

Alberta Environment and Parks (AEP)
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November 2, 2018

Subject: Monthly Report Submission for the LICA Cold Lake South station

Lakeland Industry & Community Association (LICA) is pleased to submit the ambient air monitoring monthly report for the LICA Cold Lake South AQM Station in the month of September 2018.

The air monitoring program consists of continuous air monitoring, passive sampling, intermittent sampling, including both VOC and PAH sampling program, and Partisol sampling program. All the air monitoring activities were conducted by contractors.

Sampling Program	Monitoring Activities Conducted By	Sample Analysis Conducted By	Data/Report Review and Prepared By	Electronic Submission Conducted By
Continuous ambient air	Maxxam Analytics	Maxxam Analytics	Maxxam Analytics	Maxxam Analytics
Passive	Maxxam Analytics	Maxxam Analytics	Maxxam Analytics	Maxxam Analytics
Intermittent	Maxxam Analytics	InnoTech Alberta Inc	InnoTech Alberta Inc	Not Applicable
VOC Canister	Maxxam Analytics	InnoTech Alberta Inc	InnoTech Alberta Inc	Not Applicable

The operational time for all continuous ambient air analyzers, meteorological systems and data acquisition systems, with the exception of PM2.5, were above the 90% requirement.

All data collected in September 2018 was compliant with the requirements outlined in the Air Monitoring Directive (Alberta Environment and Parks, 2016).

Non-Conformance: Due to equipment failure, 280 hours of downtime were recorded for PM2.5 this month. Operational time did not meet the AMD's 90% requirement. AEP reference number: 346086.

PM2.5: During a site visit on September 4, it was found that the Sharp unit malfunctioned due to the detector failure. A new detector was installed on September 12 and a successful post-repair calibration was completed. To address a slight negative drift following the calibration, the instrument was re-calibrated on September 13 to make adjustments to data reporting thresholds and sensitivities. Data analysis determined the point of failed performance as hour 13:00 on August 27. Data collected from this point up to the post-repair calibration on September 12, was therefore invalidated. 280 hours of downtime were incurred, in the September monitoring period, due to this event. The operational uptime was 66.1%.

As the LICA Environmental Program Manager and Data & Reporting Specialist, we have reviewed and verified this report and that the information is complete, accurate and representative of the monitoring results, reporting timeframe and the specified analysis, summarization and reporting requirements. We also verify all



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air data that are required by the AMD to be electronically submitted to AEP and Alberta's Ambient Air Quality Data Warehouse have been submitted by the time of this report submission, with the exception of electronic submission for the results of intermittent samples and VOC canister samples. We are currently working with the airdata warehouse to set up codes for some VOC/PAH species that are missing in the parameter list. The results for these data will be submitted once all needed codes are available.

Should you have any questions, please don't hesitate to contact us.

Respectfully,

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

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

JOB #: 2833-2018-09-01-C

September 2018

Prepared for:

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

5107 50 ST.

BONNYVILLE, ALBERTA

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Attention: MIKE BISAGA

DATE: **October 31, 2018**

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Wunmi Adekanmbi, M.Sc., EPT, PMP
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SUMMARY

In September 2018, Maxxam Analytics was contracted to manage the ambient air quality monitoring and maintenance activities at the Cold Lake Continuous Monitoring Station, near Cold Lake, Alberta. The monitoring station provides continuous meteorological measurements and air quality data for non-compliance parameters, as requested by the Lakeland Industry & Community Association.

All data collected this month was compliant with the requirements outlined in the Air Monitoring Directive (Alberta Environment and Parks, 2016).

The operational time for all continuous ambient air analyzers, meteorological systems and data acquisition systems, with the exception of PM_{2.5}, were above the 90% requirement.

Non-Conformance - PM_{2.5}: Due to equipment failure, 280 hours of downtime were recorded for PM_{2.5} this month. Operational time did not meet the AMD's 90% requirement. This was reported under AEP reference number: 346086. During a site visit on September 4, troubleshooting activities revealed that the detector had failed. A new detector was installed on September 12 and a successful post-repair calibration was completed. To address a slight negative drift following the calibration, the instrument was re-calibrated on September 13. Data analysis determined the point of failed performance as hour 13:00 on August 27. Data collected from this point up to the post-repair calibration on September 12, was therefore invalidated.

Gas Parameters: Due to a power failure that occurred on August 31, the automated daily zero-span check, scheduled for hour 13:00, was not executed. An additional zero-span check was performed on September 1 at hour 07:00, resulting in 1 hour of downtime.

Power Failure: A brief power failure occurred on September 9 at hour 14:00, incurring 1 hour of downtime on all parameters.

THC/CH₄/NMHC: Two additional span checks were performed on September 2 and September 14, at hours 18:00 and 08:00 respectively, as quality assurance measures, following span gas replacements. Two hours of downtime were incurred as a result.

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 Analytics is issuing this completed report to Lakeland Industry & Community Association, Cold Lake South Continuous Monitoring Station.

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

Monthly Continuous Data Summary

Lakeland Industry & Community Association						MAXIMUM VALUES							OPERATIONAL TIME (%)
Cold Lake South Continuous Monitoring Station						1-HOUR				24-HOUR			
PARAMETER	OBJECTIVES		EXCEEDANCES		MONTHLY AVERAGE	READING	DAY	HOUR	WIND SPEED (kph)	WIND DIRECTION (sector)	READING	DAY	
	1-hr	24-hr	1-hr	24-hr									
SO ₂ (ppb)	172	48	0	0	0	1	3	16	4.2	WNW	0	1	99.7
TRS (ppb)	-	-	-	-	0	1	3	1	0.6	WSW	0	1	99.7
THC (ppm)	-	-	-	-	2.07	2.61	3	5	3.1	ESE	2.23	3	99.4
CH ₄ (ppm)	-	-	-	-	2.07	2.61	3	8	3.1	ESE	2.23	3	99.4
NMHC (ppm)	-	-	-	-	0.00	0.26	7	20	4.8	E	0.01	7	99.4
NO ₂ (ppb)	159	-	0	-	2	10	21	22	0.6	E	3	21	99.7
NO (ppb)	-	-	-	-	0	10	12	17	1.5	ESE	1	5	99.7
NO _x (ppb)	-	-	-	-	2	18	21	22	0.6	E	4	21	99.7
O ₃ (ppb)	82	-	0	-	17.9	38.0	25	14	8.5	WSW	27.9	26	99.7
PM _{2.5} (µg/m ³)	80	30	0	0	1	15	18	22	0.9	SSW	4	24	61.1
RELATIVE HUMIDITY (%)	-	-	-	-	76	100	3	11	2.8	N	96	12	99.9
AMBIENT TEMPERATURE (°C)	-	-	-	-	5.4	22.0	8	15	4.9	W	15.2	8	99.9
VECTOR WS (kph)	-	-	-	-	1.5	15.9	26	11	-	NW	9.0	29	99.9
VECTOR WD (sec)	-	-	-	-	335 (NNW)	-	-	-	-	-	-	-	99.9

Exceedance Summary Report

SO₂ 1-Hour Exceedances

Measured concentrations of sulphur dioxide were below the 1-hour AAAQO of 172 ppb.

SO₂ 24-Hour Exceedances

Measured concentrations of sulphur dioxide were below the 24-hour AAAQO of 48.0 ppb.

NO₂ 1-Hour Exceedances

Measured concentrations of nitrogen dioxide were below the 1-hour AAAQO of 159 ppb.

PM_{2.5} 1-Hour Exceedances

Measured concentrations of fine particulate matter were below the 1-hour AAAQO of 80 µg/m³.

PM_{2.5} 24-Hour Exceedances

Measured concentrations of fine particulate matter were below the 24-hour AAAQO of 30 µg/m³.

O₃ 1-Hour Exceedances

Measured concentrations of ozone were below the 1-hour AAAQO of 82 ppb.

In accordance with EPEA and the Substance Release Regulation.

In accordance with A Guide to Release Reporting and the Alberta Ambient Air Quality Objectives and Guidelines Summary.

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1.0 Discussion

This monthly report consists of continuous monitoring results for the following parameters: Sulphur Dioxide (SO₂), Total Reduced Sulphur (TRS), Total Hydrocarbon (THC), Methane (CH₄), Non-Methane Hydrocarbon (NMHC), Oxides of Nitrogen (NO_x), Nitric Oxides (NO), Nitrogen Dioxide (NO₂), Ozone (O₃), Particulate Matter 2.5 (PM_{2.5}), Relative Humidity (RH), Ambient Temperature (AmbTPX), Wind Speed (WS), Wind Direction (WD) and Standard Deviation Wind Direction (STDWD).

The sample inlet filter for all continuous air analyzers are replaced 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, at a minimum, for each monthly monitoring period.

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 verification and validation based on the requirements of the AMD (December, 2016) Chapter 6: Ambient Data Quality and Chapter 9: Reporting. 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. The minimum and maximum statistics are highlighted in the data table and are for reference only. The highlighted cells are based on the software's interpretation of the exact position of the minimum or maximum value. The visual presentation of these statistics may not be the obvious choice in a data range due to rounding, truncating or analyzer specifications.

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%).

SULPHUR DIOXIDE (SO₂)

- Operational time for the monitoring period was 99.7%, equivalent to 2 hours of downtime.
- Due to a power failure that occurred on August 31, the automated daily zero-span check, scheduled for hour 13:00, was not executed. An additional zero-span check was performed on September 1 at hour 07:00, resulting in 1 hour of downtime.
- The routine monthly calibration was performed on September 5.
- A brief power failure occurred on September 9 at hour 14:00, incurring 1 hour of downtime.

TOTAL REDUCED SULPHUR (TRS)

- Operational time for the monitoring period was 99.7%, equivalent to 2 hours of downtime.
- Due to a power failure that occurred on August 31, the automated daily zero-span check, scheduled for hour 13:00, was not executed. An additional zero-span check was performed on September 1 at hour 07:00, resulting in 1 hour of downtime.
- The routine monthly calibration was performed on September 5.
- A brief power failure occurred on September 9 at hour 14:00, incurring 1 hour of downtime.

TOTAL HYDROCARBONS (THC), METHANE (CH₄) and NON-METHANE HYDROCARBONS (NMHC)

- Operational time for the monitoring period was 99.4%, equivalent to 4 hours of downtime.
- Due to a power failure that occurred on August 31, the automated daily zero-span check, scheduled for hour 13:00, was not executed. An additional zero-span check was performed on September 1 at hour 07:00, resulting in 1 hour of downtime.
- The routine monthly calibration was performed on September 5.
- A brief power failure occurred on September 9 at hour 14:00, incurring 1 hour of downtime.
- The span gas cylinder was replaced on September 2 and September 14. As quality assurance measures, additional span checks were triggered at hours 18:00 and 08:00 respectively, incurring two hours of downtime. The expected span value was updated following the gas replacement on September 14, to reflect the reference concentration for the new span gas.

OXIDES OF NITROGEN (NO_x), NITRIC OXIDE (NO) and NITROGEN DIOXIDE (NO₂)

- Operational time for the monitoring period was 99.7%, equivalent to 2 hours of downtime.
- Due to a power failure that occurred on August 31, the automated daily zero-span check, scheduled for hour 13:00, was not executed. An additional zero-span check was performed on September 1 at hour 07:00, resulting in 1 hour of downtime.
- The routine monthly calibration was performed on September 5.
- A brief power failure occurred on September 9 at hour 14:00, incurring 1 hour of downtime.

OZONE (O₃)

- Operational time for the monitoring period was 99.7%, equivalent to 2 hours of downtime.
- Due to a power failure that occurred on August 31, the automated daily zero-span check, scheduled for hour 13:00, was not executed. An additional zero-span check was performed on September 1 at hour 07:00, resulting in 1 hour of downtime.
- The routine monthly calibration was performed on September 5.
- A brief power failure occurred on September 9 at hour 14:00, incurring 1 hour of downtime.

PARTICULATE MATTER < 2.5 MICRONS (PM_{2.5})

- Operational time for the monitoring period was 66.1%, equivalent to 280 hours of downtime. Equipment uptime did not meet the AMD's 90% requirement this month. This was reported under AEP reference number: 346086
- Equipment diagnostics and alarms revealed anomaly in the performance of the Sharp unit, prompting a site visit on September 4. Troubleshooting activities were coordinated with the manufacturer and it was determined that the detector had failed. A new detector was installed on September 12 and a successful post-repair calibration was completed. To address a slight negative drift following the calibration, the instrument was re-calibrated on September 13 to make adjustments to data reporting thresholds and sensitivities. Data analysis determined the point of failed performance as hour 13:00 on August 27. Data collected from this point up to the post-repair calibration on September 12, was therefore invalidated. 280 hours of downtime were incurred, in the September monitoring period, due to this event.

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

- Operational time for the monitoring period was 99.9%, equivalent to 1 hour of downtime. This was incurred due to a power failure that occurred on September 9 at hour 14:00.
- Wind data is reported as vector wind speed and vector wind direction. Wind direction is defined as the direction from which the wind is blowing from and is measured in degrees from true north.

RELATIVE HUMIDITY (RH)

- Operational time for the monitoring period was 99.9%, equivalent to 1 hour of downtime. This was incurred due to a power failure that occurred on September 9 at hour 14:00.

AMBIENT TEMPERATURE (AmbTPX)

- Operational time for the monitoring period was 99.9%, equivalent to 1 hour of downtime. This was incurred due to a power failure that occurred on September 9 at hour 14:00.

2.0 Project Personnel

Mike Bisaga and Lily Lin were the contacts for Lakeland Industry & Community Association and the Maxxam field technician was Christopher Wesson.

3.0 Plant Monthly Required AMD Summary

All data collected this month, with the exception of $PM_{2.5}$, was compliant with the requirements outlined in the AMD, 2016.

The operational time for all continuous ambient air analyzers, meteorological systems and data acquisition systems, with the exception of $PM_{2.5}$, were above the 90% requirement.

Non-Conformance: Due to equipment failure, 280 hours of downtime were recorded for $PM_{2.5}$ this month. Operational time did not meet the AMD's 90% requirement. This was reported under AEP reference number: 346086.

4.0 Calculations and Results

All calculations and reporting of results follow the methods described in the AMD, 2016.

5.0 Methods and Procedures

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

- Maxxam AIR SOP-00001: Methane, Non-Methane Hydrocarbon Analyzer Monitoring
- Maxxam AIR SOP-00014: Measurement of Particulate Concentration Using the THERMO SHARP
- Maxxam AIR SOP-00209: Ambient Sulphur Monitoring
- Maxxam AIR SOP-00212: Ambient O₃ Monitoring
- Maxxam AIR SOP-00213: Ambient NO/NO₂/NO_x Monitoring
- MET One Instruments: Operation Manual Document No. 50.5-9800

There were no deviations from the prescribed methods.

The following instruments were used to perform the test program:

- Sulphur Dioxide - Thermo 43i UV Fluorescent Analyzer
- Total Reduced Sulphur - Thermo 450i UV Fluorescent Analyzer
- Methane, Non-Methane Hydrocarbon - Thermo 55i FID Analyzer
- Oxides of Nitrogen - Thermo 42i Chemiluminescent Analyzer
- Ozone - Thermo 49i Photometric Analyzer
- Particulate Matter (PM_{2.5}) - Thermo SHARP 5030 Unit
- Wind System - Met One Unit
- Relative Humidity - Met One Unit
- Ambient Temperature - Met One Unit
- Datalogger - Envidas Ultimate

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

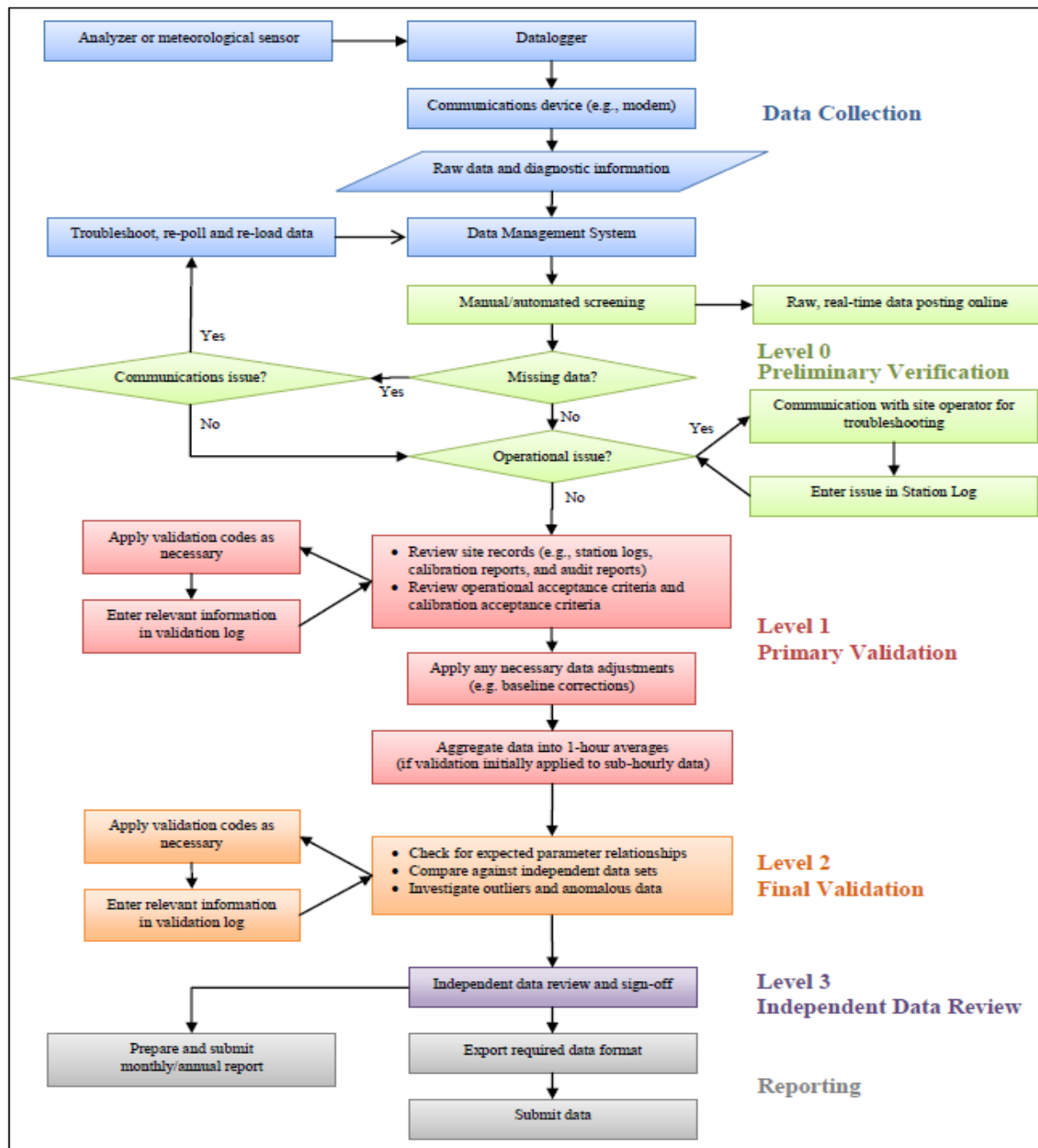
The purpose of Level 2 validation is to verify that there are no inconsistencies among related data, or among regional data measured at nearby sites.

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: Air Monitoring Directive (December 2016), Chapter 6, Ambient Data Quality; Figure 1 Data Collection and Management Process Flow Chart

APPENDIX I
CONTINUOUS MONITORING DATA RESULTS

SULPHUR DIOXIDE

SULPHUR DIOXIDE Hourly Averages (SO₂ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.				
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.					
DAY																																
1	0	0	0	0	0	0	0	S1	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23
2	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
3	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	1	0	0	1	1	1	1	1	0	0	0	0	1	0	24
4	1	1	1	1	0	0	0	1	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
5	0	0	0	0	0	0	0	0	0	C	C	C	C	C	C	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	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
7	0	0	0	0	0	0	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
8	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
9	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23
10	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	24
11	0	0	S	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	1	0	24
12	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	24
13	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	24
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	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	S	0	0	0	0	0	0	0	0	24
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	S	0	0	0	0	0	0	0	0	0	24
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	24
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	24
19	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	1	0	24
20	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
21	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	24
22	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
23	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	24
24	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
25	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	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	24
27	0	0	0	0	0	0	0	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
28	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
29	0	0	1	0	0	0	0	S	0	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
30	0	0	0	0	0	0	S	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
HOURLY MAX	1	1	1	1	0	0	0	1	1	1	1	0	1	1	0	0	1	0	0	1	1	1	1	1	1	1	1	1				
HOURLY AVG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

STATUS FLAG CODES

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

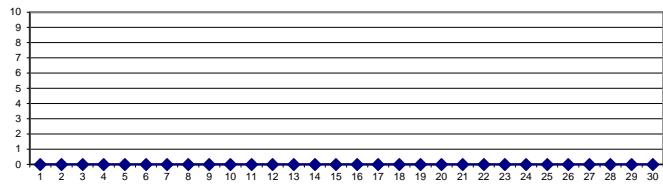
OBJECTIVE LIMIT:

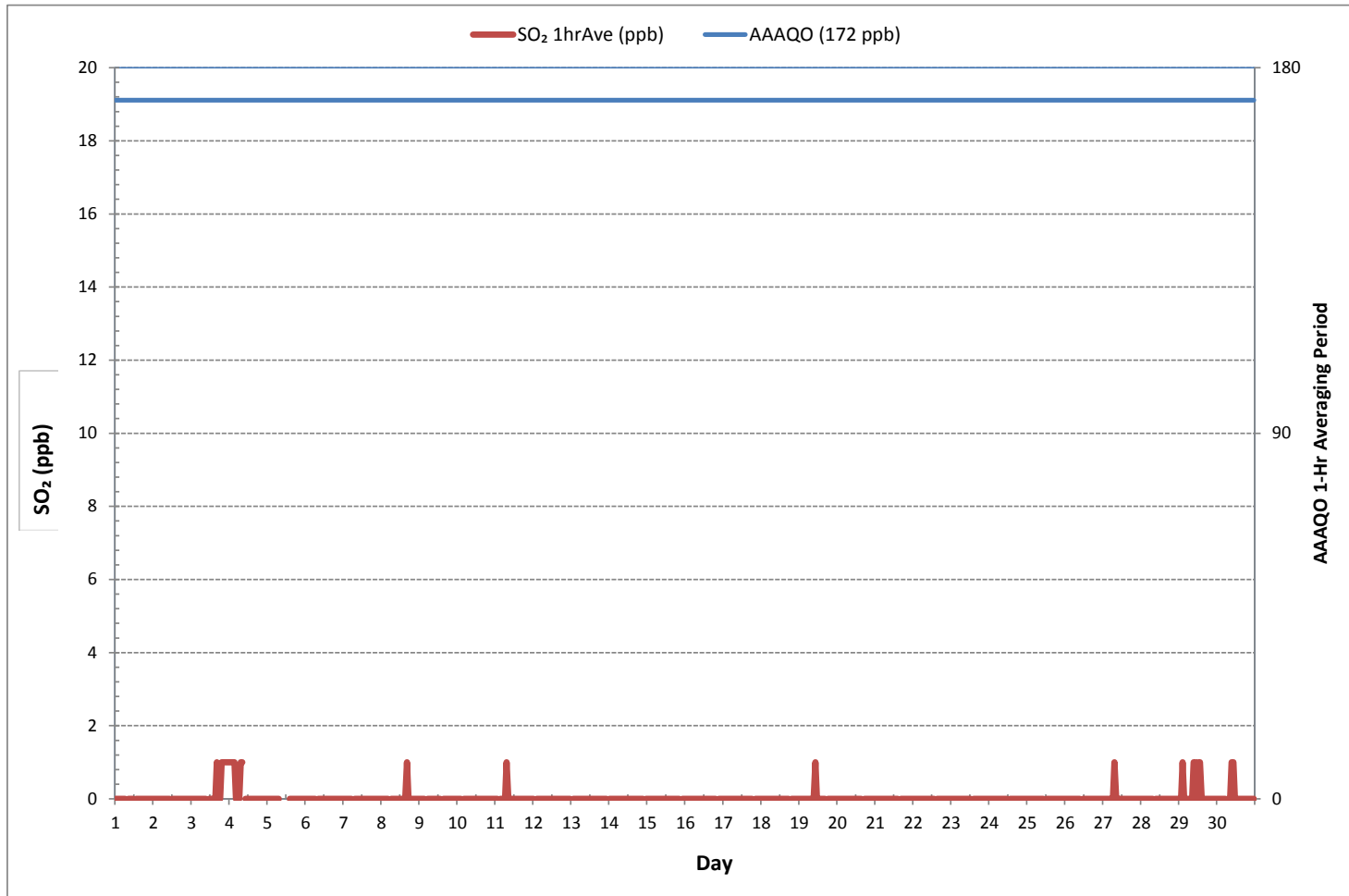
ALBERTA ENVIRONMENT:	1-HR	172	ppb	24-HR	48	ppb
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MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0		
NUMBER OF 24-HR EXCEEDANCES:	0		
NUMBER OF NON-ZERO READINGS:	23		
MINIMUM 1-HR AVERAGE:	0 ppb @ HOUR	0 ON DAY	1
MAXIMUM 1-HR AVERAGE:	1 ppb @ HOUR	16 ON DAY	3
MAXIMUM 24-HR AVERAGE:	0 ppb	ON DAY	1
IZS CALIBRATION TIME:	30 hrs	OPERATIONAL TIME:	718 hrs
MONTHLY CALIBRATION TIME:	6 hrs	AMD OPERATION UPTIME:	99.7 %
STANDARD DEVIATION:	0	MONTHLY AVERAGE:	0 ppb

24 HR AVERAGES September 2018











Wind: LICA COLD LAKE SOUTH
 Poll.: LICA COLD LAKE SOUTH-SO2[ppb]
 Monthly: 18/09
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

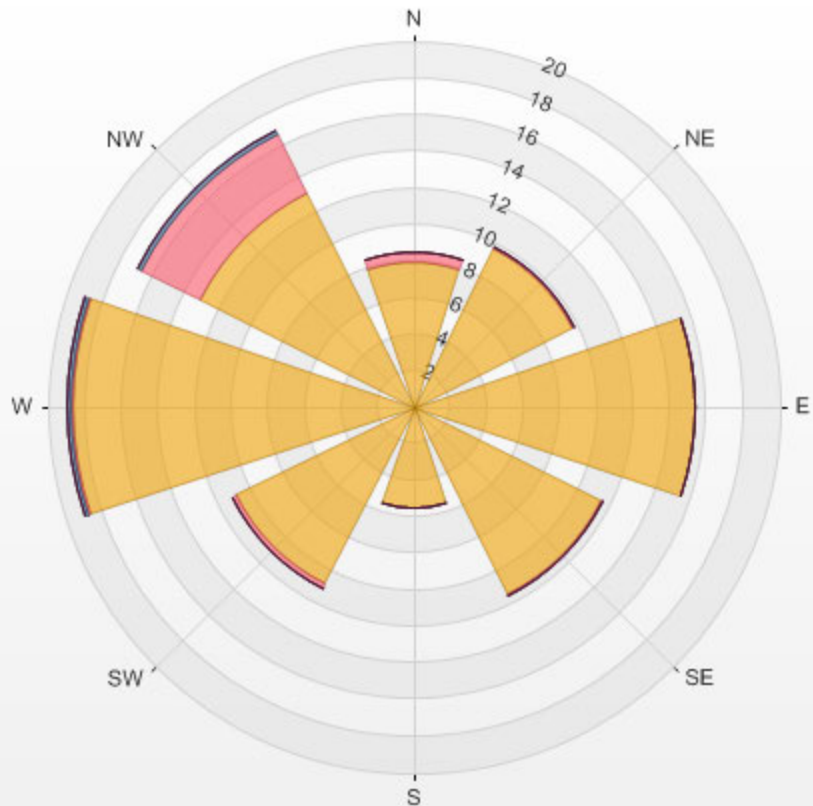
Calm: 2.20%

Calm Avg: 0.05 [ppb]

Direction	0.0-0.4	0.4-0.8	0.8-1.2	1.2-1.6	1.6-2.0	>2.0	Total
N	7.9	0.6	0.0	0.0	0.0	0.0	8.5
NE	9.7	0.2	0.0	0.0	0.0	0.0	9.8
E	15.4	0.0	0.0	0.0	0.0	0.0	15.4
SE	11.4	0.2	0.0	0.0	0.0	0.0	11.6
S	5.6	0.0	0.0	0.0	0.0	0.0	5.6
SW	10.9	0.3	0.0	0.0	0.0	0.0	11.1
W	18.6	0.2	0.2	0.0	0.0	0.0	18.9
NW	13.1	3.7	0.2	0.0	0.0	0.0	16.9
Summary	92.5	5.0	0.3	0.0	0.0	0.0	97.8

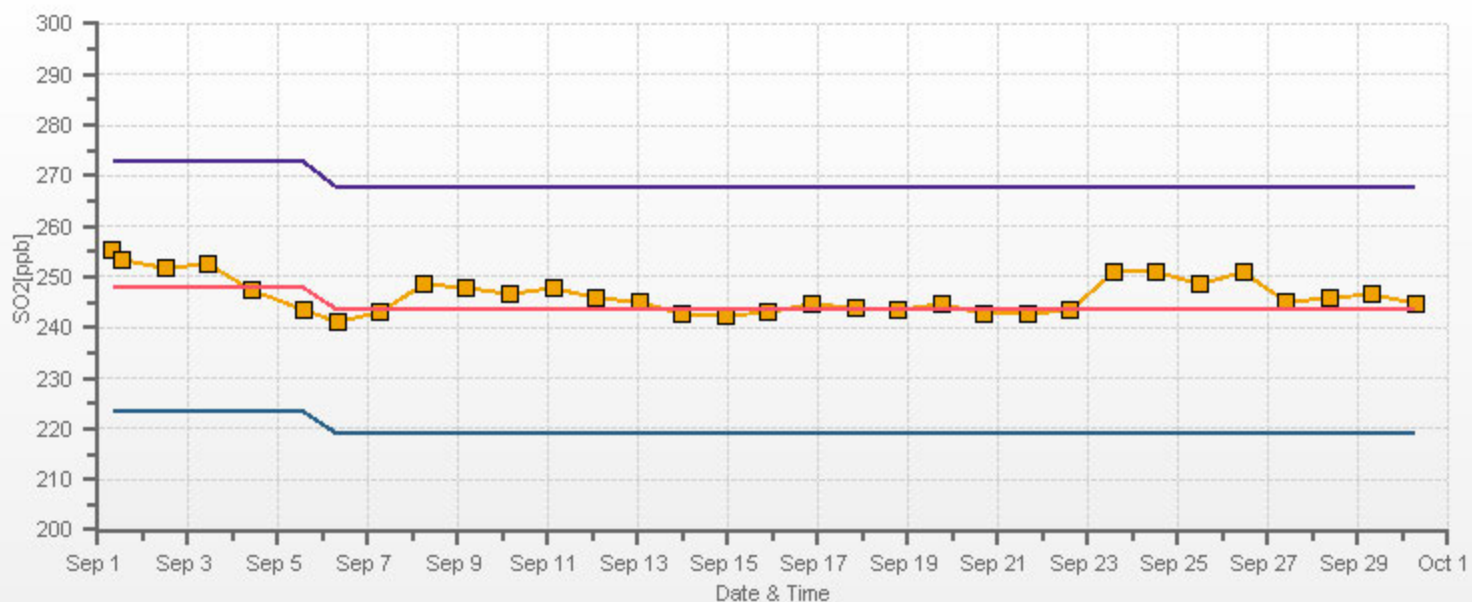
% Icon	Classes (ppb)	93	5	0	0	0	0
	0.0-0.4						
	0.4-0.8						
	0.8-1.2						
	1.2-1.6						
	1.6-2.0						
	>2.0						

LICA COLD LAKE SOUTH Poll.: LICA COLD LAKE SOUTH-SO2[ppb] 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 2.20% Calm Poll Avg: 0.05[ppb]



SO2[ppb] Calibration: LICA COLD LAKE SOUTH Monthly: 18/09 Type: Span

Span Meas Span Ref Span Low Span High



TOTAL REDUCED SULPHUR



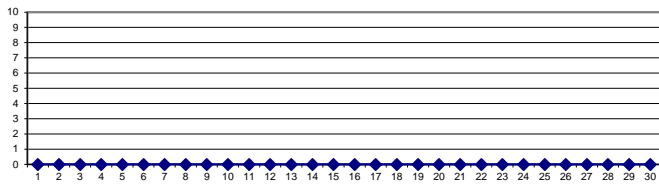
TOTAL REDUCED SULPHUR Hourly Averages (TRS ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
DAY 1	0	0	0	0	0	0	0	S1	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23
2	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
3	0	0	0	0	0	0	0	0	1	1	1	S	1	0	1	0	0	0	0	0	0	1	1	0	0	0	1	0	24
4	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	24
5	0	0	1	1	0	0	0	1	C	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
6	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	24
7	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
8	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	24
9	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	23
10	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	24
11	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	24
12	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
13	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	24
14	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	24
15	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	24
16	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
17	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	24
18	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
19	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	24
20	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	24
21	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	24
22	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	24
23	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	24
24	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	24
25	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
26	0	0	0	0	0	0	0	0	0	0	S	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	S	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	S	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	S	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	S	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	1	1	0	0	0	1	1	1	0	1	0	1	0	0	0	0	0	0	0	1	1	0	0				
HOURLY AVG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

STATUS FLAG CODES

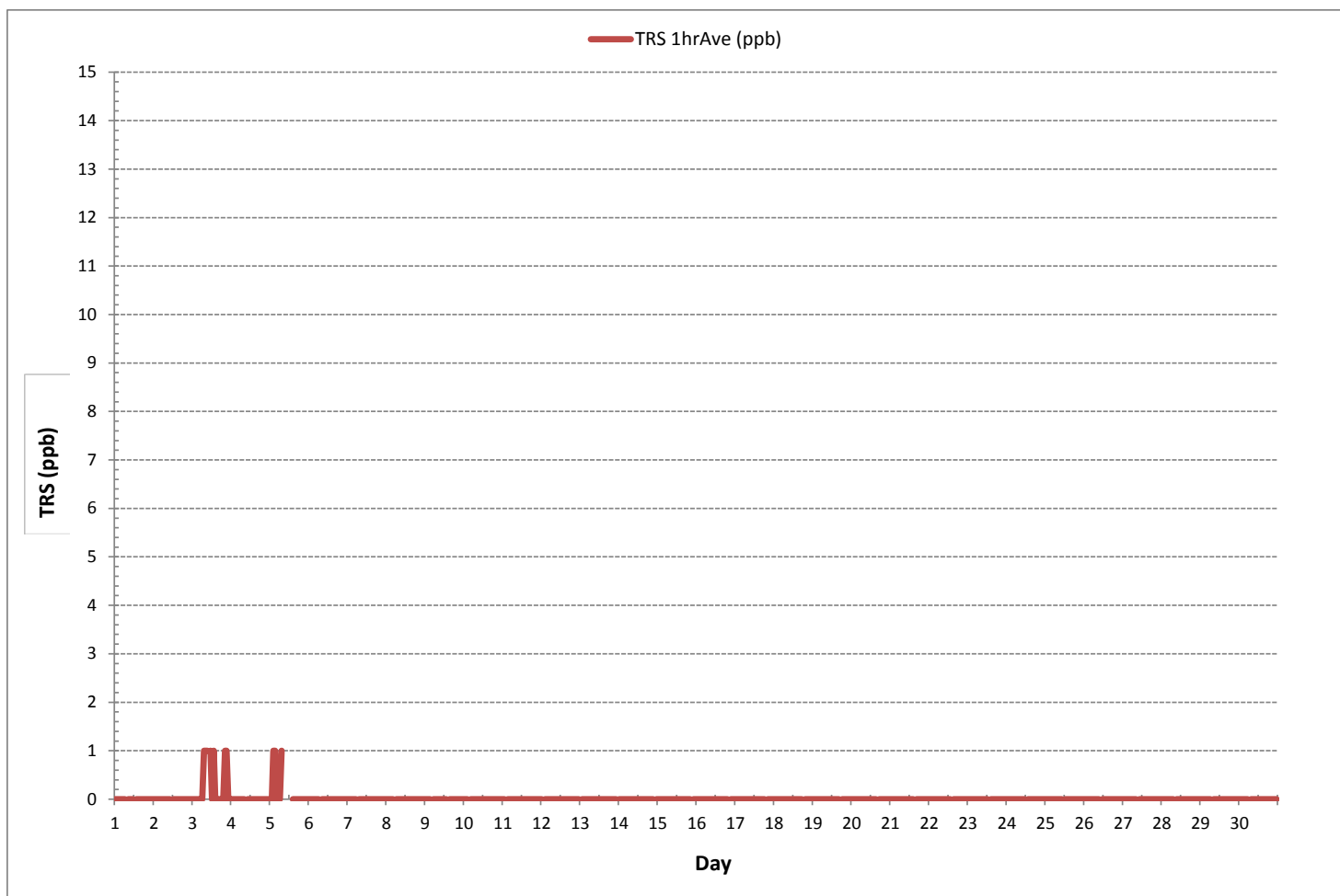
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

24 HR AVERAGES September 2018



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	10		
MINIMUM 1-HR AVERAGE:	0 ppb	@ HOUR	0 ON DAY 1
MAXIMUM 1-HR AVERAGE:	1 ppb	@ HOUR	7 ON DAY 3
MAXIMUM 24-HR AVERAGE:	0 ppb		ON DAY 1
IZS CALIBRATION TIME:	30 hrs	OPERATIONAL TIME:	718 hrs
MONTHLY CALIBRATION TIME:	6 hrs	AMD OPERATION UPTIME:	99.7 %
STANDARD DEVIATION:	0	MONTHLY AVERAGE:	0 ppb



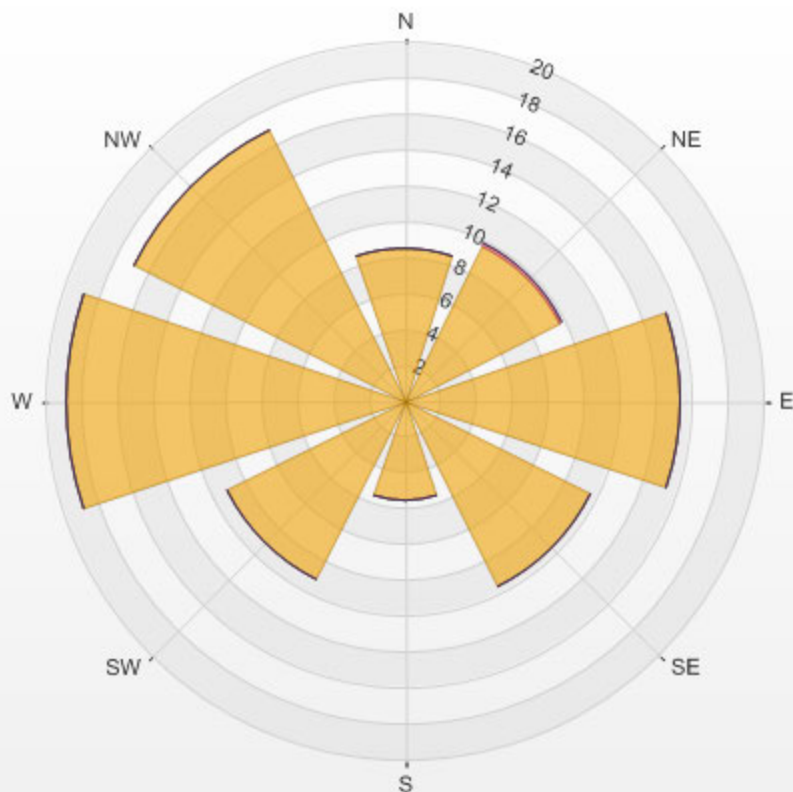
Wind: LICA COLD LAKE SOUTH
 Poll.: LICA COLD LAKE SOUTH-TRS[ppb]
 Monthly: 18/09
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 2.20% Calm Avg: 0.26 [ppb]

Direction	0.0-0.7	0.7-1.3	1.3-2.0	>2.0	Total
N	8.5	0.0	0.0	0.0	8.5
NE	9.7	0.2	0.0	0.0	9.8
E	15.4	0.0	0.0	0.0	15.4
SE	11.6	0.0	0.0	0.0	11.6
S	5.6	0.0	0.0	0.0	5.6
SW	11.1	0.0	0.0	0.0	11.1
W	18.9	0.0	0.0	0.0	18.9
NW	16.9	0.0	0.0	0.0	16.9
Summary	97.6	0.2	0.0	0.0	97.8

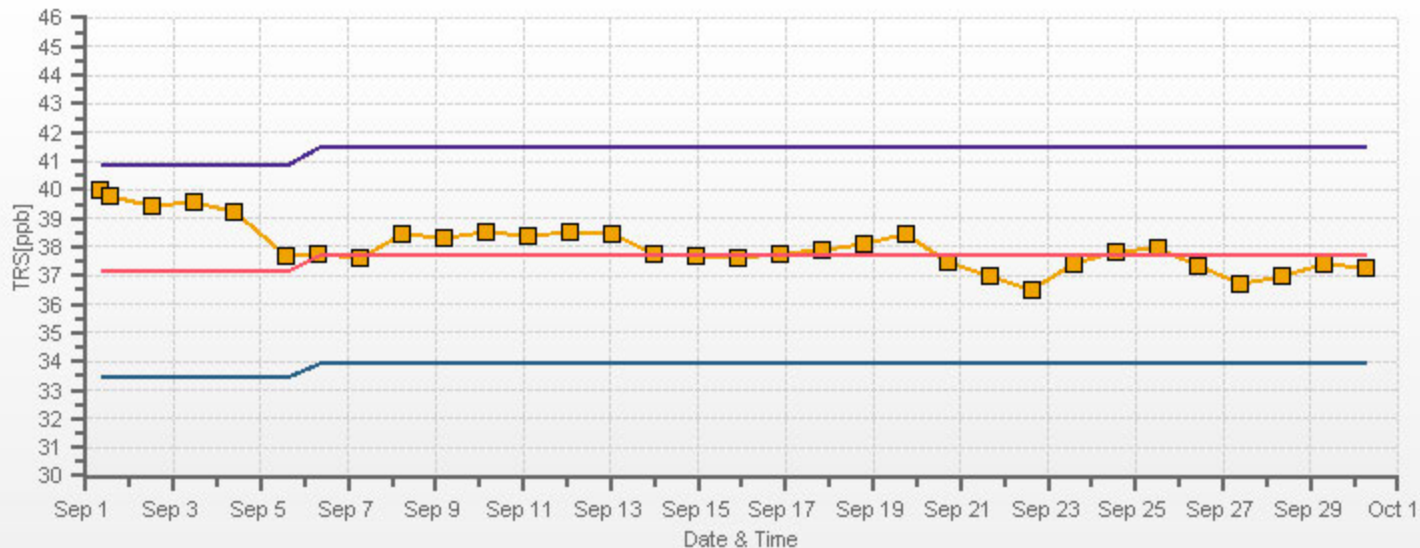
% Icon Classes (ppb) 98 0.0-0.7 0 0.7-1.3 0 1.3-2.0 0 >2.0

LICA COLD LAKE SOUTH Poll.: LICA COLD LAKE SOUTH-TRS[ppb] 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 2.20% Calm Poll Avg: 0.26[ppb]



TRS[ppb] Calibration: LICA COLD LAKE SOUTH Monthly: 18/09 Type: Span

Span Meas Span Ref Span Low Span High



TOTAL HYDROCARBON



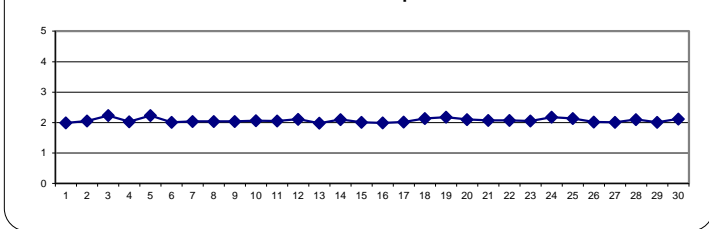
TOTAL HYDROCARBONS Hourly Averages (THC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY 1	2.03	2.11	2.16	2.24	2.08	2.04	2.01	S1	1.96	1.97	1.95	1.91	S	1.92	1.92	1.91	1.91	1.91	1.92	1.98	1.97	1.98	1.96	1.97	1.91	2.24	1.99	23
2	2.01	2.07	2.08	2.03	2.03	2.02	2.03	2.01	1.98	1.97	1.97	S	1.94	1.94	1.94	1.95	1.95	1.98	S1	2.06	2.18	2.31	2.34	2.36	1.94	2.36	2.05	23
3	2.41	2.48	2.47	2.48	2.53	2.56	2.45	2.51	2.61	2.53	S	2.35	2.07	2.07	1.99	2.02	1.99	1.96	1.96	2.01	1.99	1.98	1.98	1.97	1.96	2.61	2.23	24
4	1.98	2.01	2.04	2.06	2.01	1.98	2.01	1.99	1.97	S	1.96	1.96	1.96	1.96	1.96	1.98	1.98	1.98	2.05	2.16	2.09	2.13	2.23	2.24	1.96	2.24	2.03	24
5	2.27	2.32	2.30	2.34	2.45	2.55	2.55	2.56	S	2.32	2.13	2.02	1.99	1.99	1.99	C	C	C	C	C	2.13	2.14	2.07	2.04	1.99	2.56	2.23	24
6	2.02	2.03	2.02	2.01	2.01	2.01	2.00	S	2.01	2.00	2.01	2.02	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.02	2.02	2.02	2.03	2.03	2.00	2.03	2.01	24
7	2.04	2.04	2.04	2.04	2.05	2.06	S	2.03	2.03	2.03	2.03	2.02	2.01	2.02	2.02	2.00	2.00	2.00	2.02	2.04	2.29	2.03	2.04	2.03	2.00	2.29	2.04	24
8	2.04	2.06	2.09	2.05	2.05	S	2.07	2.04	2.03	2.03	2.02	2.01	2.00	2.01	2.01	2.01	2.03	2.07	2.07	2.05	1.98	2.04	2.05	2.06	1.98	2.09	2.04	24
9	2.07	2.09	2.09	2.09	S	2.08	2.08	2.09	2.10	2.05	2.02	2.03	2.02	2.01	P	2.00	2.00	1.99	1.99	1.99	1.99	1.99	2.01	1.99	1.99	2.10	2.04	23
10	2.03	2.07	2.03	S	2.01	2.02	2.08	2.08	2.01	2.00	2.00	1.99	2.00	2.00	2.01	2.01	2.01	2.03	2.09	2.26	2.31	2.21	2.12	2.04	1.99	2.31	2.06	24
11	2.06	2.05	S	2.07	2.04	2.02	2.05	2.04	2.01	2.01	2.01	2.02	2.01	1.99	1.99	1.99	1.98	2.00	2.03	2.11	2.15	2.13	2.19	2.25	1.98	2.25	2.05	24
12	2.21	S	2.44	2.51	2.57	2.61	2.27	2.09	2.09	2.03	1.99	1.99	1.98	1.99	1.97	1.97	1.98	1.98	1.97	1.96	1.96	1.97	1.97	1.97	1.96	2.61	2.11	24
13	S	1.97	1.98	1.98	1.97	1.97	1.97	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.99	1.99	1.99	2.01	2.02	2.02	S	1.97	2.02	1.98	24
14	2.06	2.09	2.18	2.18	2.13	2.17	2.24	2.27	S1	2.15	2.08	2.07	2.05	2.01	2.00	2.00	2.00	2.01	2.06	2.07	2.10	2.12	S	2.06	2.00	2.27	2.10	23
15	2.07	2.06	2.05	2.05	2.01	2.02	2.00	2.01	1.99	1.99	2.00	1.99	2.00	2.00	1.99	2.00	2.00	2.00	2.00	2.00	2.00	2.00	S	2.01	2.01	2.01	2.01	24
16	2.00	2.00	2.00	1.99	1.99	1.99	2.00	1.99	1.99	1.99	1.99	1.98	1.98	1.98	1.98	1.98	1.97	1.97	2.10	1.98	S	1.98	1.98	1.99	1.97	2.10	1.99	24
17	1.99	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.97	1.98	1.98	1.97	1.98	1.98	1.97	1.98	1.98	2.00	2.03	S	2.10	2.16	2.22	2.23	1.97	2.23	2.02	24
18	2.23	2.33	2.32	2.28	2.26	2.18	2.13	2.11	2.05	2.07	2.06	2.07	2.07	2.04	2.05	2.03	2.02	2.03	S	2.06	2.08	2.11	2.14	2.17	2.02	2.33	2.13	24
19	2.22	2.31	2.36	2.44	2.46	2.47	2.47	2.40	2.25	2.08	2.03	2.02	2.02	2.01	2.01	2.00	1.99	S	2.02	2.06	2.14	2.17	2.18	2.10	1.99	2.47	2.18	24
20	2.13	2.20	2.27	2.27	2.32	2.35	2.36	2.42	2.01	1.99	1.99	1.98	1.98	1.98	1.98	S	1.98	1.99	1.99	2.00	2.04	2.09	2.06	1.98	1.98	2.42	2.10	24
21	2.08	2.12	2.10	2.12	2.09	2.15	2.13	2.06	2.02	2.01	1.99	1.99	1.99	1.98	1.98	S	1.98	1.98	2.04	2.06	2.08	2.16	2.18	2.26	1.98	2.26	2.07	24
22	2.45	2.26	2.13	2.16	2.16	2.11	2.05	2.05	2.03	2.03	2.02	2.01	1.99	2.00	S	2.00	2.00	1.99	2.01	2.01	2.00	2.00	2.01	2.03	1.99	2.45	2.07	24
23	2.05	2.10	2.05	2.01	2.02	2.00	2.00	1.99	2.02	2.02	2.02	2.02	2.03	S	2.04	2.05	2.05	2.06	2.08	2.11	2.13	2.12	2.11	2.11	1.99	2.13	2.05	24
24	2.14	2.26	2.23	2.31	2.38	2.40	2.42	2.45	2.46	2.29	2.10	2.06	S	2.20	2.04	2.01	1.99	1.99	2.04	2.04	2.03	2.07	2.17	2.15	1.99	2.46	2.18	24
25	2.20	2.20	2.24	2.28	2.29	2.27	2.27	2.25	2.22	2.16	2.11	S	2.01	1.99	2.00	1.98	1.99	2.01	2.00	2.00	2.06	2.17	2.13	2.06	1.98	2.29	2.13	24
26	2.06	2.08	2.06	2.05	2.07	2.09	2.08	2.06	2.02	1.98	S	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.99	2.03	2.01	1.98	2.02	2.07	1.97	2.09	2.02	24
27	2.04	2.00	2.00	2.00	2.02	2.01	2.02	2.01	1.99	S	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.99	2.01	2.02	2.02	1.99	2.00	2.03	2.05	1.99	2.05	24
28	2.05	2.04	2.15	2.23	2.22	2.27	2.35	2.36	S	2.09	2.03	2.00	1.99	1.98	1.98	1.99	1.99	1.99	2.05	2.04	2.07	2.12	2.14	2.09	1.98	2.36	2.10	24
29	2.06	2.11	2.06	1.99	1.99	1.98	1.99	S	1.99	1.98	1.99	1.99	1.99	1.99	1.99	1.99	1.99	2.00	2.01	2.02	2.02	2.03	2.03	2.05	1.98	2.11	2.01	24
30	2.10	2.16	2.18	2.20	2.18	2.15	S	2.26	2.28	2.09	2.01	2.02	2.02	2.01	2.01	2.02	2.04	2.07	2.11	2.23	2.31	2.15	2.13	2.10	2.01	2.31	2.12	24
HOURLY MAX	2.45	2.48	2.47	2.51	2.57	2.61	2.55	2.56	2.61	2.53	2.13	2.35	2.07	2.20	2.05	2.05	2.05	2.07	2.11	2.26	2.31	2.31	2.34	2.36				
HOURLY AVG	2.11	2.12	2.14	2.15	2.15	2.16	2.15	2.15	2.08	2.07	2.02	2.02	2.00	2.00	1.99	1.99	1.99	2.00	2.02	2.05	2.08	2.08	2.09	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 HR AVERAGES September 2018



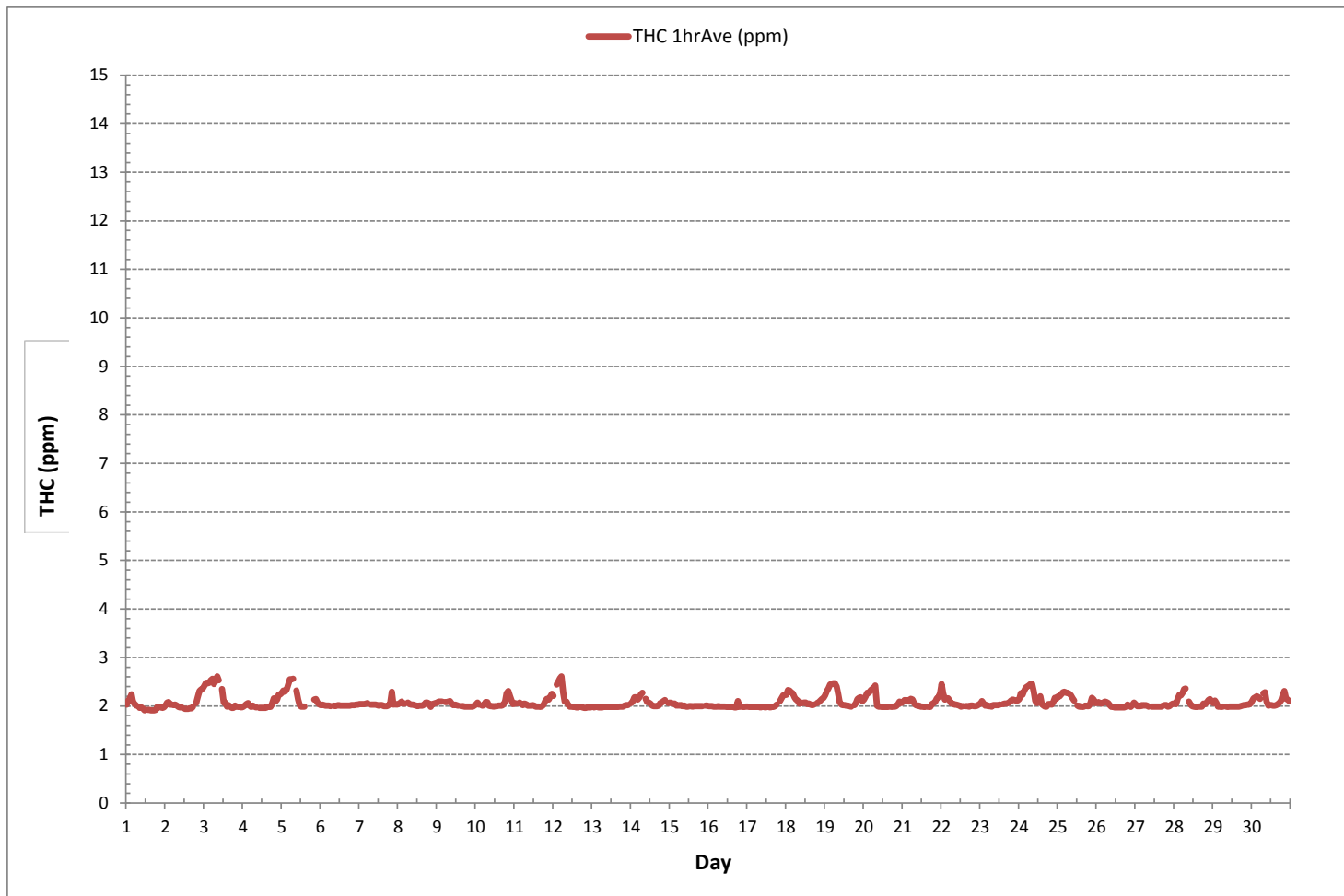
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	680			
MINIMUM 1-HR AVERAGE:	1.91 ppm	@ HOUR	11	ON DAY
MAXIMUM 1-HR AVERAGE:	2.61 ppm	@ HOUR	8	ON DAY
MAXIMUM 24-HR AVERAGE:	2.23 ppm			ON DAY
IZS CALIBRATION TIME:	31 hrs	OPERATIONAL TIME:	716 hrs	
MONTHLY CALIBRATION TIME:	5 hrs	AMD OPERATION UPTIME:	99.4 %	
STANDARD DEVIATION:	0.13	MONTHLY AVERAGE:	2.07 ppm	



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake South Continuous Monitoring Station - September 2018

TOTAL HYDROCARBONS Hourly Averages (THC ppm)



Wind: LICA COLD LAKE SOUTH
 Poll.: LICA COLD LAKE SOUTH-THC[ppm]
 Monthly: 18/09
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

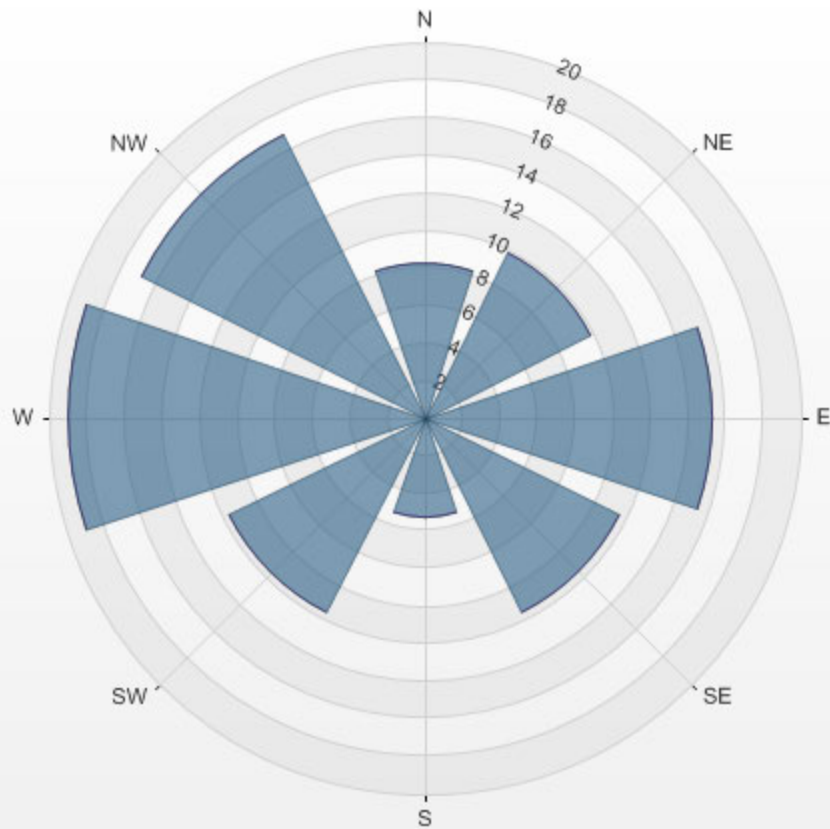
Calm: 2.21%

Calm Avg: 2.33 [ppm]

Direction	0.0-0.9	0.9-1.7	1.7-2.6	>2.6	Total
N	0.0	0.0	8.2	0.0	8.2
NE	0.0	0.0	9.9	0.0	9.9
E	0.0	0.0	15.3	0.0	15.3
SE	0.0	0.0	11.6	0.0	11.6
S	0.0	0.0	5.3	0.0	5.3
SW	0.0	0.0	11.6	0.0	11.6
W	0.0	0.0	19.0	0.0	19.0
NW	0.0	0.0	16.9	0.0	16.9
Summary	0.0	0.0	97.8	0.0	97.8

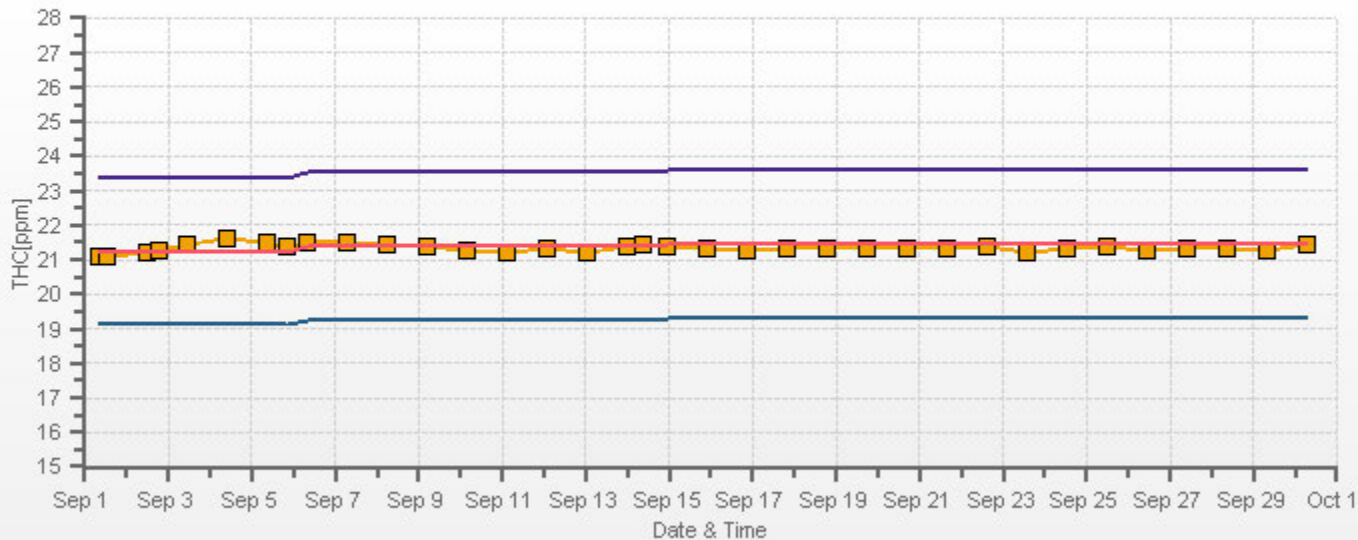
% Icon Classes (ppm) 0 0.0-0.9 0 0.9-1.7 98 1.7-2.6 0 >2.6

LICA COLD LAKE SOUTH Poll.: LICA COLD LAKE SOUTH-THC[ppm] 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 2.21% Calm Poll Avg: 2.33[ppm]



THC[ppm] Calibration: LICA COLD LAKE SOUTH Monthly: 18/09 Type: Span

Span Meas Span Ref Span Low Span High



METHANE



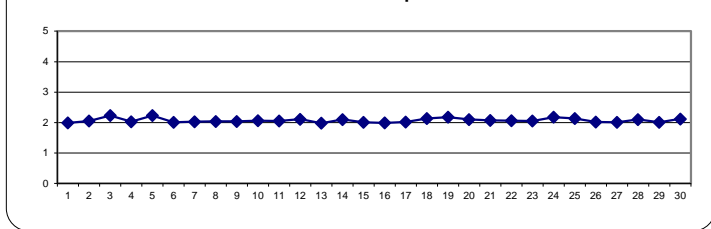
METHANE Hourly Averages (CH₄ ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY 1	2.03	2.11	2.16	2.24	2.08	2.04	2.01	S1	1.96	1.97	1.95	1.91	S	1.92	1.92	1.91	1.91	1.91	1.92	1.98	1.97	1.98	1.96	1.97	1.91	2.24	1.99	23
2	2.01	2.07	2.08	2.03	2.03	2.02	2.03	2.01	1.98	1.97	1.97	S	1.94	1.94	1.94	1.95	1.95	1.98	S1	2.06	2.18	2.31	2.34	2.36	1.94	2.36	2.05	23
3	2.41	2.48	2.47	2.48	2.53	2.56	2.45	2.51	2.61	2.53	S	2.35	2.07	2.07	1.99	2.02	1.99	1.96	1.96	2.01	1.99	1.98	1.98	1.97	1.96	2.61	2.23	24
4	1.98	2.01	2.04	2.06	2.01	1.98	2.01	1.99	1.97	S	1.96	1.96	1.96	1.96	1.96	1.98	1.98	1.98	2.05	2.16	2.09	2.13	2.23	2.24	1.96	2.24	2.03	24
5	2.27	2.32	2.30	2.34	2.45	2.55	2.55	2.56	S	2.32	2.13	2.02	1.99	1.99	1.99	C	C	C	C	C	2.13	2.14	2.07	2.04	1.99	2.56	2.23	24
6	2.02	2.03	2.02	2.01	2.01	2.01	2.00	S	2.01	2.00	2.01	2.02	2.01	2.01	2.01	2.01	2.01	2.01	2.01	2.02	2.02	2.02	2.03	2.03	2.00	2.03	2.01	24
7	2.04	2.04	2.04	2.04	2.05	2.06	S	2.03	2.03	2.03	2.03	2.02	2.01	2.02	2.02	2.00	2.00	2.00	2.02	2.04	2.03	2.03	2.04	2.03	2.00	2.06	2.03	24
8	2.04	2.06	2.09	2.05	2.05	S	2.07	2.04	2.03	2.03	2.02	2.01	2.00	2.01	2.01	2.01	2.03	2.07	2.07	2.05	1.98	2.04	2.05	2.06	1.98	2.09	2.04	24
9	2.07	2.09	2.09	2.09	S	2.08	2.08	2.09	2.10	2.05	2.02	2.03	2.02	2.01	P	2.00	2.00	1.99	1.99	1.99	1.99	1.99	2.01	1.99	1.99	2.10	2.04	23
10	2.03	2.07	2.03	S	2.01	2.02	2.08	2.08	2.01	2.00	2.00	1.99	2.00	2.00	2.01	2.01	2.01	2.03	2.09	2.26	2.31	2.21	2.12	2.04	1.99	2.31	2.06	24
11	2.06	2.05	S	2.07	2.04	2.02	2.05	2.04	2.01	2.01	2.01	2.02	2.01	1.99	1.99	1.99	1.98	2.00	2.03	2.11	2.15	2.13	2.19	2.25	1.98	2.25	2.05	24
12	2.21	S	2.44	2.51	2.57	2.58	2.27	2.09	2.09	2.03	1.99	1.99	1.98	1.99	1.97	1.97	1.98	1.98	1.97	1.96	1.96	1.97	1.97	1.97	1.96	2.58	2.11	24
13	S	1.97	1.98	1.98	1.97	1.97	1.97	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.99	1.99	1.99	2.01	2.02	2.02	S	1.97	2.02	1.98	24
14	2.06	2.09	2.18	2.18	2.13	2.17	2.24	2.27	S1	2.15	2.08	2.07	2.05	2.01	2.00	2.00	2.00	2.01	2.06	2.07	2.10	2.12	S	2.06	2.00	2.27	2.10	23
15	2.07	2.06	2.05	2.05	2.01	2.02	2.00	2.01	1.99	1.99	2.00	1.99	2.00	2.00	1.99	2.00	2.00	2.00	2.00	2.00	2.00	2.00	S	2.01	2.01	2.01	1.99	24
16	2.00	2.00	2.00	1.99	1.99	1.99	2.00	1.99	1.99	1.99	1.99	1.98	1.98	1.98	1.98	1.98	1.97	1.97	1.97	1.98	S	1.98	1.98	1.99	1.97	2.00	1.99	24
17	1.99	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.97	1.98	1.98	1.97	1.98	1.98	1.97	1.98	1.98	2.00	2.03	S	2.10	2.16	2.22	2.23	1.97	2.23	2.02	24
18	2.23	2.33	2.32	2.28	2.26	2.18	2.13	2.11	2.05	2.07	2.06	2.07	2.07	2.04	2.05	2.03	2.02	2.03	S	2.06	2.08	2.11	2.14	2.17	2.02	2.33	2.13	24
19	2.22	2.31	2.36	2.44	2.46	2.47	2.47	2.40	2.25	2.08	2.03	2.02	2.02	2.01	2.01	2.00	1.99	S	2.02	2.06	2.14	2.17	2.18	2.10	1.99	2.47	2.18	24
20	2.13	2.20	2.27	2.27	2.32	2.35	2.36	2.42	2.01	1.99	1.99	1.98	1.98	1.98	1.98	S	1.98	1.99	1.99	2.00	2.03	2.05	2.06	1.98	1.98	2.42	2.10	24
21	2.08	2.12	2.10	2.12	2.09	2.15	2.13	2.06	2.02	2.01	1.99	1.99	1.99	1.98	1.98	S	1.98	1.98	2.04	2.06	2.08	2.16	2.18	2.26	1.98	2.26	2.07	24
22	2.27	2.25	2.13	2.16	2.16	2.11	2.05	2.05	2.03	2.03	2.02	2.01	1.99	2.00	S	2.00	2.00	1.99	2.01	2.01	2.00	2.00	2.01	2.03	1.99	2.27	2.06	24
23	2.05	2.10	2.05	2.01	2.02	2.00	2.00	1.99	2.02	2.02	2.02	2.02	2.03	S	2.04	2.05	2.05	2.06	2.08	2.11	2.13	2.12	2.11	2.11	1.99	2.13	2.05	24
24	2.14	2.26	2.23	2.31	2.38	2.40	2.42	2.45	2.46	2.29	2.10	2.06	S	2.20	2.04	2.01	1.99	1.99	2.04	2.04	2.03	2.07	2.17	2.15	1.99	2.46	2.18	24
25	2.20	2.20	2.24	2.28	2.29	2.27	2.27	2.25	2.22	2.16	2.11	S	2.01	1.99	2.00	1.98	1.99	2.01	2.00	2.00	2.06	2.17	2.13	2.06	1.98	2.29	2.13	24
26	2.06	2.08	2.06	2.05	2.07	2.09	2.08	2.06	2.02	1.98	S	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.99	2.03	2.01	1.98	2.02	2.07	1.97	2.09	2.02	24
27	2.04	2.00	2.00	2.00	2.02	2.01	2.02	2.01	1.99	S	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.99	2.01	2.02	2.02	1.99	2.00	2.03	2.05	1.99	2.05	24
28	2.05	2.04	2.15	2.23	2.22	2.27	2.35	2.36	S	2.09	2.03	2.00	1.99	1.98	1.98	1.99	1.99	1.99	2.05	2.04	2.07	2.12	2.14	2.09	1.98	2.36	2.10	24
29	2.06	2.11	2.06	1.99	1.99	1.98	1.99	S	1.99	1.98	1.99	1.99	1.99	1.99	1.99	1.99	1.99	2.00	2.01	2.02	2.02	2.03	2.03	2.05	1.98	2.11	2.01	24
30	2.10	2.16	2.18	2.20	2.18	2.15	S	2.26	2.28	2.09	2.01	2.02	2.02	2.01	2.01	2.02	2.04	2.07	2.11	2.23	2.31	2.15	2.13	2.10	2.01	2.31	2.12	24
HOURLY MAX	2.41	2.48	2.47	2.51	2.57	2.58	2.55	2.56	2.61	2.53	2.13	2.35	2.07	2.20	2.05	2.05	2.05	2.07	2.11	2.26	2.31	2.31	2.34	2.36				
HOURLY AVG	2.10	2.12	2.14	2.15	2.15	2.15	2.15	2.15	2.08	2.07	2.02	2.02	2.00	2.00	1.99	1.99	1.99	2.00	2.02	2.05	2.07	2.08	2.09	2.09				

STATUS FLAG CODES

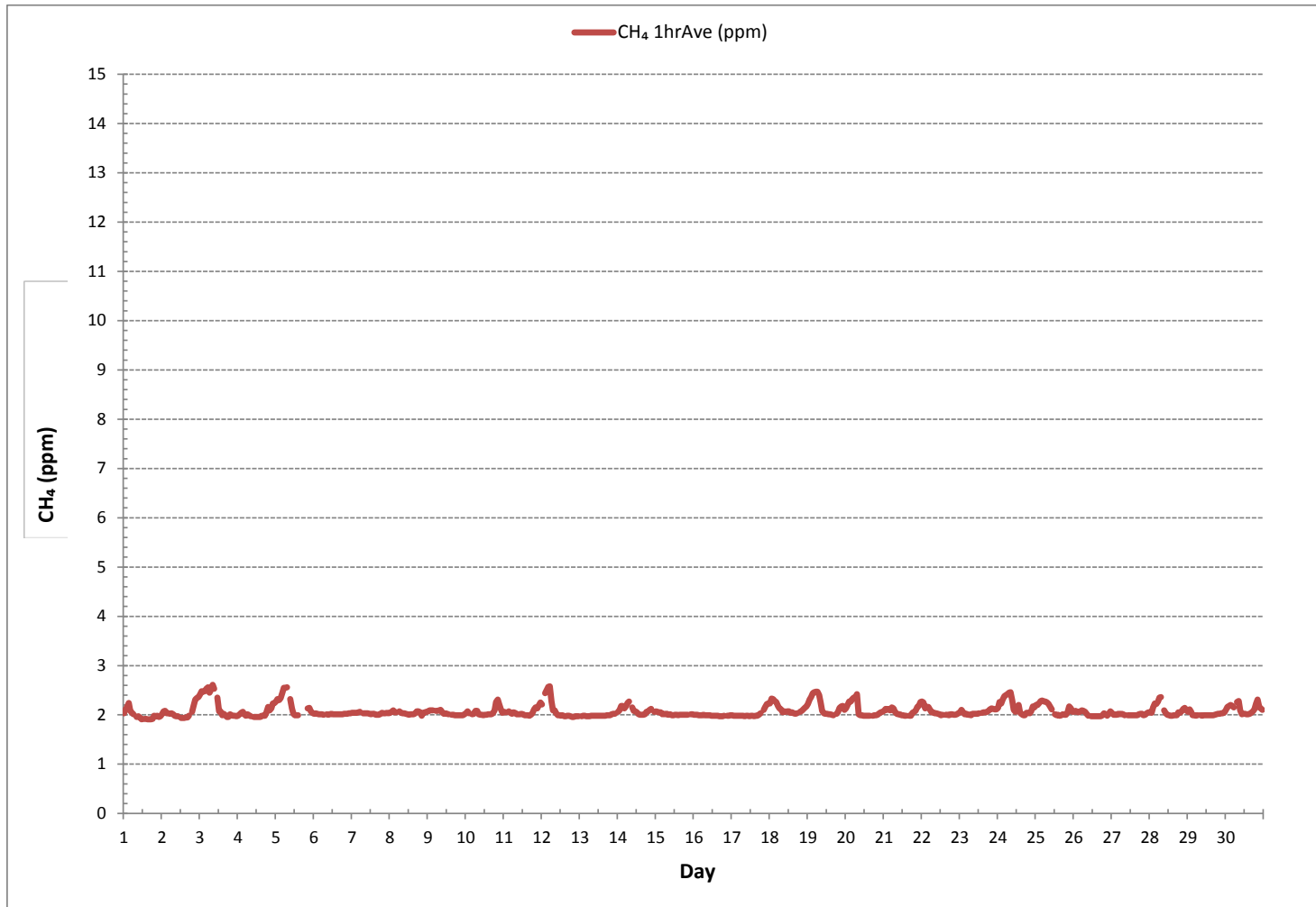
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

24 HR AVERAGES September 2018



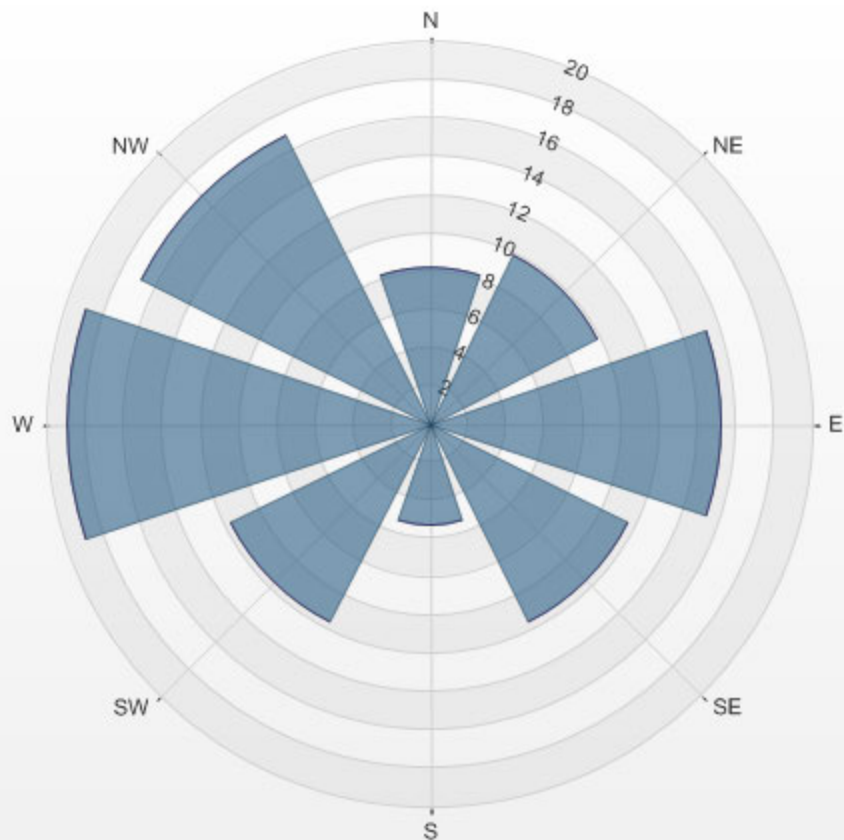
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	680			
MINIMUM 1-HR AVERAGE:	1.91 ppm	@ HOUR	11	ON DAY
MAXIMUM 1-HR AVERAGE:	2.61 ppm	@ HOUR	8	ON DAY
MAXIMUM 24-HR AVERAGE:	2.23 ppm			ON DAY
IZS CALIBRATION TIME:	31 hrs	OPERATIONAL TIME:	716	hrs
MONTHLY CALIBRATION TIME:	5 hrs	AMD OPERATION UPTIME:	99.4	%
STANDARD DEVIATION:	0.12	MONTHLY AVERAGE:	2.07	ppm



%	Icon	Classes (ppm)
0		0.0-0.9
0		0.9-1.7
98		1.7-2.6
0		>2.6

LICA COLD LAKE SOUTH Poll.: LICA COLD LAKE SOUTH-CH4[ppm] 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 2.21% Calm Poll Avg: 2.33[ppm]



CH4[ppm] Calibration: LICA COLD LAKE SOUTH Monthly: 18/09 Type: Span

Span Meas Span Ref Span Low Span High



NON-METHANE HYDROCARBON



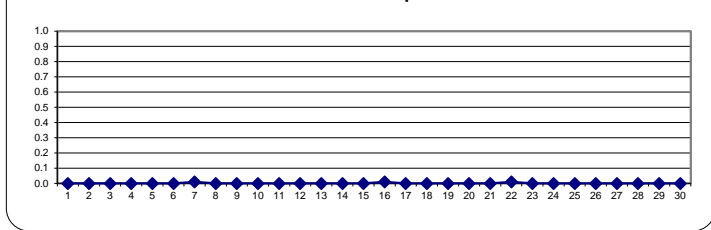
NON-METHANE HYDROCARBONS Hourly Averages (NMHC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S1	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	23
2	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	S1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
5	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	C	C	C	C	C	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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
7	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	0.26	0.00	0.00	0.00	0.00	0.26	0.01	24
8	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
9	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	P	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
10	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
11	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	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	24
12	0.00	S	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	24
13	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	24
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S1	0.00	0.00	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	23
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	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	24
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	S	0.00	0.00	0.00	0.00	0.00	0.12	0.01	24
17	0.00	0.00	0.00	0.00	0.00	0.00	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
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	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
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	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
20	0.00	0.00	0.00	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	0.02	0.04	0.00	0.00	0.04	0.00	24
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
22	0.18	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.01	24
23	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
24	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
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
29	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
30	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
HOURLY MAX	0.18	0.01	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.12	0.00	0.26	0.02	0.04	0.00				
HOURLY AVG	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	0.00	0.01	0.00	0.00	0.00				

STATUS FLAG CODES

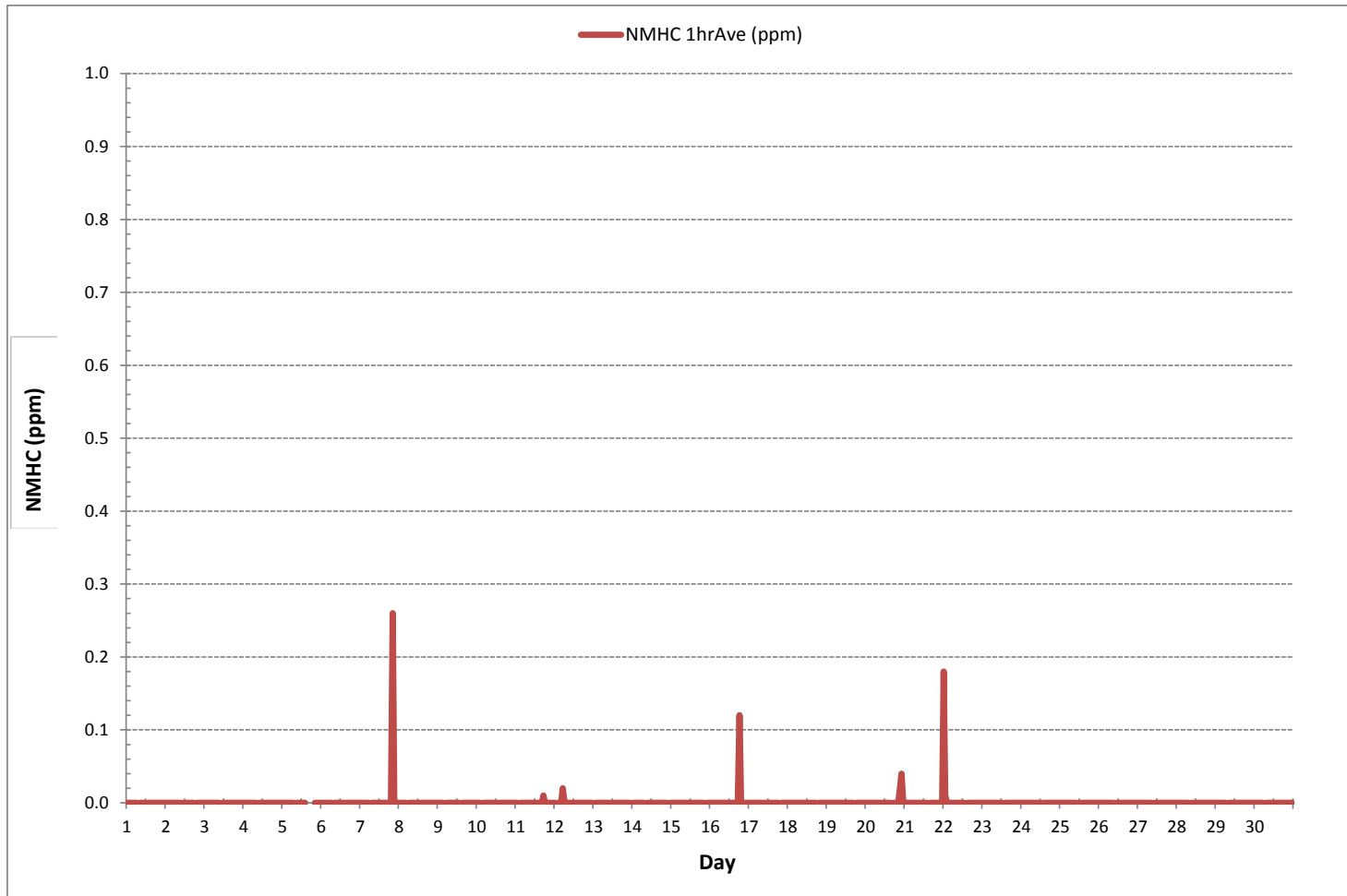
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

24 HR AVERAGES September 2018



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	8
MINIMUM 1-HR AVERAGE:	0.00 ppm @ HOUR 0 ON DAY 1
MAXIMUM 1-HR AVERAGE:	0.26 ppm @ HOUR 20 ON DAY 7
MAXIMUM 24-HR AVERAGE:	0.01 ppm ON DAY 7
IZS CALIBRATION TIME:	31 hrs
MONTHLY CALIBRATION TIME:	5 hrs
OPERATIONAL TIME:	716 hrs
AMD OPERATION UPTIME:	99.4 %
STANDARD DEVIATION:	0.01
MONTHLY AVERAGE:	0.00 ppm



Wind: LICA COLD LAKE SOUTH
 Poll.: LICA COLD LAKE SOUTH-NMHC[ppm]
 Monthly: 18/09
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

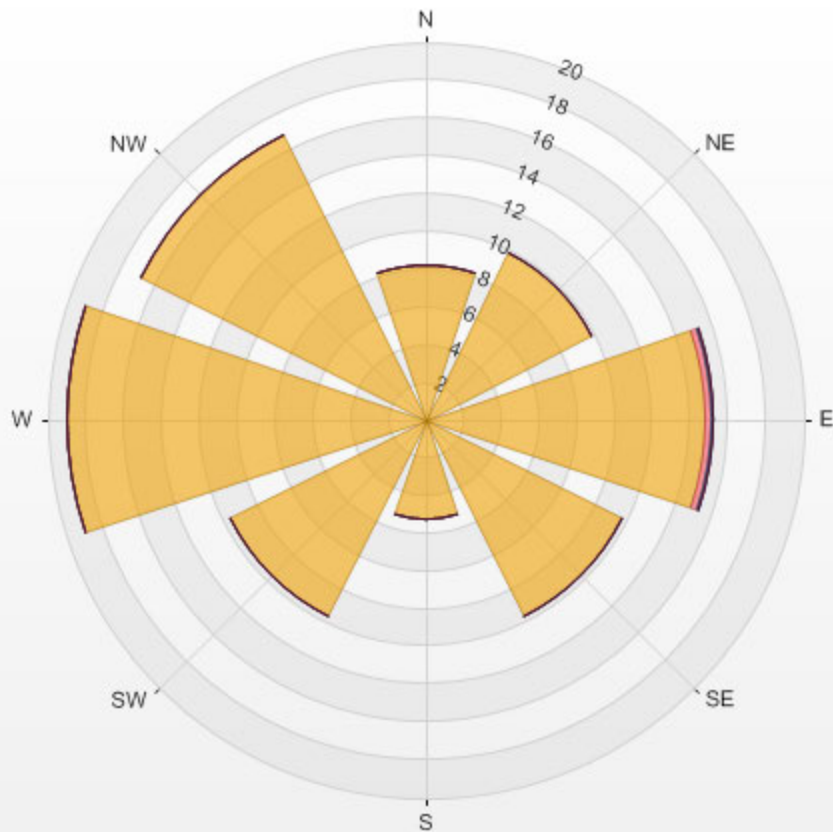
Calm: 2.21%

Calm Avg: 0.00 [ppm]

Direction	0-0.1	0.1-0.2	0.2-0.3	0.3-0.4	0.4-0.5	>0.5	Total
N	8.2	0.0	0.0	0.0	0.0	0.0	8.2
NE	9.9	0.0	0.0	0.0	0.0	0.0	9.9
E	14.9	0.3	0.2	0.0	0.0	0.0	15.3
SE	11.6	0.0	0.0	0.0	0.0	0.0	11.6
S	5.3	0.0	0.0	0.0	0.0	0.0	5.3
SW	11.6	0.0	0.0	0.0	0.0	0.0	11.6
W	19.0	0.0	0.0	0.0	0.0	0.0	19.0
NW	16.9	0.0	0.0	0.0	0.0	0.0	16.9
Summary	97.4	0.3	0.2	0.0	0.0	0.0	97.8

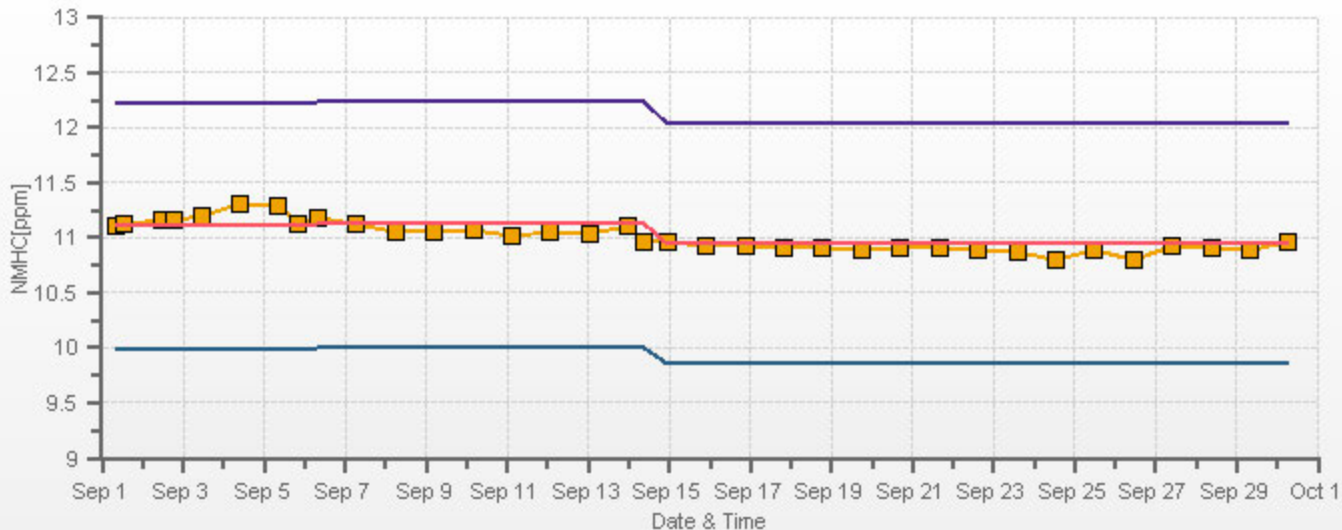
% Icon Classes (ppm) 97 0-0.1 0 0.1-0.2 0 0.2-0.3 0 0.3-0.4 0 0.4-0.5 0 >0.5

LICA COLD LAKE SOUTH Poll.: LICA COLD LAKE SOUTH-NMHC[ppm] 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 2.21% Calm Poll Avg: 0.00[ppm]



