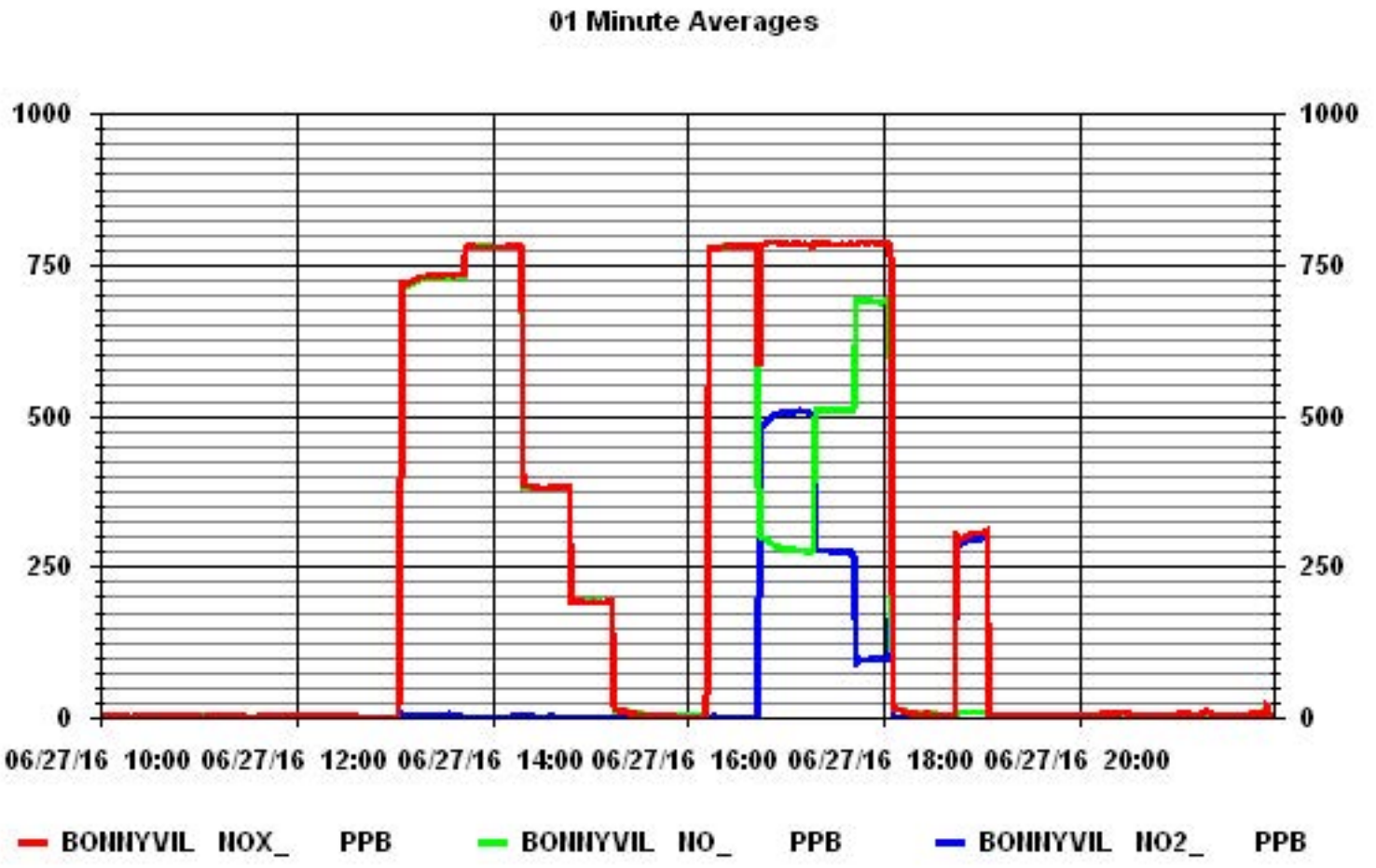
Sample inlet filter changed during monthly calibration on June 2, 2016. No ZERO adjustment made. No NO2 adjustment made. Repeat calibration was necessary because the calibration, with which monthly calibration was completed suspected to be instable during Low and Mid points of the GPT sequence. Verification of NOx analyzer and monthly re-calibration required with a different calibrator.

Date:	**June 27, 2016**	**Start/End Time 24 hr. (mst):**	**11:34 / 19:08**
Company/Airshed:	**LICA**	**Calibration Purpose:**	**repeat**
Location/Station Name:	**Bonnyville - AER**	**Calibration Method:**	**Gas Dilution & Gas Phase Titration**








01 Minute Averages
1000
750
500
250
0
06/27/16 10:00
06/27/16 12:00
06/27/16 14:00
06/27/16 16:00
06/27/16 18:00
06/27/16 20:00
BONNYVIL NOX_ PPB
BONNYVIL NO_ PPB
BONNYVIL NO2_ PPB

OZONE

Maxxam — Thermo 49i Ozone Analyzer Calibration

Date:	June 2, 2016	**Barometric Pressure:**	0.936 atm
Company/Airshed:	LICA	**Station Temperature °C:**	22
Location/Station Name:	Bonnyville	**Weather Conditions:**	Mainly clear
Start/End Time 24 hr. (mst):	16:00 / 19:30	**Calibration Purpose:**	installation
Ozone Calibration Method:	Varying UV Lamp Power	**Performed By/Reviewer:**	Alex Yakupov / Tom Bourque
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:	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
Make & Model:	SABIO 2010 D
Serial #:	11900613
Cal Gas Cylinder I.D. # :	n/a

Point	AMD Required Range of Ozone Calibration Points
High	300-400 ppb
Mid	150-200 ppb
Low	50-75 ppb

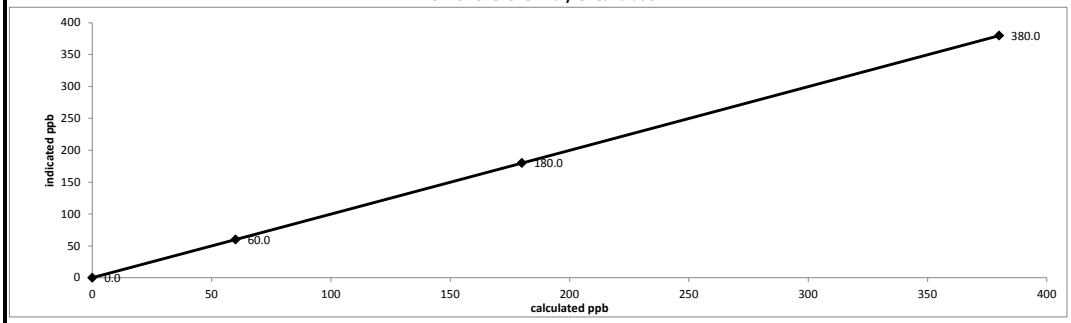
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

	Calibrator Flow Rate (cc/min)		Calculated Concentration:	Corrected Calculated Conentration:	Indicated Concentration:	Correction Factors:
Point	**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:

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

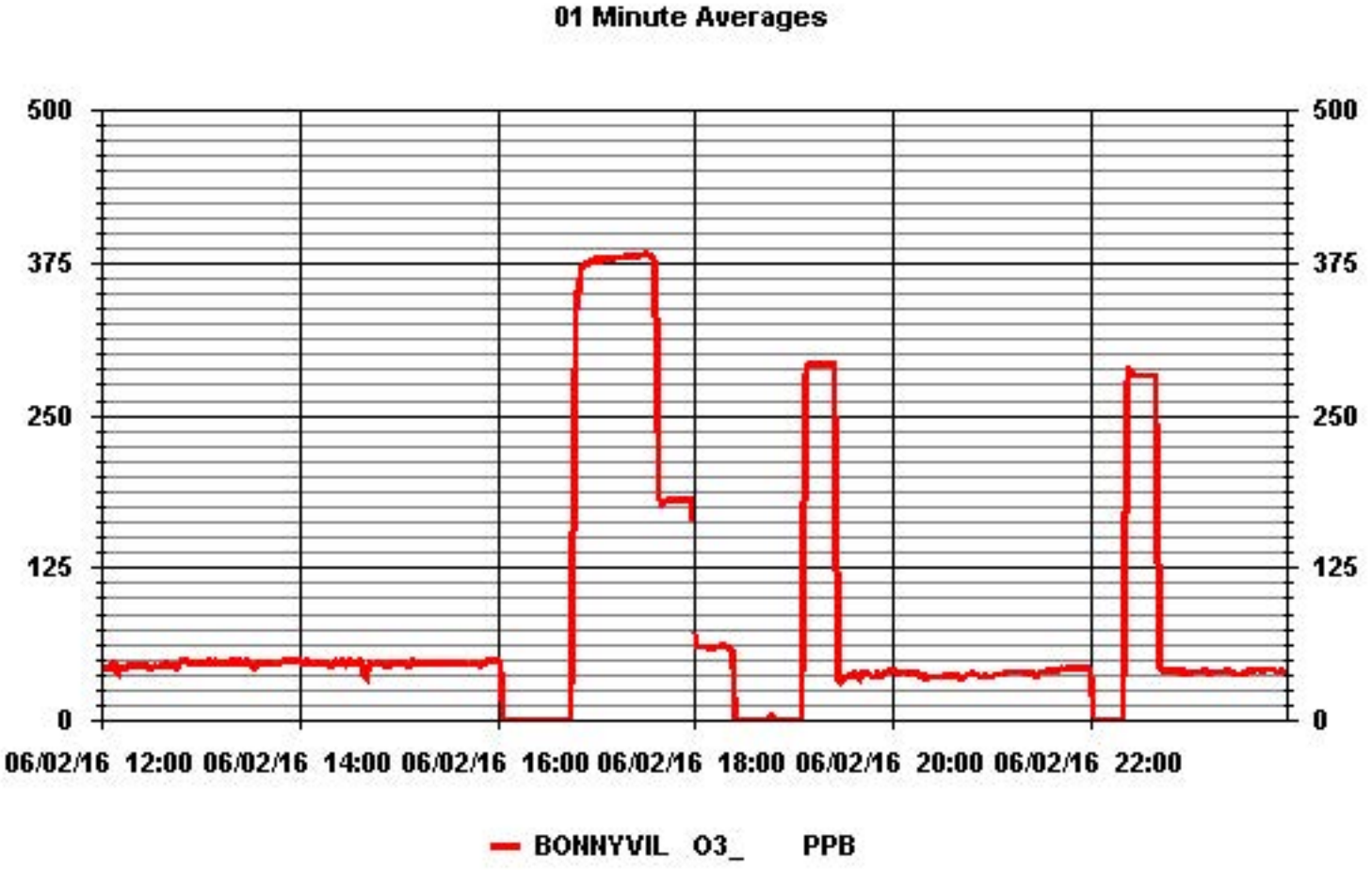
Thermo 49i Ozone Analyzer Calibration



As found:		As left:	
O3 Bkg:	n/a	O3 Bkg:	-0.1
O3 Coef:	n/a	O3 Coef:	0.995
Photo Lamp	n/a	Photo Lamp	14.2
O3 Lamp	n/a	O3 Lamp	5.8
Bench:	n/a	Bench:	30.7
Bench Lamp:	n/a	Bench Lamp:	54.0
O3 Lamp:	n/a	O3 Lamp:	68.2
Pressure:	n/a	Pressure:	691.7
Cell A lpm:	n/a	Cell A lpm:	0.723
Cell B lpm:	n/a	Cell B lpm:	0.747
O3 ppb:	n/a	O3 ppb:	0.1
Cell A ppb:	n/a	Cell A ppb:	-1.0
Cell B ppb:	n/a	Cell B ppb:	1.3
Cell A int:	n/a	Cell A int:	90235
Cell B int:	n/a	Cell B int:	90180
Internal Span:	n/a	Internal Span:	291.7

Comments:

Sample inlet filter changed.


01 Minute Averages
500
375
250
125
0
06/02/16 12:00
06/02/16 14:00
06/02/16 16:00
06/02/16 18:00
06/02/16 20:00
06/02/16 22:00
BONNYVIL O3_ PPB

PARTICULATE MATTER

R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date:	June 3, 2016	**Performed By/Reviewer:**	Alex Yakupov / Tom Bourque
Company:	LICA	**Start Time (mst):**	8:08
Station Name/Location:	Bonnyville	**End Time (mst):**	11:36
Previous Audit Date:	n/a	**Calibration Purpose:**	installation
Parameter:	PM 2.5	**Weather Conditions:**	Clear

1400A Information and Status:

Serial Number:	1405A207691003	**As Found Filter Loading %:**	n/a
Ko Factor:	15635	**As Left Filter Loading %:**	21.24
Ambient Temperature °C:	22.11	**As Found Noise:**	n/a
Ambient Pressure atm:	0.936	**As Left Noise:**	0.000
Main Flow Reading lpm:	3.00	**Pump Vacuum:**	0.33
Aux Flow Reading lpm:	13.67	**Warnings:**	None

Reference Standards:

	Flow:	**Pressure:**	**Temperature:**
Make:	Dwyer	Fisher	FLUKE
Model:	475 Mark III	FB1291	15551A Ex STIK Thermometer
Serial Number:	#2	130168457	4295
Calibration Date:	January 15, 2016	February 7, 2016	November 2, 2015

As found leak check:

		Base	**Zero**	**Reference**	**Zero**
PM 2.5 Flow	actual	n/a	n/a	n/a	n/a
	limit	0.15		0.15	
Bypass Flow	actual	n/a	n/a	n/a	n/a
	limit	0.60		0.60	

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

		Base	**Zero**	**Reference**	**Zero**
PM 2.5 Flow	actual	0.00	0.07	0.00	0.07
	limit	0.15		0.15	
Bypass Flow	actual	0.00	-0.28	0.00	-0.28
	limit	0.60		0.60	

As found temperature and pressure:

	tolerance +/- 2.0°C		**tolerance +/- 0.01 atm**
1405F temperature °C:	n/a	**1405F pressure atm:**	n/a
reference temperature °C:	n/a	**reference pressure:**	n/a
difference °C:	n/a	**difference :**	n/a

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

	tolerance +/- 2.0°C		**tolerance +/- 0.01 atm**
1405F temperature °C:	22.1	**1405F pressure atm:**	0.936
reference temperature °C:	22.1	**reference pressure:**	0.936
difference °C:	0.0	**difference :**	0.000

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:	n/a	**1400A total/aux flow lpm:**	n/a
reference main flow lpm:	n/a	**reference total/aux flow lpm:**	n/a
difference lpm:	n/a	**difference lpm:**	n/a

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:	3.00	**1400A total/aux flow lpm:**	13.67
reference main flow lpm:	3.00	**reference total/aux flow lpm:**	13.67
difference lpm:	0.00	**difference lpm:**	0.00

K_o Audit:

Last K_o audit date:	February 4, 2016
1405F K_o factor:	15635
Measured K_o factor:	15719.6000
% difference:	0.55

Comments:

Switching valve was rebuilt, newly installed O-rings were checked and reset. All leaks were eliminated. Flows were calibrated. PM 10/2.5 sample inlet head was cleaned. 47mm FDMS filter and TEOM sample filter were replaced.