NMHC[ppm] Calibration: LICA COLD LAKE SOUTH Monthly: 18/09 Type: Span

Span Meas Span Ref Span Low Span High



OXIDES OF NITROGEN



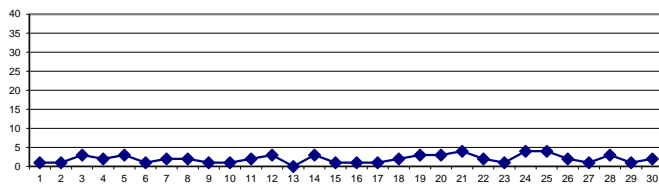
OXIDES OF NITROGEN Hourly Averages (NO_x ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.		
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.			
DAY 1	1	2	1	2	2	2	2	S1	4	2	1	1	S	2	0	0	0	0	0	1	1	1	1	1	0	4	1	23		
2	2	2	2	2	1	1	1	1	1	1	1	S	2	1	1	1	1	1	1	1	2	2	2	2	2	1	2	1	24	
3	2	2	2	3	3	2	2	2	2	5	6	S	6	3	3	2	2	3	1	1	3	2	2	2	2	1	6	3	24	
4	2	2	3	3	1	1	2	3	1	S	1	1	1	1	1	1	1	1	1	5	2	2	2	1	1	1	5	2	24	
5	1	6	0	1	1	1	4	5	C	C	C	C	C	C	C	C	C	1	2	10	9	8	1	0	0	10	3	24		
6	0	1	0	0	1	1	2	S	3	3	2	1	1	1	1	1	1	1	2	1	1	1	1	1	1	0	3	1	24	
7	1	1	0	1	1	2	S	4	2	1	2	1	1	1	1	1	1	2	3	4	2	1	1	1	0	4	2	24		
8	1	1	2	1	2	S	5	2	2	2	2	1	1	1	1	1	2	2	1	1	1	2	4	1	1	5	2	24		
9	1	1	1	1	S	3	2	2	2	2	3	3	2	1	P	1	1	1	1	1	1	1	1	0	0	3	1	23		
10	1	1	1	S	2	2	3	2	1	1	1	1	2	2	3	2	2	1	1	1	1	1	1	1	1	1	3	1	24	
11	1	1	S	4	3	3	4	4	2	2	2	2	2	1	1	2	1	1	2	1	2	1	2	6	4	3	1	6	2	24
12	5	S	6	7	9	14	6	3	1	1	1	1	0	6	1	1	0	0	0	0	0	0	0	0	0	0	14	3	24	
13	S	1	0	0	0	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	S	0	1	0	24	
14	3	3	3	2	3	5	6	7	8	7	3	2	1	0	0	0	0	0	1	2	4	3	S	2	0	8	3	24		
15	2	1	3	3	2	1	1	2	2	2	1	1	1	1	1	1	2	1	1	1	1	S	2	1	1	3	1	24		
16	1	1	1	1	2	1	1	1	1	1	2	1	1	1	1	1	1	2	1	1	S	2	1	2	1	2	1	2	24	
17	1	1	1	1	2	3	5	4	1	1	1	0	0	0	0	0	0	1	3	S	3	1	2	1	0	5	1	24		
18	2	3	2	2	2	2	2	2	3	2	2	2	2	1	1	1	1	1	S	4	2	3	2	3	1	4	2	24		
19	4	3	2	4	3	3	9	9	3	2	2	1	1	0	1	1	2	S	5	7	5	4	3	1	0	9	3	24		
20	1	1	6	2	4	5	11	14	2	1	1	1	0	0	0	1	S	2	4	2	0	2	2	2	0	14	3	24		
21	1	1	2	5	8	5	8	4	1	1	1	0	0	0	0	S	1	0	2	3	6	11	18	14	0	18	4	24		
22	17	7	2	2	4	3	4	3	1	0	0	0	0	0	S	1	0	1	3	1	0	0	0	0	0	17	2	24		
23	0	0	0	1	2	1	1	1	0	1	1	0	0	S	2	1	1	1	1	2	2	1	1	1	0	2	1	24		
24	2	2	3	3	8	5	6	8	10	7	3	2	S	6	2	2	1	2	2	2	2	2	2	2	4	1	10	4	24	
25	4	3	4	4	3	6	7	8	10	6	5	S	1	1	1	1	1	1	3	4	2	5	4	4	1	10	4	24		
26	2	3	2	3	3	4	5	8	2	1	S	2	1	3	2	0	0	0	1	2	1	1	1	2	0	8	2	24		
27	2	0	0	0	1	1	3	3	1	S	2	1	1	1	1	1	2	1	2	1	1	2	2	2	0	3	1	24		
28	2	3	3	4	5	7	11	14	S	3	1	0	0	0	0	0	0	0	3	3	3	4	4	2	0	14	3	24		
29	1	2	3	1	1	0	0	S	1	1	0	1	1	1	1	0	0	0	1	1	1	2	1	1	0	3	1	24		
30	2	4	5	5	5	4	S	5	7	3	1	1	1	0	0	0	0	1	1	2	1	1	2	2	0	7	2	24		
HOURLY MAX	17	7	6	7	9	14	11	14	10	7	5	6	3	6	3	2	3	2	5	10	9	11	18	14						
HOURLY AVG	2	2	2	2	3	3	4	5	3	2	2	1	1	1	1	1	1	1	2	2	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

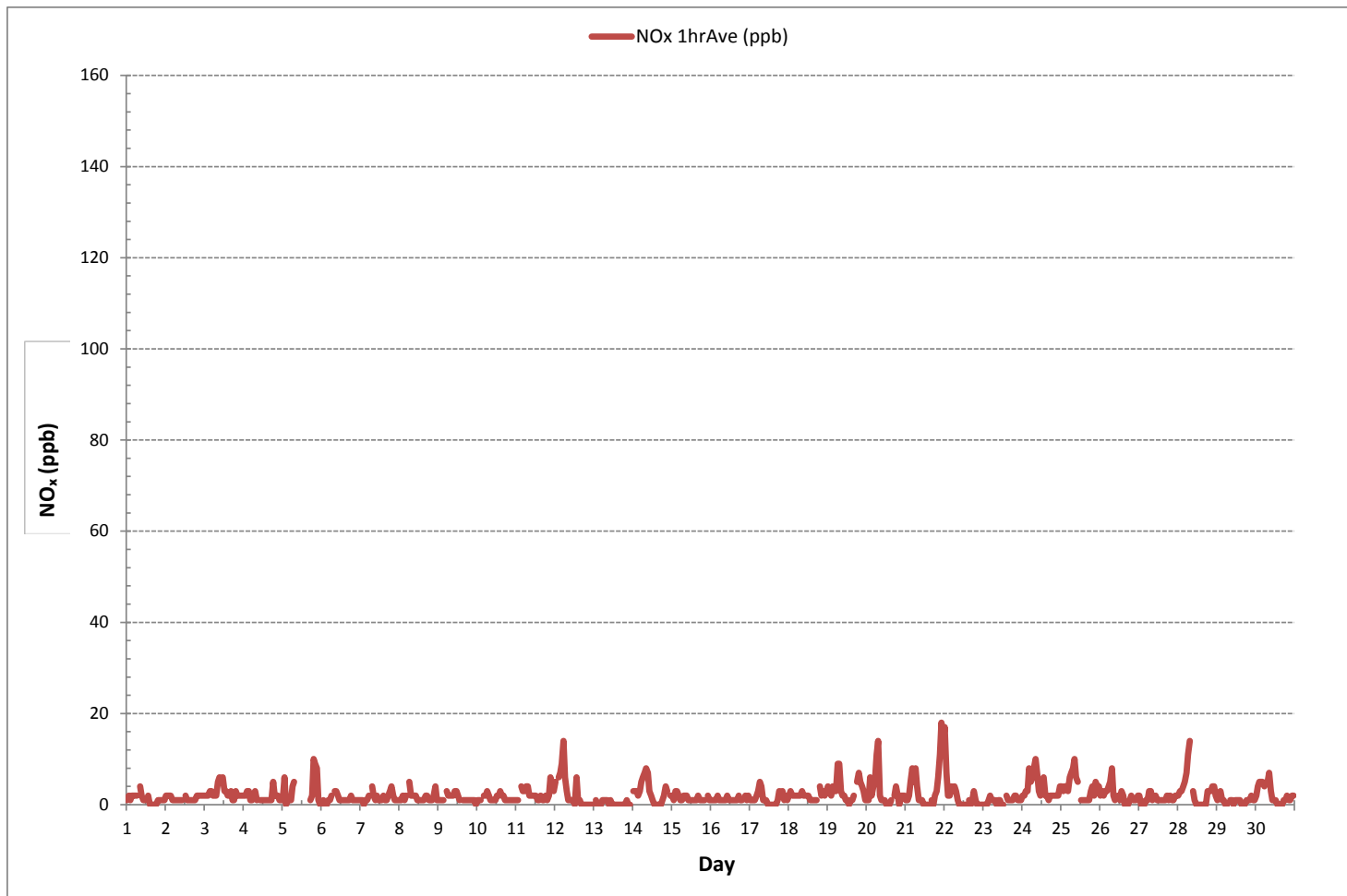
24 HR AVERAGES September 2018



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	583			
MINIMUM 1-HR AVERAGE:	0	ppb @ HOUR	14	ON DAY
MAXIMUM 1-HR AVERAGE:	18	ppb @ HOUR	22	ON DAY
MAXIMUM 24-HR AVERAGE:	4	ppb		ON DAY
IZS CALIBRATION TIME:	30	hrs	OPERATIONAL TIME:	718
MONTHLY CALIBRATION TIME:	9	hrs	AMD OPERATION UPTIME:	99.7
STANDARD DEVIATION:	2		MONTHLY AVERAGE:	2
				ppb

OXIDES OF NITROGEN Hourly Averages (NO_x ppb)



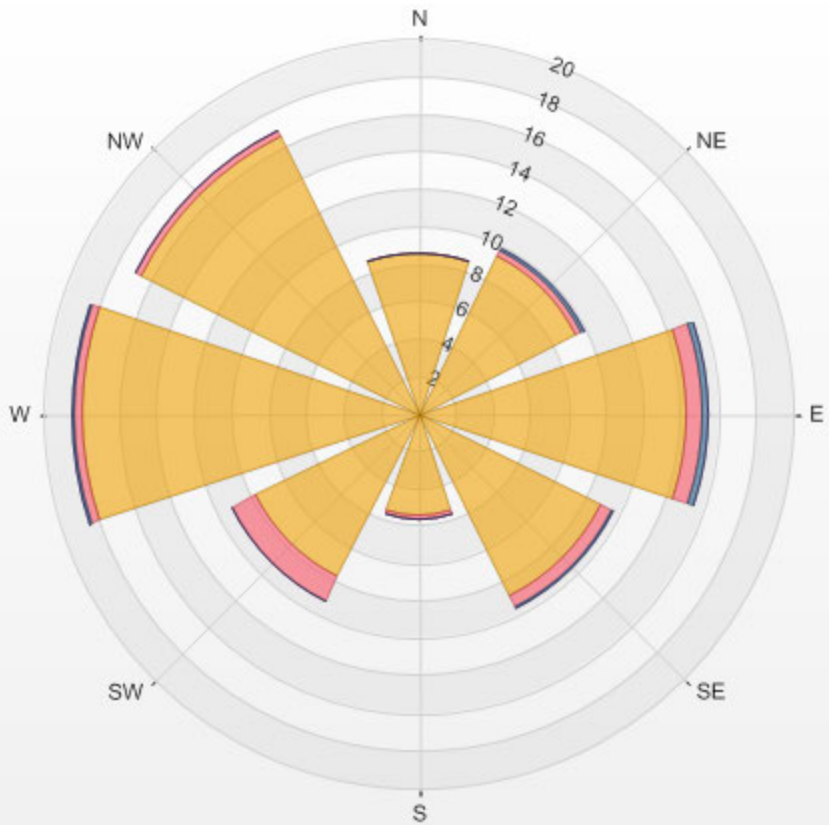
Wind: LICA COLD LAKE SOUTH
 Poll.: LICA COLD LAKE SOUTH-NOX[ppb]
 Monthly: 18/09
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 2.21% Calm Avg: 3.99 [ppb]

Direction	0.0-6.3	6.3-12.7	12.7-19.0	>19.0	Total
N	8.5	0.0	0.0	0.0	8.5
NE	9.4	0.3	0.2	0.0	9.9
E	14.3	0.9	0.3	0.0	15.5
SE	10.9	0.6	0.2	0.0	11.6
S	5.5	0.2	0.0	0.0	5.6
SW	9.7	1.5	0.0	0.0	11.2
W	18.0	0.4	0.2	0.0	18.6
NW	16.6	0.3	0.0	0.0	16.9
Summary	92.9	4.1	0.7	0.0	97.8

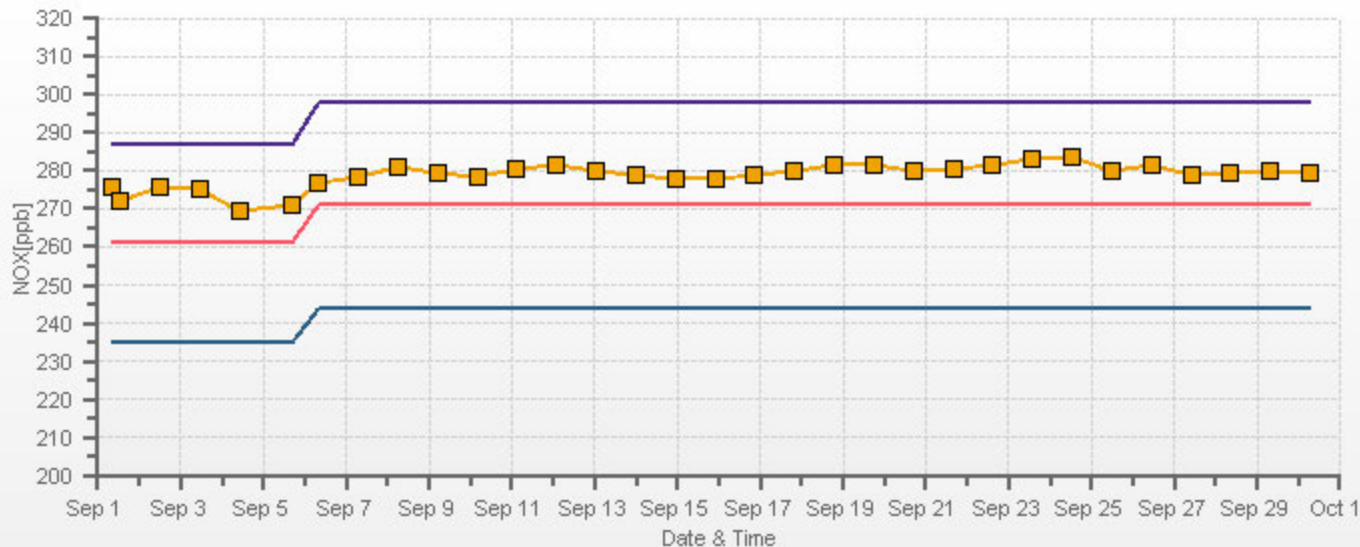
% Icon Classes (ppb) 93 0.0-6.3 4 6.3-12.7 1 12.7-19.0 0 >19.0

LICA COLD LAKE SOUTH Poll.: LICA COLD LAKE SOUTH-NOX[ppb] 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 2.21% Calm Poll Avg: 3.99[ppb]



NOX[ppb] Calibration: LICA COLD LAKE SOUTH Monthly: 18/09 Type: Span

Span Meas Span Ref Span Low Span High



NITRIC OXIDE



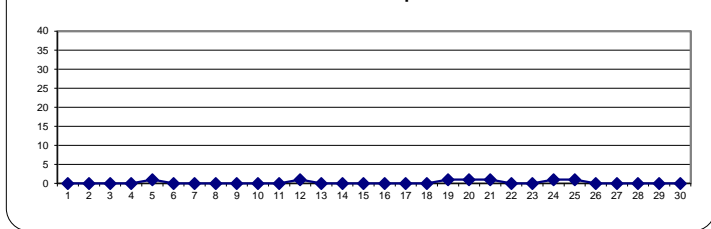
NITRIC OXIDE Hourly Averages (NO ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	0	0	0	0	0	0	0	S1	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23
DAY 2	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
DAY 3	0	0	1	1	1	0	0	1	1	2	S	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	24
DAY 4	0	0	0	0	0	0	0	1	0	S	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0	24
DAY 5	0	4	0	0	0	0	3	3	C	C	C	C	C	C	C	C	C	0	0	3	3	3	0	0	0	0	4	1	24
DAY 6	0	0	0	0	0	0	1	S	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
DAY 7	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	24
DAY 8	0	0	0	0	0	S	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
DAY 9	0	0	0	0	S	0	0	0	1	1	2	1	1	0	P	0	0	0	0	0	0	0	0	0	0	0	2	0	23
DAY 10	0	0	0	S	0	0	1	1	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	0	24
DAY 11	0	0	S	0	0	0	0	1	1	0	1	1	1	0	0	0	0	0	0	0	0	0	3	1	1	0	3	0	24
DAY 12	3	S	3	4	7	10	1	0	0	0	1	0	0	4	1	0	0	0	0	0	0	0	0	0	0	0	10	1	24
DAY 13	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	24
DAY 14	0	0	0	0	0	0	1	2	3	3	1	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	3	0	24
DAY 15	0	0	1	0	0	0	0	1	0	1	1	0	0	0	0	1	0	0	0	0	0	S	0	0	0	0	1	0	24
DAY 16	0	0	0	0	1	0	0	0	0	1	1	1	0	0	0	0	0	1	0	0	S	0	0	0	0	0	1	0	24
DAY 17	0	0	0	0	0	1	1	1	0	0	1	0	0	0	0	0	0	0	1	S	0	0	0	0	0	0	1	0	24
DAY 18	0	0	0	0	0	0	0	1	1	1	1	0	1	0	1	0	0	0	S	1	0	1	1	1	0	0	1	0	24
DAY 19	2	1	1	2	1	1	8	8	2	1	1	0	0	0	0	0	0	S	0	2	1	0	0	0	0	0	8	1	24
DAY 20	0	0	3	0	2	3	8	9	1	0	0	0	0	0	0	0	S	1	0	0	0	0	0	0	0	0	9	1	24
DAY 21	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	S	0	0	0	0	0	3	7	6	0	0	7	1	24
DAY 22	8	1	0	0	0	0	1	1	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	8	0	24
DAY 23	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	24
DAY 24	0	0	1	0	4	2	3	6	6	4	1	1	S	1	0	0	0	0	0	0	0	0	0	0	0	0	6	1	24
DAY 25	0	0	0	0	0	1	2	4	5	3	2	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	1	24
DAY 26	0	0	0	0	0	0	0	2	0	0	S	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	2	0	24
DAY 27	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
DAY 28	0	0	0	0	0	0	1	5	S	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	24
DAY 29	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
DAY 30	0	0	0	0	0	0	S	1	3	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	24
HOURLY MAX	8	4	3	4	7	10	8	9	6	4	2	1	1	4	1	1	1	1	2	3	3	3	7	6					
HOURLY AVG	0	0	0	0	1	1	1	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

STATUS FLAG CODES

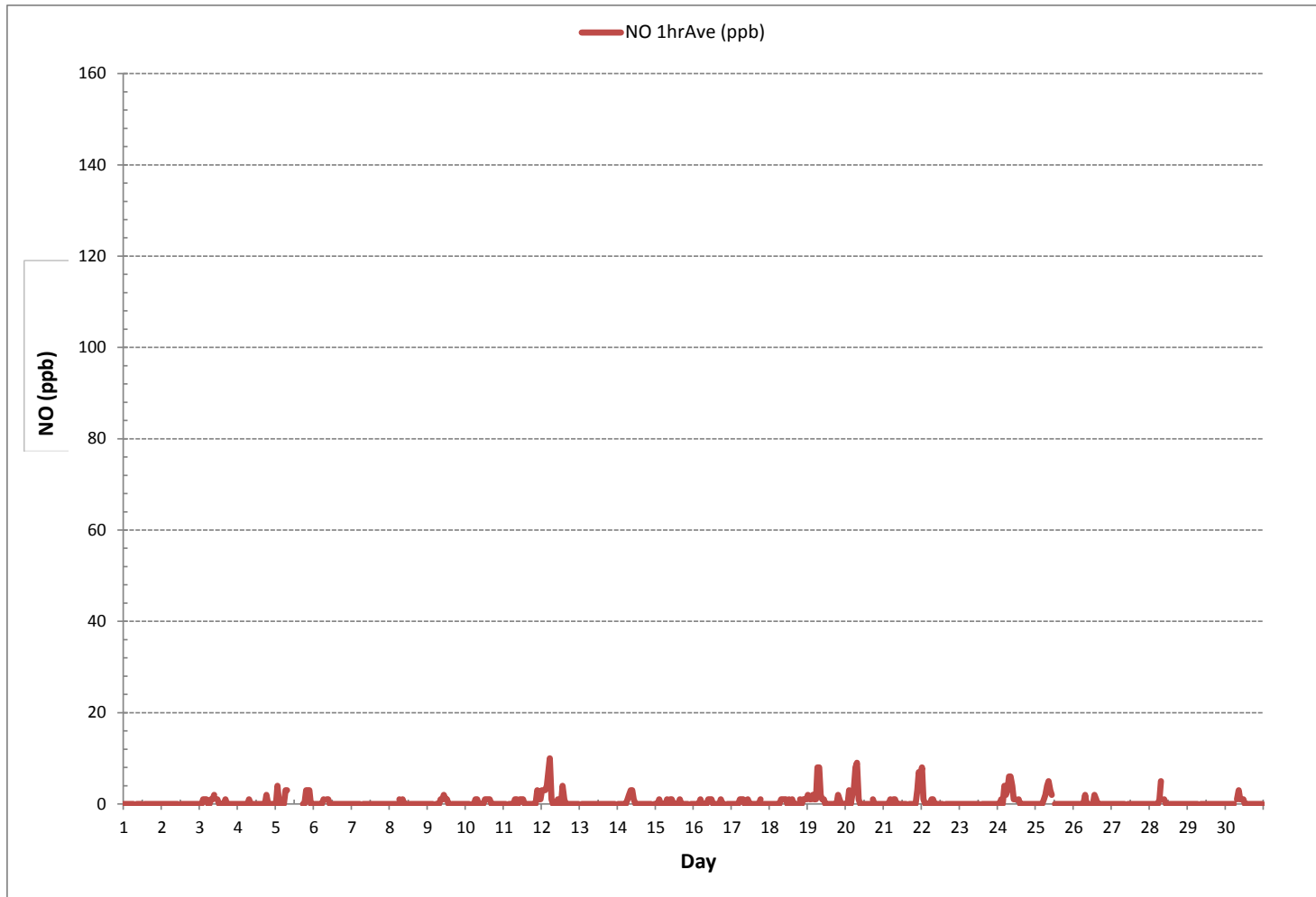
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

24 HR AVERAGES September 2018



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	136			
MINIMUM 1-HR AVERAGE:	0 ppb	@ HOUR	0	ON DAY 1
MAXIMUM 1-HR AVERAGE:	10 ppb	@ HOUR	5	ON DAY 12
MAXIMUM 24-HR AVERAGE:	1 ppb			ON DAY 5
IZS CALIBRATION TIME:	30 hrs	OPERATIONAL TIME:	718 hrs	
MONTHLY CALIBRATION TIME:	9 hrs	AMD OPERATION UPTIME:	99.7 %	
STANDARD DEVIATION:	1	MONTHLY AVERAGE:	0 ppb	



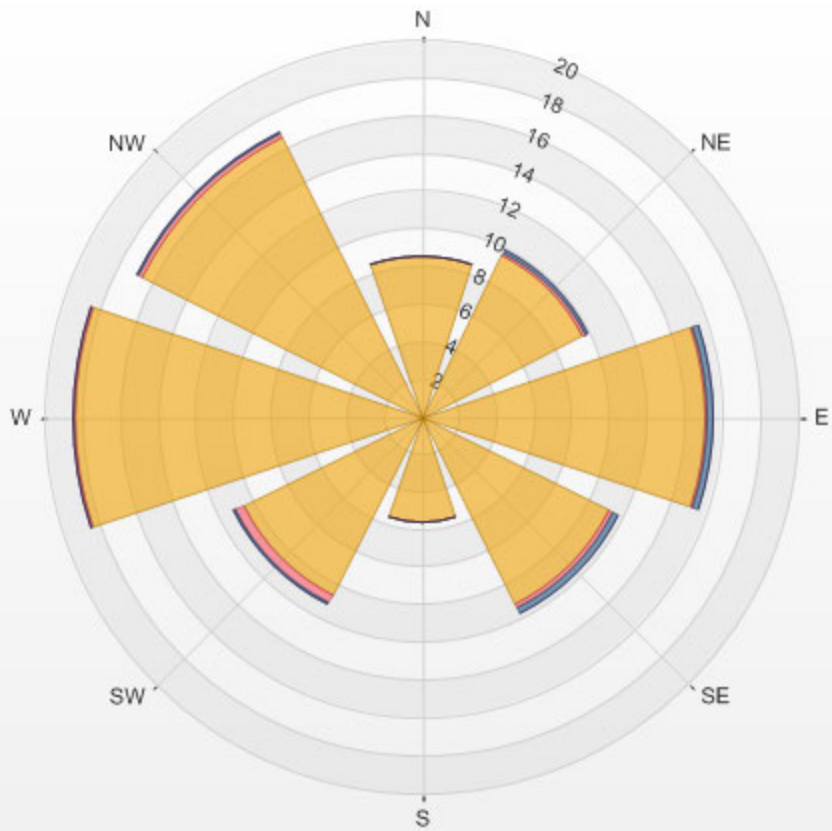
Wind: LICA COLD LAKE SOUTH
 Poll.: LICA COLD LAKE SOUTH-NO[ppb]
 Monthly: 18/09
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 2.21% Calm Avg: 1.74 [ppb]

Direction	0.0-3.7	3.7-7.3	7.3-11.0	>11.0	Total
N	8.5	0.0	0.0	0.0	8.5
NE	9.6	0.2	0.2	0.0	9.9
E	15.0	0.2	0.3	0.0	15.5
SE	11.2	0.2	0.3	0.0	11.6
S	5.6	0.0	0.0	0.0	5.6
SW	10.6	0.4	0.2	0.0	11.2
W	18.4	0.2	0.0	0.0	18.6
NW	16.6	0.2	0.2	0.0	16.9
Summary	95.6	1.2	1.0	0.0	97.8

% Icon	Classes (ppb)	96	0.0-3.7	1	3.7-7.3	1	7.3-11.0	0	>11.0

LICA COLD LAKE SOUTH Poll.: LICA COLD LAKE SOUTH-NO[ppb] 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 2.21% Calm Poll Avg: 1.74[ppb]



NITROGEN DIOXIDE

NITROGEN DIOXIDE Hourly Averages (NO₂ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.		
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59						
DAY 1	1	2	1	2	2	2	2	S1	3	2	1	1	S	1	0	0	0	0	0	1	1	1	1	1	0	3	1	23		
2	2	2	2	2	1	1	1	1	1	1	1	S	2	1	1	1	1	1	1	1	2	2	2	2	2	1	2	1	24	
3	2	1	2	2	2	1	2	2	4	4	S	5	3	3	2	2	3	1	1	3	2	2	2	2	2	1	5	2	24	
4	2	2	3	3	1	1	2	2	1	S	1	1	1	1	1	1	1	1	1	2	2	2	2	1	1	1	3	2	24	
5	1	2	0	1	1	1	1	1	2	C	C	C	C	C	C	C	C	1	2	7	6	6	1	0	0	7	2	24		
6	0	1	0	0	0	1	1	S	2	2	1	1	1	1	1	1	1	1	2	1	1	0	1	1	0	2	1	24		
7	1	1	0	1	1	2	S	4	2	1	1	1	1	1	1	1	1	2	3	4	2	1	1	1	0	4	1	24		
8	1	1	2	1	2	S	4	2	1	1	1	1	1	1	1	1	2	2	1	1	1	2	3	1	1	4	1	24		
9	1	1	1	1	S	3	2	2	2	2	2	2	1	1	P	1	1	1	1	1	1	1	1	0	0	3	1	23		
10	1	1	1	S	2	1	2	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	2	1	24		
11	1	1	S	4	3	3	3	3	2	1	1	2	1	1	1	2	1	1	2	1	2	1	1	3	2	2	1	4	2	24
12	2	S	3	2	2	4	4	2	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	4	1	24	
13	S	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	S	0	1	0	24	
14	3	3	3	2	3	4	5	5	4	4	2	2	1	0	0	0	0	0	1	2	3	3	S	2	0	5	2	24		
15	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	2	1	1	2	1	24		
16	1	1	1	1	1	1	0	0	0	1	1	1	0	0	1	1	1	1	1	1	S	2	1	1	0	2	1	24		
17	1	1	1	1	1	2	3	3	1	1	0	0	0	0	0	0	0	1	3	S	2	1	1	1	0	3	1	24		
18	2	3	2	2	2	2	1	2	2	1	1	1	1	1	1	1	1	1	S	4	2	2	1	1	1	1	4	2	24	
19	2	2	1	2	1	1	2	1	2	1	1	1	1	0	1	1	2	S	5	5	5	3	2	1	0	5	2	24		
20	1	1	3	2	2	2	4	5	2	1	1	1	0	0	0	0	S	2	3	2	0	2	2	2	0	5	2	24		
21	1	1	2	5	7	5	7	3	1	0	0	0	0	0	S	1	0	2	3	6	8	10	7	0	10	3	24			
22	9	6	2	2	4	3	3	2	0	0	0	0	0	0	S	1	0	1	2	1	0	0	0	0	0	9	2	24		
23	0	0	0	1	1	1	1	1	0	0	0	0	0	S	2	1	1	1	1	2	1	1	1	1	0	2	1	24		
24	2	1	2	2	4	2	3	2	4	3	2	1	S	4	2	2	1	2	2	2	2	2	2	3	1	4	2	24		
25	4	3	4	4	3	5	5	4	5	3	3	S	1	1	1	1	1	1	3	3	2	5	4	4	1	5	3	24		
26	2	3	2	3	3	4	5	7	2	1	S	2	1	1	1	0	0	0	1	2	1	1	1	2	0	7	2	24		
27	2	0	0	0	1	1	3	3	1	S	1	1	1	1	1	1	1	2	1	2	1	1	2	2	0	3	1	24		
28	2	3	3	4	5	7	10	9	S	2	1	0	0	0	0	0	0	0	3	3	3	4	4	2	0	10	3	24		
29	1	2	3	1	1	0	0	S	1	1	0	0	1	1	0	0	0	0	1	1	1	1	2	1	1	0	3	1	24	
30	2	4	5	5	5	3	S	4	4	2	0	0	0	0	0	0	0	1	1	2	1	1	1	2	0	5	2	24		
HOURLY MAX	9	6	5	5	7	7	10	9	5	4	3	5	3	4	2	2	3	2	5	7	6	8	10	7						
HOURLY AVG	2	2	2	2	2	2	3	3	2	1	1	1	1	1	1	1	1	1	2	2	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

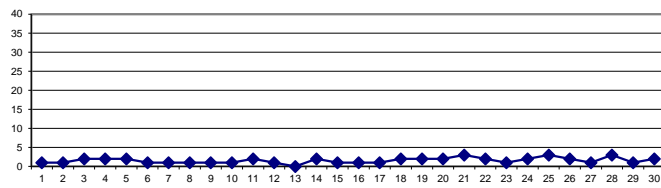
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR 159 ppb

MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0			
NUMBER OF NON-ZERO READINGS:	558			
MINIMUM 1-HR AVERAGE:	0	ppb @ HOUR	14	ON DAY
MAXIMUM 1-HR AVERAGE:	10	ppb @ HOUR	22	ON DAY
MAXIMUM 24-HR AVERAGE:	3	ppb		ON DAY
IZS CALIBRATION TIME:	30	hrs	OPERATIONAL TIME:	718
MONTHLY CALIBRATION TIME:	9	hrs	AMD OPERATION UPTIME:	99.7
STANDARD DEVIATION:	1		MONTHLY AVERAGE:	2
				ppb

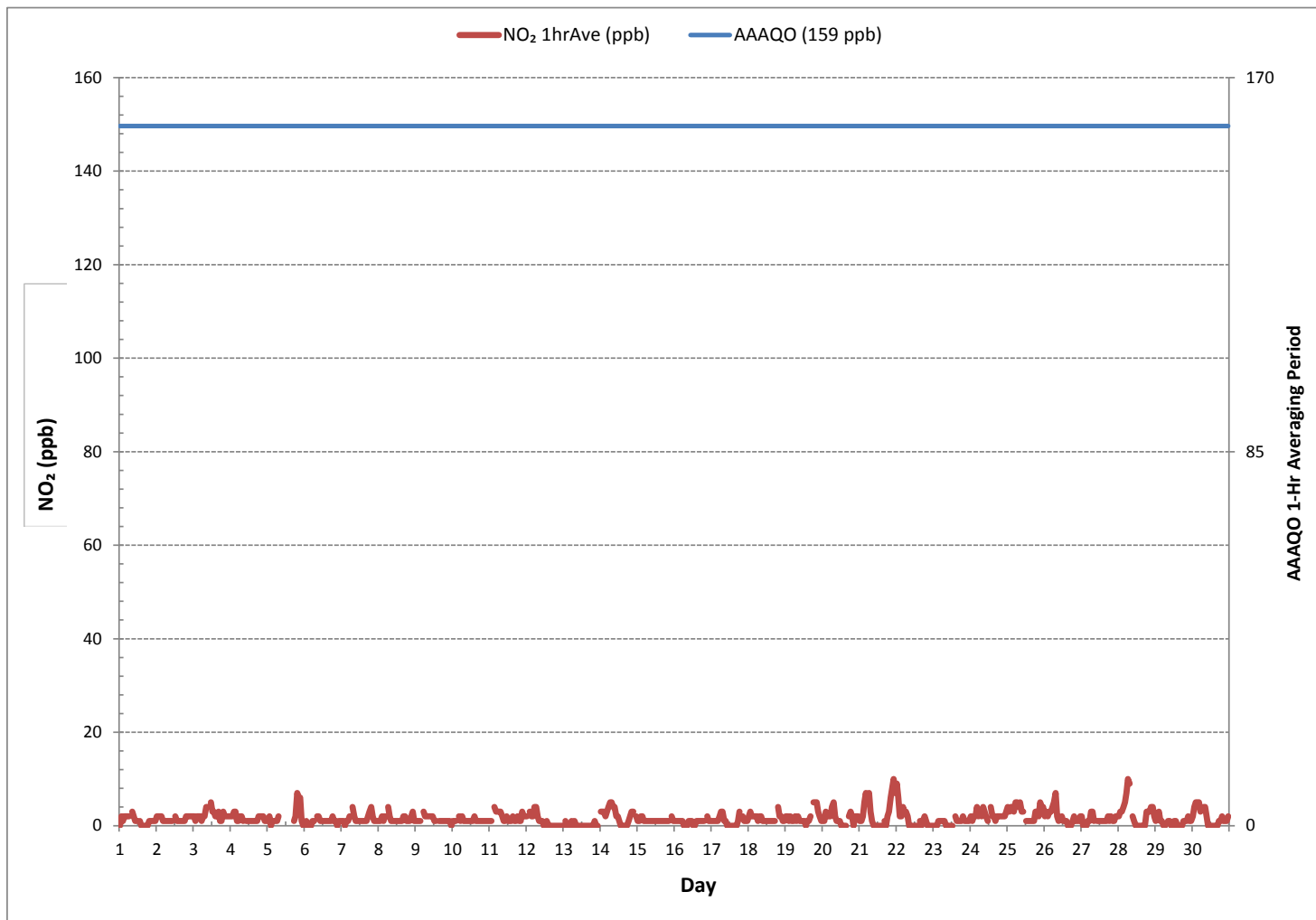
24 HR AVERAGES September 2018





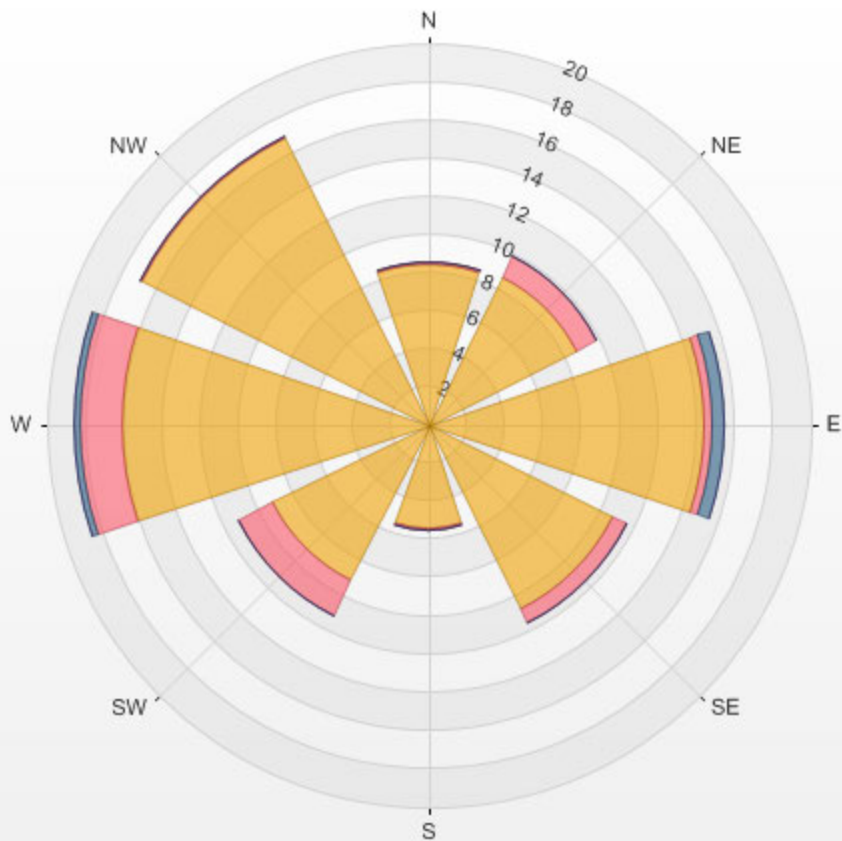
LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake South Continuous Monitoring Station - September 2018

NITROGEN DIOXIDE Hourly Averages (NO₂ ppb)



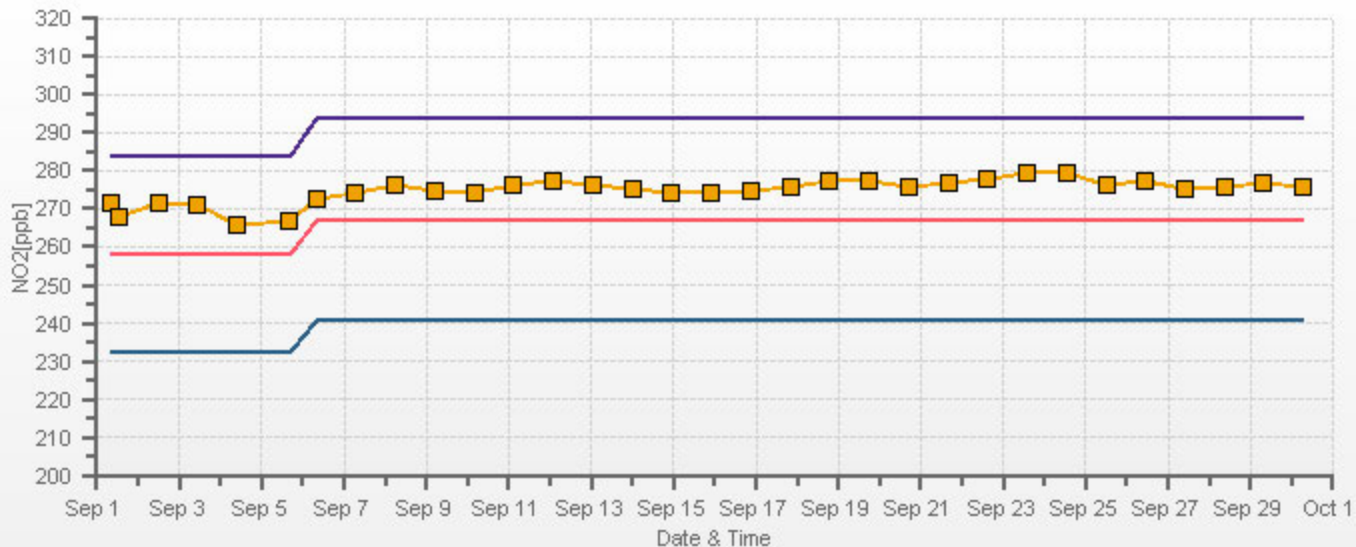
% Icon Classes (ppb) 90 0.0-3.7 7 3.7-7.3 1 7.3-11.0 0 >11.0

LICA COLD LAKE SOUTH Poll.: LICA COLD LAKE SOUTH-NO2[ppb] 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 2.21% Calm Poll Avg: 2.25[ppb]



NO2[ppb] Calibration: LICA COLD LAKE SOUTH Monthly: 18/09 Type: Span

Span Meas Span Ref Span Low Span High



OZONE



OZONE Hourly Averages (O₃ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
DAY 1	15.8	17.9	14.4	14.0	16.6	16.9	18.4	S1	21.0	22.1	23.5	24.4	S	22.5	23.2	24.0	24.7	24.9	24.1	20.3	24.8	24.8	25.0	23.5	14.0	25.0	21.2	23
2	19.1	13.1	11.2	12.1	13.6	13.1	13.7	16.5	20.8	23.9	25.8	S	25.7	27.3	29.5	30.5	29.3	25.7	16.2	10.5	8.0	6.7	5.5	5.2	5.2	30.5	17.5	24
3	6.1	4.2	3.2	2.1	1.7	1.3	2.7	4.7	5.4	5.4	S	11.7	17.4	16.2	18.4	17.9	18.4	22.5	19.3	13.1	13.3	12.8	12.6	14.4	1.3	22.5	10.6	24
4	15.2	13.5	10.5	9.0	12.2	14.2	12.6	16.1	20.2	S	26.1	27.2	28.5	30.4	31.0	31.1	30.5	29.5	20.2	9.3	5.8	3.6	5.5	4.8	3.6	31.1	17.7	24
5	3.0	0.7	1.9	0.8	0.9	0.7	0.8	4.9	S	17.5	23.4	29.6	33.9	C	C	C	C	35.3	27.5	13.1	6.7	11.3	24.6	24.0	0.7	35.3	13.7	24
6	24.5	23.5	24.6	24.7	24.3	25.0	24.6	S	25.5	25.2	25.3	26.2	28.4	29.8	29.2	29.5	28.0	26.8	26.0	26.0	25.8	24.6	23.8	22.9	22.9	29.8	25.8	24
7	22.2	21.2	21.4	20.5	20.2	19.3	S	20.0	20.2	21.2	22.8	30.3	33.8	32.2	31.4	33.7	32.4	28.6	25.1	22.1	23.0	24.4	23.7	23.6	19.3	33.8	24.9	24
8	23.0	20.9	18.3	22.6	21.4	S	18.0	20.1	20.4	21.9	22.4	24.5	26.6	30.8	31.1	32.1	31.9	25.6	21.1	23.2	27.4	21.7	18.0	17.8	17.8	32.1	23.5	24
9	14.8	12.7	10.7	9.9	S	7.2	6.0	5.3	4.6	6.3	7.7	6.8	7.7	9.0	P	10.0	9.6	10.7	9.8	10.3	10.3	10.0	11.0	10.7	4.6	14.8	9.1	23
10	8.8	7.4	7.7	S	8.0	7.2	4.9	7.9	9.8	12.5	13.9	15.4	14.3	12.9	12.5	13.6	13.3	11.3	11.9	8.3	4.7	4.1	6.8	9.0	4.1	15.4	9.8	24
11	7.0	5.1	S	3.8	4.3	4.7	5.8	8.0	9.0	9.2	10.1	10.7	16.6	22.3	24.9	27.1	30.4	27.0	13.7	5.9	2.4	0.8	1.1	0.5	0.5	30.4	10.9	24
12	0.4	S	0.3	0.3	0.3	1.2	7.2	13.1	14.1	15.2	14.3	14.8	17.8	18.9	20.3	20.4	18.5	17.1	18.1	18.5	20.1	18.6	18.3	18.0	0.3	20.4	13.3	24
13	S	18.5	18.3	18.5	19.3	18.3	19.3	19.8	18.9	19.7	20.5	21.8	21.4	21.7	22.8	24.9	23.2	20.7	19.8	19.4	17.2	14.8	13.6	S	13.6	24.9	19.7	24
14	10.8	9.7	6.8	4.5	5.3	4.7	4.1	4.5	6.0	14.2	18.1	19.5	21.7	24.5	26.2	25.7	24.7	23.3	17.4	9.8	4.3	5.7	S	13.9	4.1	26.2	13.3	24
15	15.7	15.0	14.3	15.2	17.0	15.9	14.9	15.8	19.8	19.3	20.3	21.1	20.2	18.6	20.5	19.5	20.2	21.0	21.0	20.9	20.9	S	20.5	20.0	14.3	21.1	18.6	24
16	20.6	21.4	21.5	22.0	21.7	21.5	20.7	20.7	20.9	19.8	19.8	20.0	20.8	20.4	20.3	20.4	20.1	20.2	20.5	20.3	S	20.0	19.3	18.1	18.1	22.0	20.5	24
17	17.6	16.9	16.9	16.4	15.5	14.8	13.7	14.3	16.4	16.6	17.4	18.8	18.7	19.6	20.1	20.1	18.1	16.6	6.5	S	1.6	1.8	1.7	1.7	1.6	20.1	14.0	24
18	4.8	3.7	5.3	5.4	4.8	4.9	6.1	7.2	8.5	9.8	14.2	14.0	14.2	15.4	15.2	17.4	17.6	15.0	S	4.2	2.5	1.6	1.1	0.7	0.7	17.6	8.4	24
19	0.5	0.6	0.4	0.4	0.4	0.3	0.4	1.9	10.6	18.3	22.9	26.3	29.1	31.5	32.1	28.0	26.8	S	18.7	8.1	5.6	7.0	8.0	14.5	0.3	32.1	12.7	24
20	5.9	3.1	1.4	1.9	0.7	0.4	0.9	1.7	19.6	23.7	27.9	29.7	29.8	29.7	29.1	29.8	S	27.2	24.1	25.9	25.0	16.9	14.8	11.9	0.4	29.8	16.6	24
21	11.6	10.0	10.2	8.6	10.8	7.3	9.5	21.3	24.8	25.9	26.7	28.3	28.7	29.0	28.6	S	28.3	26.9	15.7	11.1	7.8	1.7	0.7	0.9	0.7	29.0	16.3	24
22	0.7	6.0	9.3	7.8	4.6	8.7	17.7	18.6	21.0	22.2	23.4	26.0	29.8	29.6	S	29.6	29.3	28.2	25.5	25.3	26.9	25.9	25.1	24.3	0.7	29.8	20.2	24
23	23.1	23.0	22.4	21.4	19.3	19.7	18.9	17.9	16.7	16.1	15.9	16.3	16.3	S	16.5	18.9	20.0	19.3	18.0	15.1	14.1	14.8	14.9	14.4	14.1	23.1	18.0	24
24	9.8	5.7	4.5	5.5	1.4	1.5	1.3	2.1	6.2	10.3	16.4	20.2	S	19.3	26.9	31.5	31.4	30.1	25.0	23.1	22.8	20.0	19.4	15.9	1.3	31.5	15.2	24
25	13.1	11.1	7.4	5.0	4.8	3.2	3.2	7.0	10.6	14.3	20.2	S	34.5	37.2	38.0	36.0	34.2	29.9	19.8	18.1	20.6	20.8	22.0	22.7	3.2	38.0	18.9	24
26	26.5	25.4	26.1	25.8	23.9	22.9	20.8	19.2	26.6	30.8	S	33.9	34.0	35.0	35.0	36.6	35.6	34.0	31.3	27.7	27.1	24.7	20.3	17.8	17.8	36.6	27.9	24
27	17.6	20.6	23.6	20.7	18.5	22.6	20.0	22.3	29.7	S	34.2	35.6	36.0	36.0	35.8	33.6	31.0	28.5	26.8	24.2	27.3	26.7	21.4	15.4	15.4	36.0	26.4	24
28	14.5	12.0	15.8	14.9	13.2	11.7	8.2	9.9	S	25.3	30.2	34.4	36.4	36.8	37.3	36.8	36.8	35.1	25.0	19.1	19.9	17.4	18.3	24.1	8.2	37.3	23.2	24
29	26.7	26.4	27.7	33.7	32.7	29.0	26.4	S	30.8	30.3	30.2	30.6	30.3	30.1	29.6	30.0	29.2	27.9	26.2	25.6	24.4	22.8	19.7	19.0	19.0	33.7	27.8	24
30	17.7	15.2	12.7	10.1	8.4	7.8	S	10.1	14.3	24.6	30.6	30.0	30.0	31.0	31.0	30.3	29.3	28.5	27.3	23.2	23.2	22.7	21.8	21.7	7.8	31.0	21.8	24
HOURLY MAX	26.7	26.4	27.7	33.7	32.7	29.0	26.4	22.3	30.8	30.8	34.2	35.6	36.4	37.2	38.0	36.8	36.8	35.3	31.3	27.7	27.4	26.7	25.1	24.3				
HOURLY AVG	13.7	13.3	12.7	12.3	11.9	11.2	11.5	12.3	16.9	18.6	21.5	23.1	25.1	25.6	26.5	26.4	25.8	24.7	20.7	17.3	16.0	14.8	15.1	14.9				

STATUS FLAG CODES

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

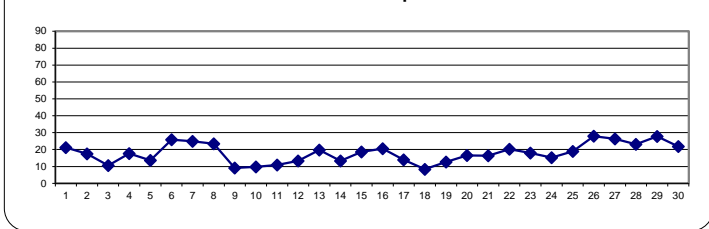
OBJECTIVE LIMIT:

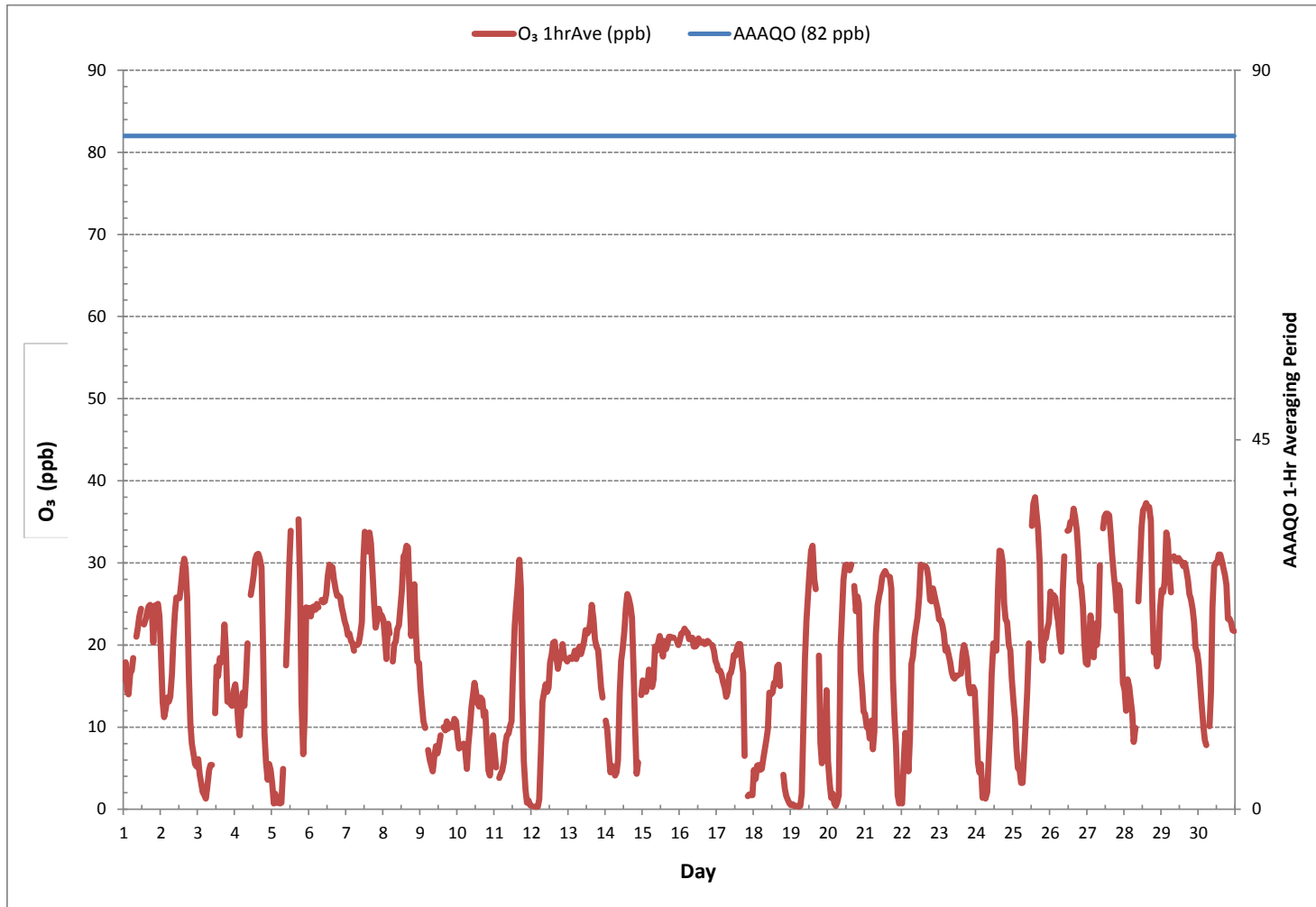
ALBERTA ENVIRONMENT: 1-HR 82 ppb

MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0				
NUMBER OF NON-ZERO READINGS:	683				
MINIMUM 1-HR AVERAGE:	0.3 ppb	@ HOUR	2	ON DAY	12
MAXIMUM 1-HR AVERAGE:	38.0 ppb	@ HOUR	14	ON DAY	25
MAXIMUM 24-HR AVERAGE:	27.9 ppb			ON DAY	26
I2S CALIBRATION TIME:	31 hrs	OPERATIONAL TIME:	718 hrs		
MONTHLY CALIBRATION TIME:	4 hrs	AMD OPERATION UPTIME:	99.7 %		
STANDARD DEVIATION:	9.3	MONTHLY AVERAGE:	17.9 ppb		

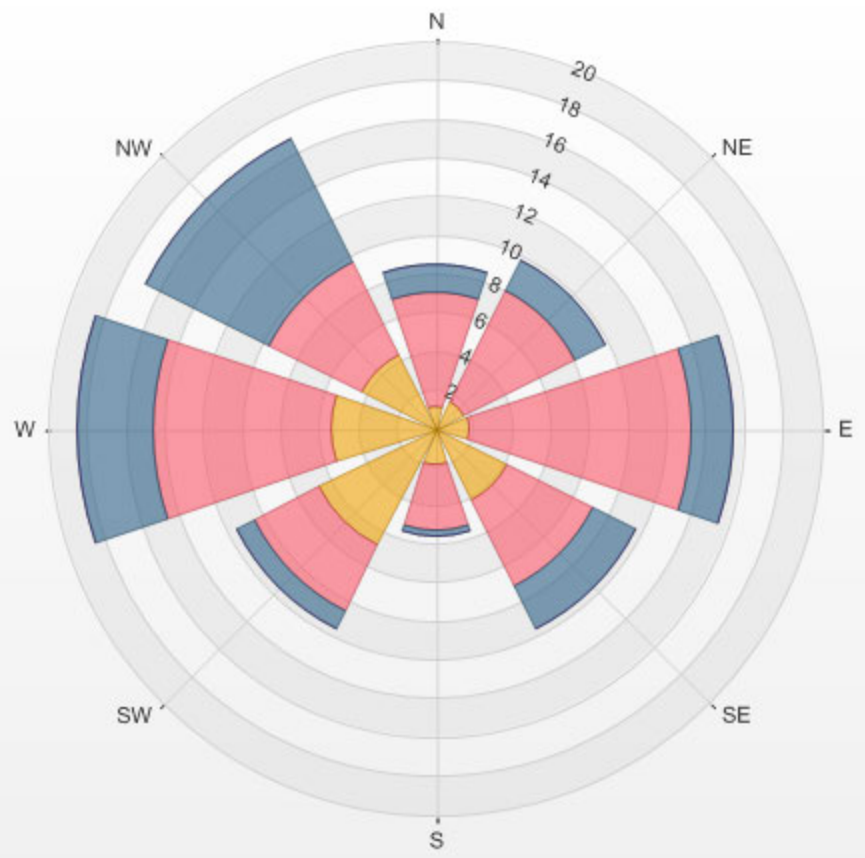
24 HR AVERAGES September 2018





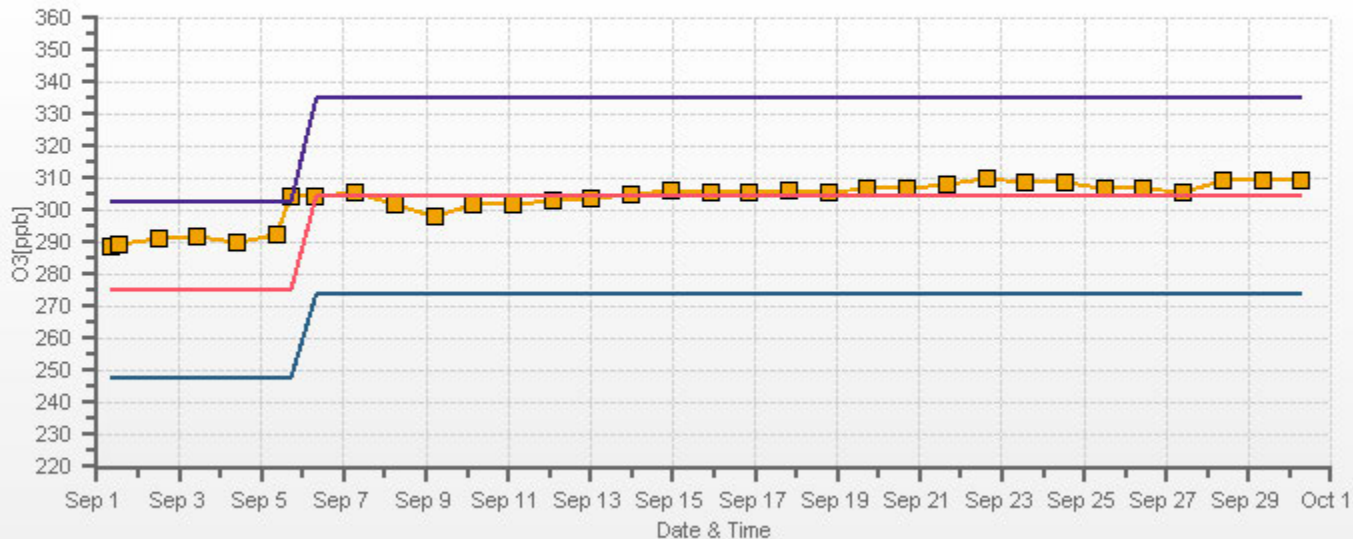
% Icon Classes (ppb) 27 0.0-13.0 51 13.0-26.0 20 26.0-39.0 0 >39.0

LICA COLD LAKE SOUTH Poll.: LICA COLD LAKE SOUTH-O3[ppb] 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 2.20% Calm Poll Avg: 3.14[ppb]



O3[ppb] Calibration: LICA COLD LAKE SOUTH Monthly: 18/09 Type: Span

Span Meas Span Ref Span Low Span High



PARTICULATE MATTER 2.5



PARTICULATE MATTER < 2.5 MICRONS Hourly Averages (PM_{2.5} µg/m³)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY																												
1	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	-	-	0
2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	-	-	0
3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	-	-	0
4	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	-	-	0
5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	-	-	0
6	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	-	-	0
7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	-	-	0
8	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	-	-	0
9	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	-	-	0
10	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	-	-	0
11	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	-	-	0
12	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	C	C	0	0	0	0	0	0	0	0	0	8
13	0	0	0	0	0	0	0	0	C	C	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	1	0	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	2	1	24
15	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
16	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	1	0	24
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	0	0	0	0	1	0	24
18	1	1	0	0	0	0	0	0	1	2	2	1	1	1	1	1	0	1	1	1	0	6	15	1	0	15	2	24
19	0	1	1	1	1	1	1	1	1	2	2	1	1	1	1	1	1	1	2	2	2	1	1	1	0	2	1	24
20	1	1	1	1	1	1	1	1	1	2	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1	3	1	24
21	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	1	2	4	7	11	0	11	1	24
22	11	6	3	2	2	2	6	2	2	1	1	1	1	1	1	1	1	1	2	1	0	1	0	0	0	11	2	24
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	2	2	3	0	0	3	1	24
24	4	6	8	10	10	10	9	9	10	6	4	3	2	2	2	1	0	0	1	1	1	1	1	0	10	4	24	
25	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	1	1	1	1	2	2	0	2	1	24
26	2	2	2	2	2	2	2	3	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	24
27	1	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	24
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	24
29	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	24
30	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	24
HOURLY MAX	11	6	8	10	10	10	9	9	10	6	4	3	2	2	2	1	1	1	2	2	2	6	15	11				
HOURLY AVG	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0	0	0	0	1	1	0	1	2	1				

STATUS FLAG CODES

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

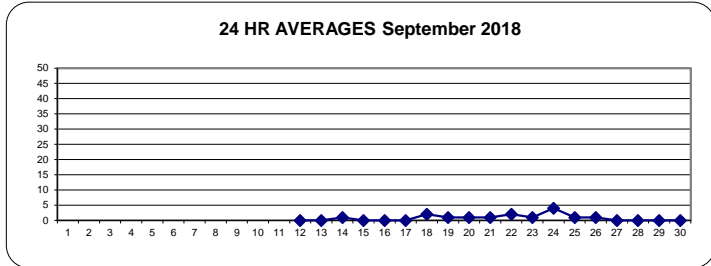
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT:	1-HR	80	µg/m ³	24-HR	30	µg/m ³
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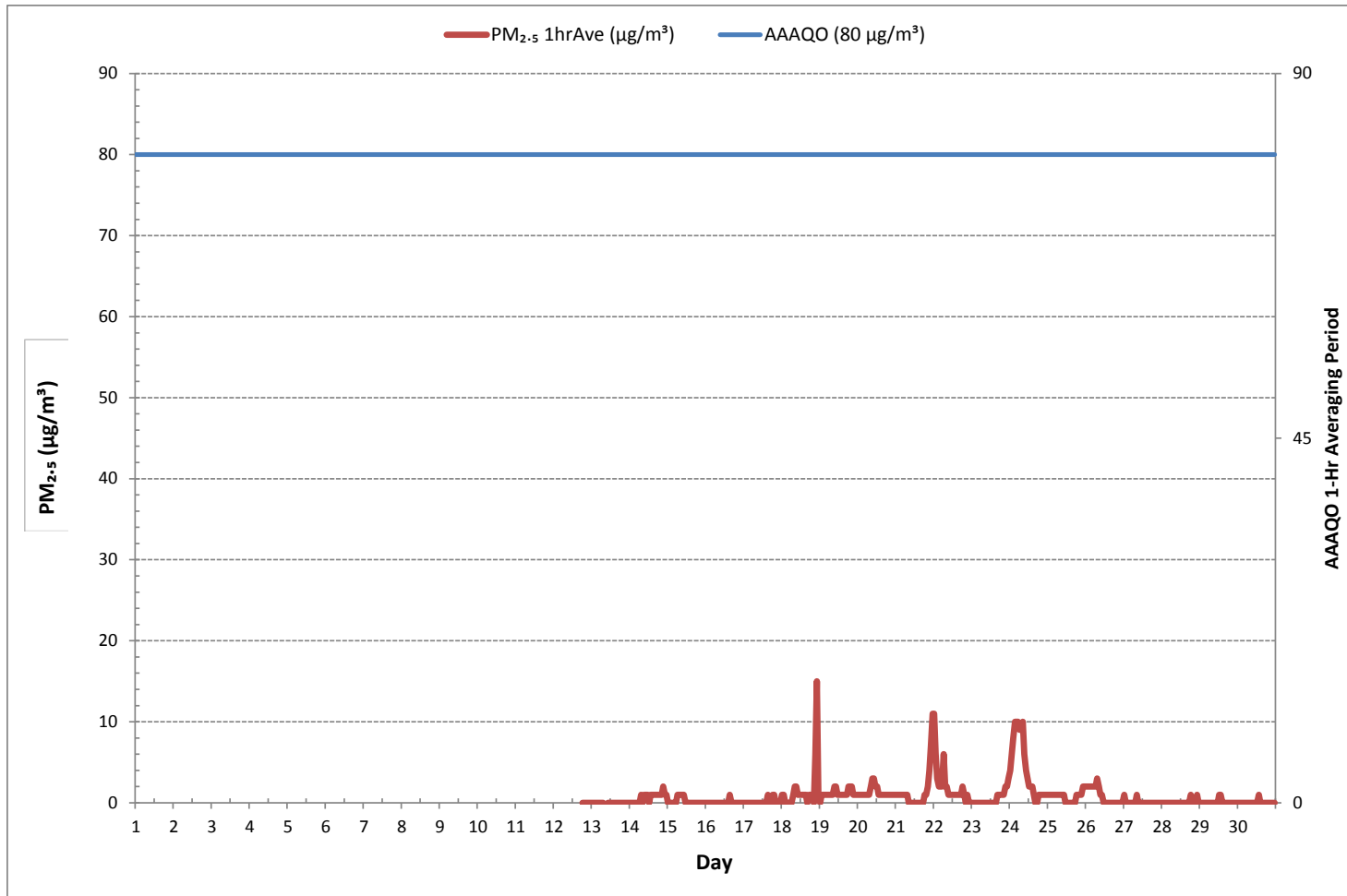
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0			
NUMBER OF 24-HR EXCEEDANCES:	0			
NUMBER OF NON-ZERO READINGS:	188			
MINIMUM 1-HR AVERAGE:	0 µg/m ³ @ HOUR	18	ON DAY	12
MAXIMUM 1-HR AVERAGE:	15 µg/m ³ @ HOUR	22	ON DAY	18
MAXIMUM 24-HR AVERAGE:	4 µg/m ³		ON DAY	24
MONTHLY CALIBRATION TIME:	4 hrs	OPERATIONAL TIME:	440 hrs	
STANDARD DEVIATION:	2	AMD OPERATION UPTIME:	61.1 %	
		MONTHLY AVERAGE:	1 µg/m ³	

24 HR AVERAGES September 2018



PARTICULATE MATTER < 2.5 MICRONS Hourly Averages (PM_{2.5} µg/m³)



Wind: LICA COLD LAKE SOUTH
 Poll.: LICA COLD LAKE SOUTH-PM2.5 [ug/m3]
 Monthly: 18/09
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

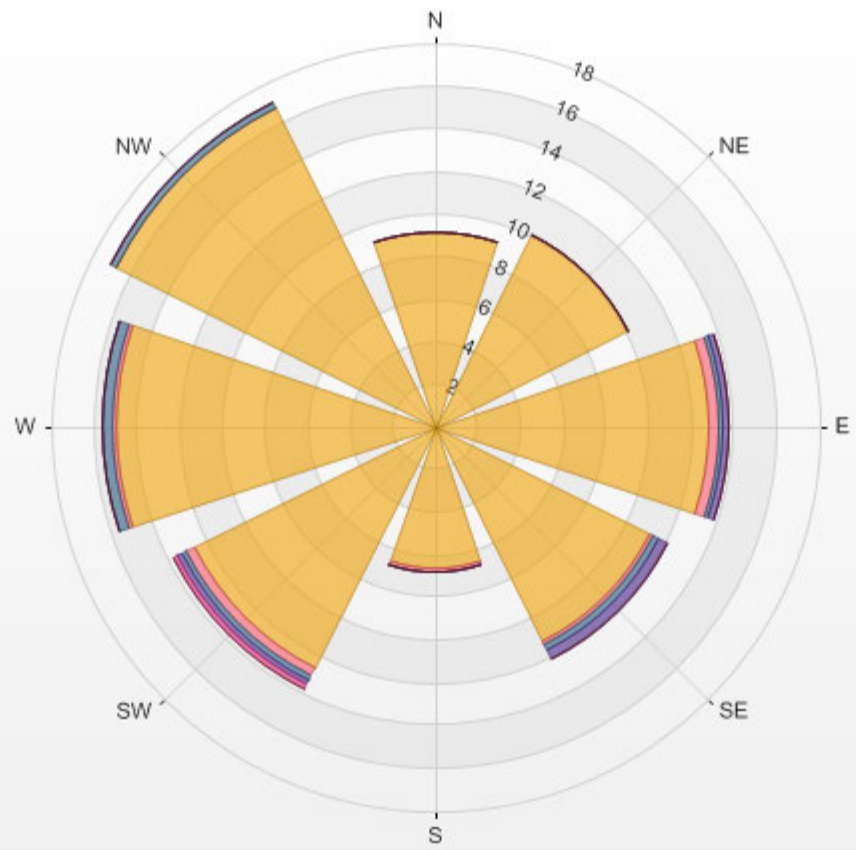
Calm: 1.61%

Calm Avg: 2.33 [ug/m3]

Direction	0.0-3.2	3.2-6.4	6.4-9.6	9.6-12.8	12.8-16.0	>16.0	Total
N	9.2	0.0	0.0	0.0	0.0	0.0	9.2
NE	10.1	0.0	0.0	0.0	0.0	0.0	10.1
E	12.8	0.5	0.2	0.2	0.0	0.0	13.8
SE	11.2	0.2	0.2	0.5	0.0	0.0	12.2
S	6.7	0.2	0.0	0.0	0.0	0.0	6.9
SW	12.6	0.5	0.2	0.2	0.2	0.0	13.8
W	14.9	0.2	0.5	0.0	0.0	0.0	15.6
NW	16.7	0.0	0.2	0.0	0.0	0.0	17.0
Summary	94.3	1.6	1.4	0.9	0.2	0.0	98.4

% Icon Classes (ug/m3(L)) 94 0.0-3.2 2 3.2-6.4 1 6.4-9.6 1 9.6-12.8 0 12.8-16.0 0 >16.0

LICA COLD LAKE SOUTH Poll.: LICA COLD LAKE SOUTH-PM2.5_2[ug/m3(L)] 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 1.61% Calm Poll Avg: 2.33[ug/m3(L)]



WIND SPEED



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake South Continuous Monitoring Station - September 2018

WIND SPEED Hourly Averages (WS kph)

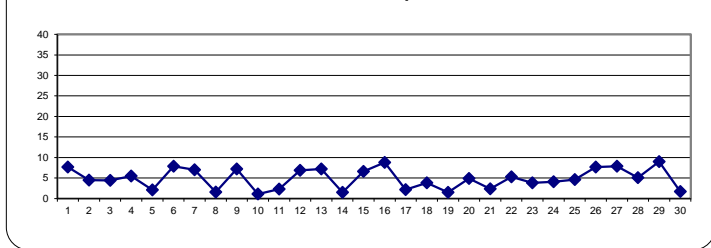
HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
DAY 1	2.3	3.2	2.4	4.3	5.2	5.6	6.2	7.0	8.4	9.6	10.5	10.9	13.8	14.3	13.1	14.1	13.7	10.1	6.4	5.9	10.0	9.1	7.4	6.6	2.3	14.3	7.7	24
2	4.7	3.7	4.1	4.4	3.6	4.0	4.5	6.3	8.3	6.8	7.7	8.5	8.6	7.9	8.9	8.3	7.0	2.7	1.3	1.5	0.6	0.3	0.6	0.7	0.3	8.9	4.5	24
3	0.2	0.2	0.1	0.4	0.4	1.2	0.8	0.6	3.1	2.0	1.6	2.8	6.0	6.5	5.8	4.9	4.2	7.7	9.1	13.7	12.4	13.8	11.2	10.7	0.1	13.8	4.4	24
4	11.0	5.1	4.4	3.6	4.6	5.9	3.5	6.8	10.1	10.3	9.6	9.0	9.9	10.1	9.9	9.3	9.1	6.3	1.4	1.1	0.9	0.6	0.9	0.8	0.6	11.0	5.5	24
5	0.1	0.1	1.2	0.6	0.4	0.5	0.7	1.5	5.1	7.2	7.7	9.6	10.5	9.4	8.2	6.4	5.3	6.0	2.0	1.1	1.3	4.1	7.5	7.6	0.1	10.5	2.1	24
6	5.9	3.8	6.9	6.6	6.0	5.9	6.8	7.9	7.8	7.1	9.2	9.3	10.1	10.4	11.5	9.8	10.0	7.8	7.1	8.4	9.8	8.4	7.4	6.1	3.8	11.5	7.9	24
7	4.9	4.1	6.3	4.8	5.6	5.9	5.7	10.7	9.0	11.9	9.7	14.0	11.9	10.7	9.0	10.0	8.2	5.3	5.0	5.1	4.8	6.2	6.2	6.1	4.1	14.0	7.0	24
8	4.9	3.4	3.1	6.2	4.5	4.8	3.5	6.1	5.1	5.4	6.6	5.2	3.4	1.2	2.9	4.9	6.8	8.4	8.4	14.8	8.2	6.0	5.3	8.0	1.2	14.8	1.6	24
9	8.6	9.3	9.3	9.8	9.7	9.0	8.5	8.6	8.1	8.0	11.0	10.0	10.0	10.0	P	8.9	8.7	8.9	6.1	6.8	6.4	5.8	5.1	4.0	4.0	11.3	7.2	23
10	3.0	2.8	2.7	2.1	1.6	1.1	1.3	4.9	6.0	6.9	5.6	5.2	3.3	3.5	4.1	3.4	3.2	1.7	2.9	0.4	0.9	0.9	1.6	3.6	0.4	6.9	1.1	24
11	3.9	4.8	4.1	3.5	4.2	3.8	4.4	6.2	5.8	5.8	4.1	4.7	4.6	4.7	4.8	3.5	2.4	1.9	1.2	0.1	0.8	1.1	1.3	0.5	0.1	6.2	2.3	24
12	0.8	0.1	0.6	0.4	0.1	1.5	2.0	6.5	8.0	9.3	10.0	10.7	11.6	12.2	12.2	12.7	11.1	11.6	9.6	8.9	10.2	8.8	9.0	7.7	0.1	12.7	6.9	24
13	9.1	7.1	6.8	6.8	9.3	9.3	8.6	8.5	6.6	8.0	9.3	10.0	10.7	9.5	10.0	8.4	5.6	4.5	5.8	5.4	5.7	5.9	6.4	3.0	3.0	10.7	7.2	24
14	2.5	3.4	0.8	1.6	1.9	2.6	3.1	2.2	1.8	1.9	3.8	3.3	3.4	3.2	3.7	2.7	2.4	3.3	1.1	0.2	0.3	1.2	1.6	2.9	0.2	3.8	1.5	24
15	4.1	3.3	3.0	3.8	3.8	5.7	5.7	6.2	7.3	7.2	8.7	8.9	8.5	7.5	8.2	8.6	9.5	8.7	7.7	7.8	8.1	8.4	8.0	8.0	3.0	9.5	6.6	24
16	8.7	9.1	9.1	10.0	9.8	12.0	11.9	11.1	11.9	9.9	9.5	9.8	10.3	9.5	9.4	10.1	9.5	7.5	7.7	6.2	5.2	6.6	6.3	5.3	5.2	12.0	8.8	24
17	6.4	5.3	5.6	5.2	4.8	3.9	4.5	4.3	3.6	2.8	3.6	5.5	5.7	5.4	4.3	4.1	2.4	3.7	1.2	0.9	1.0	1.1	0.8	1.0	0.8	6.4	2.2	24
18	1.6	1.4	3.4	3.0	2.5	2.9	2.8	4.8	8.1	7.0	8.9	7.9	9.4	8.8	11.5	7.9	8.9	3.5	2.5	1.1	0.7	0.7	0.9	0.4	0.4	11.5	3.8	24
19	0.8	0.5	0.8	0.3	0.2	0.6	0.5	1.0	5.4	8.4	10.1	8.8	9.3	8.6	7.3	7.4	5.7	3.7	1.6	1.2	1.2	2.4	2.7	3.1	0.2	10.1	1.5	24
20	1.0	0.5	1.0	0.5	0.4	0.3	0.4	1.1	11.3	11.5	13.0	10.4	12.3	12.1	10.2	10.6	8.4	6.3	3.7	3.8	4.0	1.0	1.9	0.7	0.3	13.0	4.9	24
21	0.8	0.7	1.2	1.6	2.0	0.6	1.2	3.2	4.7	5.6	6.5	6.3	5.3	5.5	4.5	2.7	2.6	3.9	1.1	0.9	0.8	0.6	0.6	0.2	0.2	6.5	2.4	24
22	1.4	1.7	1.0	0.4	0.4	1.1	3.9	3.8	5.5	8.8	9.0	8.3	12.2	10.3	8.9	7.5	7.6	6.9	5.2	5.5	6.4	5.9	6.1	5.9	0.4	12.2	5.3	24
23	5.6	4.7	4.9	3.4	3.0	4.4	5.2	8.0	7.7	6.9	4.9	5.5	5.5	4.7	2.2	4.3	4.7	3.6	3.3	1.8	2.7	1.9	1.9	0.9	0.9	8.0	3.8	24
24	0.8	1.2	1.5	0.5	0.7	0.9	0.6	1.1	4.7	5.8	6.4	6.2	9.1	8.2	10.4	14.0	7.2	6.2	5.9	5.5	5.7	4.4	3.8	4.7	0.5	14.0	4.1	24
25	3.5	3.7	4.5	3.4	3.0	3.8	2.9	3.5	4.0	4.9	5.3	6.7	6.4	7.2	8.5	9.6	7.4	3.7	1.6	1.7	1.2	4.6	5.6	7.7	1.2	9.6	4.6	24
26	9.0	8.2	8.3	7.4	7.2	6.2	4.8	5.2	6.8	10.3	13.9	15.9	15.2	14.4	14.6	13.7	8.5	8.6	6.4	5.4	4.9	7.8	5.6	5.0	4.8	15.9	7.7	24
27	7.9	10.1	7.2	5.7	6.4	5.9	4.9	8.8	12.6	11.9	10.0	10.1	11.5	10.5	12.0	12.1	11.3	7.0	4.8	6.9	9.7	7.6	2.6	2.9	2.6	12.6	7.9	24
28	1.8	2.4	4.7	4.5	4.3	4.9	3.7	3.9	5.2	6.0	4.7	6.9	8.0	10.0	11.2	10.7	9.9	6.8	3.3	3.0	4.5	3.7	4.0	4.1	1.8	11.2	5.1	24
29	4.8	5.0	6.1	9.6	10.1	7.9	7.4	12.2	14.7	14.3	12.3	12.0	13.7	12.5	12.8	12.9	12.4	9.8	8.0	7.3	6.8	4.3	3.5	2.2	2.2	14.7	9.0	24
30	2.5	3.5	3.6	1.9	3.1	2.2	1.2	2.1	3.5	2.8	4.3	2.4	5.3	2.5	4.5	6.1	5.5	3.3	2.4	2.1	3.8	2.3	2.6	2.6	1.2	6.1	1.7	24
HOURLY MAX	11.0	10.1	9.3	10.0	10.1	12.0	11.9	12.2	14.7	14.3	13.9	15.9	15.2	14.4	14.6	14.1	13.7	11.6	9.6	14.8	12.4	13.8	11.2	10.7				

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

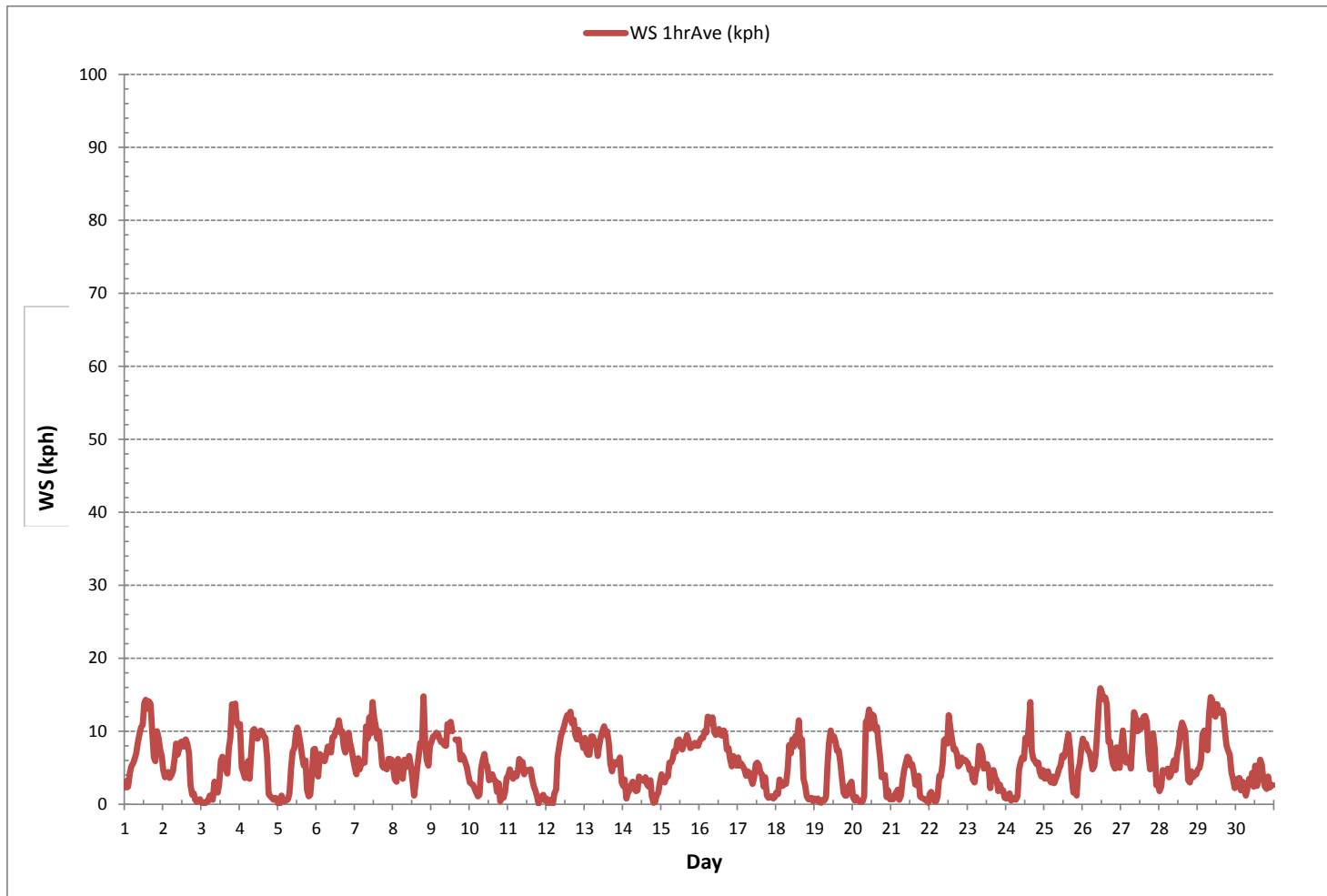
LAST CALIBRATION:	November 9, 2017
DECLINATION:	MAGNETIC DECLINATION 19 DEGREE EAST

24 HR AVERAGES September 2018



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	719
MINIMUM 1-HR AVERAGE:	0.1 kph @ HOUR 2 ON DAY 3
MAXIMUM 1-HR AVERAGE:	15.9 kph @ HOUR 11 ON DAY 26
MAXIMUM 24-HR AVERAGE:	9.0 kph ON DAY 29
MONTHLY CALIBRATION TIME:	0 hrs
OPERATIONAL TIME:	719 hrs
AMT OPERATION UPTIME:	99.9 %
STANDARD DEVIATION:	3.6
MONTHLY AVERAGE:	1.5 kph



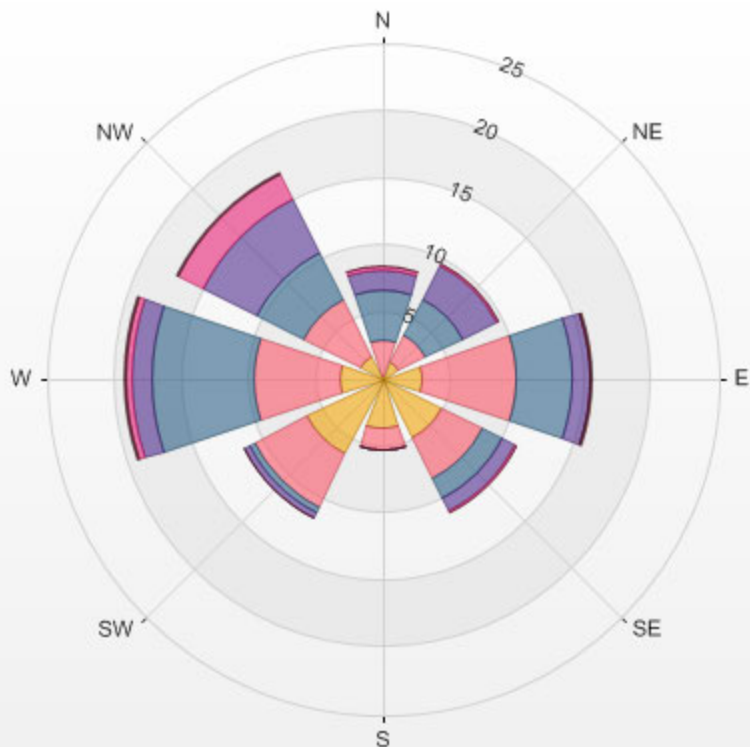
Wind: LICA COLD LAKE SOUTH
 Monitor: WSP [kph]
 Monthly: 18/09
 Type: WindRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 2.23%

Direction	0.4-3.2	3.2-6.4	6.4-9.6	9.6-12.8	12.8-16.0	>16.0	Total
N	0.3	2.6	3.8	1.4	0.3	0.0	8.4
NE	1.4	2.2	3.1	2.8	0.1	0.0	9.6
E	2.9	7.1	4.2	1.3	0.0	0.1	15.6
SE	4.9	3.5	1.7	1.0	0.1	0.0	11.1
S	3.8	1.5	0.0	0.0	0.0	0.0	5.3
SW	6.3	4.5	0.4	0.4	0.0	0.0	11.6
W	3.2	6.4	7.7	1.4	0.4	0.1	19.2
NW	1.8	4.9	3.8	4.5	2.1	0.1	17.1
Summary	24.5	32.7	24.5	12.7	3.1	0.4	97.8

% Icon Classes (kph) 24 0.4-3.2 33 3.2-6.4 24 6.4-9.6 13 9.6-12.8 3 12.8-16.0 0 >16.0

LICA COLD LAKE SOUTH 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 2.23% Calm Wind Avg Speed: 0.21(kph)



WIND DIRECTION



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake South Continuous Monitoring Station - September 2018

WIND DIRECTION Hourly Averages (WD)

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

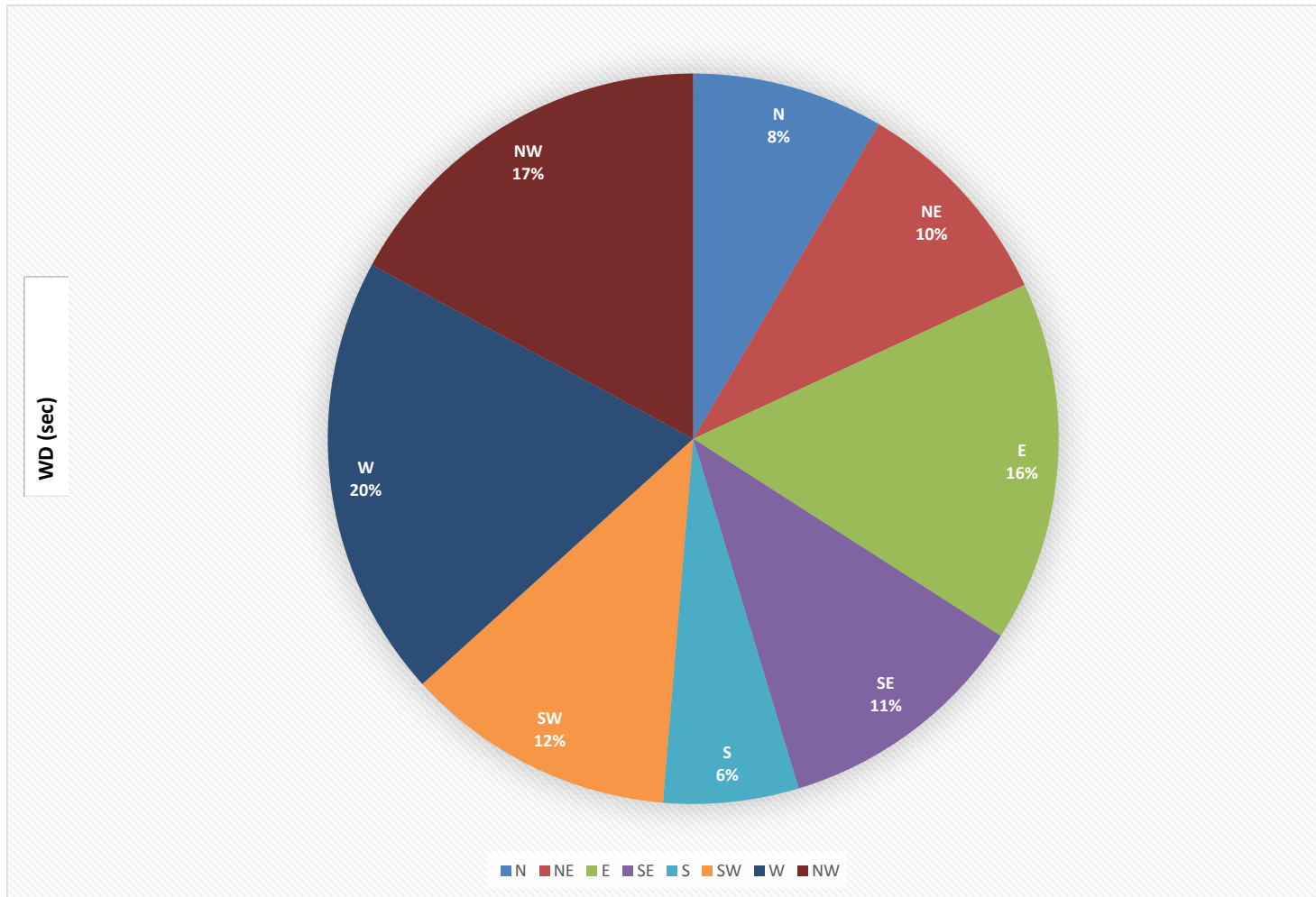
STATUS FLAG CODES

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

LAST CALIBRATION:	November 9, 2017
DECLINATION :	MAGNETIC DECLINATION 19 DEGREE EAST

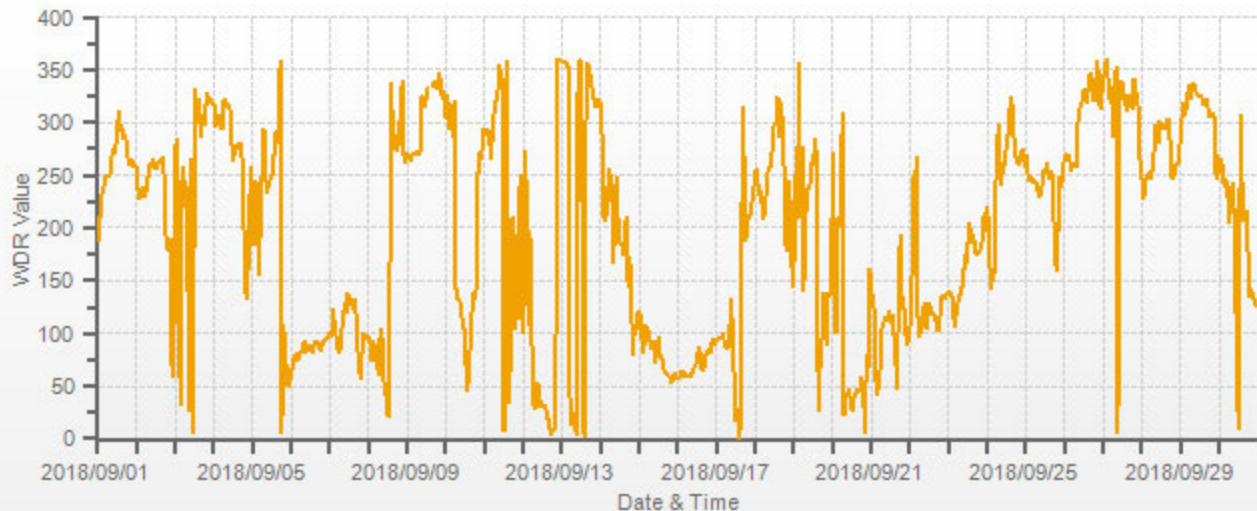
MONTHLY CALIBRATION TIME:	0	hrs	OPERATIONAL TIME:	719	hrs
STANDARD DEVIATION:	101		AMD OPERATION UPTIME:	99.9	%
			MONTHLY AVERAGE:	335	(NNW)

WIND DIRECTION Hourly Averages (WD)



WDR[degwdr] Station: LICA COLD LAKE SOUTH Monthly: 18/09 Type: AVG 1 Hr. [1 Hr.]

— WDR[degwdr]



STANDARD DEVIATION WIND DIRECTION



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake South Continuous Monitoring Station - September 2018

STANDARD DEVIATION WIND DIRECTION Hourly Averages (STDWD deg)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	
DAY																									
1	34	27	36	17	21	18	19	18	20	21	21	23	22	21	24	25	22	22	22	20	17	18	17	16	24
2	16	20	15	20	21	17	17	23	22	29	29	27	27	33	31	29	23	26	32	24	49	67	51	51	24
3	74	72	78	66	67	44	55	71	31	34	46	28	18	16	15	20	25	26	22	15	16	14	17	14	24
4	14	18	15	17	17	35	18	17	23	24	31	28	26	28	26	26	25	48	23	29	40	40	39	24	
5	73	75	19	48	53	49	43	43	31	22	22	22	25	26	25	26	36	19	38	39	34	25	15	15	24
6	17	22	21	20	20	20	21	20	18	21	19	23	20	21	20	22	21	20	22	20	20	21	20	20	24
7	23	27	21	24	21	23	21	18	24	20	23	9	6	10	13	11	15	20	8	6	13	9	10	9	24
8	9	22	20	8	9	14	13	16	22	30	17	26	45	70	47	30	11	9	12	15	36	22	14	7	24
9	7	8	6	7	8	7	8	8	8	23	10	9	12	11	P	11	13	12	15	13	10	9	8	13	23
10	19	22	27	18	21	33	47	10	14	16	23	19	17	19	16	26	15	36	15	65	32	25	16	17	24
11	13	11	9	23	9	12	8	9	15	11	22	15	32	24	21	19	45	45	36	78	46	50	41	59	24
12	45	76	62	64	75	38	41	8	7	5	8	8	8	9	9	8	12	6	7	10	12	11	8	10	24
13	9	12	12	9	6	13	9	15	16	19	8	10	10	14	12	14	20	25	11	6	10	6	5	12	24
14	19	10	63	38	39	31	14	15	33	46	26	36	28	25	20	25	22	12	57	74	66	27	22	13	24
15	12	19	16	10	20	9	13	10	8	11	9	11	11	10	10	10	7	7	8	7	6	6	7	7	24
16	9	6	5	6	6	6	5	5	5	8	10	10	12	10	12	5	6	11	8	8	9	10	10	11	24
17	10	10	8	10	11	12	11	12	25	29	35	17	26	25	39	31	26	14	34	32	34	31	38	27	24
18	33	31	19	15	15	17	18	10	9	13	19	18	16	19	13	20	14	13	20	39	51	61	46	59	24
19	44	60	54	68	71	53	62	54	10	12	13	17	19	20	17	34	14	22	33	42	36	23	29	24	24
20	56	57	50	63	66	74	75	60	11	9	9	11	12	16	17	16	15	9	9	26	17	53	23	45	24
21	36	40	33	21	18	42	29	16	13	15	17	24	21	25	39	39	34	12	26	31	46	55	40	57	24
22	31	18	47	54	49	46	9	14	13	10	11	18	14	16	20	20	18	12	8	12	4	6	5	7	24
23	5	7	11	13	13	12	9	5	6	13	22	23	25	23	32	30	22	23	18	23	20	26	30	54	24
24	48	46	26	53	38	38	44	37	9	13	18	22	21	15	13	7	22	10	9	12	13	40	31	7	24
25	9	9	4	6	10	7	6	7	10	14	22	21	25	29	20	14	14	9	16	22	45	14	6	8	24
26	7	6	7	7	5	9	11	14	15	11	11	9	11	14	13	14	12	11	6	7	19	20	5	23	24
27	17	14	7	8	7	18	17	12	12	13	23	20	13	21	15	11	13	10	12	14	8	6	39	21	24
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29	15	7	18	8	21	9	7	9	9	9	12	12	12	12	12	10	12	11	8	6	9	22	8	15	24
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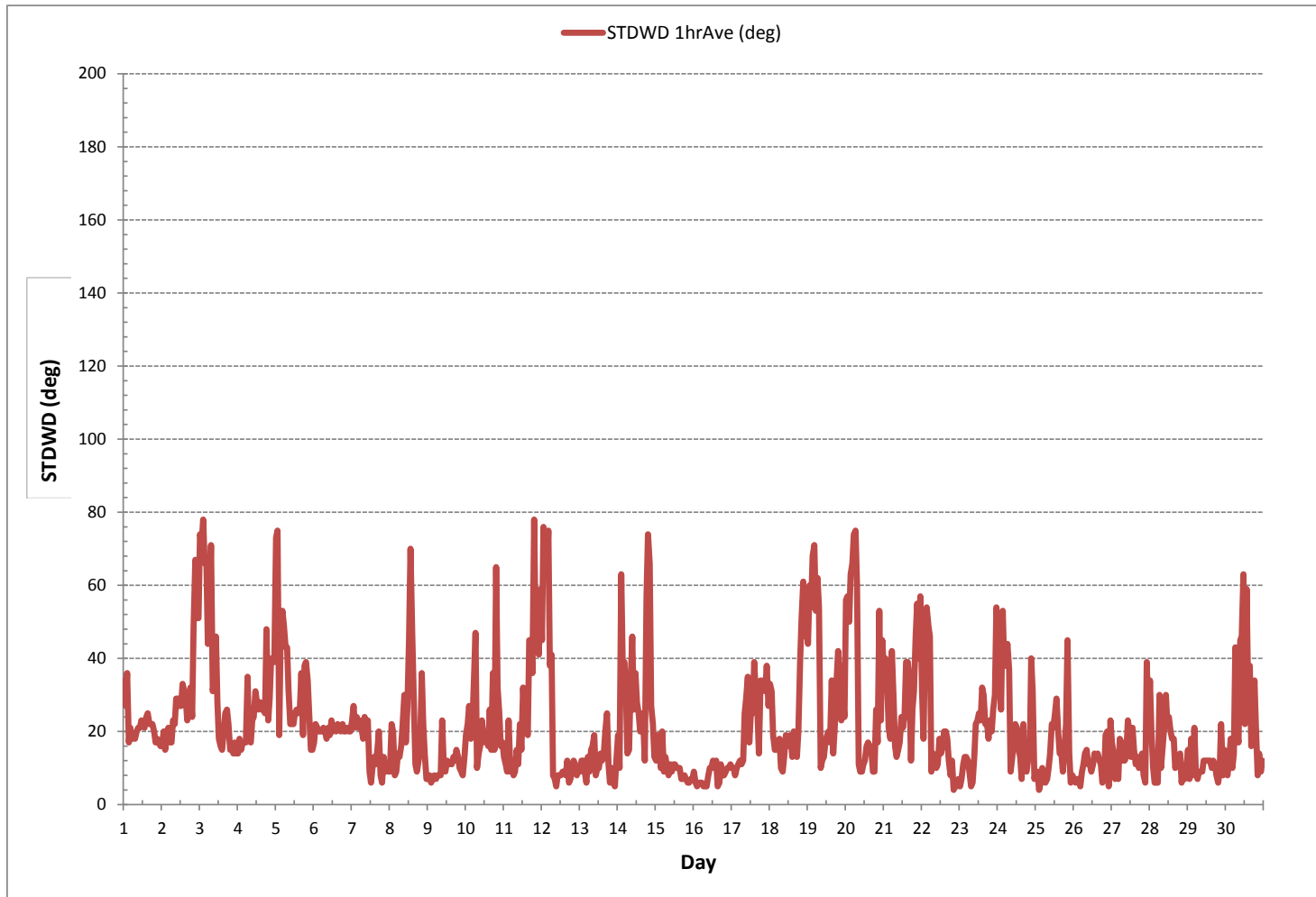
STATUS FLAG CODES

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

LAST CALIBRATION: November 9, 2017

CALIBRATION TIME: 0 hrs OPERATIONAL TIME: 719 hrs

STANDARD DEVIATION WIND DIRECTION Hourly Averages (STDWD deg)



RELATIVE HUMIDITY



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake South Continuous Monitoring Station - September 2018

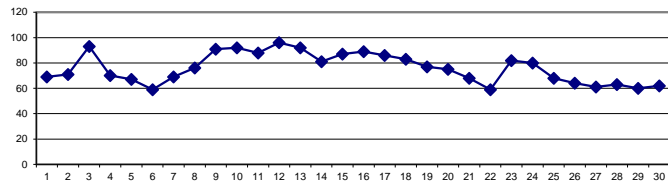
RELATIVE HUMIDITY Hourly Averages (RH %)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY																												
1	87	86	89	89	84	84	82	81	77	75	67	60	59	54	53	50	47	46	51	63	59	66	70	77	46	89	69	24
2	85	91	94	92	87	88	85	77	69	62	57	53	51	48	42	39	40	46	64	78	83	87	89	89	39	94	71	24
3	91	93	94	94	94	96	96	95	97	97	98	100	100	100	96	92	87	88	90	87	84	84	85	82	82	100	93	24
4	82	87	89	89	89	89	89	85	70	58	52	49	46	44	42	41	41	43	58	82	87	90	92	94	41	94	70	24
5	94	94	95	96	96	96	96	86	76	65	54	44	39	36	37	36	33	32	48	71	80	79	65	66	32	96	67	24
6	67	68	67	65	67	66	65	66	69	62	59	55	50	46	46	45	48	51	54	57	59	63	64	67	45	69	59	24
7	70	73	72	75	77	77	77	79	74	67	60	53	57	65	62	55	56	61	68	76	75	74	75	75	53	79	69	24
8	76	78	83	79	81	85	83	77	72	70	68	63	59	56	56	55	61	70	74	83	98	100	100	100	55	100	76	24
9	100	96	95	94	93	93	93	94	99	99	92	90	87	86	P	88	86	85	87	86	86	87	88	88	85	100	91	23
10	89	91	91	92	92	94	97	93	93	85	81	80	82	88	92	91	93	94	95	96	98	99	100	100	80	100	92	24
11	100	100	99	99	99	99	98	93	90	90	82	80	78	73	72	70	64	67	82	92	95	96	96	97	64	100	88	24
12	97	97	97	98	98	99	99	99	97	97	96	95	93	91	89	93	93	94	95	96	93	94	96	96	89	99	96	24
13	96	97	97	98	99	99	97	91	93	91	94	90	89	88	91	89	87	91	91	86	86	89	90	91	86	99	92	24
14	92	93	94	95	95	94	93	91	79	72	71	69	64	61	61	62	64	74	83	88	87	87	82	61	95	81	24	
15	80	82	81	80	78	81	87	88	86	85	84	83	89	90	91	91	91	92	92	92	91	92	91	90	78	92	87	24
16	89	88	87	87	86	86	85	84	83	84	88	87	86	90	90	90	90	91	92	93	93	93	93	93	83	93	89	24
17	93	93	93	93	94	94	94	93	90	87	82	76	74	70	66	65	71	77	87	92	94	95	96	96	65	96	86	24
18	96	95	96	96	97	97	97	94	87	80	64	65	64	63	65	62	63	72	80	90	93	94	94	94	62	97	83	24
19	94	94	95	95	95	96	96	95	82	66	55	49	44	40	37	60	66	63	74	87	90	92	92	88	37	96	77	24
20	92	94	94	94	94	94	95	87	82	76	73	68	57	52	46	48	51	54	55	62	73	75	81	46	95	75	24	
21	84	86	85	83	77	83	80	67	64	58	53	50	49	47	47	45	45	47	67	78	81	85	86	87	45	87	68	24
22	88	85	87	89	89	88	77	75	69	63	55	45	35	35	33	33	32	33	40	46	47	51	55	57	32	89	59	24
23	61	63	79	88	91	91	91	92	93	91	87	82	81	83	83	69	66	69	73	81	84	85	87	88	61	93	82	24
24	91	92	93	94	94	93	93	91	90	82	69	57	53	54	50	58	81	78	83	83	84	86	87	89	50	94	80	24
25	91	93	95	95	95	96	96	93	87	75	59	43	34	30	31	34	38	46	60	64	65	68	70	71	30	96	68	24
26	65	68	69	70	72	74	74	72	62	56	50	49	49	46	53	48	51	60	67	66	68	78	85	86	46	86	64	24
27	81	72	70	78	81	77	77	72	62	54	48	43	38	36	37	41	46	51	55	61	65	65	72	84	36	84	61	24
28	85	88	86	84	85	85	86	84	71	59	49	41	36	33	31	32	34	39	55	68	68	71	71	65	31	88	63	24
29	62	60	63	74	81	78	80	71	57	58	56	53	49	47	48	44	44	51	53	59	62	73	74	44	44	81	60	24
30	74	76	81	85	88	88	89	86	76	56	47	43	44	39	38	40	45	46	48	54	57	58	62	61	38	89	62	24
HOURLY MAX	100	100	99	99	99	99	99	99	99	99	98	100	100	100	96	93	93	94	95	96	98	100	100	100				
HOURLY AVG	85	86	87	88	88	89	88	85	80	74	68	64	62	60	58	59	60	63	70	77	79	81	83	84				

STATUS FLAG CODES

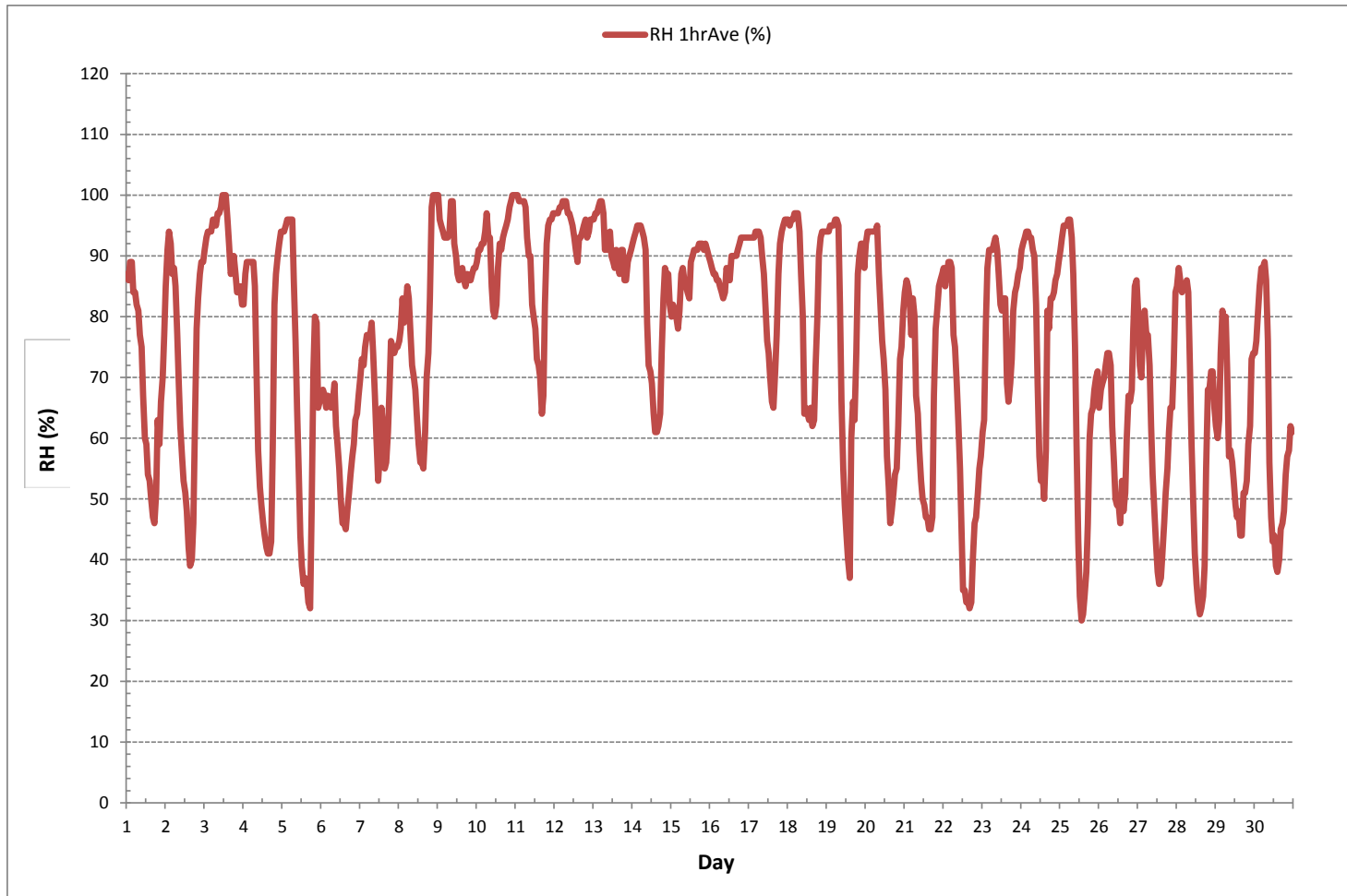
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

24 HR AVERAGES September 2018



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	30	%	@ HOUR	13	ON DAY	25
MAXIMUM 1-HR AVERAGE:	100	%	@ HOUR	11	ON DAY	3
MAXIMUM 24-HR AVERAGE:	96	%			ON DAY	12
OPERATIONAL TIME:						719 hrs
AMD OPERATION UPTIME:						99.9 %
STANDARD DEVIATION:	18		MONTHLY AVERAGE:			76 %



AMBIENT TEMPERATURE



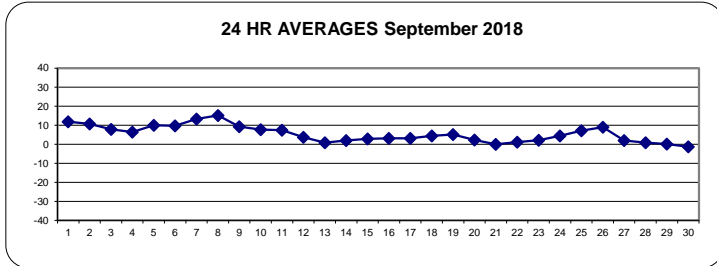
AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY 1	11.1	11.1	9.9	8.9	9.0	8.8	9.2	9.9	11.2	11.9	13.9	14.7	14.4	15.1	14.7	15.4	15.5	15.3	13.7	11.5	10.9	10.4	9.6	8.4	8.4	15.5	11.9	24
2	6.9	5.7	5.0	6.2	6.7	6.0	6.1	8.0	9.8	11.8	13.2	14.8	15.7	16.5	17.2	17.6	17.3	16.9	14.0	10.8	9.6	8.5	7.7	7.0	5.0	17.6	10.8	24
3	5.9	5.3	5.1	5.2	4.7	5.1	6.3	7.4	7.8	8.5	8.8	9.6	10.1	10.0	10.1	10.7	11.5	10.4	9.6	8.8	8.2	7.4	6.6	6.1	4.7	11.5	7.9	24
4	5.2	3.6	3.3	3.8	4.0	3.1	3.0	3.8	5.5	6.7	7.8	8.9	10.1	11.0	11.9	12.4	12.4	12.3	10.5	6.2	4.0	2.8	2.0	1.4	1.4	12.4	6.5	24
5	0.9	0.5	-0.4	-0.7	-0.9	-1.1	0.3	4.9	8.6	12.7	16.0	17.8	18.3	19.4	18.9	19.1	19.6	18.7	15.9	11.1	8.9	9.5	11.4	10.8	-1.1	19.6	10.0	24
6	10.3	9.8	9.2	8.5	7.7	7.1	6.9	7.0	7.3	8.0	8.8	10.0	10.6	11.5	11.9	12.5	12.2	11.6	10.9	10.8	10.3	10.1	9.7	6.9	12.5	9.8	24	
7	9.2	9.1	9.6	9.5	9.4	9.1	9.0	8.9	10.5	12.7	15.7	18.2	17.2	15.6	16.6	18.3	18.4	17.8	15.9	13.9	13.8	14.0	13.4	13.0	8.9	18.4	13.3	24
8	12.6	11.8	10.6	11.4	11.0	10.1	10.7	12.2	13.8	15.2	16.3	18.1	19.8	21.0	21.5	22.0	20.5	18.9	17.3	15.5	12.8	13.7	13.6	13.3	10.1	22.0	15.2	24
9	12.9	12.2	11.6	11.3	11.0	10.7	10.6	10.5	10.3	10.3	9.7	9.2	8.7	P	8.3	8.2	7.8	7.5	7.2	6.8	6.5	6.3	6.2	6.2	12.9	9.3	23	
10	6.2	6.2	6.2	6.2	6.3	6.1	6.4	6.9	7.2	8.0	8.6	9.1	9.1	8.7	8.8	9.1	9.0	9.0	8.6	8.4	8.3	8.2	8.2	8.1	6.1	9.1	7.8	24
11	8.0	7.8	7.5	7.1	7.1	7.1	7.2	7.5	7.8	7.6	8.6	8.8	9.1	9.6	9.8	9.8	9.8	9.7	7.9	6.3	4.9	3.7	2.6	1.8	1.8	9.8	7.4	24
12	1.9	2.1	1.9	2.7	3.5	4.2	5.4	6.1	5.9	5.8	5.5	5.4	5.1	4.8	4.6	4.0	3.6	2.7	2.5	2.4	2.6	2.0	1.5	1.5	1.5	6.1	3.7	24
13	1.0	0.5	0.4	0.3	0.2	0.2	0.6	0.8	0.9	1.1	0.9	1.5	1.4	1.5	1.5	1.9	1.9	1.2	1.3	1.0	0.7	0.4	0.2	-0.2	-0.2	1.9	0.9	24
14	-0.8	-0.6	-0.3	-0.2	-0.3	-0.2	0.1	0.6	1.2	2.9	3.7	3.3	3.5	4.0	3.9	4.1	4.2	4.0	3.3	2.6	2.3	2.3	2.4	2.6	-0.8	4.2	2.0	24
15	2.7	2.7	2.7	2.7	2.9	2.8	2.5	2.7	3.0	3.3	3.7	3.8	3.3	3.2	3.0	3.1	2.9	2.6	2.5	2.4	2.4	2.4	2.6	2.7	2.4	3.8	2.9	24
16	2.8	2.8	2.9	2.9	3.0	3.0	2.9	3.1	3.3	3.7	3.9	4.0	4.0	3.6	3.6	3.3	3.2	3.2	2.8	2.5	2.4	2.3	2.3	2.3	2.3	4.0	3.1	24
17	2.1	1.9	1.8	1.6	1.5	1.4	1.5	1.8	2.2	2.8	3.9	4.5	5.0	5.7	6.4	6.6	5.9	5.6	3.8	2.0	1.2	1.2	1.9	2.4	1.2	6.6	3.1	24
18	2.6	2.6	2.9	3.3	3.4	3.2	3.4	4.0	4.8	5.9	7.8	7.4	8.1	8.5	8.1	8.5	8.2	7.2	5.4	3.0	1.1	-0.1	-0.9	-1.4	-1.4	8.5	4.5	24
19	-1.7	-1.5	-0.8	-0.2	-0.1	-0.1	0.0	1.9	6.1	9.0	10.7	11.6	12.3	12.7	13.7	10.1	9.2	9.4	7.2	4.2	2.9	2.3	1.8	2.8	-1.7	13.7	5.1	24
20	0.0	-0.9	-1.4	-1.6	-2.0	-2.2	-1.3	0.4	4.3	4.4	4.7	4.5	4.7	5.6	6.3	6.7	6.0	5.3	4.5	3.8	2.3	1.1	0.6	-0.5	-2.2	6.7	2.3	24
21	-1.1	-1.6	-1.7	-1.5	-1.2	-1.4	-1.0	0.0	0.4	1.1	1.9	2.3	2.7	3.1	3.5	4.2	4.0	3.5	0.4	-2.0	-3.0	-3.8	-4.3	-5.0	-5.0	4.2	0.0	24
22	-5.3	-4.6	-4.8	-5.1	-4.4	-3.8	-2.3	-1.6	-0.1	0.7	2.6	4.2	5.1	5.4	6.0	5.8	6.0	5.4	4.1	3.3	2.9	2.6	2.3	2.0	-5.3	6.0	1.1	24
23	1.7	1.5	0.5	-0.1	0.0	0.2	0.4	0.6	1.4	2.0	2.8	3.2	3.7	4.2	5.4	5.7	5.5	4.7	3.0	2.2	1.9	1.5	1.2	-0.1	5.7	2.2	24	
24	-0.2	-1.2	-1.9	-1.8	-2.5	-2.9	-2.9	-1.5	1.6	4.7	7.4	10.3	11.5	11.5	12.4	10.7	8.2	8.2	7.3	6.2	6.2	5.5	5.7	4.7	-2.9	12.4	4.5	24
25	3.4	2.3	1.0	0.0	-0.5	-1.1	-1.3	1.0	3.7	6.3	9.4	11.7	12.9	13.7	14.2	14.0	13.6	12.4	9.6	8.7	8.3	8.8	9.1	8.6	-1.3	14.2	7.1	24
26	9.5	8.9	8.7	8.4	7.7	7.3	7.5	8.2	10.3	11.5	12.0	11.8	11.8	12.1	11.0	11.0	10.4	9.6	7.8	7.3	7.2	6.1	4.8	4.5	4.5	12.1	9.0	24
27	4.6	3.9	1.8	0.1	-0.5	-0.5	-0.1	0.2	0.3	1.6	2.5	3.8	4.8	5.0	4.6	4.1	3.7	3.4	3.0	2.2	1.3	-0.4	-2.3	-2.3	5.0	2.0	24	
28	-2.7	-3.8	-3.9	-4.2	-4.8	-4.8	-4.7	-3.2	0.0	2.3	3.8	4.9	5.9	6.5	7.2	7.2	6.5	5.6	2.7	0.0	-0.3	-1.0	-0.8	0.0	-4.8	7.2	0.8	24
29	0.4	1.0	1.3	0.8	0.2	-0.7	-0.8	-0.4	0.0	0.2	0.5	1.0	1.3	1.2	1.3	1.1	0.6	0.2	0.0	-0.7	-1.6	-2.9	-2.4	-2.9	1.3	0.1	24	
30	-2.1	-2.5	-3.9	-5.3	-6.2	-6.9	-7.4	-5.3	-2.1	0.1	0.6	1.7	1.4	3.0	3.0	2.6	1.1	1.0	0.6	-0.1	-0.6	-0.8	-1.9	-1.5	-7.4	3.0	-1.3	24
HOURLY MAX	12.9	12.2	11.6	11.4	11.0	10.7	10.7	12.2	13.8	15.2	16.3	18.2	19.8	21.0	21.5	22.0	20.5	18.9	17.3	15.5	13.8	14.0	13.6	13.3				
HOURLY AVG	3.6	3.2	2.8	2.7	2.5	2.3	2.6	3.5	4.9	6.0	7.1	7.9	8.3	8.7	9.0	9.0	8.7	8.2	6.9	5.5	4.7	4.3	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

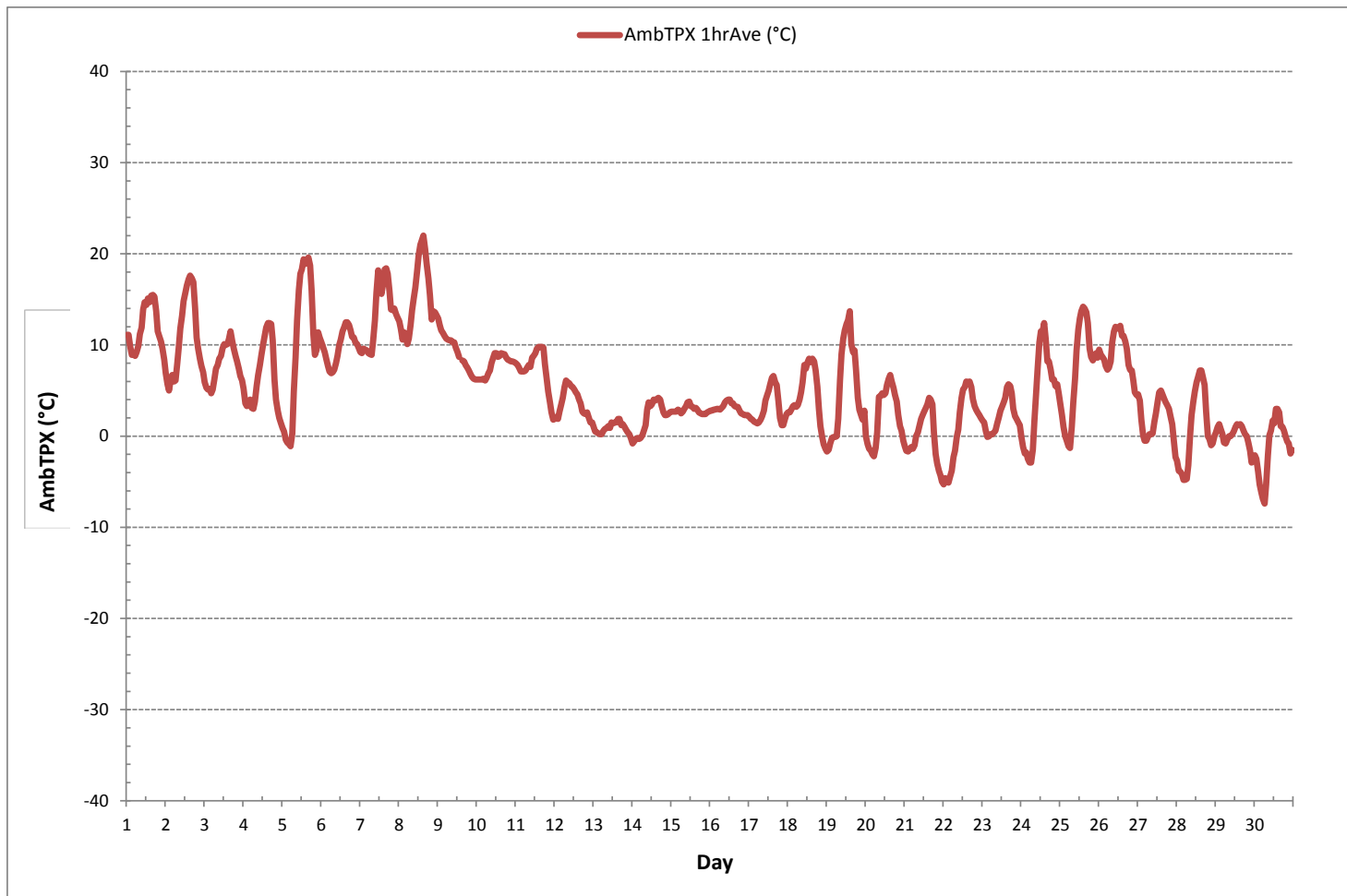
24 HR AVERAGES September 2018



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	-7.4 °C	@ HOUR	6	ON DAY	30
MAXIMUM 1-HR AVERAGE:	22.0 °C	@ HOUR	15	ON DAY	8
MAXIMUM 24-HR AVERAGE:	15.2 °C			ON DAY	8
OPERATIONAL TIME:				719	hrs
AMD OPERATION UPTIME:				99.9	%
STANDARD DEVIATION:	5.3	MONTHLY AVERAGE:		5.4	°C

AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)



APPENDIX II
EQUIPMENT CALIBRATION RESULTS

SULPHUR DIOXIDE



Thermo 43i Sulphur Dioxide Analyzer Calibration

Date: September 5, 2018	Barometer/B.P./units: Brunton 05490 expires December 11, 2018	959.1	millibars
Company/Airshed: LICA	Thermometer/Station Temp: F.S. 160459244 expires June 19, 2020	21.7	°C
Location/Station Name: Cold Lake South	Weather Conditions: Mainly sunny		
Parameter: Sulphur Dioxide	Calibration Purpose: routine monthly		
Start Time 24 hr. (mst): 8:05	Performed By/Reviewer: Chris Wesson	Rob Fisher	
End Time 24 hr. (mst): 13:52	Cal Gas Expiry Date: October 24, 2020		
Calibration Method: Gas Dilution	Converter Model & s/n (if applicable): n/a		
Analyst:	Serial Number/Owner: 806528242 LICA	Range ppb: 500	
	Last Calibration Date: August 9, 2018	As Found C.F.: 0.989	
	Previous C.F.: 1.000	New C.F.: 0.997	

Calibration Standards:	Standard Calibration Points for Ranges								
Low Flow Meter ID/Expiry Date: Defender Low 152020 expires November 22, 2018	<table border="1"> <tr><th>Point</th><th>ppb</th></tr> <tr><td>High</td><td>380</td></tr> <tr><td>Mid</td><td>180</td></tr> <tr><td>Low</td><td>90</td></tr> </table>	Point	ppb	High	380	Mid	180	Low	90
Point	ppb								
High	380								
Mid	180								
Low	90								
High Flow Meter ID/Expiry Date: Defender High 148943 expires November 21, 2018									
Calibrator ID/Expiry Date: Sabio id# 17100415 expires August 21, 2019									
Cal Gas Cylinder I.D. #: LL108105									
Cal Gas Conc. (ppm): 47.9									

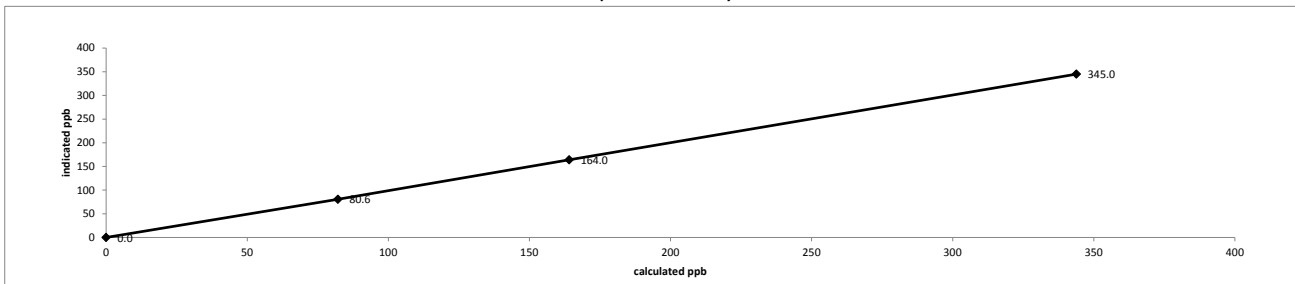
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Point	Diluent	Cal Gas	Total	Calculated Concentration (ppb):	Indicated Concentration (ppb):	Correction Factors (C.F.):
as found zero	6067	0.00	6067	0.0	0.2	n/a
as found high	6039	43.66	6082	343.8	348.0	0.989
adjusted zero	6067	0.00	6067	0.0	0.0	n/a
adjusted high	6039	43.66	6082	343.8	345.0	0.997
mid	6045	20.78	6066	164.1	164.0	1.001
low	6057	10.40	6067	82.1	80.6	1.019
calibrator zero	6067	0.00	6067	0.0	0.1	n/a
Average C.F. =						1.005

Linear Regression/Calibration Results:

Correlation Coefficient = 1.000	LIMITS
Slope = 0.995	> or = 0.995
b (Intercept as % of full scale) = 0.17%	0.95 - 1.05
% change in C.F. from last cal = 1.14%	± 3% F.S.
	± 10%

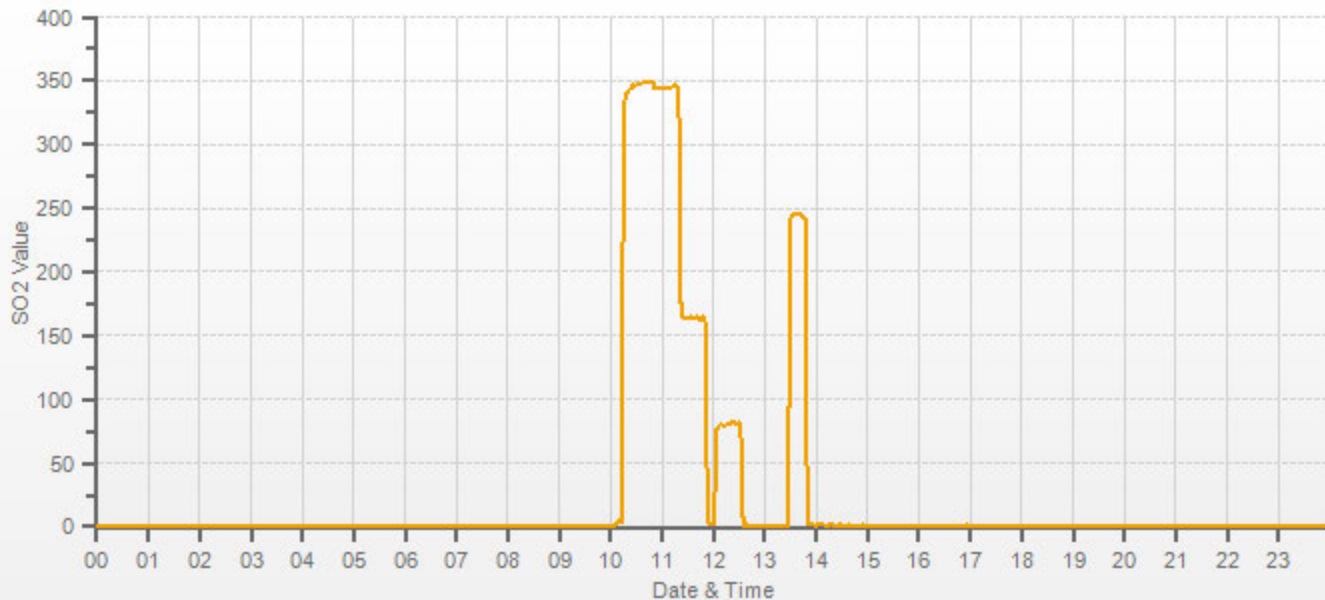
Thermo 43i Sulphur Dioxide Analyzer Calibration



As found:	As left:
Bkg: 8.7	Bkg: 8.5
Coef: 0.963	Coef: 0.944
Pmt: -624.2	Pmt: -624.2
Flash: 766	Flash: 763
Internal: 27.5	Internal: 29.8
Chamber: 45.2	Chamber: 44.9
Perm Oven Gas: 45.00	Perm Oven Gas: 45.00
Perm Oven Heater: 44.24	Perm Oven Heater: 44.25
Pressure: 685.2	Pressure: 684.9
Sample Flow: 0.486	Sample Flow: 0.486
Lamp Intensity: 97	Lamp Intensity: 96
Averaging Time: 120	Averaging Time: 120
Expected Value: 248.0	Expected Value: 243.3

Comments:
 The analyzer sample inlet filter was changed. The analyzer cooling fan filter(s) were cleaned. The manifold blower was found to be working normally.

SO2[ppb]



TOTAL REDUCED SULPHUR



Thermo 450i Total Reduced Sulphur Analyzer Calibration

Date: September 5, 2018	Barometer/B.P./units: Brunton 05490 expires December 11, 2018	959.1	millibars
Company/Airshed: LICA	Thermometer/Station Temp: F.S. 160459244 expires June 19, 2020	21.7	°C
Location/Station Name: Cold Lake South	Weather Conditions: Mainly sunny		
Parameter: Total Reduced Sulphur	Calibration Purpose: routine monthly		
Start Time 24 hr. (mst): 8:05	Performed By/Reviewer: Chris Wesson	Rob Fisher	
End Time 24 hr. (mst): 14:02	Cal Gas Expiry Date: November 7, 2020		
Calibration Method: Gas Dilution	Converter Model & s/n (if applicable): CDNOVA/Model CDN-101/#501		
Analyzer: Serial Number/Owner: 812728560 LICA	Range ppb: 100		
Last Calibration Date: August 9, 2018	As Found C.F.: 0.986		
Previous C.F.: 1.000	New C.F.: 1.000		

Calibration Standards: Low Flow Meter ID/Expiry Date: Defender Low 152020 expires November 22, 2018 High Flow Meter ID/Expiry Date: Defender High 148943 expires November 21, 2018 Calibrator ID/Expiry Date: Sabio id# 11900613 expires August 22, 2019 Cal Gas Cylinder I.D. #: LL119432 Cal Gas Conc. (ppm): 10.3	Standard Calibration Points for Ranges <table border="1" style="margin: auto;"> <tr><th>Point</th><th>ppb</th></tr> <tr><td>High</td><td>78</td></tr> <tr><td>Mid</td><td>38</td></tr> <tr><td>Low</td><td>19</td></tr> </table>	Point	ppb	High	78	Mid	38	Low	19	SO2 Scrubber Check (10 minutes): Start/End Time 24 hr.: 9:57/10:07 SO2 Analyzer Range: 500 Target Concentration (ppb): 380 As Found Zero: 0.0 Analyzer Response (ppb): 0.0 Zero Corrected Result (ppb): 0.0
Point	ppb									
High	78									
Mid	38									
Low	19									

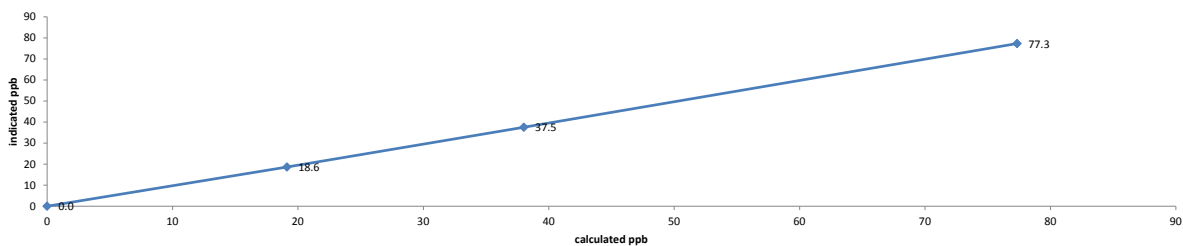
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration (ppb):	Indicated Concentration (ppb):	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total			
as found zero	7567	0.00	7567	0.0	0.2	n/a
as found high	7512	56.94	7569	77.3	78.6	0.986
adjusted zero	7567	0.00	7567	0.0	0.0	n/a
adjusted high	7512	56.94	7569	77.3	77.3	1.000
mid	7523	27.92	7551	38.0	37.5	1.014
low	7533	14.04	7548	19.1	18.6	1.028
calibrator zero	7567	0.00	7567	0.0	0.0	n/a
Average C.F. =						1.014

Linear Regression/Calibration Results:

Correlation Coefficient =	1.000	LIMITS	> or = 0.995
Slope =	0.999		0.95-1.05
b (Intercept as % of full scale) =	0.31%		± 3% F.S.
% change in C.F. from last cal =	1.36%		± 10%

Thermo 450i Total Reduced Sulphur Analyzer Calibration

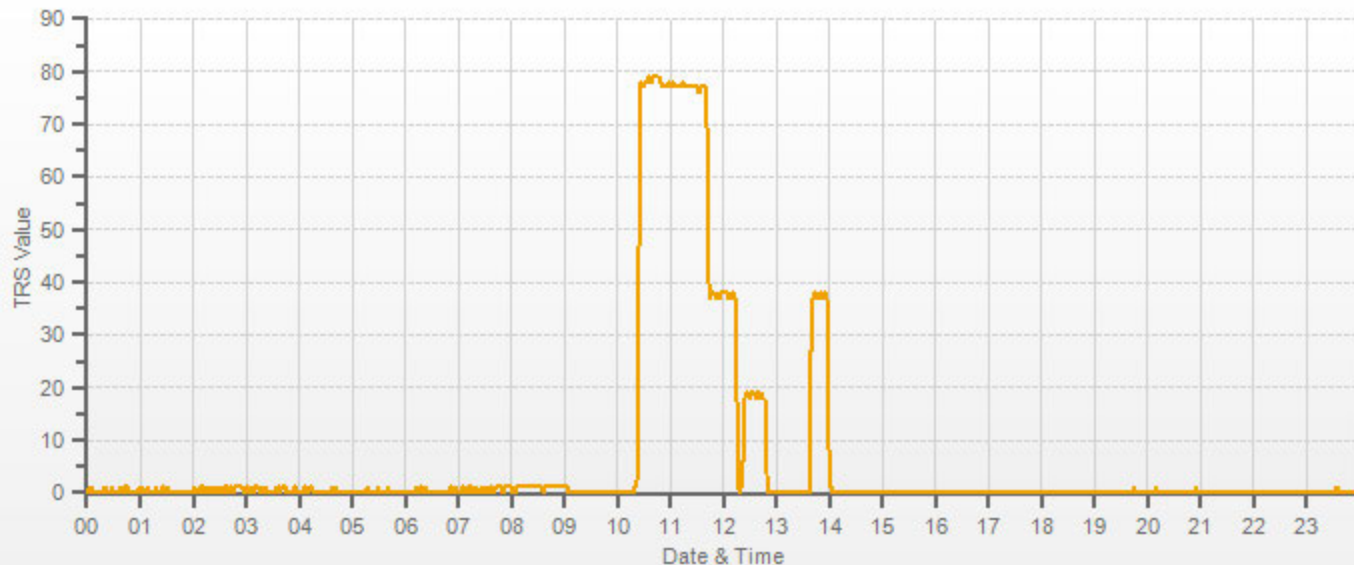


As found: Bkg: 15.4 Coef: 0.933 Pmt: -651.2 Flash: 741 Internal: 30.9 Chamber: 44.9 Converter Temp: 825 Converter Set: 825 Perm Oven Gas: 45.00 Perm Oven Htr: 44.37 Pressure: 637.9 Sample Flow: 0.494 Lamp Intensity: 91 Averaging Time: 120 Expected Value: 37.1	As left: Bkg: 15.3 Coef: 0.910 Pmt: -650.8 Flash: 744 Internal: 32.7 Chamber: 45.3 Converter Temp: 825 Converter Set: 825 Perm Oven Gas: 45.00 Perm Oven Htr: 44.36 Pressure: 635.5 Sample Flow: 0.495 Lamp Intensity: 92 Averaging Time: 120 Expected Value: 37.7
---	--

Comments:

The analyzer sample inlet filter was changed. The analyzer cooling fan filter(s) were cleaned. The manifold blower was found to be working normally.

— TRS[ppb]



TOTAL HYDROCARBON



Thermo 55i Methane/Non-Methane Analyzer Calibration

Date: September 5, 2018	Barometer/B.P./units: Brunton 05490 expires December 11, 2018	958.9	millibars
Company/Airshed: LICA	Thermometer/Station Temp: F.S. 160459244 expires June 19, 2020	22.9	°C
Location/Station Name: Cold Lake South	Weather Conditions: Mainly sunny		
Parameter: CH4 / NMHC / THC	Calibration Purpose: routine monthly		
Start/End Time 24 hr. (mst): 15:21 / 20:06	Performed By/Reviewer: Chris Wesson / Rob Fisher		
Calibration Method: Gas Dilution	Cal Gas Expiry Date: October 18, 2025		

Analyzer:	Correction Factors:												
Serial Number/Owner: 1180320044 / LICA	Previous C.F.:												
Measured Flow: 0.94 lpm	As Found C.F.:												
Last Calibration Date: August 21, 2018	New C.F.:												
Range ppm: 20 CH4/20 NMHC/40 THC	<table border="1"> <tr> <td>CH₄ =</td> <td>0.998</td> <td>1.006</td> <td>0.999</td> </tr> <tr> <td>NMHC =</td> <td>0.998</td> <td>0.994</td> <td>1.001</td> </tr> <tr> <td>THC =</td> <td>0.998</td> <td>1.000</td> <td>1.000</td> </tr> </table>	CH ₄ =	0.998	1.006	0.999	NMHC =	0.998	0.994	1.001	THC =	0.998	1.000	1.000
CH ₄ =	0.998	1.006	0.999										
NMHC =	0.998	0.994	1.001										
THC =	0.998	1.000	1.000										

Calibration Standards:

Low Flow Meter ID/Expiry Date: Defender Low 152020 expires November 22, 2018	Standard Calibration Points for Analyzer Range of 20/20/40 ppm <table border="1"> <tr> <th>Point</th> <th>CH4</th> <th>NMHC</th> <th>THC</th> </tr> <tr> <td>High</td> <td>13.00</td> <td>13.00</td> <td>26.00</td> </tr> <tr> <td>Mid</td> <td>7.00</td> <td>7.00</td> <td>14.00</td> </tr> <tr> <td>Low</td> <td>3.00</td> <td>3.00</td> <td>6.00</td> </tr> </table>	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
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														
High Flow Meter ID/Expiry Date: Defender High 148943 expires November 21, 2018																	
Calibrator ID/Expiry Date: Sabio id# 17100415 expires August 21, 2019																	
Cal Gas Cylinder I.D. #: LL107207																	
CH4 Cylinder Conc.: 600.0 / 207.0 = C ₂ H ₆ Cylinder Conc.																	
CH₄ expressed as C₂H₆: 569.3 / 1169.3 = total CH ₄ equivalent																	

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

Point	Calibrator Flow Rates (cc/min)			Calculated CH ₄ (ppm)	Calculated NMHC (ppm)	Calculated THC (ppm)	Indicated CH ₄ (ppm)	Indicated NMHC (ppm)	Indicated THC (ppm)	Correction Factors:		
	Diluent	Cal Gas	Total Flow							CH ₄	NMHC	THC
as found zero	3028	0.00	3028	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
as found high	2952	73.03	3025	14.49	13.74	28.23	14.40	13.83	28.23	1.006	0.994	1.000
adjusted zero	3028	0.00	3028	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
adjusted high	2952	73.03	3025	14.49	13.74	28.23	14.50	13.73	28.23	0.999	1.001	1.000
mid	2995	36.68	3032	7.26	6.89	14.14	7.30	6.89	14.22	0.994	0.999	0.995
low	3021	18.35	3039	3.62	3.44	7.06	3.67	3.49	7.16	0.987	0.985	0.986
calibrator zero	3028	0.00	3028	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
Average C.F. =										0.993	0.995	0.993

Linear Regression/Calibration Results:

Correlation Coefficient =	CH ₄	NMHC	THC	LIMITS > or = 0.995 0.95-1.05 ± 3% F.S. ± 10%
Slope =	1.000	0.998	1.000	
b (Intercept as % of full scale) =	0.12%	0.12%	0.14%	
% change in C.F. from last cal =	-0.80%	0.43%	-0.20%	

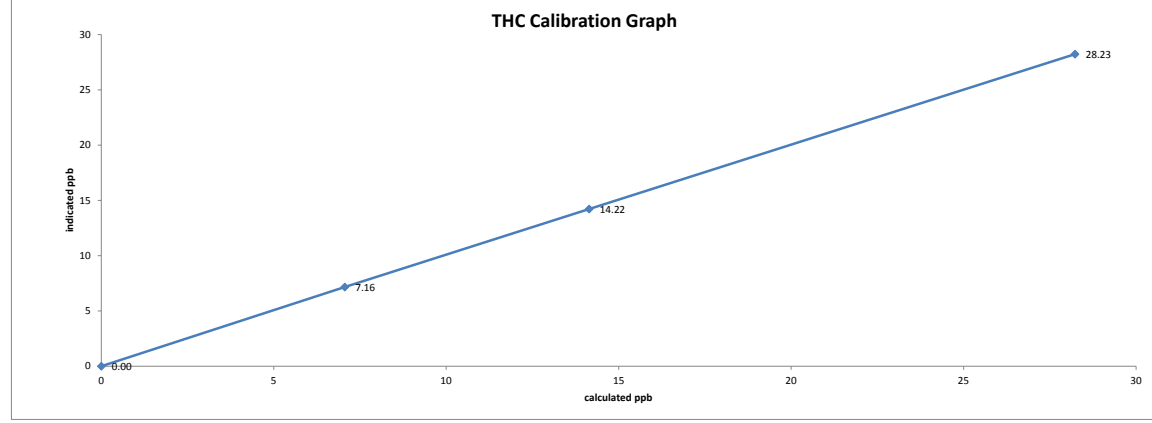
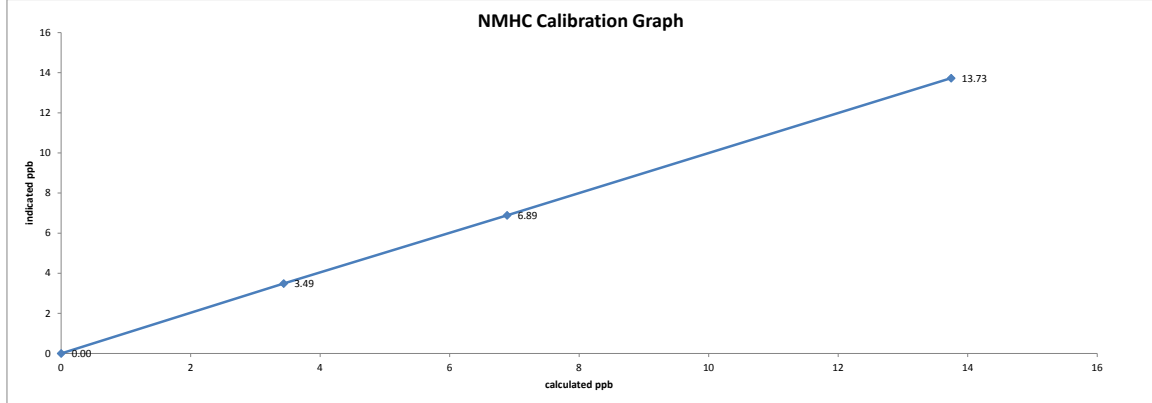
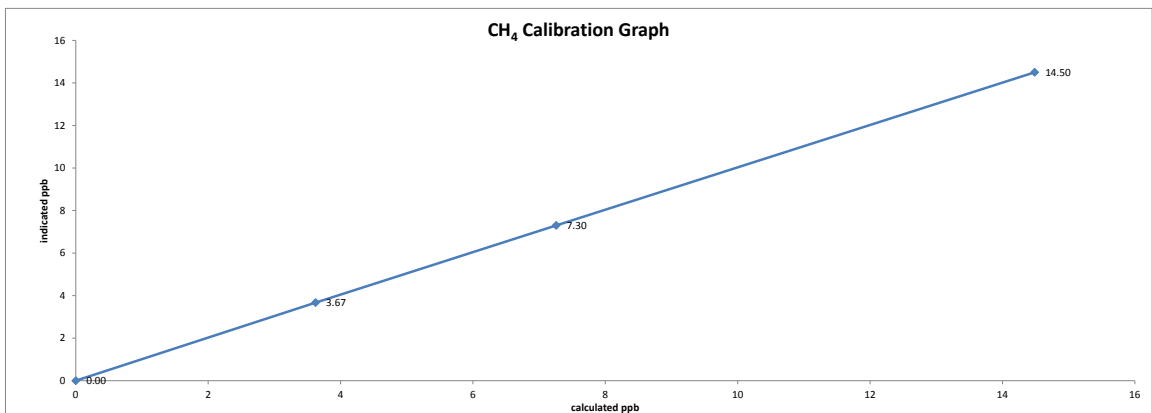
As Left Instrument Diagnostics:

Interface Board Voltages:	Bias Supply: -296.6	Calibration History cnt'd:	NM Peak Area: 95863
Temperatures:	Detector Oven: 175.0	Crucial Settings:	Methane Start: n/a
	Filter: 175.0		Methane End: n/a
	Column Oven: 75.5		Backflush: n/a
	Internal: 33.2		NMHV Start: n/a
Cylinder Pressures/reg.:	Carrier: 1100 / 50	Run History>1:	NMHC End: n/a
	Fuel: 800 / 50		Date: 05Sept2018
	Span Gas: 350 / 10		Time: 16:53
	Zero Air Generator: 42		CH ₄ PK HT: 0
Internal Pressures:	Carrier: 29.4		CH ₄ RT: 12.8
	Fuel: 44.2		CH ₄ Baseline: 3272
	Air: 30.2		CH ₄ LOD: 46
FID Status:	Status: LIT		CH ₄ SD: 15
	Counts: 36424		CH ₄ CONC: 0.00
	Flame: 334.5		NM PK HT: 0
	Det Base: 175.0		NM Peak Area: 0
Flame and Power Stats:	Last Power On: 31Aug2018 13:13		NM CONC: 0.00
	Flameouts: 1		NM Base Start: 3218
	Det Oven at Start: 40.2		NM Base End: 3247
	Col Oven at Start: 37.6		NM LOD: 9
Calibration History:	Time: 17:44		NM Start IDX: 7
	Type: SPAN		NM End IDX: 42
	Status: GOOD		NM Max Slope: 1.3e+00
	Check/Adjust: ADJUST		NM Min Slope: -3.8e-01
	CH ₄ Span Conc: 14.49		NM PT Count: 0
	CH ₄ SP Ratio: 0.000746	Expected Values:	Previous CH ₄ :
	CH ₄ RT: 13.0		Previous NMHC:
	CH ₄ PK IDX: 25		Previous THC:
	CH ₄ PK HT: 19436		New CH ₄ :
	NM Span Conc: 13.74		New NMHC:
	NM SP Ratio: 0.000143		New THC:

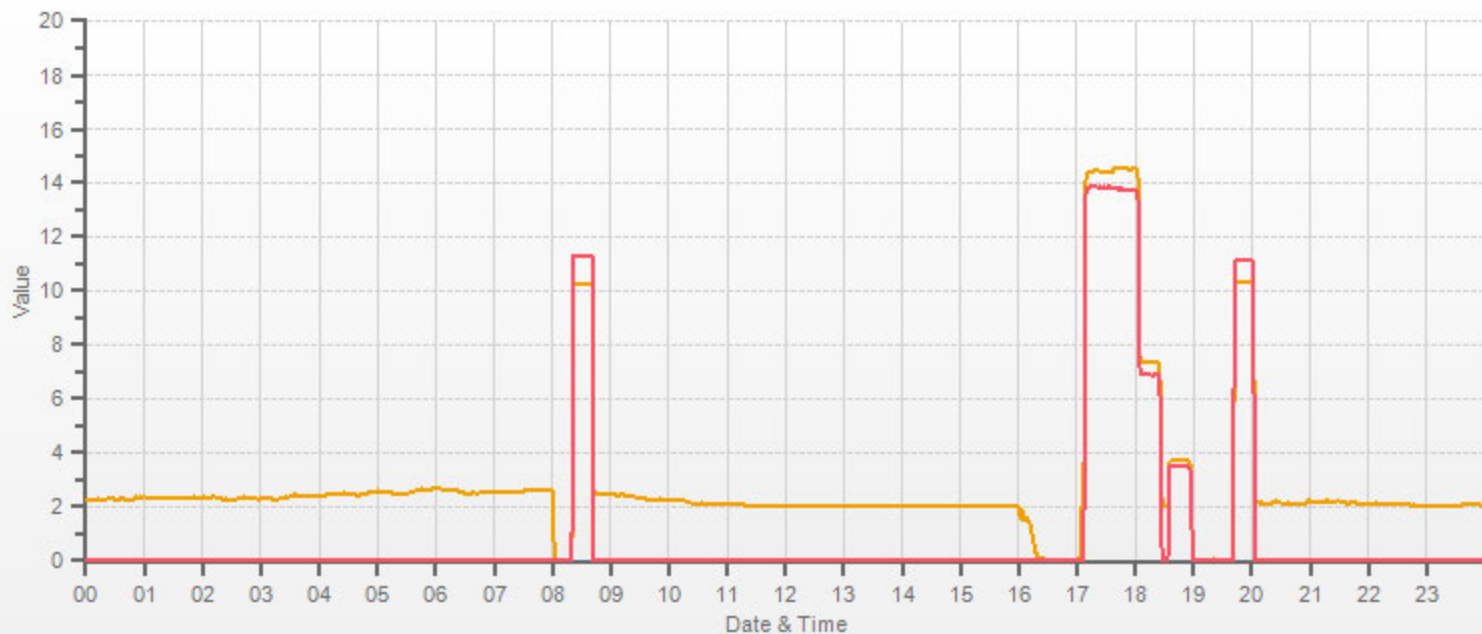
Comments:
 The analyzer sample inlet filter was changed.
 No zero adjustment was required/made. As found zero values were copied to adjusted zero values for linearity calculation purposes.
 The analyzer cooling fan filter(s) were cleaned.
 The manifold blower was found to be working normally.

Date: September 5, 2018
Company/Airshed: LICA
Location/Station Name: Cold Lake South

Start/End Time 24 hr. (mst): 15:21 / 20:06
Calibration Purpose: routine monthly
Calibration Method: Gas Dilution



— CH4[ppm] — NMHC[ppm]



NITROGEN DIOXIDE



Thermo 42i NO-NO2-NOx Analyzer Calibration

Date: September 5, 2018	Barometer/B.P./units: Brunton 05490 expires December 11, 2018	959.1	millibars
Company/Airshed: LICA	Thermometer/Station Temp: F.S. 160459244 expires June 19, 2020	21.7	°C
Location/Station Name: Cold Lake South	Weather Conditions: Mainly sunny		
Start/End Time 24 hr. (mst): 8:05 / 16:20	Calibration Purpose: routine monthly		
G.P.T. to be used for Ozone?: No	Performed By/Reviewer: Chris Wesson	Rob Fisher	
Calibration Method: Gas Dilution & Gas Phase Titration	Cal Gas Expiry Date: October 24, 2020		

Analyzer: Serial Number/Owner: 1505664393 LICA Last Calibration Date: August 9, 2018 Range ppb: 500	Correction Factors: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Previous C.F.:</th> <th>As Found C.F.:</th> <th>New C.F.:</th> </tr> </thead> <tbody> <tr> <td>NO =</td> <td>1.000</td> <td>1.019</td> <td>0.999</td> </tr> <tr> <td>NO₂ =</td> <td>1.000</td> <td>1.001</td> <td>1.001</td> </tr> <tr> <td>NOx =</td> <td>0.999</td> <td>1.019</td> <td>0.998</td> </tr> </tbody> </table>		Previous C.F.:	As Found C.F.:	New C.F.:	NO =	1.000	1.019	0.999	NO ₂ =	1.000	1.001	1.001	NOx =	0.999	1.019	0.998
	Previous C.F.:	As Found C.F.:	New C.F.:														
NO =	1.000	1.019	0.999														
NO ₂ =	1.000	1.001	1.001														
NOx =	0.999	1.019	0.998														

Calibration Standards: Low Flow Meter ID/Expiry Date: Defender Low 152020 expires November 22, 2018 High Flow Meter ID/Expiry Date: Defender High 148943 expires November 21, 2018 Calibrator ID/Expiry Date: Sabio id# 17100415 expires August 21, 2019 Cal Gas Cylinder I.D. #: LL108105 Cal Gas Conc. (ppm): 52.2 52.3	Standard Calibration Points for a Range of: 500 ppb <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Point</th> <th>Target NO (ppb)</th> <th>Target NO₂ (ppb)</th> <th>Cc Ozone ?</th> </tr> </thead> <tbody> <tr> <td>High</td> <td>380</td> <td>250</td> <td>n/a</td> </tr> <tr> <td>Mid</td> <td>180</td> <td>145</td> <td>n/a</td> </tr> <tr> <td>Low</td> <td>90</td> <td>50</td> <td>n/a</td> </tr> <tr> <td>Extra Point #1</td> <td>n/a</td> <td>n/a</td> <td>n/a</td> </tr> <tr> <td>Extra Point #2</td> <td>n/a</td> <td>n/a</td> <td>n/a</td> </tr> </tbody> </table>	Point	Target NO (ppb)	Target NO ₂ (ppb)	Cc Ozone ?	High	380	250	n/a	Mid	180	145	n/a	Low	90	50	n/a	Extra Point #1	n/a	n/a	n/a	Extra Point #2	n/a	n/a	n/a
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	6066.6	0.0	6067	0	0	0.1	0.1	n/a	n/a
as found high	6039	43.7	6082	374.7	375.4	367.7	368.7	1.019	1.019
adjusted zero	6067	0.00	6067	0.0	0.0	0.0	0.0	n/a	n/a
adjusted high	6039	43.66	6082	374.7	375.4	375.0	376.0	0.999	0.998
mid	6045	20.78	6066	178.8	179.2	178.4	178.6	1.002	1.003
low	6057	10.40	6067	89.5	89.7	88.9	89.0	1.007	1.007
calibrator zero	6067	0.00	6067	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	6039	43.66	6082	0.0	374.6	374.9	0.3	0.0	0.3	
as found high NO2	6039	43.66	6082	250.0	111.0	374.6	263.6	263.6	263.3	1.001
adjusted high NO2	6039	43.66	6082	250.0	111.0	374.6	263.6	263.6	263.3	1.001
gpt mid	6039	43.66	6082	125.0	241.5	375.6	134.1	133.1	133.8	0.995
gpt low	6039	43.66	6082	45.0	326.6	376.0	49.4	48.0	49.1	0.978
Average NO ₂ C.F.=										0.991

Linear Regression/Calibration Results:

	NO	NOx	NO ₂	LIMITS
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995
Slope =	0.999	0.998	1.003	0.95-1.05
b (Intercept as % of full scale)=	-0.08%	-0.10%	0.16%	± 3% F.S.
% change in C.F. from last cal=	-1.94%	-1.96%	-0.11%	± 10%
NO ₂ converter efficiency			1.00	0.96 to 1.04

As found:		As left:	
NO Bkg:	4.1	NO Bkg:	4.2
NOx Bkg:	4.1	NOx Bkg:	4.3
NO Coef:	1.042	NO Coef:	1.064
NO ₂ Coef:	1.000	NO ₂ Coef:	1.000
NOx Coef:	1.002	NOx Coef:	0.999
PMT:	-854.7	PMT:	-854.7
Internal:	25.3	Internal:	26.8
Chamber:	50.6	Chamber:	50.4
Cooler:	-3.0	Cooler:	-3.0
NO ₂ Converter:	327.1	NO ₂ Converter:	323.4
NO ₂ Converter Set:	325.0	NO ₂ Converter Set:	325.0
Perm Oven Gas:	34.99	Perm Oven Gas:	35.00
Perm Oven Heater:	34.21	Perm Oven Heater:	34.25
Pressure:	185.3	Pressure:	182.9
Flow:	0.749	Flow:	0.735
Ozonator Flow:	OK	Ozonator Flow:	OK
Expected Value NO:	3	Expected Value NO:	5
Expected Value NO ₂ :	258	Expected Value NO ₂ :	267
Expected Value NOx:	261	Expected Value NOx:	271

Comments:

The analyzer sample inlet filter was changed. No high point NO₂ adjustment was required/made. As found values were copied to adjusted high values for linearity calculation purposes.

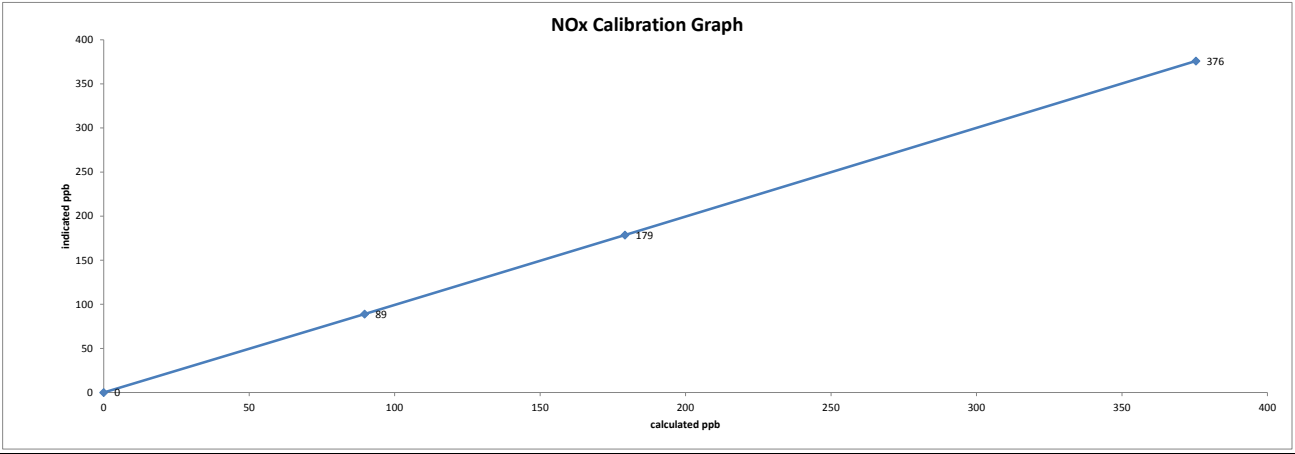
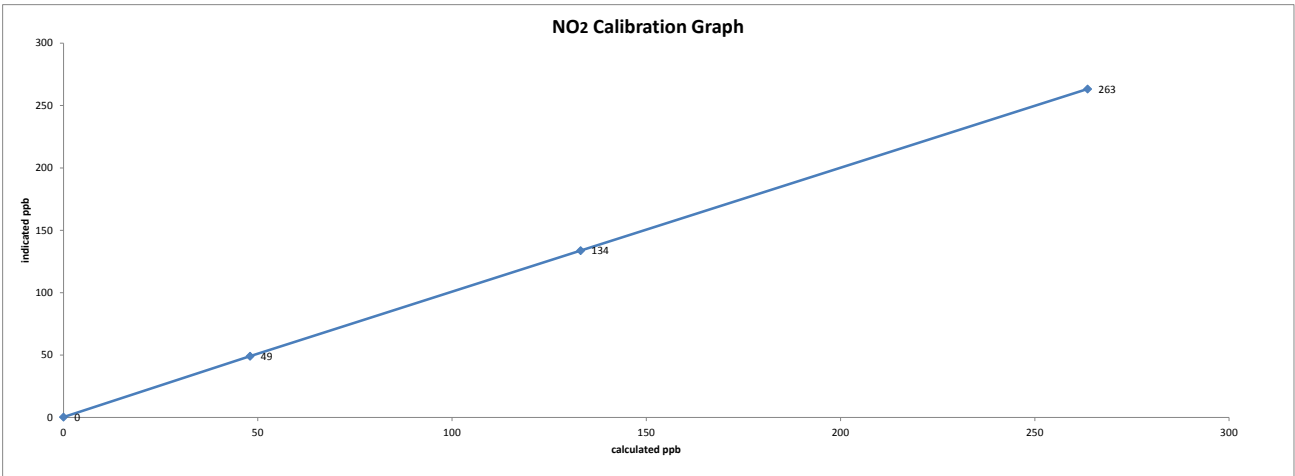
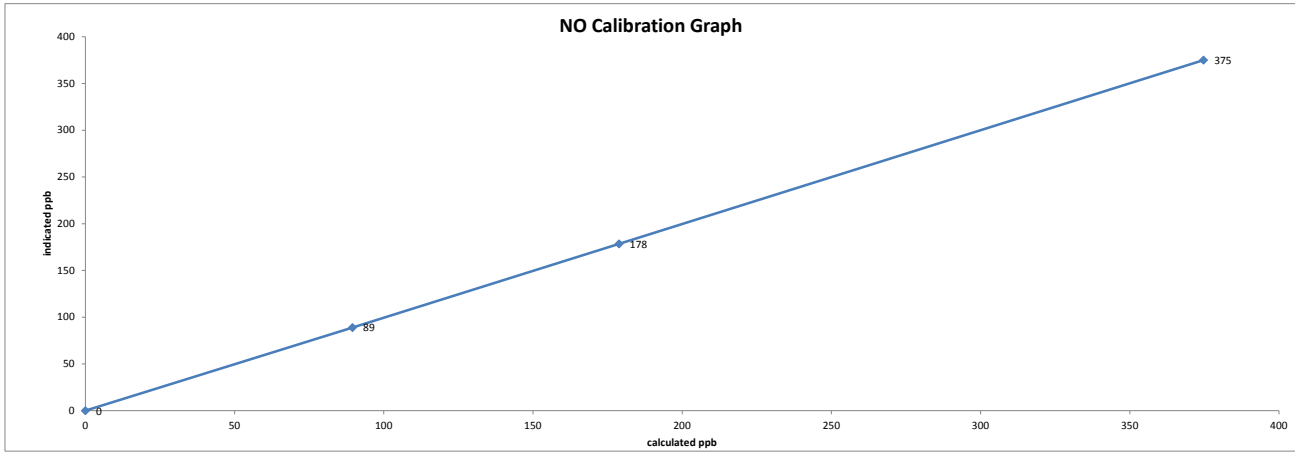
The manifold blower was found to be working normally.

The analyzer cooling fan filter(s) were cleaned.

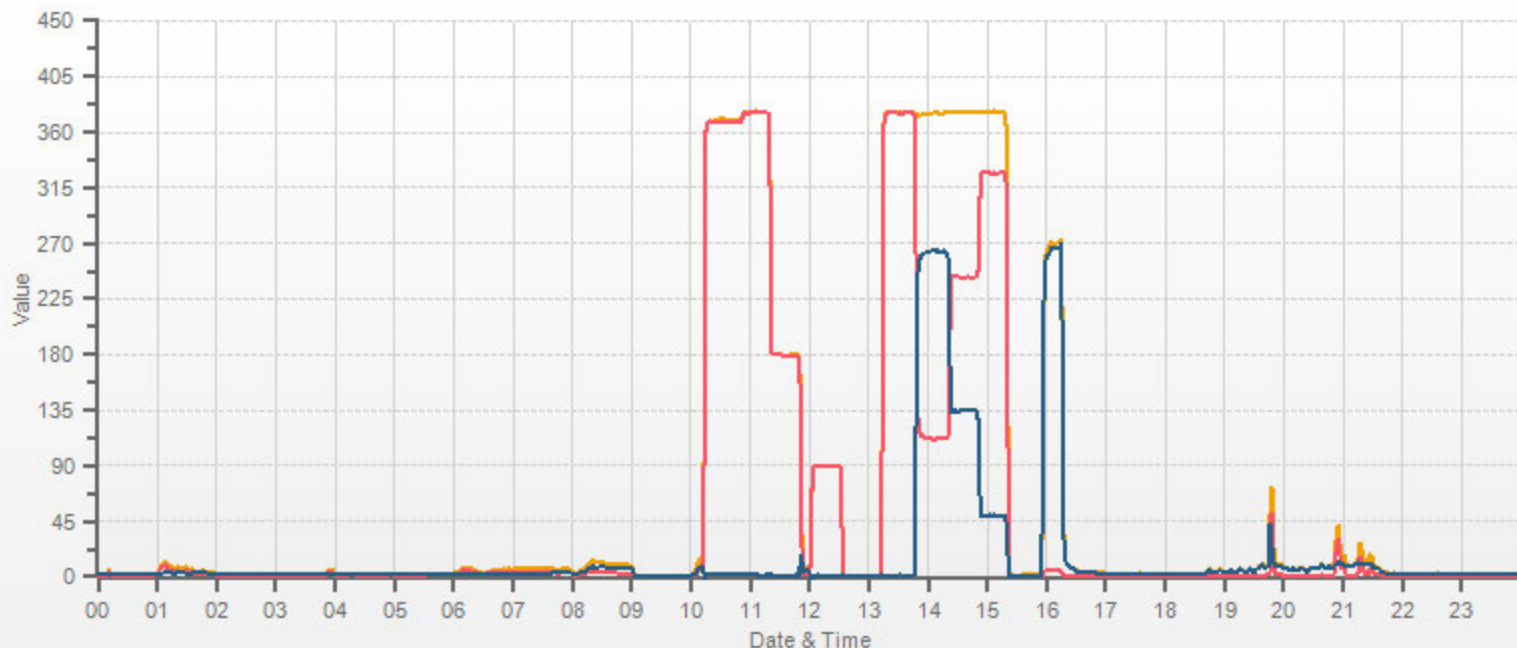
Date: September 5, 2018
Company/Airshed: LICA
Location/Station Name: Cold Lake South

Start/End Time 24 hr. (mst): 8:05 / 16:20
Calibration Purpose: routine monthly
Calibration Method: Gas Dilution & Gas Phase Titration

Thermo 42i NO-NO2-NOx Analyzer Calibration



— NOX[ppb] — NO[ppb] — NO2[ppb]



OZONE



Thermo 49i Ozone Analyzer Calibration

Date: September 5, 2018 Company/Airshed: LICA Location/Station Name: Cold Lake South Start/End Time 24 hr. (mst): 13:18/17:02 Ozone Calibration Method: Varying UV Lamp Power G.P.T. Date: n/a - done by Varying UV Lamp Power Analyzer: Serial Number/Owner: 700419951 LICA Last Calibration Date: August 10, 2018 Previous Cal High Point C.F.: 1.000	Barometer/B.P./units: Brunton 05490 expires December 11, 2018 958.9 millibars Thermometer/Station Temp: F.S. 160459244 expires June 19, 2020 21.3 °C Weather Conditions: Mainly sunny Calibration Purpose: routine monthly Performed By/Reviewer: Chris Wesson Rob Fisher Cal Gas Expiry Date: n/a - done by Varying UV Lamp Power Ozone Range ppb: 500 As Found C.F.: 1.041 New C.F.: 1.001
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Calibration Standards: Low Flow Meter ID/Expiry Date: Defender Low 152020 expires November 22, 2018 High Flow Meter ID/Expiry Date: Defender High 148943 expires November 21, 2018 Calibrator ID/Expiry Date: Sabio id# 11900613 expires August 22, 2019 Cal Gas Cylinder I.D. #: n/a	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Point</th> <th>AMD Required Range of Ozone Calibration Points</th> </tr> <tr> <td>High</td> <td>300-400 ppb</td> </tr> <tr> <td>Mid</td> <td>150-200 ppb</td> </tr> <tr> <td>Low</td> <td>50-75 ppb</td> </tr> </table>	Point	AMD Required Range of Ozone Calibration Points	High	300-400 ppb	Mid	150-200 ppb	Low	50-75 ppb
Point	AMD Required Range of Ozone Calibration Points								
High	300-400 ppb								
Mid	150-200 ppb								
Low	50-75 ppb								

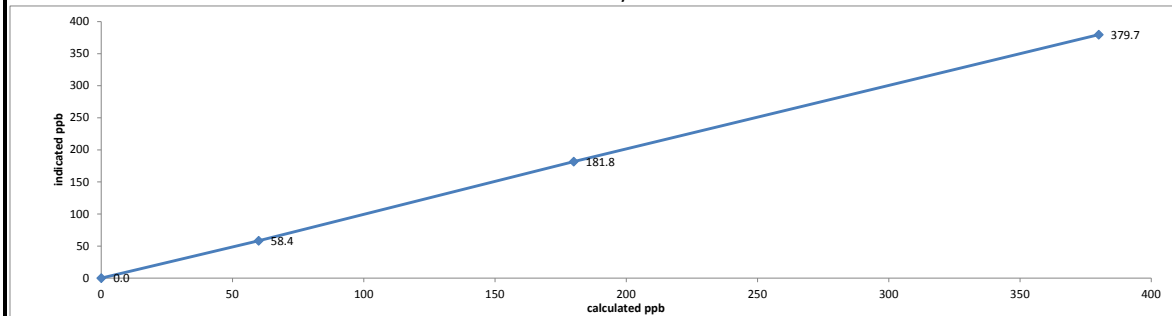
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Point	Calibrator Flow Rate (cc/min)		Calculated Concentration:	Corrected Calculated Concentration:	Indicated Concentration:	Correction Factors:
	Total Flow @ Point Start	Total Flow @ Point Finish	(ppb)	(ppb)	(ppb)	
as found zero	4999	4999	0.0	n/a	0.0	n/a
as found high	4999	4999	380.0	380.0	365.0	1.041
adjusted zero	4999	4999	0.0	0.0	0.0	n/a
adjusted high	4999	4999	380.0	380.0	379.7	1.001
mid	4999	4999	180.0	180.0	181.8	0.990
low	4999	4999	60.0	60.0	58.4	1.027
calibrator zero	4999	4999	0.0	n/a	0.0	n/a
Average C.F.=						1.006

Linear Regression/Calibration Results:

Correlation Coefficient = 1.000	LIMITS
Slope = 0.998	> or = 0.995
b (Intercept as % of full scale)= 0.05%	0.95-1.05
% change in C.F. from last cal= -4.11%	± 3% F.S.
	± 10%

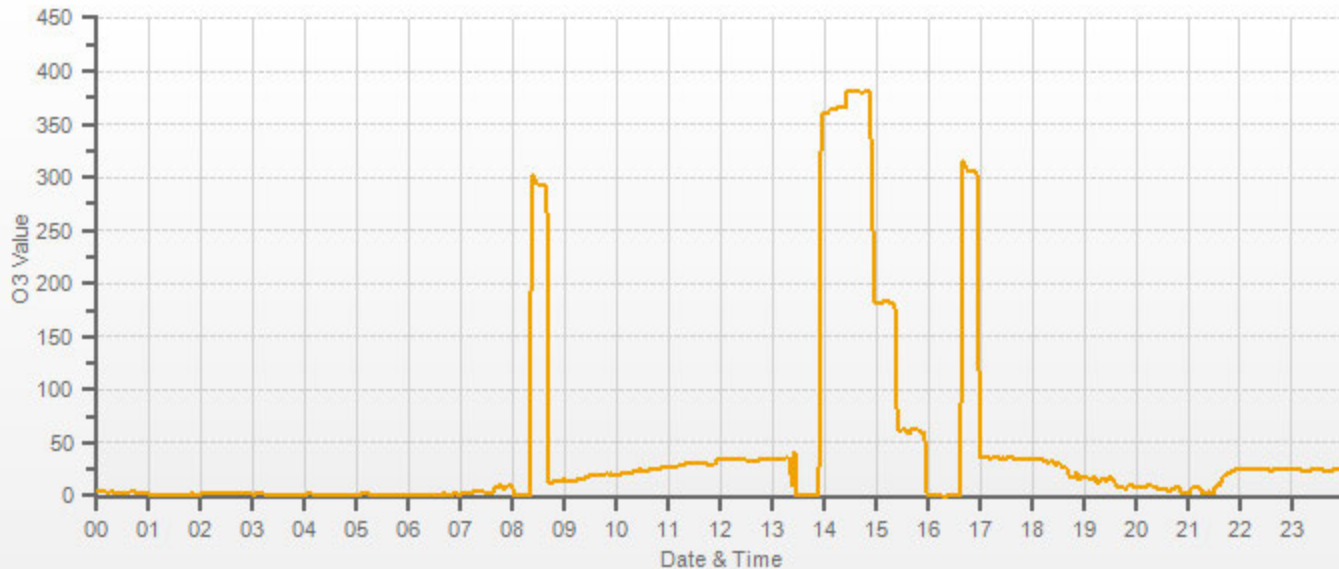
Thermo 49i Ozone Analyzer Calibration



As found:	As left:
O3 Bkg: 0.0	O3 Bkg: 0.0
O3 Coef: 1.021	O3 Coef: 1.059
Photo Lamp: 9.6	Photo Lamp: 9.6
O3 Lamp: 8.1	O3 Lamp: 8.1
Bench: 29.6	Bench: 29.4
Bench Lamp: 53.5	Bench Lamp: 53.5
O3 Lamp: 67.5	O3 Lamp: 67.5
Pressure: 708.6	Pressure: 708.9
Cell A lpm: 0.713	Cell A lpm: 0.713
Cell B lpm: 0.756	Cell B lpm: 0.756
O3 ppb: 0	O3 ppb: 0
Cell A ppb: 3.4	Cell A ppb: 3.5
Cell B ppb: -3.4	Cell B ppb: -3.5
Cell A int (Hz): 79522	Cell A int (Hz): 79523
Cell B int (Hz): 80883	Cell B int (Hz): 80893
Expected Value: 275.0	Expected Value: 304.4

Comments:
 The analyzer sample inlet filter was changed.
 The analyzer cooling fan filter(s) were cleaned.
 The manifold blower was found to be working normally.
 No zero adjustment was required/made. As found zero values were copied to adjusted zero values for linearity calculation purposes.

O3[ppb]



PARTICULATE MATTER



Thermo 5030 SHARP Monitor Audit

Date:	September 12, 2018	Performed By/Reviewer:	Chris Wesson	Rob Fisher
Company:	LICA	Start Time (mst):	16:00	
Station Name/Location:	Cold Lake South	End Time (mst):	17:37	
Previous Audit Date:	n/a	Calibration Purpose:	post-repair calibration	
Parameter:	PM 2.5	Weather Conditions:	Moderate rain	

SHARP Information and Status:				
Serial Number/Owner:	CM-2209	LICA	Status Code	44
Approx. % Tape Reaming	50		Error Code	0

Reference Standards/I.D./Cert. Date:				
High Flow:	Airmetrics/Chinook High Maxxam ID #1 expires February 14, 2019			
Digital Manometer:	Dwyer 475 Mark III id# 2 expires January 29, 2019			
Temperature:	F.S. 160459244 expires June 19, 2020			
Pressure:	Brunton 05490 expires December 11, 2018			

As Left Temperature and Pressure (same as above if as found adequate):

	T1 (°C)	T2 (°C)	T3 (°C)	T4 (°C)	P3 (hPa)	RH (%)
SHARP:	4	24	24	24	950	29
Reference:	3.6	23.6	23.6	23.6	950.1	29.2
Difference:	0.4	0.4	0.4	0.4	0.1	0.7%

Temp Limit: ± 4 °C
Pressure Limit: ± 13.33 hPa
RH Limit: ± 2%

Mass Foil Calibration:					
Mass Foil ID:	9015	QLF:	4	OLD:	7117
Spanfoil Value (µg):	1294	CONFID:	9	NEW:	7001
		ZERO:		Span Sensitivity	

Nephelometer Zero:

	As Found	As Left
Analog	n/a	154.00
NEPH	n/a	-0.10
C14	n/a	-28.30
Conc	n/a	-0.10

Flow rate:

	As Found	As Left
SHARP AirFlow l/hr	n/a	1000
Reference AirFlow (l/min)	n/a	16.63
Reference AirFlow (l/hr)	n/a	998
% Difference:	n/a	0.2%

$%D = 100 \times \frac{Q_m - Q_i}{Q_i}$
Tolerance +/- 5%

Inlet Assembly:		
	Yes/No?	If no, explain:
PM10 Inlet Cleaned	yes	
PM2.5 Cyclone Cleaned	yes	

Pump Assembly:		
	Yes/No?	If no, explain:
Pump Inspected / Cleaned	yes	
Pump Vanes Replaced	no	Not required

Comments:

Leak check: Reference with adaptor = 16.57 l/min, without = 16.63 l/min. Difference: 0.06 = PASS (<0.8L/min)



Thermo 5030 SHARP Monitor Audit

Date:	September 13, 2018	Performed By/Reviewer:	Chris Wesson	Rob Fisher
Company:	LICA	Start Time (mst):	8:00	
Station Name/Location:	Cold Lake South	End Time (mst):	10:06	
Previous Audit Date:	n/a	Calibration Purpose:	Repeat Calibration	
Parameter:	PM 2.5	Weather Conditions:	Mainly cloudy with a mix of snow and rain	

SHARP Information and Status:				
Serial Number/Owner:	CM-2209	LICA	Status Code	44
Approx. % Tape Remaining	50	Error Code	0	

Reference Standards/I.D./Cert. Date:				
High Flow:	Airmetrics/Chinook High Maxxam ID #1 expires February 14, 2019			
Digital Manometer:	Dwyer 475 Mark III id# 2 expires January 29, 2019			
Temperature:	F.S. 160459244 expires June 19, 2020			
Pressure:	Brunton 05490 expires December 11, 2018			

Mass Foil Calibration:					
Mass Foil ID:	9015	QLF:	21	OLD:	7001
Spanfoil Value (µg):	1294	CONFID:	9	NEW:	7038

Nephelometer Zero:				
	As Found		As Left	
Analog	n/a	Analog	159.00	
NEPH	n/a	NEPH	0.40	
C14	n/a	C14	3.60	
Conc	n/a	Conc	-0.40	

Inlet Assembly:				
	Yes/No?	If no, explain:		$%D = 100 \times \frac{Q_m - Q_i}{Q_i}$
PM10 Inlet Cleaned	yes			
PM2.5 Cyclone Cleaned	yes			

Pump Assembly:				
	Yes/No?	If no, explain:		
Pump Inspected / Cleaned	yes			
Pump Vanes Replaced	no	Not required		

Comments:

Adjustments to thresholds/sensitivities only following stabilization. Prior data are valid.

WIND SYSTEM

CALIBRATORS

Company <u>Maxxam</u>		Operator: <u>Mike</u>	
Calibrator:		Flow Measurement Device:	
Make/Model	<u>Sabio</u>	Make/Model	<u>Bios Definer 220</u>
Serial Number	<u>17100415</u>	Serial Number	<u>H=128686; L=129069</u>
Last Verification Date	<u>May 16, 2017</u>	Temperature (°C)	<u>22.2 C</u>
NO Cylinder S/N	<u>LL104183</u>	Barometric Pressure	<u>706.1mmHg</u>
NO [PPM]	<u>50.8</u>	NOx [PPM]	<u>50.9</u>
Expiry Date	<u>October 24, 2020</u>		

Dilution Flow (sccm)			
Pt. #1	<u>5120</u>	Pt. #2	<u>5121</u>
		Pt. #3	<u>5128</u>
Gas Flow (sccm)			
Pt. #1	<u>77.4</u>	Pt. #2	<u>37.8</u>
		Pt. #3	<u>19</u>

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO ₂	NOx	NO	NOx
5136	0.0	0.0000	0.0000	0.0001	-0.0002	0.0001	Limit ± 10%	
5120	77.4	0.7680	0.7695	0.7793	0.0003	0.7796	1%	1%
5121	37.8	0.3750	0.3757	0.3802	0.0000	0.3802	1%	1%
5128	19.0	0.1882	0.1885	0.1908	0.0005	0.1909	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)=	1.0146	0.90-1.10		m (Slope)= 1.0130
b (Intercept % of FS)=	-0.0074	± 3% F.S.		b (Intercept % of FS)= -0.0059

Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
5120	0.0	0.0000	0.7794	0.0005	0.7799	NO ₂	% Diff. Limit
5120	500.0	0.4827	0.2967	0.4854	0.7806	0%	± 10%
5120	275.0	0.2672	0.5122	0.2676	0.7798	0%	± 10%
5120	90.0	0.0896	0.6898	0.0890	0.7787	-1%	± 10%
Absolute Average Percent Difference						0%	± 10%

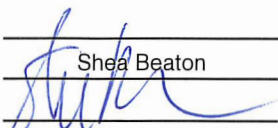
LINEAR REGRESSION ANALYSIS *y=mx+b (where x=calculated concentration, y=indicated concentration)*

NO₂		LIMITS
Correlation=	1.0000	≥ 0.995
m (Slope)=	1.0053	0.90-1.10
b (Intercept % of FS)=	-0.0370	± 3% F.S.