R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date:	June 6, 2016	**Performed By/Reviewer:**	Alex Yakupov / Tom Bourque
Company:	LICA	**Start Time (mst):**	12:38
Station Name/Location:	Bonnyville	**End Time (mst):**	13:18
Previous Audit Date:	June 3, 2016	**Calibration Purpose:**	routine monthly
Parameter:	PM 2.5	**Weather Conditions:**	Clear

1400A Information and Status:

Serial Number:	1405A207691003	**As Found Filter Loading %:**	18.71
Ko Factor:	15635	**As Left Filter Loading %:**	19.22
Ambient Temperature °C:	27.82	**As Found Noise:**	0.004
Ambient Pressure atm:	0.936	**As Left Noise:**	0.000
Main Flow Reading lpm:	3.00	**Pump Vacuum:**	0.33
Aux Flow Reading lpm:	13.67	**Warnings:**	None

Reference Standards:

	Flow:	**Pressure:**	**Temperature:**
Make:	Dwyer	Fisher	Fisher
Model:	475 Mark III	FB1291	FB1291
Serial Number:	#2	130168457	130168457
Calibration Date:	January 15, 2016	February 7, 2016	February 7, 2016

As found leak check:

		Base	**Zero**	**Reference**	**Zero**
PM 2.5 Flow	actual	0.00	0.07	0.00	0.07
	limit	0.15		0.15	
Bypass Flow	actual	0.00	-0.57	0.00	-0.57
	limit	0.60		0.60	

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

		Base	**Zero**	**Reference**	**Zero**
PM 2.5 Flow	actual	0.00	0.07	0.00	0.07
	limit	0.15		0.15	
Bypass Flow	actual	0.00	-0.57	0.00	-0.57
	limit	0.60		0.60	

As found temperature and pressure:

	tolerance +/- 2.0°C		**tolerance +/- 0.01 atm**
1405F temperature °C:	27.8	**1405F pressure atm:**	0.936
reference temperature °C:	27.1	**reference pressure:**	0.936
difference °C:	-0.7	**difference :**	0.000

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

	tolerance +/- 2.0°C		**tolerance +/- 0.01 atm**
1405F temperature °C:	27.1	**1405F pressure atm:**	0.936
reference temperature °C:	27.1	**reference pressure:**	0.936
difference °C:	0.0	**difference :**	0.000

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:	3.00	**1400A total/aux flow lpm:**	16.67
reference main flow lpm:	2.91	**reference total/aux flow lpm:**	16.60
difference lpm:	-0.09	**difference lpm:**	-0.07

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:	3.00	**1400A total/aux flow lpm:**	16.67
reference main flow lpm:	2.91	**reference total/aux flow lpm:**	16.60
difference lpm:	-0.09	**difference lpm:**	-0.07

K_o Audit:

Last K_o audit date:	February 4, 2016
1405F K_o factor:	15635
Measured K_o factor:	15719.6000
% difference:	0.55

Comments:

Switching valve was rebuilt and O-rings were reset on Saturday, June 4, 2016 by Limin Li. Repeat audit required. (In the Calibration Purpose line the purpose for the audit was indicated a Routine Monthly, as there is no option for Repeat audit)

R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date:	June 13, 2016	**Performed By/Reviewer:**	Alex Yakupov / Tom Bourque
Company:	LICA	**Start Time (mst):**	10:50
Station Name/Location:	Bonnyville	**End Time (mst):**	13:45
Previous Audit Date:	June 6, 2016	**Calibration Purpose:**	Bi-monthly #2
Parameter:	PM 2.5	**Weather Conditions:**	Mix of sun and clouds

1400A Information and Status:

Serial Number:	1405A207691003	**As Found Filter Loading %:**	21.24
Ko Factor:	15635	**As Left Filter Loading %:**	22.26
Ambient Temperature °C:	20.12	**As Found Noise:**	0.004
Ambient Pressure atm:	0.931	**As Left Noise:**	0.004
Main Flow Reading lpm:	3.00	**Pump Vacuum:**	0.33
Aux Flow Reading lpm:	13.67	**Warnings:**	None

Reference Standards:

	Flow:	**Pressure:**	**Temperature:**
Make:	Dwyer	Fisher	Fisher
Model:	475 Mark III	FB1291	FB1291
Serial Number:	#2	130168457	130168457
Calibration Date:	January 15, 2016	February 7, 2016	February 7, 2016

As found leak check:

		Base	**Zero**	**Reference**	**Zero**
PM 2.5 Flow	actual	0.00	0.07	0.00	0.07
	limit	0.15		0.15	
Bypass Flow	actual	0.00	-0.56	0.00	-0.56
	limit	0.60		0.60	

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

		Base	**Zero**	**Reference**	**Zero**
PM 2.5 Flow	actual	0.00	0.07	-0.01	0.07
	limit	0.15		0.15	
Bypass Flow	actual	0.00	-0.56	-0.01	-0.56
	limit	0.60		0.60	

As found temperature and pressure:

	tolerance +/- 2.0°C		**tolerance +/- 0.01 atm**
1405F temperature °C:	20.1	**1405F pressure atm:**	0.931
reference temperature °C:	19.0	**reference pressure:**	0.931
difference °C:	-1.1	**difference :**	0.000

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

	tolerance +/- 2.0°C		**tolerance +/- 0.01 atm**
1405F temperature °C:	19.0	**1405F pressure atm:**	0.931
reference temperature °C:	19.0	**reference pressure:**	0.931
difference °C:	0.0	**difference :**	0.000

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:	3.00	**1400A total/aux flow lpm:**	16.67
reference main flow lpm:	2.95	**reference total/aux flow lpm:**	16.65
difference lpm:	-0.05	**difference lpm:**	-0.02

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:	3.00	**1400A total/aux flow lpm:**	16.67
reference main flow lpm:	2.95	**reference total/aux flow lpm:**	16.65
difference lpm:	-0.05	**difference lpm:**	-0.02

K_o Audit:

Last K_o audit date:	February 4, 2016
1405F K_o factor:	15635
Measured K_o factor:	15719.6000
% difference:	0.55

Comments:

47mm FDMS filter. PM10/2.5 sample inlet head cleaned. After the first audit attempt "Folded O-ring" issue appeared. I had to repeat the audit after fixing the problem. During leak check the valve moves and bends one side of an O-Ring, this creates leak and many negative readings. After fixing the problem, and verifying that the instrument is leak free, I had to wait to make sure after stabilizing the TEOM reads ony positive data.

R & P 1405F TEOM PM 2.5 Analyzer Calibration

Date:	June 14, 2016	**Performed By/Reviewer:**	Alex Yakupov / Tom Bourque
Company:	LICA	**Start Time (mst):**	8:12
Station Name/Location:	Bonnyville	**End Time (mst):**	11:19
Previous Audit Date:	June 13, 2016	**Calibration Purpose:**	Bi-monthly #2
Parameter:	PM 2.5	**Weather Conditions:**	Clear

1400A Information and Status:

Serial Number:	1405A207691003	**As Found Filter Loading %:**	21.76
Ko Factor:	15635	**As Left Filter Loading %:**	21.85
Ambient Temperature °C:	18.62	**As Found Noise:**	0.036
Ambient Pressure atm:	0.925	**As Left Noise:**	0.004
Main Flow Reading lpm:	3.00	**Pump Vacuum:**	0.32
Aux Flow Reading lpm:	13.67	**Warnings:**	None

Reference Standards:

	Flow:	**Pressure:**	**Temperature:**
Make:	Dwyer	Fisher	Fisher
Model:	475 Mark III	FB1291	FB1291
Serial Number:	#2	130168457	130168457
Calibration Date:	January 15, 2016	February 7, 2016	February 7, 2016

As found leak check:

		Base	**Zero**	**Reference**	**Zero**
PM 2.5 Flow	actual	0.00	0.07	0.00	0.07
	limit	0.15		0.15	
Bypass Flow	actual	0.00	-0.56	0.00	-0.56
	limit	0.60		0.60	

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

		Base	**Zero**	**Reference**	**Zero**
PM 2.5 Flow	actual	0.00	0.07	0.00	0.07
	limit	0.15		0.15	
Bypass Flow	actual	0.00	-0.56	0.00	-0.56
	limit	0.60		0.60	

As found temperature and pressure:

	tolerance +/- 2.0°C		**tolerance +/- 0.01 atm**
1405F temperature °C:	18.6	**1405F pressure atm:**	0.925
reference temperature °C:	18.5	**reference pressure:**	0.925
difference °C:	-0.1	**difference :**	0.000

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

	tolerance +/- 2.0°C		**tolerance +/- 0.01 atm**
1405F temperature °C:	18.6	**1405F pressure atm:**	0.925
reference temperature °C:	18.5	**reference pressure:**	0.925
difference °C:	-0.1	**difference :**	0.000

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:	3.00	**1400A total/aux flow lpm:**	16.67
reference main flow lpm:	2.95	**reference total/aux flow lpm:**	16.64
difference lpm:	-0.05	**difference lpm:**	-0.03

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:	3.00	**1400A total/aux flow lpm:**	16.67
reference main flow lpm:	2.95	**reference total/aux flow lpm:**	16.64
difference lpm:	-0.05	**difference lpm:**	-0.03

K_o Audit:

Last K_o audit date:	February 4, 2016
1405F K_o factor:	15635
Measured K_o factor:	15719.6000
% difference:	0.55

Comments:

O-ring for Reference Flow pass was exchanged. The sample filter was reset. Repeat Audit required because TEOM generated unrealistic data and was unstable after the audit on June 13, 2016.

WIND SYSTEM

Meteorological Sensor Audit

Station Information

Company:	LICA	Performed By:	Limin Li
Location:	Bonnyville (in Calgary shop)	Reason:	Annual maintenance
Audit Date:	26-Jan-16	Start Time (mst):	11:00
Previous Audit Date:	NA	End Time (mst):	15:00

Wind Speed

Sensor make:	R. M. Young	Sensor height:	n/a
Sensor model:	5103VK	Serial Number:	56589
Calibrator:	Young 18802	Variable speed motor:	CA 03309
Voltage range:	0-1	Output signal range:	200KPH

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:	R. M. Young	Sensor height:	n/a
Sensor model:	5103VK	Serial Number:	56589
Calibrator:	Young 18802	Variable speed motor:	CA 03309
Voltage range:	0-1	Output signal range:	0-360DEG

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

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Calibrator Performance Audit

OZONE

File No. 2015-163

Company: Maxxam **Operator:** Chris Wesson

Calibrator:		**Flow Measurement Device:**	
Make/Model	Sabio 2010D	Make/Model	NA
Serial Number	11900613	Serial Number	NA
Oven Temperature	49.8	Temperature (°C)	24
Last Verification Date	May 21, 2015	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	% Difference 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)

O_3		**LIMITS**
Correlation=	1.0000	**≥ 0.995**
m (Slope)=	1.0119	**0.90-1.10**
b (Intercept % of FS)=	-0.0724	**± 3% F.S.**

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

COMMENTS:

Auditor: Shea Beaton Date: March 30, 2016

Operator Signature: Location: McIntyre Center Edmonton

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Calibrator Performance Audit

Oxides Of Nitrogen

File No. 2015-119

Company Maxxam **Operator:** Chris Wesson

Calibrator:		**Flow Measurement Device:**	
Make/Model	API 700	Make/Model	NA
Serial Number	627	Serial Number	NA
Last Verification Date	April 1 2015	Temperature (°C)	NA
NO Cylinder S/N	LL119317	Barometric Pressure	NA
NO/NOX Concentration	50.3/50.3		

Dilution Flow (sccm)

Pt. #1 5000 Pt. #2 5000 Pt. #3 5000

Gas Flow (sccm)

Pt. #1 77.5 Pt. #2 37.8 Pt. #3 18.9

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO_2	NOx	NO	NOx
5007	0.0	0.000	0.000	0.000	0.000	0.000	Limit ± 10%	
5003	77.5	0.779	0.779	0.787	-0.001	0.786	1%	1%
5004	37.8	0.380	0.380	0.383	0.000	0.383	1%	1%
5001	18.9	0.190	0.190	0.191	0.000	0.191	1%	1%
						Absolute Average Percent Difference	1%	1%

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

NO		**LIMITS**	**NOx**	
Correlation=	1.0000	**≥ 0.990**	Correlation=	1.0000
m (Slope)=	1.0106	**0.90-1.10**	m (Slope)=	1.0092
b (Intercept % of FS)=	-0.0566	**± 3% F.S.**	b (Intercept % of FS)=	-0.0368

Flow	O_3 Conc	NO Decrease	NO	NO2	NOX	% Diff. Vs Audit gas	
						NO_2	% Diff. Limit
5003	0	0.000	0.787	0.001	0.788		
5003	0.5	0.493	0.294	0.498	0.792	1%	± 10%
5003	0.25	0.256	0.531	0.262	0.792	2%	± 10%
5003	0.1	0.108	0.679	0.110	0.789	1%	± 10%
					Absolute Average Percent Difference	1.2%	± 10%

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

NO_2		**LIMITS**
Correlation=	1.0000	**≥ 0.995**
m (Slope)=	1.0089	**0.90-1.10**
b (Intercept % of FS)=	0.1591	**± 3% F.S.**

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

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

Auditor: Shea Beaton Date: February 3, 2016

Operator Signature: Location: McIntyre Center Edmonton

CALIBRATION GASES

aemera.org

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	Gas Flow/	Concentration	Cylinder
Dilution	Gas	Concentration (PPM)	Dilution Flow	Factor	Concentration
4952	0.0	0.000			
4946	79.54	0.793	0.01608	62.183	49.3
4941	39.35	0.396	0.00796	125.565	49.7
4940	19.57	0.195	0.00396	252.427	49.2
				Average Cylinder Concentration:	**49.4**

Previous Stated Concentration PPM: 50.0

Percent variance from Stated: **1.2**

Meets Manufacturer Tolerance. Use manufacturers stated concentration [X] **COMMENTS:** SO2/NO blend 50.0ppm NO

<=5% Outside Manufacturer Tolerance. Use manufacturers concentration [ ]

> 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder [ ]

Auditor: Shea Beaton Date: February 2, 2016

Operator Signature: Location: McIntyre Center Edmonton

Alberta Government

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

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

Previous Stated Concentration PPM: 10.0

Percent variance from Stated: **1.1**

Meets Manufacturer Tolerance. Use manufacturers stated concentration [X] **COMMENTS:**

< =5% Outside Manufacturer Tolerance. Use manufacturers concentration [ ]

> 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder [ ]

Auditor: Al Clark Date: December 16, 2014

Operator Signature: Location: McIntyre Center Edmonton

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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.	698mmHg

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

	CH4	C3H8
Previous Stated Concentration PPM:	606	212
Percent variance from Stated:	**0.3**	**1.6**

Cylinder gas tolerances based on CH4 only

Meets Manufacturer Tolerance. Use manufacturers stated concentration [X] **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

aemera.org

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:

Make/Model	Thermo 146i		
Serial Number	AMU 1809		
Last Verification Date	February 2, 2016		
Gas Type	NO	Conc.	48.79
Cylinder Number	CAL018024		

Flow Measurement Device:

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

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/	Concentration	Cylinder Concentration	
Dilution	Gas	NO	NOX	Dilution Flow	Factor	NO	NOX
4952	0.0	0.000	0.000				
4946	79.54	0.809	0.809	0.01608	62.183	50.3	50.3
4941	39.35	0.403	0.402	0.00796	125.565	50.6	50.5
4940	19.57	0.200	0.200	0.00396	252.427	50.5	50.5
					Average Cylinder Concentration:	**50.5**	**50.4**

	NO	NOx
Previous Stated Concentration PPM:	50.0	50.0
Percent variance from Stated:	**0.9**	**0.8**

Cylinder gas tolerances based on NO only

Meets Manufacturer Tolerance. Use manufacturers stated concentration [X] **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: Location: McIntyre Center Edmonton

APPENDIX IV
ANALYTICAL RESULTS

VOCS SAMPLES

Alberta Innovates Technology Futures
PO Bag 4000
Vegreville, Alberta
Canada T9C 1T4
(780) 632-8211

ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/Bonnyville/June 5, 2016	S5603	Ambient Air	05-Jun-16 0:00

DESCRIPTION: Bonnyville AER LICA 37

REPORT NUMBER: 16060039 **REPORT CREATED:** 24-Jun-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060039-002	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jun-16
16060039-002	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jun-16
16060039-002	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jun-16
16060039-002	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jun-16
16060039-002	1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	08-Jun-16
16060039-002	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	08-Jun-16
16060039-002	1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	08-Jun-16
16060039-002	1,2,4-Trimethylbenzene	I	0.05	ppbv	0.03	AC-058	08-Jun-16
16060039-002	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jun-16
16060039-002	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	08-Jun-16
16060039-002	1,2-Dichloroethane	I	0.02	ppbv	0.01	AC-058	08-Jun-16
16060039-002	1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Jun-16
16060039-002	1,3,5-Trimethylbenzene	I	0.03	ppbv	0.02	AC-058	08-Jun-16
16060039-002	1,3-Butadiene	I	0.02	ppbv	0.02	AC-058	08-Jun-16
16060039-002	1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	08-Jun-16
16060039-002	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	08-Jun-16
16060039-002	1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	08-Jun-16
16060039-002	1-Butene	I	0.10	ppbv	0.02	AC-058	08-Jun-16
16060039-002	1-Hexene	I	0.03	ppbv	0.02	AC-058	08-Jun-16
16060039-002	1-Pentene	I	0.04	ppbv	0.01	AC-058	08-Jun-16
16060039-002	2,2,4-Trimethylpentane	I	0.07	ppbv	0.01	AC-058	08-Jun-16
16060039-002	2,2-Dimethylbutane	I	0.02	ppbv	0.01	AC-058	08-Jun-16
16060039-002	2,3,4-Trimethylpentane	I	0.03	ppbv	0.01	AC-058	08-Jun-16
16060039-002	2,3-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jun-16
16060039-002	2,3-Dimethylpentane	I	0.06	ppbv	0.02	AC-058	08-Jun-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

Date: June 24, 2016 **Inquiries:** (780) 632 8455 **E-mail:** EAS.Results@albertainnovates.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/Bonnyville/June 5, 2016	S5603	Ambient Air	05-Jun-16 0:00