AENV Standards	NO_x Analyzer
Audit Calibrator	
Make/Model	<u>Thermo 146i</u>
Serial/AMU Number	<u>1809</u>
SRM Gas Cylinder No.	<u>APEX1170572</u>
Cylinder Conc. (ppm)	<u>49.99</u>
	Make/Model <u>Thermo 42i</u>
	Serial/AMU Number <u>1868</u>
	Last Calibration Date <u>August 16, 2018</u>
	Full Scale (ppm) <u>1.0</u>
	Cylinder Gas Expiry Date <u>November 15, 2020</u>

COMMENTS: _____

Auditor: Shea Beaton Date: August 21, 2018

Operator Signature:  Location: McIntyre Center Edmonton

Company Maxxam Operator: Mike

Calibrator:		Flow Measurement Device:	
Make/Model	<u>Sabio</u>	Make/Model	<u>Bios Definer 220</u>
Serial Number	<u>11900613</u>	Serial Number	<u>H=128686; L=129069</u>
Last Verification Date	<u>March 16, 2018</u>	Temperature (°C)	<u>22.9 C</u>
NO Cylinder S/N	<u>LL104183</u>	Barometric Pressure	<u>698 mmHg</u>
NO [PPM]	<u>50.8</u>	NOx [PPM]	<u>50.9</u>
Expiry Date	<u>October 24, 2020</u>		

Dilution Flow (sccm)			
Pt. #1	<u>5059</u>	Pt. #2	<u>5073</u>
Pt. #3	<u>5073</u>		
Gas Flow (sccm)			
Pt. #1	<u>77.5</u>	Pt. #2	<u>38.2</u>
Pt. #3	<u>19.1</u>		

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO ₂	NOx	NO	NOx
5124	0.0	0.0000	0.0000	0.0000	-0.0001	0.0000	Limit ± 10%	
5059	77.5	0.7782	0.7797	0.7763	0.0005	0.7767	0%	0%
5073	38.2	0.3825	0.3833	0.3794	0.0000	0.3795	-1%	-1%
5073	19.1	0.1913	0.1916	0.1904	0.0000	0.1904	0%	-1%
Absolute Average Percent Difference							1%	1%

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

<u>NO</u>		<u>LIMITS</u>		<u>NOx</u>	
Correlation=	1.0000	≥ 0.990		Correlation=	1.0000
m (Slope)=	0.9975	0.90-1.10		m (Slope)=	0.9960
b (Intercept % of FS)=	-0.0616	± 3% F.S.		b (Intercept % of FS)=	-0.0661

Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
5059	0.0	0.0000	0.7741	0.0000	0.7741	NO ₂	% Diff. Limit
5059	500.0	0.4918	0.2823	0.4916	0.7739	0%	± 10%
5059	275.0	0.2774	0.4967	0.2780	0.7747	0%	± 10%
5059	100.0	0.1031	0.6710	0.1032	0.7743	0%	± 10%
Absolute Average Percent Difference						0%	± 10%

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

<u>NO₂</u>		<u>LIMITS</u>	
Correlation=	1.0000	≥ 0.995	
m (Slope)=	0.9998	0.90-1.10	
b (Intercept % of FS)=	0.0173	± 3% F.S.	

<u>AENV Standards</u>		<u>NO_x Analyzer</u>	
<u>Audit Calibrator</u>			
Make/Model	<u>Thermo 146i</u>	Make/Model	<u>Thermo 42i</u>
Serial/AMU Number	<u>1809</u>	Serial/AMU Number	<u>1868</u>
SRM Gas Cylinder No.	<u>APEX1170572</u>	Last Calibration Date	<u>August 16, 2018</u>
Cylinder Conc. (ppm)	<u>49.99</u>	Full Scale (ppm)	<u>1.0</u>
		Cylinder Gas Expiry Date	<u>November 15, 2020</u>

COMMENTS: _____

Auditor: Shea Beaton
Operator Signature: _____

Date: August 22, 2018
Location: McIntyre Center Edmonton

CALIBRATION GASES



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2017-486CGA

Company: Maxxam **Operator's Name:** Mike
Cylinder #: LL108015 **Concentration PPM:** 47.9 **Tolerance(%)** 2 **Certified By:** Praxair
Expiry Date: October 2020

Reference Calibrator and Gas:	Flow Measurement Device:
Make/Model: <u>R&R MFC 201</u>	Make/Model: <u>Mesa Definer 220</u>
Serial Number: <u>AMU 1690</u>	Serial Number: <u>H-133034 / L-132702</u>
Last Verification Date: <u>December 13, 2017</u>	Temp. °C: <u>23.4 C</u>
Gas Type: <u>SO2</u> Conc. <u>98.07</u>	B.P. <u>707 mmHg</u>
Cylinder Number: <u>CAL016625</u>	
Expiry Date: <u>January 2019</u>	

Reference Analyzer:
 Make/Model: Teco 43C Serial/AMU Number: 1623
 Instrument Settings: Zero: 10.0 Span: 1.006 Range: 1.0
 Last Calibration: Date: Dec12/17 C.F. 1.000 Done By: Al Clark

Calibrator Flows (sccm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.000			
4989	79.5	0.760	0.01594	62.755	47.7
4995	39.6	0.374	0.00793	126.136	47.2
4992	19.6	0.183	0.00393	254.694	46.6
Average Cylinder Concentration:					47.2

Previous Stated Concentration PPM: 47.9

Percent variance from Stated: 2

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

Auditor: Al Clark
 Operator Signature: *Al Clark*

Date: December 13, 2017
 Location: McIntyre Center Edmonton



Calibration Gas Audit

CH4 / C3H8 Cylinder Gas

File No. 2017-484CGA

Company: Maxxam **Operators name:** Mike
Cylinder #: LL107207 **Conc CH4 (PPM)** 600/207 **Tolerance (%)** 2 **Certified By:** Praxair
Expiry Date: October 2025

Reference Calibrator and Gas:				Flow Measurement Device:	
Make/Model	<u>R&R MFC 201</u>			Make/Model	<u>Mesa Definer 220</u>
Serial Number	<u>AMU 1690</u>			Serial Number	<u>H-133034 / L-132702</u>
Last Verification Date	<u>December 13, 2017</u>			Temp. °C	<u>23.1 C</u>
Gas Type	<u>CH4</u>	Conc.	<u>990.4</u>	B.P.	<u>707 mmHg</u>
Cylinder Number	<u>5604875</u>	Expiry Date	<u>July 2021</u>		
Gas Type	<u>C3H8</u>	Conc.	<u>246.5</u>		
Cylinder Number	<u>XF003845B</u>	Expiry Date	<u>July 2022</u>		

Reference Analyzer:
Make/Model Teco 55i **Serial/AMU Number:** 2108
Instrument Settings **Zero:** N/A **Span:** N/A **Range:** 20.0
Last Calibration: **Date:** Dec 12/17 **C.F.** 1.000 **Done By:** Al Clark

Calibrator Flows (sccm)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	CH4	C3H8			CH4	C3H8
3500	0.0	0.00	0.00				
3618	80.4	13.28	12.77	0.02	45.00	598	209
3547	39.8	6.71	6.47	0.01	89.12	598	210
3560	19.8	3.35	3.26	0.01	179.80	602	213
Average Cylinder Concentration:						599	211

	CH4	C3H8
Previous Stated Concentration PPM:	<u>600</u>	<u>207</u>
Percent variance from Stated:	<u>0</u>	<u>2</u>

Cylinder gas tolerances based on CH4 only
 Meets Manufacturer Tolerance. Use manufacturers stated concentration **COMMENTS:**
 < =5% Outside Manufacturer Tolerance. Use manufacturers concentration
 > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Al Clark **Date:** December 13, 2017
Operator Signature: **Location:** McIntyre Center Edmonton



Calibration Gas Audit

NO Cylinder Gas

File No. 2017-487CGA

Company: Maxxam **Operators name:** Mike
Cylinder #: LL108015 **Conc (PPM)** 52.2/52.3 **Tolerance (%)** 2 **Certified By:** Praxair
Expiry Date: October 2020

Reference Calibrator and Gas:				Flow Measurement Device:	
Make/Model	<u>Teco 146i</u>			Make/Model	<u>Mesa Definer 220</u>
Serial Number	<u>AMU 1809</u>			Serial Number	<u>H-133034 / L-132702</u>
Last Verification Date	<u>December 13, 2017</u>			Temp. °C	<u>23.4 C</u>
Gas Type	<u>NO</u>	Conc.	<u>50.03</u>	B.P.	<u>707 mmHg</u>
Cylinder Number	<u>APEX 1223938</u>				
Expiry Date	<u>June 2020</u>				

Reference Analyzer:

Make/Model Teco 42i Serial/AMU Number: 1868
Instrument Settings Zero: 4.7 Span: 1.004 Range: 1.0
Last Calibration: Date: Dec12/17 C.F. 1.000 Done By: Al Clark

Calibrator Flows (sccm)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	NO	NOX			NO	NOX
5000	0.0	0.000	0.000				
4989	79.5	0.833	0.831	0.016	62.755	52.3	52.1
4995	39.6	0.417	0.417	0.008	126.136	52.6	52.6
4992	19.6	0.209	0.209	0.004	254.694	53.2	53.2
Average Cylinder Concentration:						52.7	52.7

<u>NO</u>	<u>NOx</u>
Previous Stated Concentration PPM: <u>52.2</u>	<u>52.3</u>
Percent variance from Stated: <u>1</u>	<u>1</u>

Cylinder gas tolerances based on NO only

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

Auditor: Al Clark Date: December 13, 2017
Operator Signature: *Al Clark* Location: McIntyre Center Edmonton

***APPENDIX III
MAXIMUM INSTANTANEOUS DATA***



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake South Continuous Monitoring Station - September 2018

SULPHUR DIOXIDE Instantaneous Maximum (SO₂ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.		
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59						
DAY 1	0	0	1	0	0	0	1	S1	0	0	0	0	S	0	0	0	0	0	0	0	0	0	1	0	0	1	0	23		
2	0	0	0	0	1	0	0	0	0	0	0	S	0	1	1	0	0	0	0	0	0	0	0	0	1	0	1	0	24	
3	0	0	0	0	0	0	0	0	0	0	S	1	1	1	1	1	1	0	1	1	1	1	1	1	0	1	1	1	24	
4	1	1	1	1	1	1	1	2	1	S	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	2	1	24	
5	0	0	0	0	0	0	1	1	C	C	C	C	C	C	1	1	1	1	1	1	1	0	0	0	0	0	1	0	24	
6	0	0	1	1	1	1	0	S	0	0	0	1	1	1	1	0	0	0	0	0	0	0	1	0	0	0	1	0	24	
7	0	0	0	0	0	0	S	1	0	0	1	1	1	1	1	0	0	0	1	0	1	1	1	0	0	0	1	0	24	
8	0	0	0	0	0	S	0	0	1	0	1	1	0	1	1	1	1	1	1	0	0	0	1	1	1	0	1	0	24	
9	0	0	0	0	S	0	0	0	0	0	1	1	1	1	P	0	1	0	0	1	1	1	0	0	0	0	1	0	23	
10	0	0	0	0	S	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
11	0	0	0	S	1	0	0	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	1	0	0	0	0	1	1	24
12	0	S	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	1	0	24
13	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	S	0	1	0	24	
14	0	1	0	0	0	1	0	0	1	1	1	1	0	0	0	1	0	0	0	0	0	1	0	S	0	0	1	0	24	
15	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	1	0	24
16	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	24
17	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	S	0	0	0	0	0	0	1	0	24
18	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	1	1	1	S	0	0	0	0	0	0	1	0	24
19	0	0	0	0	0	0	0	0	0	1	2	1	1	1	1	1	0	0	S	0	1	0	0	0	0	0	0	2	0	24
20	0	0	0	0	1	0	0	0	0	1	1	1	0	0	0	1	S	0	0	0	0	0	0	1	1	0	1	0	24	
21	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	S	0	1	0	0	0	0	0	1	1	0	1	0	24	
22	1	0	0	0	0	0	0	1	1	0	0	0	1	0	S	0	0	1	0	1	1	1	1	0	1	0	1	0	24	
23	0	1	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	1	0	1	0	0	1	0	24	
24	0	0	0	0	0	0	0	1	1	0	0	S	1	1	1	1	1	0	0	0	0	0	1	1	0	0	1	0	24	
25	1	0	0	1	1	0	1	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	24	
26	1	0	0	0	0	0	0	0	0	0	S	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1	1	24	
27	1	1	0	0	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	24	
28	0	1	1	1	1	0	0	0	S	1	0	0	1	1	0	0	0	0	1	0	0	0	1	0	0	0	1	0	24	
29	0	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	1	24
30	1	0	1	0	0	0	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	1	1	24
HOURLY MAX	1	1	1	1	1	1	1	2	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	24
HOURLY AVG	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	24

STATUS FLAG CODES

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

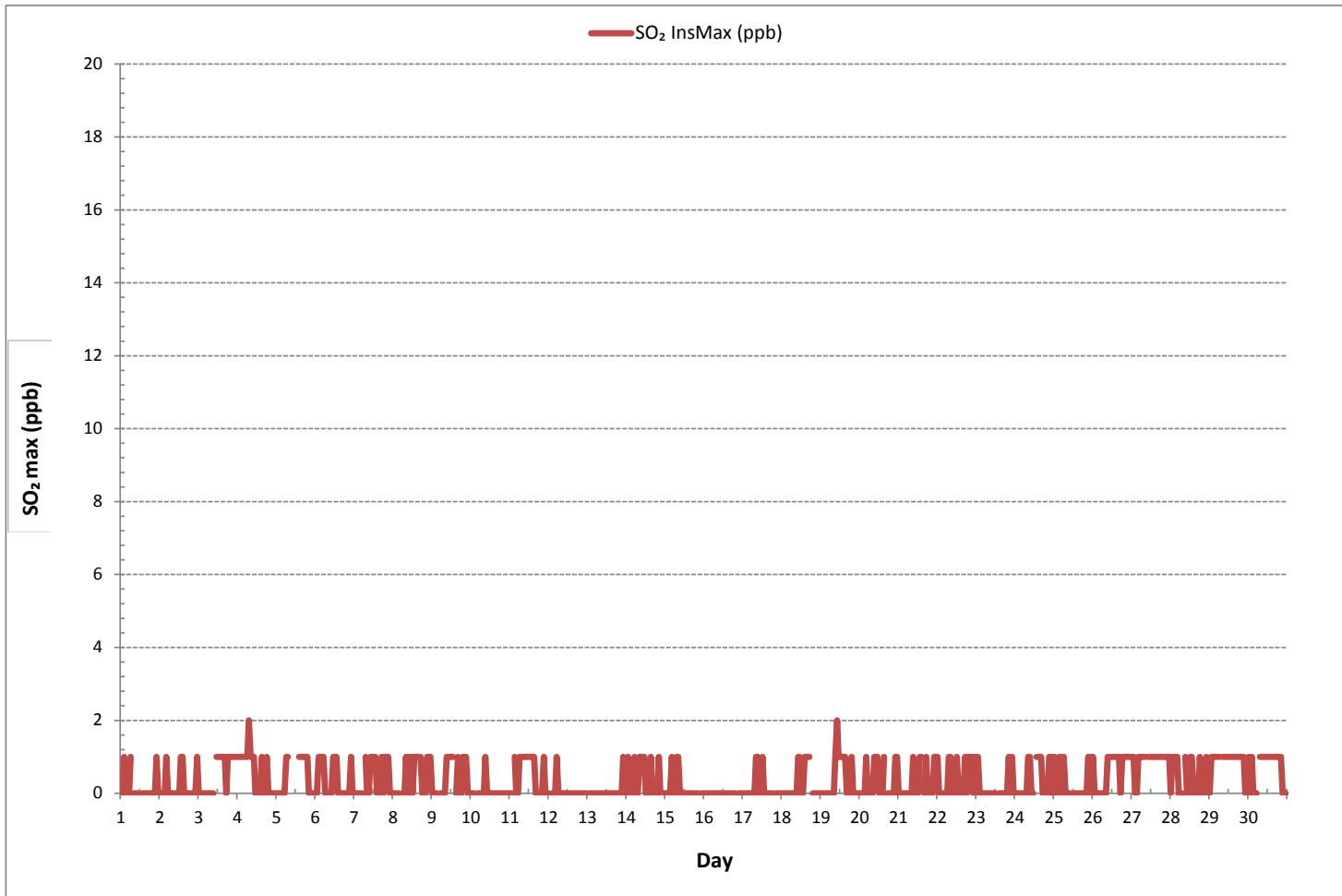
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	238
MAXIMUM INSTANTANEOUS VALUE:	2 ppb @ HOUR 7 ON DAY 4
IZS CALIBRATION TIME:	30 hrs
MONTHLY CALIBRATION TIME:	6 hrs
STANDARD DEVIATION:	0
OPERATIONAL TIME:	718 hrs



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake South Continuous Monitoring Station - September 2018

SULPHUR DIOXIDE Instantaneous Maximum (SO₂ ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake South Continuous Monitoring Station - September 2018

TOTAL REDUCED SULPHUR Instantaneous Maximum (TRS ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	1	1	1	1	1	1	1	S1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	23	
2	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	24	
3	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	24	
4	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	24	
5	1	1	1	1	1	1	1	1	C	C	C	C	C	C	C	1	1	0	1	1	1	1	0	1	0	1	1	24	
6	0	1	0	1	0	1	1	S	0	1	1	0	0	1	1	0	0	1	0	1	0	1	1	0	1	0	1	24	
7	1	0	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	24	
8	1	1	1	0	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0	1	24	
9	0	0	0	1	S	0	1	1	0	0	1	1	1	P	0	0	0	0	0	0	0	0	1	0	0	0	1	23	
10	1	1	0	S	0	0	1	0	0	1	0	0	1	0	0	1	0	1	0	0	0	1	0	0	1	0	0	24	
11	0	0	S	1	0	0	0	1	1	0	1	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0	1	24	
12	0	S	1	1	1	1	1	0	0	0	0	0	0	1	0	0	1	0	1	0	1	0	0	0	0	0	1	24	
13	S	0	1	0	1	0	0	1	1	1	1	0	0	0	0	1	0	0	0	0	0	0	0	1	S	0	1	24	
14	0	0	0	0	1	1	1	0	0	0	1	1	1	0	0	0	0	1	0	0	0	0	1	S	1	0	1	24	
15	0	0	0	0	1	0	1	1	0	1	1	1	0	0	1	1	0	0	1	0	1	0	1	S	1	0	0	24	
16	0	0	0	0	1	0	0	0	1	0	0	0	0	1	1	0	1	1	1	1	1	S	0	1	0	0	1	24	
17	1	1	1	0	1	1	0	0	1	0	1	0	1	0	0	0	1	0	0	S	0	0	0	0	0	0	0	24	
18	0	1	0	1	1	0	0	1	1	1	1	1	1	0	1	0	0	1	S	0	0	0	0	0	0	0	1	24	
19	0	1	0	1	0	0	0	0	1	0	1	0	0	0	0	0	1	S	1	0	0	1	1	0	0	0	1	24	
20	1	0	0	0	1	0	1	1	0	1	0	1	1	1	0	1	S	1	1	1	1	1	0	0	0	0	1	24	
21	0	1	1	1	1	0	1	1	1	1	0	0	0	0	S	0	1	0	1	0	1	1	1	1	1	0	1	24	
22	0	0	1	0	0	1	0	0	1	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	1	0	1	24	
23	0	1	1	0	1	0	1	0	1	1	1	1	1	S	1	1	0	1	1	1	1	0	1	1	1	0	1	24	
24	1	0	0	0	1	0	0	1	1	1	1	0	S	1	0	0	1	1	0	0	1	1	0	0	0	1	0	24	
25	1	0	0	0	0	0	1	1	1	0	0	S	1	0	0	0	0	1	0	0	1	1	1	1	1	0	1	24	
26	1	1	1	1	1	1	0	1	0	1	S	1	1	0	1	0	0	1	1	1	1	1	0	1	1	0	1	24	
27	1	1	1	1	1	1	1	0	1	S	1	0	1	0	1	1	1	0	1	1	1	1	1	1	1	0	1	24	
28	0	1	0	0	1	1	1	1	S	0	0	0	0	0	0	1	0	0	1	1	1	1	1	1	0	0	1	24	
29	0	1	1	1	0	0	1	S	0	1	0	1	1	1	1	1	1	0	1	0	0	0	1	0	1	0	1	24	
30	1	1	1	0	1	0	S	0	1	1	1	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	24
HOURLY MAX	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	24	
HOURLY AVG	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	24	

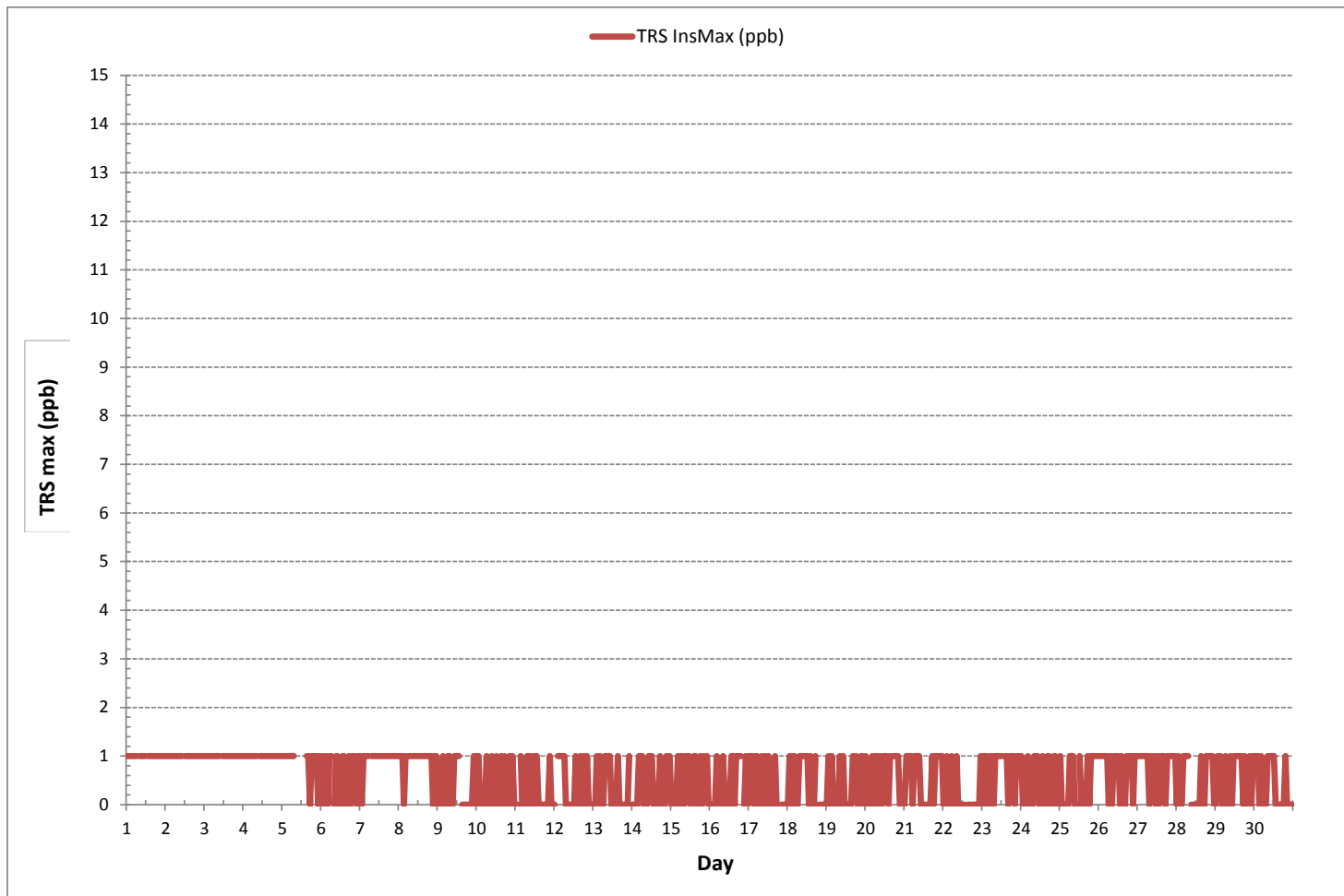
STATUS FLAG CODES

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

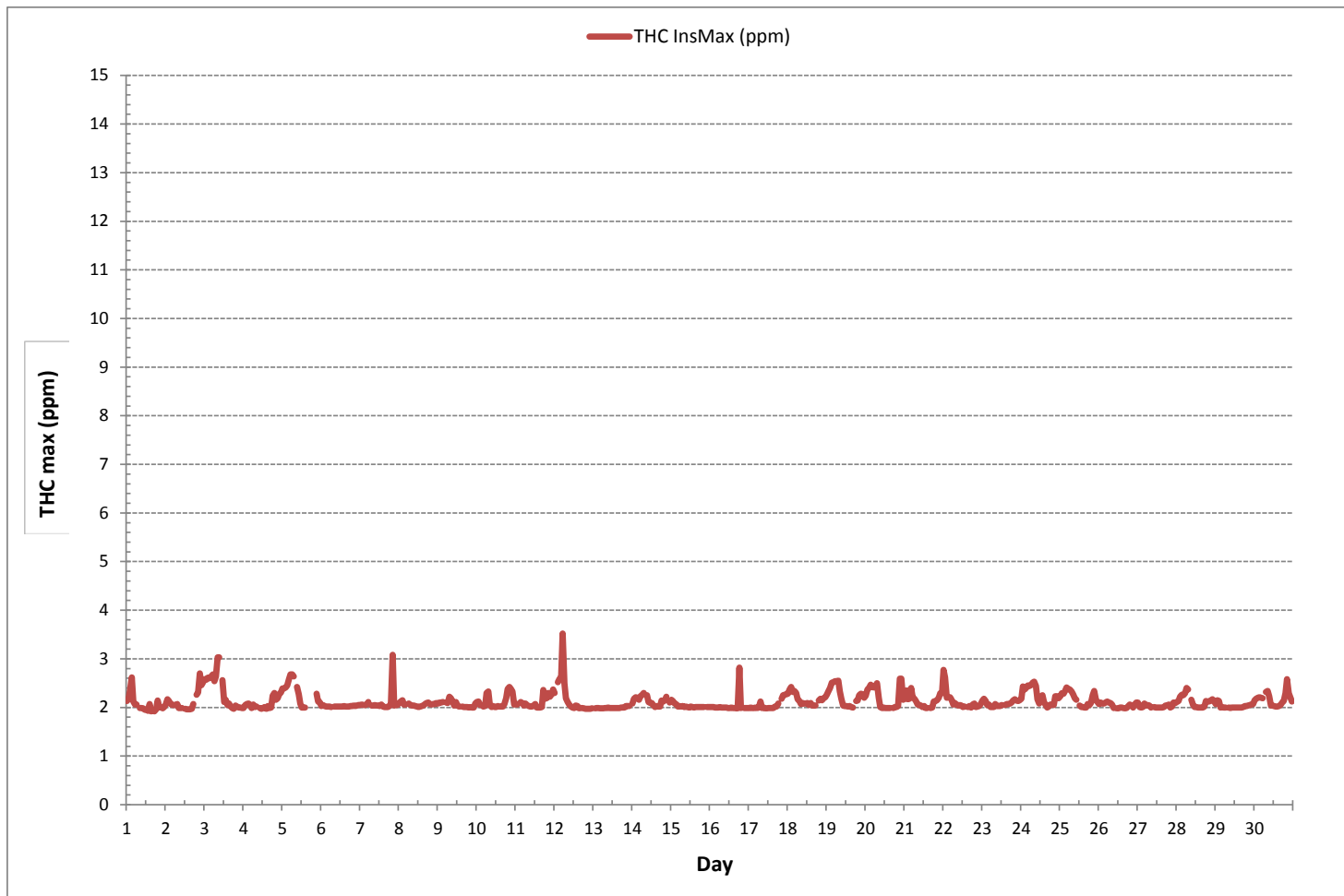
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	400
MAXIMUM INSTANTANEOUS VALUE:	1 ppb @ HOUR 0 ON DAY 1
IZS CALIBRATION TIME:	30 hrs
MONTHLY CALIBRATION TIME:	7 hrs
STANDARD DEVIATION:	0
OPERATIONAL TIME:	718 hrs

TOTAL REDUCED SULPHUR Instantaneous Maximum (TRS ppb)



TOTAL HYDROCARBONS Instantaneous Maximum (THC ppm)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake South Continuous Monitoring Station - September 2018

METHANE MAX Instantaneous Maximum (CH₄ ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	2.13	2.18	2.36	2.62	2.12	2.06	2.06	S1	1.99	1.99	1.98	1.95	S	1.93	2.07	1.92	1.94	1.92	1.96	2.14	2.00	2.01	1.98	2.01	1.92	2.62	2.06	23	
2	2.06	2.17	2.13	2.07	2.05	2.05	2.05	2.07	1.99	1.99	1.99	S	1.97	1.96	1.96	1.96	1.97	2.07	S1	2.26	2.31	2.70	2.46	2.52	1.96	2.70	2.13	23	
3	2.58	2.57	2.61	2.60	2.64	2.68	2.54	2.64	2.71	2.59	S	2.56	2.11	2.16	2.05	2.08	2.02	1.99	1.97	2.04	2.02	2.00	2.00	1.99	1.97	2.71	2.31	24	
4	1.99	2.05	2.07	2.08	2.05	1.99	2.06	2.01	2.02	S	1.99	1.97	1.99	2.01	1.97	2.03	1.99	2.00	2.24	2.30	2.16	2.19	2.27	2.31	1.97	2.31	2.08	24	
5	2.39	2.39	2.41	2.45	2.58	2.68	2.68	2.64	S	2.42	2.27	2.08	2.00	2.00	2.00	C	C	C	C	C	C	C	2.28	2.12	2.11	2.00	2.68	2.32	24
6	2.03	2.05	2.03	2.02	2.02	2.02	2.01	S	2.02	2.02	2.02	2.02	2.02	2.02	2.03	2.02	2.02	2.02	2.03	2.03	2.04	2.03	2.04	2.05	2.01	2.05	2.03	24	
7	2.05	2.06	2.05	2.05	2.06	2.11	S	2.04	2.04	2.05	2.04	2.04	2.03	2.06	2.02	2.01	2.01	2.03	2.07	2.05	2.04	2.05	2.05	2.01	2.11	2.04	2.04	24	
8	2.09	2.12	2.15	2.06	2.06	S	2.08	2.05	2.04	2.04	2.03	2.02	2.01	2.02	2.03	2.04	2.07	2.09	2.10	2.07	2.06	2.07	2.07	2.09	2.01	2.15	2.06	24	
9	2.08	2.10	2.10	2.11	S	2.10	2.09	2.22	2.19	2.12	2.04	2.11	2.04	2.02	P	2.02	2.02	2.01	2.01	2.01	2.00	2.01	2.00	2.08	2.00	2.22	2.07	23	
10	2.11	2.12	2.05	S	2.02	2.03	2.30	2.33	2.05	2.01	2.03	2.01	2.01	2.03	2.02	2.02	2.02	2.07	2.19	2.38	2.42	2.38	2.33	2.06	2.01	2.42	2.13	24	
11	2.08	2.06	S	2.11	2.09	2.04	2.08	2.05	2.03	2.02	2.02	2.04	2.07	2.00	2.00	2.00	2.01	2.06	2.18	2.19	2.30	2.22	2.26	2.37	2.00	2.37	2.10	24	
12	2.30	S	2.52	2.59	2.61	2.70	2.50	2.19	2.11	2.06	2.02	2.00	1.99	2.04	2.03	1.98	1.99	1.99	1.98	1.97	1.97	1.97	1.97	1.98	1.97	2.70	2.15	24	
13	S	1.98	1.99	1.99	1.98	1.98	1.98	1.99	1.99	2.00	1.99	1.99	1.99	1.99	1.99	2.03	1.98	1.99	2.00	2.00	2.03	2.03	2.03	S	1.98	2.03	2.00	24	
14	2.08	2.18	2.21	2.20	2.16	2.23	2.26	2.30	S1	2.25	2.11	2.09	2.09	2.04	2.01	2.03	2.02	2.02	2.14	2.12	2.15	2.22	S	2.10	2.01	2.30	2.14	23	
15	2.16	2.13	2.08	2.07	2.02	2.03	2.02	2.03	2.01	2.02	2.01	2.00	2.02	2.01	2.00	2.01	2.01	2.01	2.01	2.01	2.01	S	2.01	2.01	2.00	2.16	2.03	24	
16	2.01	2.01	2.01	2.00	2.00	2.00	2.01	2.00	2.00	2.00	2.00	1.99	1.99	2.00	1.99	1.99	1.98	1.98	1.99	1.99	S	1.99	1.99	1.98	1.98	2.01	2.00	24	
17	1.99	2.00	1.99	1.99	2.00	1.99	2.00	2.12	1.99	2.00	1.98	1.98	1.99	1.99	1.99	1.99	2.02	2.02	2.08	S	2.18	2.25	2.26	2.27	1.98	2.27	2.05	24	
18	2.28	2.37	2.42	2.32	2.34	2.30	2.17	2.13	2.07	2.09	2.08	2.08	2.09	2.05	2.09	2.04	2.04	S	2.14	2.18	2.15	2.19	2.21	2.04	2.42	2.17	24		
19	2.26	2.34	2.40	2.51	2.52	2.54	2.54	2.55	2.33	2.18	2.04	2.03	2.03	2.02	2.03	2.01	2.00	S	2.13	2.14	2.25	2.28	2.27	2.20	2.00	2.55	2.24	24	
20	2.24	2.37	2.40	2.47	2.42	2.41	2.43	2.50	2.20	2.01	1.99	2.00	1.99	1.99	1.99	S	1.99	1.99	2.01	2.01	2.03	2.10	2.15	2.16	1.99	2.50	2.17	24	
21	2.18	2.35	2.17	2.18	2.18	2.21	2.18	2.13	2.06	2.05	2.04	2.01	2.03	1.99	1.99	S	1.99	2.00	2.12	2.13	2.15	2.20	2.29	2.29	1.99	2.35	2.13	24	
22	2.30	2.41	2.20	2.21	2.21	2.16	2.06	2.09	2.06	2.04	2.05	2.04	2.01	2.02	S	2.01	2.03	2.00	2.06	2.08	2.01	2.02	2.03	2.07	2.00	2.41	2.09	24	
23	2.14	2.18	2.13	2.05	2.06	2.01	2.01	2.01	2.07	2.03	2.03	2.03	2.05	S	2.05	2.07	2.07	2.08	2.10	2.14	2.17	2.14	2.13	2.15	2.01	2.18	2.08	24	
24	2.18	2.43	2.37	2.40	2.45	2.44	2.46	2.51	2.53	2.44	2.17	2.08	S	2.25	2.11	2.05	2.00	2.02	2.06	2.06	2.05	2.23	2.23	2.19	2.00	2.53	2.25	24	
25	2.23	2.29	2.28	2.34	2.41	2.38	2.37	2.33	2.27	2.19	2.16	S	2.04	2.01	2.01	2.00	2.00	2.07	2.05	2.09	2.25	2.34	2.16	2.11	2.00	2.41	2.19	24	
26	2.07	2.10	2.08	2.08	2.10	2.12	2.10	2.09	2.06	1.99	S	1.98	1.98	2.00	2.00	1.99	1.98	1.99	2.03	2.06	2.04	2.00	2.06	2.10	1.98	2.12	2.04	24	
27	2.10	2.01	2.00	2.01	2.08	2.04	2.05	2.04	2.00	S	2.01	2.00	2.00	2.00	2.00	2.00	2.01	2.04	2.04	2.06	2.00	2.02	2.10	2.09	2.00	2.10	2.03	24	
28	2.11	2.13	2.22	2.26	2.25	2.29	2.40	2.37	S	2.16	2.05	2.01	2.01	2.00	2.00	2.00	2.00	2.02	2.13	2.12	2.12	2.15	2.17	2.12	2.00	2.40	2.13	24	
29	2.07	2.15	2.13	2.00	2.01	2.00	2.00	S	2.00	1.99	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.01	2.03	2.03	2.04	2.05	2.06	2.07	1.99	2.15	2.03	24	
30	2.15	2.18	2.20	2.21	2.20	2.19	S	2.32	2.34	2.23	2.04	2.04	2.03	2.02	2.02	2.02	2.05	2.10	2.13	2.29	2.58	2.29	2.21	2.12	2.02	2.58	2.17	24	
HOURLY MAX	2.58	2.57	2.61	2.62	2.64	2.70	2.68	2.64	2.71	2.59	2.27	2.56	2.11	2.25	2.11	2.08	2.07	2.10	2.24	2.38	2.58	2.70	2.46	2.52					
HOURLY AVG	2.15	2.19	2.20	2.21	2.20	2.20	2.20	2.21	2.12	2.11	2.04	2.04	2.02	2.02	2.02	2.01	2.01	2.02	2.07	2.10	2.13	2.15	2.13	2.13					

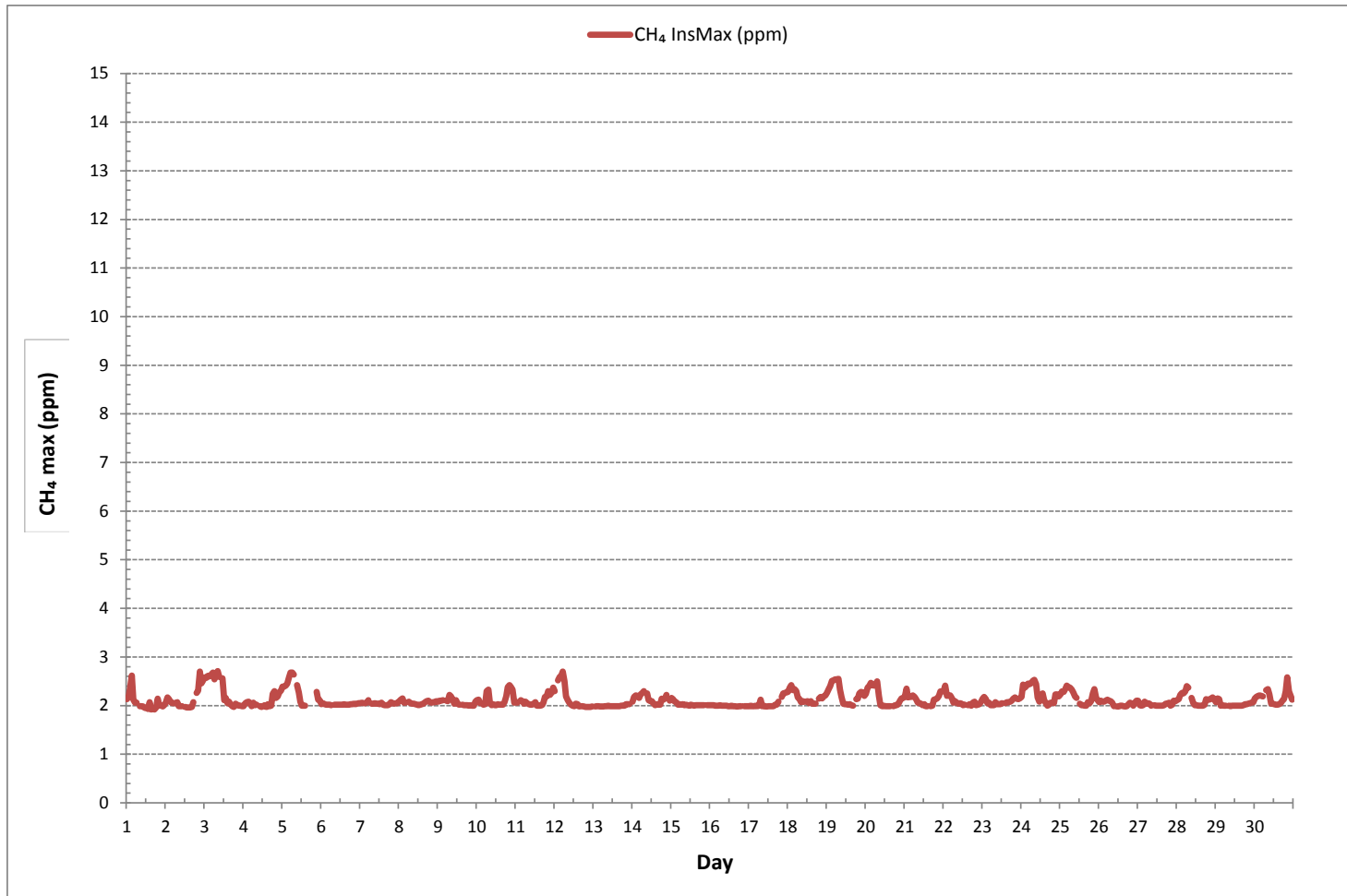
STATUS FLAG CODES

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:	2.71 ppm @ HOUR 8 ON DAY 3
IZS CALIBRATION TIME:	31 hrs
MONTHLY CALIBRATION TIME:	6 hrs
STANDARD DEVIATION:	0.16
OPERATIONAL TIME:	716 hrs

METHANE MAX Instantaneous Maximum (CH₄ ppm)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake South Continuous Monitoring Station - September 2018

NON-METHANE HYDROCARBONS Instantaneous Maximum (NMHC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.							
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59											
DAY 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S1	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23		
2	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	S1	0.00	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		
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24		
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24		
5	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	C	C	C	C	C	C	C	0.00	0.00	0.00	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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24		
7	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24		
8	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24		
9	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	P	0.00	0.00	0.00	0.00	0.00	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		
10	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24		
11	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24		
12	0.00	S	0.00	0.00	0.00	0.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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	
13	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24	
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S1	0.00	0.00	0.00	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	23	
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	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.84	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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	24
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	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
20	0.00	0.00	0.00	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	0.56	0.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
21	0.00	0.00	0.00	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
22	0.52	0.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
30	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
HOURLY MAX	0.52	0.36	0.00	0.00	0.29	0.84	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.38	0.84	0.00	0.26	0.56	0.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
HOURLY AVG	0.02	0.01	0.00	0.00	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.00	0.01	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24

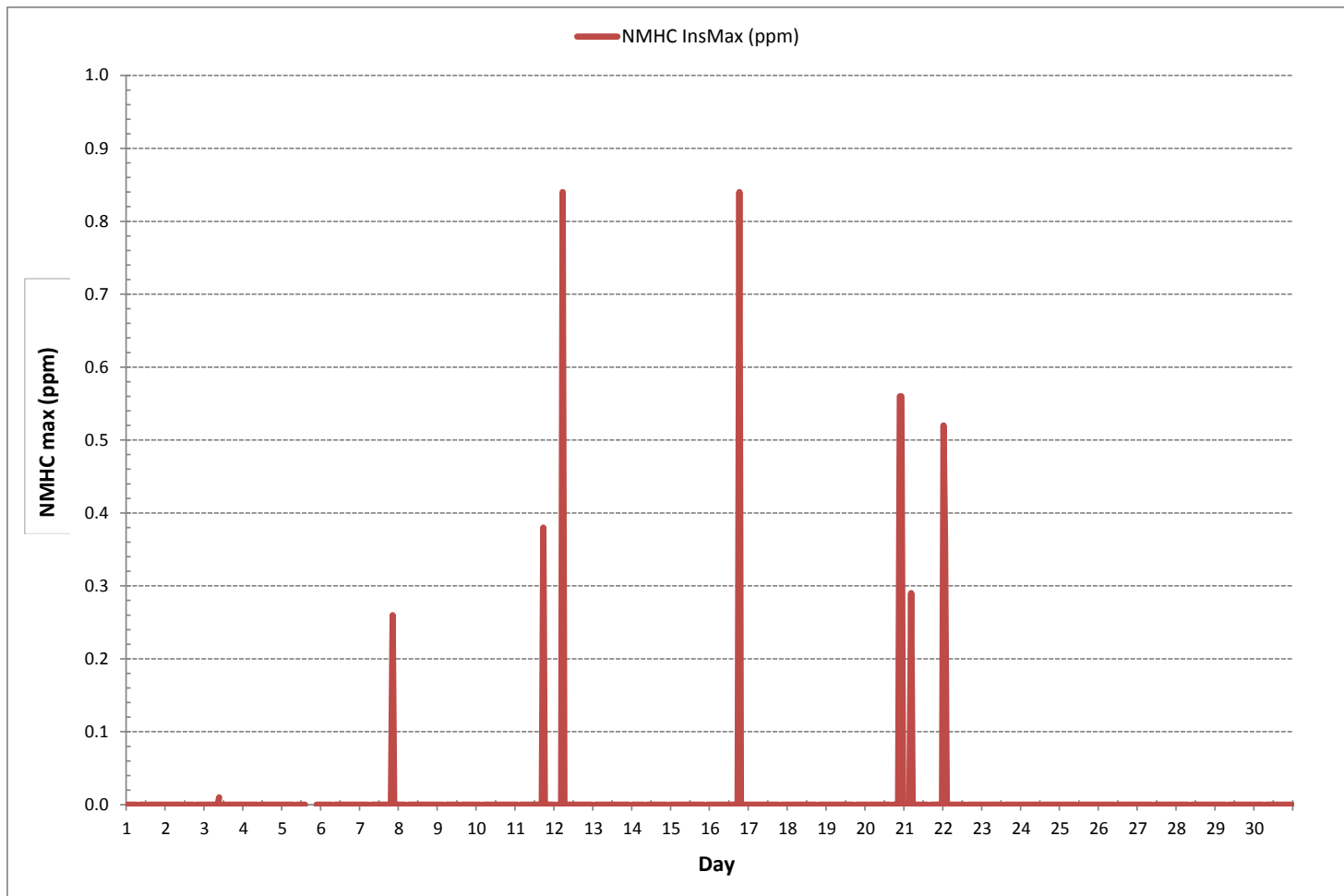
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	10
MAXIMUM INSTANTANEOUS VALUE:	0.84 ppm @ HOUR 5 ON DAY 12
IZS CALIBRATION TIME:	31 hrs
MONTHLY CALIBRATION TIME:	6 hrs
STANDARD DEVIATION:	0.06
OPERATIONAL TIME:	716 hrs

NON-METHANE HYDROCARBONS Instantaneous Maximum (NMHC ppm)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake South Continuous Monitoring Station - September 2018

OXIDES OF NITROGEN Instantaneous Maximum (NO_x ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY																													
1	3	2	2	3	3	3	3	S1	10	3	3	2	S	5	2	1	1	1	1	3	2	2	2	2	2	1	10	3	23
2	3	3	3	3	2	2	3	3	2	3	3	S	5	3	2	2	1	2	4	4	5	4	4	4	4	1	5	3	24
3	4	6	8	8	7	3	4	7	12	13	S	10	4	4	4	4	5	3	2	4	4	3	3	2	2	2	13	5	24
4	3	3	4	4	3	2	4	4	4	S	4	2	2	2	2	3	10	2	81	4	5	5	3	2	2	2	81	7	24
5	6	13	3	6	2	3	8	7	C	C	C	C	C	C	C	C	C	3	6	79	43	27	4	2	2	2	79	14	24
6	3	3	2	2	4	4	5	S	11	13	7	3	7	4	11	4	3	6	9	4	3	2	3	3	2	2	13	5	24
7	3	3	2	5	3	11	S	9	4	3	11	2	3	3	5	3	3	10	14	7	6	2	2	5	2	2	14	5	24
8	4	4	5	3	4	S	9	4	4	3	4	2	2	2	5	2	4	3	2	4	4	4	5	2	2	2	9	4	24
9	2	2	2	2	S	5	3	4	4	4	11	4	3	2	P	3	3	3	3	2	3	2	2	1	1	1	11	3	23
10	3	2	3	S	4	3	6	7	2	2	9	4	5	4	5	6	5	4	2	4	2	2	2	2	2	2	9	4	24
11	2	2	S	5	4	3	5	5	4	3	3	3	5	2	2	7	5	6	4	3	3	19	7	6	2	19	5	24	
12	10	S	11	12	16	22	11	7	2	3	4	2	4	57	12	2	1	2	2	2	1	1	1	1	1	1	57	8	24
13	S	3	2	2	1	4	3	3	4	1	13	1	1	1	2	1	2	2	1	2	15	1	2	S	1	1	15	3	24
14	8	6	5	3	4	7	9	9	9	10	5	3	2	3	4	3	6	2	4	6	7	7	S	5	2	10	6	24	
15	4	6	8	8	4	3	3	4	5	5	6	2	3	4	3	3	4	4	5	4	3	S	5	4	2	8	4	24	
16	3	3	3	2	22	2	3	3	3	4	9	4	2	3	3	3	3	21	4	3	S	4	3	4	2	22	5	24	
17	3	3	3	3	4	7	10	9	3	2	13	2	2	1	6	2	1	2	8	S	4	3	3	3	1	1	13	4	24
18	3	4	3	3	3	5	5	4	5	5	4	3	3	2	11	2	3	3	S	15	4	6	7	7	2	15	5	24	
19	15	6	6	9	5	4	15	19	5	4	8	5	3	1	3	3	6	S	14	32	13	9	6	4	1	32	8	24	
20	3	4	14	9	12	15	38	29	10	6	2	8	4	2	2	18	S	25	12	6	3	8	5	6	2	38	10	24	
21	2	4	5	10	36	8	16	8	3	3	2	2	2	2	S	3	2	5	14	10	19	23	18	2	2	36	9	24	
22	24	13	4	6	7	7	8	10	3	3	3	6	1	5	S	19	3	5	7	6	5	5	2	6	1	24	7	24	
23	1	1	2	4	6	3	2	9	2	7	4	2	1	S	4	2	6	2	2	21	11	3	3	3	1	21	4	24	
24	6	7	16	10	25	14	10	11	19	10	6	5	S	8	3	3	3	3	4	3	5	5	3	5	3	25	8	24	
25	7	6	6	7	5	10	10	16	15	8	7	S	5	4	2	2	2	3	8	10	3	9	5	6	2	16	7	24	
26	3	4	3	3	4	5	7	14	5	2	S	4	2	19	23	2	2	1	2	3	3	2	2	3	1	23	5	24	
27	3	1	1	2	3	3	7	5	2	S	4	4	2	2	2	2	3	3	5	2	2	4	4	1	7	3	24		
28	4	7	7	6	10	10	14	17	S	7	2	1	3	1	1	2	1	3	9	6	5	7	6	5	1	17	6	24	
29	4	4	6	3	2	1	2	S	3	10	2	6	5	7	9	1	1	2	4	4	3	4	3	3	1	10	4	24	
30	7	7	8	7	7	5	S	7	9	8	3	8	3	3	2	2	2	2	3	5	6	6	7	10	2	10	6	24	
HOURLY MAX	24	13	16	12	36	22	38	29	19	13	13	10	7	57	23	19	10	25	81	79	43	27	23	18					
HOURLY AVG	5	5	5	5	7	6	8	9	6	5	6	4	3	6	5	4	3	4	8	9	6	6	4	4					

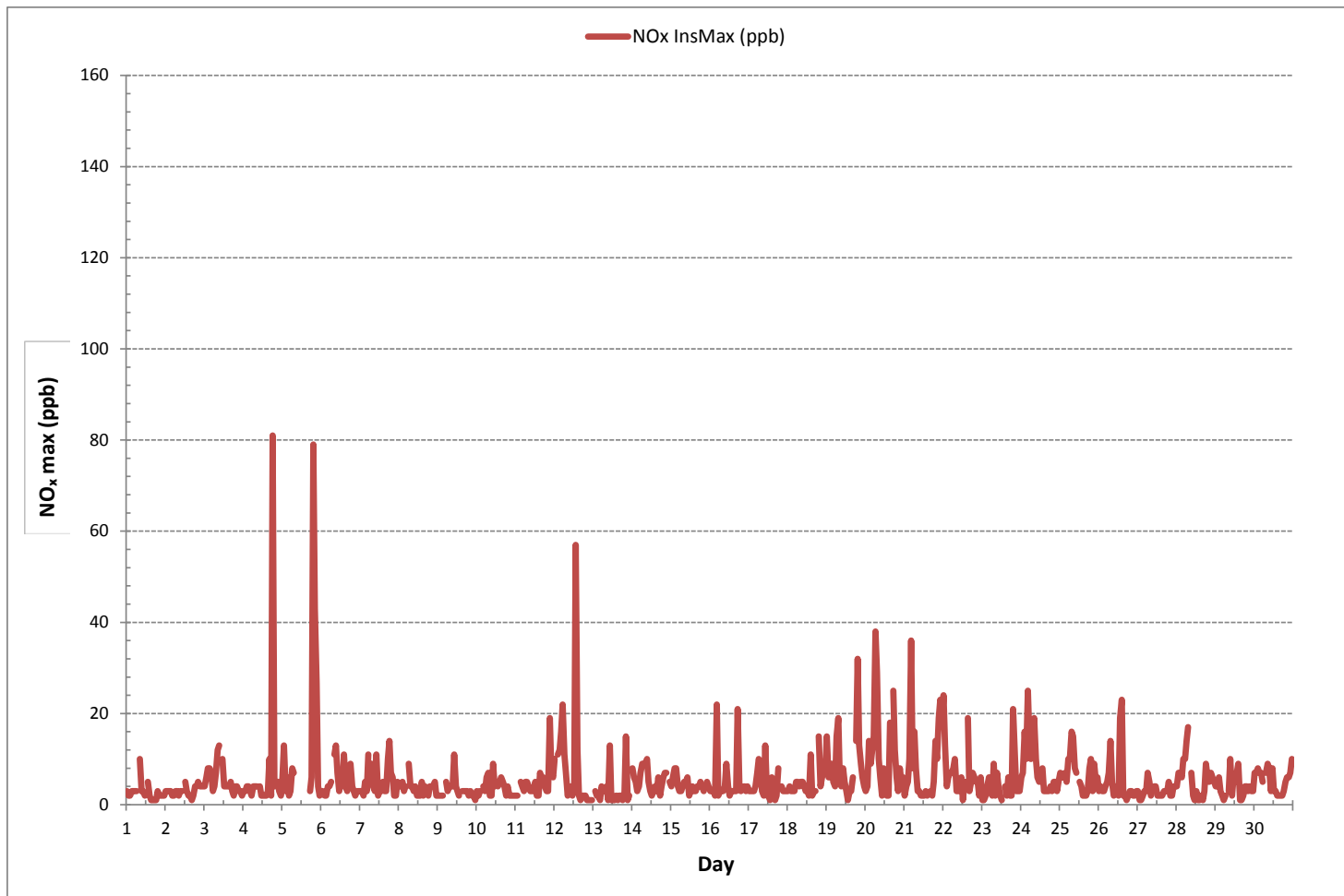
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	679
MAXIMUM INSTANTANEOUS VALUE:	81 ppb @ HOUR 18 ON DAY 4
IZS CALIBRATION TIME:	30 hrs
MONTHLY CALIBRATION TIME:	9 hrs
STANDARD DEVIATION:	7
OPERATIONAL TIME:	718 hrs

OXIDES OF NITROGEN Instantaneous Maximum (NO_x ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake South Continuous Monitoring Station - September 2018

NITRIC OXIDE Instantaneous Maximum (NO ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.																						
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.																							
DAY																																																		
1	0	0	0	0	0	0	0	S1	1	1	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	23																					
2	0	0	0	0	0	0	1	1	1	1	1	S	1	1	1	0	0	0	0	1	1	1	1	1	0	1	1	24																						
3	1	4	4	5	3	1	2	4	7	7	S	3	1	1	1	1	1	0	0	0	0	0	0	0	0	0	7	2	24																					
4	0	0	0	0	0	0	1	2	1	S	0	0	1	1	0	3	5	0	62	0	1	2	1	0	0	62	3	24																						
5	5	10	1	4	1	2	5	5	C	C	C	C	C	C	C	C	0	0	55	31	17	2	1	0	55	9	24																							
6	2	1	1	1	1	1	3	S	8	4	4	1	2	1	3	2	1	7	2	1	1	1	1	1	1	8	2	24																						
7	1	1	0	2	1	4	S	2	1	1	4	2	1	1	1	1	0	4	4	2	1	0	0	1	0	4	2	24																						
8	1	1	2	1	1	S	3	2	2	1	2	1	1	1	4	0	0	0	0	0	0	0	0	0	0	4	1	24																						
9	0	0	0	0	S	0	1	1	1	1	2	10	1	1	1	P	1	1	1	0	0	0	0	0	0	10	1	23																						
10	2	0	1	S	0	1	2	3	1	1	3	2	9	2	1	7	3	2	0	2	0	0	0	0	0	9	2	24																						
11	0	0	S	0	0	0	1	1	1	1	1	1	2	1	0	3	7	2	0	1	1	12	4	3	0	12	2	24																						
12	6	S	6	8	12	17	3	1	1	2	2	1	2	59	8	1	2	3	1	0	0	0	0	0	0	59	6	24																						
13	S	0	0	0	0	1	1	1	3	0	3	0	2	0	1	0	1	0	0	0	9	0	0	S	0	9	1	24																						
14	3	2	1	1	0	2	2	3	4	5	2	1	1	2	2	1	3	0	1	1	2	1	S	1	0	5	2	24																						
15	2	2	3	2	1	1	1	2	2	2	6	1	1	2	1	2	2	2	2	3	2	S	1	1	1	6	2	24																						
16	2	2	1	1	10	1	2	1	1	3	6	2	1	2	1	1	2	13	2	2	S	2	1	2	1	13	3	24																						
17	2	1	1	1	2	2	5	3	1	1	12	1	1	1	6	1	0	1	3	S	2	1	1	1	0	12	2	24																						
18	0	1	0	0	0	2	2	1	2	2	2	1	1	1	6	2	1	1	S	5	1	4	4	4	0	6	2	24																						
19	10	4	3	4	2	2	12	17	3	2	7	3	1	1	1	1	2	S	4	29	4	2	2	1	1	29	5	24																						
20	0	2	11	5	8	10	28	23	4	6	1	2	1	1	1	8	S	16	5	2	1	2	1	1	0	28	6	24																						
21	0	0	1	2	22	0	7	3	1	2	1	1	1	2	1	S	1	1	0	7	2	9	10	10	0	22	4	24																						
22	14	3	1	1	1	1	2	5	2	3	2	4	1	4	S	10	1	3	2	9	0	4	0	5	0	14	3	24																						
23	0	0	0	2	2	1	1	4	1	1	4	1	0	S	0	0	3	0	0	12	4	1	1	0	0	12	2	24																						
24	3	3	8	3	16	9	7	9	12	5	2	2	S	2	1	0	0	0	0	2	1	0	1	0	0	16	4	24																						
25	2	4	1	3	1	4	5	12	8	4	3	S	2	1	0	2	0	0	0	4	0	0	0	0	0	12	2	24																						
26	0	0	0	0	0	0	1	6	1	1	S	1	0	13	12	0	0	0	0	0	0	0	0	0	0	13	2	24																						
27	0	0	0	0	0	1	0	0	0	S	1	3	1	1	1	0	0	0	1	0	0	0	1	0	0	3	0	24																						
28	1	3	3	2	3	2	3	7	S	2	1	0	1	0	0	1	0	0	0	0	0	0	1	1	0	7	1	24																						
29	1	0	2	0	0	0	1	S	0	4	0	7	1	3	5	0	0	0	1	0	0	1	1	1	0	7	1	24																						
30	2	2	1	0	0	0	S	2	3	3	2	3	1	1	1	1	0	0	0	1	2	1	2	3	0	3	1	24																						
HOURLY MAX	14	10	11	8	22	17	28	23	12	7	12	7	9	59	12	10	7	16	62	55	31	17	10	10																										
HOURLY AVG	2	2	2	2	3	2	4	4	3	2	3	2	1	4	2	2	1	2	3	5	2	2	1	1																										

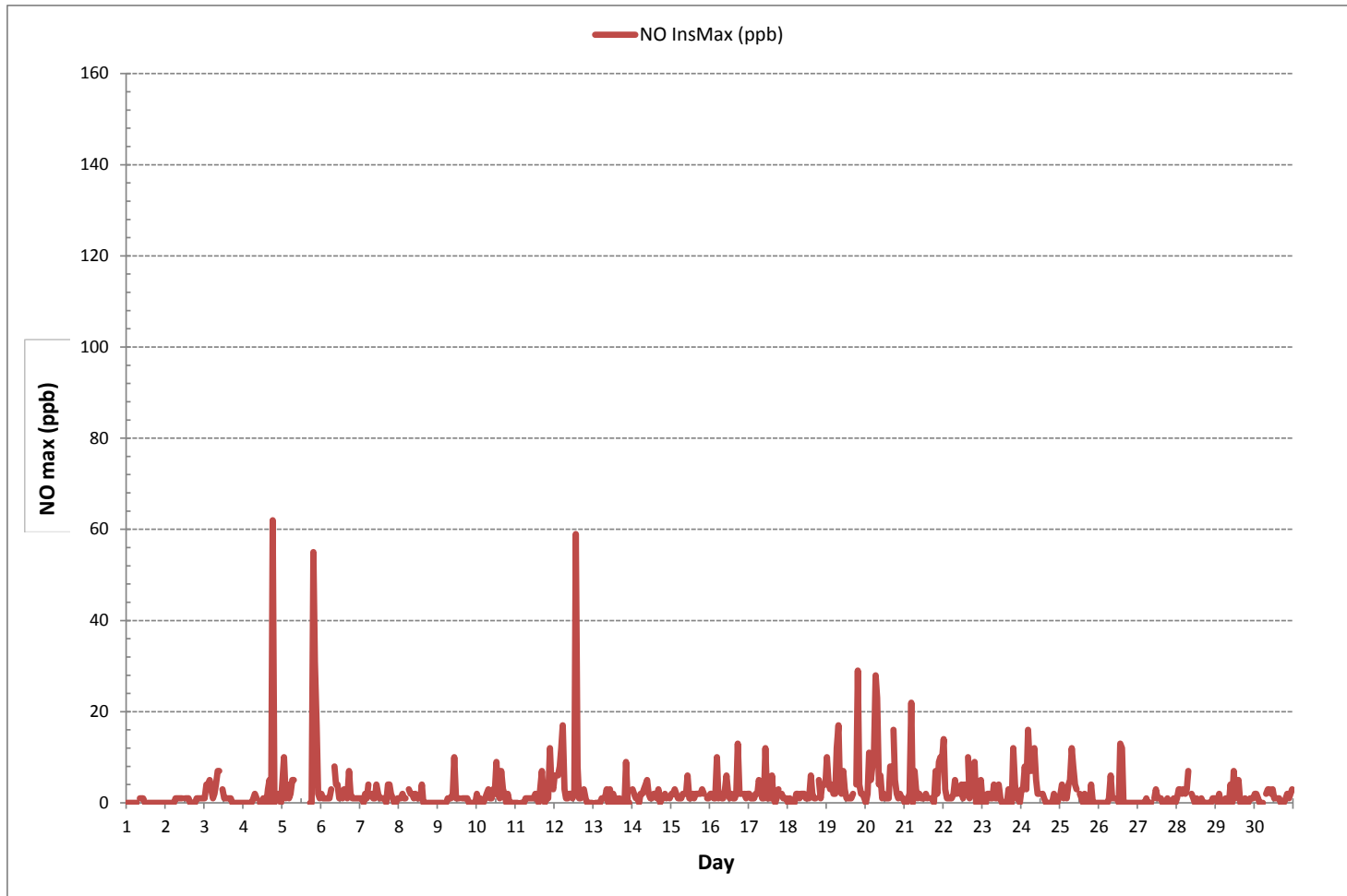
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	481
MAXIMUM INSTANTANEOUS VALUE:	62 ppb @ HOUR 18 ON DAY 4
IZS CALIBRATION TIME:	30 hrs
MONTHLY CALIBRATION TIME:	9 hrs
OPERATIONAL TIME:	718 hrs
STANDARD DEVIATION:	5

NITRIC OXIDE Instantaneous Maximum (NO ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake South Continuous Monitoring Station - September 2018

NITROGEN DIOXIDE Instantaneous Maximum (NO₂ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.					
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59									
DAY																																	
1	3	2	2	3	3	3	3	S1	9	3	2	1	S	4	1	1	1	1	1	2	2	2	2	2	2	1	9	2	23				
2	3	3	3	3	2	2	2	2	1	2	2	S	4	3	2	1	1	1	3	4	4	3	3	3	3	1	4	2	24				
3	3	3	4	4	4	2	3	4	7	7	S	8	3	4	4	3	5	3	2	4	3	3	2	2	2	2	8	4	24				
4	3	3	4	4	3	2	3	3	2	S	3	1	2	2	1	1	5	1	22	3	4	4	4	2	1	1	22	3	24				
5	2	4	2	2	1	2	3	3	C	C	C	C	C	C	C	C	C	3	6	49	13	13	2	2	1	49	7	24					
6	2	3	1	2	3	3	3	S	5	9	3	2	5	3	9	3	2	3	7	3	2	2	2	2	1	9	3	24					
7	2	2	1	3	2	7	S	7	3	2	7	2	2	2	4	2	2	7	11	5	5	2	2	3	1	11	4	24					
8	3	3	4	2	3	S	6	3	3	2	2	2	2	2	2	2	3	3	2	4	4	4	4	5	2	6	3	24					
9	2	2	2	2	S	5	2	3	2	3	6	3	2	1	P	2	2	2	2	2	2	2	2	1	1	6	2	23					
10	2	2	2	S	4	2	4	4	1	2	6	3	2	3	4	3	3	2	2	3	1	2	2	2	1	6	3	24					
11	2	2	S	5	4	3	4	4	3	2	2	2	3	2	2	4	2	4	4	3	3	7	4	3	2	7	3	24					
12	4	S	5	3	4	6	9	6	2	2	2	1	2	16	6	1	1	1	1	1	1	0	0	1	0	16	3	24					
13	S	3	1	1	1	3	2	2	3	1	11	1	1	1	1	1	1	1	1	1	6	1	1	S	1	11	2	24					
14	5	5	4	3	4	6	7	6	6	5	3	3	2	1	2	2	3	1	3	6	5	5	S	5	1	7	4	24					
15	3	4	5	6	3	3	2	2	4	3	2	2	2	2	2	3	2	3	2	2	2	S	4	2	2	6	3	24					
16	2	2	3	2	13	1	2	1	2	2	4	2	1	2	2	2	2	9	2	2	S	4	2	3	1	13	3	24					
17	2	2	2	3	3	6	7	7	7	2	2	2	1	1	1	2	1	1	2	6	S	3	2	2	2	1	7	3	24				
18	3	4	3	2	2	3	3	3	3	3	2	2	2	1	6	1	3	2	S	10	3	3	3	3	1	10	3	24					
19	5	3	3	4	3	2	4	3	3	3	2	2	2	1	2	2	5	S	10	9	9	8	5	3	1	10	4	24					
20	3	3	6	5	4	5	11	8	6	2	2	7	2	1	1	10	S	14	8	4	2	6	4	5	1	14	5	24					
21	2	4	5	9	14	7	10	6	3	2	2	1	1	2	1	S	2	1	5	8	9	11	14	10	1	14	6	24					
22	12	10	4	6	7	6	6	6	2	2	2	5	1	3	S	9	2	4	5	3	5	2	2	2	1	12	5	24					
23	1	1	1	3	4	2	2	5	1	5	2	1	1	S	3	2	3	1	2	10	7	3	2	3	1	10	3	24					
24	5	5	8	7	10	5	5	4	7	5	4	3	S	6	3	2	2	3	3	3	4	4	3	5	2	10	5	24					
25	6	4	6	6	5	7	6	6	8	4	4	S	4	3	1	2	2	3	8	8	3	8	5	6	1	8	5	24					
26	3	4	3	3	4	5	7	10	4	2	S	4	2	11	19	2	2	1	2	3	3	2	2	3	1	19	4	24					
27	3	1	1	1	3	3	7	5	2	S	3	2	1	2	2	1	2	3	5	1	2	3	4	1	7	3	24						
28	4	5	6	6	8	9	12	11	S	5	2	1	2	1	1	1	1	2	9	6	5	7	6	4	1	12	5	24					
29	3	4	5	3	2	1	2	S	2	5	1	2	4	3	4	1	1	2	4	4	3	3	3	3	1	5	3	24					
30	5	6	7	6	6	5	S	5	5	5	2	5	3	2	1	2	2	2	3	5	4	5	5	7	1	7	4	24					
HOURLY MAX	12	10	8	9	14	9	12	11	9	9	11	8	5	16	19	10	5	14	22	49	13	13	14	10									
HOURLY AVG	3	3	4	4	4	4	5	5	4	3	3	3	2	3	3	2	2	3	5	6	4	4	3	3									

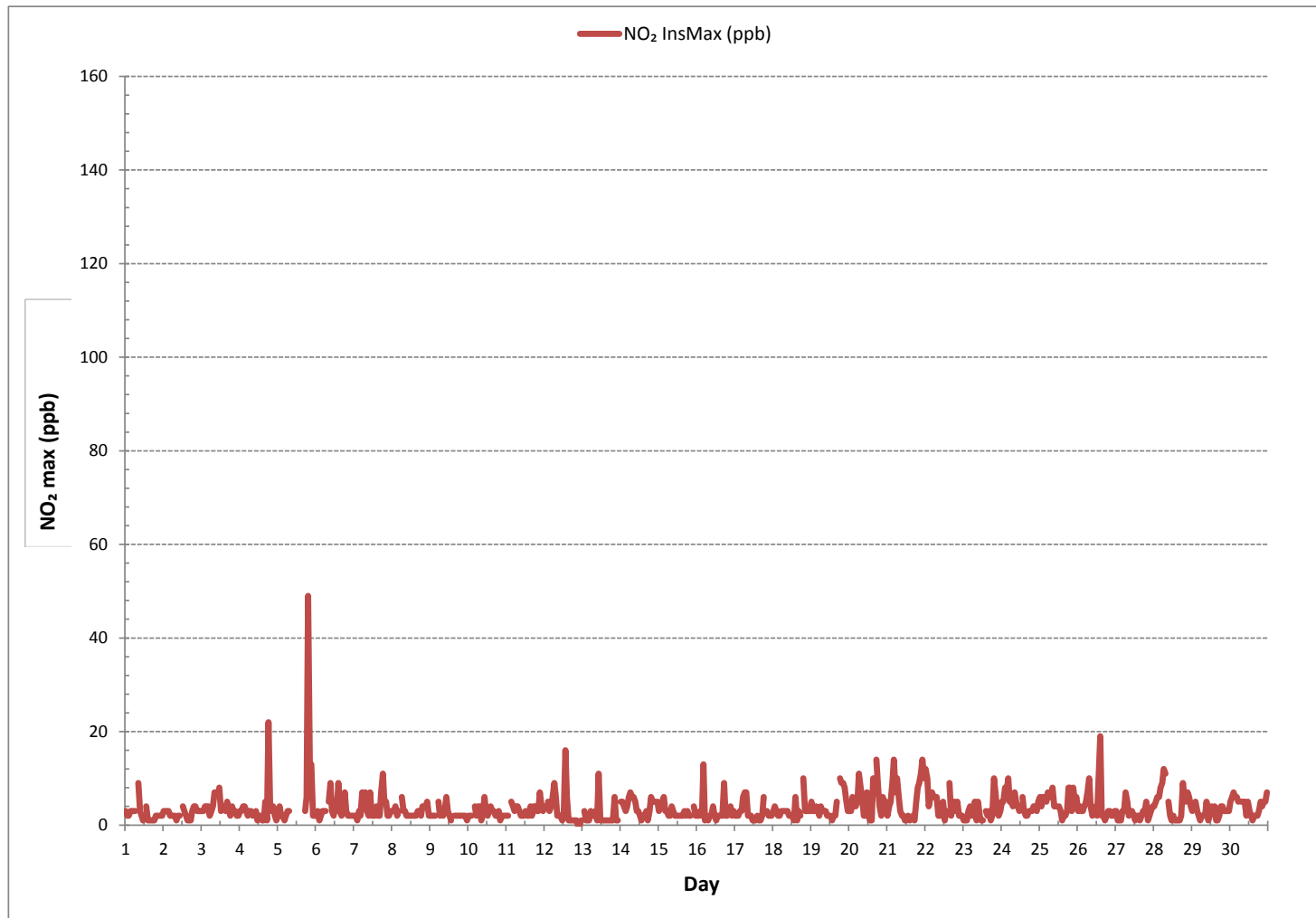
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	677
MAXIMUM INSTANTANEOUS VALUE:	49 ppb @ HOUR 19 ON DAY 5
	VAR-VARIOUS
IZS CALIBRATION TIME:	30 hrs
MONTHLY CALIBRATION TIME:	9 hrs
STANDARD DEVIATION:	3
OPERATIONAL TIME:	718 hrs

NITROGEN DIOXIDE Instantaneous Maximum (NO₂ ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake South Continuous Monitoring Station - September 2018

OZONE Instantaneous Maximum (O₃ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	20.0	20.3	17.6	17.0	17.4	18.0	20.0	S1	22.0	22.8	24.8	25.1	S	24.0	24.0	24.7	25.5	25.3	25.1	23.1	25.8	25.9	25.5	25.0	17.0	25.9	22.7	23	
2	21.1	16.7	13.3	12.8	14.4	14.0	15.1	19.3	23.1	26.3	26.2	S	27.0	29.3	30.8	31.3	30.3	28.5	23.8	14.0	12.0	9.1	7.5	7.5	7.5	31.3	19.7	24	
3	8.1	6.5	4.5	3.2	3.3	2.3	4.0	6.5	6.2	6.5	S	18.0	20.7	18.2	20.0	19.3	20.2	25.4	22.2	16.0	14.1	13.9	14.1	14.9	2.3	25.4	12.5	24	
4	16.2	15.5	11.8	9.9	14.9	15.1	14.7	17.3	23.9	S	27.5	27.9	29.6	31.4	32.0	31.3	30.3	28.5	13.3	8.6	4.6	6.4	6.3	4.6	4.6	32.0	19.5	24	
5	4.3	1.6	2.6	1.4	1.4	1.5	1.3	9.8	S	20.2	26.9	33.6	34.9	C	C	C	C	C	34.3	18.1	10.0	24.6	24.8	24.3	1.3	34.9	15.3	24	
6	25.3	25.2	25.0	25.4	25.2	25.8	25.6	S	26.3	26.0	26.0	27.5	29.5	30.8	30.2	30.5	29.3	27.6	27.0	26.9	26.4	25.0	24.4	23.5	23.5	30.8	26.7	24	
7	22.6	22.0	22.0	21.1	20.7	20.4	S	20.6	20.8	21.9	24.3	35.4	34.4	33.5	32.2	35.2	34.0	30.8	26.5	24.3	24.9	25.1	24.1	24.2	20.4	35.4	26.1	24	
8	23.9	23.3	21.4	23.5	22.8	S	20.3	21.0	21.2	23.4	23.3	26.4	28.0	33.1	32.5	33.3	34.2	32.3	21.6	35.3	37.3	23.8	20.7	18.3	18.3	37.3	26.1	24	
9	17.5	13.2	11.1	10.5	S	8.3	6.1	5.3	4.7	8.6	9.0	7.3	8.4	9.7	P	10.4	10.4	10.9	10.8	10.7	10.9	10.2	11.4	11.1	4.7	17.5	9.8	23	
10	10.4	8.0	8.0	S	9.1	7.9	6.7	9.0	12.0	12.9	14.8	16.7	15.7	14.4	13.9	14.9	14.6	13.4	14.1	11.1	5.8	6.3	10.2	10.2	5.8	16.7	11.3	24	
11	8.0	5.8	S	4.5	4.5	4.9	7.8	9.2	9.5	10.1	12.1	12.6	22.0	25.0	26.3	30.5	32.0	31.7	23.8	8.6	5.1	2.2	2.5	1.3	1.3	32.0	13.0	24	
12	0.3	S	0.2	0.1	0.3	7.2	9.4	15.5	15.2	15.7	14.7	16.4	18.8	20.6	20.9	20.9	20.1	17.6	18.9	20.1	21.1	20.4	18.6	18.7	0.1	21.1	14.4	24	
13	S	18.8	19.0	18.8	19.8	18.9	19.9	20.6	20.0	21.6	21.1	22.3	22.1	22.5	23.5	25.8	25.3	22.0	20.8	19.9	18.5	15.6	13.9	S	13.9	13.9	25.8	20.5	24
14	12.4	11.0	9.3	5.6	6.2	6.0	5.1	5.2	7.5	19.8	19.8	21.8	24.5	26.8	27.6	27.7	26.9	25.6	23.0	15.4	6.7	10.8	S	16.2	5.1	27.7	15.7	24	
15	16.6	16.0	15.1	16.9	18.5	17.1	15.4	17.6	21.0	20.4	21.7	22.0	21.7	20.0	22.0	20.8	21.0	21.7	22.0	21.5	21.5	S	20.9	21.4	15.1	22.0	19.7	24	
16	21.7	22.1	22.4	22.8	23.0	22.0	21.5	21.3	21.5	20.4	20.7	20.9	21.4	21.0	21.0	21.1	20.9	21.4	21.1	20.8	S	21.0	20.0	18.9	18.9	23.0	21.3	24	
17	18.4	18.0	17.6	17.2	16.5	16.0	15.0	16.1	17.6	17.7	18.2	19.9	19.8	20.8	20.9	20.9	20.4	17.8	13.9	S	3.3	3.9	2.8	5.1	2.8	20.9	15.6	24	
18	6.5	5.1	7.1	6.1	5.4	6.7	7.6	8.5	9.3	11.2	16.1	14.8	14.7	16.4	16.7	19.7	19.7	16.1	S	7.5	3.7	6.7	5.4	1.2	1.2	19.7	10.1	24	
19	0.9	0.8	0.8	0.7	0.5	0.5	0.5	6.2	14.9	20.7	26.9	27.6	32.0	33.8	33.6	33.9	28.9	S	26.3	12.2	10.2	15.3	16.0	20.6	0.5	33.9	15.8	24	
20	9.1	5.5	5.1	3.3	1.3	0.6	1.6	9.3	21.8	26.5	29.1	30.9	30.5	30.1	29.8	30.3	S	28.7	26.3	27.0	26.0	19.5	21.2	15.1	0.6	30.9	18.6	24	
21	13.9	12.2	12.0	12.6	14.3	9.6	20.1	23.8	26.3	26.6	28.6	29.9	29.7	29.7	29.2	S	29.5	28.7	25.0	13.2	12.5	4.8	1.3	1.6	1.3	29.9	18.9	24	
22	3.0	14.9	14.0	12.4	5.7	16.8	19.2	20.6	22.3	23.0	24.6	29.1	30.7	30.4	S	30.6	30.0	29.6	26.7	27.3	27.2	26.8	25.9	24.9	3.0	30.7	22.4	24	
23	24.1	23.2	23.5	22.0	20.6	20.3	19.8	18.6	17.3	16.6	16.6	17.0	16.6	S	17.0	19.4	20.5	19.8	18.7	16.5	14.7	15.6	15.8	15.8	14.7	24.1	18.7	24	
24	11.7	11.2	6.5	8.1	2.7	2.7	1.9	3.3	8.5	14.6	18.3	21.8	S	22.8	30.2	33.0	32.8	32.6	28.0	24.0	23.9	22.3	22.2	16.8	1.9	33.0	17.4	24	
25	14.5	13.6	8.9	7.6	8.2	5.6	5.7	9.6	12.5	17.2	24.2	S	37.0	38.0	38.7	38.1	35.6	33.2	26.4	22.9	25.6	23.5	22.8	26.3	5.6	38.7	21.6	24	
26	26.8	26.0	26.5	26.6	24.6	23.3	22.2	23.9	30.2	32.0	S	34.5	34.5	35.9	36.0	38.2	37.2	34.9	32.9	29.6	28.3	27.8	21.9	19.2	19.2	38.2	29.3	24	
27	20.5	24.1	24.7	22.2	21.0	25.1	24.7	28.3	32.5	S	35.0	36.6	36.9	36.8	36.8	35.3	32.5	30.2	27.9	26.3	28.1	27.8	25.8	18.1	18.1	36.9	28.6	24	
28	17.9	13.4	17.0	16.8	14.3	12.4	10.5	12.5	S	28.0	33.3	35.7	37.0	37.4	38.3	38.2	37.4	36.1	33.5	22.8	22.7	20.5	21.0	27.4	10.5	38.3	25.4	24	
29	27.4	27.6	34.6	34.6	34.5	30.8	27.3	S	31.6	31.1	30.6	31.4	30.9	30.7	30.0	30.6	30.2	28.9	28.2	27.2	25.6	23.7	21.6	19.8	19.8	34.6	29.1	24	
30	19.7	15.8	14.6	11.5	9.9	9.0	S	11.8	16.7	28.9	30.7	30.6	30.6	31.8	31.5	31.0	30.1	29.7	29.1	24.8	24.6	24.6	23.9	24.3	9.0	31.8	23.3	24	
HOURLY MAX	27.4	27.6	34.6	34.6	34.5	30.8	27.3	28.3	32.5	32.0	35.0	36.6	37.0	38.0	38.7	38.2	37.4	36.1	34.3	35.3	37.3	27.8	25.9	27.4					
HOURLY AVG	15.3	15.1	14.4	13.6	13.1	12.7	13.2	14.5	18.4	20.4	23.0	24.8	26.4	27.0	27.6	27.8	27.2	26.1	24.4	20.0	18.1	17.3	17.0	16.5					

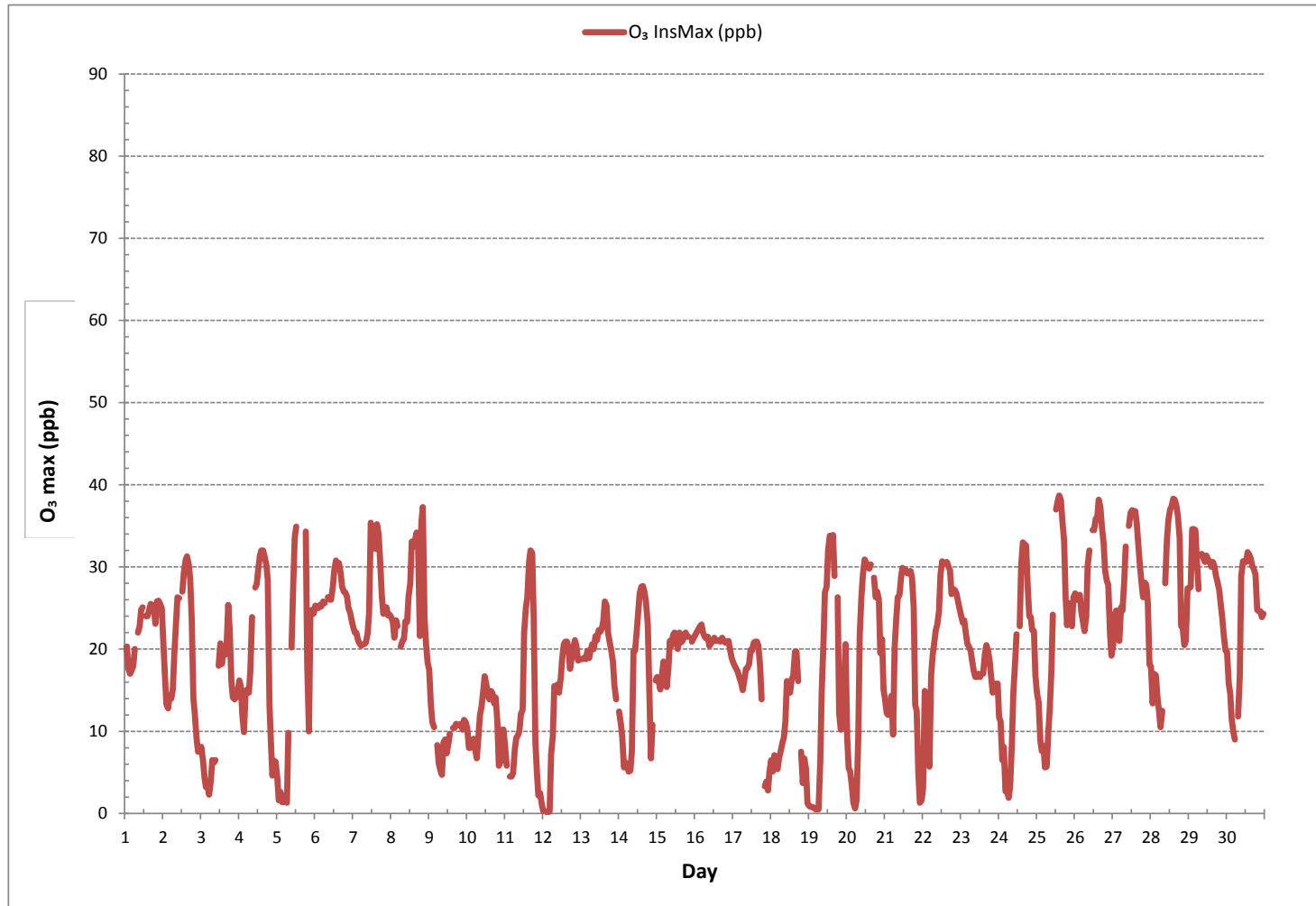
STATUS FLAG CODES

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:	682
MAXIMUM INSTANTANEOUS VALUE:	38.7 ppb @ HOUR 14 ON DAY 25
IZS CALIBRATION TIME:	31 hrs
MONTHLY CALIBRATION TIME:	5 hrs
STANDARD DEVIATION:	9.2
OPERATIONAL TIME:	718 hrs

OZONE Instantaneous Maximum (O₃ ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake South Continuous Monitoring Station - September 2018

WIND SPEED Instantaneous Maximum (WS kph)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
DAY 1	11.2	11.8	11.8	14.0	18.4	18.0	18.6	23.5	34.9	26.2	37.5	40.5	48.6	58.9	49.8	53.5	53.4	30.8	23.0	26.3	47.9	35.2	24.4	19.1	11.2	58.9	30.7	24
2	14.9	13.5	11.0	15.0	11.8	12.0	14.7	22.5	22.8	28.6	25.2	29.6	33.9	29.8	35.2	32.7	25.6	13.0	4.0	5.7	5.7	4.9	4.8	3.0	3.0	35.2	17.5	24
3	3.7	2.6	3.5	3.2	3.5	4.8	5.0	7.9	8.8	8.1	6.2	8.8	16.2	20.5	16.3	16.9	18.6	28.6	28.3	42.8	52.7	40.1	32.8	31.3	2.6	52.7	17.1	24
4	29.1	16.4	12.0	9.7	15.2	17.4	15.3	18.8	28.8	31.8	32.8	33.5	33.7	34.6	49.8	31.8	37.4	22.7	10.1	3.2	3.0	7.4	5.4	3.7	3.0	49.8	21.0	24
5	3.0	3.0	4.2	2.3	2.8	2.3	3.0	8.4	17.9	20.0	29.8	32.2	38.5	37.8	24.2	21.3	19.6	20.7	9.3	5.0	3.7	19.6	18.8	22.0	2.3	38.5	15.4	24
6	14.7	14.2	23.5	22.1	21.5	17.6	26.6	29.6	21.8	22.5	30.1	33.0	42.3	37.1	34.0	49.8	33.5	30.3	21.8	31.3	35.4	34.4	25.2	20.3	14.2	49.8	28.0	24
7	15.9	17.1	22.5	19.8	16.4	19.4	23.3	37.9	35.6	32.5	31.7	38.6	29.4	32.7	27.8	30.5	24.4	27.3	13.5	11.8	18.4	19.8	20.0	29.6	11.8	38.6	24.8	24
8	17.2	15.4	9.8	19.6	14.7	17.9	10.4	20.8	15.9	16.2	16.9	16.9	24.2	17.4	15.1	16.9	26.4	24.1	26.6	61.0	88.8	21.0	15.8	24.9	9.8	88.8	23.1	24
9	23.5	30.5	27.8	31.3	53.1	26.4	25.5	26.9	31.1	32.0	34.9	29.6	37.4	31.3	P	34.2	28.1	26.4	18.4	19.3	17.9	14.7	12.5	10.4	10.4	53.1	27.1	23
10	7.0	8.0	6.7	6.5	5.9	4.7	9.1	13.5	15.8	20.3	19.3	15.7	12.7	8.8	12.3	12.5	10.3	8.3	8.6	4.0	3.0	2.5	7.7	11.5	2.5	20.3	9.8	24
11	10.1	17.6	12.0	12.0	13.0	11.4	12.3	14.9	14.2	15.2	11.6	14.4	14.2	12.4	12.7	9.8	9.8	8.1	4.0	2.9	3.1	4.2	12.6	3.2	2.9	17.6	10.7	24
12	2.9	3.2	10.5	3.2	3.5	8.6	8.6	24.0	22.4	29.1	31.8	41.4	45.9	39.8	37.1	45.7	39.6	37.1	30.5	30.3	45.7	30.5	25.9	22.3	2.9	45.9	25.8	24
13	28.3	23.5	22.3	25.7	32.0	33.2	29.1	26.2	24.7	24.9	28.6	33.0	37.6	42.0	31.1	21.8	18.8	21.6	17.1	13.0	15.4	13.7	13.7	11.8	11.8	42.0	24.5	24
14	12.0	12.0	6.9	10.9	9.1	15.2	13.7	11.5	5.4	12.4	16.9	13.0	11.5	12.5	11.3	11.3	8.4	12.3	6.2	3.7	4.2	5.2	6.4	11.8	3.7	16.9	10.2	24
15	11.8	12.0	11.0	14.2	14.7	17.9	20.5	19.6	21.5	31.0	26.6	29.1	25.9	22.0	28.1	25.4	27.6	27.1	19.6	22.7	20.8	24.2	24.1	25.9	11.0	31.0	21.8	24
16	23.2	25.4	26.5	27.1	27.1	35.7	33.7	28.6	31.5	27.9	30.1	28.6	32.0	33.0	30.3	28.3	31.4	24.1	23.7	20.8	18.8	25.8	19.8	17.9	17.9	35.7	27.1	24
17	22.7	17.1	17.9	16.7	15.9	14.7	12.5	11.8	11.5	8.4	16.7	17.1	21.0	20.8	15.9	16.4	12.0	13.8	4.2	3.1	3.5	7.4	4.5	5.5	3.1	22.7	13.0	24
18	6.9	5.4	12.0	10.8	10.5	8.8	10.3	17.9	25.4	21.6	33.1	35.9	31.3	28.1	31.5	34.0	27.9	12.0	9.1	5.7	11.5	11.3	10.5	2.6	2.6	35.9	17.3	24
19	3.2	3.8	11.8	10.8	3.0	12.3	11.0	7.9	20.5	23.2	28.6	26.6	47.9	26.9	33.7	44.2	15.7	10.1	6.9	6.4	6.4	10.8	12.0	15.7	3.0	47.9	16.6	24
20	11.5	10.5	11.0	9.8	10.5	12.5	10.8	17.1	36.9	32.5	36.9	33.1	37.1	37.4	45.3	26.4	27.4	22.1	11.3	12.0	13.0	7.4	11.4	5.5	5.5	45.3	20.4	24
21	4.2	3.7	12.7	10.3	11.0	3.3	10.8	10.5	16.7	16.0	21.5	18.1	15.4	16.9	15.9	12.7	9.8	11.0	4.8	2.8	10.4	11.5	2.3	1.4	1.4	21.5	10.6	24
22	7.1	10.8	9.8	2.8	8.4	11.5	15.2	15.3	17.6	25.7	32.5	27.1	34.1	29.3	28.3	25.7	20.5	19.6	15.9	16.7	15.9	18.0	16.2	14.4	2.8	34.1	18.3	24
23	13.0	12.7	14.0	10.6	12.0	12.3	15.7	18.8	20.8	24.9	20.3	22.7	21.0	20.1	11.5	19.1	17.9	14.4	14.2	8.2	12.7	11.8	11.5	13.0	8.2	24.9	15.6	24
24	10.5	10.3	11.4	6.7	2.8	11.3	2.9	10.8	14.2	17.1	17.9	19.3	29.8	25.0	31.5	45.5	29.8	17.0	17.9	16.9	18.8	25.7	11.8	11.3	2.8	45.5	17.3	24
25	8.6	12.3	10.1	13.0	12.3	11.5	11.5	11.6	11.8	13.0	17.4	23.0	22.6	27.9	31.3	32.8	23.5	11.5	6.2	7.5	7.4	13.5	20.8	23.0	6.2	32.8	16.0	24
26	26.4	24.5	23.5	21.3	19.7	20.2	14.0	18.1	21.8	27.6	42.1	53.1	49.1	40.6	41.5	50.0	25.5	27.6	15.9	13.5	20.8	32.3	11.8	14.2	11.8	53.1	27.3	24
27	35.2	37.6	25.9	20.3	19.1	26.7	17.6	30.8	45.4	44.2	36.4	32.0	36.6	39.1	36.6	34.0	32.5	32.5	13.0	34.2	27.4	31.8	13.2	13.2	13.0	45.4	29.8	24
28	12.7	11.3	14.0	16.2	16.4	14.9	15.7	13.7	15.4	19.1	18.4	23.2	28.6	38.4	33.2	29.8	27.4	22.3	6.6	11.3	12.5	14.0	13.7	14.2	6.6	38.4	18.5	24
29	13.2	13.7	26.9	23.7	32.9	23.5	19.6	42.7	40.5	37.4	37.6	51.0	39.6	46.4	42.2	34.9	38.1	28.6	28.0	21.0	23.8	14.7	13.0	12.5	12.5	51.0	29.4	24
30	13.0	13.5	13.8	14.4	14.2	19.8	9.7	10.5	14.0	15.2	19.8	16.7	14.4	16.4	23.3	26.0	18.5	14.4	8.6	8.2	9.8	10.8	6.4	11.0	6.4	26.0	14.3	24
HOURLY MAX	35.2	37.6	27.8	31.3	53.1	35.7	33.7	42.7	45.4	44.2	42.1	53.1	49.1	58.9	49.8	53.5	53.4	37.1	30.5	61.0	88.8	40.1	32.8	31.3				

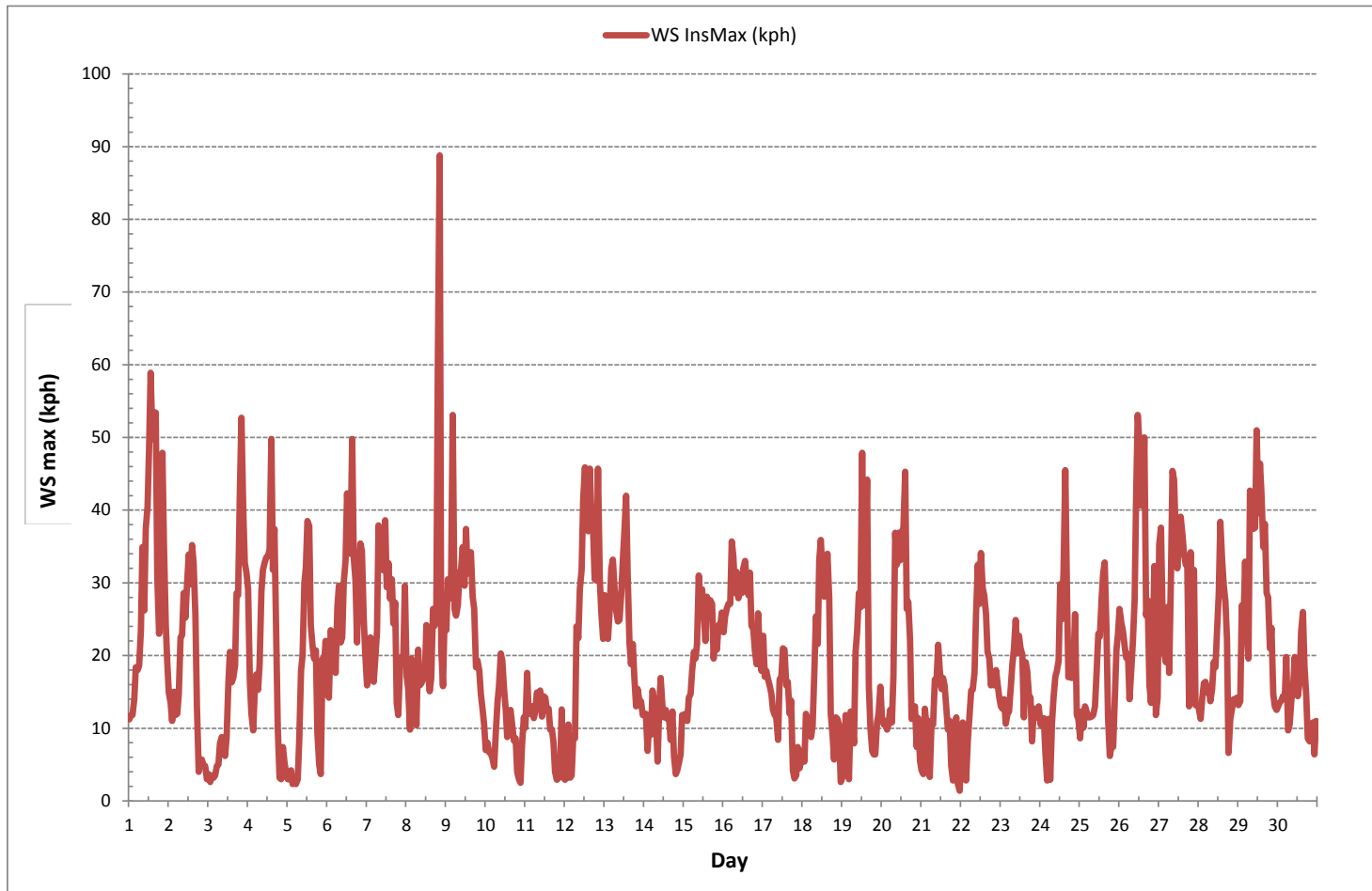
STATUS FLAG CODES

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

MAXIMUM INSTANTANEOUS VALUE:	88.8	kph	@ HOUR	20	ON DAY	8	
OPERATIONAL TIME:						719	hrs

WIND SPEED Instantaneous Maximum (WS kph)



***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	COLD LAKE SOUTH CONTINUOUS MONITORING STATION
Name of the Representative of the Person Responsible	Position / Title of the Representative of the Person Responsible
Mike Bisaga	Environment Monitoring Program Manager
Is an External Party Certifying the Report?	
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Name of External Person Certifying the Report	Position / Title of External Person Certifying the Report
Wunmi Adekanmbi	Project Team Lead, Customer Service - Air Services
Company Name for External Person Certifying the Report	Identification of Qualifications / Professional Designations of the External Person Certifying the Report
Maxxam Analytics, A Bureau Veritas Group Company	M.Sc., EPT., PMP

Maxxam Analytics is the designated contractor conducting monitoring and reporting activities. I certify that the submitted data has been (a) reviewed and validated as per the AMD Chapter 6: Ambient Data Quality. I certify that the submitted report (b) accurately reflects the monitoring results and reporting timeframe and (c) meets the specified analysis, summarization and reporting requirements as per the AMD Chapter 9: Reporting.



Signature of the External Person Certifying the Report

31-Oct-2018

Report Issued Date (dd-mon-yyyy)

APPENDIX V
DATA VALIDATION CERTIFICATION FORM



Validation Certificate Form

Client: <u>Lakeland Industry & Community Association</u>	Project #: <u>2833-2018-09-1-C</u>
Site: <u>Cold Lake South Continuous Monitoring Station</u>	Contact: <u>Mike Bisaga</u>

Level 0 Preliminary Verification	<u>Maram Ghalet</u>	Date <u>26-Oct-2018</u>
Level 1 Primary Validation	<u>Maram Ghalet</u>	Date <u>26-Oct-2018</u>
Level 2 Final Validation	<u>Maram Ghalet</u>	Date <u>30-Oct-2018</u>
Level 3 Independent Data Review	<u>CSA-LMBA</u>	Date <u>31-Oct-2018</u>
Post-Final Validation	<u>NA</u>	Date <u>NA</u>

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

Alberta Environment and Parks (AEP)
Air.Reporting@gov.ab.ca

November 2, 2018

Subject: Monthly Report Submission for the LICA Maskwa station

Lakeland Industry & Community Association (LICA) is pleased to submit the ambient air monitoring monthly report for the LICA Maskwa AQM Station in the month of September 2018.

The air monitoring program consists of continuous air monitoring results for Sulphur Dioxide (SO₂), Hydrogen Sulphide (H₂S), Total Hydrocarbon (THC), Oxides of Nitrogen (NO_x), Nitric Oxides (NO), Nitrogen Dioxide (NO₂), Relative Humidity (RH), Barometric Pressure (BP), Precipitation, Ambient Temperature (AmbTPX), Wind Speed (WS), Wind Direction (WD) and Standard Deviation Wind Direction (STDWD).

Sampling Program	Monitoring Activities Conducted By	Sample Analysis Conducted By	Data/Report Review and Prepared By	Electronic Submission Conducted By
Continuous ambient air	Maxxam Analytics	Maxxam Analytics	Maxxam Analytics	Maxxam Analytics

All data collected in September was compliant with the requirements outlined in the Air Monitoring Directive 2016 (AMD 2016).

The operational time for all continuous ambient air analyzers, meteorological systems and data acquisition systems were above the 90% requirement systems. The operational time for PM_{2.5} was 62.8%. The Teom unit was removed on September 21 as the monitoring program was completed. AMD data completeness criteria was not applicable to data collected in September.

PM_{2.5}: The temporary PM_{2.5} monitoring program, conducted for forest fires season, was concluded on September 21.

Wind System: The resident Met One 50.5H wind system, s/n: H10703, was replaced with a RM Young 02305VK wind system, s/n: 161465, on September 17, as part of LICA's planned station upgrade.

Should you have any questions, please don't hesitate to contact us.

Respectfully,



Lakeland Industry & Community Association
5107 50 St
Bonnyville, AB T9N 2J7

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

Michael Bisaga
Technical Program Manager
Lakeland Industry & Community Association
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AMBIENT AIR MONITORING MONTHLY DATA REPORT
LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
MASKWA CONTINUOUS MONITORING STATION

JOB #: 2833-2018-09-30-C

September 2018

Prepared for:

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
5107 50 ST.
BONNYVILLE, ALBERTA
T9N 2J7

Attention: MIKE BISAGA

DATE: **October 25, 2018**

Prepared by:

Maram Ghaleb

Maram Ghaleb, B.Sc.
Project Manager, Customer Service, Air Services

Reviewed by:

Wunmi Adekanmbi

Wunmi Adekanmbi, M.Sc., EPT, PMP
Project Team Lead, Customer Service, Air Services

SUMMARY

In September 2018, Maxxam Analytics was contracted to manage the ambient air quality monitoring and maintenance activities at the Maskwa Continuous Monitoring Station, near Bonnyville, Alberta. The monitoring station provides continuous meteorological measurements and air quality data for non-compliance parameters, as requested by Lakeland Industry & Community Association.

All data collected this month was compliant with the requirements outlined in the Air Monitoring Directive (Alberta Environment and Parks, 2016).

With the exception of PM_{2.5}, the operational time for all continuous ambient air analyzers, meteorological systems and data acquisition systems were above the 90% requirement. The operational time for PM_{2.5} was 62.8%. The Teom unit was removed on September 21 as the monitoring program was completed. AMD data completeness criteria was not applicable to data collected in September.

THC/CH₄/NMHC: A calibration attempt on September 2 did not meet Maxxam's internal stability requirement due to a faulty detector. Data was invalidated back to the point of failed performance, determined as August 29 at 12:00. Fifty-eight hours of downtime were incurred in the September monitoring period due to this event.

PM_{2.5}:

- The temporary PM_{2.5} monitoring program, conducted for forest fires season, was concluded on September 21, at LICA's request. AMD data completeness criteria (Chapter 6, DQ 4-C) was not applicable to data collected in the month of September.
- Thirty-eight hours of data were recorded at concentrations lower than $-3 \mu\text{g}/\text{m}^3$ this month, rendering the data invalid.

Wind System: The resident Met One system (model: 50.5H, s/n: H10703) was replaced with an RM Young system (model: 05305VK, s/n: 161465) on September 17, as part of LICA's planned station upgrade.

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 Analytics is issuing this completed report to Lakeland Industry & Community Association, Maskwa Continuous Monitoring Station.

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 Continuous Monitoring Station						MAXIMUM VALUES							OPERATIONAL TIME (%)
PARAMETER	OBJECTIVES		EXCEEDANCES		MONTHLY AVERAGE	1-HOUR					24-HOUR		
	1-hr	24-hr	1-hr	24-hr		READING	DAY	HOUR	WIND SPEED (kph)	WIND DIRECTION (sector)	READING	DAY	
SO ₂ (ppb)	172	48	0	0	1	14	29	3	5.2	NW	2	1	100.0
H ₂ S (ppb)	10	3	0	0	0	4	7	5	3.8	ESE	1	7	100.0
THC (ppm)	-	-	-	-	2.00	2.42	20	4	0.3	ESE	2.11	19	91.9
CH ₄ (ppm)	-	-	-	-	2.00	2.35	19	2	2.3	S	2.11	19	91.9
NMHC (ppm)	-	-	-	-	0.00	0.12	20	4	0.3	ESE	0.01	20	91.9
NO ₂ (ppb)	159	-	0	-	2	19	29	3	5.2	NW	6	25	100.0
NO (ppb)	-	-	-	-	1	31	25	7	2.2	WNW	3	25	100.0
NO _x (ppb)	-	-	-	-	3	45	25	7	2.2	WNW	9	25	100.0
PM _{2.5} (µg/m ³)	80	30	0	0	3	27	1	2	3.2	SSW	11	1	62.8
RELATIVE HUMIDITY (%)	-	-	-	-	82	100	3	7	1.6	SSW	99	12	100.0
BAROMETRIC PRESSURE (millibar)	-	-	-	-	941	951	6	7	6.0	ENE	949	6	100.0
AMBIENT TEMPERATURE (°C)	-	-	-	-	4.7	20.6	8	13	1.8	NE	13.4	8	100.0
PRECIPITATION (mm)	-	-	-	-	0.1	10.2	8	19	6.5	WNW	19.9	8	100.0
VECTOR WS (kph)	-	-	-	-	1.2	13.0	20	8	-	NNE	8.4	16	100.0
VECTOR WD (sec)	-	-	-	-	9 (N)	-	-	-	-	-	-	-	100.0

Exceedance Summary Report

SO₂ 1-Hour Exceedances

Measured concentrations of sulphur dioxide were below the 1-hour AAAQO of 172 ppb.

SO₂ 24-Hour Exceedances

Measured concentrations of sulphur dioxide were below the 24-hour AAAQO of 48.0 ppb.

H₂S 1-Hour Exceedances

Measured concentrations of hydrogen sulphide were below the 1-hour AAAQO of 10 ppb.

H₂S 24-Hour Exceedances

Measured concentrations of hydrogen sulphide were below the 24-hour AAAQO of 3 ppb.

NO₂ 1-Hour Exceedances

Measured concentrations of nitrogen dioxide were below the 1-hour AAAQO of 159 ppb.

PM_{2.5} 1-Hour Exceedances

Measured concentrations of fine particulate matter were below the 1-hour AAAQO of 80 µg/m³.

PM_{2.5} 24-Hour Exceedances

Measured concentrations of fine particulate matter were below the 24-hour AAAQO of 30 µg/m³.

In accordance with EPEA and the Substance Release Regulation.

In accordance with A Guide to Release Reporting and the Alberta Ambient Air Quality Objectives and Guidelines Summary.

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1.0 Discussion

This monthly report consists of continuous monitoring results for the following parameters: Sulphur Dioxide (SO₂), Hydrogen Sulphide (H₂S), Total Hydrocarbon (THC), Methane (CH₄), Non-Methane Hydrocarbon (NMHC), Oxides of Nitrogen (NO_x), Nitric Oxides (NO), Nitrogen Dioxide (NO₂), Particulate Matter 2.5 (PM_{2.5}), Relative Humidity (RH), Barometric Pressure (BP), Precipitation, Ambient Temperature (AmbTPX), Wind Speed (WS), Wind Direction (WD) and Standard Deviation Wind Direction (STDWD).

The sample inlet filter for all continuous air analyzers are replaced 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, at a minimum, for each monthly monitoring period.

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 verification and validation based on the requirements of the AMD (December, 2016) Chapter 6: Ambient Data Quality and Chapter 9: Reporting. 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. The minimum and maximum statistics are highlighted in the data table and are for reference only. The highlighted cells are based on the software's interpretation of the exact position of the minimum or maximum value. The visual presentation of these statistics may not be the obvious choice in a data range due to rounding, truncating or analyzer specifications.

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%).

SULPHUR DIOXIDE (SO₂)

- Operational time for the monitoring period was 100%.
- The routine monthly calibration was performed on September 2 and the expected span value was immediately updated. The internal zero-span oven temperature was adjusted during this site visit. The zero-span system was allowed time to stabilize at the new oven temperature and the expected span value was re-adjusted following the daily zero-span check on September 4.

HYDROGEN SULPHIDE (H₂S)

- Operational time for the monitoring period was 100%.
- The routine monthly calibration was performed on September 3. The expected span value was re-adjusted following the daily zero-span check on September 4, in order to reflect a more representative reference concentration.

TOTAL HYDROCARBONS (THC), METHANE (CH₄) and NON-METHANE HYDROCARBONS (NMHC)

- Operational time for the monitoring period was 91.9%, equivalent to 58 hours of downtime.
- On August 31, it was observed that the analyzer was constantly, spontaneously relighting. This prompted a site visit on September 2 where a shut-down calibration was attempted. However, the stability criteria was not met at Low point due to a faulty detector, rendering the calibration invalid. The resident LICA analyzer, Thermo 55i (s/n: 1180930026) was replaced with another LICA-owned Thermo 55i (s/n: 1236656107). Monitoring activity resumed following a successful installation calibration on September 3. Data was invalidated back to the point of failed performance, determined as August 29 at 15:00. Fifty-eight hours of downtime were incurred, in the September monitoring period, due to this event.
- An anomalous minute concentration was recorded on the CH₄ channel on September 8 at 13:05, likely due to data-logger configuration challenges. This data point was discarded along with the corresponding anomalous maximum instantaneous data, and the hourly average was recalculated. The corresponding maximum instantaneous data for THC and NMHC were also discarded to preserve parameter relationships.

OXIDES OF NITROGEN (NO_x), NITRIC OXIDE (NO) and NITROGEN DIOXIDE (NO₂)

- Operational time for the monitoring period was 100%.
- The routine monthly calibration was performed on September 2.

PARTICULATE MATTER < 2.5 MICRONS (PM_{2.5})

- Operational time for the monitoring period was 62.8%, equivalent to 268 hours of downtime.
- The temporary PM_{2.5} monitoring program, conducted for forest fires season, was concluded on September 21, at LICA's request. AMD data completeness criteria (Chapter 6, DQ 4-C) was not applicable to data collected in the month of September.
- The routine monthly audit was performed on September 13; and a shut-down audit was conducted on September 21, denoting the end of the temporary monitoring program.
- Data was corrected in accordance with AMD (2016), Chapter 6, Table 2, Zero Adjustment Criteria. Data recorded between 0 and -3 µg/m³ was corrected to 0 µg/m³. Data recorded below -3 µg/m³ was invalidated. Thirty-eight hours of data were invalidated as the data was below -3 µg/m³ this month.

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

- Operational time for the monitoring period was 100%.
- The resident Met One system (model: 50.5H, s/n: H10703) was replaced with a LICA-owned RM Young system (model: 05305VK, s/n: 161465) on September 17, as part of LICA's planned station upgrade.
- Wind data is reported as vector wind speed and vector wind direction. Wind direction is defined as the direction from which the wind is blowing from and is measured in degrees from true north.

RELATIVE HUMIDITY (RH)

- Operational time for the monitoring period was 100%.

BAROMETRIC PRESSURE (BP)

- Operational time for the monitoring period was 100%.

PRECIPITATION (PRECIP)

- Operational time for the monitoring period was 100%.

AMBIENT TEMPERATURE (AmbTPX)

- Operational time for the monitoring period was 100%.

2.0 Project Personnel

Mike Bisaga and Lily Lin were the contacts for Lakeland Industry & Community Association and the Maxxam field technicians were Alexander Yakupov and Limin Li.

3.0 Plant Monthly Required AMD Summary

All data collected this month was compliant with the requirements outlined in the Air Monitoring Directive (Alberta Environment and Parks, 2016).

With the exception of PM_{2.5}, the operational time for all continuous ambient air analyzers, meteorological systems and data acquisition systems were above the 90% requirement. The operational time for PM_{2.5} was 62.8%. The Teom unit was removed on September 21 as the monitoring program was completed. AMD data completeness criteria was not applicable to data collected in September.

4.0 Calculations and Results

All calculations and reporting of results follow the methods described in the AMD, 2016.

5.0 Methods and Procedures

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

- Maxxam AIR SOP-00001: Methane, Non-Methane Hydrocarbon Analyzer Monitoring
- Maxxam AIR SOP-00013: RM Young Wind Monitor Calibration
- Maxxam AIR SOP-00209: Ambient Sulphur Monitoring
- Maxxam AIR SOP-00213: Ambient NO/NO₂/NO_x Monitoring
- Maxxam AIR SOP-00215: TEOM Operation
- Maxxam AIR SOP-00242: Precipitation Collector Installation/Maintenance
- MET One Instruments: Operation Manual Document No. 50.5-9800

There were no deviations from the prescribed methods.

The following instruments were used to perform the test program:

- Sulphur Dioxide - Thermo 43i - TLE UV Fluorescent Analyzer
- Hydrogen Sulphide - Thermo 450i UV Fluorescent Analyzer
- Methane, Non-Methane Hydrocarbon - Thermo 55i FID Analyzer
- Oxides of Nitrogen - Thermo 42i Chemiluminescent Analyzer
- Particulate Matter (PM_{2.5}) - R&P 1400A TEOM Unit
- Wind System - Met One & RMYoung Units
- Relative Humidity - Rotronic Hygroclip Unit
- Barometric Pressure - Met One Unit
- Ambient Temperature - Rotronic Hygroclip Unit
- Precipitation - Met One Unit
- Datalogger - Envidas Ultimate

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

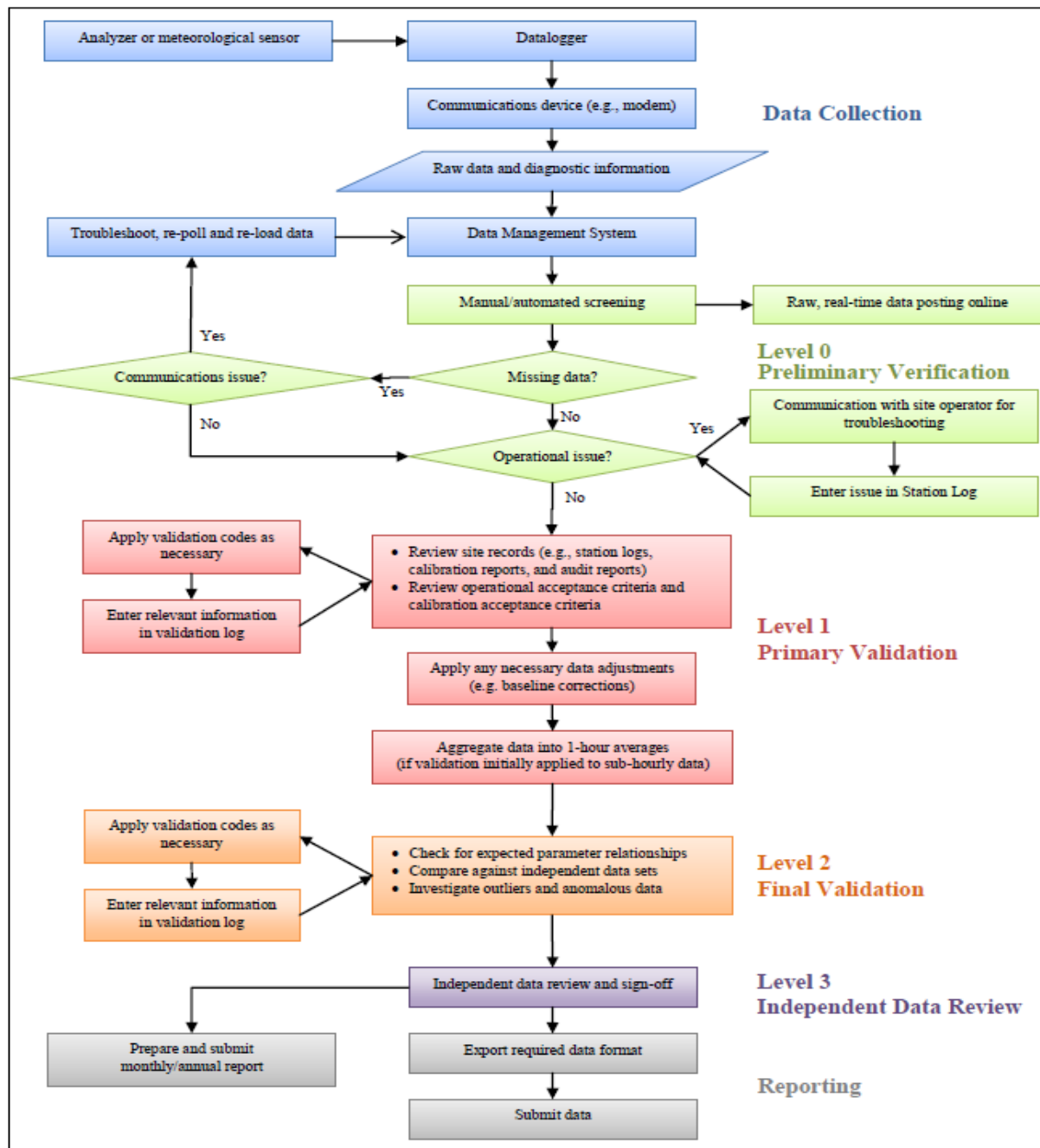
The purpose of Level 2 validation is to verify that there are no inconsistencies among related data, or among regional data measured at nearby sites.

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: Air Monitoring Directive (December 2016), Chapter 6, Ambient Data Quality; Figure 1 Data Collection and Management Process Flow Chart

APPENDIX I
CONTINUOUS MONITORING DATA RESULTS

SULPHUR DIOXIDE

SULPHUR DIOXIDE Hourly Averages (SO₂ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.				
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.					
DAY																																
1	1	1	1	0	0	0	0	0	0	S	6	3	5	7	5	3	5	6	6	0	0	0	0	0	0	0	0	0	7	2	24	
2	0	0	0	0	0	1	1	0	S	0	0	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
3	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	1	10	9	1	0	0	0	0	0	0	0	10	1	24	
4	0	3	1	3	2	2	S	2	3	3	2	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	3	1	24	
5	0	0	0	0	0	S	0	0	1	2	2	2	2	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	2	1	24	
6	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	24	
7	0	2	0	S	0	1	1	3	4	2	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	4	1	24	
8	0	0	S	0	0	0	0	0	0	0	0	0	0	2	2	1	0	0	4	4	1	1	0	5	0	0	0	5	1	24		
9	4	S	1	0	0	0	0	0	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	24	
10	S	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	24	
11	4	7	2	0	2	1	0	1	0	0	1	0	0	0	1	0	1	1	0	0	0	0	S	0	0	0	0	0	7	1	24	
12	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	24	
13	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	
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	24	
15	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	
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	24	
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
18	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1	S	1	0	0	0	0	0	0	0	0	0	0	0	2	0	24	
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	24	
20	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	
21	0	0	0	0	0	0	0	0	0	0	0	0	S	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
22	0	0	0	0	0	0	0	0	0	0	0	S	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	0	24	
23	1	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
24	0	0	0	0	0	0	0	0	0	S	0	0	0	3	2	1	0	0	0	2	1	1	3	0	0	0	0	0	3	1	24	
25	1	1	1	1	2	2	3	4	S	7	5	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	1	24	
26	0	0	0	1	0	0	0	S	10	1	2	1	1	3	1	0	0	0	0	0	0	0	3	0	0	0	0	0	10	1	24	
27	0	0	0	0	0	2	S	1	1	0	0	1	1	3	5	4	3	4	2	0	0	1	6	0	0	0	0	0	6	1	24	
28	0	1	0	1	3	S	0	4	9	3	1	1	1	1	1	1	0	0	0	0	0	1	2	1	0	0	0	0	9	1	24	
29	5	0	4	14	S	0	0	1	1	0	0	1	1	1	2	2	3	3	7	2	0	1	1	1	0	0	0	0	14	2	24	
30	2	1	0	S	0	0	0	0	1	1	1	2	1	0	0	0	0	0	0	0	0	0	1	3	0	0	0	0	3	1	24	
HOURLY MAX	5	7	4	14	3	2	3	4	10	7	6	3	5	7	5	4	5	10	9	4	1	1	6	5								
HOURLY AVG	1	1	0	1	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0								

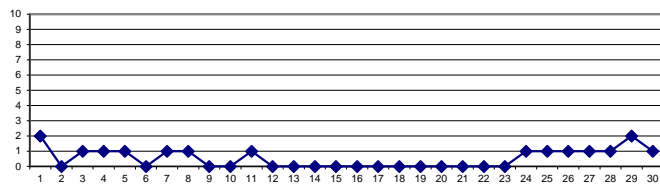
STATUS FLAG CODES

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

OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT:	1-HR	172	ppb	24-HR	48	ppb
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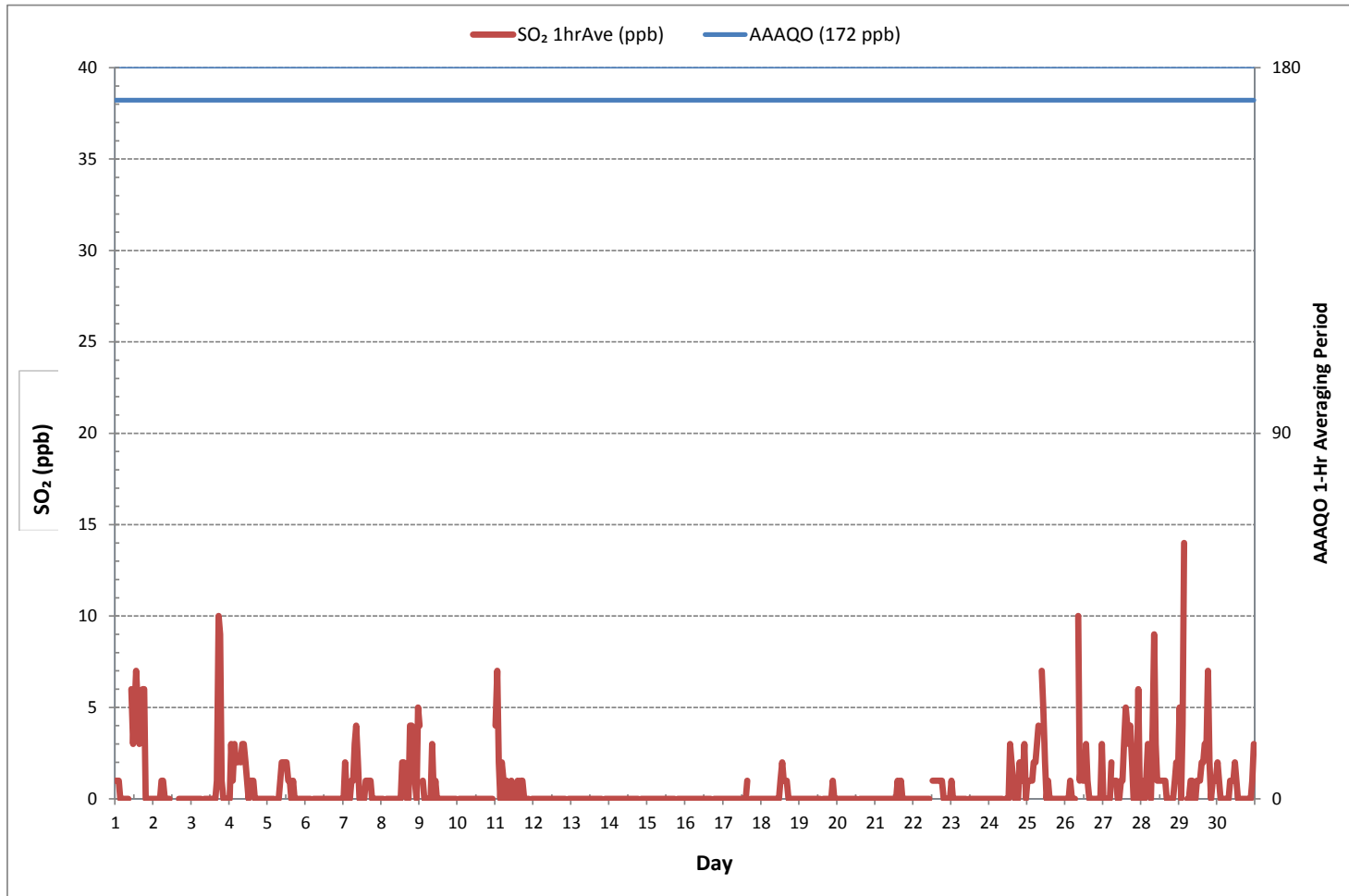
24 HR AVERAGES September 2018



MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0
NUMBER OF 24-HR EXCEEDANCES:	0
NUMBER OF NON-ZERO READINGS:	169
MINIMUM 1-HR AVERAGE:	0 ppb @ HOUR 3 ON DAY 1
MAXIMUM 1-HR AVERAGE:	14 ppb @ HOUR 3 ON DAY 29
MAXIMUM 24-HR AVERAGE:	2 ppb ON DAY 1
IZS CALIBRATION TIME:	31 hrs
MONTHLY CALIBRATION TIME:	5 hrs
OPERATIONAL TIME:	720 hrs
AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	1
MONTHLY AVERAGE:	1 ppb

SULPHUR DIOXIDE Hourly Averages (SO₂ ppb)



Wind: LICA MASKWA
 Poll.: LICA MASKWA-SO2[ppb]
 Monthly: 18/09
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

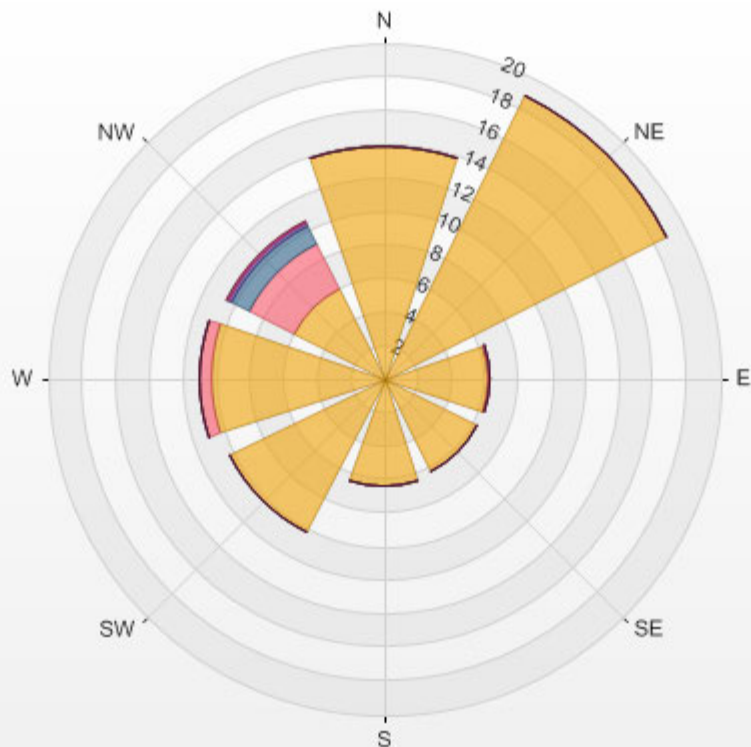
Calm: 16.47%

Calm Avg: 0.25 [ppb]

Direction	0.0-3.0	3.0-6.0	6.0-9.0	9.0-12.0	12.0-15.0	>15.0	Total
N	13.8	0.0	0.0	0.0	0.0	0.0	13.8
NE	18.8	0.0	0.0	0.0	0.0	0.0	18.8
E	6.2	0.2	0.0	0.0	0.0	0.0	6.3
SE	6.2	0.0	0.0	0.0	0.0	0.0	6.2
S	6.5	0.0	0.0	0.0	0.0	0.0	6.5
SW	10.3	0.0	0.0	0.0	0.0	0.0	10.3
W	10.3	0.7	0.0	0.0	0.0	0.0	11.0
NW	6.0	2.9	1.2	0.3	0.2	0.0	10.6
Summary	78.1	3.8	1.2	0.3	0.2	0.0	83.5

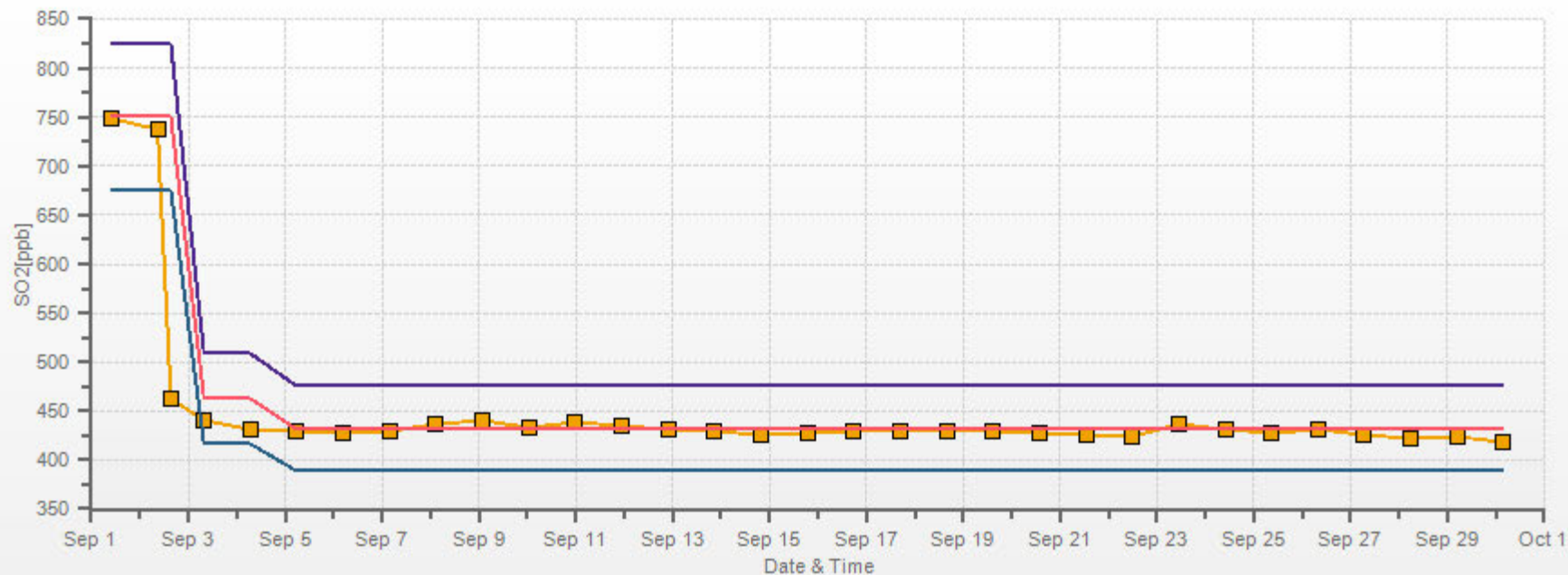
% Icon Classes (ppb) 78 0.0-3.0 4 3.0-6.0 1 6.0-9.0 0 9.0-12.0 0 12.0-15.0 0 >15.0

LICA MASKWA Poll.: LICA MASKWA-SO2[ppb] 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 16.47% Calm Poll Avg: 0.25[ppb]



SO2[ppb] Calibration: LICA MASKWA Monthly: 18/09 Type: Span

Span Meas Span Ref Span Low Span High



HYDROGEN SULPHIDE

HYDROGEN SULPHIDE Hourly Averages (H₂S ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	0	0	0	0	0	0	0	0	0	S	1	0	1	0	1	0	0	1	0	0	0	0	0	0	0	1	0	24	
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	24	
3	0	0	0	0	0	0	0	S	1	1	C	C	C	C	C	C	1	1	1	0	0	0	0	0	0	1	0	24	
4	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	
5	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	1	0	24	
6	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	
7	0	1	2	S	1	4	2	4	1	1	0	0	0	2	1	1	1	0	0	0	0	0	0	0	0	4	1	24	
8	0	0	S	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
9	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	24	
10	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	24	
11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	24	
12	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	24	
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	24	
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	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	S	0	0	0	0	0	0	0	0	24	
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	24	
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	24	
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	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	S	0	0	0	0	0	0	0	0	0	0	0	0	0	24	
20	0	0	0	1	3	3	2	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	3	0	24	
21	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	1	2	0	0	2	0	24	
22	2	1	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	1	0	0	0	0	0	0	2	0	24	
23	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	24	
24	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	
25	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	
26	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	
27	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	
28	0	0	0	0	0	S	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	24	
29	1	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
30	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	24	
HOURLY MAX	2	1	2	1	3	4	2	4	1	1	1	0	1	2	1	1	1	1	1	1	1	0	1	1	2				
HOURLY AVG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					

STATUS FLAG CODES

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

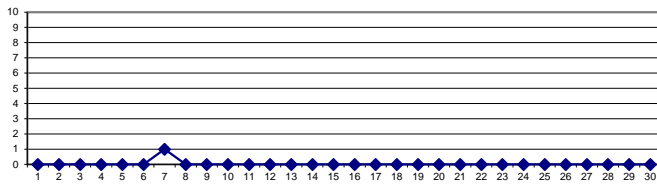
OBJECTIVE LIMIT:

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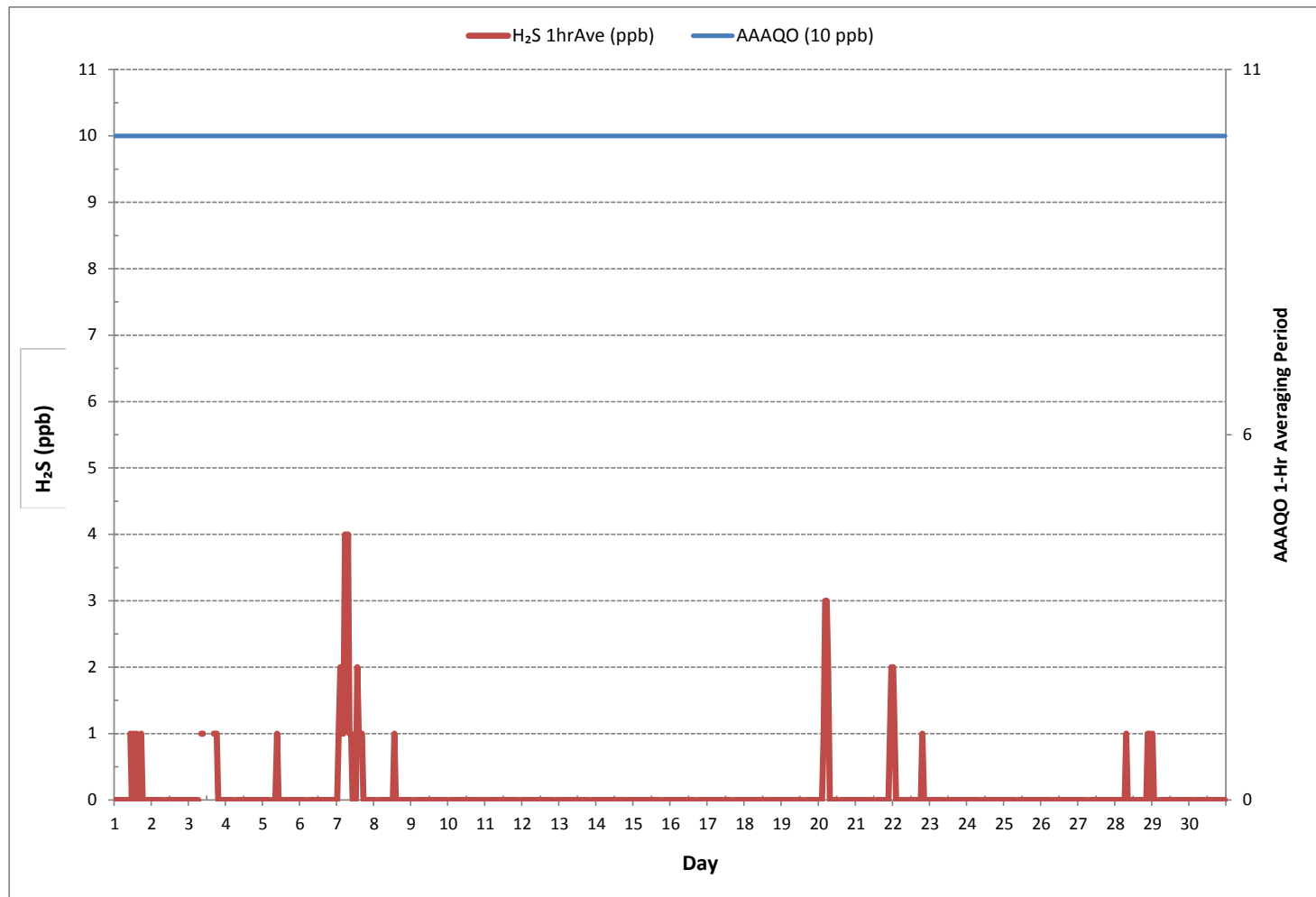
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0		
NUMBER OF 24-HR EXCEEDANCES:	0		
NUMBER OF NON-ZERO READINGS:	36		
MINIMUM 1-HR AVERAGE:	0 ppb @ HOUR	0 ON DAY	1
MAXIMUM 1-HR AVERAGE:	4 ppb @ HOUR	5 ON DAY	7
MAXIMUM 24-HR AVERAGE:	1 ppb	ON DAY	7
IZS CALIBRATION TIME:	31 hrs	OPERATIONAL TIME:	720 hrs
MONTHLY CALIBRATION TIME:	6 hrs	AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	0	MONTHLY AVERAGE:	0 ppb

24 HR AVERAGES September 2018



HYDROGEN SULPHIDE Hourly Averages (H₂S ppb)



Wind: LICA MASKWA
 Poll.: LICA MASKWA-H2S[ppb]
 Monthly: 18/09
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 16.49%

Calm Avg: 0.23 [ppb]

Direction	0.0-1.7	1.7-3.3	3.3-5.0	>5.0	Total
N	13.4	0.0	0.0	0.0	13.4
NE	18.6	0.0	0.0	0.0	18.6
E	5.9	0.2	0.3	0.0	6.3
SE	6.0	0.2	0.0	0.0	6.2
S	6.5	0.0	0.0	0.0	6.5
SW	10.6	0.0	0.0	0.0	10.6
W	11.5	0.0	0.0	0.0	11.5
NW	10.5	0.0	0.0	0.0	10.5
Summary	82.9	0.3	0.3	0.0	83.5

% Icon Classes (ppb)

83

0.0-1.7

0

1.7-3.3

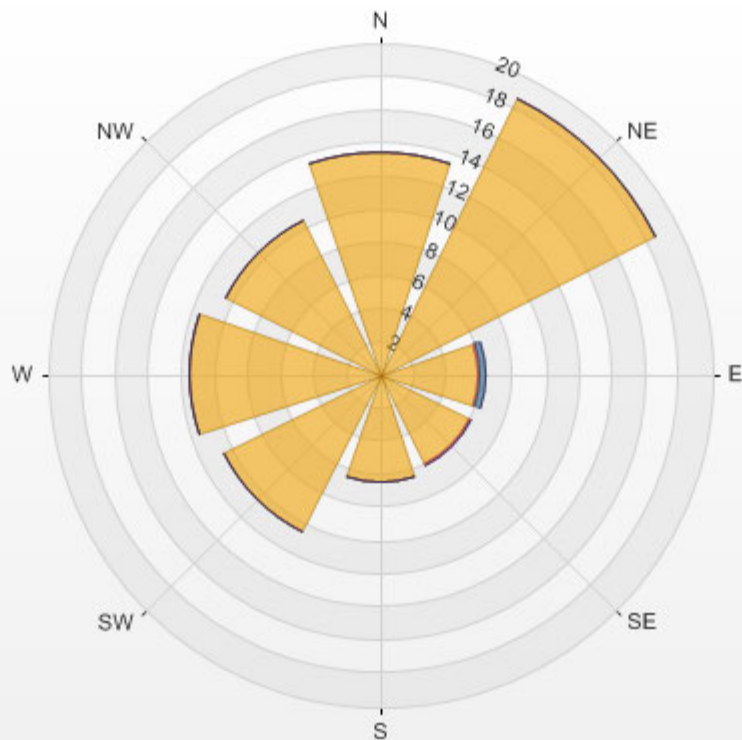
0

3.3-5.0

0

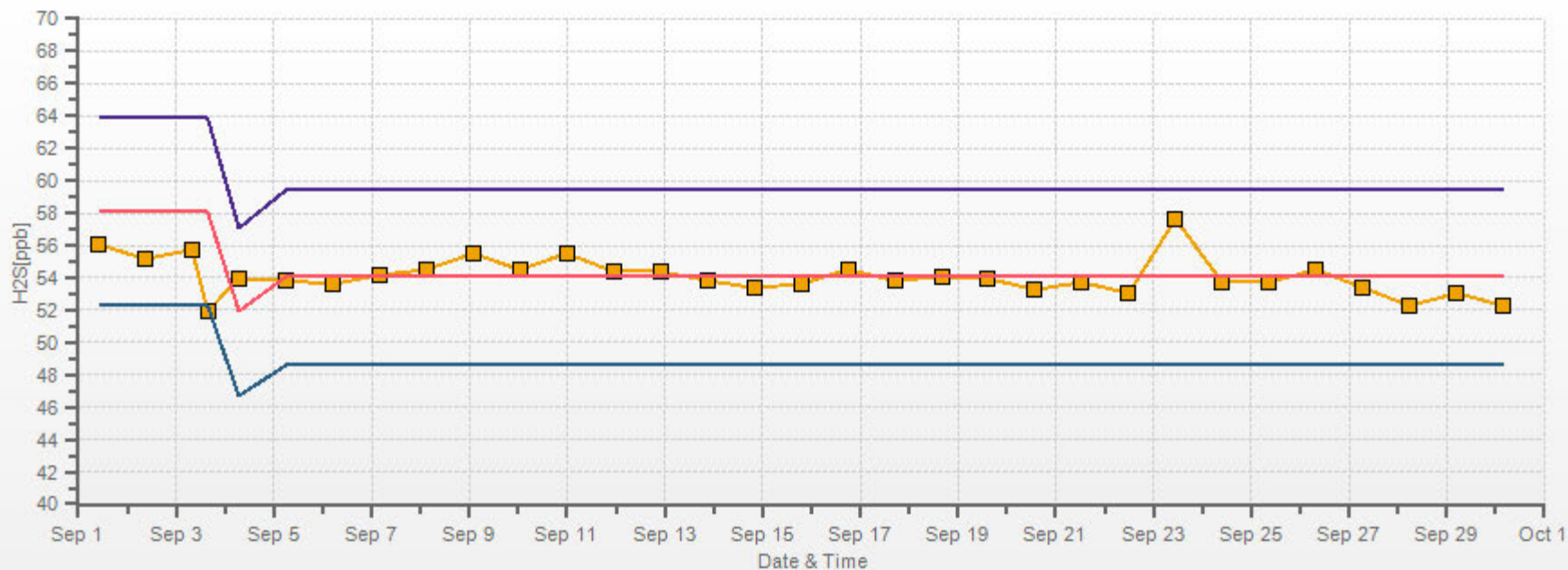
>5.0

LICA MASKWA Poll.: LICA MASKWA-H2S[ppb] 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 16.49% Calm Poll Avg: 0.23[ppb]



H2S[ppb] Calibration: LICA MASKWA Monthly: 18/09 Type: Span

Span Meas Span Ref Span Low Span High



TOTAL HYDROCARBON



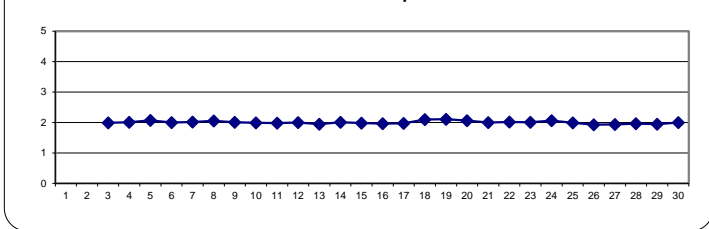
TOTAL HYDROCARBONS Hourly Averages (THC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY 1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	C	C	C	C	Y	Y	Y	Y	Y	Y	Y	Y	Y	1.96	2.04	1.99	14
4	1.98	1.99	2.00	2.00	2.00	2.01	S	2.00	1.99	2.00	2.00	1.97	1.99	2.01	2.00	2.00	1.99	1.99	1.99	2.03	2.03	2.08	2.15	2.12	1.97	2.15	2.01	24	
5	2.15	2.15	2.15	2.15	2.12	S	2.12	2.13	2.12	2.14	2.21	2.13	2.09	1.99	1.98	1.97	1.98	1.98	1.99	2.02	2.01	2.04	2.02	2.01	1.97	2.21	2.07	24	
6	2.01	2.01	2.01	2.01	S	2.01	2.01	2.01	1.99	1.99	1.99	1.99	2.00	2.00	1.99	1.99	1.99	1.99	1.99	1.99	1.99	2.00	2.00	2.00	1.99	2.01	2.00	24	
7	2.01	2.03	2.02	S	2.02	2.03	2.04	2.06	2.06	2.02	2.02	2.02	2.02	2.01	2.00	2.00	2.01	2.00	1.99	1.99	1.99	2.00	2.01	2.01	1.99	2.06	2.02	24	
8	2.01	2.05	S	2.09	2.10	2.11	2.12	2.10	2.04	2.03	2.01	2.01	2.01	2.01	2.01	2.01	2.02	2.03	2.06	2.07	2.03	2.05	2.03	2.06	2.01	2.12	2.05	24	
9	2.07	S	2.05	2.04	2.04	2.04	2.05	2.06	2.05	1.99	1.99	1.99	1.99	1.99	1.99	1.98	1.98	1.98	1.98	1.99	1.98	1.98	1.98	1.99	1.98	2.07	2.01	24	
10	S	2.01	2.00	2.01	1.99	1.99	1.99	1.97	1.97	1.97	1.98	1.98	1.98	1.98	1.97	1.97	1.98	1.99	2.00	2.00	1.99	2.00	2.01	S	1.97	2.01	1.99	24	
11	2.01	2.00	1.99	1.99	1.98	2.00	2.01	1.99	1.99	1.98	1.98	1.95	1.94	1.93	1.94	1.93	1.94	1.94	1.94	1.96	2.01	2.03	S	2.14	1.93	2.14	1.98	24	
12	2.17	2.18	2.25	2.16	2.13	2.05	2.01	1.97	1.95	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	S	1.94	1.94	1.94	2.25	2.00	24	
13	1.95	1.94	1.95	1.94	1.95	1.95	1.95	1.95	1.95	1.94	1.95	1.94	1.94	1.94	1.94	1.94	1.94	1.95	1.95	1.96	S	1.97	1.97	1.98	1.94	1.98	1.95	24	
14	1.98	1.98	1.99	2.00	2.02	2.03	2.03	2.05	2.01	1.98	2.02	2.05	1.98	1.98	1.98	1.98	1.98	1.98	2.00	S	2.02	2.03	2.05	2.07	1.98	2.07	2.01	24	
15	2.08	2.05	2.04	2.04	2.04	2.01	1.96	1.97	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.96	1.96	1.96	S	1.97	1.96	1.97	1.97	1.97	1.95	2.08	1.98	24
16	1.97	1.97	1.97	1.97	1.97	1.96	1.96	1.97	1.97	1.97	1.97	1.96	1.96	1.95	1.95	1.95	1.95	1.95	S	1.95	1.96	1.96	1.95	1.96	1.96	1.95	1.97	1.96	24
17	1.96	1.96	1.96	1.96	1.96	1.96	1.97	1.97	1.96	1.96	1.95	1.95	1.95	1.95	1.95	1.95	1.96	S	1.96	1.98	2.01	2.00	2.02	2.03	2.08	1.95	2.08	1.97	24
18	2.10	2.21	2.27	2.20	2.18	2.13	2.14	2.14	2.12	2.06	2.03	2.02	2.02	2.02	2.00	S	1.99	1.97	1.99	2.14	2.22	2.08	2.14	2.14	1.97	2.27	2.10	24	
19	2.17	2.33	2.35	2.21	2.25	2.19	2.24	2.29	2.26	2.24	2.17	1.98	1.97	1.96	S	1.96	1.96	1.96	1.97	1.97	1.99	2.03	2.04	2.03	1.96	2.35	2.11	24	
20	2.04	2.08	2.13	2.25	2.42	2.41	2.28	2.18	1.98	1.97	1.96	1.95	1.95	S	1.95	1.95	1.96	1.96	1.97	1.98	2.00	1.99	1.99	1.98	1.95	2.42	2.06	24	
21	1.98	2.00	2.00	2.00	2.00	1.99	2.00	2.00	2.01	1.99	1.97	1.96	S	1.96	1.96	1.96	1.96	1.96	1.97	1.99	2.07	2.11	2.08	2.10	1.96	2.11	2.00	24	
22	2.10	2.12	2.06	2.05	2.10	2.18	2.17	2.12	1.98	1.95	1.95	S	1.97	1.97	1.97	1.96	1.97	1.97	1.97	1.96	1.96	1.96	1.97	1.98	1.95	2.18	2.02	24	
23	1.99	1.99	1.98	1.98	1.97	1.97	1.97	1.97	1.99	2.00	S	2.02	2.02	2.03	2.01	1.99	1.98	1.99	2.01	2.06	2.07	2.08	2.07	2.08	1.97	2.08	2.01	24	
24	2.10	2.14	2.15	2.14	2.15	2.20	2.22	2.22	2.22	S	2.20	2.15	2.03	2.02	1.95	1.94	1.93	1.94	1.94	1.95	1.94	1.94	1.94	1.94	1.93	2.22	2.06	24	
25	1.95	1.97	1.98	1.98	1.99	2.00	2.01	2.03	S	2.03	1.99	1.96	1.97	2.04	1.94	1.94	1.94	1.95	1.96	2.00	2.00	2.06	2.02	2.01	1.94	2.06	1.99	24	
26	1.95	1.93	1.92	1.94	1.94	1.94	1.93	S	1.95	1.94	1.91	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.93	1.94	1.94	1.95	1.96	1.91	1.96	1.93	24	
27	1.95	1.94	1.94	1.95	1.94	1.95	S	1.95	1.94	1.94	1.94	1.94	1.93	1.94	1.94	1.94	1.94	1.94	1.95	1.95	1.94	1.94	1.94	1.97	1.95	1.93	1.97	1.94	24
28	1.95	1.98	1.97	1.97	2.00	S	1.97	2.01	1.97	1.96	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.94	1.97	1.97	1.99	1.99	1.96	1.93	2.01	1.96	24
29	1.98	1.95	1.94	1.94	S	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.95	1.96	1.95	1.95	1.96	1.97	1.99	1.94	1.99	1.95	24	
30	1.98	1.98	1.99	S	2.04	2.05	2.08	2.11	2.00	1.95	1.95	1.95	1.96	1.97	1.96	1.95	1.96	1.95	1.97	1.99	2.00	2.05	2.05	2.02	1.95	2.11	2.00	24	
HOURLY MAX	2.17	2.33	2.35	2.25	2.42	2.41	2.28	2.29	2.26	2.24	2.21	2.15	2.09	2.04	2.01	2.01	2.02	2.03	2.06	2.14	2.22	2.11	2.15	2.14					
HOURLY AVG	2.02	2.04	2.04	2.04	2.05	2.04	2.05	2.04	2.01	1.99	2.00	1.98	1.98	1.98	1.96	1.96	1.96	1.97	1.98	1.99	2.00	2.01	2.01	2.02					

STATUS FLAG CODES

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

24 HR AVERAGES September 2018

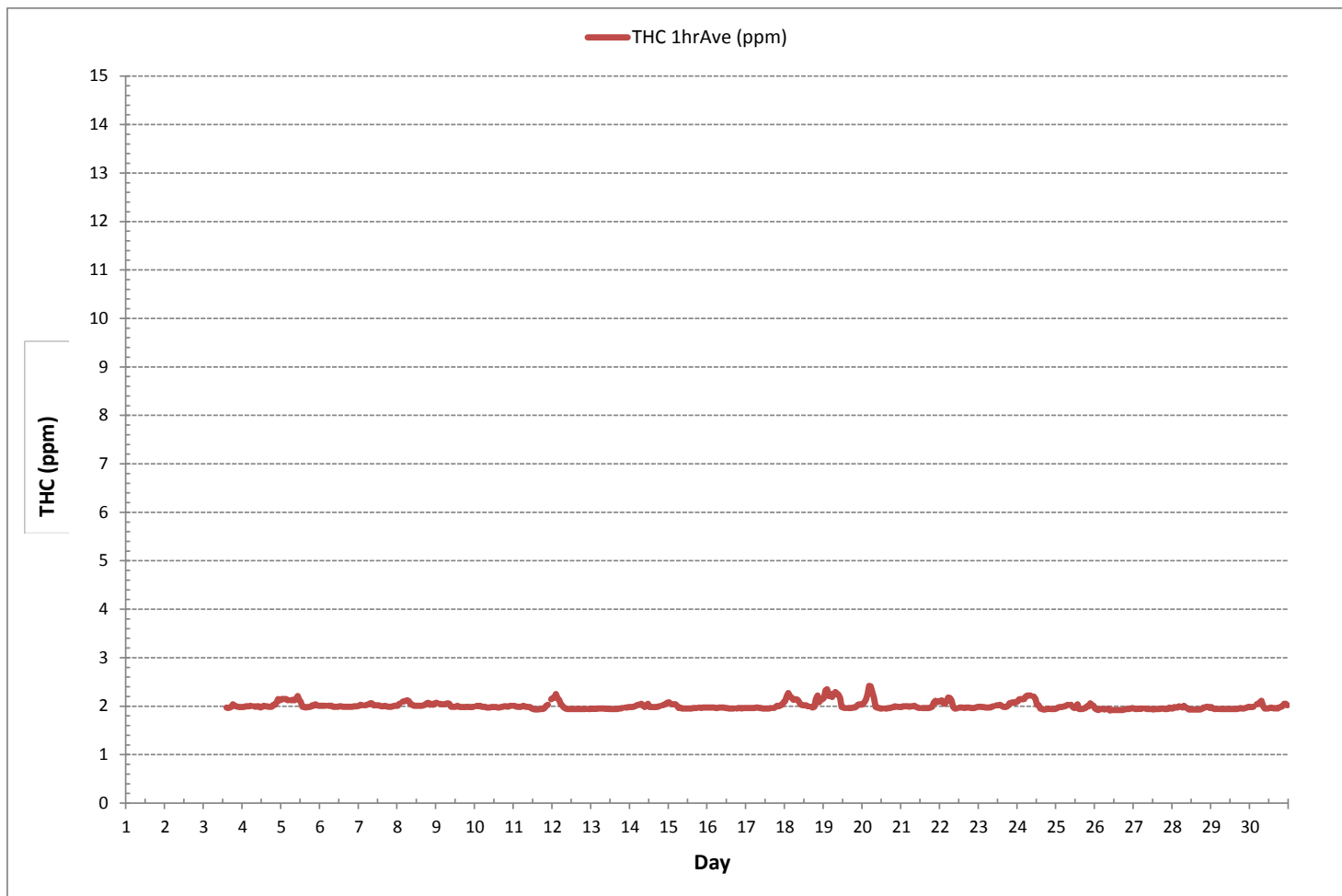


MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	630			
MINIMUM 1-HR AVERAGE:	1.91 ppm	@ HOUR	9	ON DAY 26
MAXIMUM 1-HR AVERAGE:	2.42 ppm	@ HOUR	4	ON DAY 20
MAXIMUM 24-HR AVERAGE:	2.11 ppm			ON DAY 19
IZS CALIBRATION TIME:	28 hrs	OPERATIONAL TIME:	662 hrs	
MONTHLY CALIBRATION TIME:	4 hrs	AMD OPERATION UPTIME:	91.9 %	
STANDARD DEVIATION:	0.07	MONTHLY AVERAGE:	2.00 ppm	



TOTAL HYDROCARBONS Hourly Averages (THC ppm)



% Icon Classes (ppm)

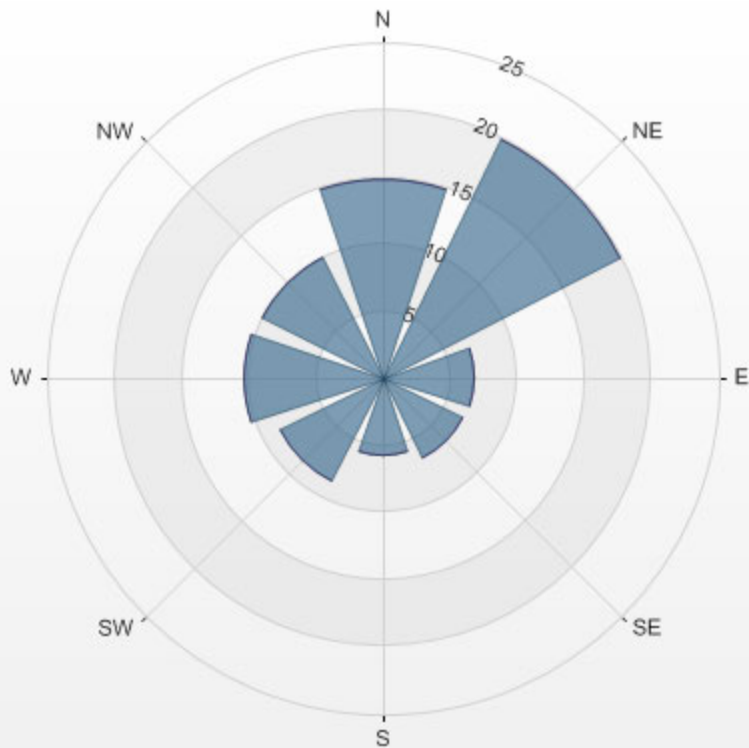
0 0.0-0.8

0 0.8-1.6

83 1.6-2.4

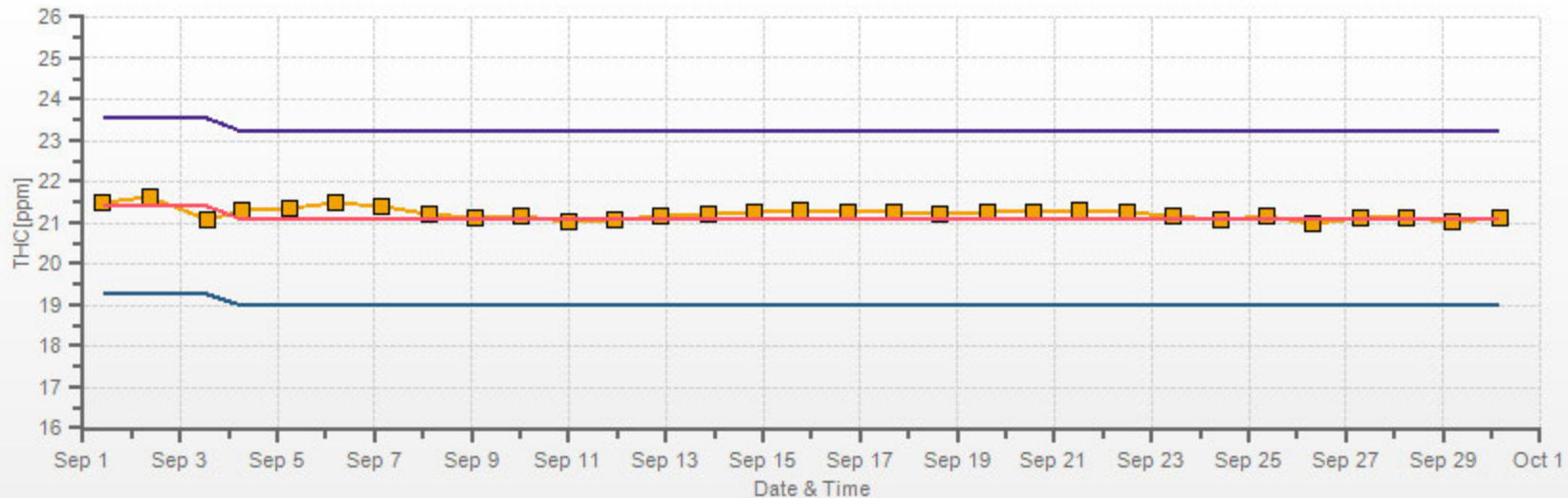
0 >2.4

LICA MASKWA Poll.: LICA MASKWA-THC[ppm] 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 16.93% Calm Poll Avg: 2.04[ppm]



THC[ppm] Calibration: LICA MASKWA Monthly: 18/09 Type: Span

Span Meas Span Ref Span Low Span High



METHANE



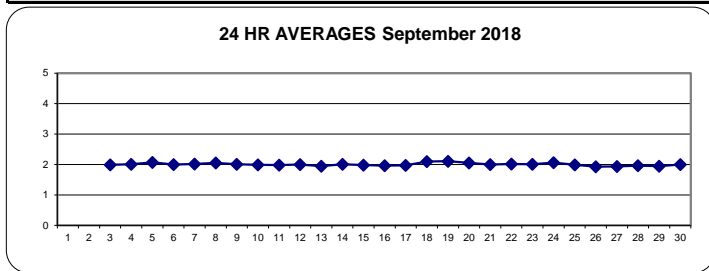
METHANE Hourly Averages (CH₄ ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY 1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	C	C	C	C	Y	Y	Y	Y	Y	Y	Y	Y	Y	1.96	2.04	1.99	14
4	1.98	1.99	2.00	2.00	2.00	2.01	S	2.00	1.99	2.00	2.00	1.97	1.99	2.01	2.00	2.00	1.99	1.99	1.99	2.03	2.03	2.08	2.15	2.12	1.97	2.15	2.01	24	
5	2.15	2.15	2.15	2.15	2.12	S	2.12	2.13	2.12	2.14	2.21	2.13	2.09	1.99	1.98	1.97	1.98	1.98	1.99	2.02	2.01	2.04	2.02	2.01	1.97	2.21	2.07	24	
6	2.01	2.01	2.01	2.01	S	2.01	2.01	2.01	1.99	1.99	1.99	1.99	2.00	2.00	1.99	1.99	1.99	1.99	1.99	1.99	1.99	2.00	2.00	2.00	1.99	2.01	2.00	24	
7	2.01	2.03	2.02	S	2.02	2.03	2.04	2.05	2.06	2.02	2.02	2.02	2.02	2.01	2.00	2.00	2.01	2.00	1.99	1.99	1.99	2.00	2.01	2.01	1.99	2.06	2.02	24	
8	2.01	2.05	S	2.09	2.10	2.11	2.12	2.10	2.04	2.03	2.01	2.01	2.01	2.01	2.01	2.01	2.02	2.03	2.06	2.07	2.03	2.05	2.03	2.06	2.01	2.12	2.05	24	
9	2.07	S	2.05	2.04	2.04	2.04	2.05	2.06	2.05	1.99	1.99	1.99	1.99	1.99	1.99	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.99	1.98	2.07	2.01	24	
10	S	2.01	2.00	2.01	1.99	1.99	1.99	1.97	1.97	1.97	1.98	1.98	1.98	1.98	1.97	1.97	1.98	1.99	2.00	2.00	1.99	2.00	2.01	S	1.97	2.01	1.99	24	
11	2.01	2.00	1.99	1.99	1.98	2.00	2.01	1.99	1.99	1.98	1.97	1.95	1.94	1.93	1.94	1.93	1.94	1.94	1.94	1.96	2.01	2.03	S	2.14	1.93	2.14	1.98	24	
12	2.17	2.16	2.22	2.16	2.13	2.05	2.01	1.97	1.95	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	S	1.94	1.94	1.94	2.22	2.00	24	
13	1.95	1.94	1.95	1.94	1.95	1.95	1.95	1.95	1.95	1.94	1.95	1.94	1.94	1.94	1.94	1.94	1.94	1.95	1.95	1.96	S	1.97	1.97	1.98	1.94	1.98	1.95	24	
14	1.98	1.97	1.99	2.00	2.02	2.03	2.03	2.05	2.01	1.98	2.02	2.05	1.98	1.98	1.98	1.98	1.98	1.98	2.00	S	2.02	2.03	2.05	2.07	1.97	2.07	2.01	24	
15	2.08	2.05	2.04	2.04	2.04	2.01	1.96	1.97	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.96	1.96	1.96	S	1.97	1.96	1.97	1.97	1.97	1.95	2.08	1.98	24
16	1.97	1.97	1.97	1.97	1.97	1.96	1.96	1.97	1.97	1.97	1.97	1.96	1.96	1.95	1.95	1.95	1.95	1.95	S	1.95	1.96	1.96	1.95	1.96	1.96	1.95	1.97	1.96	24
17	1.96	1.96	1.96	1.96	1.96	1.96	1.97	1.97	1.96	1.96	1.95	1.95	1.95	1.95	1.95	1.95	1.96	S	1.96	1.98	2.01	2.00	2.02	2.03	2.08	1.95	2.08	1.97	24
18	2.10	2.21	2.27	2.20	2.18	2.13	2.14	2.14	2.12	2.06	2.03	2.02	2.02	2.02	2.00	S	1.99	1.97	1.99	2.14	2.22	2.08	2.14	2.14	1.97	2.27	2.10	24	
19	2.17	2.33	2.35	2.21	2.25	2.19	2.24	2.29	2.26	2.24	2.17	1.98	1.97	1.96	S	1.96	1.96	1.96	1.97	1.97	1.99	2.03	2.04	2.03	1.96	2.35	2.11	24	
20	2.04	2.08	2.13	2.22	2.31	2.33	2.27	2.18	1.98	1.97	1.96	1.95	1.95	S	1.95	1.95	1.96	1.96	1.97	1.98	2.00	1.99	1.98	1.98	1.95	2.33	2.05	24	
21	1.98	2.00	2.00	2.00	2.00	1.99	2.00	2.00	2.01	1.99	1.97	1.96	S	1.96	1.96	1.96	1.96	1.96	1.97	1.99	2.06	2.10	2.08	2.09	1.96	2.10	2.00	24	
22	2.10	2.12	2.06	2.05	2.10	2.18	2.17	2.12	1.98	1.95	1.95	S	1.97	1.97	1.97	1.96	1.97	1.97	1.97	1.96	1.96	1.96	1.97	1.98	1.95	2.18	2.02	24	
23	1.99	1.99	1.98	1.98	1.97	1.97	1.97	1.97	1.99	2.00	S	2.02	2.02	2.03	2.01	1.99	1.98	1.99	2.01	2.06	2.07	2.08	2.07	2.08	1.97	2.08	2.01	24	
24	2.10	2.14	2.15	2.14	2.15	2.20	2.22	2.22	2.21	S	2.20	2.15	2.03	2.02	1.95	1.94	1.93	1.94	1.93	1.94	1.95	1.94	1.94	1.94	1.93	2.22	2.06	24	
25	1.95	1.97	1.98	1.98	1.99	2.00	2.01	2.03	S	2.03	1.99	1.96	1.97	2.02	1.94	1.94	1.94	1.95	1.96	2.00	2.00	2.06	2.02	2.01	1.94	2.06	1.99	24	
26	1.95	1.93	1.92	1.94	1.94	1.94	1.93	S	1.94	1.91	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.93	1.94	1.94	1.95	1.96	1.91	1.96	1.93	24	
27	1.95	1.94	1.94	1.95	1.94	1.95	S	1.95	1.94	1.94	1.94	1.93	1.94	1.94	1.94	1.94	1.94	1.94	1.95	1.95	1.94	1.94	1.94	1.97	1.95	1.93	1.97	1.94	24
28	1.95	1.98	1.97	1.97	2.00	S	1.97	2.01	1.97	1.96	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.94	1.97	1.97	1.99	1.99	1.96	1.93	2.01	1.96	24
29	1.98	1.95	1.94	1.94	S	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.95	1.96	1.95	1.95	1.96	1.97	1.99	1.94	1.99	1.95	24	
30	1.98	1.98	1.99	S	2.04	2.05	2.08	2.11	2.00	1.95	1.95	1.95	1.96	1.97	1.96	1.95	1.96	1.95	1.97	1.99	2.00	2.05	2.05	2.02	1.95	2.11	2.00	24	
HOURLY MAX	2.17	2.33	2.35	2.22	2.31	2.33	2.27	2.29	2.26	2.24	2.21	2.15	2.09	2.03	2.01	2.01	2.02	2.03	2.06	2.14	2.22	2.10	2.15	2.14					
HOURLY AVG	2.02	2.04	2.04	2.04	2.05	2.04	2.05	2.04	2.01	1.99	2.00	1.98	1.98	1.97	1.96	1.96	1.96	1.97	1.98	1.99	2.00	2.01	2.01	2.02					

STATUS FLAG CODES

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

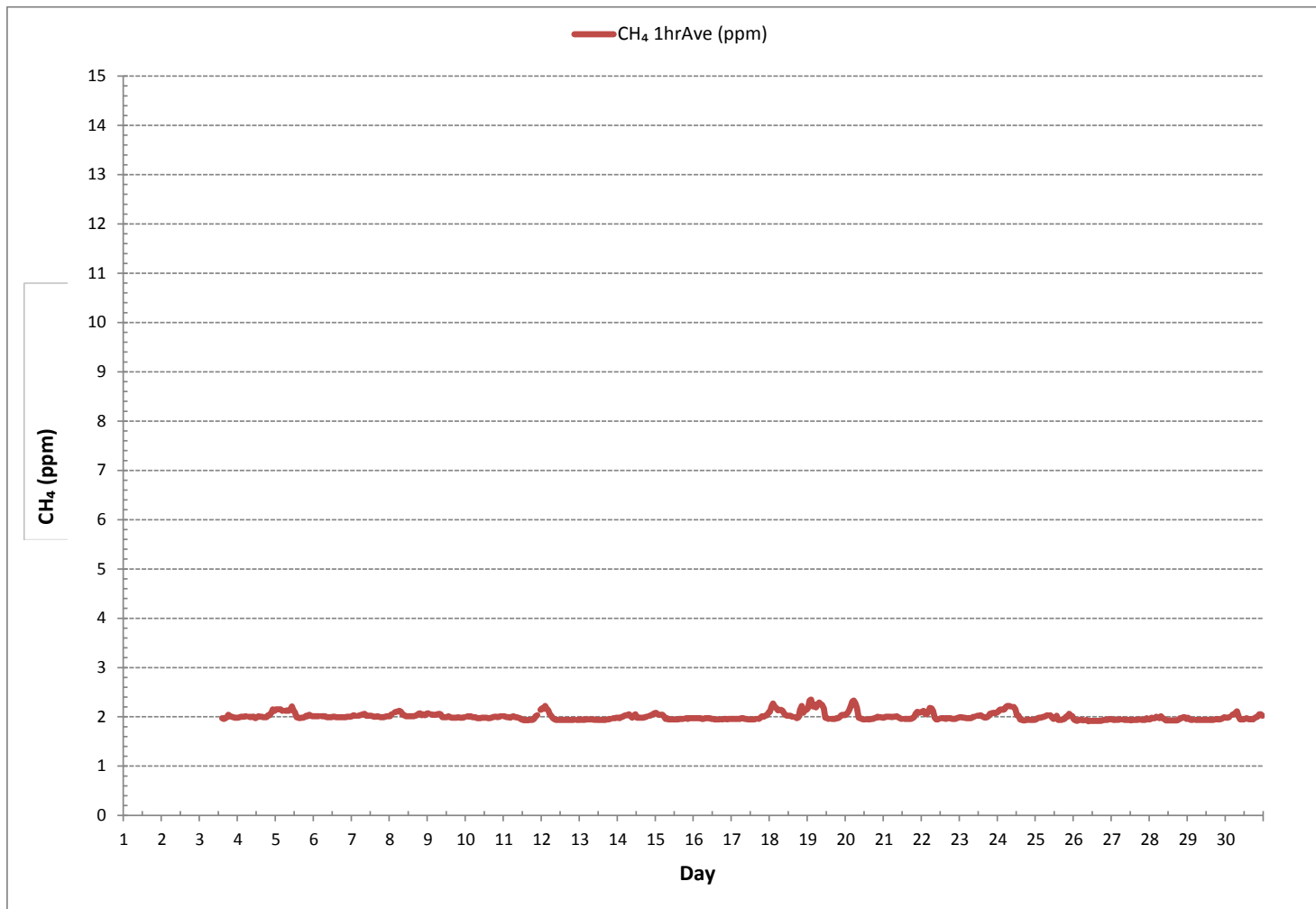
24 HR AVERAGES September 2018



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	630
MINIMUM 1-HR AVERAGE:	1.91 ppm @ HOUR 9 ON DAY 26
MAXIMUM 1-HR AVERAGE:	2.35 ppm @ HOUR 2 ON DAY 19
MAXIMUM 24-HR AVERAGE:	2.11 ppm ON DAY 19
IZS CALIBRATION TIME:	28 hrs
MONTHLY CALIBRATION TIME:	4 hrs
OPERATIONAL TIME:	662 hrs
AMD OPERATION UPTIME:	91.9 %
STANDARD DEVIATION:	0.07
MONTHLY AVERAGE:	2.00 ppm

METHANE Hourly Averages (CH₄ ppm)



Wind: LICA MASKWA
 Poll.: LICA MASKWA-CH4[ppm]
 Monthly: 18/09
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 16.93% Calm Avg: 2.03 [ppm]

Direction	0.0-0.8	0.8-1.6	1.6-2.4	>2.4	Total
N	0.0	0.0	14.9	0.0	14.9
NE	0.0	0.0	19.8	0.0	19.8
E	0.0	0.0	6.9	0.0	6.9
SE	0.0	0.0	6.7	0.0	6.7
S	0.0	0.0	5.8	0.0	5.8
SW	0.0	0.0	8.6	0.0	8.6
W	0.0	0.0	10.4	0.0	10.4
NW	0.0	0.0	10.1	0.0	10.1
Summary	0.0	0.0	83.1	0.0	83.1

% Icon Classes (ppm)

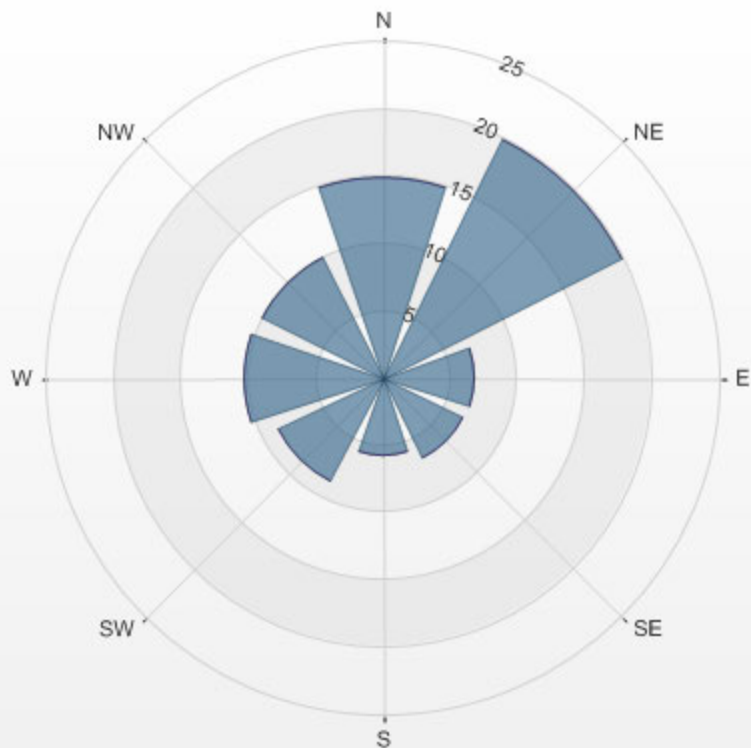
0 0.0-0.8

0 0.8-1.6

83 1.6-2.4

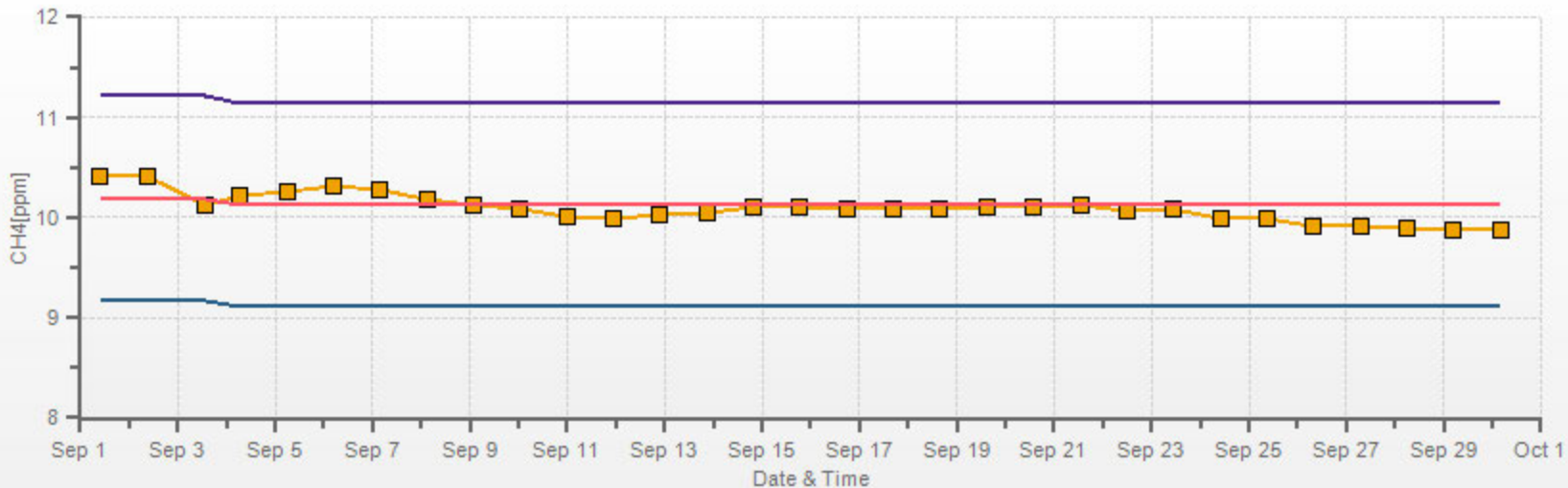
0 >2.4

LICA MASKWA Poll.: LICA MASKWA-CH4[ppm] 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 16.93% Calm Poll Avg: 2.03[ppm]



CH4[ppm] Calibration: LICA MASKWA Monthly: 18/09 Type: Span

Span Meas Span Ref Span Low Span High



NON-METHANE HYDROCARBON



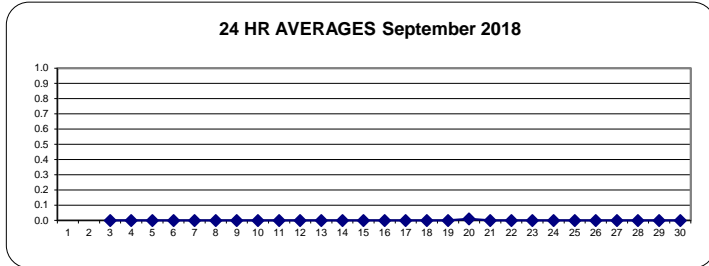
NON-METHANE HYDROCARBONS Hourly Averages (NMHC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY 1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
DAY 2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
DAY 3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	C	C	C	C	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14
DAY 4	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
DAY 5	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
DAY 6	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
DAY 7	0.00	0.00	0.00	S	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	24
DAY 8	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
DAY 9	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
DAY 10	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	24
DAY 11	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	0.00	0.00	0.00	S	0.00	0.00	0.00	0.01	0.00	24
DAY 12	0.00	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.00	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	0.03	0.00	24
DAY 13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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
DAY 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	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
DAY 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	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
DAY 16	0.00	0.00	0.00	0.00	0.00	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
DAY 17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
DAY 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	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
DAY 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	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
DAY 20	0.00	0.00	0.00	0.03	0.12	0.09	0.01	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	0.12	0.01	24
DAY 21	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	0.01	0.00	0.00	0.00	0.00	0.01	0.00	24
DAY 22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
DAY 23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
DAY 24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	24
DAY 25	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	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	24
DAY 26	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	24
DAY 27	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
DAY 28	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
DAY 29	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
DAY 30	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
HOURLY MAX	0.00	0.02	0.03	0.03	0.12	0.09	0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00				
HOURLY AVG	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				

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 HR AVERAGES September 2018

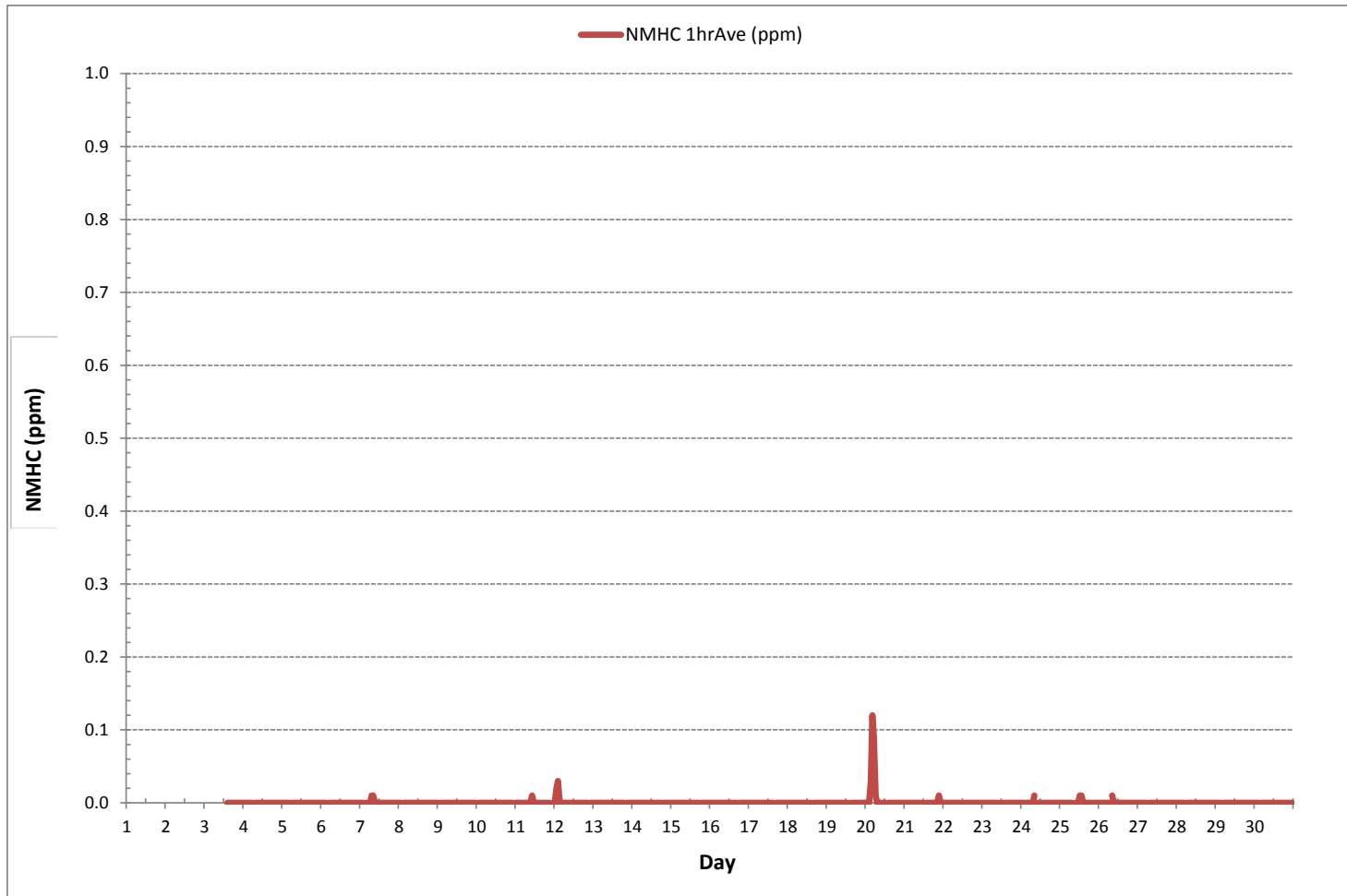


MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	14			
MINIMUM 1-HR AVERAGE:	0.00 ppm	@ HOUR	14	ON DAY 3
MAXIMUM 1-HR AVERAGE:	0.12 ppm	@ HOUR	4	ON DAY 20
MAXIMUM 24-HR AVERAGE:	0.01 ppm			ON DAY 20
IZS CALIBRATION TIME:	28 hrs	OPERATIONAL TIME:	662 hrs	
MONTHLY CALIBRATION TIME:	4 hrs	AMD OPERATION UPTIME:	91.9 %	
STANDARD DEVIATION:	0.01	MONTHLY AVERAGE:	0.00 ppm	