DESCRIPTION: Bonnyville AER LICA 37

REPORT NUMBER: 16060039 **REPORT CREATED:** 24-Jun-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060039-002	2,4-Dimethylpentane	I	0.03	ppbv	0.01	AC-058	08-Jun-16
16060039-002	2-Methylheptane	I	0.02	ppbv	0.01	AC-058	08-Jun-16
16060039-002	2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Jun-16
16060039-002	2-Methylpentane	I	0.15	ppbv	0.01	AC-058	08-Jun-16
16060039-002	3-Methylheptane	I	0.02	ppbv	0.02	AC-058	08-Jun-16
16060039-002	3-Methylhexane	I	0.05	ppbv	0.02	AC-058	08-Jun-16
16060039-002	3-Methylpentane	I	0.07	ppbv	0.01	AC-058	08-Jun-16
16060039-002	Acetone		3.8	ppbv	0.4	AC-058	08-Jun-16
16060039-002	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	08-Jun-16
16060039-002	Benzene	I	0.12	ppbv	0.01	AC-058	08-Jun-16
16060039-002	Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	08-Jun-16
16060039-002	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jun-16
16060039-002	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jun-16
16060039-002	Bromomethane	I	0.01	ppbv	0.01	AC-058	08-Jun-16
16060039-002	Carbon disulfide	I	0.03	ppbv	0.01	AC-058	08-Jun-16
16060039-002	Carbon tetrachloride	I	0.11	ppbv	0.01	AC-058	08-Jun-16
16060039-002	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jun-16
16060039-002	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jun-16
16060039-002	Chloroform	I	0.03	ppbv	0.02	AC-058	08-Jun-16
16060039-002	Chloromethane		0.70	ppbv	0.02	AC-058	08-Jun-16
16060039-002	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Jun-16
16060039-002	cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	08-Jun-16
16060039-002	cis-2-Butene	I	0.04	ppbv	0.02	AC-058	08-Jun-16
16060039-002	cis-2-Pentene	I	0.03	ppbv	0.02	AC-058	08-Jun-16
16060039-002	Cyclohexane	I	0.05	ppbv	0.02	AC-058	08-Jun-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

Date: June 24, 2016 **Inquiries:** (780) 632 8455 **E-mail:** EAS.Results@albertainnovates.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/Bonnyville/June 5, 2016	S5603	Ambient Air	05-Jun-16 0:00

DESCRIPTION: Bonnyville AER LICA 37

REPORT NUMBER: 16060039 **REPORT CREATED:** 24-Jun-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060039-002	Cyclopentane	I	0.04	ppbv	0.01	AC-058	08-Jun-16
16060039-002	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Jun-16
16060039-002	Ethanol		1.6	ppbv	0.3	AC-058	08-Jun-16
16060039-002	Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	08-Jun-16
16060039-002	Ethylbenzene	I	0.06	ppbv	0.01	AC-058	08-Jun-16
16060039-002	Freon-11		0.31	ppbv	0.02	AC-058	08-Jun-16
16060039-002	Freon-113	I	0.08	ppbv	0.01	AC-058	08-Jun-16
16060039-002	Freon-114	I	0.03	ppbv	0.02	AC-058	08-Jun-16
16060039-002	Freon-12		0.80	ppbv	0.02	AC-058	08-Jun-16
16060039-002	Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.50	AC-058	08-Jun-16
16060039-002	Isobutane		0.54	ppbv	0.02	AC-058	08-Jun-16
16060039-002	Isopentane		0.77	ppbv	0.03	AC-058	08-Jun-16
16060039-002	Isoprene		0.42	ppbv	0.01	AC-058	08-Jun-16
16060039-002	Isopropyl alcohol		0.8	ppbv	0.4	AC-058	08-Jun-16
16060039-002	Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Jun-16
16060039-002	m,p-Xylene	I	0.22	ppbv	0.03	AC-058	08-Jun-16
16060039-002	m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	08-Jun-16
16060039-002	m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	08-Jun-16
16060039-002	Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.50	AC-058	08-Jun-16
16060039-002	Methyl ethyl ketone		0.3	ppbv	0.3	AC-058	08-Jun-16
16060039-002	Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	08-Jun-16
16060039-002	Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	08-Jun-16
16060039-002	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	08-Jun-16
16060039-002	Methylcyclohexane	I	0.06	ppbv	0.01	AC-058	08-Jun-16
16060039-002	Methylcyclopentane	I	0.09	ppbv	0.02	AC-058	08-Jun-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/Bonnyville/June 5, 2016	S5603	Ambient Air	05-Jun-16 0:00

DESCRIPTION: Bonnyville AER LICA 37

REPORT NUMBER: 16060039 **REPORT CREATED:** 24-Jun-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060039-002	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	08-Jun-16
16060039-002	n-Butane		1.32	ppbv	0.03	AC-058	08-Jun-16
16060039-002	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	08-Jun-16
16060039-002	n-Dodecane		6.2	ppbv	0.4	AC-058	08-Jun-16
16060039-002	n-Heptane	I	0.04	ppbv	0.01	AC-058	08-Jun-16
16060039-002	n-Hexane	I	0.08	ppbv	0.01	AC-058	08-Jun-16
16060039-002	n-Octane	I	0.03	ppbv	0.02	AC-058	08-Jun-16
16060039-002	n-Pentane		0.3	ppbv	0.1	AC-058	08-Jun-16
16060039-002	n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	08-Jun-16
16060039-002	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	08-Jun-16
16060039-002	Naphthalene		2.3	ppbv	0.5	AC-058	08-Jun-16
16060039-002	n-Nonane	I	0.02	ppbv	0.01	AC-058	08-Jun-16
16060039-002	o-Ethyltoluene	I	0.02	ppbv	0.01	AC-058	08-Jun-16
16060039-002	o-Xylene	I	0.07	ppbv	0.01	AC-058	08-Jun-16
16060039-002	p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	08-Jun-16
16060039-002	p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	08-Jun-16
16060039-002	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	08-Jun-16
16060039-002	Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	08-Jun-16
16060039-002	Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	08-Jun-16
16060039-002	Toluene	I	0.19	ppbv	0.01	AC-058	08-Jun-16
16060039-002	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Jun-16
16060039-002	trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	08-Jun-16
16060039-002	trans-2-Butene	I	0.04	ppbv	0.01	AC-058	08-Jun-16
16060039-002	trans-2-Pentene	I	0.05	ppbv	0.02	AC-058	08-Jun-16
16060039-002	Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	08-Jun-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/VOC/Bonnyville/June 5, 2016	S5603	Ambient Air	05-Jun-16 0:00

DESCRIPTION: Bonnyville AER LICA 37

REPORT NUMBER: 16060039 **REPORT CREATED:** 24-Jun-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060039-002	Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	08-Jun-16
16060039-002	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jun-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	GROUP SAMPLE ID	Matrix	PROJECT NUMBER	STATION ID	SAMPLER ID
ICA/VOC/Bonnyville/June 11, 201		Ambient Air			AY

DATE SAMPLED: 11-Jun-16 0:00 **STATION DESCRIPTION:**

REPORT NUMBER: 16060175 **REPORT CREATED:** 12-Jul-16 **VERSION:** Version 01

AGENCY: **MATRIX:** **TYPE:** **COLLECTION:**

Lab ID	Parameter	Qualifier	Result	Units	RDL	VMV	Method	Analysis Date
16060175-003	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-003	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-003	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-003	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-003	1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04		AC-058	28-Jun-16
16060175-003	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05		AC-058	28-Jun-16
16060175-003	1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8		AC-058	28-Jun-16
16060175-003	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03		AC-058	28-Jun-16
16060175-003	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-003	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03		AC-058	28-Jun-16
16060175-003	1,2-Dichloroethane	I	0.02	ppbv	0.01		AC-058	28-Jun-16
16060175-003	1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-003	1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-003	1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-003	1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3		AC-058	28-Jun-16
16060175-003	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4		AC-058	28-Jun-16
16060175-003	1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4		AC-058	28-Jun-16
16060175-003	1-Butene	I	0.05	ppbv	0.02		AC-058	28-Jun-16
16060175-003	1-Hexene	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-003	1-Pentene	K, T, U	< 0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-003	2,2,4-Trimethylpentane	I	0.02	ppbv	0.01		AC-058	28-Jun-16
16060175-003	2,2-Dimethylbutane	K, T, U	< 0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-003	2,3,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-003	2,3-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	GROUP SAMPLE ID	Matrix	PROJECT NUMBER	STATION ID	SAMPLER ID
ICA/VOC/Bonnyville/June 11, 201		Ambient Air			AY

DATE SAMPLED: 11-Jun-16 0:00 **STATION DESCRIPTION:**

REPORT NUMBER: 16060175 **REPORT CREATED:** 12-Jul-16 **VERSION:** Version 01

AGENCY: **MATRIX:** **TYPE:** **COLLECTION:**

Lab ID	Parameter	Qualifier	Result	Units	RDL	VMV	Method	Analysis Date
16060175-003	2,3-Dimethylpentane	I	0.03	ppbv	0.02		AC-058	28-Jun-16
16060175-003	2,4-Dimethylpentane	K, T, U	< 0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-003	2-Methylheptane	K, T, U	< 0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-003	2-Methylhexane	I	0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-003	2-Methylpentane	I	0.03	ppbv	0.01		AC-058	28-Jun-16
16060175-003	3-Methylheptane	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-003	3-Methylhexane	I	0.03	ppbv	0.02		AC-058	28-Jun-16
16060175-003	3-Methylpentane	I	0.02	ppbv	0.01		AC-058	28-Jun-16
16060175-003	Acetone		3.1	ppbv	0.4		AC-058	28-Jun-16
16060175-003	Acrolein	K, T, U	< 0.3	ppbv	0.3		AC-058	28-Jun-16
16060175-003	Benzene	K, T, U	< 0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-003	Benzyl chloride	K, T, U	< 0.4	ppbv	0.4		AC-058	28-Jun-16
16060175-003	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-003	Bromoform	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-003	Bromomethane	I	0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-003	Carbon disulfide	I	0.27	ppbv	0.01		AC-058	28-Jun-16
16060175-003	Carbon tetrachloride	I	0.10	ppbv	0.01		AC-058	28-Jun-16
16060175-003	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-003	Chloroethane	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-003	Chloroform	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-003	Chloromethane		0.65	ppbv	0.02		AC-058	28-Jun-16
16060175-003	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-003	cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04		AC-058	28-Jun-16
16060175-003	cis-2-Butene	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	GROUP SAMPLE ID	Matrix	PROJECT NUMBER	STATION ID	SAMPLER ID
ICA/VOC/Bonnyville/June 11, 201		Ambient Air			AY

DATE SAMPLED: 11-Jun-16 0:00 **STATION DESCRIPTION:**
REPORT NUMBER: 16060175 **REPORT CREATED:** 12-Jul-16 **VERSION:** Version 01
AGENCY: **MATRIX:** **TYPE:** **COLLECTION:**

Lab ID	Parameter	Qualifier	Result	Units	RDL	VMV	Method	Analysis Date
16060175-003	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-003	Cyclohexane	I	0.03	ppbv	0.02		AC-058	28-Jun-16
16060175-003	Cyclopentane	I	0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-003	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-003	Ethanol		0.7	ppbv	0.3		AC-058	28-Jun-16
16060175-003	Ethyl acetate	K, T, U	< 0.4	ppbv	0.4		AC-058	28-Jun-16
16060175-003	Ethylbenzene	I	0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-003	Freon-11	I	0.29	ppbv	0.02		AC-058	28-Jun-16
16060175-003	Freon-113	I	0.05	ppbv	0.01		AC-058	28-Jun-16
16060175-003	Freon-114	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-003	Freon-12		0.52	ppbv	0.02		AC-058	28-Jun-16
16060175-003	Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.50		AC-058	28-Jun-16
16060175-003	Isobutane	I	0.18	ppbv	0.02		AC-058	28-Jun-16
16060175-003	Isopentane	I	0.10	ppbv	0.03		AC-058	28-Jun-16
16060175-003	Isoprene	I	0.07	ppbv	0.01		AC-058	28-Jun-16
16060175-003	Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4		AC-058	28-Jun-16
16060175-003	Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-003	m,p-Xylene	I	0.05	ppbv	0.03		AC-058	28-Jun-16
16060175-003	m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04		AC-058	28-Jun-16
16060175-003	m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08		AC-058	28-Jun-16
16060175-003	Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.50		AC-058	28-Jun-16
16060175-003	Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3		AC-058	28-Jun-16
16060175-003	Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4		AC-058	28-Jun-16
16060175-003	Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07		AC-058	28-Jun-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	GROUP SAMPLE ID	Matrix	PROJECT NUMBER	STATION ID	SAMPLER ID
ICA/VOC/Bonnyville/June 11, 201		Ambient Air			AY

DATE SAMPLED: 11-Jun-16 0:00 **STATION DESCRIPTION:**

REPORT NUMBER: 16060175 **REPORT CREATED:** 12-Jul-16 **VERSION:** Version 01

AGENCY: **MATRIX:** **TYPE:** **COLLECTION:**

Lab ID	Parameter	Qualifier	Result	Units	RDL	VMV	Method	Analysis Date
16060175-003	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03		AC-058	28-Jun-16
16060175-003	Methylcyclohexane	I	0.05	ppbv	0.01		AC-058	28-Jun-16
16060175-003	Methylcyclopentane	I	0.03	ppbv	0.02		AC-058	28-Jun-16
16060175-003	Methylene chloride	K, T, U	< 0.3	ppbv	0.3		AC-058	28-Jun-16
16060175-003	n-Butane	I	0.20	ppbv	0.03		AC-058	28-Jun-16
16060175-003	n-Decane	K, T, U	< 0.06	ppbv	0.06		AC-058	28-Jun-16
16060175-003	n-Dodecane	K, T, U	< 0.4	ppbv	0.4		AC-058	28-Jun-16
16060175-003	n-Heptane	I	0.02	ppbv	0.01		AC-058	28-Jun-16
16060175-003	n-Hexane	I	0.02	ppbv	0.01		AC-058	28-Jun-16
16060175-003	n-Octane	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-003	n-Pentane	K, T, U	< 0.1	ppbv	0.1		AC-058	28-Jun-16
16060175-003	n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05		AC-058	28-Jun-16
16060175-003	n-Undecane	K, T, U	< 0.5	ppbv	0.5		AC-058	28-Jun-16
16060175-003	Naphthalene	K, T, U	< 0.5	ppbv	0.5		AC-058	28-Jun-16
16060175-003	n-Nonane	K, T, U	< 0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-003	o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-003	o-Xylene	I	0.02	ppbv	0.01		AC-058	28-Jun-16
16060175-003	p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04		AC-058	28-Jun-16
16060175-003	p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07		AC-058	28-Jun-16
16060175-003	Styrene	K, T, U	< 0.04	ppbv	0.04		AC-058	28-Jun-16
16060175-003	Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04		AC-058	28-Jun-16
16060175-003	Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4		AC-058	28-Jun-16
16060175-003	Toluene	I	0.04	ppbv	0.01		AC-058	28-Jun-16
16060175-003	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01		AC-058	28-Jun-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	GROUP SAMPLE ID	Matrix	PROJECT NUMBER	STATION ID	SAMPLER ID
ICA/VOC/Bonnyville/June 11, 201		Ambient Air			AY

DATE SAMPLED: 11-Jun-16 0:00 **STATION DESCRIPTION:**

REPORT NUMBER: 16060175 **REPORT CREATED:** 12-Jul-16 **VERSION:** Version 01

AGENCY: **MATRIX:** **TYPE:** **COLLECTION:**

Lab ID	Parameter	Qualifier	Result	Units	RDL	VMV	Method	Analysis Date
16060175-003	trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04		AC-058	28-Jun-16
16060175-003	trans-2-Butene	K, T, U	< 0.01	ppbv	0.01		AC-058	28-Jun-16
16060175-003	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16
16060175-003	Trichloroethylene	K, T, U	< 0.04	ppbv	0.04		AC-058	28-Jun-16
16060175-003	Vinyl acetate	K, T, U	< 0.4	ppbv	0.4		AC-058	28-Jun-16
16060175-003	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02		AC-058	28-Jun-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
ICA/VOC/Bonnyville/June 17, 201(	2421	Ambient Air	17-Jun-16 0:00

DESCRIPTION: Bonnyville

REPORT NUMBER: 16060297 **REPORT CREATED:** 12-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060297-001	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-001	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-001	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-001	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-001	1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	29-Jun-16
16060297-001	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	29-Jun-16
16060297-001	1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	29-Jun-16
16060297-001	1,2,4-Trimethylbenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Jun-16
16060297-001	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-001	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Jun-16
16060297-001	1,2-Dichloroethane	I	0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-001	1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-001	1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-001	1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-001	1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Jun-16
16060297-001	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	29-Jun-16
16060297-001	1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	29-Jun-16
16060297-001	1-Butene	I	0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-001	1-Hexene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-001	1-Pentene	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-001	2,2,4-Trimethylpentane	I	0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-001	2,2-Dimethylbutane	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-001	2,3,4-Trimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-001	2,3-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-001	2,3-Dimethylpentane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
ICA/VOC/Bonnyville/June 17, 201(	2421	Ambient Air	17-Jun-16 0:00

DESCRIPTION: Bonnyville

REPORT NUMBER: 16060297 **REPORT CREATED:** 12-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060297-001	2,4-Dimethylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-001	2-Methylheptane	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-001	2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-001	2-Methylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-001	3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-001	3-Methylhexane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-001	3-Methylpentane	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-001	Acetone		2.3	ppbv	0.4	AC-058	29-Jun-16
16060297-001	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Jun-16
16060297-001	Benzene	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-001	Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	29-Jun-16
16060297-001	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-001	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-001	Bromomethane	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-001	Carbon disulfide		8.40	ppbv	0.01	AC-058	29-Jun-16
16060297-001	Carbon tetrachloride	I	0.09	ppbv	0.01	AC-058	29-Jun-16
16060297-001	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-001	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-001	Chloroform	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-001	Chloromethane		0.60	ppbv	0.02	AC-058	29-Jun-16
16060297-001	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-001	cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	29-Jun-16
16060297-001	cis-2-Butene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-001	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-001	Cyclohexane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
ICA/VOC/Bonnyville/June 17, 201(	2421	Ambient Air	17-Jun-16 0:00

DESCRIPTION: Bonnyville

REPORT NUMBER: 16060297 **REPORT CREATED:** 12-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060297-001	Cyclopentane	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-001	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-001	Ethanol		1.0	ppbv	0.3	AC-058	29-Jun-16
16060297-001	Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	29-Jun-16
16060297-001	Ethylbenzene	I	0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-001	Freon-11	I	0.28	ppbv	0.02	AC-058	29-Jun-16
16060297-001	Freon-113	I	0.04	ppbv	0.01	AC-058	29-Jun-16
16060297-001	Freon-114	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-001	Freon-12		0.66	ppbv	0.02	AC-058	29-Jun-16
16060297-001	Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.50	AC-058	29-Jun-16
16060297-001	Isobutane		2.41	ppbv	0.02	AC-058	29-Jun-16
16060297-001	Isopentane	I	0.08	ppbv	0.03	AC-058	29-Jun-16
16060297-001	Isoprene	I	0.08	ppbv	0.01	AC-058	29-Jun-16
16060297-001	Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	29-Jun-16
16060297-001	Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-001	m,p-Xylene	I	0.03	ppbv	0.03	AC-058	29-Jun-16
16060297-001	m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	29-Jun-16
16060297-001	m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	29-Jun-16
16060297-001	Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.50	AC-058	29-Jun-16
16060297-001	Methyl ethyl ketone	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Jun-16
16060297-001	Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	29-Jun-16
16060297-001	Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	29-Jun-16
16060297-001	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	29-Jun-16
16060297-001	Methylcyclohexane	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-001	Methylcyclopentane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
ICA/VOC/Bonnyville/June 17, 201(	2421	Ambient Air	17-Jun-16 0:00

DESCRIPTION: Bonnyville

REPORT NUMBER: 16060297 **REPORT CREATED:** 12-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060297-001	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	29-Jun-16
16060297-001	n-Butane	I	0.18	ppbv	0.03	AC-058	29-Jun-16
16060297-001	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	29-Jun-16
16060297-001	n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	29-Jun-16
16060297-001	n-Heptane	I	0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-001	n-Hexane	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-001	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-001	n-Pentane	K, T, U	< 0.1	ppbv	0.1	AC-058	29-Jun-16
16060297-001	n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	29-Jun-16
16060297-001	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	29-Jun-16
16060297-001	Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	29-Jun-16
16060297-001	n-Nonane	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-001	o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-001	o-Xylene	I	0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-001	p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	29-Jun-16
16060297-001	p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	29-Jun-16
16060297-001	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	29-Jun-16
16060297-001	Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	29-Jun-16
16060297-001	Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	29-Jun-16
16060297-001	Toluene	I	0.03	ppbv	0.01	AC-058	29-Jun-16
16060297-001	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-001	trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	29-Jun-16
16060297-001	trans-2-Butene	K, T, U	< 0.01	ppbv	0.01	AC-058	29-Jun-16
16060297-001	trans-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16
16060297-001	Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	29-Jun-16

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
ICA/VOC/Bonnyville/June 17, 201(	2421	Ambient Air	17-Jun-16 0:00

DESCRIPTION: Bonnyville

REPORT NUMBER: 16060297 **REPORT CREATED:** 12-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060297-001	Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	29-Jun-16
16060297-001	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	29-Jun-16

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
ICA/VOC/Bonnyville/June 23, 201(	S5662	Ambient Air	23-Jun-16 0:00

DESCRIPTION:

REPORT NUMBER: 16060335 **REPORT CREATED:** 19-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060335-003	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	07-Jul-16
16060335-003	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	07-Jul-16
16060335-003	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	07-Jul-16
16060335-003	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	07-Jul-16
16060335-003	1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	07-Jul-16
16060335-003	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	07-Jul-16
16060335-003	1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	07-Jul-16
16060335-003	1,2,4-Trimethylbenzene	I	0.03	ppbv	0.03	AC-058	07-Jul-16
16060335-003	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	07-Jul-16
16060335-003	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	07-Jul-16
16060335-003	1,2-Dichloroethane	I	0.02	ppbv	0.01	AC-058	07-Jul-16
16060335-003	1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	07-Jul-16
16060335-003	1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	07-Jul-16
16060335-003	1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	07-Jul-16
16060335-003	1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	07-Jul-16
16060335-003	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	07-Jul-16
16060335-003	1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	07-Jul-16
16060335-003	1-Butene		0.33	ppbv	0.02	AC-058	07-Jul-16
16060335-003	1-Hexene	I	0.14	ppbv	0.02	AC-058	07-Jul-16
16060335-003	1-Pentene	I	0.03	ppbv	0.01	AC-058	07-Jul-16
16060335-003	2,2,4-Trimethylpentane	I	0.06	ppbv	0.01	AC-058	07-Jul-16
16060335-003	2,2-Dimethylbutane	I	0.12	ppbv	0.01	AC-058	07-Jul-16
16060335-003	2,3,4-Trimethylpentane	I	0.06	ppbv	0.01	AC-058	07-Jul-16
16060335-003	2,3-Dimethylbutane		0.96	ppbv	0.02	AC-058	07-Jul-16
16060335-003	2,3-Dimethylpentane	I	0.03	ppbv	0.02	AC-058	07-Jul-16

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
ICA/VOC/Bonnyville/June 23, 201(	S5662	Ambient Air	23-Jun-16 0:00

DESCRIPTION:

REPORT NUMBER: 16060335 **REPORT CREATED:** 19-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060335-003	2,4-Dimethylpentane	I	0.02	ppbv	0.01	AC-058	07-Jul-16
16060335-003	2-Methylheptane	I	0.02	ppbv	0.01	AC-058	07-Jul-16
16060335-003	2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	07-Jul-16
16060335-003	2-Methylpentane		5.86	ppbv	0.01	AC-058	07-Jul-16
16060335-003	3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	07-Jul-16
16060335-003	3-Methylhexane	I	0.07	ppbv	0.02	AC-058	07-Jul-16
16060335-003	3-Methylpentane		2.29	ppbv	0.01	AC-058	07-Jul-16
16060335-003	Acetone		5.7	ppbv	0.4	AC-058	07-Jul-16
16060335-003	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	07-Jul-16
16060335-003	Benzene		0.39	ppbv	0.01	AC-058	07-Jul-16
16060335-003	Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	07-Jul-16
16060335-003	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	07-Jul-16
16060335-003	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	07-Jul-16
16060335-003	Bromomethane	I	0.03	ppbv	0.01	AC-058	07-Jul-16
16060335-003	Carbon disulfide		36.7	ppbv	0.03	AC-058	08-Jul-16
16060335-003	Carbon tetrachloride	I	0.09	ppbv	0.01	AC-058	07-Jul-16
16060335-003	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	07-Jul-16
16060335-003	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	07-Jul-16
16060335-003	Chloroform	I	0.02	ppbv	0.02	AC-058	07-Jul-16
16060335-003	Chloromethane		4.90	ppbv	0.02	AC-058	07-Jul-16
16060335-003	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	07-Jul-16
16060335-003	cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	07-Jul-16
16060335-003	cis-2-Butene	I	0.04	ppbv	0.02	AC-058	07-Jul-16
16060335-003	cis-2-Pentene	K, T, U	< 0.02	ppbv	0.02	AC-058	07-Jul-16
16060335-003	Cyclohexane	I	0.02	ppbv	0.02	AC-058	07-Jul-16

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
ICA/VOC/Bonnyville/June 23, 201(	S5662	Ambient Air	23-Jun-16 0:00

DESCRIPTION:

REPORT NUMBER: 16060335 **REPORT CREATED:** 19-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060335-003	Cyclopentane	I	0.20	ppbv	0.01	AC-058	07-Jul-16
16060335-003	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	07-Jul-16
16060335-003	Ethanol		6.2	ppbv	0.3	AC-058	07-Jul-16
16060335-003	Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	07-Jul-16
16060335-003	Ethylbenzene	I	0.04	ppbv	0.01	AC-058	07-Jul-16
16060335-003	Freon-11	I	0.22	ppbv	0.02	AC-058	07-Jul-16
16060335-003	Freon-113	I	0.06	ppbv	0.01	AC-058	07-Jul-16
16060335-003	Freon-114	K, T, U	< 0.02	ppbv	0.02	AC-058	07-Jul-16
16060335-003	Freon-12	I	0.25	ppbv	0.02	AC-058	07-Jul-16
16060335-003	Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.50	AC-058	07-Jul-16
16060335-003	Isobutane	I	0.19	ppbv	0.02	AC-058	07-Jul-16
16060335-003	Isopentane		0.48	ppbv	0.03	AC-058	07-Jul-16
16060335-003	Isoprene	I	0.11	ppbv	0.01	AC-058	07-Jul-16
16060335-003	Isopropyl alcohol	K, T, U	< 0.4	ppbv	0.4	AC-058	07-Jul-16
16060335-003	Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	07-Jul-16
16060335-003	m,p-Xylene	I	0.10	ppbv	0.03	AC-058	07-Jul-16
16060335-003	m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	07-Jul-16
16060335-003	m-Ethyltoluene	K, T, U	< 0.08	ppbv	0.08	AC-058	07-Jul-16
16060335-003	Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.50	AC-058	07-Jul-16
16060335-003	Methyl ethyl ketone		0.6	ppbv	0.3	AC-058	07-Jul-16
16060335-003	Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	07-Jul-16
16060335-003	Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	07-Jul-16
16060335-003	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	07-Jul-16
16060335-003	Methylcyclohexane	I	0.02	ppbv	0.01	AC-058	07-Jul-16
16060335-003	Methylcyclopentane	I	0.16	ppbv	0.02	AC-058	07-Jul-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

Date: July 19, 2016 **Inquiries:** (780) 632 8455 **E-mail:** EAS.Results@albertainnovates.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
ICA/VOC/Bonnyville/June 23, 201(	S5662	Ambient Air	23-Jun-16 0:00

DESCRIPTION:

REPORT NUMBER: 16060335 **REPORT CREATED:** 19-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060335-003	Methylene chloride		4.3	ppbv	0.3	AC-058	07-Jul-16
16060335-003	n-Butane		0.81	ppbv	0.03	AC-058	07-Jul-16
16060335-003	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	07-Jul-16
16060335-003	n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	07-Jul-16
16060335-003	n-Heptane	I	0.10	ppbv	0.01	AC-058	07-Jul-16
16060335-003	n-Hexane		0.50	ppbv	0.01	AC-058	07-Jul-16
16060335-003	n-Octane	K, T, U	< 0.02	ppbv	0.02	AC-058	07-Jul-16
16060335-003	n-Pentane	I	0.3	ppbv	0.1	AC-058	07-Jul-16
16060335-003	n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	07-Jul-16
16060335-003	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	07-Jul-16
16060335-003	Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	07-Jul-16
16060335-003	n-Nonane	I	0.01	ppbv	0.01	AC-058	07-Jul-16
16060335-003	o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	07-Jul-16
16060335-003	o-Xylene	I	0.04	ppbv	0.01	AC-058	07-Jul-16
16060335-003	p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	07-Jul-16
16060335-003	p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	07-Jul-16
16060335-003	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	07-Jul-16
16060335-003	Tetrachloroethylene	I	0.09	ppbv	0.04	AC-058	07-Jul-16
16060335-003	Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	07-Jul-16
16060335-003	Toluene		0.80	ppbv	0.01	AC-058	07-Jul-16
16060335-003	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	07-Jul-16
16060335-003	trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	07-Jul-16
16060335-003	trans-2-Butene	I	0.05	ppbv	0.01	AC-058	07-Jul-16
16060335-003	trans-2-Pentene	I	0.02	ppbv	0.02	AC-058	07-Jul-16
16060335-003	Trichloroethylene	I	0.05	ppbv	0.04	AC-058	07-Jul-16

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
ICA/VOC/Bonnyville/June 23, 201(	S5662	Ambient Air	23-Jun-16 0:00

DESCRIPTION:

REPORT NUMBER: 16060335 **REPORT CREATED:** 19-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060335-003	Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	07-Jul-16
16060335-003	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	07-Jul-16

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
ICA/VOC/Bonnyville/June 29, 201(	S5682	Ambient Air	29-Jun-16 0:00

DESCRIPTION: Bonnyville- AER

REPORT NUMBER: 16070015 **REPORT CREATED:** 20-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16070015-003	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	09-Jul-16
16070015-003	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	09-Jul-16
16070015-003	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	09-Jul-16
16070015-003	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	09-Jul-16
16070015-003	1,1-Dichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	09-Jul-16
16070015-003	1,2,3-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	09-Jul-16
16070015-003	1,2,4-Trichlorobenzene	K, T, U	< 0.8	ppbv	0.8	AC-058	09-Jul-16
16070015-003	1,2,4-Trimethylbenzene	I	0.10	ppbv	0.03	AC-058	09-Jul-16
16070015-003	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	09-Jul-16
16070015-003	1,2-Dichlorobenzene	K, T, U	< 0.03	ppbv	0.03	AC-058	09-Jul-16
16070015-003	1,2-Dichloroethane	I	0.03	ppbv	0.01	AC-058	09-Jul-16
16070015-003	1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	09-Jul-16
16070015-003	1,3,5-Trimethylbenzene	I	0.05	ppbv	0.02	AC-058	09-Jul-16
16070015-003	1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	09-Jul-16
16070015-003	1,3-Dichlorobenzene	K, T, U	< 0.3	ppbv	0.3	AC-058	09-Jul-16
16070015-003	1,4-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	09-Jul-16
16070015-003	1,4-Dioxane	K, T, U	< 0.4	ppbv	0.4	AC-058	09-Jul-16
16070015-003	1-Butene	I	0.16	ppbv	0.02	AC-058	09-Jul-16
16070015-003	1-Hexene	I	0.05	ppbv	0.02	AC-058	09-Jul-16
16070015-003	1-Pentene	I	0.04	ppbv	0.01	AC-058	09-Jul-16
16070015-003	2,2,4-Trimethylpentane		0.58	ppbv	0.01	AC-058	09-Jul-16
16070015-003	2,2-Dimethylbutane		0.31	ppbv	0.01	AC-058	09-Jul-16
16070015-003	2,3,4-Trimethylpentane	I	0.01	ppbv	0.01	AC-058	09-Jul-16
16070015-003	2,3-Dimethylbutane	I	0.13	ppbv	0.02	AC-058	09-Jul-16
16070015-003	2,3-Dimethylpentane	I	0.15	ppbv	0.02	AC-058	09-Jul-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
ICA/VOC/Bonnyville/June 29, 201(	S5682	Ambient Air	29-Jun-16 0:00

DESCRIPTION: Bonnyville- AER

REPORT NUMBER: 16070015 **REPORT CREATED:** 20-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16070015-003	2,4-Dimethylpentane	I	0.09	ppbv	0.01	AC-058	09-Jul-16
16070015-003	2-Methylheptane	I	0.12	ppbv	0.01	AC-058	09-Jul-16
16070015-003	2-Methylhexane		0.43	ppbv	0.01	AC-058	09-Jul-16
16070015-003	2-Methylpentane		0.62	ppbv	0.01	AC-058	09-Jul-16
16070015-003	3-Methylheptane	I	0.11	ppbv	0.02	AC-058	09-Jul-16
16070015-003	3-Methylhexane		0.49	ppbv	0.02	AC-058	09-Jul-16
16070015-003	3-Methylpentane		0.45	ppbv	0.01	AC-058	09-Jul-16
16070015-003	Acetone		5.8	ppbv	0.4	AC-058	09-Jul-16
16070015-003	Acrolein	K, T, U	< 0.3	ppbv	0.3	AC-058	09-Jul-16
16070015-003	Benzene	I	0.24	ppbv	0.01	AC-058	09-Jul-16
16070015-003	Benzyl chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	09-Jul-16
16070015-003	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	09-Jul-16
16070015-003	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	09-Jul-16
16070015-003	Bromomethane	K, T, U	< 0.01	ppbv	0.01	AC-058	09-Jul-16
16070015-003	Carbon disulfide		0.38	ppbv	0.01	AC-058	09-Jul-16
16070015-003	Carbon tetrachloride	I	0.09	ppbv	0.01	AC-058	09-Jul-16
16070015-003	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	09-Jul-16
16070015-003	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	09-Jul-16
16070015-003	Chloroform	K, T, U	< 0.02	ppbv	0.02	AC-058	09-Jul-16
16070015-003	Chloromethane	I	0.14	ppbv	0.02	AC-058	09-Jul-16
16070015-003	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	09-Jul-16
16070015-003	cis-1,3-Dichloropropene	K, T, U	< 0.04	ppbv	0.04	AC-058	09-Jul-16
16070015-003	cis-2-Butene	I	0.09	ppbv	0.02	AC-058	09-Jul-16
16070015-003	cis-2-Pentene	I	0.08	ppbv	0.02	AC-058	09-Jul-16
16070015-003	Cyclohexane	I	0.24	ppbv	0.02	AC-058	09-Jul-16