NON-METHANE HYDROCARBONS Hourly Averages (NMHC ppm)



Wind: LICA MASKWA
 Poll.: LICA MASKWA-NMHC[ppm]
 Monthly: 18/09
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 16.93%

Calm Avg: 0.00 [ppm]

Direction	0.0-0.4	0.4-0.8	0.8-1.2	1.2-1.6	1.6-2.0	>2.0	Total
N	14.9	0.0	0.0	0.0	0.0	0.0	14.9
NE	19.8	0.0	0.0	0.0	0.0	0.0	19.8
E	6.9	0.0	0.0	0.0	0.0	0.0	6.9
SE	6.7	0.0	0.0	0.0	0.0	0.0	6.7
S	5.8	0.0	0.0	0.0	0.0	0.0	5.8
SW	8.6	0.0	0.0	0.0	0.0	0.0	8.6
W	10.4	0.0	0.0	0.0	0.0	0.0	10.4
NW	10.1	0.0	0.0	0.0	0.0	0.0	10.1
Summary	83.1	0.0	0.0	0.0	0.0	0.0	83.1

% Icon Classes (ppm)

83 0.0-0.4

0 0.4-0.8

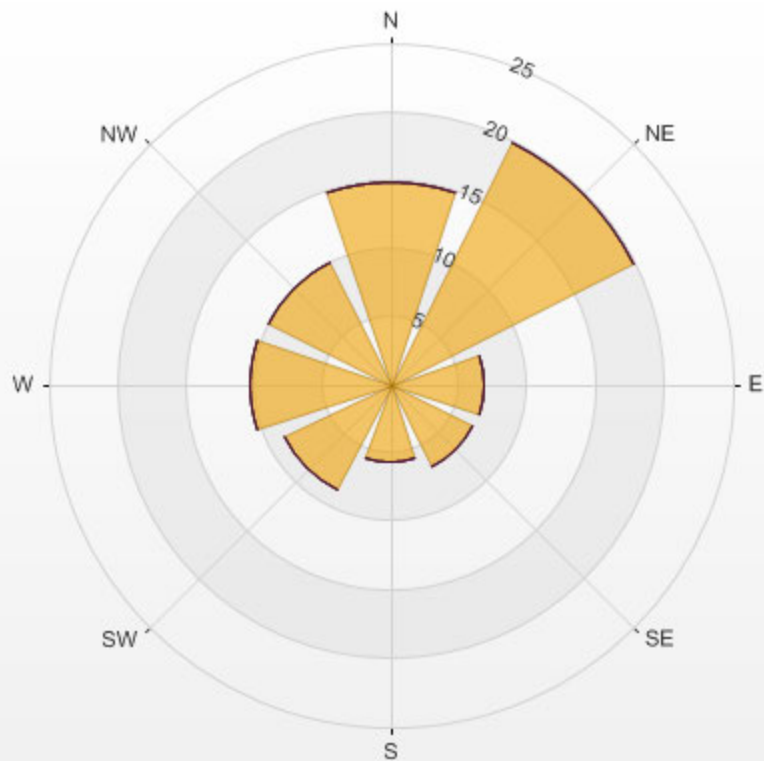
0 0.8-1.2

0 1.2-1.6

0 1.6-2.0

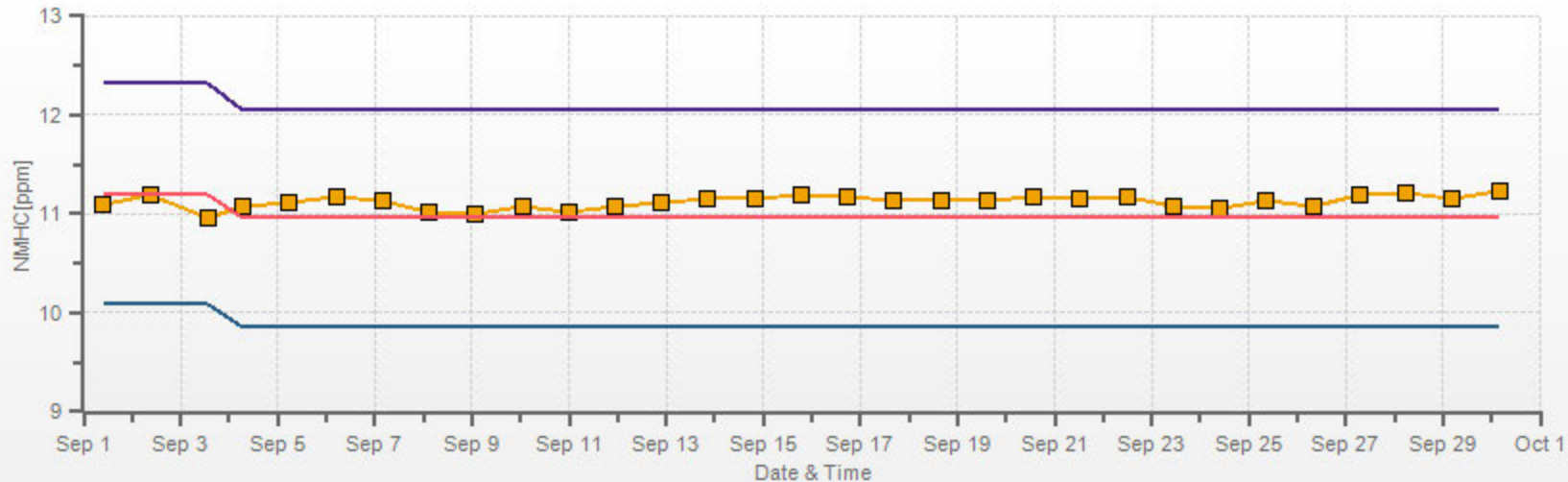
0 >2.0

LICA MASKWA Poll.: LICA MASKWA-NMHC[ppm] 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 16.93% Calm Poll Avg: 0.00[ppm]



NMHC[ppm] Calibration: LICA MASKWA Monthly: 18/09 Type: Span

Span Meas Span Ref Span Low Span High



OXIDES OF NITROGEN



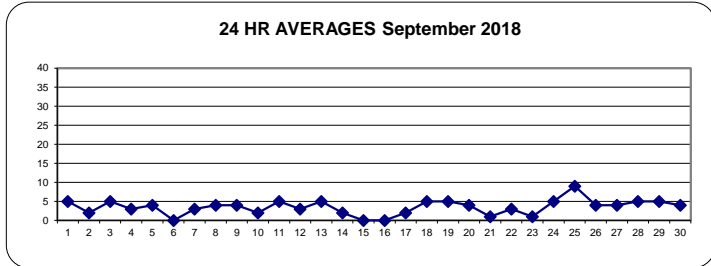
OXIDES OF NITROGEN Hourly Averages (NO_x ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY																												
1	4	5	6	2	1	2	2	2	2	S	13	8	12	11	8	7	9	11	10	0	1	0	1	1	0	13	5	24
2	1	2	6	2	1	5	8	2	S	2	1	C	C	C	C	C	C	C	2	1	1	2	1	2	1	8	2	24
3	2	2	2	1	1	5	5	S	8	7	4	3	2	5	5	3	3	23	17	3	2	1	1	1	1	23	5	24
4	1	7	5	9	7	9	S	6	5	7	3	3	1	2	2	2	1	0	1	1	1	1	3	3	0	9	3	24
5	3	4	3	3	2	S	5	8	7	8	9	8	8	5	2	3	2	2	5	1	1	1	0	0	0	9	4	24
6	0	0	0	0	S	2	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	24
7	2	8	1	S	2	5	6	10	13	4	1	1	1	4	3	3	4	3	1	1	1	1	1	1	1	13	3	24
8	1	6	S	2	1	1	1	1	1	1	1	1	1	4	4	4	2	1	12	14	5	7	1	19	1	19	4	24
9	14	S	11	2	5	1	2	6	11	3	3	3	3	3	4	3	3	3	5	4	4	3	3	3	1	14	4	24
10	S	5	3	2	1	1	0	0	1	0	1	2	1	1	1	0	1	1	3	2	4	1	3	S	0	5	2	24
11	11	15	5	3	6	7	10	6	8	3	7	4	2	2	2	4	3	2	1	0	1	1	S	2	0	15	5	24
12	1	4	2	1	1	2	2	1	3	3	3	4	4	4	7	5	3	4	3	3	4	S	5	4	1	7	3	24
13	4	4	4	3	3	5	7	10	8	8	9	8	10	5	3	4	2	3	3	1	S	5	4	5	1	10	5	24
14	3	2	2	1	1	2	4	5	3	2	3	3	1	1	1	1	1	1	0	S	3	3	1	0	0	5	2	24
15	2	0	0	0	1	2	0	0	2	0	0	0	0	0	0	0	0	0	S	1	1	0	0	0	0	2	0	24
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	1	1	1	0	0	0	0	1	0	24
17	0	0	0	0	0	0	2	1	1	1	0	0	2	3	0	5	S	4	2	2	3	3	3	6	0	6	2	24
18	5	7	6	6	6	7	5	7	7	3	2	6	5	8	6	S	6	2	4	1	3	2	1	1	1	8	5	24
19	1	9	3	3	7	5	7	9	7	7	6	2	1	1	S	5	2	3	2	1	2	9	13	4	1	13	5	24
20	12	11	7	3	1	2	17	6	2	1	2	1	2	S	3	1	1	2	5	0	1	3	1	1	0	17	4	24
21	0	0	0	0	2	1	0	0	2	1	3	1	S	2	4	1	3	1	0	0	2	2	2	2	0	4	1	24
22	1	0	0	3	11	1	0	9	4	0	2	S	3	4	4	3	4	5	4	2	0	0	0	0	0	11	3	24
23	2	1	1	0	0	0	0	0	3	2	S	2	2	1	1	1	1	1	1	1	1	2	2	2	0	3	1	24
24	3	3	3	3	4	6	7	8	7	S	8	6	5	8	4	4	2	2	1	8	9	2	8	3	1	9	5	24
25	12	14	17	12	16	9	24	45	S	17	16	6	1	3	1	1	1	1	1	2	3	5	3	3	1	45	9	24
26	1	1	1	12	14	9	6	S	20	3	4	3	3	5	3	3	0	1	1	1	1	1	2	5	0	20	4	24
27	1	1	1	1	2	5	S	3	2	2	3	3	3	7	10	8	6	9	4	0	1	2	12	1	0	12	4	24
28	1	7	2	5	11	S	6	21	18	6	2	3	2	4	3	1	0	1	1	3	1	5	9	5	0	21	5	24
29	14	0	8	26	S	2	2	2	1	1	1	1	1	1	4	4	6	6	14	3	0	2	6	3	0	26	5	24
30	5	3	3	S	4	5	25	9	5	2	2	4	3	1	1	1	0	0	1	1	2	2	2	6	0	25	4	24
HOURLY MAX	14	15	17	26	16	9	25	45	20	17	16	8	12	11	10	8	9	23	17	14	9	9	13	19				
HOURLY AVG	4	4	4	4	4	4	6	6	5	3	4	3	3	3	3	3	2	3	4	2	2	2	3	3				

STATUS FLAG CODES

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

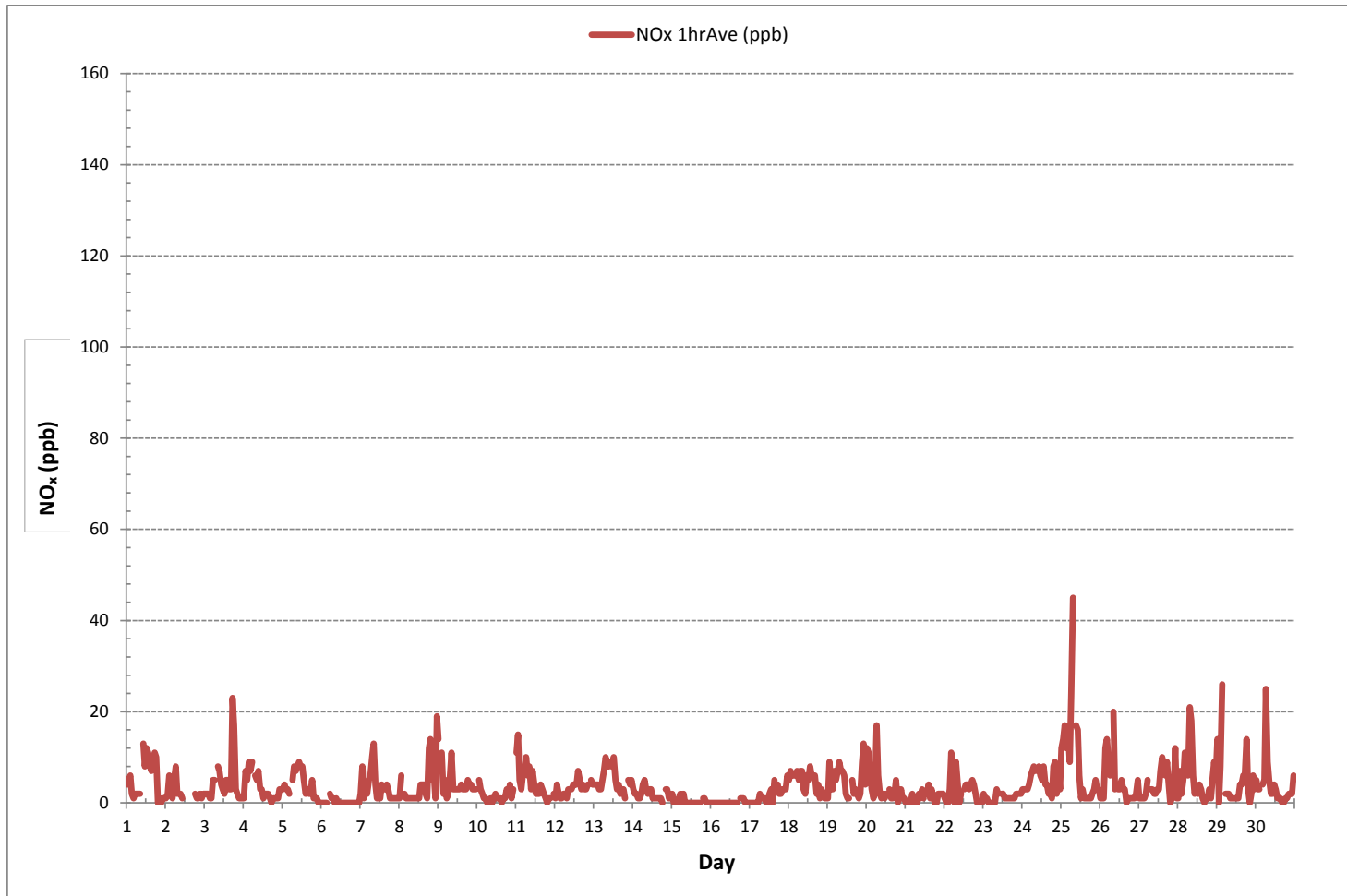
24 HR AVERAGES September 2018







MONTHLY SUMMARY

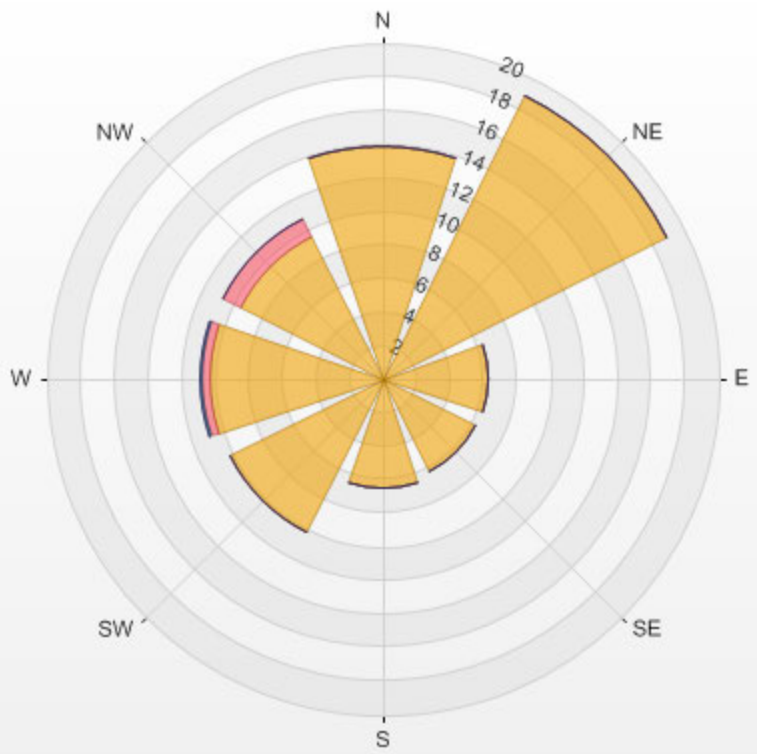
NUMBER OF NON-ZERO READINGS:	577			
MINIMUM 1-HR AVERAGE:	0	ppb @ HOUR	19	ON DAY
MAXIMUM 1-HR AVERAGE:	45	ppb @ HOUR	7	ON DAY
MAXIMUM 24-HR AVERAGE:	9	ppb		ON DAY
IZS CALIBRATION TIME:	31	hrs	OPERATIONAL TIME:	720
MONTHLY CALIBRATION TIME:	7	hrs	AMD OPERATION UPTIME:	100.0
STANDARD DEVIATION:	4		MONTHLY AVERAGE:	3
				ppb

OXIDES OF NITROGEN Hourly Averages (NO_x ppb)



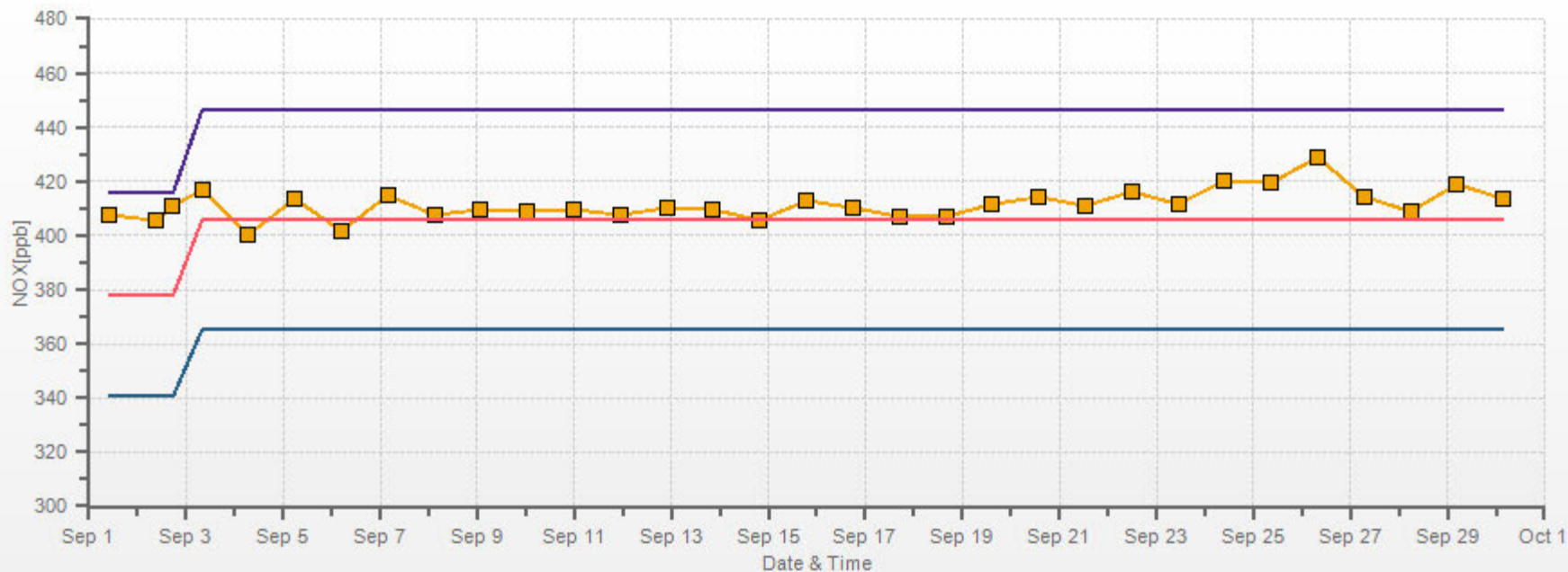
% Icon	Classes (ppb)	82		0.0-15.3	2		15.3-30.7	0		30.7-46.0	0		>46.0
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LICA MASKWA Poll.: LICA MASKWA-NOX[ppb] 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 16.52% Calm Poll Avg: 3.26[ppb]



NOX[ppb] Calibration: LICA MASKWA Monthly: 18/09 Type: Span

Span Meas Span Ref Span Low Span High



NITRIC OXIDE

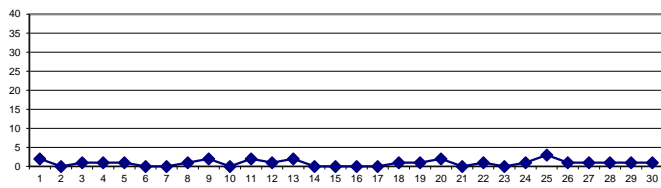
NITRIC OXIDE Hourly Averages (NO ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY																												
1	0	0	0	0	0	0	0	0	0	S	5	3	6	5	4	3	4	4	3	0	0	0	0	0	0	6	2	24
2	0	0	0	0	0	0	2	1	S	0	0	C	C	C	C	C	C	C	0	0	0	0	0	0	0	2	0	24
3	0	0	0	0	0	1	1	S	1	1	1	0	0	2	2	1	1	12	8	1	0	0	0	0	0	12	1	24
4	0	2	1	2	1	3	S	2	2	3	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	3	1	24
5	0	0	0	0	0	S	1	3	3	4	4	3	2	1	0	1	1	0	0	0	0	0	0	0	0	4	1	24
6	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
7	0	0	0	S	0	0	1	2	4	1	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	4	0	24
8	0	3	S	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	4	5	1	3	0	10	0	10	1	24
9	6	S	2	0	1	0	0	3	7	1	2	2	1	1	2	1	1	1	2	1	2	1	1	1	0	7	2	24
10	S	1	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	1	2	0	1	S	0	2	0	24
11	6	9	2	1	1	3	6	3	5	1	3	1	1	0	0	1	1	0	0	0	0	0	S	0	0	9	2	24
12	0	2	1	0	0	1	1	0	1	2	2	2	2	2	4	2	1	2	2	1	2	S	2	2	0	4	1	24
13	2	2	2	1	2	2	3	5	4	4	5	5	5	3	1	2	1	1	1	0	S	1	0	1	0	5	2	24
14	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0	0	S	0	0	0	0	0	1	0	24
15	1	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	24
16	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	24
17	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	2	S	0	0	0	0	0	0	0	0	2	0	24
18	0	0	0	0	1	1	1	3	3	1	1	2	2	4	2	S	2	0	0	0	1	0	0	0	0	4	1	24
19	0	7	1	0	1	0	2	4	3	3	2	1	0	0	S	1	0	0	0	0	0	3	4	1	0	7	1	24
20	6	5	4	1	0	0	12	4	1	1	1	0	1	S	1	0	0	0	1	0	0	0	0	0	0	12	2	24
21	0	0	0	0	0	0	0	0	1	0	2	0	S	0	1	0	0	0	0	0	0	0	0	0	0	2	0	24
22	0	0	0	0	5	0	0	5	2	0	1	S	1	1	1	1	1	0	0	0	0	0	0	0	0	5	1	24
23	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	1	0	24
24	0	0	0	0	0	0	1	3	3	S	3	2	1	3	1	1	0	0	0	2	0	0	1	0	0	3	1	24
25	1	2	4	2	3	1	11	31	S	7	7	2	0	1	0	0	0	0	0	0	0	0	0	0	0	31	3	24
26	0	0	0	1	1	1	0	S	7	1	1	1	1	1	1	1	0	0	0	0	0	0	1	0	0	7	1	24
27	0	0	0	0	0	1	S	0	1	0	1	1	1	1	3	4	3	2	2	1	0	0	2	0	0	4	1	24
28	0	0	0	0	1	S	0	8	8	2	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	8	1	24
29	2	0	1	6	S	0	0	0	0	0	0	0	0	0	1	1	2	2	4	0	0	0	0	0	0	6	1	24
30	0	0	0	S	0	0	13	3	2	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	13	1	24
HOURLY MAX	6	9	4	6	5	3	13	31	8	7	7	5	6	5	4	3	4	12	8	5	2	3	4	10				
HOURLY AVG	1	1	1	1	1	1	2	3	2	1	2	1	1	1	1	1	1	1	1	0	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

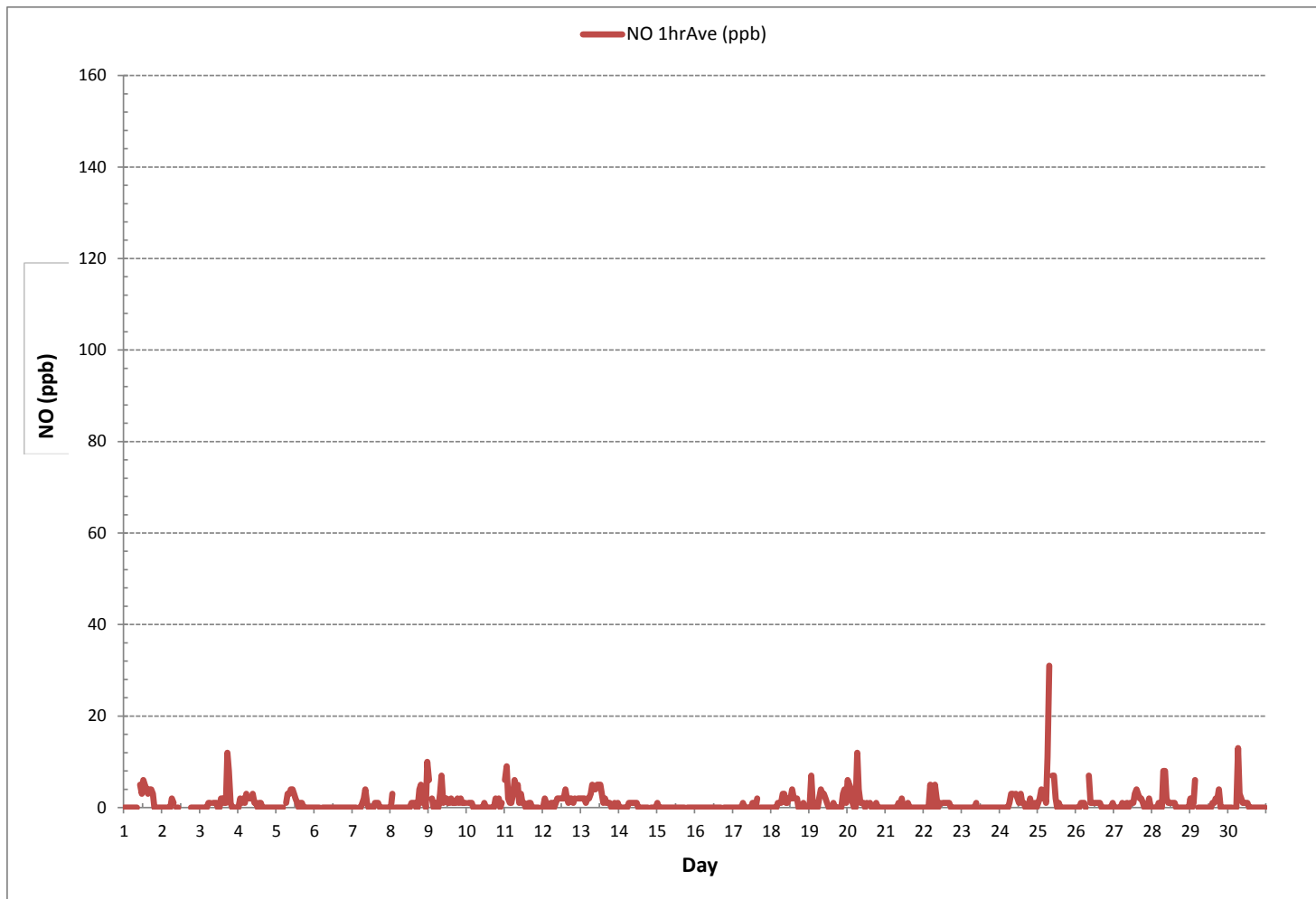
24 HR AVERAGES September 2018



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	277			
MINIMUM 1-HR AVERAGE:	0	ppb @ HOUR	0	ON DAY 1
MAXIMUM 1-HR AVERAGE:	31	ppb @ HOUR	7	ON DAY 25
MAXIMUM 24-HR AVERAGE:	3	ppb		ON DAY 25
IZS CALIBRATION TIME:	31	hrs	OPERATIONAL TIME:	720
MONTHLY CALIBRATION TIME:	7	hrs	AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	2		MONTHLY AVERAGE:	1
				ppb

NITRIC OXIDE Hourly Averages (NO ppb)



% Icon Classes (ppb)

83

0.0-10.7

0

10.7-21.3

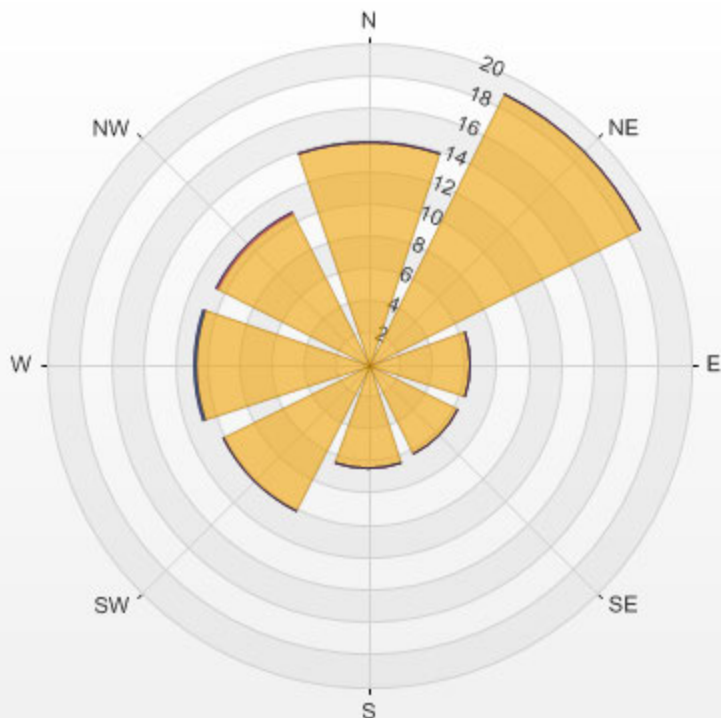
0

21.3-32.0

0

>32.0

LICA MASKWA Poll.: LICA MASKWA-NO[ppb] 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 16.52% Calm Poll Avg: 0.93[ppb]



NITROGEN DIOXIDE

NITROGEN DIOXIDE Hourly Averages (NO₂ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	0	7	3	24	
1	4	5	5	2	1	1	1	2	2	S	7	5	6	6	5	4	5	7	7	0	0	0	1	1	0	7	3	24
2	1	2	6	2	1	5	6	2	S	2	1	C	C	C	C	C	C	C	2	1	1	2	1	2	1	6	2	24
3	2	2	2	1	1	4	4	S	7	5	3	2	2	3	3	2	2	12	9	3	1	1	1	1	1	12	3	24
4	1	5	4	7	6	6	S	4	3	4	2	2	1	1	1	1	1	0	1	1	1	1	3	3	0	7	3	24
5	3	4	3	3	2	S	4	5	4	4	5	5	5	4	2	2	2	2	5	1	1	1	0	0	0	5	3	24
6	0	0	0	0	S	2	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	24
7	2	7	1	S	2	5	6	8	9	3	1	1	1	3	2	3	4	2	1	1	1	1	1	1	1	9	3	24
8	1	3	S	2	1	1	1	1	1	1	1	1	1	3	4	3	2	1	8	9	5	5	1	9	1	9	3	24
9	8	S	9	2	4	1	1	3	3	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	1	9	3	24
10	S	3	2	1	1	1	0	0	0	0	1	1	1	1	1	0	1	1	2	2	2	1	2	S	0	3	1	24
11	5	6	3	2	5	4	5	3	3	2	4	3	1	2	2	2	3	2	1	0	1	1	S	2	0	6	3	24
12	1	2	1	1	1	1	1	1	1	1	1	2	2	2	3	2	2	2	2	2	2	S	3	3	1	3	2	24
13	3	2	2	2	2	3	4	4	4	4	4	4	4	3	2	3	1	2	2	1	S	4	3	4	1	4	3	24
14	3	2	2	1	1	2	4	4	2	2	2	2	1	1	1	1	1	1	0	S	3	3	1	0	0	4	2	24
15	2	0	0	0	1	2	0	1	0	0	0	0	0	0	0	0	0	0	S	1	1	0	0	0	0	2	0	24
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	1	1	1	0	0	0	0	1	0	24
17	0	0	0	0	0	0	1	1	1	0	0	0	1	1	0	3	S	3	2	2	3	3	3	5	0	5	1	24
18	5	6	6	5	5	5	4	4	3	1	1	4	3	4	4	S	4	2	3	1	2	2	1	1	1	6	3	24
19	1	1	2	3	6	5	5	4	3	3	4	1	1	1	S	4	2	3	2	1	2	6	8	3	1	8	3	24
20	6	6	3	2	1	1	5	2	1	1	1	1	1	S	2	1	1	2	4	0	1	3	1	1	0	6	2	24
21	0	0	0	0	2	1	0	0	1	1	1	1	S	2	3	1	2	1	0	0	2	2	2	2	0	3	1	24
22	1	0	0	2	5	1	0	4	2	0	1	S	3	3	3	2	4	5	4	2	0	0	0	0	0	5	2	24
23	2	1	1	0	0	0	0	2	1	S	2	1	1	1	1	1	1	1	1	1	1	2	2	2	0	2	1	24
24	3	3	3	3	4	6	6	5	4	S	4	3	3	5	3	3	2	2	1	6	8	2	7	3	1	8	4	24
25	11	12	14	9	13	8	13	14	S	9	9	4	1	2	0	1	1	1	1	1	2	3	5	3	0	14	6	24
26	1	1	1	1	13	9	6	S	12	2	3	2	2	4	2	2	0	1	1	1	1	1	2	4	0	13	4	24
27	1	1	1	1	2	4	S	3	3	1	2	2	2	4	6	5	4	7	3	0	1	1	10	1	0	10	3	24
28	1	7	2	4	10	S	6	13	10	4	2	2	1	2	2	1	0	1	1	3	1	5	9	5	0	13	4	24
29	12	0	6	19	S	2	2	2	1	1	1	1	1	1	3	2	4	4	10	3	0	2	6	3	0	19	4	24
30	5	3	3	S	4	4	12	7	4	1	1	3	2	1	1	1	0	0	1	1	2	2	2	6	0	12	3	24
HOURLY MAX	12	12	14	19	13	9	13	14	12	9	9	5	6	6	6	5	5	12	10	9	8	6	10	9				
HOURLY AVG	3	3	3	3	3	3	4	4	3	2	2	2	2	2	2	2	2	2	3	2	2	2	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

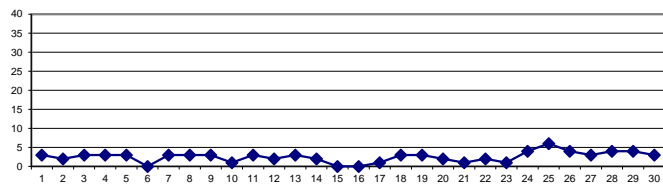
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR 159 ppb

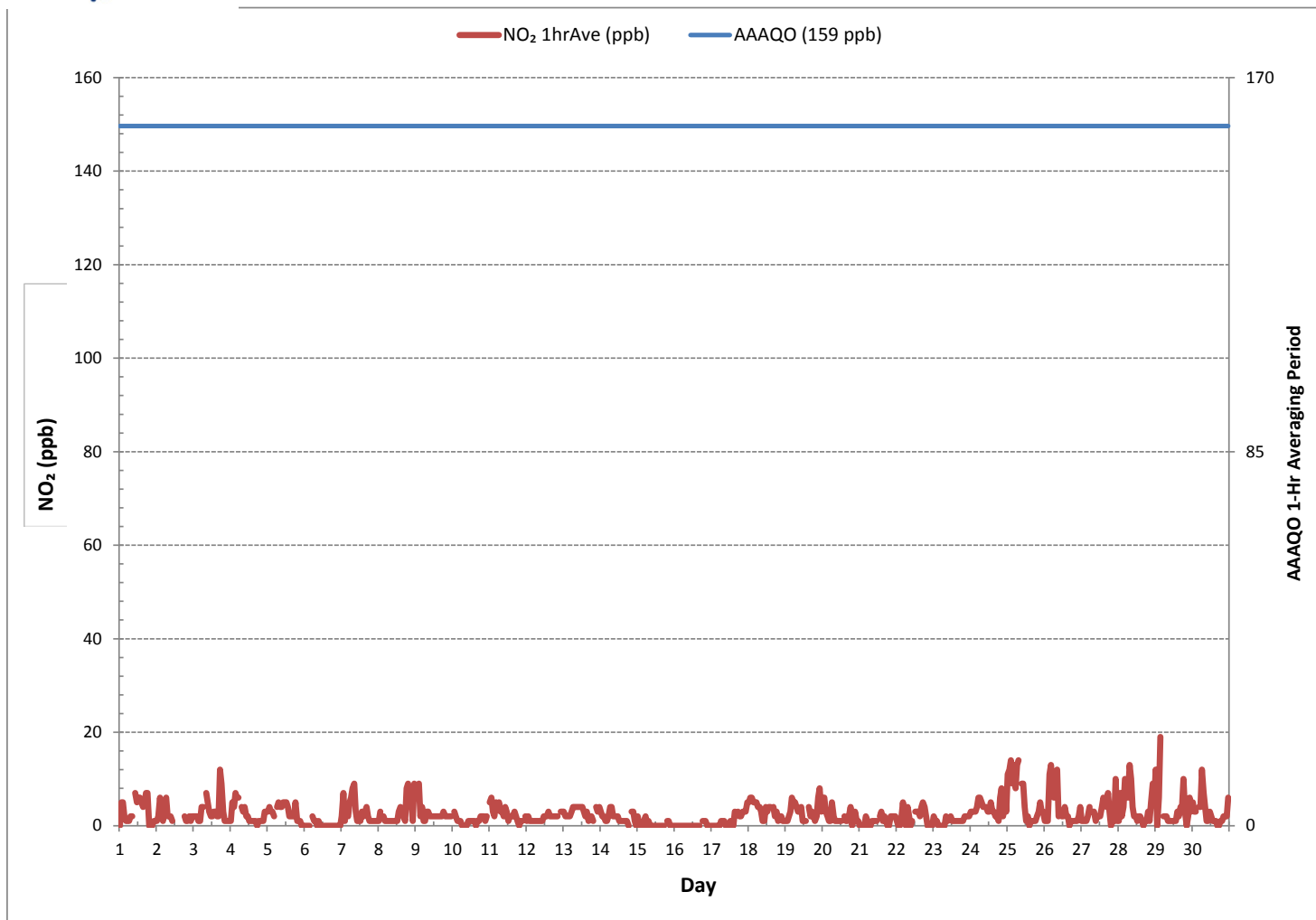
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0			
NUMBER OF NON-ZERO READINGS:	572			
MINIMUM 1-HR AVERAGE:	0	ppb @ HOUR	19	ON DAY
MAXIMUM 1-HR AVERAGE:	19	ppb @ HOUR	3	ON DAY
MAXIMUM 24-HR AVERAGE:	6	ppb		ON DAY
IZS CALIBRATION TIME:	31	hrs	OPERATIONAL TIME:	720
MONTHLY CALIBRATION TIME:	7	hrs	AMD OPERATION UPTIME:	100.0
STANDARD DEVIATION:	3		MONTHLY AVERAGE:	2
				ppb

24 HR AVERAGES September 2018



NITROGEN DIOXIDE Hourly Averages (NO₂ ppb)



Wind: LICA MASKWA
 Poll.: LICA MASKWA-NO2[ppb]
 Monthly: 18/09
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 16.52% Calm Avg: 2.33 [ppb]

Direction	0.0-6.7	6.7-13.3	13.3-20.0	>20.0	Total
N	13.9	0.0	0.0	0.0	13.9
NE	18.9	0.0	0.0	0.0	18.9
E	5.9	0.4	0.0	0.0	6.3
SE	6.2	0.0	0.0	0.0	6.2
S	6.5	0.0	0.0	0.0	6.5
SW	10.2	0.0	0.0	0.0	10.2
W	8.0	2.4	0.6	0.0	10.9
NW	8.3	2.2	0.2	0.0	10.6
Summary	77.7	5.0	0.7	0.0	83.5

% Icon Classes (ppb)

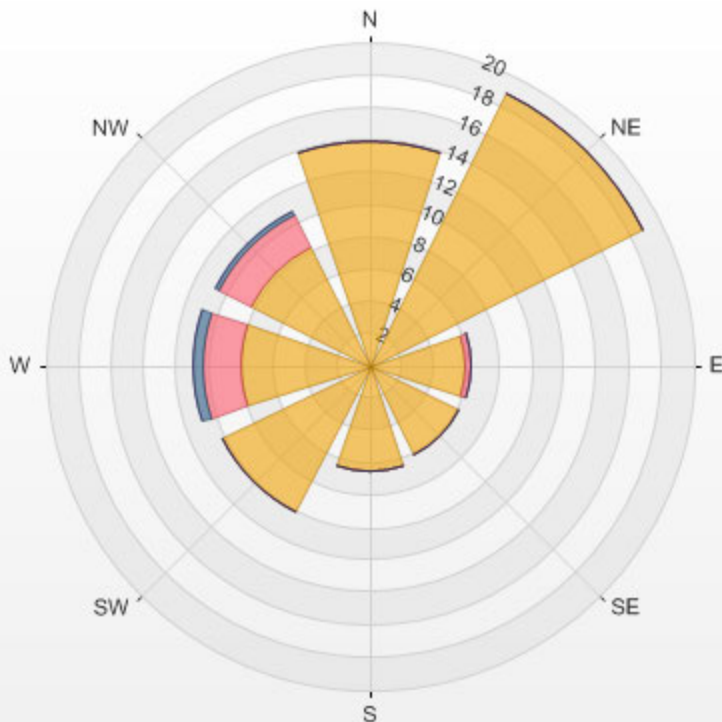
78 0.0-6.7

5 6.7-13.3

1 13.3-20.0

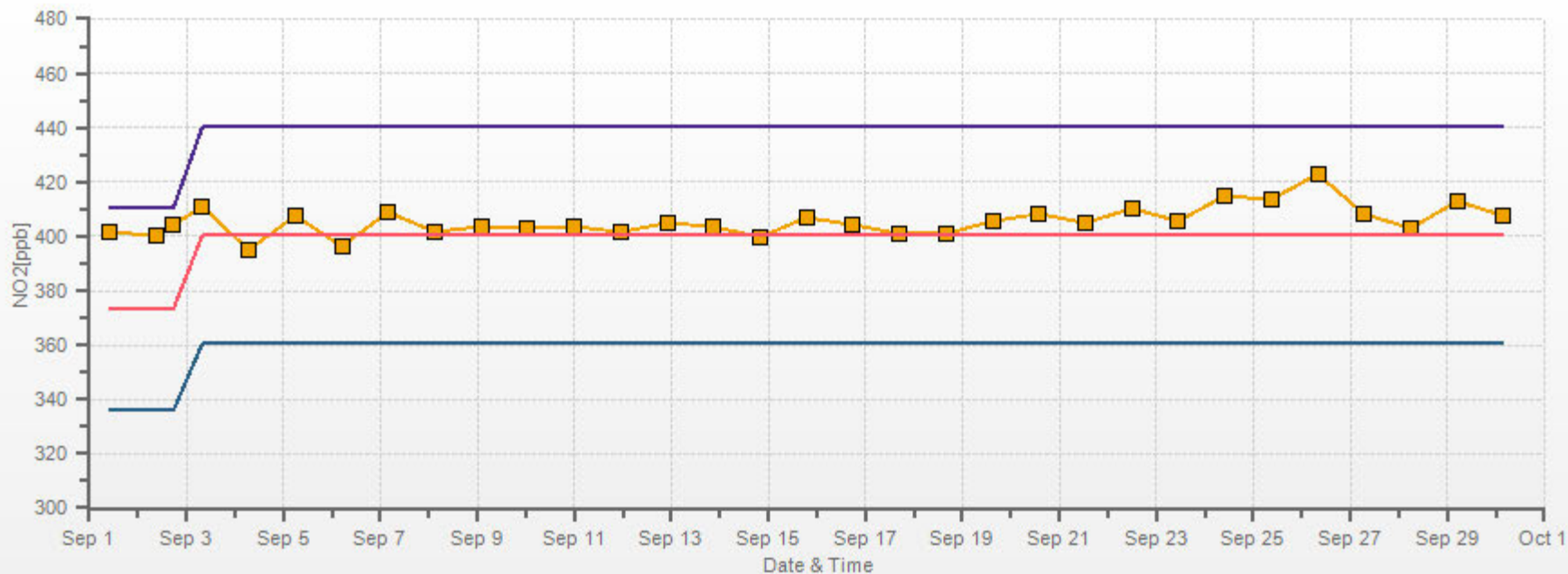
0 >20.0

LICA MASKWA Poll.: LICA MASKWA-NO2[ppb] 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 16.52% Calm Poll Avg: 2.33[ppb]



NO2[ppb] Calibration: LICA MASKWA Monthly: 18/09 Type: Span

■ Span Meas
 — Span Ref
 — Span Low
 — Span High



PARTICULATE MATTER 2.5

PARTICULATE MATTER < 2.5 MICRONS Hourly Averages (PM_{2.5} µg/m³)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.
DAY 1	21	26	27	22	17	20	21	22	21	12	4	3	2	0	3	X	X	X	2	2	0	4	5	0	0	27	11	21
DAY 2	0	X	4	5	0	0	4	9	X	2	4	4	2	3	0	7	3	13	15	6	4	2	3	5	0	15	4	22
DAY 3	3	0	0	4	7	13	19	21	21	18	19	20	20	10	10	6	1	9	3	X	X	X	X	X	0	21	11	19
DAY 4	X	0	1	1	0	0	0	3	X	X	0	0	0	1	1	0	1	2	7	3	0	0	2	5	0	7	1	21
DAY 5	0	0	1	1	0	1	8	12	5	9	11	7	X	X	0	0	X	10	12	5	0	1	5	2	0	12	4	21
DAY 6	0	0	0	X	X	0	1	0	X	0	1	3	4	0	0	3	3	0	0	0	6	2	2	1	0	6	1	21
DAY 7	2	3	1	2	3	5	8	4	7	6	7	11	9	21	9	2	4	0	0	0	4	0	0	2	0	21	5	24
DAY 8	X	X	0	0	0	0	5	23	14	4	8	14	14	11	12	16	8	5	6	11	4	0	0	0	0	23	7	22
DAY 9	0	X	0	0	0	X	0	2	0	X	X	X	X	0	0	0	0	0	0	0	0	0	0	0	0	2	0	18
DAY 10	0	0	0	0	0	0	2	4	5	0	0	1	1	2	2	2	1	1	0	0	0	0	0	0	0	5	1	24
DAY 11	0	0	0	0	0	0	1	1	0	0	0	0	0	0	3	0	0	0	5	6	2	0	X	X	0	6	1	22
DAY 12	0	1	2	3	2	5	1	2	3	X	0	X	0	0	0	0	0	0	0	0	0	0	0	0	0	5	1	22
DAY 13	0	0	0	0	0	0	0	1	2	0	C	C	C	0	1	1	0	0	0	1	0	1	0	1	0	2	0	24
DAY 14	1	1	1	1	1	1	2	3	1	0	0	0	0	0	0	2	4	6	4	1	0	1	2	1	0	6	1	24
DAY 15	1	1	1	1	2	2	2	2	1	1	2	0	1	1	0	0	0	0	0	0	0	0	0	2	0	2	1	24
DAY 16	0	0	0	1	0	0	0	1	1	2	2	2	1	0	0	0	0	0	0	0	0	0	1	0	0	2	0	24
DAY 17	0	0	0	0	0	0	0	1	2	2	1	2	3	0	0	1	1	5	2	2	0	1	0	0	0	5	1	24
DAY 18	0	0	0	0	0	1	2	2	2	1	0	2	2	2	0	0	1	2	0	X	X	0	0	0	0	2	1	22
DAY 19	2	1	2	4	4	3	1	5	18	3	X	X	0	X	5	6	5	0	3	2	2	1	0	0	0	18	3	21
DAY 20	X	X	0	0	0	3	5	8	13	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	13	1	22
DAY 21	0	1	1	0	2	1	2	1	3	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	3	1	10
DAY 22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
DAY 23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
DAY 24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
DAY 25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
DAY 26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
DAY 27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
DAY 28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
DAY 29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
DAY 30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
HOURLY MAX	21	26	27	22	17	20	21	23	21	18	19	20	20	21	12	16	8	13	15	11	6	4	5	5				
HOURLY AVG	2	2	2	2	2	3	4	6	7	4	3	4	3	3	2	2	2	3	3	2	1	1	1	1				

STATUS FLAG CODES

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

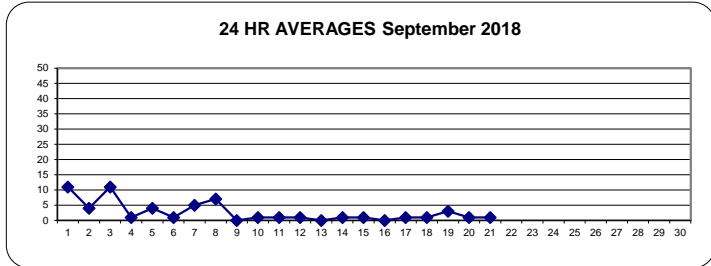
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT:	1-HR	80	µg/m ³	24-HR	30	µg/m ³
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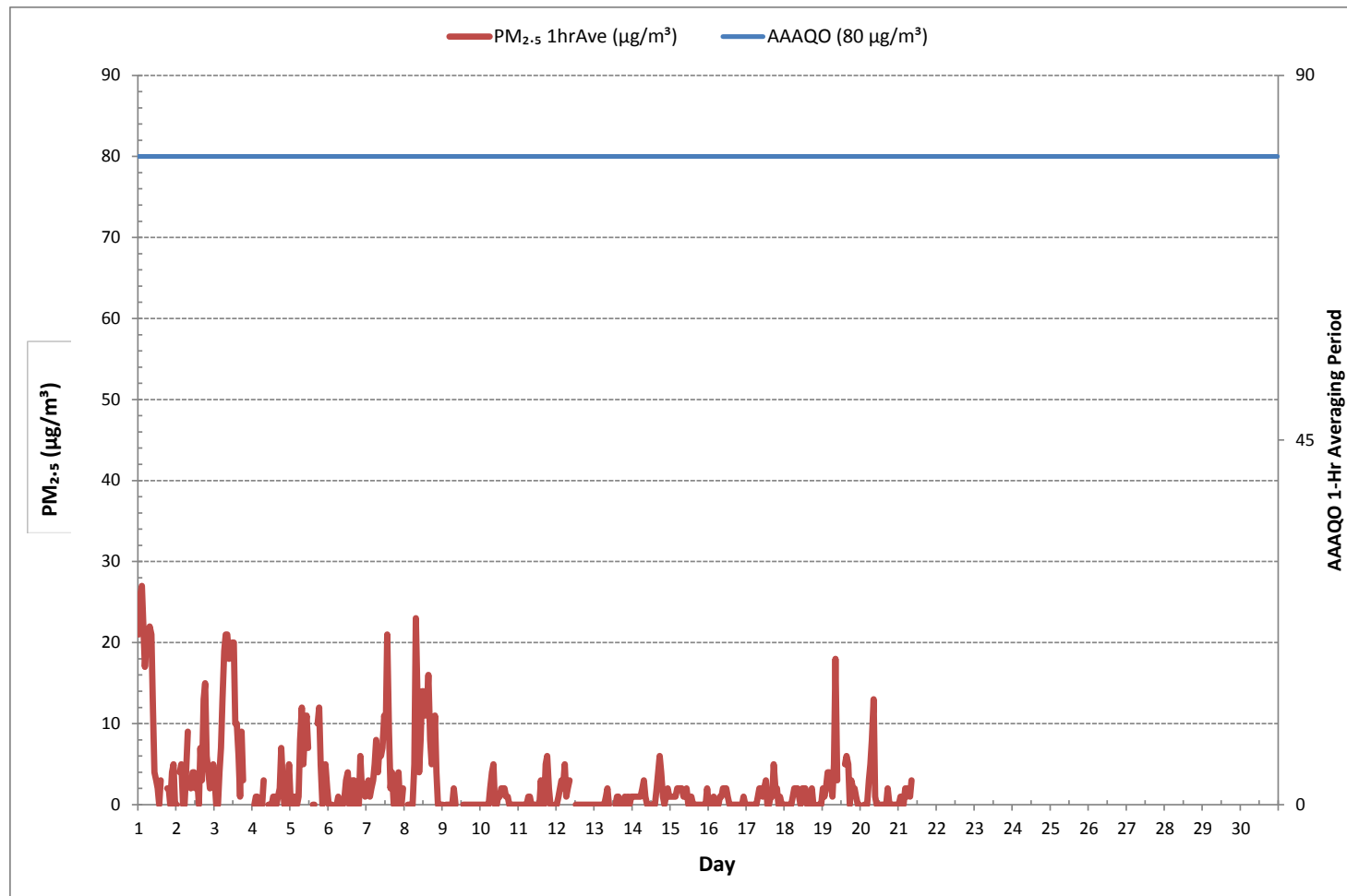
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0		
NUMBER OF 24-HR EXCEEDANCES:	0		
NUMBER OF NON-ZERO READINGS:	246		
MINIMUM 1-HR AVERAGE:	0 µg/m ³ @ HOUR	13 ON DAY	1
MAXIMUM 1-HR AVERAGE:	27 µg/m ³ @ HOUR	2 ON DAY	1
MAXIMUM 24-HR AVERAGE:	11 µg/m ³	ON DAY	1
MONTHLY CALIBRATION TIME:	4 hrs	OPERATIONAL TIME:	452 hrs
STANDARD DEVIATION:	5	AMD OPERATION UPTIME:	62.8 %
		MONTHLY AVERAGE:	3 µg/m ³

24 HR AVERAGES September 2018



PARTICULATE MATTER < 2.5 MICRONS Hourly Averages (PM_{2.5} µg/m³)



Wind: LICA MASKWA
 Poll.: LICA MASKWA-PM25[ug/m3]
 Monthly: 18/09
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

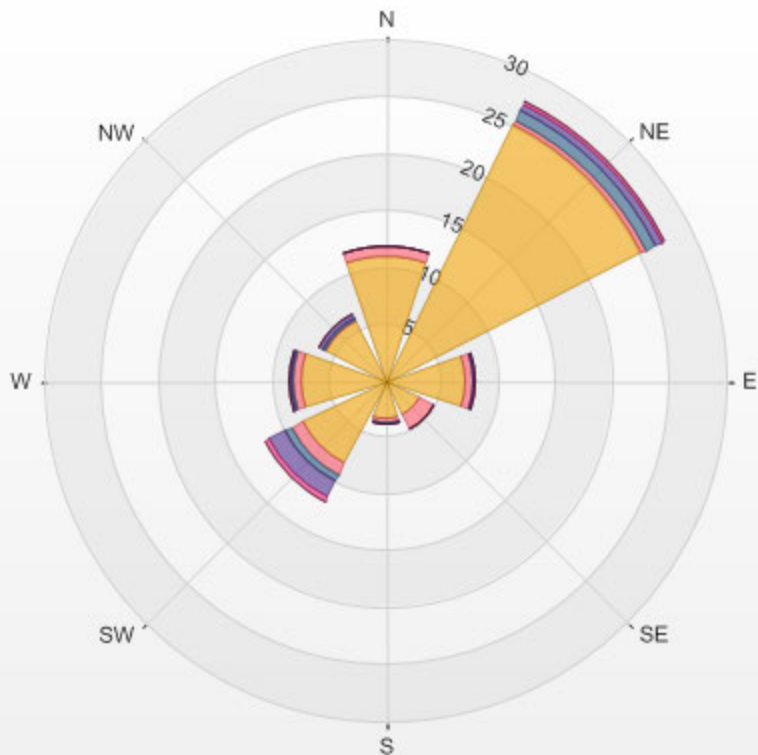
Calm: 17.12%

Calm Avg: 2.72 [ug/m3]

Direction	0.0-5.6	5.6-11.2	11.2-16.8	16.8-22.4	22.4-28.0	>28.0	Total
N	11.0	0.9	0.0	0.0	0.0	0.0	11.9
NE	25.2	0.5	0.9	0.7	0.2	0.0	27.5
E	7.0	0.7	0.0	0.2	0.0	0.0	7.9
SE	3.4	1.4	0.0	0.0	0.0	0.0	4.7
S	3.4	0.2	0.2	0.0	0.0	0.0	3.8
SW	8.1	1.1	0.7	1.6	0.5	0.0	12.0
W	7.4	0.7	0.2	0.2	0.0	0.0	8.6
NW	5.9	0.2	0.2	0.2	0.0	0.0	6.6
Summary	71.4	5.7	2.3	3.0	0.7	0.0	83.0

% Icon Classes (ug/m3(L)) 71 0.0-5.6 6 5.6-11.2 2 11.2-16.8 3 16.8-22.4 1 22.4-28.0 0 >28.0

LICA MASKWA Poll.: LICA MASKWA-PM25[ug/m3(L)] 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 17.12% Calm Poll Avg: 2.72[ug/m3(L)]



WIND SPEED



WIND SPEED Hourly Averages (WS kph)

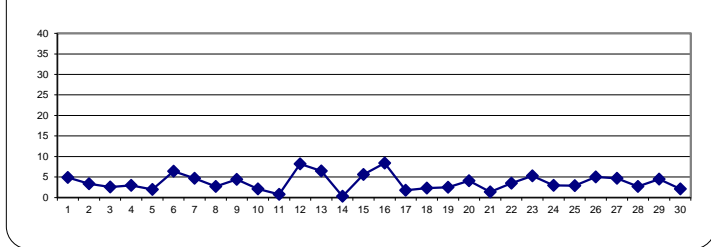
HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
DAY 1	5.4	4.6	3.2	3.4	3.9	3.4	4.3	4.4	3.9	5.6	8.5	10.4	9.0	7.8	7.4	10.2	8.6	9.7	3.4	4.1	4.9	4.3	3.9	2.9	2.9	10.4	4.9	24
2	2.7	3.7	4.9	3.0	2.8	5.5	4.4	3.6	4.3	4.3	4.7	5.4	5.6	4.2	5.3	4.7	4.2	2.5	1.9	2.3	3.7	4.0	3.7	3.7	1.9	5.6	3.4	24
3	3.0	0.4	1.6	1.9	0.7	1.1	1.2	1.6	0.7	2.1	3.2	1.9	2.7	4.2	2.9	2.6	3.5	6.5	7.4	7.1	7.7	7.7	6.9	6.0	0.4	7.7	2.6	24
4	4.7	3.9	1.5	2.8	4.3	3.9	3.6	3.4	5.6	6.9	6.1	4.2	5.9	5.3	5.2	5.7	4.4	3.8	1.9	4.1	4.0	4.0	5.1	6.3	1.5	6.9	3.0	24
5	5.7	4.8	6.0	6.1	4.8	5.4	6.8	5.7	7.0	6.7	6.9	8.0	4.8	5.6	5.0	5.0	4.6	2.5	1.2	1.7	3.2	5.5	5.7	6.2	1.2	8.0	2.0	24
6	5.9	7.8	7.8	7.4	7.3	5.0	5.3	6.0	6.1	6.7	7.0	7.0	7.5	7.3	7.4	8.2	8.5	6.5	6.5	5.9	5.0	5.0	5.1	4.2	4.2	8.5	6.4	24
7	3.6	3.6	5.2	5.4	4.9	3.8	4.2	5.7	5.7	7.2	7.2	6.7	7.4	3.3	5.5	6.7	4.8	5.2	5.1	4.7	4.9	4.3	4.8	4.7	3.3	7.4	4.7	24
8	3.3	3.3	3.5	4.0	3.7	3.7	4.0	5.3	6.0	6.8	7.0	7.8	4.1	1.8	0.7	3.9	5.6	6.6	5.4	6.5	4.3	6.4	7.2	5.2	0.7	7.8	2.7	24
9	6.6	6.8	5.6	6.6	7.0	6.0	5.3	5.4	4.8	4.9	6.3	7.5	6.5	5.7	5.7	6.4	5.8	4.9	5.2	5.1	6.5	3.8	2.6	3.1	2.6	7.5	4.4	24
10	2.5	3.6	2.4	1.9	2.9	4.0	3.9	4.0	3.8	6.4	4.5	3.8	2.5	2.9	3.9	2.9	1.1	1.3	3.4	1.0	2.0	1.0	1.9	2.2	1.0	6.4	2.1	24
11	3.7	3.0	2.4	2.4	2.1	2.9	3.4	3.6	5.1	3.2	3.4	3.8	1.9	2.2	2.4	1.4	1.7	3.0	3.1	2.8	2.9	0.6	1.9	1.3	0.6	5.1	0.8	24
12	2.0	0.6	1.9	1.5	2.4	7.8	8.0	8.0	11.7	12.7	11.8	12.7	12.9	12.2	12.2	11.7	11.7	9.2	8.7	9.0	7.7	8.7	8.5	7.9	0.6	12.9	8.2	24
13	8.3	7.6	8.8	8.1	7.7	8.2	7.8	8.0	9.4	7.3	8.4	8.4	10.3	10.6	8.2	6.2	5.3	5.7	3.3	1.7	2.7	2.6	1.8	1.8	1.7	10.6	6.5	24
14	1.0	0.6	1.4	1.2	1.8	1.2	0.7	0.3	1.1	2.1	2.6	3.8	3.1	1.6	1.8	1.2	1.5	1.5	0.8	3.0	0.6	1.6	1.7	2.3	0.3	3.8	0.3	24
15	1.5	1.3	1.7	1.4	1.0	2.6	4.0	4.3	6.6	6.0	6.3	7.3	7.0	7.4	7.8	8.4	7.8	8.2	8.0	8.1	8.0	8.2	8.8	8.1	1.0	8.8	5.6	24
16	8.5	7.3	7.9	8.0	9.2	11.2	11.4	10.0	10.1	9.6	9.6	9.9	10.7	10.2	9.4	9.3	9.2	8.5	7.9	6.2	5.6	4.9	4.4	4.7	4.4	11.4	8.4	24
17	4.6	4.4	4.3	4.1	3.8	4.3	5.3	6.8	6.6	C	C	C	C	3.7	0.3	0.6	1.1	0.9	1.1	1.6	1.4	2.0	1.1	2.7	0.3	6.8	1.8	24
18	2.0	2.4	2.5	2.9	3.4	3.2	4.4	4.5	4.1	3.1	4.3	3.2	3.3	4.0	3.6	4.0	3.5	0.9	2.7	3.1	1.7	1.0	1.4	1.9	0.9	4.5	2.3	24
19	1.6	1.1	2.3	4.9	4.8	4.6	5.0	6.7	7.0	5.4	4.6	5.6	5.1	6.5	6.7	1.7	1.1	1.3	2.9	3.3	2.5	2.0	0.8	3.1	0.8	7.0	2.5	24
20	0.4	0.5	1.5	0.4	0.3	0.5	1.2	6.4	13.0	11.4	11.0	9.0	9.1	8.0	7.5	5.3	4.4	2.2	4.0	0.5	0.5	1.7	2.8	2.9	0.3	13.0	4.1	24
21	2.1	1.2	0.8	0.8	0.2	0.3	1.3	1.5	2.4	2.6	1.8	4.1	5.3	2.9	2.1	2.4	2.0	1.8	1.8	1.3	1.4	0.5	0.2	0.4	0.2	5.3	1.4	24
22	0.6	0.8	0.8	0.0	0.5	0.4	1.9	1.3	5.6	7.5	7.7	7.8	6.4	6.1	6.5	5.2	4.7	2.9	2.5	4.1	5.3	4.4	3.9	4.6	0.0	7.8	3.5	24
23	4.4	4.5	5.1	3.9	3.6	4.7	5.4	4.6	5.2	4.4	5.4	5.8	6.0	8.1	9.0	6.4	6.3	5.5	3.9	5.5	7.0	7.3	6.5	6.7	3.6	9.0	5.3	24
24	5.0	3.6	4.1	2.7	1.4	4.9	4.5	5.0	4.8	3.3	3.8	4.1	4.7	5.3	6.6	5.7	4.8	4.5	2.9	5.1	3.2	3.4	2.2	3.4	1.4	6.6	3.0	24
25	2.3	1.9	2.8	3.2	4.0	2.8	1.8	2.2	2.9	4.2	5.5	4.9	4.2	2.9	4.9	4.5	3.3	2.6	3.5	4.2	5.1	3.4	3.8	3.6	1.8	5.5	2.9	24
26	5.7	7.1	6.8	6.5	4.7	4.8	6.7	6.5	7.5	7.4	7.8	7.7	6.9	6.8	7.4	6.8	6.3	5.5	3.5	3.7	2.5	1.7	2.5	3.4	1.7	7.8	5.0	24
27	5.0	5.5	3.4	2.7	3.6	2.9	5.3	6.5	10.4	7.0	5.7	6.3	6.3	6.5	6.3	7.5	5.4	3.9	2.9	5.5	3.3	2.8	2.5	2.9	2.5	10.4	4.7	24
28	0.8	2.0	2.3	3.1	2.9	1.8	0.3	2.8	4.0	3.3	4.3	4.4	5.6	3.6	6.2	5.6	5.1	3.6	1.6	1.2	1.7	1.9	2.7	3.8	0.3	6.2	2.7	24
29	3.6	2.4	4.4	5.2	5.1	4.1	4.6	6.1	6.0	6.1	6.5	7.2	6.6	6.3	6.8	6.7	6.3	4.9	4.5	3.8	2.3	1.0	0.6	1.4	0.6	7.2	4.5	24
30	1.2	1.1	0.6	1.0	2.5	1.5	0.9	1.4	1.6	4.1	1.4	1.2	2.7	0.8	3.5	5.2	5.3	5.2	4.2	3.0	2.9	3.6	3.8	3.4	0.6	5.3	2.1	24
HOURLY MAX	8.5	7.8	8.8	8.1	9.2	11.2	11.4	10.0	13.0	12.7	11.8	12.7	12.9	12.2	12.2	11.7	11.7	9.7	8.7	9.0	8.0	8.7	8.8	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

LAST CALIBRATION:	September 17, 2018
DECLINATION:	MAGNETIC DECLINATION 19 DEGREE EAST

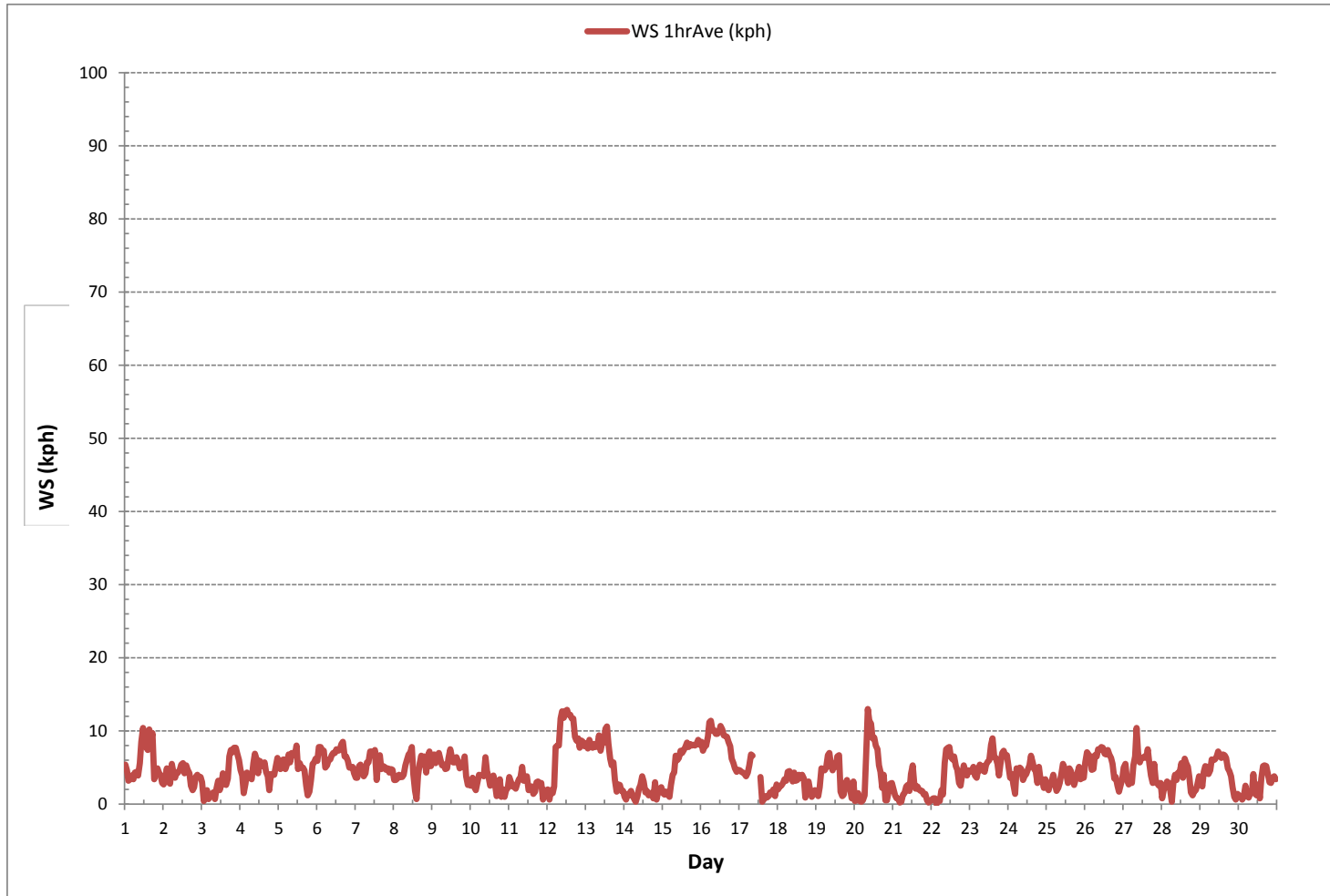
24 HR AVERAGES September 2018



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	715
MINIMUM 1-HR AVERAGE:	0.0 kph @ HOUR 3 ON DAY 22
MAXIMUM 1-HR AVERAGE:	13.0 kph @ HOUR 8 ON DAY 20
MAXIMUM 24-HR AVERAGE:	8.4 kph ON DAY 16
MONTHLY CALIBRATION TIME:	4 hrs
OPERATIONAL TIME:	720 hrs
AMT OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	2.6
MONTHLY AVERAGE:	1.2 kph

WIND SPEED Hourly Averages (WS kph)



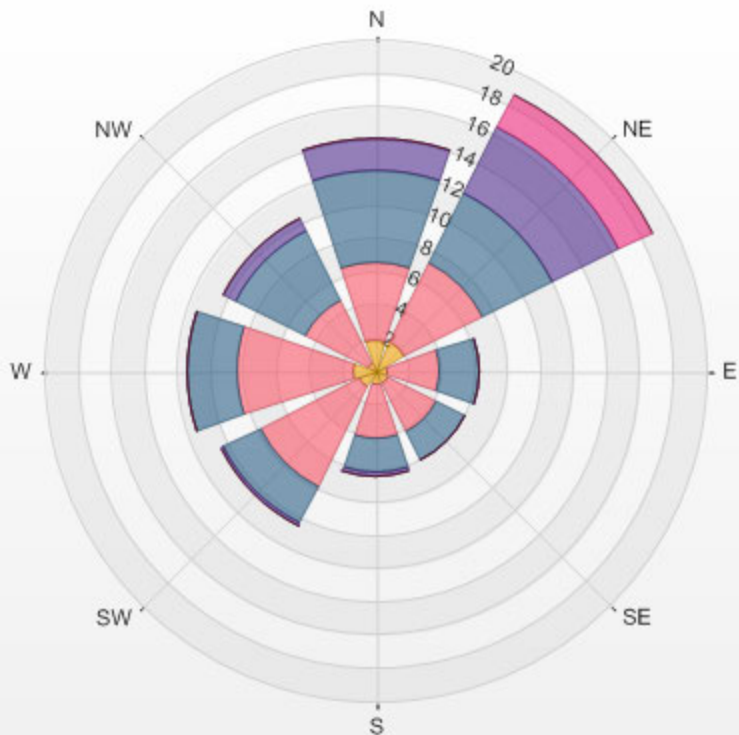
Wind: LICA MASKWA
 Monitor: WSP [kph]
 Monthly: 18/09
 Type: WindRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 16.20%

Direction	1.8-2.6	2.6-5.2	5.2-7.9	7.9-10.5	10.5-13.1	>13.1	Total
N	1.8	4.8	5.6	2.0	0.0	0.0	14.1
NE	2.0	5.3	4.8	4.5	2.2	0.0	18.7
E	0.7	3.2	2.4	0.0	0.0	0.0	6.3
SE	0.8	3.2	2.0	0.0	0.0	0.0	6.0
S	0.8	3.2	2.1	0.3	0.0	0.0	6.4
SW	1.1	6.7	2.5	0.1	0.0	0.0	10.5
W	1.4	7.0	3.1	0.0	0.0	0.0	11.5
NW	0.6	4.2	4.8	0.8	0.0	0.0	10.3
Summary	9.2	37.6	27.1	7.7	2.2	0.0	83.8

% Icon Classes (kph) 9 1.8-2.6 38 2.6-5.2 27 5.2-7.9 8 7.9-10.5 2 10.5-13.1 0 >13.1

LICA MASKWA 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 16.20% Calm Wind Avg Speed: 1.09(kph)



WIND DIRECTION



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Maskwa Continuous Monitoring Station - September 2018

WIND DIRECTION Hourly Averages (WD)

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

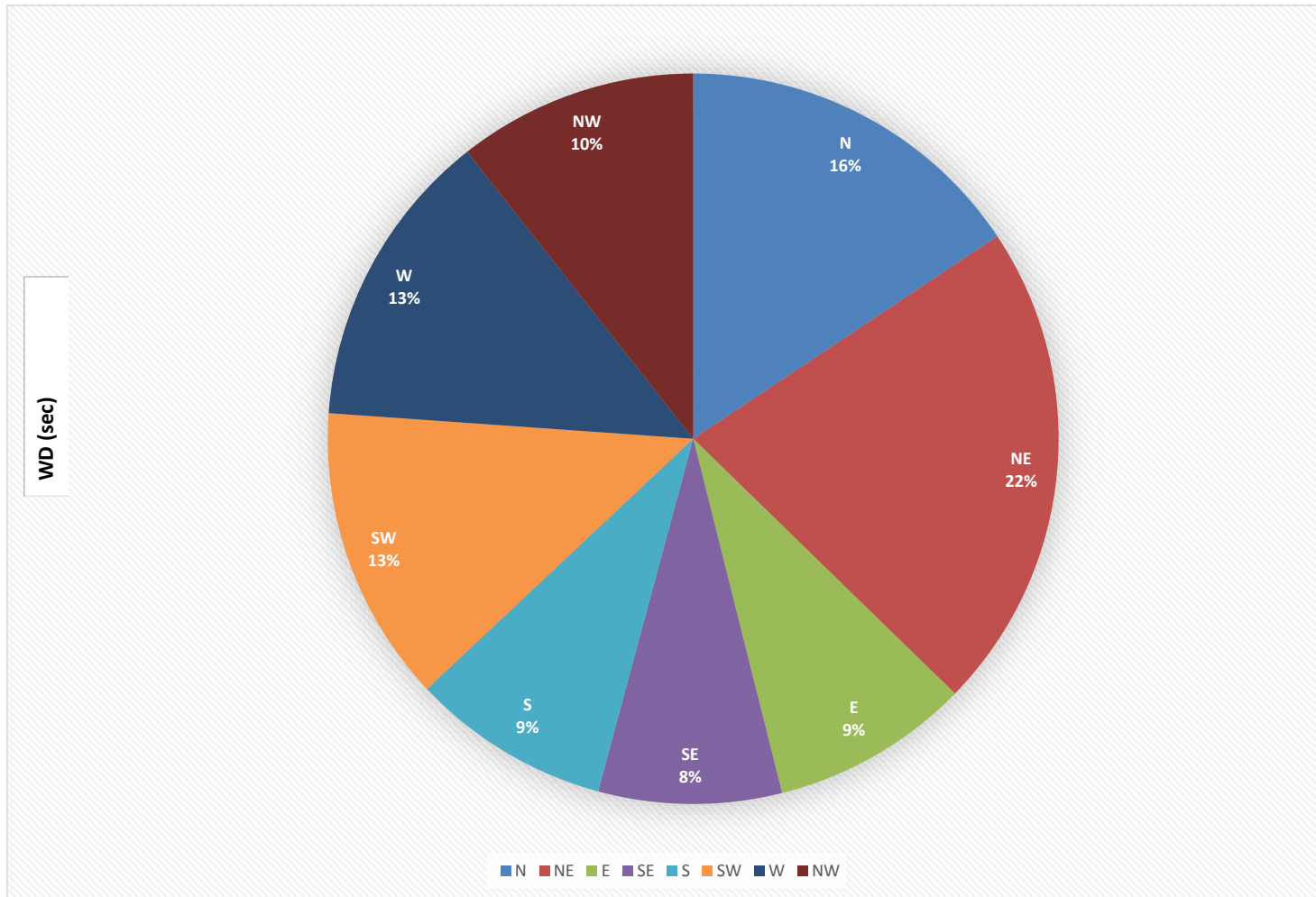
STATUS FLAG CODES

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

LAST CALIBRATION:	September 17, 2018
DECLINATION :	MAGNETIC DECLINATION 19 DEGREE EAST

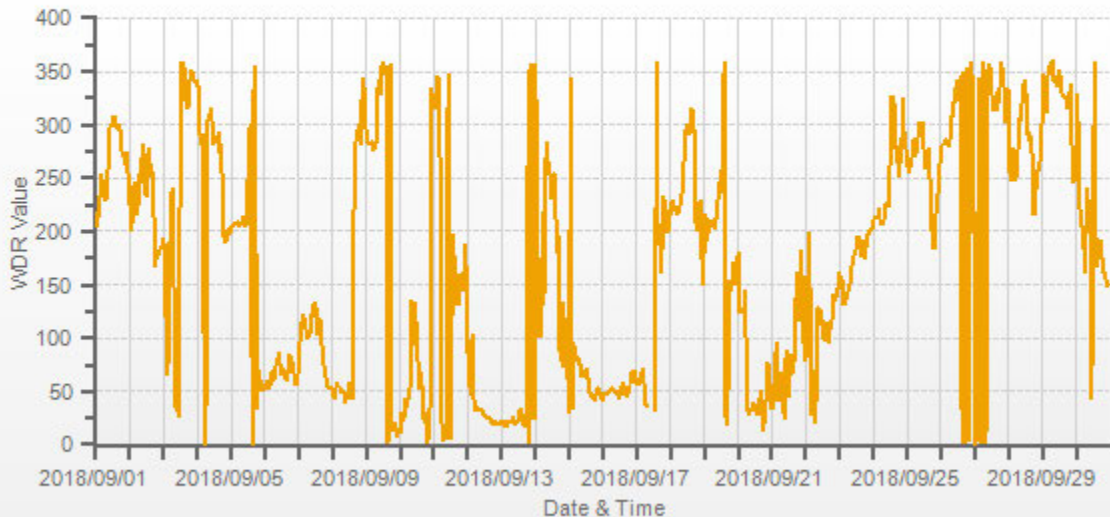
MONTHLY CALIBRATION TIME:	4	hrs	OPERATIONAL TIME:	720	hrs
STANDARD DEVIATION:	113		AMD OPERATION UPTIME:	100.0	%
			MONTHLY AVERAGE:	9 (N)	

WIND DIRECTION Hourly Averages (WD)



WDR[degwdr] Station: LICA MASKWA Monthly: 18/09 Type: AVG 1 Hr. [1 Hr.]