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
ICA/VOC/Bonnyville/June 29, 201(	S5682	Ambient Air	29-Jun-16 0:00

DESCRIPTION: Bonnyville- AER

REPORT NUMBER: 16070015 **REPORT CREATED:** 20-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16070015-003	Cyclopentane	I	0.07	ppbv	0.01	AC-058	09-Jul-16
16070015-003	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	09-Jul-16
16070015-003	Ethanol		11.4	ppbv	0.3	AC-058	09-Jul-16
16070015-003	Ethyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	09-Jul-16
16070015-003	Ethylbenzene	I	0.16	ppbv	0.01	AC-058	09-Jul-16
16070015-003	Freon-11	I	0.26	ppbv	0.02	AC-058	09-Jul-16
16070015-003	Freon-113	I	0.05	ppbv	0.01	AC-058	09-Jul-16
16070015-003	Freon-114	K, T, U	< 0.02	ppbv	0.02	AC-058	09-Jul-16
16070015-003	Freon-12		0.50	ppbv	0.02	AC-058	09-Jul-16
16070015-003	Hexachloro-1,3-butadiene	K, T, U	< 0.50	ppbv	0.50	AC-058	09-Jul-16
16070015-003	Isobutane		0.53	ppbv	0.02	AC-058	09-Jul-16
16070015-003	Isopentane		4.52	ppbv	0.03	AC-058	09-Jul-16
16070015-003	Isoprene		0.77	ppbv	0.01	AC-058	09-Jul-16
16070015-003	Isopropyl alcohol		0.9	ppbv	0.4	AC-058	09-Jul-16
16070015-003	Isopropylbenzene	I	0.01	ppbv	0.01	AC-058	09-Jul-16
16070015-003	m,p-Xylene		0.61	ppbv	0.03	AC-058	09-Jul-16
16070015-003	m-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	09-Jul-16
16070015-003	m-Ethyltoluene	I	0.10	ppbv	0.08	AC-058	09-Jul-16
16070015-003	Methyl butyl ketone	K, T, U	< 0.50	ppbv	0.50	AC-058	09-Jul-16
16070015-003	Methyl ethyl ketone		0.3	ppbv	0.3	AC-058	09-Jul-16
16070015-003	Methyl isobutyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	09-Jul-16
16070015-003	Methyl methacrylate	K, T, U	< 0.07	ppbv	0.07	AC-058	09-Jul-16
16070015-003	Methyl tert butyl ether	K, T, U	< 0.03	ppbv	0.03	AC-058	09-Jul-16
16070015-003	Methylcyclohexane	I	0.22	ppbv	0.01	AC-058	09-Jul-16
16070015-003	Methylcyclopentane		0.58	ppbv	0.02	AC-058	09-Jul-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
ICA/VOC/Bonnyville/June 29, 201(	S5682	Ambient Air	29-Jun-16 0:00

DESCRIPTION: Bonnyville- AER

REPORT NUMBER: 16070015 **REPORT CREATED:** 20-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16070015-003	Methylene chloride	K, T, U	< 0.3	ppbv	0.3	AC-058	09-Jul-16
16070015-003	n-Butane		1.95	ppbv	0.03	AC-058	09-Jul-16
16070015-003	n-Decane	K, T, U	< 0.06	ppbv	0.06	AC-058	09-Jul-16
16070015-003	n-Dodecane	K, T, U	< 0.4	ppbv	0.4	AC-058	09-Jul-16
16070015-003	n-Heptane	I	0.29	ppbv	0.01	AC-058	09-Jul-16
16070015-003	n-Hexane		0.32	ppbv	0.01	AC-058	09-Jul-16
16070015-003	n-Octane	I	0.09	ppbv	0.02	AC-058	09-Jul-16
16070015-003	n-Pentane		0.9	ppbv	0.1	AC-058	09-Jul-16
16070015-003	n-Propylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	09-Jul-16
16070015-003	n-Undecane	K, T, U	< 0.5	ppbv	0.5	AC-058	09-Jul-16
16070015-003	Naphthalene	K, T, U	< 0.5	ppbv	0.5	AC-058	09-Jul-16
16070015-003	n-Nonane	I	0.04	ppbv	0.01	AC-058	09-Jul-16
16070015-003	o-Ethyltoluene	I	0.03	ppbv	0.01	AC-058	09-Jul-16
16070015-003	o-Xylene	I	0.21	ppbv	0.01	AC-058	09-Jul-16
16070015-003	p-Diethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	09-Jul-16
16070015-003	p-Ethyltoluene	K, T, U	< 0.07	ppbv	0.07	AC-058	09-Jul-16
16070015-003	Styrene	K, T, U	< 0.04	ppbv	0.04	AC-058	09-Jul-16
16070015-003	Tetrachloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	09-Jul-16
16070015-003	Tetrahydrofuran	K, T, U	< 0.4	ppbv	0.4	AC-058	09-Jul-16
16070015-003	Toluene		1.15	ppbv	0.01	AC-058	09-Jul-16
16070015-003	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	09-Jul-16
16070015-003	trans-1,3-Dichloropropylene	K, T, U	< 0.04	ppbv	0.04	AC-058	09-Jul-16
16070015-003	trans-2-Butene	I	0.15	ppbv	0.01	AC-058	09-Jul-16
16070015-003	trans-2-Pentene	I	0.19	ppbv	0.02	AC-058	09-Jul-16
16070015-003	Trichloroethylene	K, T, U	< 0.04	ppbv	0.04	AC-058	09-Jul-16

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
ICA/VOC/Bonnyville/June 29, 201(	S5682	Ambient Air	29-Jun-16 0:00

DESCRIPTION: Bonnyville- AER

REPORT NUMBER: 16070015 **REPORT CREATED:** 20-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16070015-003	Vinyl acetate	K, T, U	< 0.4	ppbv	0.4	AC-058	09-Jul-16
16070015-003	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	09-Jul-16

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PAHS SAMPLES

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/PUF/Bonnyville/June 5, 2016	9702	Air Filter	05-Jun-16 0:00

DESCRIPTION: Bonnyville AER LICA 37

REPORT NUMBER: 16060039 **REPORT CREATED:** 24-Jun-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060039-003	1-Methylnaphthalene		0.13	ug/puf	0.01	NA-017	16-Jun-16
16060039-003	2-Methylnaphthalene		0.23	ug/puf	0.01	NA-017	16-Jun-16
16060039-003	3-Methylcholanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060039-003	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060039-003	Acenaphthene		0.04	ug/puf	0.01	NA-017	16-Jun-16
16060039-003	Acenaphthylene		0.02	ug/puf	0.01	NA-017	16-Jun-16
16060039-003	Acridine	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060039-003	Anthracene		0.29	ug/puf	0.01	NA-017	16-Jun-16
16060039-003	Benzo(a)anthracene		0.18	ug/puf	0.01	NA-017	16-Jun-16
16060039-003	Benzo(a)pyrene		0.06	ug/puf	0.01	NA-017	16-Jun-16
16060039-003	Benzo(b,j,k)fluoranthene		0.13	ug/puf	0.01	NA-017	16-Jun-16
16060039-003	Benzo(c)phenanthrene		0.04	ug/puf	0.01	NA-017	16-Jun-16
16060039-003	Benzo(e)pyrene		0.05	ug/puf	0.01	NA-017	16-Jun-16
16060039-003	Benzo(ghi)perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060039-003	Chrysene		0.10	ug/puf	0.01	NA-017	16-Jun-16
16060039-003	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060039-003	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060039-003	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060039-003	Dibenzo(ah)anthracene		0.04	ug/puf	0.01	NA-017	16-Jun-16
16060039-003	Fluoranthene		0.49	ug/puf	0.01	NA-017	16-Jun-16
16060039-003	Fluorene		0.08	ug/puf	0.01	NA-017	16-Jun-16
16060039-003	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	16-Jun-16
16060039-003	Naphthalene		0.07	ug/puf	0.01	NA-017	16-Jun-16
16060039-003	Perylene		0.01	ug/puf	0.01	NA-017	16-Jun-16
16060039-003	Phenanthrene		1.37	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 24, 2016 **Inquiries:** (780) 632 8455 **E-mail:** EAS.Results@albertainnovates.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
LICA/PUF/Bonnyville/June 5, 2016	9702	Air Filter	05-Jun-16 0:00

DESCRIPTION: Bonnyville AER LICA 37

REPORT NUMBER: 16060039 **REPORT CREATED:** 24-Jun-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060039-003	Pyrene		0.44	ug/puf	0.01	NA-017	16-Jun-16
16060039-003	Retene		0.14	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

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

RESULTS: Adewunmi Adekanmbi
Lakeland Industry and Community Assn
4000, 19 St NE
Calgary
AB T2E 6P8

INVOICE: Charmaine Code 780 812-2182
PO Box 8237
5107W-50 St
Bonnyville
AB T9N 2J5

CLIENT SAMPLE ID	GROUP SAMPLE ID	PROJECT NUMBER
ICA/PUF/Bonnyville/June 11, 201		
STATION ID	**SAMPLER ID**	**Matrix**
	AY	Air Filter

STATION DESCRIPTION:

DATE SAMPLED: 11-Jun-16 0:00 **DATE RECEIVED:** 16-Jun-16
REPORT CREATED: 12-Jul-16 **REPORT NUMBER:** 16060175
VERSION: Version 01

AGENCY	MATRIX	TYPE	COLLECTION

Lab ID	Parameter	Qualifier	Result	Units	RDL	VMV	Method	Analysis Date
16060175-004	1-Methylnaphthalene		0.03	ug/puf	0.01		NA-017	01-Jul-16
16060175-004	2-Methylnaphthalene		0.08	ug/puf	0.01		NA-017	01-Jul-16
16060175-004	3-Methylcholanthrene	K, T, U	< 0.01	ug/puf	0.01	102847	NA-017	01-Jul-16
16060175-004	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	102848	NA-017	01-Jul-16
16060175-004	Acenaphthene	K, T, U	< 0.01	ug/puf	0.01	102849	NA-017	01-Jul-16
16060175-004	Acenaphthylene	K, T, U	< 0.01	ug/puf	0.01	102850	NA-017	01-Jul-16
16060175-004	Acridine	K, T, U	< 0.01	ug/puf	0.01	102851	NA-017	01-Jul-16
16060175-004	Anthracene		0.03	ug/puf	0.01	102852	NA-017	01-Jul-16
16060175-004	Benzo(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	102853	NA-017	01-Jul-16
16060175-004	Benzo(a)pyrene	K, T, U	< 0.01	ug/puf	0.01	102854	NA-017	01-Jul-16
16060175-004	Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/puf	0.01	102855	NA-017	01-Jul-16
16060175-004	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/puf	0.01	102856	NA-017	01-Jul-16
16060175-004	Benzo(e)pyrene	K, T, U	< 0.01	ug/puf	0.01	102857	NA-017	01-Jul-16
16060175-004	Benzo(ghi)perylene	K, T, U	< 0.01	ug/puf	0.01	102858	NA-017	01-Jul-16
16060175-004	Chrysene		0.01	ug/puf	0.01	102859	NA-017	01-Jul-16
16060175-004	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/puf	0.01	102860	NA-017	01-Jul-16
16060175-004	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/puf	0.01	102861	NA-017	01-Jul-16
16060175-004	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/puf	0.01	102862	NA-017	01-Jul-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

Date: July 12, 2016 **Inquiries:** (780) 632 8455 **E-mail:** EAS.Results@albertainnovates.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	GROUP SAMPLE ID	Matrix	PROJECT NUMBER	STATION ID	SAMPLER ID
ICA/PUF/Bonnyville/June 11, 201		Air Filter			AY

DATE SAMPLED: 11-Jun-16 0:00 **STATION DESCRIPTION:**

REPORT NUMBER: 16060175 **REPORT CREATED:** 12-Jul-16 **VERSION:** Version 01

AGENCY: **MATRIX:** **TYPE:** **COLLECTION:**

Lab ID	Parameter	Qualifier	Result	Units	RDL	VMV	Method	Analysis Date
16060175-004	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/puf	0.01	102863	NA-017	01-Jul-16
16060175-004	Fluoranthene		0.15	ug/puf	0.01	102864	NA-017	01-Jul-16
16060175-004	Fluorene		0.07	ug/puf	0.01	102865	NA-017	01-Jul-16
16060175-004	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/puf	0.01	102866	NA-017	01-Jul-16
16060175-004	Naphthalene		0.02	ug/puf	0.01	102867	NA-017	01-Jul-16
16060175-004	Perylene	K, T, U	< 0.01	ug/puf	0.01		NA-017	01-Jul-16
16060175-004	Phenanthrene		0.34	ug/puf	0.01	102868	NA-017	01-Jul-16
16060175-004	Pyrene		0.08	ug/puf	0.01	102869	NA-017	01-Jul-16
16060175-004	Retene		0.05	ug/puf	0.01	103826	NA-017	01-Jul-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

RESULTS: Adewunmi Adekanmbi
Lakeland Industry and Community Assn
4000, 19 St NE
Calgary
AB T2E 6P8

INVOICE: Charmaine Code 780 812-2182
PO Box 8237
5107W-50 St
Bonnyville
AB T9N 2J5

CLIENT SAMPLE ID	CANISTER ID	Matrix	Priority
CA/PUF/Bonnyville/June 17, 20	TE-01	Air Filter	Normal

DESCRIPTION: Bonnyville
DATE SAMPLED: 17-Jun-16 0:00
DATE RECEIVED: 24-Jun-16
REPORT CREATED: 12-Jul-16
REPORT NUMBER: 16060297
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060297-002	1-Methylnaphthalene		0.11	ug/puf	0.01	NA-017	01-Jul-16
16060297-002	2-Methylnaphthalene		0.21	ug/puf	0.01	NA-017	01-Jul-16
16060297-002	3-Methylcholanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060297-002	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060297-002	Acenaphthene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060297-002	Acenaphthylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060297-002	Acridine	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060297-002	Anthracene		0.03	ug/puf	0.01	NA-017	01-Jul-16
16060297-002	Benzo(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060297-002	Benzo(a)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060297-002	Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060297-002	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060297-002	Benzo(e)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060297-002	Benzo(ghi)perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060297-002	Chrysene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060297-002	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060297-002	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060297-002	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
.ICA/PUF/Bonnyville/June 17, 201(	TE-01	Air Filter	17-Jun-16 0:00

DESCRIPTION: Bonnyville

REPORT NUMBER: 16060297 **REPORT CREATED:** 12-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060297-002	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060297-002	Fluoranthene		0.05	ug/puf	0.01	NA-017	01-Jul-16
16060297-002	Fluorene		0.04	ug/puf	0.01	NA-017	01-Jul-16
16060297-002	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060297-002	Naphthalene		0.02	ug/puf	0.01	NA-017	01-Jul-16
16060297-002	Perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060297-002	Phenanthrene		0.14	ug/puf	0.01	NA-017	01-Jul-16
16060297-002	Pyrene		0.05	ug/puf	0.01	NA-017	01-Jul-16
16060297-002	Retene		0.02	ug/puf	0.01	NA-017	01-Jul-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
.ICA/PUF/Bonnyville/June 23, 201(	TE-02	Air Filter	23-Jun-16 0:00

DESCRIPTION:

REPORT NUMBER: 16060335 **REPORT CREATED:** 19-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060335-004	1-Methylnaphthalene		0.06	ug/puf	0.01	NA-017	01-Jul-16
16060335-004	2-Methylnaphthalene		0.12	ug/puf	0.01	NA-017	01-Jul-16
16060335-004	3-Methylcholanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060335-004	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060335-004	Acenaphthene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060335-004	Acenaphthylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060335-004	Acridine	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060335-004	Anthracene		0.04	ug/puf	0.01	NA-017	01-Jul-16
16060335-004	Benzo(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060335-004	Benzo(a)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060335-004	Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060335-004	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060335-004	Benzo(e)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060335-004	Benzo(ghi)perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060335-004	Chrysene		0.01	ug/puf	0.01	NA-017	01-Jul-16
16060335-004	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060335-004	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060335-004	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060335-004	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060335-004	Fluoranthene		0.15	ug/puf	0.01	NA-017	01-Jul-16
16060335-004	Fluorene		0.07	ug/puf	0.01	NA-017	01-Jul-16
16060335-004	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060335-004	Naphthalene		0.03	ug/puf	0.01	NA-017	01-Jul-16
16060335-004	Perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	01-Jul-16
16060335-004	Phenanthrene		0.37	ug/puf	0.01	NA-017	01-Jul-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