— WDR[degwdr]



STANDARD DEVIATION WIND DIRECTION



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Maskwa Continuous Monitoring Station - September 2018

STANDARD DEVIATION WIND DIRECTION Hourly Averages (STDWD deg)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	
DAY																									
1	16	23	26	34	36	33	31	27	34	39	33	32	35	36	35	31	35	30	39	34	33	37	32	32	24
2	28	25	19	36	33	17	29	38	38	40	41	39	38	44	38	39	39	35	28	12	12	11	12	13	24
3	22	65	34	33	62	46	57	37	59	30	21	38	37	32	37	43	47	33	33	34	33	35	35	36	24
4	34	35	56	41	31	48	29	38	38	36	40	47	38	42	41	40	43	36	34	9	9	11	13	13	24
5	15	15	14	14	16	16	18	23	21	22	22	22	49	37	43	32	35	37	43	27	23	19	18	20	24
6	21	21	23	22	23	27	25	27	29	29	30	27	27	29	27	27	27	29	27	26	23	20	20	22	24
7	26	29	27	28	28	31	31	31	32	33	33	17	18	40	21	16	19	12	9	11	7	9	9	7	24
8	9	8	10	7	9	9	11	11	14	12	19	15	33	52	68	23	17	10	13	14	28	20	15	15	24
9	12	8	13	10	11	11	12	9	33	18	17	16	14	19	22	18	18	21	11	12	7	14	19	13	24
10	21	12	22	18	13	6	13	25	19	17	28	24	27	31	14	24	47	32	10	51	15	41	39	28	24
11	17	19	28	28	31	14	11	16	13	23	33	24	56	38	40	53	46	18	8	21	23	62	28	45	24
12	24	49	33	35	20	4	6	6	6	6	6	6	5	6	6	6	6	5	5	5	6	6	7	7	24
13	6	8	7	7	7	7	5	7	5	8	8	9	6	6	9	10	16	11	10	30	18	19	30	23	24
14	43	68	48	45	59	23	67	62	35	43	35	32	37	57	33	49	33	22	53	21	69	29	9	22	24
15	20	65	53	39	41	23	17	23	12	10	13	10	11	11	13	8	9	7	7	10	9	10	8	9	24
16	8	9	9	9	7	8	8	10	9	10	11	9	9	11	10	12	8	9	10	11	13	12	11	10	24
17	12	16	12	13	12	15	7	5	8	C	C	C	24	76	65	47	58	20	21	10	10	46	10	24	
18	19	19	17	12	8	15	10	10	16	28	12	20	24	19	18	22	41	49	15	9	14	32	21	18	24
19	13	23	17	5	11	12	8	6	8	16	22	31	30	24	40	46	37	53	11	12	13	16	48	17	24
20	68	60	36	30	29	66	52	7	5	7	8	14	14	19	30	15	23	6	18	16	20	7	13	24	
21	7	10	11	27	41	27	12	27	12	12	47	37	25	40	48	34	50	42	24	34	35	21	63	44	24
22	44	36	26	81	14	30	19	13	15	14	16	13	22	22	17	25	20	22	10	11	8	10	11	11	24
23	14	11	12	13	13	11	11	13	12	15	17	13	13	8	16	21	15	11	7	7	7	5	5	5	24
24	6	6	6	15	24	6	8	9	17	16	23	21	27	24	16	25	11	13	13	16	16	37	22	10	24
25	13	16	12	17	11	11	19	20	17	15	14	23	33	41	28	21	23	20	8	10	7	14	11	16	24
26	8	6	8	7	8	9	7	13	11	14	16	22	14	19	23	20	20	16	16	19	16	18	26	24	24
27	13	10	13	19	17	22	16	18	12	18	24	25	29	21	23	18	19	24	24	17	19	18	23	16	24
28	53	15	17	11	16	23	67	21	17	28	29	30	27	43	16	23	16	17	14	52	18	16	15	11	24
29	20	18	18	14	18	15	15	13	15	17	15	15	16	18	14	16	17	19	14	15	20	36	41	25	24
30	35	27	55	27	19	9	53	27	37	31	57	58	56	63	44	29	16	18	11	12	8	6	9	12	24

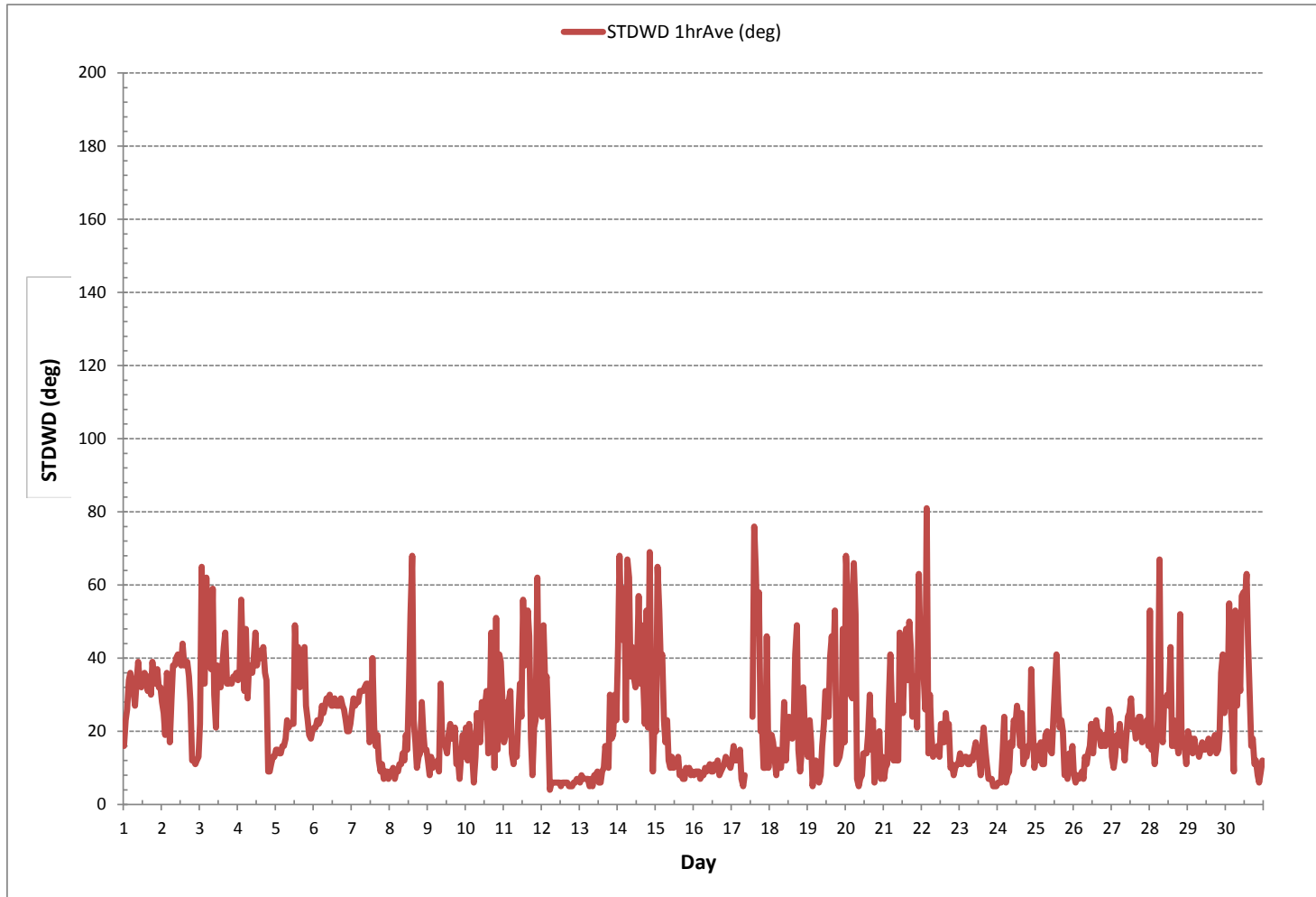
STATUS FLAG CODES

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

LAST CALIBRATION: September 17, 2018

CALIBRATION TIME: 4 hrs OPERATIONAL TIME: 720 hrs

STANDARD DEVIATION WIND DIRECTION Hourly Averages (STDWD deg)



RELATIVE HUMIDITY



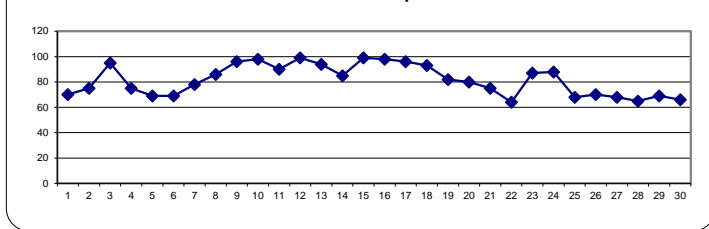
RELATIVE HUMIDITY Hourly Averages (RH %)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.				
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.					
DAY																																
1	74	77	87	86	82	85	86	85	83	73	61	58	62	56	58	51	47	44	54	61	62	71	79	88	44	88	70	24				
2	95	99	99	97	93	95	93	85	74	64	56	54	51	49	42	42	40	49	77	89	88	83	87	90	40	99	75	24				
3	88	95	99	98	99	99	99	100	100	100	100	100	100	98	94	90	92	92	93	91	91	90	88	89	88	100	95	24				
4	90	93	95	95	94	97	99	93	73	63	57	52	46	44	43	43	44	47	69	91	95	98	91	88	43	99	75	24				
5	89	89	90	91	91	94	89	85	75	67	59	51	44	38	33	36	30	41	65	83	80	75	81	81	30	94	69	24				
6	81	80	78	77	76	80	79	74	65	62	62	63	66	63	58	55	56	57	61	64	74	78	78	77	55	81	69	24				
7	80	81	77	77	78	80	87	81	77	68	63	60	58	79	85	69	68	70	78	85	92	97	97	94	58	97	78	24				
8	99	100	100	100	100	100	100	97	87	79	71	66	62	59	61	65	70	77	80	92	100	100	100	99	59	100	86	24				
9	100	99	99	100	100	100	100	100	100	97	95	92	94	93	92	93	94	95	95	95	95	95	96	96	92	100	96	24				
10	96	98	99	98	98	100	100	100	99	93	91	96	97	98	99	98	98	100	100	100	100	100	100	100	91	100	98	24				
11	100	100	100	100	99	100	100	99	97	92	86	84	78	75	72	69	65	74	86	95	98	100	100	100	65	100	90	24				
12	100	100	100	100	100	100	100	100	100	100	99	99	98	98	99	99	99	99	99	100	99	100	99	99	98	100	99	24				
13	99	99	98	99	99	98	97	96	94	94	92	92	93	91	89	86	86	85	88	94	93	95	97	96	85	99	94	24				
14	96	96	98	97	97	96	98	96	86	75	74	68	62	60	63	67	75	85	90	92	91	95	95	97	60	98	85	24				
15	98	97	98	98	98	96	95	98	97	99	99	97	98	99	99	99	100	100	100	100	100	100	100	100	95	100	99	24				
16	100	100	99	99	97	96	95	95	94	96	99	98	97	98	99	99	99	100	100	100	100	100	100	100	94	100	98	24				
17	100	100	100	100	100	100	100	100	100	96	89	88	91	90	85	86	85	97	99	99	99	100	99	99	85	100	96	24				
18	98	99	100	100	100	100	99	99	95	88	85	86	85	82	76	73	72	91	99	100	100	100	100	100	72	100	93	24				
19	100	100	100	100	100	100	100	97	89	76	65	51	48	42	57	67	67	67	89	92	89	88	93	88	42	100	82	24				
20	94	99	100	99	98	100	100	99	92	83	75	69	62	55	49	49	55	69	68	83	84	82	75	75	49	100	80	24				
21	81	82	83	88	87	88	85	84	78	67	58	52	48	48	48	49	49	55	76	89	93	93	94	96	48	96	75	24				
22	95	94	95	95	93	92	94	94	71	52	43	43	42	43	40	40	42	45	52	52	51	54	58	62	40	95	64	24				
23	65	69	80	95	96	97	98	98	99	99	98	94	88	86	77	72	71	74	83	88	89	90	94	96	65	99	87	24				
24	98	100	100	100	100	100	100	100	97	83	68	59	53	60	79	84	85	92	89	91	85	87	93	53	100	88	24					
25	97	98	99	99	96	95	99	96	76	57	46	37	32	32	33	36	39	48	65	66	63	68	70	74	32	99	68	24				
26	72	71	70	70	74	80	78	75	66	60	56	56	52	52	55	50	58	66	63	75	88	96	95	95	50	96	70	24				
27	88	82	86	89	88	86	82	75	64	55	48	44	41	40	43	50	54	59	63	74	73	77	83	83	40	89	68	24				
28	87	90	89	86	86	90	92	88	72	60	47	41	36	36	33	36	39	46	63	72	70	69	67	63	33	92	65	24				
29	62	63	81	92	95	90	86	78	71	68	64	60	55	54	51	50	54	56	57	65	69	74	77	77	50	95	69	24				
30	78	82	90	94	96	95	96	92	71	56	52	50	44	46	40	41	46	49	54	60	64	63	62	60	40	96	66	24				
HOURLY MAX	100	100	100	100	100	100	100	100	100	100	100	100	100	99	99	99	100	100	100	100	100	100	100	100								
HOURLY AVG	90	91	93	94	94	94	94	92	85	78	73	69	66	65	64	65	66	71	79	85	86	87	88	89								

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

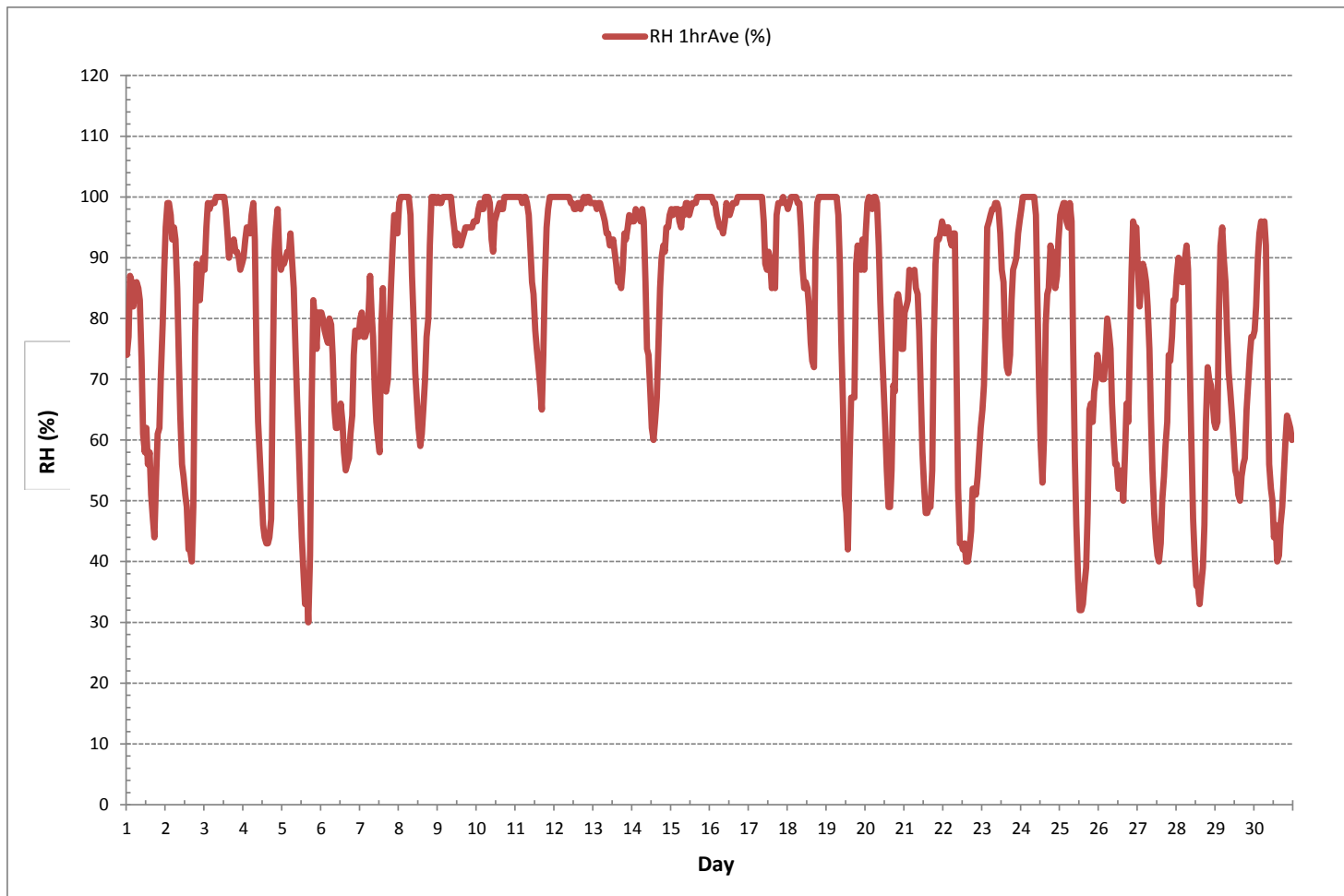
24 HR AVERAGES September 2018



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	30	%	@ HOUR	16	ON DAY	5
MAXIMUM 1-HR AVERAGE:	100	%	@ HOUR	7	ON DAY	3
MAXIMUM 24-HR AVERAGE:	99	%			ON DAY	12
OPERATIONAL TIME:						720 hrs
AMD OPERATION UPTIME:						100.0 %
STANDARD DEVIATION:	19		MONTHLY AVERAGE:			82 %

RELATIVE HUMIDITY Hourly Averages (RH %)



BAROMETRIC PRESSURE

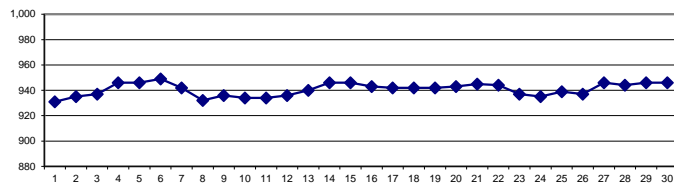
BAROMETRIC PRESSURE Hourly Averages (BP mbar)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	927	927	927	927	927	927	928	928	929	929	930	930	931	932	932	933	933	933	933	933	933	934	934	934	935	927	935	931	24
2	935	935	935	935	935	935	935	936	936	936	937	936	936	936	936	936	935	936	935	936	935	934	935	934	934	934	937	935	24
3	934	934	934	933	934	934	934	935	935	935	935	935	935	935	936	936	937	937	938	939	940	941	942	943	943	933	943	937	24
4	944	944	944	945	945	945	946	946	947	947	948	947	947	947	947	946	946	946	945	944	944	944	944	944	944	944	948	946	24
5	944	944	944	944	944	944	944	945	945	946	947	947	947	947	947	947	947	947	947	947	947	947	948	949	949	944	949	946	24
6	950	950	950	950	950	950	951	951	951	951	951	951	951	950	950	949	949	949	948	948	947	947	947	946	946	946	951	949	24
7	946	946	945	945	944	944	944	943	943	943	943	943	942	941	941	940	940	940	939	939	938	937	937	936	936	936	946	942	24
8	936	935	934	934	933	933	933	932	933	932	932	932	932	932	932	932	931	931	931	932	932	932	931	932	931	931	936	932	24
9	931	931	932	932	932	932	933	933	934	935	935	936	936	937	937	937	938	938	939	939	939	939	939	939	939	931	939	936	24
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18	942	942	942	941	941	941	941	941	941	942	942	942	942	942	942	942	942	942	942	942	942	943	943	943	943	941	943	942	24
19	943	943	942	942	942	942	942	942	943	943	943	943	943	943	943	942	942	942	942	941	941	941	941	941	941	941	943	942	24
20	940	940	939	939	939	940	940	941	942	943	944	945	945	945	945	945	945	945	945	945	946	946	946	947	939	939	947	943	24
21	946	946	946	946	945	946	946	945	946	946	946	946	946	945	945	945	945	945	945	945	945	944	944	944	944	944	946	945	24
22	944	944	944	944	944	944	944	945	945	945	946	946	946	945	945	945	944	944	944	943	943	943	943	942	942	942	946	944	24
23	942	941	941	940	940	939	939	938	938	938	937	937	936	936	935	935	935	935	934	934	934	934	933	933	933	933	942	937	24
24	932	932	932	932	932	933	933	933	933	933	934	934	935	935	936	936	936	937	937	938	938	938	939	939	939	932	939	935	24
25	939	939	939	939	940	940	940	940	940	941	942	942	941	941	940	939	939	938	937	936	935	935	934	934	934	934	942	939	24
26	934	934	934	934	934	934	933	934	934	935	935	936	937	937	937	938	938	939	939	940	940	941	941	942	933	933	942	937	24
27	942	943	943	943	944	944	945	945	946	947	947	948	948	947	947	947	947	947	946	947	947	947	947	947	947	942	948	946	24
28	947	947	947	946	946	946	946	946	946	946	946	945	945	944	944	943	943	942	941	941	941	941	941	942	941	941	947	944	24
29	942	942	942	942	943	943	944	944	945	945	946	946	947	947	947	947	948	948	948	949	949	949	949	949	949	942	949	946	24
30	950	949	949	949	948	948	948	948	948	949	948	948	947	946	946	945	944	943	942	941	941	941	941	940	940	940	950	946	24
HOURLY MAX	950	950	950	950	950	950	950	951	951	951	951	951	951	950	950	949	949	949	948	948	949	949	949	949	949				
HOURLY AVG	940	940	940	940	940	940	940	940	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941				

STATUS FLAG CODES

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

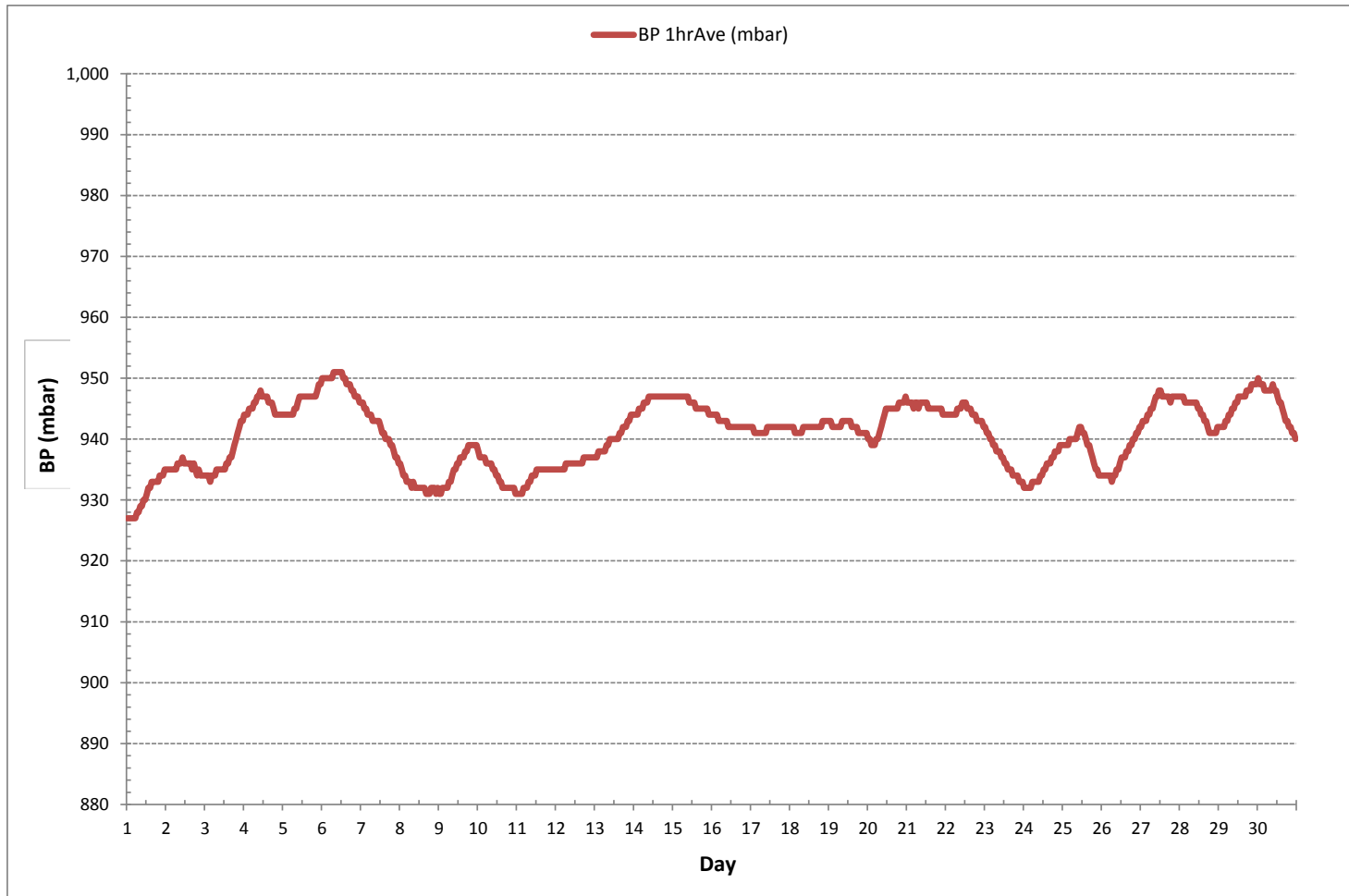
24 HR AVERAGES September 2018



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	927 mbar	@ HOUR	0	ON DAY	1
MAXIMUM 1-HR AVERAGE:	951 mbar	@ HOUR	7	ON DAY	6
MAXIMUM 24-HR AVERAGE:	949 mbar			ON DAY	6
OPERATIONAL TIME:					720 hrs
AMD OPERATION UPTIME:					100.0 %
STANDARD DEVIATION:	5	MONTHLY AVERAGE:			941 mbar

BAROMETRIC PRESSURE Hourly Averages (BP mbar)



AMBIENT TEMPERATURE



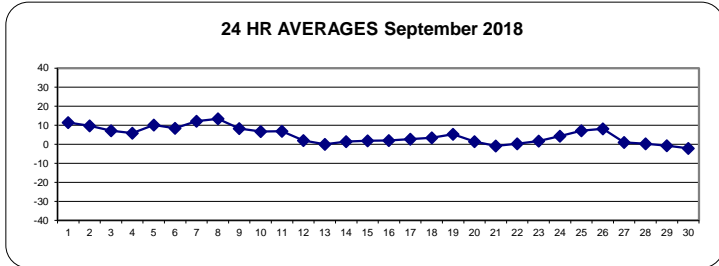
AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY 1	12.0	11.6	10.1	9.5	9.5	8.8	8.7	9.3	10.4	12.4	14.0	14.1	12.9	13.6	13.8	14.7	15.1	14.1	12.3	10.9	10.2	9.3	8.5	7.0	7.0	15.1	11.4	24
2	5.7	4.1	4.9	5.7	5.7	4.7	5.4	6.7	8.9	10.9	12.4	13.6	14.5	15.1	16.1	16.3	16.5	15.5	11.4	8.6	8.2	8.3	7.5	7.0	4.1	16.5	9.7	24
3	6.7	4.6	3.4	3.4	3.6	4.6	6.1	7.4	8.3	8.4	8.6	8.9	9.1	9.3	10.0	10.8	10.0	9.8	9.2	7.9	7.0	6.1	5.4	4.7	3.4	10.8	7.2	24
4	3.6	2.9	3.0	3.5	3.0	2.3	1.8	3.0	4.5	5.5	6.7	8.2	9.5	10.6	11.5	11.6	11.9	11.4	8.1	4.4	3.0	2.6	4.1	5.1	1.8	11.9	5.9	24
5	4.5	3.9	3.8	3.6	3.4	3.0	4.1	5.7	8.4	10.8	13.8	16.4	17.2	17.7	18.9	17.5	18.1	16.5	12.6	8.7	8.2	8.7	8.4	8.4	3.0	18.9	10.1	24
6	7.8	7.2	6.7	6.1	5.7	5.2	5.5	6.3	7.1	7.7	8.1	8.6	8.9	9.8	10.1	11.3	12.0	11.8	10.4	9.4	8.8	8.4	8.7	8.9	5.2	12.0	8.4	24
7	8.4	8.5	9.3	9.3	9.2	9.4	9.2	9.9	10.9	13.4	14.8	16.6	17.9	14.9	14.7	16.8	16.7	16.0	13.7	12.1	11.3	10.4	10.0	10.4	8.4	17.9	12.2	24
8	9.2	8.2	7.8	7.7	7.2	7.1	7.2	9.1	11.7	13.5	15.5	17.8	19.6	20.6	20.6	20.0	19.0	17.4	16.5	14.9	13.6	13.1	12.7	12.3	7.1	20.6	13.4	24
9	12.1	11.5	11.0	10.7	10.3	9.9	9.8	10.0	9.9	9.4	8.7	8.4	7.7	7.6	7.5	7.2	6.9	6.5	6.1	5.9	5.5	5.2	5.1	5.2	5.1	12.1	8.3	24
10	5.2	5.0	4.9	5.0	5.0	4.8	5.0	5.8	6.7	7.6	7.8	7.4	7.4	7.5	7.7	8.1	8.1	8.1	7.7	7.5	7.4	7.4	7.3	7.2	4.8	8.1	6.7	24
11	7.1	6.9	6.5	6.4	6.3	6.0	6.0	6.2	6.3	6.8	7.6	7.5	8.1	8.6	9.5	9.6	10.3	9.5	8.1	6.6	5.5	4.2	2.8	2.3	2.3	10.3	6.9	24
12	2.1	2.4	2.5	3.0	3.1	3.6	3.0	3.5	3.9	2.7	2.7	2.5	2.3	2.2	1.9	1.4	1.3	1.2	0.8	0.7	0.5	0.2	0.2	0.1	0.1	3.9	2.0	24
13	-0.1	-0.2	-0.3	-0.7	-0.8	-1.0	-1.0	-0.6	-0.3	-0.1	0.3	0.8	0.6	0.6	1.1	1.5	1.5	1.2	0.5	-0.1	-0.2	-0.5	-1.0	-0.8	-1.0	1.5	0.0	24
14	-0.6	-0.5	-0.6	-0.4	-0.3	-0.3	-0.2	0.3	1.2	2.1	2.7	3.1	3.4	3.7	3.4	3.2	2.7	2.2	1.4	1.2	0.8	0.9	0.8	-0.6	-0.6	3.7	1.4	24
15	0.7	0.7	0.6	0.8	1.1	1.7	2.1	2.1	2.3	2.2	2.5	2.6	2.8	2.9	2.8	2.4	2.0	1.5	1.4	1.6	1.6	1.5	1.4	1.4	0.6	2.9	1.8	24
16	1.4	1.5	1.5	1.6	1.6	1.6	1.6	1.8	2.1	2.3	2.6	2.9	3.2	3.1	2.9	2.5	2.2	1.8	1.6	1.5	1.6	1.4	1.5	1.5	1.4	3.2	2.0	24
17	1.2	1.1	1.1	0.9	1.0	1.1	0.9	1.0	1.5	2.3	3.0	3.6	3.9	4.0	4.7	4.9	4.3	4.0	3.6	3.3	3.2	3.2	3.1	0.9	4.9	2.7	24	
18	3.1	2.9	2.7	2.4	2.2	2.6	2.9	3.2	4.0	5.0	5.1	5.2	5.5	6.1	6.6	7.2	7.7	5.1	2.9	1.0	0.2	0.0	-1.1	-1.4	-1.4	7.7	3.4	24
19	-0.8	-0.1	0.1	1.2	1.6	2.0	1.8	2.8	4.7	7.3	8.6	10.8	11.6	12.2	9.9	8.8	9.3	8.8	5.4	4.7	5.1	5.0	3.7	3.8	-0.8	12.2	5.3	24
20	2.1	-0.4	-1.4	-1.7	-1.9	-1.8	-1.5	0.4	2.7	3.5	4.3	4.8	5.2	5.7	6.4	6.3	5.2	3.4	1.6	-1.2	-1.6	-1.8	-1.8	-1.9	6.4	1.4	24	
21	-2.6	-2.7	-2.6	-3.3	-2.8	-2.7	-2.6	-2.0	-1.1	0.2	1.9	2.3	2.4	2.9	3.3	3.4	3.7	2.3	-1.3	-2.8	-3.5	-4.1	-4.6	-5.4	-5.4	3.7	-0.9	24
22	-5.7	-5.8	-6.1	-6.0	-5.4	-5.2	-5.0	-3.8	0.2	2.2	3.8	3.7	4.7	4.5	5.2	5.1	4.4	3.8	2.0	2.3	2.5	2.0	1.6	1.4	-6.1	5.2	0.3	24
23	1.3	1.0	0.3	-0.6	-0.7	-0.6	-0.5	-0.3	0.0	0.4	1.0	1.5	2.2	3.0	4.5	5.1	5.0	4.7	3.1	2.4	2.2	2.0	1.4	1.3	-0.7	5.1	1.7	24
24	1.0	0.0	-0.2	-0.8	-1.5	-1.2	-1.3	-0.7	0.5	2.9	5.8	8.9	10.6	11.7	10.3	8.2	7.7	7.8	6.2	6.1	5.5	6.1	5.6	4.5	-1.5	11.7	4.3	24
25	3.1	1.9	1.4	1.0	1.3	0.7	-0.3	1.2	4.9	7.8	10.0	11.2	12.2	12.9	13.3	13.1	13.0	11.6	8.5	8.4	9.3	9.3	9.3	8.4	-0.3	13.3	7.2	24
26	8.7	8.8	8.8	8.7	8.2	7.3	7.6	8.1	9.4	10.1	10.6	10.5	11.0	10.7	10.0	10.6	9.8	8.4	7.4	6.5	5.2	4.0	3.8	3.4	3.4	11.0	8.2	24
27	2.8	1.4	-0.2	-1.1	-1.4	-1.2	-0.6	-1.0	-0.8	0.0	1.1	2.1	3.1	3.9	4.1	3.5	3.3	3.0	2.8	1.7	1.0	0.0	-1.0	-1.6	-1.6	4.1	1.0	24
28	-2.8	-3.6	-3.9	-3.7	-3.7	-4.6	-5.1	-3.4	-0.4	1.5	2.8	4.3	5.0	5.4	6.9	6.5	5.9	4.3	0.9	-1.1	-1.4	-1.5	-0.7	0.0	-5.1	6.9	0.3	24
29	0.6	0.6	0.0	-0.4	-1.2	-1.8	-1.6	-1.5	-1.2	-0.9	-0.5	-0.2	0.2	0.5	0.8	0.6	0.4	-0.1	-0.3	-1.0	-1.7	-2.8	-2.9	-2.5	-2.9	0.8	-0.7	24
30	-2.6	-3.3	-5.1	-6.4	-7.2	-7.4	-7.9	-5.6	-2.4	-0.9	-0.4	-0.2	1.3	0.9	2.5	2.3	1.0	0.4	-0.9	-1.9	-1.9	-1.4	-1.3	-1.3	-7.9	2.5	-2.1	24
HOURLY MAX	12.1	11.6	11.0	10.7	10.3	9.9	9.8	10.0	11.7	13.5	15.5	17.8	19.6	20.6	20.6	20.0	19.0	17.4	16.5	14.9	13.6	13.1	12.7	12.3				
HOURLY AVG	3.2	2.7	2.3	2.2	2.1	2.0	2.0	2.8	4.1	5.2	6.2	6.9	7.5	7.7	8.0	8.0	7.9	7.1	5.5	4.4	3.9	3.6	3.3	3.1				

STATUS FLAG CODES

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

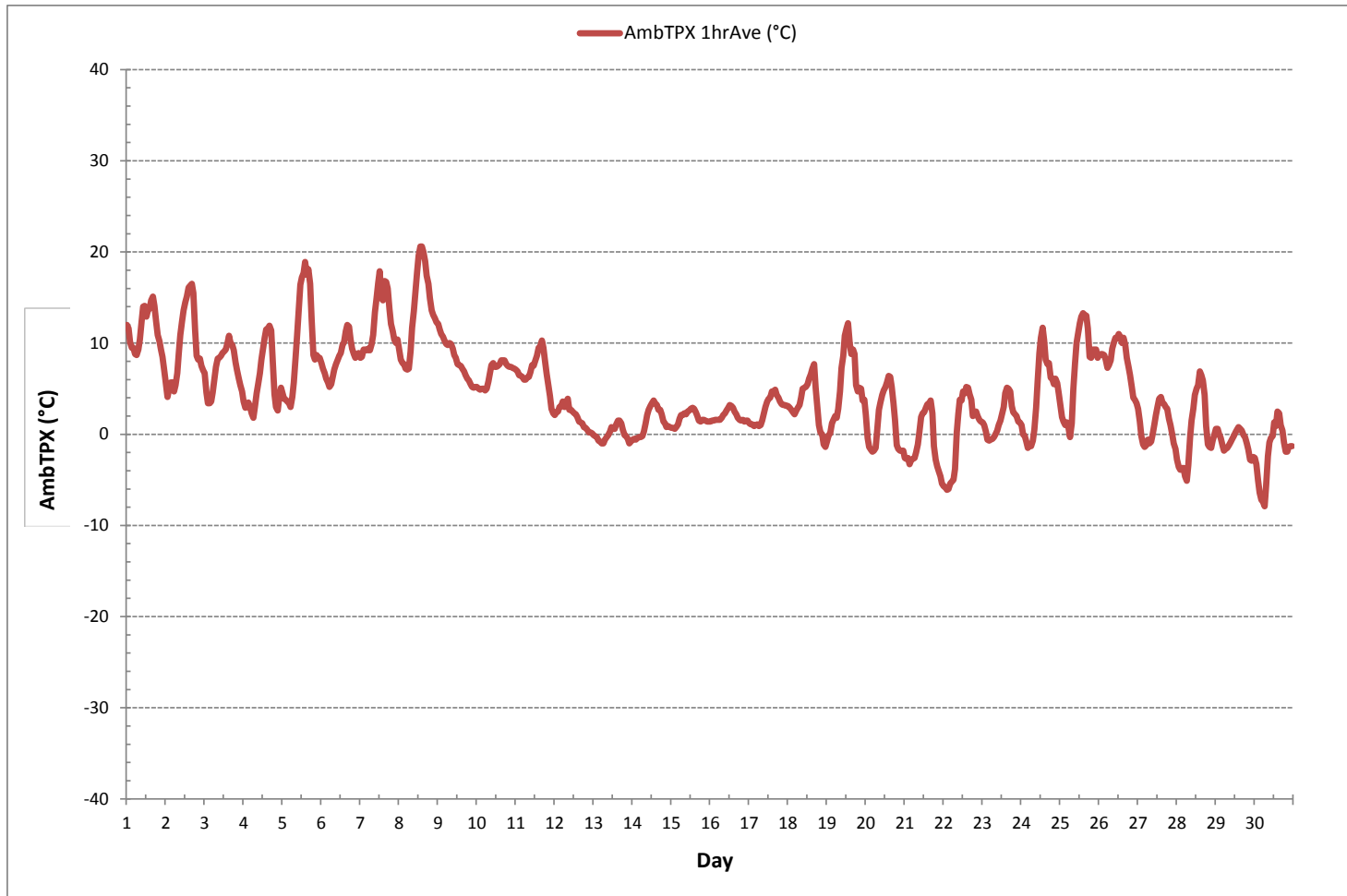
24 HR AVERAGES September 2018



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	-7.9 °C	@ HOUR	6	ON DAY	30
MAXIMUM 1-HR AVERAGE:	20.6 °C	@ HOUR	13	ON DAY	8
MAXIMUM 24-HR AVERAGE:	13.4 °C			ON DAY	8
OPERATIONAL TIME:				720	hrs
AMD OPERATION UPTIME:				100.0	%
STANDARD DEVIATION:	5.1	MONTHLY AVERAGE:		4.7	°C

AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)



PRECIPITATION



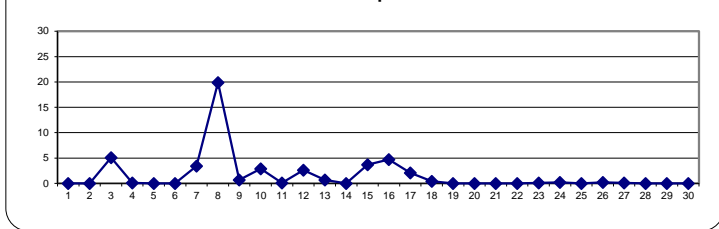
PRECIPITATION Hourly Totals (mm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	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.	TOTALS	
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	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	24
3	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0.0	1.0	5.1	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	0.1	0.1	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	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	24
7	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	3.4	3.4	24
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	4	4	2	1	0.0	10.2	19.9	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	0.4	0.7	24
10	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0.0	0.6	2.9	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	0.1	0.1	24
12	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.7	2.6	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	0.2	0.7	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	24
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0.0	0.6	3.7	24
16	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	0.6	4.7	24
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.3	2.1	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	0.2	0.4	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	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	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	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	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	0.1	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	0.2	0.2	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	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	0.1	0.2	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	0.1	0.1	24
28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	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	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	24
HOURLY MAX	0.4	0.3	0.2	0.3	0.2	0.1	0.3	0.4	1.0	0.8	0.6	0.9	0.5	3.4	0.5	0.4	0.6	0.6	0.4	10.2	3.5	3.7	1.6	0.9				
HOURLY AVG	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.2	0.0	0.0	0.1	0.0	0.0	0.4	0.1	0.2	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

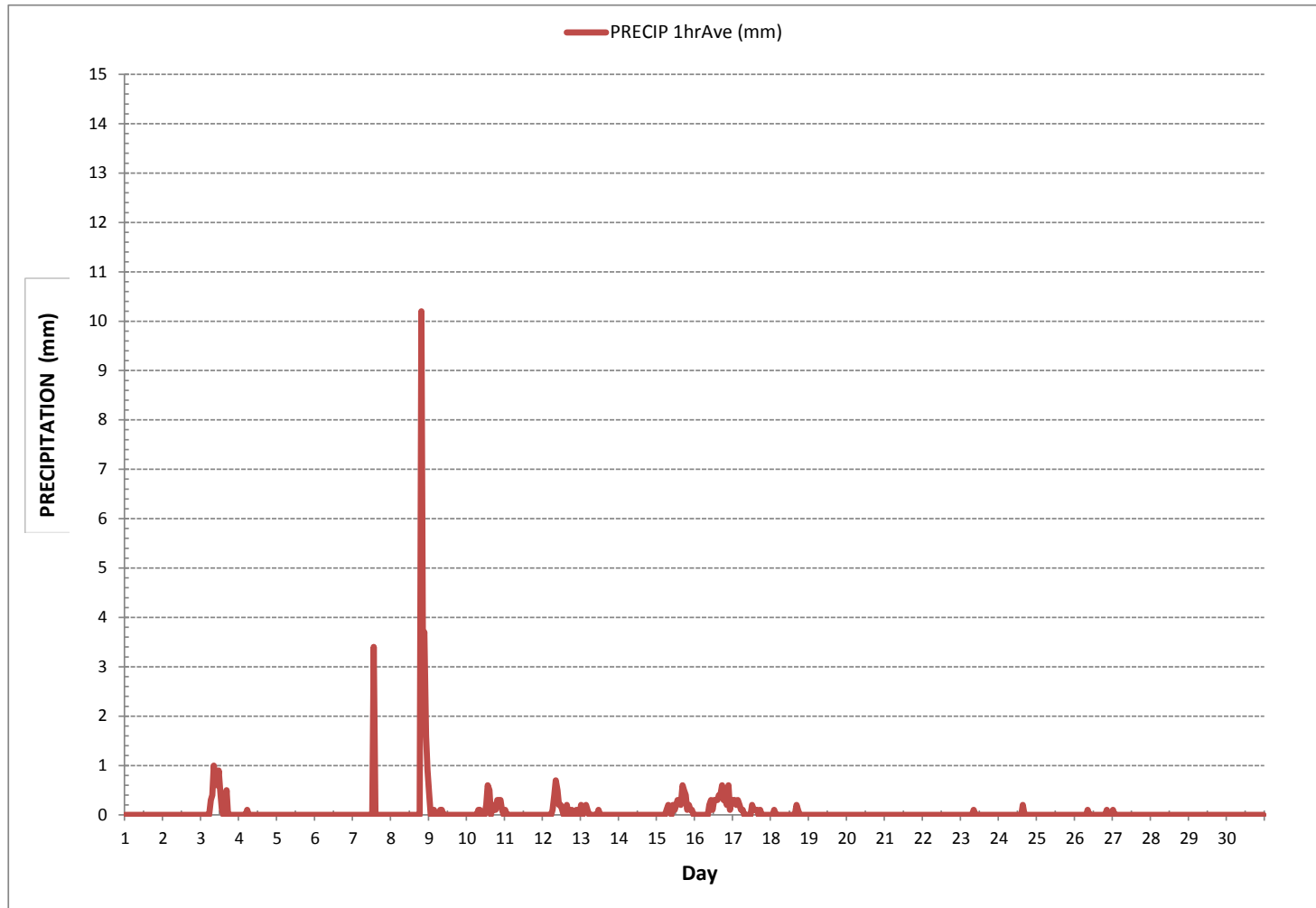
24 HR TOTALS September 2018



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	0.0	mm	@ HOUR	0	ON DAY	1
MAXIMUM 1-HR AVERAGE:	10.2	mm	@ HOUR	19	ON DAY	8
MAXIMUM 24-HR AVERAGE:	19.9	mm			ON DAY	8
MONTHLY TOTAL	47.0	mm				
OPERATIONAL TIME:					720	hrs
AMD OPERATION UPTIME:					100.0	%
STANDARD DEVIATION:	0.5				MONTHLY AVERAGE:	0.1 mm

PRECIPITATION Hourly Totals (mm)



APPENDIX II
EQUIPMENT CALIBRATION RESULTS

SULPHUR DIOXIDE



Thermo 431-TLE Sulphur Dioxide Analyzer Calibration

Date: September 2, 2018	Barometer/B.P./units: Brunton 05535 expires December 15, 2018	27.76	inHg
Company/Airshed: LICA	Thermometer/Station Temp: F.S. 160348895 expires June 19, 2020	23.5	°C
Location/Station Name: Maskwa	Weather Conditions: Mainly sunny		
Parameter: Sulphur Dioxide	Calibration Purpose: routine monthly		
Start Time 24 hr. (mst): 11:14	Performed By/Reviewer: Limin Li	Rob Fisher	
End Time 24 hr. (mst): 15:21	Cal Gas Expiry Date: May 23, 2019		
Calibration Method: Gas Dilution	Converter Model & s/n (if applicable): n/a		
Analyst:	Serial Number/Owner: 1180930031 LICA	Range ppb: 1000	
	Last Calibration Date: August 8, 2018	As Found C.F.: 1.025	
	Previous C.F.: 1.001	New C.F.: 1.000	

Calibration Standards:	Standard Calibration Points for Ranges								
Low Flow Meter ID/Expiry Date: Defender Low 156151 expires October 2, 2018	<table border="1" style="margin: auto;"> <tr><th>Point</th><th>ppb</th></tr> <tr><td>High</td><td>780</td></tr> <tr><td>Mid</td><td>380</td></tr> <tr><td>Low</td><td>190</td></tr> </table>	Point	ppb	High	780	Mid	380	Low	190
Point	ppb								
High	780								
Mid	380								
Low	190								
High Flow Meter ID/Expiry Date: Defender High 156312 expires December 13, 2018									
Calibrator ID/Expiry Date: Sabio id# 17200415 expires August 21, 2019									
Cal Gas Cylinder I.D. #: LL119513									
Cal Gas Conc. (ppm): 50.6									

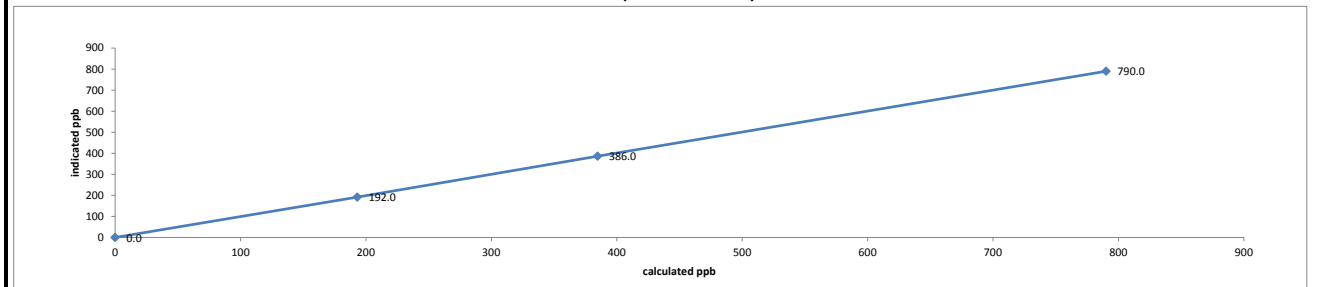
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Point	Diluent	Cal Gas	Total	Calculated Concentration (ppb):	Indicated Concentration (ppb):	Correction Factors (C.F.):
as found zero	5030	0.00	5030	0.0	0.1	n/a
as found high	4946	78.45	5024	790.1	771.0	1.025
adjusted zero	5030	0.00	5030	0.0	0.0	n/a
adjusted high	4946	78.45	5024	790.1	790.0	1.000
mid	5013	38.40	5051	384.7	386.0	0.997
low	5036	19.29	5055	193.1	192.0	1.006
calibrator zero	5055	0.00	5055	0.0	0.3	n/a
Average C.F. =						1.001

Linear Regression/Calibration Results:

Correlation Coefficient = 1.000	LIMITS
Slope = 1.000	> or = 0.995
b (Intercept as % of full scale) = 0.01%	0.95-1.05
% change in C.F. from last cal = -2.39%	± 3% F.S.
	± 10%

Thermo 431-TLE Sulphur Dioxide Analyzer Calibration

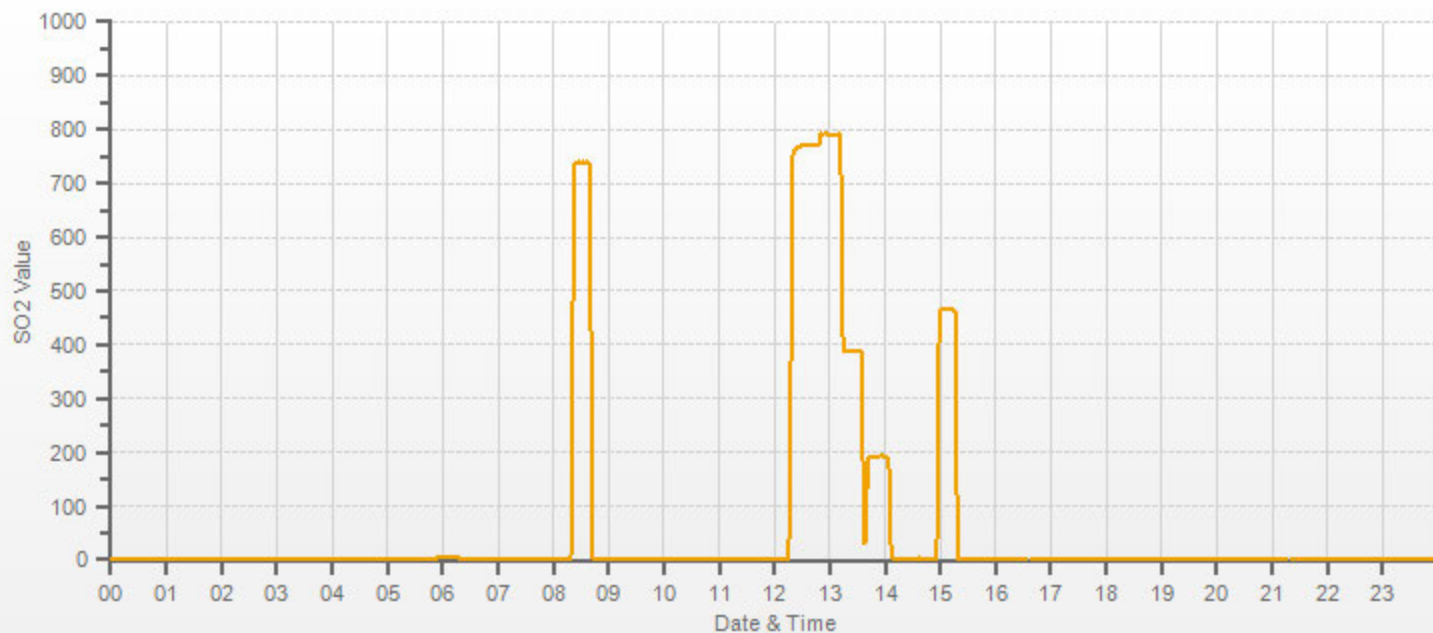


As found:	As left:
Bkg: 1.73	Bkg: 1.87
Coef: 0.942	Coef: 0.963
Pmt: -700.4	Pmt: -700.8
Flash: 973	Flash: 972
Internal: 31.2	Internal: 30.1
Chamber: 44.9	Chamber: 44.8
Perm Oven Gas: 45.01	Perm Oven Gas: 35.00
Perm Oven Heater: 44.23	Perm Oven Heater: 34.26
Pressure: 668.9	Pressure: 669.5
Sample Flow: 0.459	Sample Flow: 0.459
Lamp Intensity: 91	Lamp Intensity: 91
Averaging Time: 120	Averaging Time: 120
Expected Value: 750.0	Expected Value: 462.8

Comments:
 The analyzer sample inlet filter was changed. The analyzer cooling fan filter(s) were cleaned. The manifold blower was found to be working normally.

The IZS temperature was changed from 45 to 35°C.

— SO2[ppb]



HYDROGEN SULPHIDE



Thermo 450i Hydrogen Sulphide Analyzer Calibration

Date:	September 3, 2018	Barometer/B.P./units:	Brunton 05535 expires December 15, 2018	27.74	inHg
Company/Airshed:	LICA	Thermometer/Station Temp:	F.S. 160348895 expires June 19, 2020	22	°C
Location/Station Name:	Maskwa	Weather Conditions:	Light rain/scattered showers		
Parameter:	Hydrogen Sulphide	Calibration Purpose:	routine monthly		
Start Time 24 hr. (mst):	10:38	Performed By/Reviewer:	Limin Li	Rob Fisher	
End Time 24 hr. (mst):	15:30	Cal Gas Expiry Date:	August 23, 2020		
Calibration Method:	Gas Dilution	Converter Model & s/n (if applicable):	Internal		
Analyzer:					
Serial Number/Owner:	CM17360005 LICA	Range ppb:	100		
Last Calibration Date:	August 1, 2018	As Found C.F.:	1.036		
Previous C.F.:	1.000	New C.F.:	1.000		

Calibration Standards:	Standard Calibration Points for Ranges	SO2 Scrubber Check (10 minutes):
Low Flow Meter ID/Expiry Date:	Defender Low 156151 expires October 2, 2018	Start/End Time 24 hr.:
High Flow Meter ID/Expiry Date:	Defender High 156312 expires December 13, 2018	SO2 Analyzer Range:
Calibrator ID/Expiry Date:	Sabio id# 17200415 expires August 21, 2019	Target Concentration (ppb):
Cal Gas Cylinder I.D. #:	LL119500	As Found Zero:
Cal Gas Conc. (ppm):	9.8	Analyzer Response: (ppb):
		Zero Corrected Result (ppb):

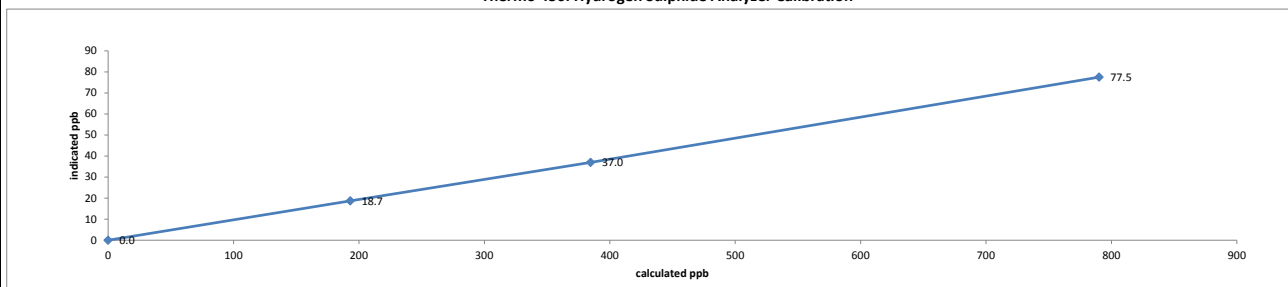
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration (ppb):	Indicated Concentration (ppb):	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total			
as found zero	7561	0.00	7561	0.0	1.9	n/a
as found high	7540	60.12	7600	77.5	76.7	1.036
adjusted zero	7561	0.00	7561	0.0	0.0	n/a
adjusted high	7540	60.12	7600	77.5	77.5	1.000
mid	7587	29.57	7617	38.0	37.0	1.028
low	7613	14.87	7628	19.1	18.7	1.022
calibrator zero	7626	0.00	7626	0.0	0.0	n/a
Average C.F. =						1.017

Linear Regression/Calibration Results:

Correlation Coefficient =	1.000	LIMITS	> or = 0.995
Slope =	1.000		0.95-1.05
b (Intercept as % of full scale) =	0.38%		± 3% F.S.
% change in C.F. from last cal =	-3.64%		± 10%

Thermo 450i Hydrogen Sulphide Analyzer Calibration

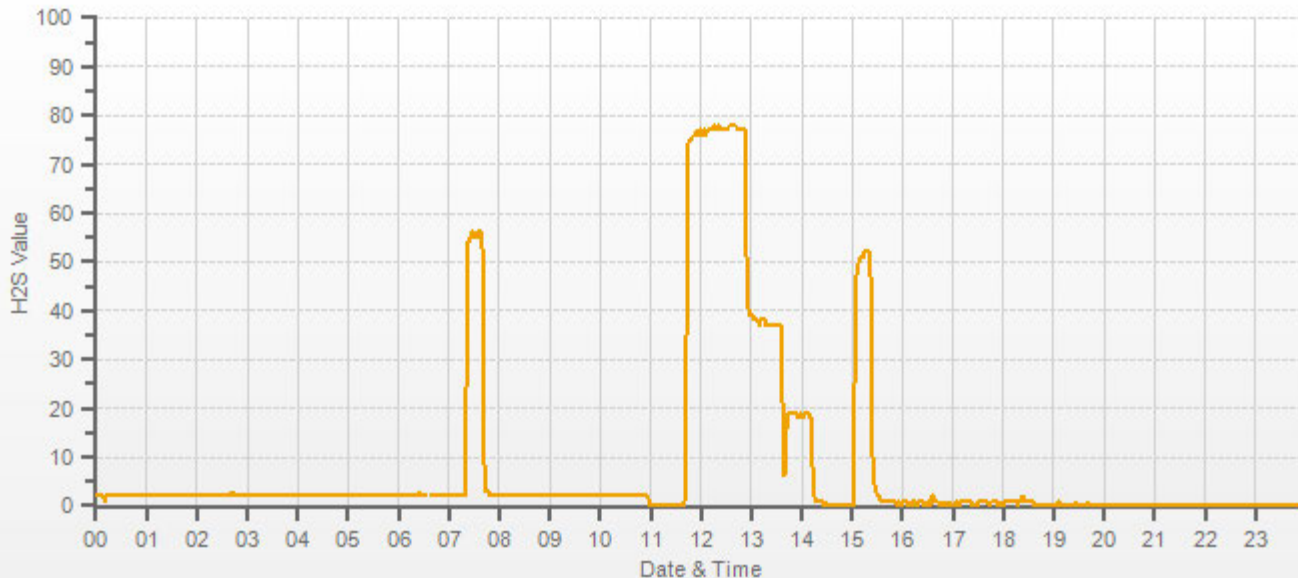


As found:		As left:	
Bkg:	14.3	Bkg:	16.4
Coef:	0.836	Coef:	0.851
Pmt:	-602.4	Pmt:	-602.4
Flash:	812	Flash:	808
Internal:	35.0	Internal:	33.1
Chamber:	45.1	Chamber:	45.3
Converter Temp:	323.9	Converter Temp:	330.2
Converter Set:	325.0	Converter Set:	325.0
Perm Oven Gas:	35.0	Perm Oven Gas:	35.0
Perm Oven Htr:	34.27	Perm Oven Htr:	34.27
Pressure:	576.4	Pressure:	574.6
Sample Flow:	0.929	Sample Flow:	0.929
Lamp Intensity:	91	Lamp Intensity:	91
Averaging Time:	120	Averaging Time:	120
Expected Value:	58.1	Expected Value:	51.9

Comments:

The analyzer sample inlet filter was changed. The analyzer cooling fan filter(s) were cleaned. The manifold blower was found to be working normally.

H2S[ppb]



TOTAL HYDROCARBON



Thermo 55i Methane/Non-Methane Analyzer Calibration

Date: September 3, 2018
Company/Airshed: LICA
Location/Station Name: Maskwa
Parameter: CH4 / NMHC / THC
Start/End Time 24 hr. (mst): 10:40/13:35
Calibration Method: Gas Dilution
Barometer/B.P./units: Brunton 05535 expires December 15, 2018
Thermometer/Station Temp: F.S. 160348895 expires June 19, 2020
Weather Conditions: Light rain/scattered showers
Calibration Purpose: installation
Performed By/Reviewer: Limin Li / Rob Fisher
Cal Gas Expiry Date: October 18, 2025

Analyzer: Serial Number/Owner: 1236656107 / LICA
Measured Flow: 1111
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.
CH4 = 1.000, NMHC = 1.000, THC = 1.000

Calibration Standards: Low Flow Meter ID/Expiry Date: Defender Low 156151 expires October 2, 2018
High Flow Meter ID/Expiry Date: Defender High 156312 expires December 13, 2018
Calibrator ID/Expiry Date: Envionics id# 1991 expires March 15, 2019
Cal Gas Cylinder I.D. #: LL168404
CH4 Cylinder Conc.: 597.0, 206.0 =C2H6 Cylinder Conc.
CH4 expressed as C2H6: 566.5, 1163.5 =total CH4 equivalent
Standard Calibration Points for Analyzer Range of 20/20/40 ppm
Point: High (13.00 CH4, 13.00 NMHC, 26.00 THC), Mid (7.00 CH4, 7.00 NMHC, 14.00 THC), Low (3.00 CH4, 3.00 NMHC, 6.00 THC)

ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015
Calibrator Flow Rates (cc/min) table with columns: Point, Diluent, Cal Gas, Total Flow, Calculated CH4 (ppm), Calculated NMHC (ppm), Calculated THC (ppm), Indicated CH4 (ppm), Indicated NMHC (ppm), Indicated THC (ppm), Correction Factors: CH4, NMHC, THC.
Average C.F. = 0.997, 0.999, 0.998

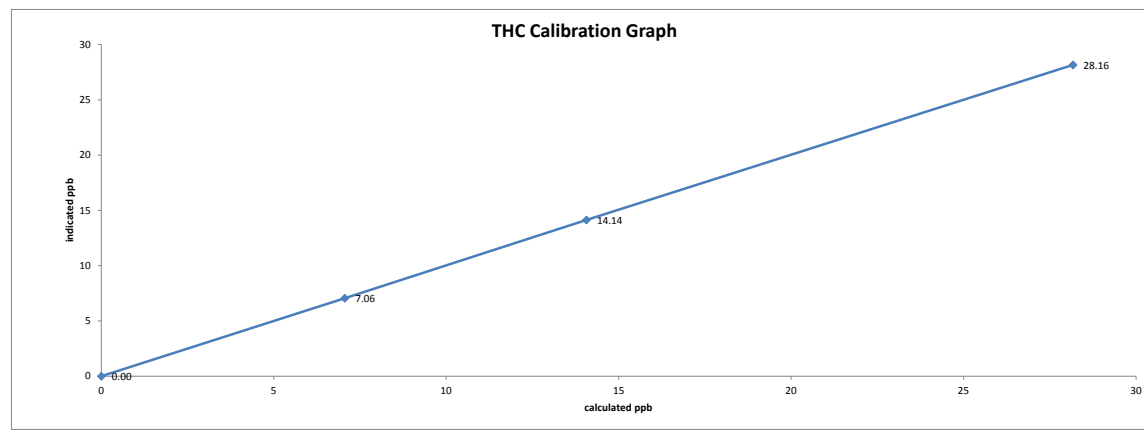
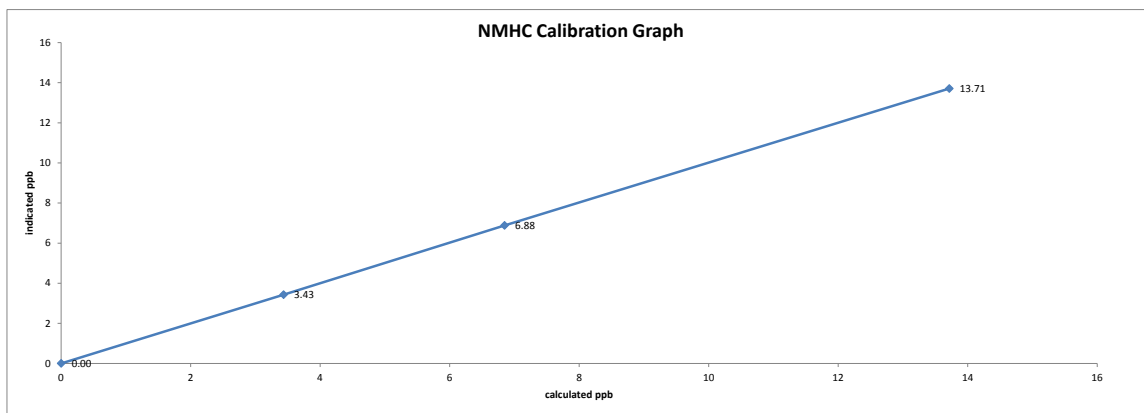
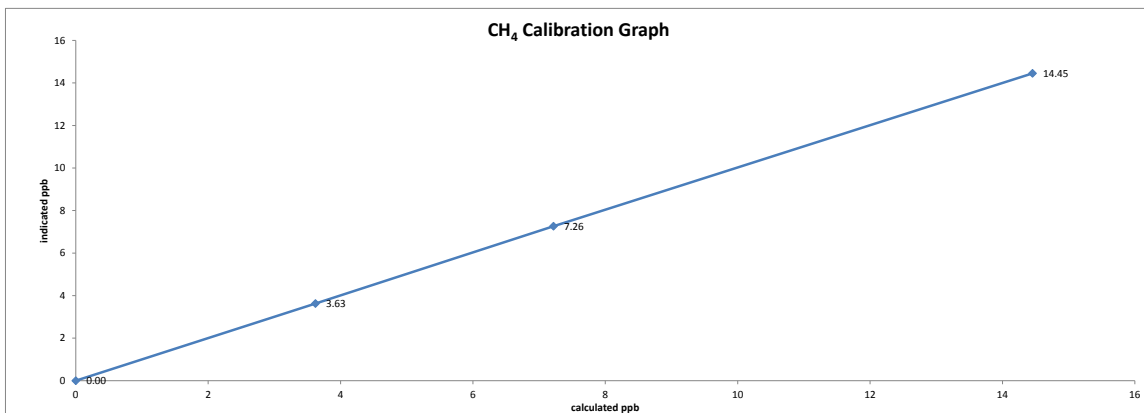
Linear Regression/Calibration Results:
Correlation Coefficient = 1.000, 1.000, 1.000
Slope = 1.000, 1.000, 1.000
b (Intercept as % of full scale) = 0.06%, 0.02%, 0.04%
% change in C.F. from last cal = n/a, n/a, n/a
LIMITS: > or = 0.995, 0.95-1.05, ± 3% F.S., n/a

As Left Instrument Diagnostics:
Interface Board Voltages: Bias Supply: -292.7
Temperatures: Detector Oven: 175.0, Filter: 175.0, Column Oven: 75.0, Internal: 31.3
Cylinder Pressures/reg.: Carrier: 2250, 50; Fuel: 550, 55; Span Gas: 2000, 13
Zero Air Generator: 50
Internal Pressures: Carrier: 31.1, Fuel: 40.3, Air: 31.0
FID Status: Status: LIT, Counts: 25812, Flame: 367.2, Det Base: 175.0
Flame and Power Stats: Last Power On: 02SEP2018 14:41, Flameouts: 1, Det Oven at Start: 35.7, Col Oven at Start: 32.0
Calibration History: Time: 03SEP18 11:15, Type: SPAN, Status: GOOD, Check/Adjust: ADJUST, CH4 Span Conc: 14.45, CH4 SP Ratio: 0.000766, CH4 RT: 13.4, CH4 PK IDX: 24, CH4 PK HT: 18874, NM Span Conc: 13.72, NM SP Ratio: 0.000152
Calibration History cnt'd: NM Peak Area: 90183, Methane Start: 8, Methane End: 16, Backflush: 18, NMHV Start: 24, NMHC End: 56, Date: 03SEP18, Time: 10:59, CH4 PK HT: 0, CH4 RT: 8.0, CH4 Baseline: 2222, CH4 LOD: 76, CH4 SD: 25, CH4 CONC: 0.00, NM PK HT: 0, NM Peak Area: 0, NM CONC: 0.00, NM Base Start: 2181, NM Base End: 2195, NM LOD: 10, NM Start IDX: 30, NM End IDX: 95, NM Max Slope: 1.0E+00, NM Min Slope: -7.2E-01, NM PT Count: 0, Previous CH4: n/a, Previous NMHC: n/a, Previous THC: n/a, New CH4: 10.13, New NMHC: 10.96, New THC: 21.08

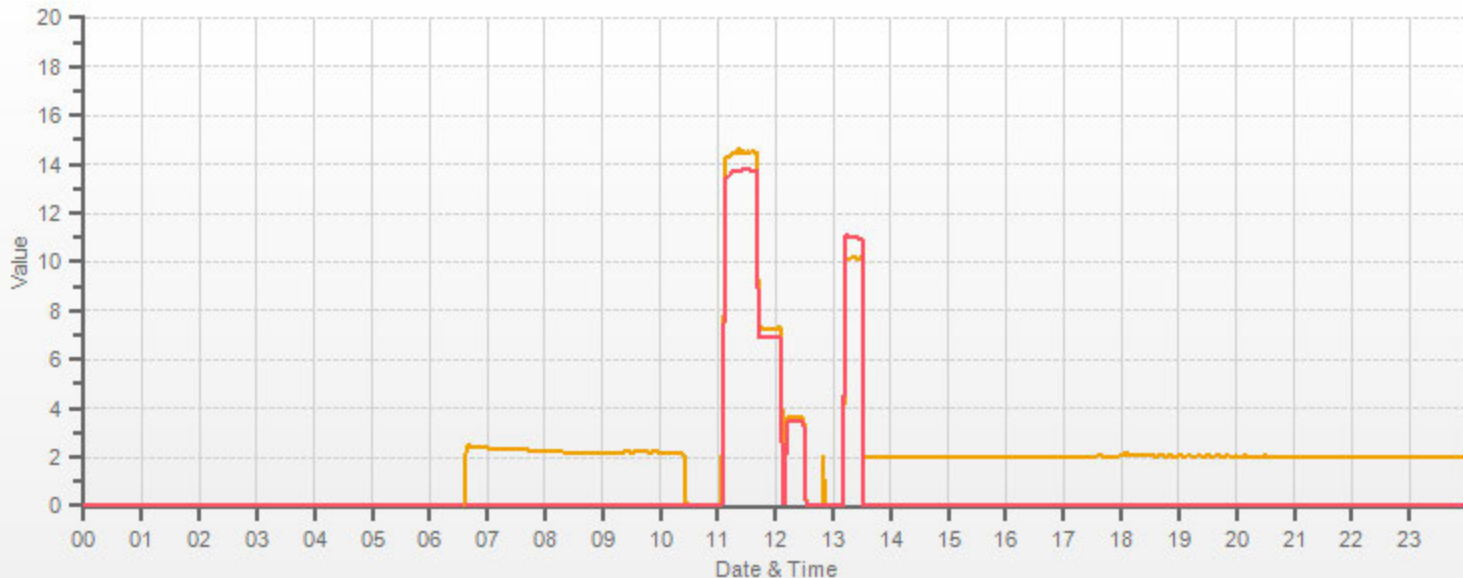
Comments:
The manifold blower was found to be working normally.

Date: September 3, 2018
Company/Airshed: LICA
Location/Station Name: Maskwa

Start/End Time 24 hr. (mst): 10:40/13:35
Calibration Purpose: installation
Calibration Method: Gas Dilution



CH4[ppm] NMHC[ppm]



NITROGEN DIOXIDE



Thermo 42i NO-NO2-NOx Analyzer Calibration

Date: September 2, 2018	Barometer/B.P./units: Brunton 05535 expires December 15, 2018	27.75	inHg
Company/Airshed: LICA	Thermometer/Station Temp: F.S. 160348895 expires June 19, 2020	23.5	°C
Location/Station Name: Maskwa	Weather Conditions: Mainly sunny		
Start/End Time 24 hr. (mst): 11:14/17:25	Calibration Purpose: routine monthly		
G.P.T. to be used for Ozone?: No	Performed By/Reviewer: Limin Li	Rob Fisher	
Calibration Method: Gas Dilution & Gas Phase Titration	Cal Gas Expiry Date: May 23, 2019		

Analyzer: Serial Number/Owner: 1180930028 LICA Last Calibration Date: August 8, 2018 Range ppb: 1000	Correction Factors: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Previous C.F.:</th> <th>As Found C.F.:</th> <th>New C.F.:</th> </tr> </thead> <tbody> <tr> <td>NO =</td> <td>1.000</td> <td>1.006</td> <td>1.000</td> </tr> <tr> <td>NO₂ =</td> <td>1.000</td> <td>1.000</td> <td>1.000</td> </tr> <tr> <td>NOx =</td> <td>0.999</td> <td>1.008</td> <td>1.000</td> </tr> </tbody> </table>		Previous C.F.:	As Found C.F.:	New C.F.:	NO =	1.000	1.006	1.000	NO ₂ =	1.000	1.000	1.000	NOx =	0.999	1.008	1.000
	Previous C.F.:	As Found C.F.:	New C.F.:														
NO =	1.000	1.006	1.000														
NO ₂ =	1.000	1.000	1.000														
NOx =	0.999	1.008	1.000														

Calibration Standards: Low Flow Meter ID/Expiry Date: Defender Low 156151 expires October 2, 2018 High Flow Meter ID/Expiry Date: Defender High 156312 expires December 13, 2018 Calibrator ID/Expiry Date: Sabio id# 17200415 expires August 21, 2019 Cal Gas Cylinder I.D. #: LL119513 Cal Gas Conc. (ppm): 50.2 50.4	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4">Standard Calibration Points for a Range of: 1000 ppb</th> </tr> <tr> <th>Point</th> <th>Target NO (ppb)</th> <th>Target NO₂ (ppb)</th> <th>Cc Ozone ?</th> </tr> </thead> <tbody> <tr> <td>High</td> <td>780</td> <td>500</td> <td>n/a</td> </tr> <tr> <td>Mid</td> <td>380</td> <td>275</td> <td>n/a</td> </tr> <tr> <td>Low</td> <td>190</td> <td>100</td> <td>n/a</td> </tr> <tr> <td>Extra Point #1</td> <td>n/a</td> <td>n/a</td> <td>n/a</td> </tr> <tr> <td>Extra Point #2</td> <td>n/a</td> <td>n/a</td> <td>n/a</td> </tr> </tbody> </table>	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
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	5030	0.0	5030	0	0	-0.4	-0.4	n/a	n/a
as found high	4946	78.5	5024	783.9	787.0	779.0	780.0	1.006	1.008
adjusted zero	5030	0.00	5030	0.0	0.0	0.0	0.0	n/a	n/a
adjusted high	4946	78.45	5024	783.9	787.0	784.0	787.0	1.000	1.000
mid	5013	38.40	5051	381.6	383.2	384.0	386.0	0.994	0.993
low	5036	19.29	5055	191.6	192.3	193.0	194.0	0.993	0.991
calibrator zero	5055	0.00	5055	0	0	0.1	0.1	n/a	n/a
Average C.F.=								0.995	0.995

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	4946	78.45	5024	0.0	783.0	787.0	4.0	0.0	4.0	
as found high NO2	4946	78.45	5024	500.0	261.0	787.0	526.0	522.0	522.0	1.000
adjusted high NO2	4946	78.45	5024	500.0	261.0	787.0	526.0	522.0	522.0	1.000
gpt mid	4946	78.45	5024	265.0	504.0	787.0	283.0	279.0	279.0	1.000
gpt low	4946	78.45	5024	93.0	682.0	787.0	105.0	101.0	101.0	1.000
Average NO ₂ C.F.=										1.000

Linear Regression/Calibration Results:

	NO	NOx	NO ₂	LIMITS
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995
Slope =	1.000	1.000	1.006	0.95-1.05
b (Intercept as % of full scale)=	0.10%	0.13%	0.23%	± 3% F.S.
% change in C.F. from last cal=	-0.57%	-0.95%	0.00%	± 10%
NO2 converter efficiency			1.00	0.96 to 1.04

As found:		As left:	
NO Bkg:	3.1	NO Bkg:	2.7
NOx Bkg:	3.2	NOx Bkg:	2.8
NO Coef:	1.052	NO Coef:	1.060
NO2 Coef:	1.000	NO2 Coef:	1.000
NOx Coef:	1.000	NOx Coef:	1.003
PMT:	-866.5	PMT:	-866.5
Internal:	29.9	Internal:	29.3
Chamber:	50.0	Chamber:	50.5
Cooler:	-3.0	Cooler:	-3.0
NO2 Converter:	323.4	NO2 Converter:	323.7
NO2 Converter Set:	325.0	NO2 Converter Set:	325.0
Perm Oven Gas:	45.02	Perm Oven Gas:	45.00
Perm Oven Heater:	44.20	Perm Oven Heater:	44.17
Pressure:	253.1	Pressure:	254.3
Flow:	0.556	Flow:	0.556
Ozonator Flow:	OK	Ozonator Flow:	ok
Expected Value NO:	373	Expected Value NO:	406
Expected Value NO2:	6	Expected Value NO2:	5
Expected Value NOx:	378	Expected Value NOx:	400

Comments:

The analyzer sample inlet filter was changed. No high point NO2 adjustment was required/made. As found values were copied to adjusted high values for linearity calculation purposes.

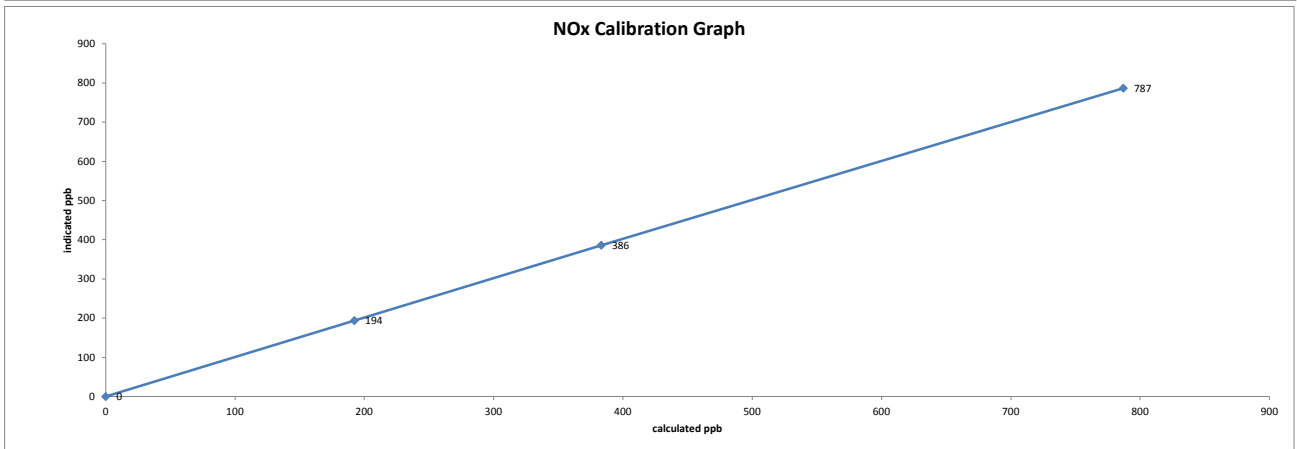
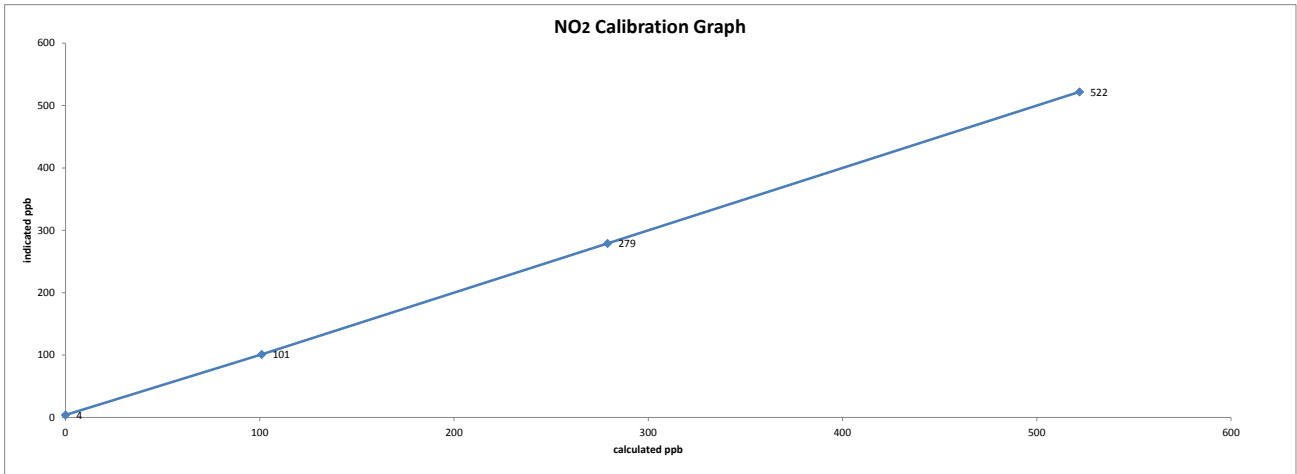
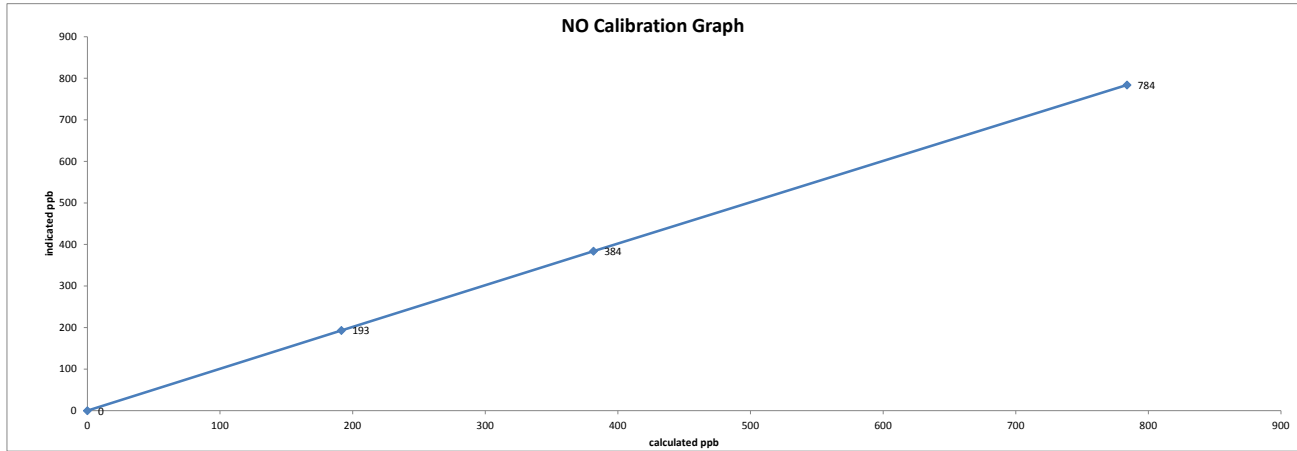
The manifold blower was found to be working normally.

The analyzer cooling fan filter(s) were cleaned.

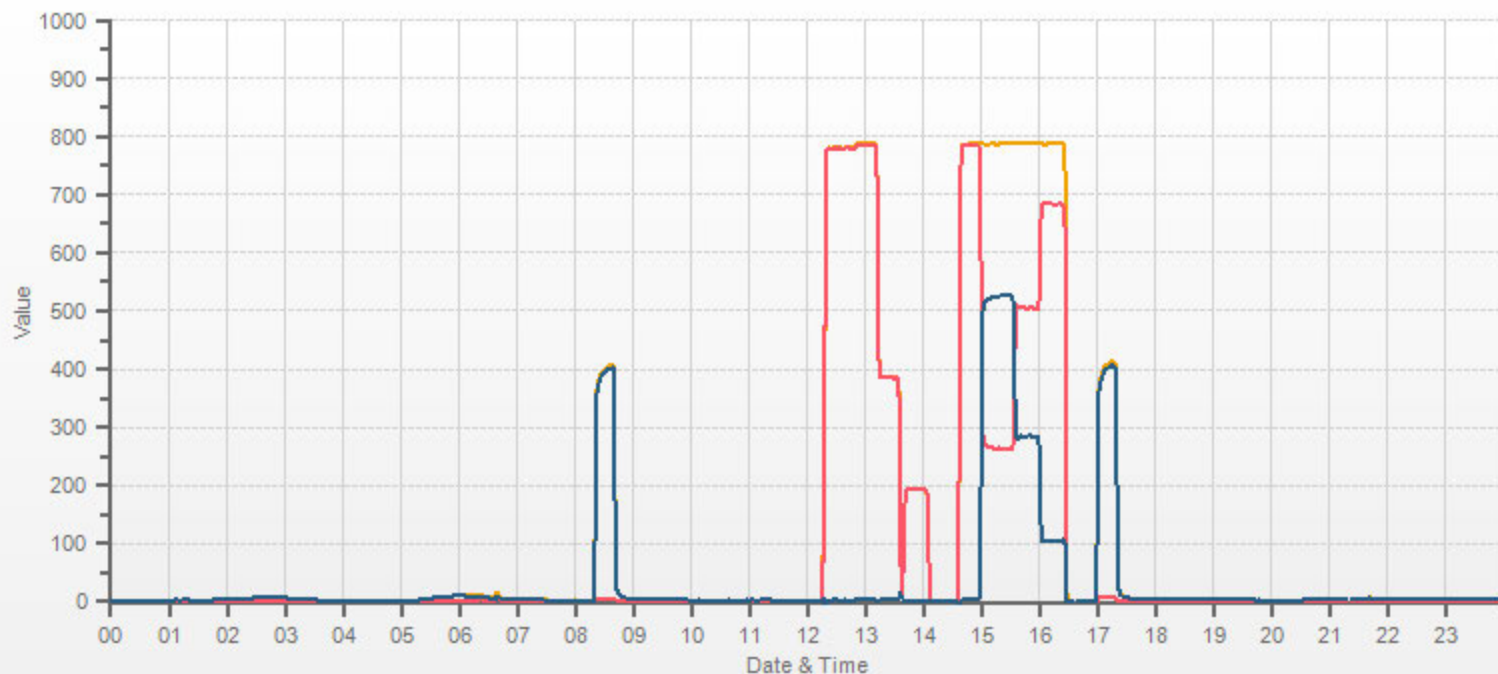
Date: September 2, 2018
Company/Airshed: LICA
Location/Station Name: Maskwa

Start/End Time 24 hr. (mst): 11:14/17:25
Calibration Purpose: routine monthly
Calibration Method: Gas Dilution & Gas Phase Titration

Thermo 42i NO-NO2-NOx Analyzer Calibration



— NOX[ppb] — NO[ppb] — NO2[ppb]



PARTICULATE MATTER

Maxxam R & P 1400A TEOM PM 2.5 Analyzer Audit/Calibration

Date:	September 13, 2018	Performed By/Reviewer:	Alex Yakupov	Rob Fisher
Company:	LICA	Start Time (mst):	10:13	
Station Name/Location:	Maskwa	End Time (mst):	13:01	
Previous Audit Date:	August 24, 2018	Calibration Purpose:	Bi-monthly #1	
Parameter:	PM 2.5	Weather Conditions:	Light snow	

1400A Information and Status:

Serial Number/Owner:	140AB228740001 Maxxam	As Found Filter Loading %:	42%
K _o Factor:	12166	As Left Filter Loading %:	20%
Ambient Temperature °C:	0.1	As Found/As Left Noise:	0.041% / 0.039%
Ambient Pressure atm:	0.925	FDMS or SES Dryer in use?	no
Main Flow Reading lpm:	3.0	Pump Vacuum:	n/a
Aux Flow Reading lpm:	13.66	Warnings:	None

Reference Standards/I.D./Expiry Date:

Low Flow:	Airmetrics/Chinook Low Maxxam ID #3 expires April 24, 2019
High Flow:	Airmetrics/Chinook High Maxxam ID #2 expires April 24, 2019
Digital Manometer:	Dwyer 475 Mark III id# 3 expires January 9, 2019
Temperature:	F.S. 170286131 expires April 19, 2019
Pressure:	F.S. 05544 expires January 15, 2019

As Found Pump Off Test and Leak Check :

	main flow	auxiliary flow	
pump unplugged zero (lpm)	0.32	0.11	
seconds to reach full flow (max. 60s)	46	51	(maintenance required if either > 60 seconds)
leak rate (lpm)	0.34	0.26	
0 corrected leak rate (lpm)	0.02	0.15	
limit (lpm)	0.15	0.15	

As Left Pump Off Test and Leak Check (same as above if as found adequate):

	main flow	auxiliary flow	
pump unplugged zero (lpm)	0.32	0.11	
seconds to reach full flow (max. 60s)	46	50	(maintenance required if either > 60 seconds)
leak rate (lpm)	0.34	0.16	
0 corrected leak rate (lpm)	0.02	0.05	
limit (lpm)	0.15	0.15	

As found temperature and pressure:

tolerance +/- 2.0 °C		tolerance +/- 0.01 atm	
1400A temperature °C:	0.1	1400A pressure atm:	0.925
reference temperature °C:	0.5	reference pressure:	0.926
difference °C:	0.4	difference :	0.001

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

tolerance +/- 2.0 °C		tolerance +/- 0.01 atm	
1400A temperature °C:	0.1	1400A pressure atm:	0.925
reference temperature °C:	0.5	reference pressure:	0.926
difference °C:	0.4	difference :	0.001

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%
1400A main flow lpm: 3.00	1400A total/aux flow lpm: 13.67
reference main flow lpm: 2.80	reference total/aux flow lpm: 12.95
difference lpm: -0.20	difference lpm: -0.72

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%
1400A main flow lpm: 3.00	1400A total/aux flow lpm: 13.67
reference main flow lpm: 2.87	reference total/aux flow lpm: 13.33
difference lpm: -0.13	difference lpm: -0.34

<p>K_o Audit:</p> <p>Last K_o audit date: July 26, 2018</p> <p>1400A K_o factor: 12166</p> <p>Measured K_o factor: 12350</p> <p>% difference: 1.51%</p>	<p>Instrument Operating Parameters:</p> <p>Pump Vacuum: n/a</p> <p>Main Fadj: 1.000</p> <p>Aux Fadj: 1.000</p>
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Comments:
 The TEOM sample filter was changed. The TEOM intake head and associated sharp cut components were cleaned.

Flows were calibrated

Maxxam R & P 1400A TEOM PM 2.5 Analyzer Audit/Calibration

Date:	September 21, 2018	Performed By/Reviewer:	Alex Yakupov	Rob Fisher
Company:	LICA	Start Time (mst):	9:04	
Station Name/Location:	Maskwa	End Time (mst):	10:12	
Previous Audit Date:	September 13, 2018	Calibration Purpose:	shut down	
Parameter:	PM 2.5	Weather Conditions:	A few clouds	

1400A Information and Status:

Serial Number/Owner:	140AB228740001	Maxxam	As Found Filter Loading %:	22%
K _o Factor:	12166		As Left Filter Loading %:	n/a
Ambient Temperature °C:	0.2		As Found/As Left Noise:	0.038%/ n/a
Ambient Pressure atm:	0.931		FDMS or SES Dryer in use?	no
Main Flow Reading lpm:	3.0		Pump Vacuum:	n/a
Aux Flow Reading lpm:	13.66		Warnings:	None

Reference Standards/I.D./Expiry Date:

Low Flow:	Airmetrics/Chinook Low Maxxam ID #3 expires April 24, 2019
High Flow:	Airmetrics/Chinook High Maxxam ID #2 expires April 24, 2019
Digital Manometer:	Dwyer 475 Mark III id# 3 expires January 9, 2019
Temperature:	F.S. 170286131 expires April 19, 2019
Pressure:	F.S. 05544 expires January 15, 2019

As Found Pump Off Test and Leak Check :

	main flow	auxiliary flow	
pump unplugged zero (lpm)	0.31	0.11	
seconds to reach full flow (max. 60s)	44	53	(maintenance required if either > 60 seconds)
leak rate (lpm)	0.34	0.22	
0 corrected leak rate (lpm)	0.03	0.11	
limit (lpm)	0.15	0.15	

As found temperature and pressure:

tolerance +/- 2.0°C		tolerance +/- 0.01 atm	
1400A temperature °C:	0.2	1400A pressure atm:	0.931
reference temperature °C:	0.5	reference pressure:	0.932
difference °C:	0.3	difference :	0.001

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%
1400A main flow lpm: 3.00	1400A total/aux flow lpm: 13.67
reference main flow lpm: 2.86	reference total/aux flow lpm: 12.91
difference lpm: -0.14	difference lpm: -0.76

<p>K_o Audit:</p> <p>Last K_o audit date: July 26, 2018</p> <p>1400A K_o factor: 12166</p> <p>Measured K_o factor: 12350</p> <p>% difference: 1.51%</p>	<p>Instrument Operating Parameters:</p> <p>Pump Vacuum: n/a</p> <p>Main Fadj: 1.000</p> <p>Aux Fadj: 1.000</p>
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Comments:

The instrument was shut down until 2019 Fire Season.

WIND SYSTEM



Meteorological Sensor Audit/Calibration

Location Information

Company:	LICA	Performed By:	Alex Yakupov
Audit Location:	Maskwa	Reviewed By:	Rob Fisher
Audit Date:	September 17, 2018	Start/End Time (mst):	9:36 / 12:48
Calibration Purpose:	installation	Weather Conditions:	Cloudy/Overcast

Wind Sensor Information

Sensor ID Data:		Sensor Outputs:	
Sensor Make:	RM Young	Velocity Voltage Output Range:	0-1 V
Sensor Model:	05305VK	Velocity Unit Output Range:	0-200 km/h
Serial #:	161465	Direction Voltage Output Range:	0-1 V
Previous Cal/Audit Date:	May 17, 2018	Direction Unit Output Range:	0-360 degrees

Wind Calibrator Information

Calibrator I.D. and Expiry Date: Model 18860-90/18802 SN: CA 4744; expiration May 18, 2019

Wind Speed Audit Data ****+/- 2% of the average correction factor is the limit****

RPM	Wind Speed Generated kph	Clockwise Wind Speed kph	Counter Clockwise Wind Speed kph	Correction Factor
0	0	0.1	0.1	-
1000	18.4	18.5	18.5	0.995
2000	36.9	36.9	36.9	1.000
3000	55.3	55.4	55.4	0.998
4000	73.7	73.8	73.8	0.999
5000	92.2	92.3	92.3	0.999
6000	110.6	110.8	110.8	0.998
7000	129.0	129.3	129.3	0.998
8000	147.4	147.7	147.7	0.998
9000	165.9	166.1	166.1	0.999
10000	184.3	184.9	184.9	0.997
The audit meets AMD requirements.			Average Correction Factor=	0.998

Wind Direction Audit Data ****+/- 3° of the absolute average degrees difference for all points is the limit****

Generated Wind Direction 0-360 (Up)	Generated Wind Direction 360-0 (Down)	Indicated Wind Direction 0-360 (Up)	Indicated Wind Direction 360-0 (Down)	Degrees Difference 0-360 (Up)	Degrees Difference 360-0 (Down)	Average Absolute Degrees Difference
0	355	0	355	0.3	0.1	0.2
30	330	30	329	-0.4	0.7	0.5
60	300	62	300	-1.9	-0.3	1.1
90	270	91	270	-1.3	-0.3	0.8
120	240	121	241	-1.0	-0.8	0.9
150	210	152	212	-1.7	-1.7	1.7
180	180	181	182	-1.1	-2.0	1.6
210	150	211	152	-1.1	-1.8	1.5
240	120	241	122	-0.5	-1.8	1.2
270	90	270	91	-0.1	-0.8	0.5
300	60	300	61	0.4	-0.6	0.5
330	30	330	31	-0.1	-0.7	0.4
355	0	354	0	0.6	0.3	0.5
The audit meets AMD requirements.				Average Absolute Degrees Difference=		0.9

Comments:

CALIBRATORS

Company <u>Maxxam</u>		Operator: <u>Mike</u>	
Calibrator:		Flow Measurement Device:	
Make/Model	<u>Sabio</u>	Make/Model	<u>Bios Definer 220</u>
Serial Number	<u>17200415</u>	Serial Number	<u>H=128686; L=129069</u>
Last Verification Date	<u>May 16, 2017</u>	Temperature (°C)	<u>22.2 C</u>
NO Cylinder S/N	<u>LL104183</u>	Barometric Pressure	<u>706.1mmHg</u>
NO [PPM]	<u>50.8</u>	NOx [PPM]	<u>50.9</u>
Expiry Date	<u>October 24, 2020</u>		

Dilution Flow (sccm)			
Pt. #1	<u>5057</u>	Pt. #2	<u>5055</u>
		Pt. #3	<u>5070</u>
Gas Flow (sccm)			
Pt. #1	<u>77.4</u>	Pt. #2	<u>37.9</u>
		Pt. #3	<u>19.1</u>

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO ₂	NOx	NO	NOx
5102	0.0	0.0000	0.0000	0.0001	-0.0002	-0.0001	Limit ± 10%	
5057	77.4	0.7775	0.7779	0.7973	0.0012	0.7985	3%	3%
5055	37.9	0.3809	0.3816	0.3896	0.0000	0.3896	2%	2%
5070	19.1	0.1914	0.1918	0.1962	0.0000	0.1962	2%	2%
Absolute Average Percent Difference							2%	2%

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

<u>NO</u>		<u>LIMITS</u>		<u>NOx</u>	
Correlation=	1.0000	≥ 0.990		Correlation=	1.0000
m (Slope)=	1.0253	0.90-1.10		m (Slope)=	1.0266
b (Intercept % of FS)=	-0.0176	± 3% F.S.		b (Intercept % of FS)=	-0.0763


Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
5057	0.0	0.0000	0.7868	0.0006	0.7874	NO ₂	% Diff. Limit
5057	500.0	0.5003	0.2865	0.5016	0.7875	0%	± 10%
5057	275.0	0.2802	0.5066	0.2797	0.7862	0%	± 10%
5057	100.0	0.1053	0.6815	0.1046	0.7863	-1%	± 10%
Absolute Average Percent Difference						0%	± 10%

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

<u>NO₂</u>		<u>LIMITS</u>	
Correlation=	1.0000	≥ 0.995	
m (Slope)=	1.0020	0.90-1.10	
b (Intercept % of FS)=	-0.0259	± 3% F.S.	

<u>AENV Standards</u>		<u>NO_x Analyzer</u>	
Audit Calibrator		Make/Model	<u>Thermo 42i</u>
Make/Model	<u>Thermo 146i</u>	Serial/AMU Number	<u>1868</u>
Serial/AMU Number	<u>1809</u>	Last Calibration Date	<u>August 16, 2018</u>
SRM Gas Cylinder No.	<u>APEX1170572</u>	Full Scale (ppm)	<u>1.0</u>
Cylinder Conc. (ppm)	<u>49.99</u>	Cylinder Gas Expiry Date	<u>November 15, 2020</u>

COMMENTS:

Auditor: Shea Beaton
Operator Signature: 

Date: August 21, 2018
Location: McIntyre Center Edmonton

Company: Maxxam **Operator:** Chris W

Calibrator:				Flow Measurement Device:			
Make/Model	<u>EnviroNics 2000</u>			Make/Model	<u>Mesa Defender 530</u>		
Serial Number	<u>1991</u>			Serial Number	<u>L-153351 H-152571</u>		
Last Verification Date	<u>March 2017</u>			Temperature (°C)	<u>25.0 C</u>		
NO Cylinder S/N	<u>LL108015</u>			Barometric Pressure	<u>695 mmHg</u>		
NO [PPM]	<u>52.2</u>	NOx [PPM]	<u>52.3</u>				
Expiry Date	<u>Oct 2020</u>						

Dilution Flow (sccm)			
Pt. #1	<u>5000</u>	Pt. #2	<u>5000</u>
Pt. #3	<u>5000</u>		
Gas Flow (sccm)			
Pt. #1	<u>80</u>	Pt. #2	<u>40</u>
Pt. #3	<u>20</u>		

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO ₂	NOx	NO	NOx
5000	0.0	0.000	0.000	0.000	0.000	0.000	Limit ± 10%	
4988	75.1	0.786	0.787	0.785	-0.002	0.783	0%	-1%
4988	36.5	0.382	0.383	0.382	0.001	0.383	0%	0%
4988	18.3	0.192	0.192	0.190	0.000	0.190	-1%	-1%
Absolute Average Percent Difference							0%	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)= 0.9996	0.90-1.10	m (Slope)= 0.9956
b (Intercept % of FS)= -0.0599	± 3% F.S.	b (Intercept % of FS)= -0.0005


Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
4988	0.000	0.000	0.788	-0.001	0.787	NO ₂	% Diff. Limit
4988	0.350	0.519	0.269	0.512	0.780	-1%	± 10%
4988	0.160	0.231	0.557	0.229	0.786	0%	± 10%
4988	0.070	0.099	0.689	0.097	0.787	-1%	± 10%
Absolute Average Percent Difference						1%	± 10%

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

NO₂	LIMITS
Correlation= 1.0000	≥ 0.995
m (Slope)= 0.9885	0.90-1.10
b (Intercept % of FS)= -0.0567	± 3% F.S.

AENV Standards	NO_x Analyzer
Audit Calibrator	Make/Model <u>Teco 42i</u>
Make/Model <u>Teco 146i</u>	Serial/AMU Number <u>AMU 1868</u>
Serial/AMU Number <u>AMU 1809</u>	Last Calibration Date <u>March 14, 2018</u>
SRM Gas Cylinder No. <u>APEX1170572</u>	Full Scale (ppm) <u>1.0</u>
Cylinder Conc. (ppm) <u>49.99</u>	Cylinder Gas Expiry Date <u>November 2020</u>

COMMENTS: Cylinder contains 47.9 ppm SO2.