Date: July 19, 2016 **Inquiries:** (780) 632 8455 **E-mail:** EAS.Results@albertainnovates.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
.ICA/PUF/Bonnyville/June 23, 201(	TE-02	Air Filter	23-Jun-16 0:00

DESCRIPTION:

REPORT NUMBER: 16060335 **REPORT CREATED:** 19-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060335-004	Pyrene		0.09	ug/puf	0.01	NA-017	01-Jul-16
16060335-004	Retene		0.04	ug/puf	0.01	NA-017	01-Jul-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

Date: July 19, 2016 **Inquiries:** (780) 632 8455 **E-mail:** EAS.Results@albertainnovates.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
.ICA/PUF/Bonnyville/June 29, 201(	TE-07	Air Filter	29-Jun-16 0:00

DESCRIPTION: Bonnyville- AER

REPORT NUMBER: 16070015 **REPORT CREATED:** 20-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16070015-004	1-Methylnaphthalene		0.19	ug/puf	0.01	NA-017	15-Jul-16
16070015-004	2-Methylnaphthalene		0.44	ug/puf	0.01	NA-017	15-Jul-16
16070015-004	3-Methylcholanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jul-16
16070015-004	7,12-Dimethylbenz(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jul-16
16070015-004	Acenaphthene		0.03	ug/puf	0.01	NA-017	15-Jul-16
16070015-004	Acenaphthylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jul-16
16070015-004	Acridine	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jul-16
16070015-004	Anthracene		0.11	ug/puf	0.01	NA-017	15-Jul-16
16070015-004	Benzo(a)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jul-16
16070015-004	Benzo(a)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jul-16
16070015-004	Benzo(b,j,k)fluoranthene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jul-16
16070015-004	Benzo(c)phenanthrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jul-16
16070015-004	Benzo(e)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jul-16
16070015-004	Benzo(ghi)perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jul-16
16070015-004	Chrysene		0.02	ug/puf	0.01	NA-017	15-Jul-16
16070015-004	Dibenzo(a,h)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jul-16
16070015-004	Dibenzo(a,i)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jul-16
16070015-004	Dibenzo(a,l)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jul-16
16070015-004	Dibenzo(ah)anthracene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jul-16
16070015-004	Fluoranthene		0.61	ug/puf	0.01	NA-017	15-Jul-16
16070015-004	Fluorene		0.11	ug/puf	0.01	NA-017	15-Jul-16
16070015-004	Indeno(1,2,3-cd)pyrene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jul-16
16070015-004	Naphthalene		0.26	ug/puf	0.01	NA-017	15-Jul-16
16070015-004	Perylene	K, T, U	< 0.01	ug/puf	0.01	NA-017	15-Jul-16
16070015-004	Phenanthrene		1.96	ug/puf	0.01	NA-017	15-Jul-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

Date: July 20, 2016 **Inquiries:** (780) 632 8455 **E-mail:** EAS.Results@albertainnovates.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
.ICA/PUF/Bonnyville/June 29, 201(	TE-07	Air Filter	29-Jun-16 0:00

DESCRIPTION: Bonnyville- AER

REPORT NUMBER: 16070015 **REPORT CREATED:** 20-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16070015-004	Pyrene		0.26	ug/puf	0.01	NA-017	15-Jul-16
16070015-004	Retene		0.06	ug/puf	0.01	NA-017	15-Jul-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

Date: July 20, 2016 **Inquiries:** (780) 632 8455 **E-mail:** EAS.Results@albertainnovates.ca

NMHC CANISTER SAMPLES

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

RESULTS: Adewunmi Adekanmbi
Lakeland Industry and Community Assn
4000, 19 St NE
Calgary
AB T2E 6P8

INVOICE: Charmaine Code 780 812-2182
PO Box 8237
5107W-50 St
Bonnyville
AB T9N 2J5

CLIENT SAMPLE ID	CANISTER ID	Matrix	Priority
NMHC-VOC/Bonnyville/June 5,	S5684	Ambient Air	Normal

DESCRIPTION: Bonnyville LICA 37

DATE SAMPLED: 05-Jun-16 19:50
DATE RECEIVED: 07-Jun-16
REPORT CREATED: 24-Jun-16
REPORT NUMBER: 16060039
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060039-001	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jun-16
16060039-001	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jun-16
16060039-001	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jun-16
16060039-001	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jun-16
16060039-001	1,1-Dichloroethylene	K, T, U	< 0.05	ppbv	0.05	AC-058	08-Jun-16
16060039-001	1,2,3-Trimethylbenzene	K, T, U	< 0.06	ppbv	0.06	AC-058	08-Jun-16
16060039-001	1,2,4-Trichlorobenzene	K, T, U	< 1.0	ppbv	1.0	AC-058	08-Jun-16
16060039-001	1,2,4-Trimethylbenzene	I	0.09	ppbv	0.04	AC-058	08-Jun-16
16060039-001	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jun-16
16060039-001	1,2-Dichlorobenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	08-Jun-16
16060039-001	1,2-Dichloroethane	I	0.02	ppbv	0.01	AC-058	08-Jun-16
16060039-001	1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Jun-16
16060039-001	1,3,5-Trimethylbenzene	I	0.05	ppbv	0.02	AC-058	08-Jun-16
16060039-001	1,3-Butadiene	I	0.08	ppbv	0.02	AC-058	08-Jun-16
16060039-001	1,3-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	08-Jun-16
16060039-001	1,4-Dichlorobenzene	K, T, U	< 0.5	ppbv	0.5	AC-058	08-Jun-16
16060039-001	1,4-Dioxane	K, T, U	< 0.5	ppbv	0.5	AC-058	08-Jun-16
16060039-001	1-Butene	I	0.31	ppbv	0.02	AC-058	08-Jun-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

Date: June 24, 2016 **Inquiries:** (780) 632 8455 **E-mail:** EAS.Results@albertainnovates.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
\/NMHC-VOC/Bonnyville/June 5, 2	S5684	Ambient Air	05-Jun-16 19:50

DESCRIPTION: Bonnyville LICA 37

REPORT NUMBER: 16060039 **REPORT CREATED:** 24-Jun-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060039-001	1-Hexene	I	0.04	ppbv	0.02	AC-058	08-Jun-16
16060039-001	1-Pentene	I	0.08	ppbv	0.01	AC-058	08-Jun-16
16060039-001	2,2,4-Trimethylpentane	I	0.13	ppbv	0.01	AC-058	08-Jun-16
16060039-001	2,2-Dimethylbutane	I	0.03	ppbv	0.01	AC-058	08-Jun-16
16060039-001	2,3,4-Trimethylpentane	I	0.11	ppbv	0.01	AC-058	08-Jun-16
16060039-001	2,3-Dimethylbutane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jun-16
16060039-001	2,3-Dimethylpentane	I	0.10	ppbv	0.02	AC-058	08-Jun-16
16060039-001	2,4-Dimethylpentane	I	0.06	ppbv	0.01	AC-058	08-Jun-16
16060039-001	2-Methylheptane	I	0.05	ppbv	0.01	AC-058	08-Jun-16
16060039-001	2-Methylhexane	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Jun-16
16060039-001	2-Methylpentane	I	0.33	ppbv	0.01	AC-058	08-Jun-16
16060039-001	3-Methylheptane	I	0.04	ppbv	0.02	AC-058	08-Jun-16
16060039-001	3-Methylhexane	I	0.09	ppbv	0.02	AC-058	08-Jun-16
16060039-001	3-Methylpentane	I	0.15	ppbv	0.01	AC-058	08-Jun-16
16060039-001	Acetone		4.9	ppbv	0.5	AC-058	08-Jun-16
16060039-001	Acrolein	K, T, U	< 0.4	ppbv	0.4	AC-058	08-Jun-16
16060039-001	Benzene	I	0.16	ppbv	0.01	AC-058	08-Jun-16
16060039-001	Benzyl chloride	K, T, U	< 0.5	ppbv	0.5	AC-058	08-Jun-16
16060039-001	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jun-16
16060039-001	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jun-16
16060039-001	Bromomethane	I	0.01	ppbv	0.01	AC-058	08-Jun-16
16060039-001	Carbon disulfide	I	0.07	ppbv	0.01	AC-058	08-Jun-16
16060039-001	Carbon tetrachloride	I	0.11	ppbv	0.01	AC-058	08-Jun-16
16060039-001	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jun-16
16060039-001	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jun-16

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
\/NMHC-VOC/Bonnyville/June 5, 2	S5684	Ambient Air	05-Jun-16	19:50

DESCRIPTION: Bonnyville LICA 37

REPORT NUMBER: 16060039 **REPORT CREATED:** 24-Jun-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060039-001	Chloroform	I	0.03	ppbv	0.02	AC-058	08-Jun-16
16060039-001	Chloromethane		1.09	ppbv	0.02	AC-058	08-Jun-16
16060039-001	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Jun-16
16060039-001	cis-1,3-Dichloropropene	K, T, U	< 0.05	ppbv	0.05	AC-058	08-Jun-16
16060039-001	cis-2-Butene	I	0.06	ppbv	0.02	AC-058	08-Jun-16
16060039-001	cis-2-Pentene	I	0.06	ppbv	0.02	AC-058	08-Jun-16
16060039-001	Cyclohexane	I	0.05	ppbv	0.02	AC-058	08-Jun-16
16060039-001	Cyclopentane	I	0.07	ppbv	0.01	AC-058	08-Jun-16
16060039-001	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Jun-16
16060039-001	Ethanol		2.5	ppbv	0.4	AC-058	08-Jun-16
16060039-001	Ethyl acetate	K, T, U	< 0.5	ppbv	0.5	AC-058	08-Jun-16
16060039-001	Ethylbenzene	I	0.12	ppbv	0.01	AC-058	08-Jun-16
16060039-001	Freon-11	I	0.32	ppbv	0.02	AC-058	08-Jun-16
16060039-001	Freon-113	I	0.08	ppbv	0.01	AC-058	08-Jun-16
16060039-001	Freon-114	I	0.03	ppbv	0.02	AC-058	08-Jun-16
16060039-001	Freon-12		0.62	ppbv	0.02	AC-058	08-Jun-16
16060039-001	Hexachloro-1,3-butadiene	K, T, U	< 0.61	ppbv	0.61	AC-058	08-Jun-16
16060039-001	Isobutane		0.69	ppbv	0.02	AC-058	08-Jun-16
16060039-001	Isopentane		1.67	ppbv	0.04	AC-058	08-Jun-16
16060039-001	Isoprene		1.09	ppbv	0.01	AC-058	08-Jun-16
16060039-001	Isopropyl alcohol		0.6	ppbv	0.5	AC-058	08-Jun-16
16060039-001	Isopropylbenzene	I	0.02	ppbv	0.01	AC-058	08-Jun-16
16060039-001	m,p-Xylene		0.45	ppbv	0.04	AC-058	08-Jun-16
16060039-001	m-Diethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	08-Jun-16
16060039-001	m-Ethyltoluene	K, T, U	< 0.10	ppbv	0.10	AC-058	08-Jun-16

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
\/NMHC-VOC/Bonnyville/June 5, 2	S5684	Ambient Air	05-Jun-16	19:50

DESCRIPTION: Bonnyville LICA 37

REPORT NUMBER: 16060039 **REPORT CREATED:** 24-Jun-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060039-001	Methyl butyl ketone	K, T, U	< 0.61	ppbv	0.61	AC-058	08-Jun-16
16060039-001	Methyl ethyl ketone		0.5	ppbv	0.4	AC-058	08-Jun-16
16060039-001	Methyl isobutyl ketone	K, T, U	< 0.5	ppbv	0.5	AC-058	08-Jun-16
16060039-001	Methyl methacrylate	K, T, U	< 0.09	ppbv	0.09	AC-058	08-Jun-16
16060039-001	Methyl tert butyl ether	K, T, U	< 0.04	ppbv	0.04	AC-058	08-Jun-16
16060039-001	Methylcyclohexane	I	0.05	ppbv	0.01	AC-058	08-Jun-16
16060039-001	Methylcyclopentane	I	0.13	ppbv	0.02	AC-058	08-Jun-16
16060039-001	Methylene chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	08-Jun-16
16060039-001	n-Butane		2.39	ppbv	0.04	AC-058	08-Jun-16
16060039-001	n-Decane	K, T, U	< 0.07	ppbv	0.07	AC-058	08-Jun-16
16060039-001	n-Dodecane		7.7	ppbv	0.5	AC-058	08-Jun-16
16060039-001	n-Heptane	I	0.07	ppbv	0.01	AC-058	08-Jun-16
16060039-001	n-Hexane	I	0.15	ppbv	0.01	AC-058	08-Jun-16
16060039-001	n-Octane	I	0.05	ppbv	0.02	AC-058	08-Jun-16
16060039-001	n-Pentane		0.7	ppbv	0.1	AC-058	08-Jun-16
16060039-001	n-Propylbenzene	K, T, U	< 0.06	ppbv	0.06	AC-058	08-Jun-16
16060039-001	n-Undecane	K, T, U	< 0.6	ppbv	0.6	AC-058	08-Jun-16
16060039-001	Naphthalene		2.7	ppbv	0.6	AC-058	08-Jun-16
16060039-001	n-Nonane	I	0.05	ppbv	0.01	AC-058	08-Jun-16
16060039-001	o-Ethyltoluene	I	0.04	ppbv	0.01	AC-058	08-Jun-16
16060039-001	o-Xylene	I	0.15	ppbv	0.01	AC-058	08-Jun-16
16060039-001	p-Diethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	08-Jun-16
16060039-001	p-Ethyltoluene	K, T, U	< 0.09	ppbv	0.09	AC-058	08-Jun-16
16060039-001	Styrene	K, T, U	< 0.05	ppbv	0.05	AC-058	08-Jun-16
16060039-001	Tetrachloroethylene	K, T, U	< 0.05	ppbv	0.05	AC-058	08-Jun-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
/NMHC-VOC/Bonnyville/June 5, 2	S5684	Ambient Air	05-Jun-16	19:50

DESCRIPTION: Bonnyville LICA 37

REPORT NUMBER: 16060039 **REPORT CREATED:** 24-Jun-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060039-001	Tetrahydrofuran	K, T, U	< 0.5	ppbv	0.5	AC-058	08-Jun-16
16060039-001	Toluene	I	0.33	ppbv	0.01	AC-058	08-Jun-16
16060039-001	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Jun-16
16060039-001	trans-1,3-Dichloropropylene	K, T, U	< 0.05	ppbv	0.05	AC-058	08-Jun-16
16060039-001	trans-2-Butene	I	0.07	ppbv	0.01	AC-058	08-Jun-16
16060039-001	trans-2-Pentene	I	0.09	ppbv	0.02	AC-058	08-Jun-16
16060039-001	Trichloroethylene	K, T, U	< 0.05	ppbv	0.05	AC-058	08-Jun-16
16060039-001	Vinyl acetate	K, T, U	< 0.5	ppbv	0.5	AC-058	08-Jun-16
16060039-001	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jun-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

Date: June 24, 2016 **Inquiries:** (780) 632 8455 **E-mail:** EAS.Results@albertainnovates.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

RESULTS: Adewunmi Adekanmbi
Lakeland Industry and Community Assn
4000, 19 St NE
Calgary
AB T2E 6P8

INVOICE: Charmaine Code 780 812-2182
PO Box 8237
5107W-50 St
Bonnyville
AB T9N 2J5

CLIENT SAMPLE ID	CANISTER ID	Matrix	Priority
NMHC-VOC/Bonnyville/June 9,	S5593	Ambient Air	Normal

DESCRIPTION: Bonnyville- AER

DATE SAMPLED: 09-Jun-16 4:20 **DATE RECEIVED:** 13-Jun-16

REPORT CREATED: 05-Jul-16 **REPORT NUMBER:** 16060102

VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060102-001	1,1,1-Trichloroethane	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Jun-16
16060102-001	1,1,2,2-Tetrachloroethane	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Jun-16
16060102-001	1,1,2-Trichloroethane	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Jun-16
16060102-001	1,1-Dichloroethane	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Jun-16
16060102-001	1,1-Dichloroethylene	K, T, U	< 0.07	ppbv	0.07	AC-058	28-Jun-16
16060102-001	1,2,3-Trimethylbenzene	K, T, U	< 0.09	ppbv	0.09	AC-058	28-Jun-16
16060102-001	1,2,4-Trichlorobenzene	K, T, U	< 1.4	ppbv	1.4	AC-058	28-Jun-16
16060102-001	1,2,4-Trimethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	28-Jun-16
16060102-001	1,2-Dibromoethane	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Jun-16
16060102-001	1,2-Dichlorobenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	28-Jun-16
16060102-001	1,2-Dichloroethane	I	0.02	ppbv	0.02	AC-058	28-Jun-16
16060102-001	1,2-Dichloropropane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Jun-16
16060102-001	1,3,5-Trimethylbenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Jun-16
16060102-001	1,3-Butadiene	I	0.18	ppbv	0.04	AC-058	28-Jun-16
16060102-001	1,3-Dichlorobenzene	K, T, U	< 0.5	ppbv	0.5	AC-058	28-Jun-16
16060102-001	1,4-Dichlorobenzene	K, T, U	< 0.7	ppbv	0.7	AC-058	28-Jun-16
16060102-001	1,4-Dioxane	K, T, U	< 0.7	ppbv	0.7	AC-058	28-Jun-16
16060102-001	1-Butene	I	0.35	ppbv	0.04	AC-058	28-Jun-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
\/NMHC-VOC/Bonnyville/June 9, 2	S5593	Ambient Air	09-Jun-16	4:20

DESCRIPTION: Bonnyville- AER

REPORT NUMBER: 16060102 **REPORT CREATED:** 05-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060102-001	1-Hexene	I	0.06	ppbv	0.04	AC-058	28-Jun-16
16060102-001	1-Pentene	I	0.25	ppbv	0.02	AC-058	28-Jun-16
16060102-001	2,2,4-Trimethylpentane		0.60	ppbv	0.02	AC-058	28-Jun-16
16060102-001	2,2-Dimethylbutane	I	0.08	ppbv	0.02	AC-058	28-Jun-16
16060102-001	2,3,4-Trimethylpentane	I	0.08	ppbv	0.02	AC-058	28-Jun-16
16060102-001	2,3-Dimethylbutane	I	0.38	ppbv	0.04	AC-058	28-Jun-16
16060102-001	2,3-Dimethylpentane	I	0.42	ppbv	0.04	AC-058	28-Jun-16
16060102-001	2,4-Dimethylpentane	I	0.23	ppbv	0.02	AC-058	28-Jun-16
16060102-001	2-Methylheptane	I	0.04	ppbv	0.02	AC-058	28-Jun-16
16060102-001	2-Methylhexane	I	0.35	ppbv	0.02	AC-058	28-Jun-16
16060102-001	2-Methylpentane		1.53	ppbv	0.02	AC-058	28-Jun-16
16060102-001	3-Methylheptane	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Jun-16
16060102-001	3-Methylhexane	I	0.40	ppbv	0.04	AC-058	28-Jun-16
16060102-001	3-Methylpentane		0.81	ppbv	0.02	AC-058	28-Jun-16
16060102-001	Acetone		7.9	ppbv	0.7	AC-058	28-Jun-16
16060102-001	Acrolein	K, T, U	< 0.5	ppbv	0.5	AC-058	28-Jun-16
16060102-001	Benzene	I	0.22	ppbv	0.02	AC-058	28-Jun-16
16060102-001	Benzyl chloride	K, T, U	< 0.7	ppbv	0.7	AC-058	28-Jun-16
16060102-001	Bromodichloromethane	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Jun-16
16060102-001	Bromoform	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Jun-16
16060102-001	Bromomethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Jun-16
16060102-001	Carbon disulfide	I	0.27	ppbv	0.02	AC-058	28-Jun-16
16060102-001	Carbon tetrachloride	I	0.09	ppbv	0.02	AC-058	28-Jun-16
16060102-001	Chlorobenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Jun-16
16060102-001	Chloroethane	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Jun-16

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
\/NMHC-VOC/Bonnyville/June 9, 2	S5593	Ambient Air	09-Jun-16	4:20

DESCRIPTION: Bonnyville- AER

REPORT NUMBER: 16060102 **REPORT CREATED:** 05-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060102-001	Chloroform	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Jun-16
16060102-001	Chloromethane		0.65	ppbv	0.04	AC-058	28-Jun-16
16060102-001	cis-1,2-Dichloroethene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Jun-16
16060102-001	cis-1,3-Dichloropropene	K, T, U	< 0.07	ppbv	0.07	AC-058	28-Jun-16
16060102-001	cis-2-Butene	I	0.12	ppbv	0.04	AC-058	28-Jun-16
16060102-001	cis-2-Pentene	I	0.23	ppbv	0.04	AC-058	28-Jun-16
16060102-001	Cyclohexane	I	0.12	ppbv	0.04	AC-058	28-Jun-16
16060102-001	Cyclopentane	I	0.28	ppbv	0.02	AC-058	28-Jun-16
16060102-001	Dibromochloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Jun-16
16060102-001	Ethanol		12.6	ppbv	0.5	AC-058	28-Jun-16
16060102-001	Ethyl acetate	K, T, U	< 0.7	ppbv	0.7	AC-058	28-Jun-16
16060102-001	Ethylbenzene	I	0.06	ppbv	0.02	AC-058	28-Jun-16
16060102-001	Freon-11	I	0.24	ppbv	0.04	AC-058	28-Jun-16
16060102-001	Freon-113	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Jun-16
16060102-001	Freon-114	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Jun-16
16060102-001	Freon-12	I	0.49	ppbv	0.04	AC-058	28-Jun-16
16060102-001	Hexachloro-1,3-butadiene	K, T, U	< 0.90	ppbv	0.90	AC-058	28-Jun-16
16060102-001	Isobutane		8.57	ppbv	0.04	AC-058	28-Jun-16
16060102-001	Isopentane		14.6	ppbv	0.05	AC-058	28-Jun-16
16060102-001	Isoprene	I	0.20	ppbv	0.02	AC-058	28-Jun-16
16060102-001	Isopropyl alcohol		1.0	ppbv	0.7	AC-058	28-Jun-16
16060102-001	Isopropylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Jun-16
16060102-001	m,p-Xylene	I	0.18	ppbv	0.05	AC-058	28-Jun-16
16060102-001	m-Diethylbenzene	K, T, U	< 0.07	ppbv	0.07	AC-058	28-Jun-16
16060102-001	m-Ethyltoluene	K, T, U	< 0.14	ppbv	0.14	AC-058	28-Jun-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

Date: July 5, 2016 **Inquiries:** (780) 632 8455 **E-mail:** EAS.Results@albertainnovates.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
\/NMHC-VOC/Bonnyville/June 9, 2	S5593	Ambient Air	09-Jun-16 4:20

DESCRIPTION: Bonnyville- AER

REPORT NUMBER: 16060102 **REPORT CREATED:** 05-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060102-001	Methyl butyl ketone	K, T, U	< 0.90	ppbv	0.90	AC-058	28-Jun-16
16060102-001	Methyl ethyl ketone		0.8	ppbv	0.5	AC-058	28-Jun-16
16060102-001	Methyl isobutyl ketone	K, T, U	< 0.7	ppbv	0.7	AC-058	28-Jun-16
16060102-001	Methyl methacrylate	K, T, U	< 0.13	ppbv	0.13	AC-058	28-Jun-16
16060102-001	Methyl tert butyl ether	K, T, U	< 0.05	ppbv	0.05	AC-058	28-Jun-16
16060102-001	Methylcyclohexane	I	0.04	ppbv	0.02	AC-058	28-Jun-16
16060102-001	Methylcyclopentane		0.54	ppbv	0.04	AC-058	28-Jun-16
16060102-001	Methylene chloride	K, T, U	< 0.5	ppbv	0.5	AC-058	28-Jun-16
16060102-001	n-Butane		33.0	ppbv	0.05	AC-058	28-Jun-16
16060102-001	n-Decane	K, T, U	< 0.11	ppbv	0.11	AC-058	28-Jun-16
16060102-001	n-Dodecane	K, T, U	< 0.7	ppbv	0.7	AC-058	28-Jun-16
16060102-001	n-Heptane	I	0.12	ppbv	0.02	AC-058	28-Jun-16
16060102-001	n-Hexane		0.77	ppbv	0.02	AC-058	28-Jun-16
16060102-001	n-Octane	I	0.05	ppbv	0.04	AC-058	28-Jun-16
16060102-001	n-Pentane		5.7	ppbv	0.2	AC-058	28-Jun-16
16060102-001	n-Propylbenzene	K, T, U	< 0.09	ppbv	0.09	AC-058	28-Jun-16
16060102-001	n-Undecane	K, T, U	< 0.9	ppbv	0.9	AC-058	28-Jun-16
16060102-001	Naphthalene	K, T, U	< 0.9	ppbv	0.9	AC-058	28-Jun-16
16060102-001	n-Nonane	I	0.02	ppbv	0.02	AC-058	28-Jun-16
16060102-001	o-Ethyltoluene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Jun-16
16060102-001	o-Xylene	I	0.07	ppbv	0.02	AC-058	28-Jun-16
16060102-001	p-Diethylbenzene	K, T, U	< 0.07	ppbv	0.07	AC-058	28-Jun-16
16060102-001	p-Ethyltoluene	K, T, U	< 0.13	ppbv	0.13	AC-058	28-Jun-16
16060102-001	Styrene	K, T, U	< 0.07	ppbv	0.07	AC-058	28-Jun-16
16060102-001	Tetrachloroethylene	K, T, U	< 0.07	ppbv	0.07	AC-058	28-Jun-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
\/NMHC-VOC/Bonnyville/June 9, 2	S5593	Ambient Air	09-Jun-16	4:20

DESCRIPTION: Bonnyville- AER

REPORT NUMBER: 16060102 **REPORT CREATED:** 05-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060102-001	Tetrahydrofuran	K, T, U	< 0.7	ppbv	0.7	AC-058	28-Jun-16
16060102-001	Toluene	I	0.50	ppbv	0.02	AC-058	28-Jun-16
16060102-001	trans-1,2-Dichloroethylene	K, T, U	< 0.02	ppbv	0.02	AC-058	28-Jun-16
16060102-001	trans-1,3-Dichloropropylene	K, T, U	< 0.07	ppbv	0.07	AC-058	28-Jun-16
16060102-001	trans-2-Butene	I	0.08	ppbv	0.02	AC-058	28-Jun-16
16060102-001	trans-2-Pentene	I	0.41	ppbv	0.04	AC-058	28-Jun-16
16060102-001	Trichloroethylene	K, T, U	< 0.07	ppbv	0.07	AC-058	28-Jun-16
16060102-001	Vinyl acetate		2.7	ppbv	0.7	AC-058	28-Jun-16
16060102-001	Vinyl chloride	K, T, U	< 0.04	ppbv	0.04	AC-058	28-Jun-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

RESULTS: Adewunmi Adekanmbi
Lakeland Industry and Community Assn
4000, 19 St NE
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PO Box 8237
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Bonnyville
AB T9N 2J5

CLIENT SAMPLE ID	CANISTER ID	Matrix	Priority
JMHC-VOC/Bonnyville/June 23	H3288	Ambient Air	Normal

DESCRIPTION:

DATE SAMPLED: 25-Jun-16 6:45 **DATE RECEIVED:** 29-Jun-16
REPORT CREATED: 19-Jul-16 **REPORT NUMBER:** 16060335
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060335-005	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16060335-005	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16060335-005	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16060335-005	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16060335-005	1,1-Dichloroethylene	K, T, U	< 0.05	ppbv	0.05	AC-058	08-Jul-16
16060335-005	1,2,3-Trimethylbenzene	K, T, U	< 0.06	ppbv	0.06	AC-058	08-Jul-16
16060335-005	1,2,4-Trichlorobenzene	K, T, U	< 1.0	ppbv	1.0	AC-058	08-Jul-16
16060335-005	1,2,4-Trimethylbenzene	I	0.04	ppbv	0.04	AC-058	08-Jul-16
16060335-005	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16060335-005	1,2-Dichlorobenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	08-Jul-16
16060335-005	1,2-Dichloroethane	I	0.02	ppbv	0.01	AC-058	08-Jul-16
16060335-005	1,2-Dichloropropane	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Jul-16
16060335-005	1,3,5-Trimethylbenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16060335-005	1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16060335-005	1,3-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	08-Jul-16
16060335-005	1,4-Dichlorobenzene	K, T, U	< 0.5	ppbv	0.5	AC-058	08-Jul-16
16060335-005	1,4-Dioxane	K, T, U	< 0.5	ppbv	0.5	AC-058	08-Jul-16
16060335-005	1-Butene	I	0.21	ppbv	0.02	AC-058	08-Jul-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
/NMHC-VOC/Bonnyville/June 23, 2	H3288	Ambient Air	25-Jun-16 6:45

DESCRIPTION:

REPORT NUMBER: 16060335 **REPORT CREATED:** 19-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060335-005	1-Hexene	I	0.06	ppbv	0.02	AC-058	08-Jul-16
16060335-005	1-Pentene	I	0.20	ppbv	0.01	AC-058	08-Jul-16
16060335-005	2,2,4-Trimethylpentane	I	0.12	ppbv	0.01	AC-058	08-Jul-16
16060335-005	2,2-Dimethylbutane	I	0.03	ppbv	0.01	AC-058	08-Jul-16
16060335-005	2,3,4-Trimethylpentane	I	0.07	ppbv	0.01	AC-058	08-Jul-16
16060335-005	2,3-Dimethylbutane	I	0.15	ppbv	0.02	AC-058	08-Jul-16
16060335-005	2,3-Dimethylpentane	I	0.15	ppbv	0.02	AC-058	08-Jul-16
16060335-005	2,4-Dimethylpentane	I	0.07	ppbv	0.01	AC-058	08-Jul-16
16060335-005	2-Methylheptane	I	0.03	ppbv	0.01	AC-058	08-Jul-16
16060335-005	2-Methylhexane	I	0.12	ppbv	0.01	AC-058	08-Jul-16
16060335-005	2-Methylpentane		0.45	ppbv	0.01	AC-058	08-Jul-16
16060335-005	3-Methylheptane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16060335-005	3-Methylhexane	I	0.19	ppbv	0.02	AC-058	08-Jul-16
16060335-005	3-Methylpentane	I	0.22	ppbv	0.01	AC-058	08-Jul-16
16060335-005	Acetone		3.2	ppbv	0.5	AC-058	08-Jul-16
16060335-005	Acrolein	K, T, U	< 0.4	ppbv	0.4	AC-058	08-Jul-16
16060335-005	Benzene	I	0.25	ppbv	0.01	AC-058	08-Jul-16
16060335-005	Benzyl chloride	K, T, U	< 0.5	ppbv	0.5	AC-058	08-Jul-16
16060335-005	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16060335-005	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16060335-005	Bromomethane	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Jul-16
16060335-005	Carbon disulfide		1.03	ppbv	0.01	AC-058	08-Jul-16
16060335-005	Carbon tetrachloride	I	0.09	ppbv	0.01	AC-058	08-Jul-16
16060335-005	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16060335-005	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
/NMHC-VOC/Bonnyville/June 23, 2	H3288	Ambient Air	25-Jun-16 6:45

DESCRIPTION:

REPORT NUMBER: 16060335 **REPORT CREATED:** 19-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060335-005	Chloroform	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16060335-005	Chloromethane		1.02	ppbv	0.02	AC-058	08-Jul-16
16060335-005	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Jul-16
16060335-005	cis-1,3-Dichloropropene	K, T, U	< 0.05	ppbv	0.05	AC-058	08-Jul-16
16060335-005	cis-2-Butene	I	0.04	ppbv	0.02	AC-058	08-Jul-16
16060335-005	cis-2-Pentene	I	0.18	ppbv	0.02	AC-058	08-Jul-16
16060335-005	Cyclohexane	I	0.10	ppbv	0.02	AC-058	08-Jul-16
16060335-005	Cyclopentane	I	0.11	ppbv	0.01	AC-058	08-Jul-16
16060335-005	Dibromochloromethane	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Jul-16
16060335-005	Ethanol		4.1	ppbv	0.4	AC-058	08-Jul-16
16060335-005	Ethyl acetate	K, T, U	< 0.5	ppbv	0.5	AC-058	08-Jul-16
16060335-005	Ethylbenzene	I	0.04	ppbv	0.01	AC-058	08-Jul-16
16060335-005	Freon-11	I	0.27	ppbv	0.02	AC-058	08-Jul-16
16060335-005	Freon-113	I	0.06	ppbv	0.01	AC-058	08-Jul-16
16060335-005	Freon-114	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16060335-005	Freon-12		0.46	ppbv	0.02	AC-058	08-Jul-16
16060335-005	Hexachloro-1,3-butadiene	K, T, U	< 0.62	ppbv	0.62	AC-058	08-Jul-16
16060335-005	Isobutane		3.59	ppbv	0.02	AC-058	08-Jul-16
16060335-005	Isopentane		4.95	ppbv	0.04	AC-058	08-Jul-16
16060335-005	Isoprene		0.48	ppbv	0.01	AC-058	08-Jul-16
16060335-005	Isopropyl alcohol	K, T, U	< 0.5	ppbv	0.5	AC-058	08-Jul-16
16060335-005	Isopropylbenzene	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Jul-16
16060335-005	m,p-Xylene	I	0.24	ppbv	0.04	AC-058	08-Jul-16
16060335-005	m-Diethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	08-Jul-16
16060335-005	m-Ethyltoluene	K, T, U	< 0.10	ppbv	0.10	AC-058	08-Jul-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
/NMHC-VOC/Bonnyville/June 23, 2	H3288	Ambient Air	25-Jun-16 6:45

DESCRIPTION:

REPORT NUMBER: 16060335 **REPORT CREATED:** 19-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060335-005	Methyl butyl ketone	K, T, U	< 0.62	ppbv	0.62	AC-058	08-Jul-16
16060335-005	Methyl ethyl ketone		0.9	ppbv	0.4	AC-058	08-Jul-16
16060335-005	Methyl isobutyl ketone	K, T, U	< 0.5	ppbv	0.5	AC-058	08-Jul-16
16060335-005	Methyl methacrylate	K, T, U	< 0.09	ppbv	0.09	AC-058	08-Jul-16
16060335-005	Methyl tert butyl ether	K, T, U	< 0.04	ppbv	0.04	AC-058	08-Jul-16
16060335-005	Methylcyclohexane	I	0.15	ppbv	0.01	AC-058	08-Jul-16
16060335-005	Methylcyclopentane	I	0.28	ppbv	0.02	AC-058	08-Jul-16
16060335-005	Methylene chloride		1.2	ppbv	0.4	AC-058	08-Jul-16
16060335-005	n-Butane		16.0	ppbv	0.04	AC-058	08-Jul-16
16060335-005	n-Decane	K, T, U	< 0.07	ppbv	0.07	AC-058	08-Jul-16
16060335-005	n-Dodecane	K, T, U	< 0.5	ppbv	0.5	AC-058	08-Jul-16
16060335-005	n-Heptane	I	0.21	ppbv	0.01	AC-058	08-Jul-16
16060335-005	n-Hexane	I	0.28	ppbv	0.01	AC-058	08-Jul-16
16060335-005	n-Octane	I	0.04	ppbv	0.02	AC-058	08-Jul-16
16060335-005	n-Pentane		1.6	ppbv	0.1	AC-058	08-Jul-16
16060335-005	n-Propylbenzene	K, T, U	< 0.06	ppbv	0.06	AC-058	08-Jul-16
16060335-005	n-Undecane	K, T, U	< 0.6	ppbv	0.6	AC-058	08-Jul-16
16060335-005	Naphthalene	K, T, U	< 0.6	ppbv	0.6	AC-058	08-Jul-16
16060335-005	n-Nonane	I	0.02	ppbv	0.01	AC-058	08-Jul-16
16060335-005	o-Ethyltoluene	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Jul-16
16060335-005	o-Xylene	I	0.09	ppbv	0.01	AC-058	08-Jul-16
16060335-005	p-Diethylbenzene	K, T, U	< 0.05	ppbv	0.05	AC-058	08-Jul-16
16060335-005	p-Ethyltoluene	K, T, U	< 0.09	ppbv	0.09	AC-058	08-Jul-16
16060335-005	Styrene	K, T, U	< 0.05	ppbv	0.05	AC-058	08-Jul-16
16060335-005	Tetrachloroethylene	K, T, U	< 0.05	ppbv	0.05	AC-058	08-Jul-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED
/NMHC-VOC/Bonnyville/June 23, 2	H3288	Ambient Air	25-Jun-16 6:45

DESCRIPTION:

REPORT NUMBER: 16060335 **REPORT CREATED:** 19-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16060335-005	Tetrahydrofuran	K, T, U	< 0.5	ppbv	0.5	AC-058	08-Jul-16
16060335-005	Toluene		0.66	ppbv	0.01	AC-058	08-Jul-16
16060335-005	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Jul-16
16060335-005	trans-1,3-Dichloropropylene	K, T, U	< 0.05	ppbv	0.05	AC-058	08-Jul-16
16060335-005	trans-2-Butene	I	0.03	ppbv	0.01	AC-058	08-Jul-16
16060335-005	trans-2-Pentene	I	0.35	ppbv	0.02	AC-058	08-Jul-16
16060335-005	Trichloroethylene	K, T, U	< 0.05	ppbv	0.05	AC-058	08-Jul-16
16060335-005	Vinyl acetate	K, T, U	< 0.5	ppbv	0.5	AC-058	08-Jul-16
16060335-005	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

RESULTS: Adewunmi Adekanmbi
Lakeland Industry and Community Assn
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CLIENT SAMPLE ID	CANISTER ID	Matrix	Priority
MHC-VOC/Bonnyville/June 29	S5625	Ambient Air	Normal

DESCRIPTION: Bonnyville- AER

DATE SAMPLED: 29-Jun-16 17:20
DATE RECEIVED: 05-Jul-16
REPORT CREATED: 20-Jul-16
REPORT NUMBER: 16070015
VERSION: Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16070015-005	1,1,1-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16070015-005	1,1,2,2-Tetrachloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16070015-005	1,1,2-Trichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16070015-005	1,1-Dichloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16070015-005	1,1-Dichloroethylene	K, T, U	< 0.05	ppbv	0.05	AC-058	08-Jul-16
16070015-005	1,2,3-Trimethylbenzene	I	0.36	ppbv	0.06	AC-058	08-Jul-16
16070015-005	1,2,4-Trichlorobenzene	K, T, U	< 1.0	ppbv	1.0	AC-058	08-Jul-16
16070015-005	1,2,4-Trimethylbenzene		2.10	ppbv	0.04	AC-058	08-Jul-16
16070015-005	1,2-Dibromoethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16070015-005	1,2-Dichlorobenzene	K, T, U	< 0.04	ppbv	0.04	AC-058	08-Jul-16
16070015-005	1,2-Dichloroethane	I	0.03	ppbv	0.01	AC-058	08-Jul-16
16070015-005	1,2-Dichloropropane	I	0.03	ppbv	0.01	AC-058	08-Jul-16
16070015-005	1,3,5-Trimethylbenzene		0.73	ppbv	0.02	AC-058	08-Jul-16
16070015-005	1,3-Butadiene	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16070015-005	1,3-Dichlorobenzene	K, T, U	< 0.4	ppbv	0.4	AC-058	08-Jul-16
16070015-005	1,4-Dichlorobenzene	K, T, U	< 0.5	ppbv	0.5	AC-058	08-Jul-16
16070015-005	1,4-Dioxane	K, T, U	< 0.5	ppbv	0.5	AC-058	08-Jul-16
16070015-005	1-Butene		0.60	ppbv	0.02	AC-058	08-Jul-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

Date: July 20, 2016 **Inquiries:** (780) 632 8455 **E-mail:** EAS.Results@albertainnovates.ca

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
/NMHC-VOC/Bonnyville/June 29, 2	S5625	Ambient Air	29-Jun-16	17:20

DESCRIPTION: Bonnyville- AER

REPORT NUMBER: 16070015 **REPORT CREATED:** 20-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16070015-005	1-Hexene		0.52	ppbv	0.02	AC-058	08-Jul-16
16070015-005	1-Pentene		0.53	ppbv	0.01	AC-058	08-Jul-16
16070015-005	2,2,4-Trimethylpentane		8.32	ppbv	0.01	AC-058	08-Jul-16
16070015-005	2,2-Dimethylbutane		5.37	ppbv	0.01	AC-058	08-Jul-16
16070015-005	2,3,4-Trimethylpentane	I	0.10	ppbv	0.01	AC-058	08-Jul-16
16070015-005	2,3-Dimethylbutane		2.65	ppbv	0.02	AC-058	08-Jul-16
16070015-005	2,3-Dimethylpentane		1.83	ppbv	0.02	AC-058	08-Jul-16
16070015-005	2,4-Dimethylpentane		0.78	ppbv	0.01	AC-058	08-Jul-16
16070015-005	2-Methylheptane		2.03	ppbv	0.01	AC-058	08-Jul-16
16070015-005	2-Methylhexane		6.19	ppbv	0.01	AC-058	08-Jul-16
16070015-005	2-Methylpentane		9.58	ppbv	0.01	AC-058	08-Jul-16
16070015-005	3-Methylheptane		1.96	ppbv	0.02	AC-058	08-Jul-16
16070015-005	3-Methylhexane		6.45	ppbv	0.02	AC-058	08-Jul-16
16070015-005	3-Methylpentane		6.68	ppbv	0.01	AC-058	08-Jul-16
16070015-005	Acetone		7.9	ppbv	0.5	AC-058	08-Jul-16
16070015-005	Acrolein	K, T, U	< 0.4	ppbv	0.4	AC-058	08-Jul-16
16070015-005	Benzene		2.57	ppbv	0.01	AC-058	08-Jul-16
16070015-005	Benzyl chloride	K, T, U	< 0.5	ppbv	0.5	AC-058	08-Jul-16
16070015-005	Bromodichloromethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16070015-005	Bromoform	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16070015-005	Bromomethane	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Jul-16
16070015-005	Carbon disulfide	I	0.11	ppbv	0.01	AC-058	08-Jul-16
16070015-005	Carbon tetrachloride	I	0.09	ppbv	0.01	AC-058	08-Jul-16
16070015-005	Chlorobenzene	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16070015-005	Chloroethane	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16

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ENVIRONMENTAL ANALYTICAL SERVICES

TEST REPORT

CLIENT SAMPLE ID	CANISTER ID	Matrix	DATE SAMPLED	
/NMHC-VOC/Bonnyville/June 29, 2	S5625	Ambient Air	29-Jun-16	17:20

DESCRIPTION: Bonnyville- AER

REPORT NUMBER: 16070015 **REPORT CREATED:** 20-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16070015-005	Chloroform	I	0.03	ppbv	0.02	AC-058	08-Jul-16
16070015-005	Chloromethane		0.52	ppbv	0.02	AC-058	08-Jul-16
16070015-005	cis-1,2-Dichloroethene	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Jul-16
16070015-005	cis-1,3-Dichloropropene	K, T, U	< 0.05	ppbv	0.05	AC-058	08-Jul-16
16070015-005	cis-2-Butene		0.89	ppbv	0.02	AC-058	08-Jul-16
16070015-005	cis-2-Pentene		1.17	ppbv	0.02	AC-058	08-Jul-16
16070015-005	Cyclohexane		4.19	ppbv	0.02	AC-058	08-Jul-16
16070015-005	Cyclopentane		1.36	ppbv	0.01	AC-058	08-Jul-16
16070015-005	Dibromochloromethane	I	0.02	ppbv	0.01	AC-058	08-Jul-16
16070015-005	Ethanol		111	ppbv	2.2	AC-058	08-Jul-16
16070015-005	Ethyl acetate	K, T, U	< 0.5	ppbv	0.5	AC-058	08-Jul-16
16070015-005	Ethylbenzene		2.58	ppbv	0.01	AC-058	08-Jul-16
16070015-005	Freon-11	I	0.24	ppbv	0.02	AC-058	08-Jul-16
16070015-005	Freon-113	I	0.06	ppbv	0.01	AC-058	08-Jul-16
16070015-005	Freon-114	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16
16070015-005	Freon-12	I	0.35	ppbv	0.02	AC-058	08-Jul-16
16070015-005	Hexachloro-1,3-butadiene	K, T, U	< 0.62	ppbv	0.62	AC-058	08-Jul-16
16070015-005	Isobutane		6.27	ppbv	0.02	AC-058	08-Jul-16
16070015-005	Isopentane		55.0	ppbv	0.22	AC-058	08-Jul-16
16070015-005	Isoprene		0.67	ppbv	0.01	AC-058	08-Jul-16
16070015-005	Isopropyl alcohol		0.7	ppbv	0.5	AC-058	08-Jul-16
16070015-005	Isopropylbenzene	I	0.12	ppbv	0.01	AC-058	08-Jul-16
16070015-005	m,p-Xylene		8.75	ppbv	0.04	AC-058	08-Jul-16
16070015-005	m-Diethylbenzene	I	0.06	ppbv	0.05	AC-058	08-Jul-16
16070015-005	m-Ethyltoluene		1.77	ppbv	0.10	AC-058	08-Jul-16

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TEST REPORT

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DESCRIPTION: Bonnyville- AER

REPORT NUMBER: 16070015 **REPORT CREATED:** 20-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16070015-005	Methyl butyl ketone	K, T, U	< 0.62	ppbv	0.62	AC-058	08-Jul-16
16070015-005	Methyl ethyl ketone	K, T, U	< 0.4	ppbv	0.4	AC-058	08-Jul-16
16070015-005	Methyl isobutyl ketone	K, T, U	< 0.5	ppbv	0.5	AC-058	08-Jul-16
16070015-005	Methyl methacrylate	K, T, U	< 0.09	ppbv	0.09	AC-058	08-Jul-16
16070015-005	Methyl tert butyl ether	K, T, U	< 0.04	ppbv	0.04	AC-058	08-Jul-16
16070015-005	Methylcyclohexane		3.59	ppbv	0.01	AC-058	08-Jul-16
16070015-005	Methylcyclopentane		5.97	ppbv	0.02	AC-058	08-Jul-16
16070015-005	Methylene chloride	K, T, U	< 0.4	ppbv	0.4	AC-058	08-Jul-16
16070015-005	n-Butane		15.1	ppbv	0.04	AC-058	08-Jul-16
16070015-005	n-Decane	I	0.12	ppbv	0.07	AC-058	08-Jul-16
16070015-005	n-Dodecane	K, T, U	< 0.5	ppbv	0.5	AC-058	08-Jul-16
16070015-005	n-Heptane		4.59	ppbv	0.01	AC-058	08-Jul-16
16070015-005	n-Hexane		3.06	ppbv	0.01	AC-058	08-Jul-16
16070015-005	n-Octane		1.55	ppbv	0.02	AC-058	08-Jul-16
16070015-005	n-Pentane		11.0	ppbv	0.1	AC-058	08-Jul-16
16070015-005	n-Propylbenzene		0.56	ppbv	0.06	AC-058	08-Jul-16
16070015-005	n-Undecane	K, T, U	< 0.6	ppbv	0.6	AC-058	08-Jul-16
16070015-005	Naphthalene	K, T, U	< 0.6	ppbv	0.6	AC-058	08-Jul-16
16070015-005	n-Nonane		0.52	ppbv	0.01	AC-058	08-Jul-16
16070015-005	o-Ethyltoluene		0.52	ppbv	0.01	AC-058	08-Jul-16
16070015-005	o-Xylene		3.02	ppbv	0.01	AC-058	08-Jul-16
16070015-005	p-Diethylbenzene	I	0.16	ppbv	0.05	AC-058	08-Jul-16
16070015-005	p-Ethyltoluene		0.70	ppbv	0.09	AC-058	08-Jul-16
16070015-005	Styrene	K, T, U	< 0.05	ppbv	0.05	AC-058	08-Jul-16
16070015-005	Tetrachloroethylene	I	0.16	ppbv	0.05	AC-058	08-Jul-16

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DESCRIPTION: Bonnyville- AER

REPORT NUMBER: 16070015 **REPORT CREATED:** 20-Jul-16 **VERSION:** Version 01

Lab ID	Parameter	Qualifier	Result	Units	RDL	Method	Analysis Date
16070015-005	Tetrahydrofuran	K, T, U	< 0.5	ppbv	0.5	AC-058	08-Jul-16
16070015-005	Toluene		16.9	ppbv	0.01	AC-058	08-Jul-16
16070015-005	trans-1,2-Dichloroethylene	K, T, U	< 0.01	ppbv	0.01	AC-058	08-Jul-16
16070015-005	trans-1,3-Dichloropropylene	K, T, U	< 0.05	ppbv	0.05	AC-058	08-Jul-16
16070015-005	trans-2-Butene		1.25	ppbv	0.01	AC-058	08-Jul-16
16070015-005	trans-2-Pentene		2.65	ppbv	0.02	AC-058	08-Jul-16
16070015-005	Trichloroethylene	K, T, U	< 0.05	ppbv	0.05	AC-058	08-Jul-16
16070015-005	Vinyl acetate	K, T, U	< 0.5	ppbv	0.5	AC-058	08-Jul-16
16070015-005	Vinyl chloride	K, T, U	< 0.02	ppbv	0.02	AC-058	08-Jul-16

Report certified by: Graham Knox, Team Lead **On behalf of:** PJ Pretorius, Manager, Analysis and Testing Services

Date: July 20, 2016 **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	Bonnyville
Name of the Representative of the Person Responsible (Last, First, Middle)	Position / Title of the Representative of the Person Responsible
Wunmi Adekanmbi	Project Manager Assistant, Customer Service, Air Services
Is an External Party Certifying the Report? (If 'Yes', fill in the fields below for the external person. ☐ Yes ■ 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

03-Aug-2016

Report Issued Date (dd-mm-yyyy)

APPENDIX VI
DATA VALIDATION CERTIFICATION FORM

Maxxam
A Bureau Veritas Group Company

Validation Certificate Form

Client: Lakeland Industry & Community Association	**Project #:** 2833-2016-06-37- C
Site: Bonnyville	**Contact:** Mike Bisaga

Level 0 Preliminary Verification	[illegible]	**Date** 15-July-2016
Level 1 Primary Validation	[illegible]	**Date** 03-Aug-2016
Level 2 Final Validation	[illegible]	**Date** 03-Aug-2016
Level 3 Independent Data Review	[illegible]	**Date** 03-Aug-2016
Post-Final Validation	NA	**Date** NA

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