Auditor: Al Clark
Operator Signature: 

Date: March 15, 2018
Location: McIntyre Center Edmonton

CALIBRATION GASES



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2016-086CGA

Company: Maxxam Operator's Name: Chris Wesson
Cylinder #: LL119513 Concentration PPM: 50.6 Tolerance(%) 1 Certified By: Praxair

Reference Calibrator and Gas:

Make/Model: Teco 146i
Serial Number: AMU 1809
Last Verification Date: June 17, 2016
Gas Type: SO2 Conc. 98.07
Cylinder Number: CAL016625

Flow Measurement Device:

Make/Model: Bios DC2
Serial Number: AMU 1659
Temp. °C: 23.0 C
B.P. 700 mmhg

Reference Analyzer:

Make/Model: Teco 43C Serial/AMU Number: 1623
Instrument Settings: Zero: 8.7 Span: 1.027 Range: 1.0
Last Calibration: Date: June 17/16 C.F. 1.000 Done By: Al Clark

Calibrator Flows (sccm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.000	0.01654	60.462	50.1
4976	82.3	0.828	0.01654	60.462	50.1
4985	40.8	0.411	0.00818	122.181	50.2
4965	20.2	0.203	0.00407	245.792	49.9
Average Cylinder Concentration:					50.1

Previous Stated Concentration PPM: 50.6

Percent variance from Stated: 1.1

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

Auditor: Al Clark
Operator Signature: *Al Clark*

Date: June 17, 2016
Location: McIntyre Center Edmonton



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2017-213CGA

Company: Maxxam **Operator's Name:** C. Wesson
Cylinder #: LL119500 **Concentration PPM:** 9.8 **Tolerance(%)** 2 **Certified By:** Praxair
Expiry Date: August 2020

Reference Calibrator and Gas:
Make/Model: R&R MFC 201
Serial Number: AMU 1690
Last Verification Date: September 22, 2017
Gas Type: H2S **Conc.** 20.43
Cylinder Number: CAL015272
Expiry Date: January 2019

Flow Measurement Device:
Make/Model: Mesa Definer 220
Serial Number: H-133034 L-132702
Temp. °C: 23.5 C
B.P. 705 mmhg

Reference Analyzer:
Make/Model: Teco 450i **Serial/AMU Number:** 1980
Instrument Settings: **Zero:** 22.4 **Span:** 1.091 **Range:** 0.1
Last Calibration: **Date:** Sep 22/17 **C.F.** 1.000 **Done By:** Al Clark

Calibrator Flows (sccm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.0000	0.0000	0.0000	0.0000
5114	39.5	0.0734	0.00772	129.468	9.5
5096	18.5	0.0345	0.00363	275.459	9.5
5089	9.5	0.0178	0.00187	535.684	9.5
Average Cylinder Concentration:					9.5

Previous Stated Concentration PPM: 9.8
 Percent variance from Stated: 3

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

Auditor: Al Clark **Date:** September 22, 2017
Operator Signature: *Al Clark* **Location:** McIntyre Center Edmonton



Calibration Gas Audit

CH4 / C3H8 Cylinder Gas

File No. 2017-488CGA

Company: Maxxam **Operators name:** Mike
Cylinder #: LL168404 **Conc CH4 (PPM)** 597/206 **Tolerance (%)** 2 **Certified By:** Praxair
Expiry Date: October 2025

Reference Calibrator and Gas:				Flow Measurement Device:	
Make/Model	<u>R&R MFC 201</u>			Make/Model	<u>Mesa Definer 220</u>
Serial Number	<u>AMU 1690</u>			Serial Number	<u>H-133034 / L-132702</u>
Last Verification Date	<u>December 13, 2017</u>			Temp. °C	<u>23.1 C</u>
Gas Type	<u>CH4</u>	Conc.	<u>990.4</u>	B.P.	<u>707 mmHg</u>
Cylinder Number	<u>5604875</u>	Expiry Date	<u>July 2021</u>		
Gas Type	<u>C3H8</u>	Conc.	<u>246.5</u>		
Cylinder Number	<u>XF003845B</u>	Expiry Date	<u>July 2022</u>		

Reference Analyzer:
Make/Model Teco 55i **Serial/AMU Number:** 2108
Instrument Settings **Zero:** N/A **Span:** N/A **Range:** 20.0
Last Calibration: **Date:** Dec 12/17 **C.F.** 1.000 **Done By:** Al Clark

Calibrator Flows (sccm)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	CH4	C3H8			CH4	C3H8
3500	0.0	0.00	0.00	0.02	45.00	595	208
3618	80.4	13.22	12.69	0.02	45.00	595	208
3547	39.8	6.64	6.42	0.01	89.12	592	208
3560	19.8	3.33	3.23	0.01	179.80	599	211
Average Cylinder Concentration:						595	209

CH4	C3H8
Previous Stated Concentration PPM: <u>597</u>	<u>206</u>
Percent variance from Stated: <u>0</u>	<u>1</u>

Cylinder gas tolerances based on CH4 only

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

Auditor: Al Clark **Date:** December 13, 2017
Operator Signature: **Location:** McIntyre Center Edmonton



Calibration Gas Audit

NO Cylinder Gas

File No. 2016-087CGA

Company: Maxxam **Operator's name:** Chris Wesson
Cylinder #: LL119513 **Conc (PPM)** 50.2/50.4 **Tolerance (%)** 1 **Certified By:** Praxair

Reference Calibrator and Gas:				Flow Measurement Device:	
Make/Model	<u>Teco 146i</u>			Make/Model	<u>Bios DC2</u>
Serial Number	<u>Amu 1809</u>			Serial Number	<u>AMU 1659</u>
Last Verification Date	<u>June 17, 2016</u>			Temp.°C	<u>23.0 C</u>
Gas Type	<u>NO</u>	Conc.	<u>48.79</u>	B.P.	<u>700 mmhg</u>
Cylinder Number	<u>CAL018188</u>				

Reference Analyzer:

Make/Model	<u>Teco 42i</u>	Serial/AMU Number:	<u>1868</u>
Instrument Settings	Zero: <u>4.3</u>	Span:	<u>1.046</u> Range: <u>1.0</u>
Last Calibration:	Date: <u>June 17/16</u>	C.F.	<u>1.000</u> Done By: <u>Al Clark</u>

Calibrator Flows (scm)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	NO	NOX			NO	NOX
5000	0.0	0.000	0.000				
4976	82.3	0.826	0.819	0.01654	60.462	49.9	49.5
4985	40.8	0.411	0.406	0.00818	122.181	50.2	49.6
4965	20.2	0.204	0.202	0.00407	245.792	50.1	49.7
Average Cylinder Concentration:						50.1	49.6

<u>NO</u>	<u>NOx</u>
Previous Stated Concentration PPM: <u>50.2</u>	<u>50.4</u>
Percent variance from Stated: <u>0.2</u>	<u>1.6</u>

Cylinder gas tolerances based on NO only

Meets Manufacturer Tolerance. Use manufacturers stated concentration **COMMENTS:** _____
 < =5% Outside Manufacturer Tolerance. Use manufacturers concentration Contains 50.6 ppm SO2.
 > 5% Outside Manufacturer Tolerance. **DO NOT USE** this cylinder

Auditor: Al Clark Date: June 17, 2016
 Operator Signature: _____ Location: McIntyre Center Edmonton

APPENDIX ~~@@~~
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LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Maskwa Continuous Monitoring Station - September 2018

SULPHUR DIOXIDE Instantaneous Maximum (SO₂ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	1	1	1	0	0	0	0	0	0	S	20	8	16	20	20	10	19	25	26	1	0	0	0	0	0	26	7	24	
DAY 2	0	0	1	1	0	2	2	0	S	0	0	C	C	C	C	C	0	0	0	0	0	0	0	0	0	2	0	24	
DAY 3	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	2	3	18	18	1	1	0	0	0	0	18	2	24	
DAY 4	0	8	3	11	5	9	S	4	5	10	5	1	2	6	10	3	1	0	0	0	0	0	0	0	0	11	4	24	
DAY 5	0	0	0	0	0	S	0	0	2	2	3	3	7	5	8	0	10	2	0	0	0	0	0	0	0	10	2	24	
DAY 6	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	
DAY 7	1	3	1	S	0	2	4	5	6	4	1	0	1	1	1	3	3	1	0	0	0	0	0	0	0	6	2	24	
DAY 8	0	0	S	0	0	0	0	0	0	0	0	0	1	3	2	2	1	0	12	10	6	7	0	18	0	18	3	24	
DAY 9	17	S	2	0	1	0	0	1	9	1	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	17	2	24	
DAY 10	S	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	S	0	2	0	24	
DAY 11	8	17	13	1	4	1	1	1	0	1	4	1	0	2	1	1	1	1	0	0	0	0	S	0	0	17	3	24	
DAY 12	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	24	
DAY 13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	1	1	0	1	0	24	
DAY 14	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	1	0	24	
DAY 15	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	1	0	24	
DAY 16	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	24	
DAY 17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	S	0	0	0	0	0	0	0	0	3	0	24	
DAY 18	0	0	0	0	0	0	0	0	0	0	1	1	1	7	3	S	4	1	1	0	0	0	0	0	0	7	1	24	
DAY 19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	1	1	1	1	0	1	0	24	
DAY 20	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	1	0	24	
DAY 21	0	0	0	0	0	0	0	0	0	0	1	1	S	1	4	1	4	1	0	0	0	0	0	0	0	4	1	24	
DAY 22	0	0	0	0	0	0	0	0	0	0	1	S	2	2	2	2	3	3	2	2	0	0	0	0	0	3	1	24	
DAY 23	1	1	1	1	0	0	0	0	1	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
DAY 24	0	0	0	0	0	0	0	0	0	0	0	0	2	9	12	9	1	0	0	14	2	5	14	1	0	14	3	24	
DAY 25	1	2	2	2	4	4	4	11	S	18	10	8	4	7	0	1	0	0	0	0	0	0	0	0	0	18	3	24	
DAY 26	0	0	0	2	1	1	0	S	21	8	14	12	9	11	9	0	0	0	1	1	0	0	2	10	0	21	4	24	
DAY 27	1	0	1	0	0	11	S	1	1	1	8	11	13	16	17	9	11	13	0	1	7	14	5	0	17	6	24		
DAY 28	2	2	0	5	5	S	1	8	18	11	5	10	5	6	7	5	0	1	0	1	1	3	2	3	0	18	4	24	
DAY 29	15	1	16	20	S	1	1	1	1	1	1	1	1	5	9	13	11	12	18	9	1	3	2	2	1	20	6	24	
DAY 30	3	3	1	S	1	0	1	1	2	1	2	2	2	1	1	0	0	0	0	1	0	1	0	3	5	0	5	1	24
HOURLY MAX	17	17	16	20	5	11	4	11	21	18	20	12	16	20	20	17	19	25	26	14	6	7	14	18					
HOURLY AVG	2	1	1	2	1	1	1	1	2	2	3	2	2	4	4	3	2	3	3	1	0	1	1	2					

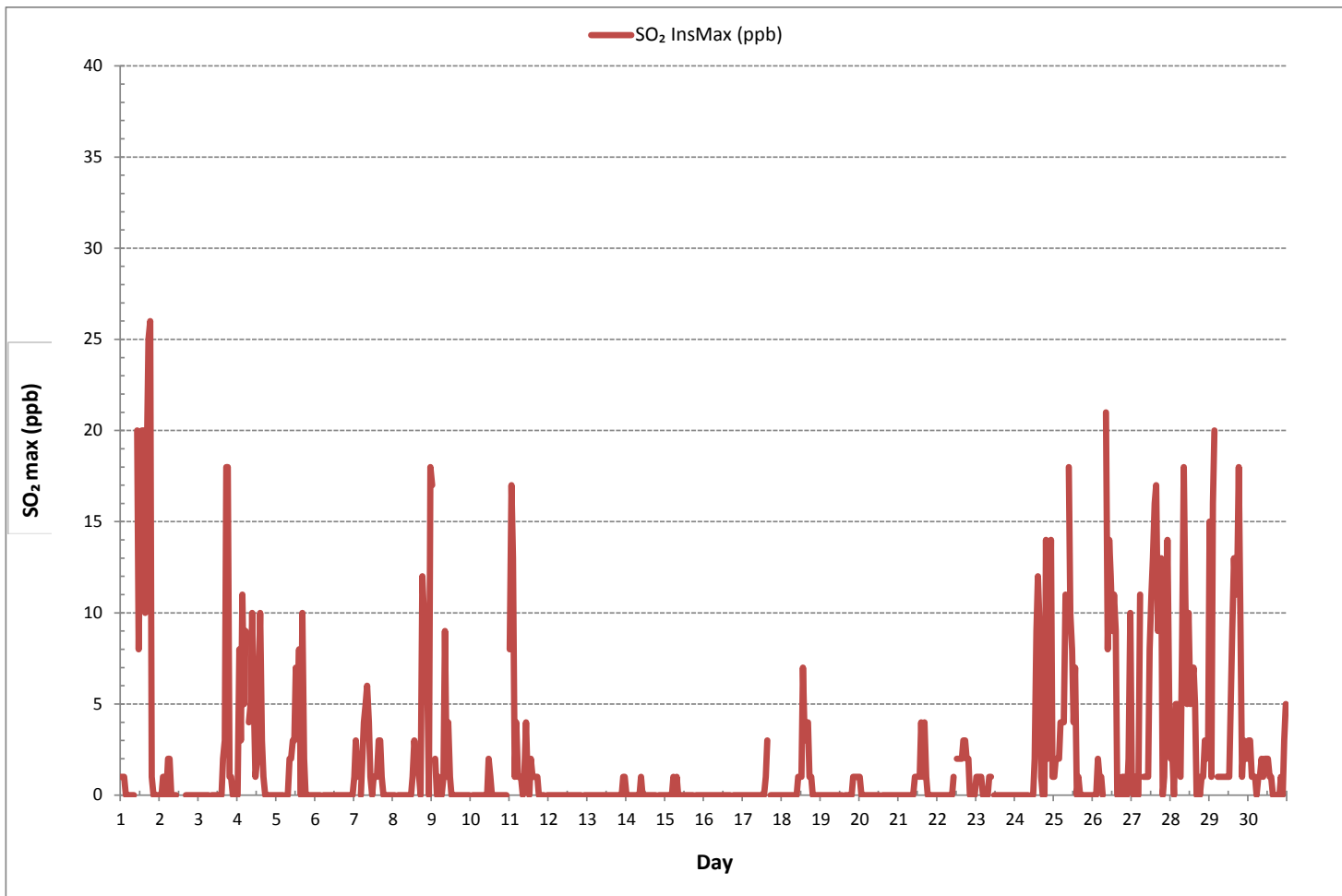
STATUS FLAG CODES

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:	256
MAXIMUM INSTANTANEOUS VALUE:	26 ppb @ HOUR 18 ON DAY 1
IZS CALIBRATION TIME:	31 hrs
MONTHLY CALIBRATION TIME:	5 hrs
STANDARD DEVIATION:	4
OPERATIONAL TIME:	720 hrs

SULPHUR DIOXIDE Instantaneous Maximum (SO₂ ppb)





HYDROGEN SULPHIDE Instantaneous Maximum (H₂S ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	2	2	2	2	2	2	2	2	2	S	4	3	3	3	3	3	3	4	3	2	2	2	2	2	2	2	4	2	24
2	2	2	2	2	2	2	2	2	S	2	2	2	2	2	2	2	2	2	2	2	3	2	3	3	2	2	3	2	24
3	3	3	3	2	3	2	3	S	2	2	C	C	C	C	C	C	2	1	2	1	0	1	1	1	1	0	3	2	24
4	0	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	0	1	1	24
5	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	24
6	1	1	0	1	S	1	1	1	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	0	1	1	24
7	1	4	4	S	1	6	4	6	3	2	2	1	1	4	4	3	2	1	1	1	1	1	1	1	1	6	2	24	
8	1	1	S	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	24
9	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	24
10	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	24
11	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	24
12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	2	1	1	2	1	1	24
13	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	24
14	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	24
15	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	2	1	24
16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	24
17	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	24
18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	24
19	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	24
20	1	1	2	4	6	5	3	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	6	2	24
21	1	1	1	1	1	1	1	1	1	1	1	2	S	1	1	1	1	1	1	1	2	2	2	4	1	4	1	24	
22	4	2	1	1	2	2	1	1	1	2	2	S	2	2	1	1	1	1	1	3	1	1	1	1	1	4	2	24	
23	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	24
24	1	1	1	1	1	2	1	1	1	S	1	1	1	2	1	1	1	2	1	1	1	1	1	1	1	2	1	24	
25	2	1	2	1	1	1	1	2	S	2	1	1	3	3	1	1	1	1	1	2	1	1	2	1	1	3	1	24	
26	1	1	1	1	2	2	2	S	2	1	1	1	2	1	1	1	1	1	1	1	1	1	2	1	1	2	1	24	
27	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	2	1	24
28	1	2	1	1	1	S	2	2	2	1	1	1	1	2	1	1	1	1	1	2	1	2	2	2	1	2	1	24	
29	2	1	2	2	S	1	1	1	1	1	1	1	1	1	1	1	2	2	2	1	1	2	2	2	1	2	1	24	
30	2	2	2	S	2	2	2	2	2	1	1	2	1	2	1	2	1	2	2	2	2	2	1	2	2	1	2	2	24
HOURLY MAX	4	4	4	4	6	6	4	6	3	2	4	3	3	4	4	3	3	4	3	3	3	2	3	3	4				
HOURLY AVG	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				

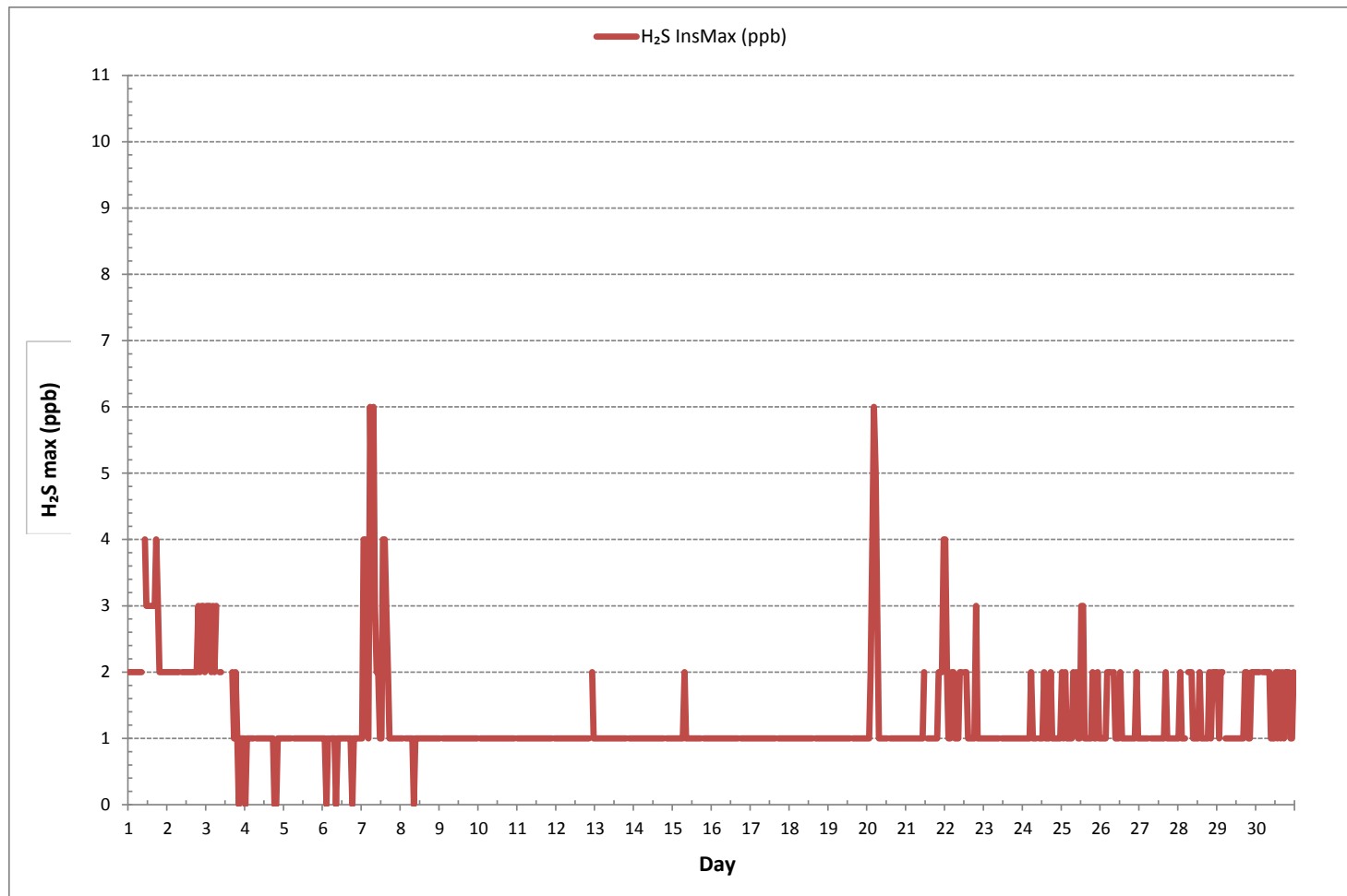
STATUS FLAG CODES

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

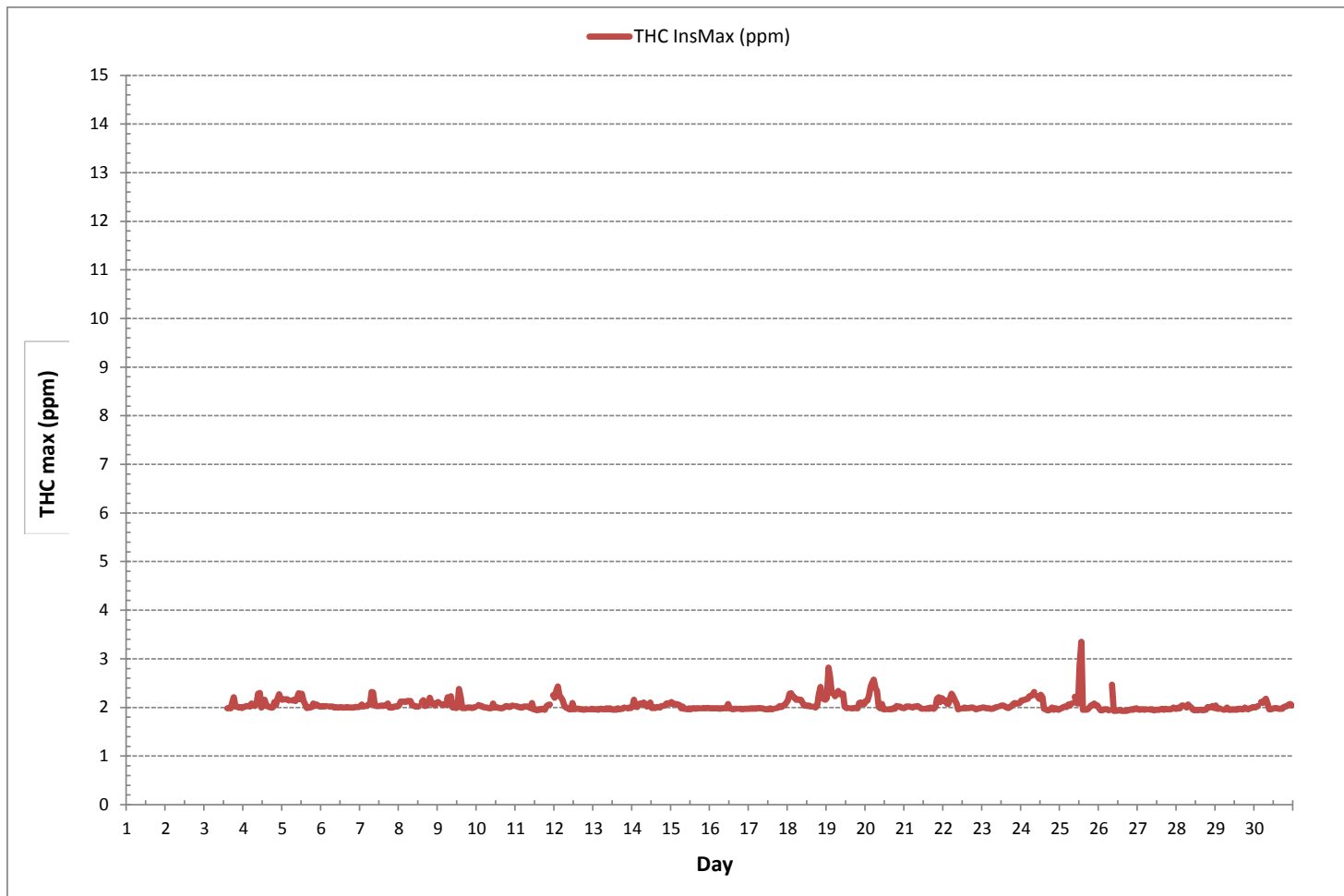
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	675
MAXIMUM INSTANTANEOUS VALUE:	6 ppb @ HOUR 5 ON DAY 7
IZS CALIBRATION TIME:	31 hrs
MONTHLY CALIBRATION TIME:	6 hrs
STANDARD DEVIATION:	1
OPERATIONAL TIME:	720 hrs

HYDROGEN SULPHIDE Instantaneous Maximum (H₂S ppb)



TOTAL HYDROCARBONS Instantaneous Maximum (THC ppm)





METHANE MAX Instantaneous Maximum (CH₄ ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY 1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
DAY 2	X	X	X	X	X	X	X	X	X	X	X	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	-	-	0
DAY 3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	C	C	C	C	1.98	1.99	1.98	2.10	2.21	2.02	2.02	2.00	2.01	1.99	1.98	2.21	2.03	14	
DAY 4	2.01	2.02	2.03	2.03	2.02	2.08	S	2.03	2.09	2.28	2.24	2.00	2.03	2.16	2.04	2.02	2.01	2.00	2.00	2.11	2.05	2.19	2.27	2.17	2.00	2.28	2.08	24	
DAY 5	2.16	2.17	2.17	2.17	2.14	S	2.14	2.16	2.13	2.20	2.29	2.17	2.28	2.03	2.07	1.99	2.00	2.00	2.01	2.08	2.03	2.06	2.04	2.02	1.99	2.29	2.11	24	
DAY 6	2.02	2.03	2.02	2.03	S	2.02	2.02	2.02	2.00	2.01	2.00	2.00	2.01	2.00	2.00	2.00	2.01	2.00	2.00	2.00	2.00	2.01	2.01	2.01	2.00	2.03	2.01	24	
DAY 7	2.02	2.06	2.02	S	2.03	2.05	2.06	2.17	2.12	2.04	2.03	2.03	2.04	2.03	2.04	2.05	2.01	2.00	2.00	2.00	2.00	2.02	2.02	2.02	2.00	2.17	2.04	24	
DAY 8	2.05	2.12	S	2.12	2.11	2.13	2.14	2.13	2.05	2.04	2.02	2.02	2.02	X	2.02	2.01	2.03	2.04	2.08	2.10	2.08	2.09	2.04	2.09	2.01	2.14	2.07	23	
DAY 9	2.11	S	2.07	2.05	2.06	2.05	2.06	2.08	2.23	2.00	2.02	1.99	2.00	2.38	2.21	1.99	1.99	1.99	1.99	2.00	2.00	1.99	2.00	2.01	1.99	2.38	2.06	24	
DAY 10	S	2.05	2.03	2.03	2.01	2.00	2.00	1.99	1.98	1.99	2.02	2.00	2.00	2.00	1.99	1.98	1.99	1.99	2.01	2.03	2.02	2.01	2.04	S	1.98	2.05	2.01	24	
DAY 11	2.03	2.02	2.01	2.00	2.00	2.02	2.02	2.02	2.01	1.99	2.01	1.96	1.96	1.94	1.96	1.95	1.97	1.96	1.95	2.03	2.05	2.06	S	2.25	1.94	2.25	2.01	24	
DAY 12	2.20	2.28	2.36	2.23	2.20	2.15	2.03	2.00	1.98	1.96	1.96	2.09	1.96	1.97	1.97	1.97	1.96	1.96	1.95	1.96	1.96	S	1.96	1.97	1.95	2.36	2.04	24	
DAY 13	1.96	1.96	1.96	1.95	1.97	1.97	1.96	1.96	1.98	1.96	1.98	1.96	1.95	1.96	1.95	1.98	1.96	1.97	1.97	2.00	S	1.98	2.00	1.99	1.95	2.00	1.97	24	
DAY 14	2.02	2.00	2.02	2.01	2.07	2.08	2.06	2.10	2.07	2.02	2.06	2.10	1.99	2.00	1.99	2.01	2.01	2.00	2.03	S	2.04	2.08	2.08	2.08	1.99	2.10	2.04	24	
DAY 15	2.11	2.07	2.07	2.07	2.06	2.05	1.98	2.02	1.97	1.97	1.96	1.98	1.96	1.98	1.98	1.97	1.98	1.98	S	1.98	1.99	1.98	1.99	1.99	1.96	2.11	2.00	24	
DAY 16	1.98	1.98	1.98	1.98	1.98	1.98	1.97	1.98	1.98	1.99	1.98	1.97	1.98	1.97	1.98	1.97	1.97	S	1.97	1.97	1.96	1.97	1.97	1.97	1.96	1.99	1.97	24	
DAY 17	1.97	1.98	1.97	1.98	1.97	1.98	1.99	1.98	1.98	1.97	1.96	1.96	1.97	1.98	1.96	1.97	S	1.99	2.00	2.03	2.01	2.04	2.05	2.10	1.96	2.10	1.99	24	
DAY 18	2.14	2.28	2.29	2.22	2.21	2.16	2.17	2.16	2.09	2.04	2.04	2.03	2.04	2.02	S	2.02	2.00	2.04	2.26	2.42	2.20	2.18	2.16	2.00	2.00	2.42	2.14	24	
DAY 19	2.19	2.82	2.63	2.30	2.30	2.23	2.29	2.34	2.27	2.28	2.28	2.03	1.99	1.99	S	1.98	1.98	1.99	1.99	1.98	2.09	2.10	2.08	2.07	1.98	2.82	2.18	24	
DAY 20	2.13	2.14	2.24	2.30	2.36	2.38	2.34	2.34	2.01	1.98	2.02	1.96	1.96	S	1.96	1.96	1.96	1.98	1.97	2.03	2.02	2.02	2.00	1.99	1.96	2.38	2.09	24	
DAY 21	1.99	2.02	2.02	2.02	2.01	2.00	2.02	2.02	2.03	2.01	1.98	1.97	S	1.97	1.98	1.97	2.00	1.98	1.97	2.01	2.12	2.13	2.11	2.15	1.97	2.15	2.02	24	
DAY 22	2.14	2.15	2.08	2.07	2.19	2.28	2.22	2.15	2.08	1.96	1.97	S	1.98	2.00	1.98	1.99	1.99	2.00	2.00	1.98	1.96	1.97	1.98	1.99	1.96	2.28	2.05	24	
DAY 23	2.00	2.00	1.99	1.98	1.98	1.97	1.97	1.98	2.00	2.01	S	2.03	2.04	2.04	2.02	2.00	1.99	2.01	2.03	2.07	2.09	2.08	2.08	2.09	1.97	2.09	2.02	24	
DAY 24	2.14	2.15	2.16	2.17	2.18	2.23	2.24	2.25	2.23	S	2.23	2.18	2.26	2.21	1.97	1.96	1.94	1.94	1.96	2.00	1.95	1.98	1.97	1.95	1.94	2.26	2.10	24	
DAY 25	1.97	1.99	2.01	2.02	2.01	2.05	2.04	2.08	S	2.22	2.05	2.08	2.74	3.16	1.95	1.96	1.95	1.96	2.00	2.04	2.05	2.08	2.04	2.04	1.95	3.16	2.11	24	
DAY 26	1.99	1.94	1.94	1.96	1.96	1.96	1.94	S	2.11	1.93	1.94	1.93	1.94	1.94	1.93	1.93	1.93	1.93	1.94	1.95	1.96	1.95	1.97	1.98	1.93	2.11	1.95	24	
DAY 27	1.96	1.95	1.96	1.96	1.95	1.96	S	1.96	1.95	1.96	1.94	1.95	1.95	1.95	1.96	1.97	1.95	1.97	1.96	1.96	1.96	1.97	2.00	1.97	1.94	2.00	1.96	24	
DAY 28	1.97	2.00	1.98	2.04	2.04	S	2.00	2.06	2.02	2.00	1.95	1.94	1.95	1.94	1.95	1.95	1.94	1.95	1.95	2.01	2.00	2.01	2.03	1.99	1.94	2.06	1.99	24	
DAY 29	2.04	1.97	1.98	1.97	S	1.95	1.96	2.00	1.95	1.95	1.96	1.95	1.96	1.95	1.97	1.97	1.96	1.96	2.00	1.97	1.96	1.98	1.99	2.01	1.95	2.04	1.97	24	
DAY 30	2.00	2.01	2.03	S	2.11	2.09	2.15	2.18	2.07	1.96	1.96	1.97	1.98	1.99	1.98	1.97	1.97	1.97	2.01	2.02	2.03	2.06	2.07	2.04	1.96	2.18	2.03	24	
HOURLY MAX	2.20	2.82	2.63	2.30	2.36	2.38	2.34	2.34	2.27	2.28	2.29	2.18	2.74	3.16	2.21	2.04	2.05	2.10	2.21	2.26	2.42	2.20	2.27	2.25					
HOURLY AVG	2.05	2.08	2.08	2.07	2.08	2.07	2.07	2.08	2.06	2.03	2.03	2.01	2.04	2.06	1.99	1.98	1.98	1.99	2.00	2.02	2.03	2.04	2.04	2.04					

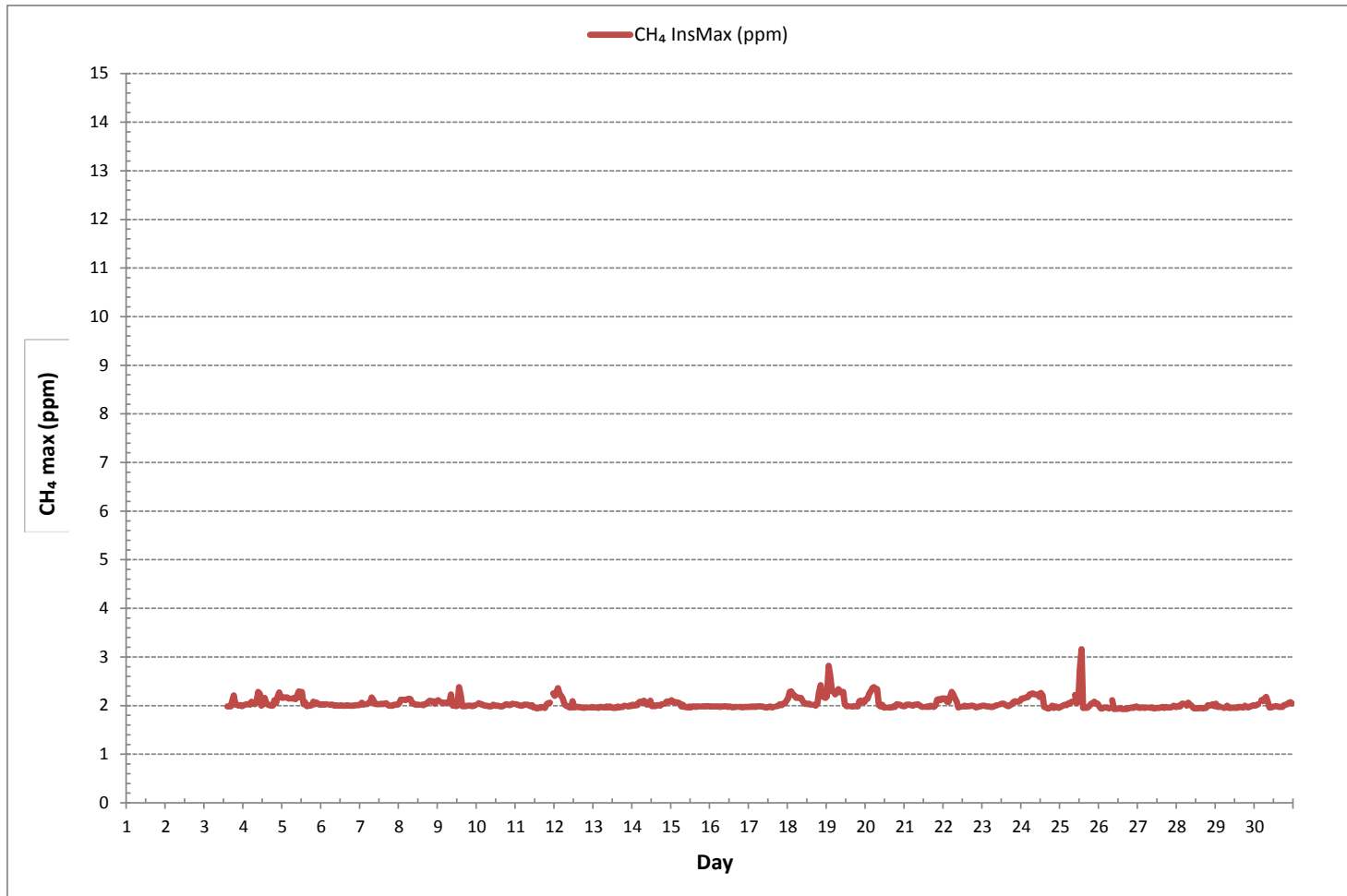
STATUS FLAG CODES

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:	629
MAXIMUM INSTANTANEOUS VALUE:	3.16 ppm @ HOUR 13 ON DAY 25
IZS CALIBRATION TIME:	28 hrs
MONTHLY CALIBRATION TIME:	4 hrs
STANDARD DEVIATION:	0.11
OPERATIONAL TIME:	661 hrs

METHANE MAX Instantaneous Maximum (CH₄ ppm)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Maskwa Continuous Monitoring Station - September 2018

NON-METHANE HYDROCARBONS Instantaneous Maximum (NMHC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY 1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	-	-	-	0
DAY 2	X	X	X	X	X	X	X	X	X	X	X	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	-	-	-	0
DAY 3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	C	C	C	C	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.01	14
DAY 4	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	24
DAY 5	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	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	24
DAY 6	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
DAY 7	0.00	0.00	0.00	S	0.00	0.03	0.00	0.17	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.19	0.02	24
DAY 8	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	X	0.10	0.15	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.15	0.02	23
DAY 9	0.00	S	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.01	24
DAY 10	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.07	0.00	24
DAY 11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.09	0.00	24
DAY 12	0.00	0.13	0.18	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	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.18	0.01	24
DAY 13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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
DAY 14	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.19	0.01	24
DAY 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	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
DAY 16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	24
DAY 17	0.00	0.00	0.00	0.00	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
DAY 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	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
DAY 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	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
DAY 20	0.00	0.00	0.00	0.15	0.17	0.19	0.12	0.00	0.00	0.00	0.12	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	0.19	0.03	24
DAY 21	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	0.06	0.10	0.00	0.05	0.00	0.10	0.01	24
DAY 22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
DAY 23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
DAY 24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	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	0.09	0.00	24
DAY 25	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	S	0.08	0.06	0.00	0.14	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.02	24
DAY 26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.02	24
DAY 27	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
DAY 28	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
DAY 29	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
DAY 30	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
HOURLY MAX	0.00	0.19	0.18	0.15	0.17	0.19	0.16	0.17	0.35	0.08	0.12	0.11	0.14	0.18	0.10	0.15	0.00	0.09	0.05	0.13	0.06	0.10	0.00	0.05				
HOURLY AVG	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.00	0.02	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				

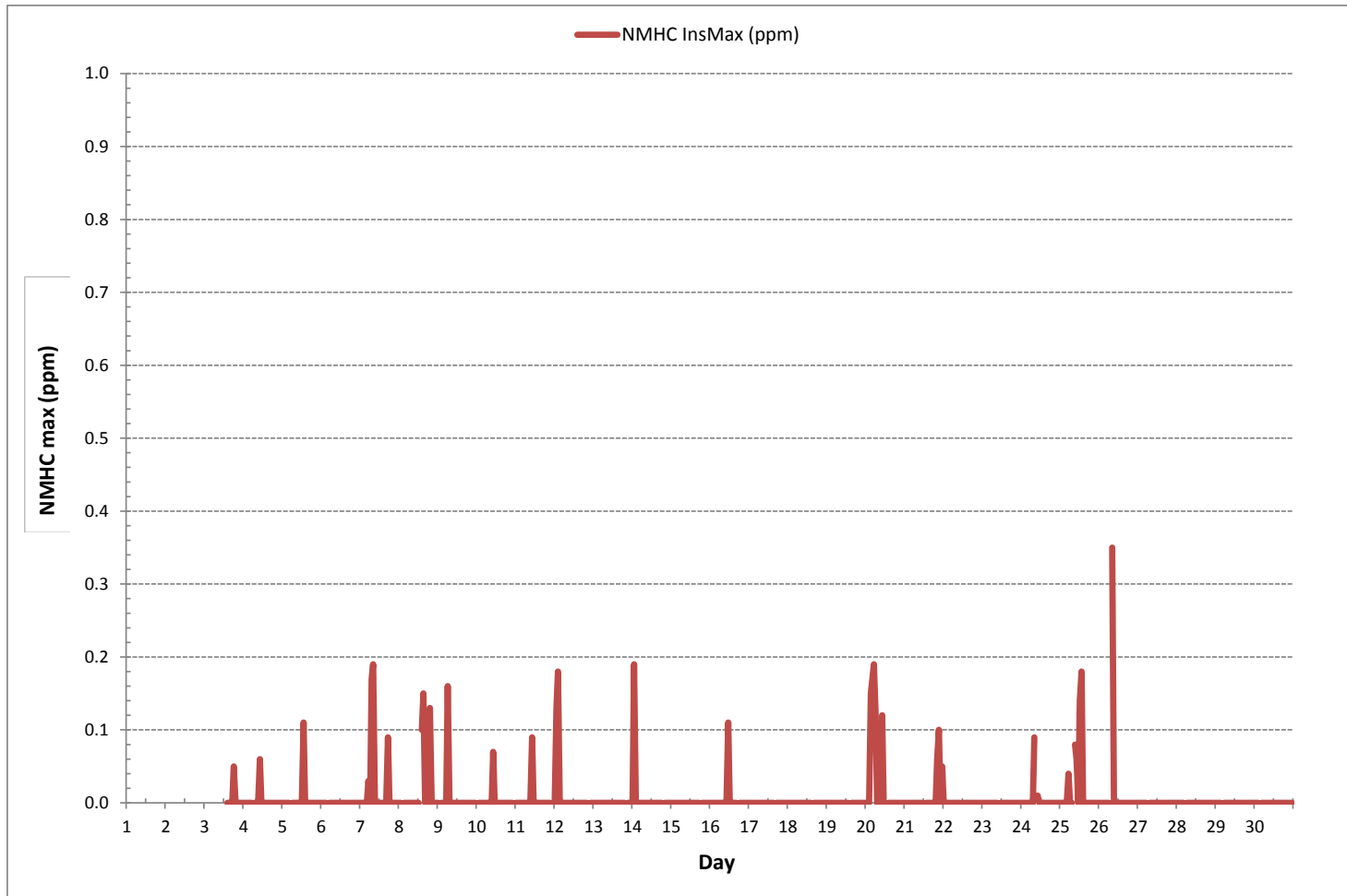
STATUS FLAG CODES

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:	33
MAXIMUM INSTANTANEOUS VALUE:	0.35 ppm @ HOUR 8 ON DAY 26
IZS CALIBRATION TIME:	28 hrs
MONTHLY CALIBRATION TIME:	4 hrs
STANDARD DEVIATION:	0.03
OPERATIONAL TIME:	661 hrs

NON-METHANE HYDROCARBONS Instantaneous Maximum (NMHC ppm)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Maskwa Continuous Monitoring Station - September 2018

OXIDES OF NITROGEN Instantaneous Maximum (NO_x ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.				
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59								
DAY																																
1	5	6	7	3	1	5	2	4	3	S	38	47	72	32	33	20	29	42	42	0	2	0	0	1	0	72	17	24				
2	1	4	8	6	1	10	18	4	S	4	5	C	C	C	C	C	C	C	4	2	2	7	2	3	1	18	5	24				
3	8	4	5	4	4	8	8	S	15	16	7	8	5	13	40	9	14	41	36	12	4	2	3	2	2	41	12	24				
4	3	19	10	27	16	31	S	12	13	24	9	29	10	13	19	7	3	1	2	1	1	2	4	3	1	31	11	24				
5	4	9	4	3	4	S	15	29	14	12	11	10	20	23	14	7	18	7	9	2	3	1	0	0	0	29	10	24				
6	0	0	0	0	S	3	1	1	1	2	0	0	1	1	0	0	0	1	1	0	0	0	0	1	0	3	1	24				
7	7	12	3	S	4	10	14	21	18	13	2	1	4	8	9	13	8	6	1	1	1	1	1	1	1	21	7	24				
8	2	52	S	4	1	1	1	1	1	4	7	3	3	7	8	36	5	3	29	33	27	44	2	49	1	52	14	24				
9	47	S	14	4	9	2	2	11	37	5	14	5	7	7	9	8	5	5	18	6	7	5	5	6	2	47	10	24				
10	S	9	10	5	3	3	1	1	1	4	8	4	1	1	1	1	4	11	9	12	5	5	S	1	1	12	5	24				
11	22	37	27	6	12	16	21	12	16	7	14	14	7	7	4	61	5	3	1	1	1	1	S	4	1	61	13	24				
12	1	17	9	2	8	10	8	5	10	9	12	9	8	8	13	10	5	6	6	5	9	S	8	7	1	17	8	24				
13	8	8	8	7	6	10	12	17	17	14	17	14	19	17	12	17	10	7	9	4	S	8	5	7	4	19	11	24				
14	6	4	5	1	1	5	7	11	6	7	5	11	5	6	4	3	3	1	1	S	4	11	1	1	1	11	5	24				
15	6	2	1	1	4	6	2	10	0	0	0	0	0	1	1	1	1	0	S	3	1	1	1	1	0	10	2	24				
16	1	0	0	0	0	0	0	0	0	0	0	0	6	1	0	0	0	S	3	1	1	1	0	0	0	6	1	24				
17	0	0	0	0	0	2	8	8	4	4	5	6	14	18	3	10	S	14	7	3	5	5	8	8	0	18	6	24				
18	7	8	8	7	8	25	7	15	9	5	8	17	10	26	10	S	12	7	8	2	9	4	1	1	1	26	9	24				
19	1	53	5	5	9	7	13	23	11	9	10	4	4	2	S	16	6	7	2	1	6	30	56	26	1	56	13	24				
20	61	60	34	9	2	4	57	30	9	5	11	5	11	S	10	5	3	11	12	4	4	5	3	6	2	61	16	24				
21	2	0	0	5	9	7	0	6	9	5	40	7	S	7	11	3	14	4	1	1	3	3	3	3	0	40	6	24				
22	2	1	1	10	44	4	2	34	34	3	6	S	13	9	8	11	11	11	9	8	1	1	1	1	1	44	10	24				
23	5	5	2	2	1	1	1	5	4	13	S	6	4	3	3	1	2	2	1	3	3	3	2	3	1	13	3	24				
24	4	5	6	6	6	8	9	12	8	S	9	8	10	21	26	27	5	5	1	37	25	16	27	7	1	37	13	24				
25	16	20	21	21	22	20	29	70	S	33	24	27	10	13	1	7	1	2	1	3	5	7	4	4	1	70	16	24				
26	3	3	1	26	20	25	12	S	45	15	30	27	18	22	18	39	1	3	1	2	2	1	6	17	1	45	15	24				
27	1	1	1	2	4	20	S	8	8	4	4	22	26	22	34	31	18	26	25	1	1	11	24	7	1	34	13	24				
28	5	11	9	21	19	S	13	36	37	19	14	19	11	13	34	10	1	4	1	8	4	11	12	15	1	37	14	24				
29	35	2	34	36	S	3	3	4	3	3	2	13	14	10	24	33	26	23	38	17	3	9	8	8	2	38	15	24				
30	9	7	6	S	6	8	72	15	13	4	5	7	7	3	4	2	1	1	2	1	3	2	6	10	1	72	8	24				
HOURLY MAX	61	60	34	36	44	31	72	70	45	33	40	47	72	32	40	61	29	42	42	37	27	44	56	49								
HOURLY AVG	9	12	8	8	8	9	12	14	12	9	11	12	12	11	13	14	7	9	10	6	5	7	7	7								

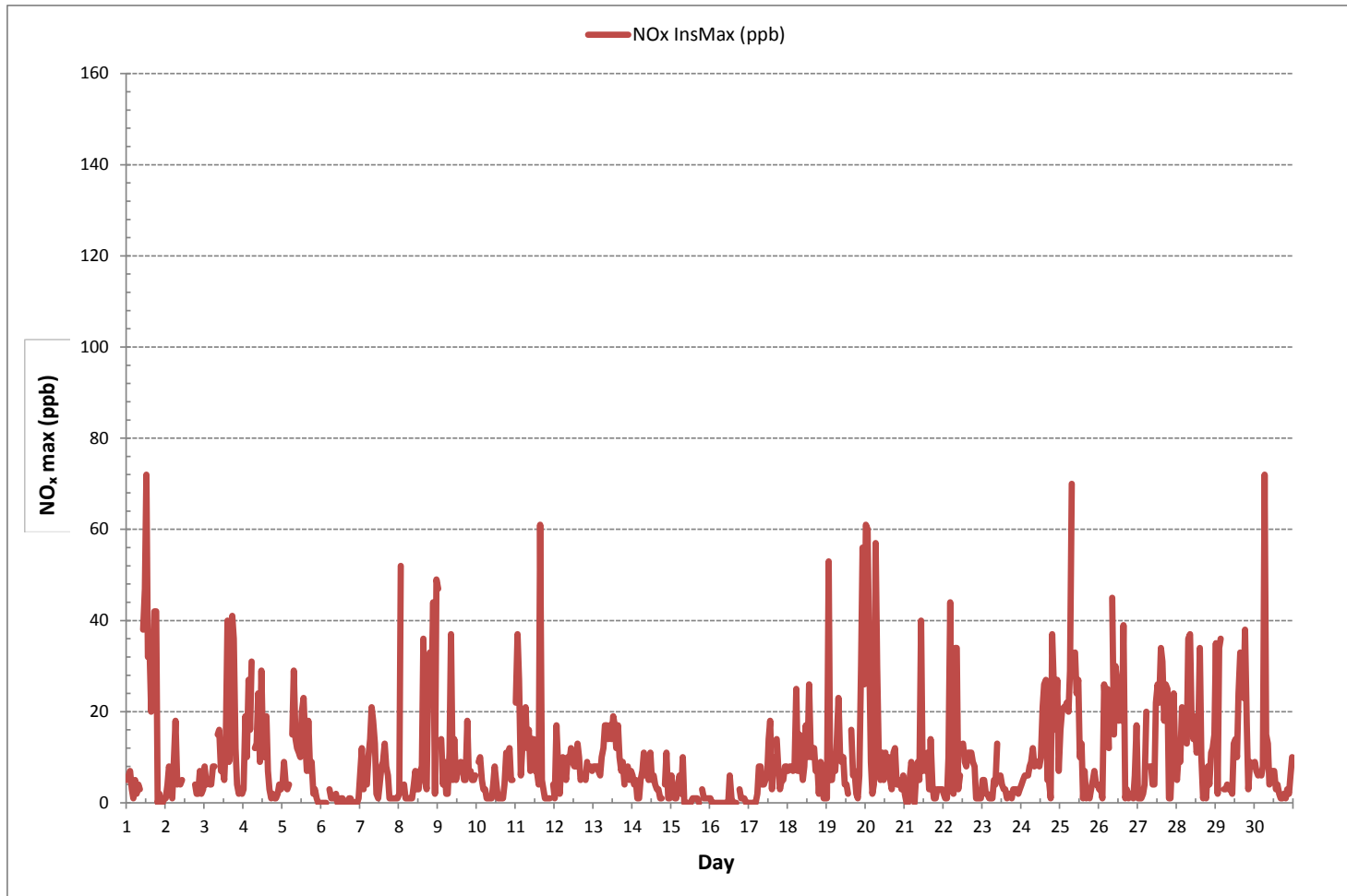
STATUS FLAG CODES

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:	634
MAXIMUM INSTANTANEOUS VALUE:	72 ppb @ HOUR 12 ON DAY 1
IZS CALIBRATION TIME:	31 hrs
MONTHLY CALIBRATION TIME:	7 hrs
STANDARD DEVIATION:	11
OPERATIONAL TIME:	720 hrs

OXIDES OF NITROGEN Instantaneous Maximum (NO_x ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Maskwa Continuous Monitoring Station - September 2018

NITRIC OXIDE Instantaneous Maximum (NO ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY 1	0	0	0	0	0	1	0	1	0	S	20	26	60	16	19	10	15	20	20	0	1	0	0	0	0	0	60	9	24
2	0	1	0	0	0	3	9	1	S	0	2	C	C	C	C	C	C	C	0	0	0	1	0	0	0	0	9	1	24
3	0	1	0	1	1	2	2	S	4	6	2	2	1	5	28	8	4	24	21	7	1	1	1	1	1	0	28	5	24
4	1	8	2	14	5	20	S	6	6	12	4	16	6	6	9	3	1	0	0	0	0	0	0	0	0	0	20	5	24
5	0	2	0	0	1	S	7	15	8	6	5	4	5	9	5	2	6	1	2	0	0	0	0	0	0	0	15	3	24
6	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	24
7	1	1	0	S	0	1	3	6	8	5	1	0	0	2	2	4	2	1	0	0	0	0	0	0	0	0	8	2	24
8	1	39	S	0	0	0	1	0	0	2	4	1	1	2	3	21	1	0	13	15	11	26	0	34	0	39	8	24	
9	33	S	3	1	3	0	1	6	29	3	10	3	4	5	5	4	2	3	11	3	4	2	2	2	2	0	33	6	24
10	S	4	5	2	1	1	0	0	0	0	2	4	1	0	0	0	0	1	6	4	6	2	2	S	0	6	2	24	
11	14	28	18	3	4	9	13	8	10	3	7	5	3	1	1	35	1	0	0	0	0	0	S	0	0	35	7	24	
12	0	12	6	0	3	5	4	3	6	5	8	5	4	4	9	6	2	3	3	2	5	S	4	3	0	12	4	24	
13	3	4	4	3	3	6	6	11	9	8	10	9	12	11	7	8	4	3	4	1	S	1	1	1	1	1	12	6	24
14	1	1	1	0	0	1	2	5	2	3	3	7	2	2	1	0	0	0	0	S	1	2	0	0	0	0	7	1	24
15	3	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	3	0	24
16	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	S	0	0	0	0	0	0	0	4	0	24
17	0	0	0	0	0	1	3	4	2	2	4	4	8	11	1	4	S	6	2	0	0	1	3	1	0	11	2	24	
18	1	1	1	1	2	13	2	9	6	2	3	7	5	16	5	S	4	2	1	0	3	1	0	0	0	16	4	24	
19	0	61	3	1	2	1	7	19	7	4	5	1	1	1	S	5	1	1	0	0	2	19	40	14	0	61	8	24	
20	41	38	27	5	0	2	47	26	5	2	5	2	5	S	4	2	1	3	3	0	1	0	0	0	0	47	10	24	
21	0	0	0	2	2	0	0	2	4	2	33	2	S	2	3	0	4	1	0	0	0	0	0	0	0	33	2	24	
22	0	0	0	3	32	2	1	21	22	1	2	S	4	3	2	3	2	2	0	0	0	0	0	0	0	32	4	24	
23	0	0	0	0	0	0	0	4	1	9	S	3	1	1	1	0	1	0	0	0	0	0	0	0	0	9	1	24	
24	0	1	1	1	1	1	2	5	4	S	4	3	3	9	11	8	1	1	0	17	3	3	6	0	0	17	4	24	
25	1	4	5	5	6	7	16	53	S	17	11	20	5	5	0	3	0	0	0	0	0	0	0	0	0	53	7	24	
26	0	0	0	2	2	3	1	S	21	5	14	12	6	8	6	9	0	0	0	0	0	1	5	0	0	21	4	24	
27	0	0	0	0	1	6	S	2	2	1	1	9	14	10	17	13	7	10	9	0	5	9	1	0	17	5	24		
28	0	0	0	5	4	S	2	17	19	9	6	7	4	5	21	3	0	0	0	2	0	0	0	0	0	21	5	24	
29	10	0	9	11	S	0	1	0	0	0	6	5	3	11	14	10	8	15	4	1	0	0	0	0	0	15	5	24	
30	1	0	0	S	0	1	45	6	5	2	1	2	4	1	1	0	0	0	0	0	0	0	0	0	0	0	45	3	24
HOURLY MAX	41	61	27	14	32	20	47	53	29	17	33	26	60	16	28	35	15	24	21	17	11	26	40	34					
HOURLY AVG	4	7	3	2	3	3	6	8	6	4	6	6	6	5	6	6	2	3	4	2	1	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

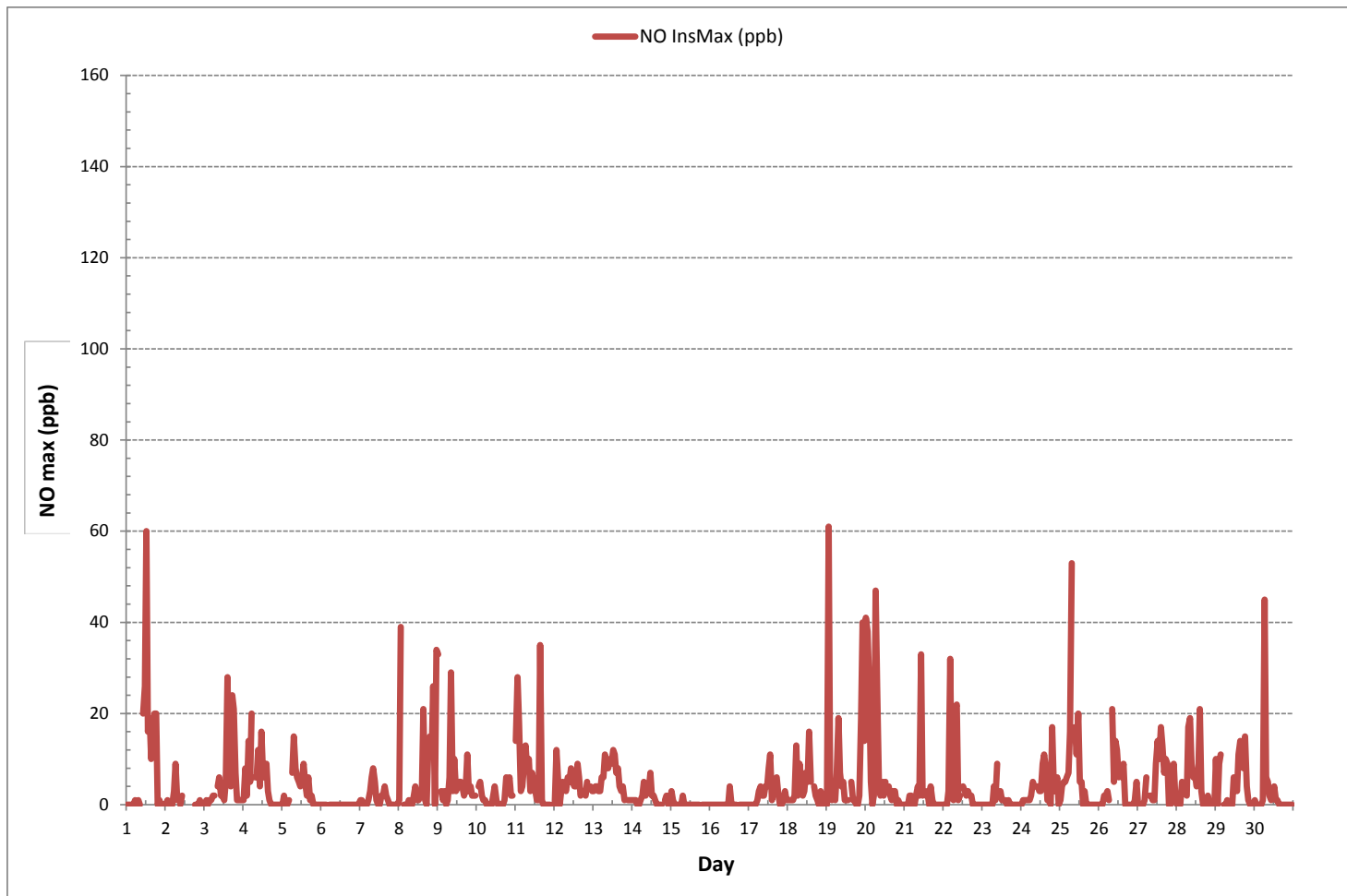
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	425
MAXIMUM INSTANTANEOUS VALUE:	61 ppb @ HOUR 1 ON DAY 19
IZS CALIBRATION TIME:	31 hrs
MONTHLY CALIBRATION TIME:	7 hrs
STANDARD DEVIATION:	8
OPERATIONAL TIME:	720 hrs



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Maskwa Continuous Monitoring Station - September 2018

NITRIC OXIDE Instantaneous Maximum (NO ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Maskwa Continuous Monitoring Station - September 2018

NITROGEN DIOXIDE Instantaneous Maximum (NO₂ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	6	6	7	4	2	4	2	3	3	S	18	21	19	16	15	10	14	23	22	1	2	1	1	1	1	1	23	9	24
2	1	3	8	6	1	9	9	3	S	4	3	C	C	C	C	C	C	C	3	2	2	6	2	3	1	9	4	24	
3	8	3	5	3	3	6	6	S	11	11	6	5	4	8	12	4	10	18	15	5	3	2	2	2	2	18	7	24	
4	2	12	8	13	11	12	S	8	7	12	5	13	5	7	11	5	2	1	2	1	1	2	4	3	1	13	6	24	
5	4	7	4	3	3	S	8	15	7	6	6	6	14	14	9	5	12	6	9	2	3	1	0	1	0	15	6	24	
6	0	0	0	0	S	3	1	1	1	2	0	0	1	1	1	0	0	1	1	0	0	0	0	1	0	3	1	24	
7	6	11	3	S	4	9	12	15	12	7	2	1	4	7	7	9	6	5	1	1	1	1	1	1	1	15	5	24	
8	1	15	S	4	1	1	1	1	1	2	3	2	2	5	5	17	4	3	15	19	17	20	1	15	1	20	7	24	
9	15	S	13	4	6	2	2	5	8	2	5	2	3	3	4	4	3	3	7	3	4	4	3	3	2	15	5	24	
10	S	7	5	3	2	2	1	1	1	2	4	3	1	1	1	1	3	5	5	6	3	3	S	4	1	7	3	24	
11	10	9	9	3	9	7	8	6	6	4	8	9	5	6	3	26	4	3	1	1	1	1	S	4	1	26	6	24	
12	1	5	3	1	5	5	4	2	4	3	4	4	4	4	5	5	3	3	3	3	5	S	5	4	1	5	4	24	
13	5	5	4	4	3	6	7	7	8	7	7	6	8	9	5	9	6	4	5	3	S	7	4	6	3	9	6	24	
14	5	4	4	1	1	4	6	7	5	4	3	5	3	3	3	2	3	1	1	S	4	9	1	1	1	9	3	24	
15	4	2	1	0	4	6	1	8	0	0	0	0	0	0	1	1	0	S	3	1	1	1	1	1	0	8	2	24	
16	1	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	0	S	3	1	1	1	0	0	0	3	0	24	
17	1	0	0	0	0	1	5	5	2	2	2	2	6	8	2	6	S	8	5	3	4	4	5	7	0	8	3	24	
18	6	7	7	6	6	12	5	6	5	2	5	9	6	10	6	S	8	5	7	2	6	3	1	1	1	12	6	24	
19	1	8	3	5	7	6	7	6	4	5	6	2	3	1	S	11	5	6	2	1	5	15	18	12	1	18	6	24	
20	21	23	9	4	2	2	12	7	4	3	6	3	6	S	6	3	2	8	9	4	3	5	3	6	2	23	7	24	
21	2	0	0	3	7	7	0	3	5	3	8	5	S	5	8	2	10	4	1	1	3	3	3	3	0	10	4	24	
22	2	1	1	7	12	2	2	13	13	2	4	S	9	6	5	8	9	10	8	8	1	1	1	1	1	13	5	24	
23	5	5	2	2	1	1	1	2	4	5	S	4	3	2	2	1	2	2	2	3	3	3	2	3	1	5	3	24	
24	4	4	5	5	5	7	7	4	S	6	5	6	12	15	20	5	4	1	21	23	13	21	6	1	23	9	24		
25	15	16	16	16	17	15	16	18	S	16	13	10	7	9	1	4	1	2	1	3	5	7	4	4	1	18	9	24	
26	3	3	1	25	19	22	11	S	24	10	16	15	12	14	12	30	1	3	1	1	2	1	5	12	1	30	11	24	
27	1	1	1	2	3	15	S	5	5	3	3	14	13	13	17	18	13	16	16	1	1	8	16	6	1	18	8	24	
28	4	11	9	17	16	S	11	19	18	11	8	12	8	9	14	8	1	3	2	8	4	11	12	14	1	19	10	24	
29	26	2	26	26	S	3	3	4	2	2	2	8	8	7	13	19	17	15	23	13	2	9	8	8	2	26	11	24	
30	8	7	5	S	6	7	27	10	8	3	4	5	4	2	3	2	1	1	2	1	3	2	6	10	1	27	6	24	
HOURLY MAX	26	23	26	26	19	22	27	19	24	16	18	21	19	16	17	30	17	23	23	21	23	20	21	15					
HOURLY AVG	6	6	5	6	6	6	6	7	6	5	5	6	6	7	7	8	5	6	6	4	4	5	5	5					

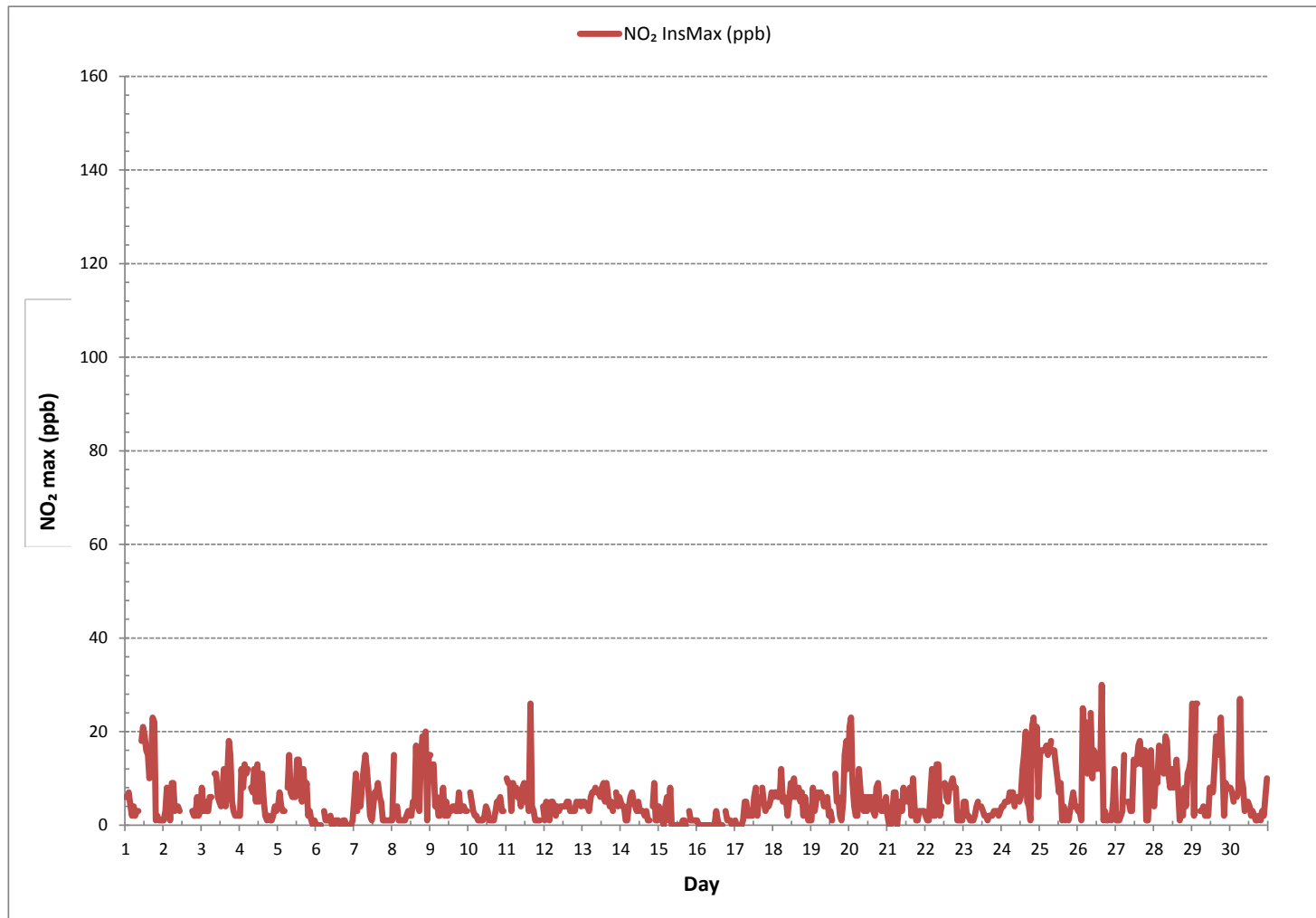
STATUS FLAG CODES

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

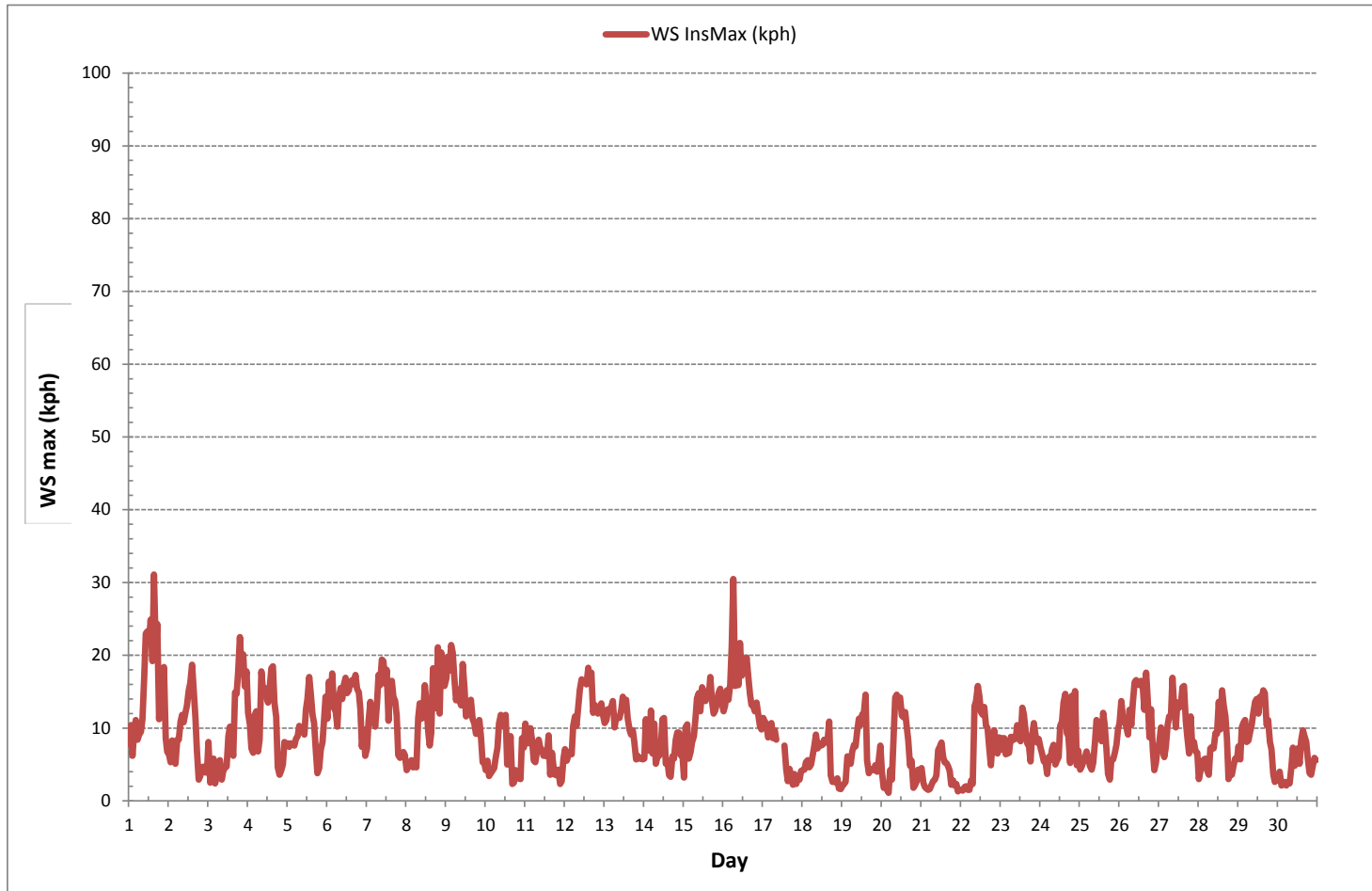
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	637
MAXIMUM INSTANTANEOUS VALUE:	30 ppb @ HOUR 15 ON DAY 26
	VAR-VARIOUS
IZS CALIBRATION TIME:	31 hrs
MONTHLY CALIBRATION TIME:	7 hrs
STANDARD DEVIATION:	5
OPERATIONAL TIME:	720 hrs

NITROGEN DIOXIDE Instantaneous Maximum (NO₂ ppb)



WIND SPEED Instantaneous Maximum (WS kph)



***APPENDIX IV
REPORT CERTIFICATION FORM***

Report Certification Form

Alberta Airshed (if applicable)	EPA Approval or Code of Practice Registration # (if applicable)
YES	NA
Company Name (if applicable)	Industrial Operation Name (if applicable)
LAKELAND INDUSTRY & COMMUNITY ASSOCIATION	Maskwa Continuous Monitoring Station
Name of the Representative of the Person Responsible	Position / Title of the Representative of the Person Responsible
Mike Bisaga	Environment Monitoring Program Manager
Is an External Party Certifying the Report?	
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Name of External Person Certifying the Report	Position / Title of External Person Certifying the Report
Wunmi Adekanmbi	Project Team Lead, Customer Service, Air Services
Company Name for External Person Certifying the Report	Identification of Qualifications / Professional Designations of the External Person Certifying the Report
Maxxam Analytics, A Bureau Veritas Group Company	M.Sc., EPt., PMP

Maxxam Analytics is the designated contractor conducting monitoring and reporting activities. I certify that the submitted data has been (a) reviewed and validated as per the AMD Chapter 6: Ambient Data Quality. I certify that the submitted report (b) accurately reflects the monitoring results and reporting timeframe and (c) meets the specified analysis, summarization and reporting requirements as per the AMD Chapter 9: Reporting.



Signature of the External Person Certifying the

Report 25-Oct-2018

Report Issued Date (dd-mon-yyyy)

APPENDIX V
DATA VALIDATION CERTIFICATION FORM



Validation Certificate Form

Client: <u>Lakeland Industry & Community Association</u>	Project #: <u>2833-2018-09-30-C</u>
Site: <u>Maskwa Continuous Monitoring Station</u>	Contact: <u>Mike Bisaga</u>

Level 0 Preliminary Verification	<u>Maram Ghaleb</u>	Date <u>22 - Oct - 2018</u>
Level 1 Primary Validation	<u>Maram Ghaleb</u>	Date <u>22 - Oct - 2018</u>
Level 2 Final Validation	<u>Maram Ghaleb</u>	Date <u>25 - Oct - 2018</u>
Level 3 Independent Data Review	<u>CSA-LMBQ</u>	Date <u>25 - Oct - 2018</u>
Post-Final Validation	<u>NA</u>	Date <u>NA</u>

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

Alberta Environment and Parks (AEP)
Air.Reporting@gov.ab.ca

November 2, 2018

Subject: Monthly Report Submission for the LICA St. Lina station

Lakeland Industry & Community Association (LICA) is pleased to submit the ambient air monitoring monthly report for the LICA St. Lina AQM Station in the month of September 2018.

The air monitoring program consists of continuous air monitoring results for Sulphur Dioxide (SO₂), Hydrogen Sulphide (H₂S), Total Hydrocarbon (THC), Oxides of Nitrogen (NO_x), Nitric Oxides (NO), Nitrogen Dioxide (NO₂), Ozone (O₃), Particulate Matter 2.5 (PM_{2.5}), Relative Humidity (RH), Barometric Pressure (BP), Precipitation, Ambient Temperature (AmbTPX), Wind Speed (WS), Wind Direction (WD) and Standard Deviation Wind Direction (STDWD).

Sampling Program	Monitoring Activities Conducted By	Sample Analysis Conducted By	Data/Report Review and Prepared By	Electronic Submission Conducted By
Continuous ambient air	Maxxam Analytics	Maxxam Analytics	Maxxam Analytics	Maxxam Analytics

All data collected in September 2018 was compliant with the requirements outlined in the Air Monitoring Directive (Alberta Environment and Parks, 2016).

The operational time for all continuous ambient air analyzers, meteorological systems and data acquisition systems were above the 90% requirement systems.

As the LICA Environmental Program Manager and Data & Reporting Specialist, we have reviewed and verified this report and that the information is complete, accurate and representative of the monitoring results, reporting timeframe and the specified analysis, summarization and reporting requirements. We also verify all air data that are required by the AMD to be electronically submitted to AEP and Alberta's Ambient Air Quality Data Warehouse have been submitted by the time of this report submission.

Should you have any questions, please don't hesitate to contact us.

Respectfully,



Lakeland Industry & Community Association
5107 50 St
Bonnyville, AB T9N 2J7

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

Michael Bisaga
Technical Program Manager
Lakeland Industry & Community Association
780-266-7068
monitoring@lica.ca

A handwritten signature in blue ink that reads "Lily Lin".

Lily Lin
Data & Reporting Specialist
587-225-2248
monitoring@lica.ca



MAXXAM ANALYTICS
#1 2080 39 Ave. NE, Calgary, AB
T2E 6P7

maxxam.ca
Toll Free 800-386-7247
Fax 403-219-3673

AMBIENT AIR MONITORING MONTHLY DATA REPORT
LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
ST. LINA CONTINUOUS MONITORING STATION

JOB #: 2833-2018-09-31-C

September 2018

Prepared for:

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
5107 50 ST.
BONNYVILLE, ALBERTA
T9N 2J7

Attention: MIKE BISAGA

DATE: **October 24, 2018**

Prepared by: *Maram Ghaleb*

Maram Ghaleb, B.Sc.
Project Manager, Customer Service, Air Services

Reviewed by: *Wunmi Adekanmbi*

Wunmi Adekanmbi, M.Sc., EPT, PMP
Project Team Lead, Customer Service, Air Services

SUMMARY

In September 2018, Maxxam Analytics was contracted to manage the ambient air quality monitoring and maintenance activities at the St. Lina Continuous Monitoring Station, near Bonnyville, Alberta. The monitoring station provides continuous meteorological measurements and air quality data for non-compliance parameters, as requested by the Lakeland Industry and Community Association.

All data collected this month was compliant with the requirements outlined in the Air Monitoring Directive (Alberta Environment and Parks, 2016).

The operational time for all continuous ambient air analyzers, meteorological systems and data acquisition systems were above the 90% requirement.

All Gas Parameters (except H₂S): An additional zero-span check was conducted on September 8 at hour 06:00 as part of activities surrounding a software programming update. One hour of downtime was incurred as a result.

THC/CH₄/NMHC: One hour of downtime was recorded on September 13 at hour 09:00 due to poor sample injections.

Wind data: Anomalous WS minute data were discarded and the corresponding hourly average was recalculated. Hourly averages emerging with less than 45 minutes of valid data were discarded. Two hours of downtime were incurred on September 12 at hour 17:00 and September 13 at hour 11:00 as a result. The corresponding WD and STDWD data were also discarded to preserve parameter relationships.

BP: One hour of downtime was incurred on September 19 at hour 13:00 due to interference from station activities.

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 Analytics is issuing this completed report to Lakeland Industry & Community Association, St. Lina Continuous Monitoring Station.

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

Monthly Continuous Data Summary

Lakeland Industry & Community Association						MAXIMUM VALUES							OPERATIONAL TIME (%)
St. Lina Continuous Monitoring Station						1-HOUR				24-HOUR			
PARAMETER	OBJECTIVES		EXCEEDANCES		MONTHLY AVERAGE	READING	DAY	HOUR	WIND SPEED (kph)	WIND DIRECTION (sector)	READING	DAY	
	1-hr	24-hr	1-hr	24-hr									
SO ₂ (ppb)	172	48	0	0	0	2	5	10	6.9	SW	0	1	99.9
H ₂ S (ppb)	10	3	0	0	0	1	2	4	9.2	WSW	0	1	100.0
THC (ppm)	-	-	-	-	2.04	2.37	14	2	1.5	WSW	2.20	8	99.7
CH ₄ (ppm)	-	-	-	-	2.04	2.36	10	19	4.3	NW	2.20	8	99.7
NMHC (ppm)	-	-	-	-	0.00	0.01	14	2	1.5	WSW	0.00	1	99.7
NO ₂ (ppb)	159	-	0	-	1	7	12	7	9.9	NE	2	5	99.9
NO (ppb)	-	-	-	-	0	4	24	5	8.4	WSW	1	24	99.9
NO _x (ppb)	-	-	-	-	1	8	12	7	9.9	NE	3	5	99.9
O ₃ (ppb)	82	-	0	-	21.0	38.5	28	15	9.4	NW	32.1	26	99.9
PM _{2.5} (µg/m ³)	80	30	0	0	3	43	1	0	18.0	W	17	1	100.0
RELATIVE HUMIDITY (%)	-	-	-	-	78	100	12	18	12.1	SSE	99	16	100.0
BAROMETRIC PRESSURE (millibar)	-	-	-	-	933	942	6	10	14.2	E	940	6	99.9
AMBIENT TEMPERATURE (°C)	-	-	-	-	4.8	20.7	7	15	14.7	SE	13.3	7	100.0
PRECIPITATION (mm)	-	-	-	-	0.1	2.4	12	6	8.7	NE	14.9	16	100.0
VECTOR WS (kph)	-	-	-	-	1.6	19.3	26	13	-	NNW	14.1	6	99.7
VECTOR WD (sec)	-	-	-	-	337 (NNW)	-	-	-	-	-	-	-	99.7

Exceedance Summary Report

SO₂ 1-Hour Exceedances

Measured concentrations of sulphur dioxide were below the 1-hour AAAQO of 172 ppb.

SO₂ 24-Hour Exceedances

Measured concentrations of sulphur dioxide were below the 24-hour AAAQO of 48.0 ppb.

H₂S 1-Hour Exceedances

Measured concentrations of hydrogen sulphide were below the 1-hour AAAQO of 10 ppb.

H₂S 24-Hour Exceedances

Measured concentrations of hydrogen sulphide were below the 24-hour AAAQO of 3 ppb.

NO₂ 1-Hour Exceedances

Measured concentrations of nitrogen dioxide were below the 1-hour AAAQO of 159 ppb.

PM_{2.5} 1-Hour Exceedances

Measured concentrations of fine particulate matter were below the 1-hour AAAQO of 80 µg/m³.

PM_{2.5} 24-Hour Exceedances

Measured concentrations of fine particulate matter were below the 24-hour AAAQO of 30 µg/m³.

O₃ 1-Hour Exceedances

Measured concentrations of ozone were below the 1-hour AAAQO of 82 ppb.

In accordance with EPEA and the Substance Release Regulation.

In accordance with A Guide to Release Reporting and the Alberta Ambient Air Quality Objectives and Guidelines Summary.

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1.0 Discussion

This monthly report consists of continuous monitoring results for the following parameters: Sulphur Dioxide (SO₂), Hydrogen Sulphide (H₂S), Total Hydrocarbon (THC), Methane (CH₄), Non-Methane Hydrocarbon (NMHC), Oxides of Nitrogen (NO_x), Nitric Oxides (NO), Nitrogen Dioxide (NO₂), Ozone (O₃), Particulate Matter 2.5 (PM_{2.5}), Relative Humidity (RH), Barometric Pressure (BP), Precipitation, Ambient Temperature (AmbTPX), Wind Speed (WS), Wind Direction (WD) and Standard Deviation Wind Direction (STDWD).

The sample inlet filter for all continuous air analyzers are replaced 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, at a minimum, for each monthly monitoring period.

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 (December, 2016). 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. The minimum and maximum statistics are highlighted in the data table and are for reference only. The highlighted cells are based on the software's interpretation of the exact position of the minimum or maximum value. The visual presentation of these statistics may not be the obvious choice in a data range due to rounding, truncating or analyzer specifications.

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%).

SULPHUR DIOXIDE (SO₂)

- Operational time for the monitoring period was 99.9%, equivalent to 1 hour of downtime.
- An additional zero-span check was conducted on September 8 at hour 06:00 as part of activities surrounding a software programming update. One hour of downtime was incurred as a result.
- The routine monthly calibration was performed on September 12.

HYDROGEN SULPHIDE (H₂S)

- Operational time for the monitoring period was 100%.
- The routine monthly calibration was performed on September 11.

TOTAL HYDROCARBONS (THC), METHANE (CH₄) and NON-METHANE HYDROCARBONS (NMHC)

- Operational time for the monitoring period was 99.7%, equivalent to 2 hours of downtime.
- An additional zero-span check was conducted on September 8 at hour 06:00 as part of activities surrounding a software programming update. One hour of downtime was incurred as a result.
- The routine monthly calibration was performed on September 11.
- The analyzer exhibited poor sample injections on September 13, as demonstrated by sporadic minute data recorded at concentrations lower than 1.80 ppm. CH₄ minute concentrations < 1.80 ppm, along with the corresponding THC and NMHC values, were excluded and the corresponding hourly averages were re-calculated. The following hourly averages were re-calculated: September 13 at hours 07:00, 08:00, 10:00, 11:00, 12:00 and 13:00. Hourly averages with less than 45 minutes of valid data were discarded, impacting data collected at hour 09:00 on September 13. One hour of downtime was incurred as a result.

OXIDES OF NITROGEN (NO_x), NITRIC OXIDE (NO) and NITROGEN DIOXIDE (NO₂)

- Operational time for the monitoring period was 99.9%, equivalent to 1 hour of downtime.
- An additional zero-span check was conducted on September 8 at hour 06:00 as part of activities surrounding a software programming update. One hour of downtime was incurred as a result.
- The routine monthly calibration was performed on September 12.

OZONE (O₃)

- Operational time for the monitoring period was 99.9%, equivalent to 1 hour of downtime.
- An additional zero-span check was conducted on September 8 at hour 06:00 as part of activities surrounding a software programming update. One hour of downtime was incurred as a result.
- The routine monthly calibration was performed on September 12.

PARTICULATE MATTER < 2.5 MICRONS (PM_{2.5})

- Operational time for the monitoring period was 100%.
- The routine monthly check was performed on September 19.

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

- Operational time for the monitoring period was 99.7%, equivalent to 2 hours of downtime.
- Two hours of downtime were incurred on September 12 at hour 17:00 and September 13 at hour 11:00 as the hourly averages were less than 45 minutes of valid data, due to discarding anomalous minute data.
- For undetermined reasons, sporadic anomalous spikes were recorded on the maximum instantaneous channel. These spikes, along with the corresponding anomalously high minute data, were discarded. The hourly averages were recalculated and hours with less than 45 minutes of valid data were discarded. Two hours of data collected on September 12 at hour 17:00 and September 13 at hour 11:00, and eight instances of maximum instantaneous data, collected between September 5 and September 25, were invalidated as a result. The corresponding WD and STDWD data were also discarded to preserve parameter relationships.
- Wind data is reported as vector wind speed and vector wind direction. Wind direction is defined as the direction from which the wind is blowing and is measured in degrees from true north.

RELATIVE HUMIDITY (RH)

- Operational time for the monitoring period was 100%.
- On September 19, a successful removal audit was completed on the resident Maxxam-supplied sensor (RM Young Model: 41372VC, s/n: 1920/01983), in an attempt to install a LICA-owned Campbell Scientific sensor (Rotronic Model: HC2A-S3, s/n: 20257103). However, there were electrical compatibility concerns with the Rotronic sensor. The RM Young was therefore left operational and the Rotronic's installation was postponed until a confirmation was provided by the manufacturer. A successful installation audit was subsequently completed on September 21.

BAROMETRIC PRESSURE (BP)

- Operational time for the monitoring period was 99.9%, equivalent to 1 hour of downtime.
- Station activities surrounding the RH/Temperature sensor audit impacted BP data quality. Consequently, one hour of data collected on September 19 at hour 13:00 was discarded, and the hourly average recorded on September 21 at hour 12:00 was recalculated (after the impacted minute data were excluded).

PRECIPITATION (PRECIP)

- Operational time for the monitoring period was 100%.

AMBIENT TEMPERATURE (AmbTPX)

- Operational time for the monitoring period was 100%.
- On September 19, a successful removal audit was completed on the resident Maxxam-supplied sensor (RM Young Model: 41372VC, s/n: 1920/01983), in an attempt to install a LICA-owned Campbell Scientific sensor (Rotronic Model: HC2A-S3, s/n: 20257103). However, there were electrical compatibility concerns with the Rotronic sensor. The RM Young was therefore left operational and the Rotronic's installation was postponed until a confirmation was provided by the manufacturer. A successful installation audit was subsequently completed on September 21.

2.0 Project Personnel

Mike Bisaga and Lily Lin were the contacts for Lakeland Industry & Community Association and the Maxxam field technician was Alexander Yakupov.

3.0 Plant Monthly Required AMD Summary

All data collected this month was compliant with the requirements outlined in the Air Monitoring Directive (Alberta Environment and Parks, 2016).

The operational time for all continuous ambient air analyzers, meteorological systems and data acquisition systems were above the 90% requirement.

4.0 Calculations and Results

All calculations and reporting of results follow the methods described in the AMD, 2016.

5.0 Methods and Procedures

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

Maxxam AIR SOP-00001: Methane, Non-Methane Hydrocarbon Analyzer Monitoring
Maxxam AIR SOP-00014: Measurement of Particulate Concentration Using the THERMO SHARP
Maxxam AIR SOP-00209: Ambient Sulphur Monitoring
Maxxam AIR SOP-00212: Ambient O₃ Monitoring
Maxxam AIR SOP-00213: Ambient NO/NO₂/NO_x Monitoring
Maxxam AIR SOP-00242: Precipitation Collector Installation/Maintenance
MET One Instruments: Operation Manual Document No. 50.5-9800

There were no deviations from the prescribed methods.

The following instruments were used to perform the test program:

Sulphur Dioxide - Thermo 431-TLE UV Fluorescent Analyzer
Hydrogen Sulphide - Thermo 450i UV Fluorescent Analyzer
Methane, Non-Methane Hydrocarbon - Thermo 55i FID Analyzer
Oxides of Nitrogen - Thermo 42i Chemiluminescent Analyzer
Ozone - Thermo 49i Photometric Analyzer
Particulate Matter (PM_{2.5}) - Thermo SHARP 5030i Unit
Wind System - Met One Unit
Relative Humidity - RMYoung & Campbell Scientific Rotronic Units
Barometric Pressure - Met One Unit
Ambient Temperature - RMYoung & Campbell Scientific Rotronic Units
Precipitation - Met One Unit
Datalogger - Envidas Ultimate

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

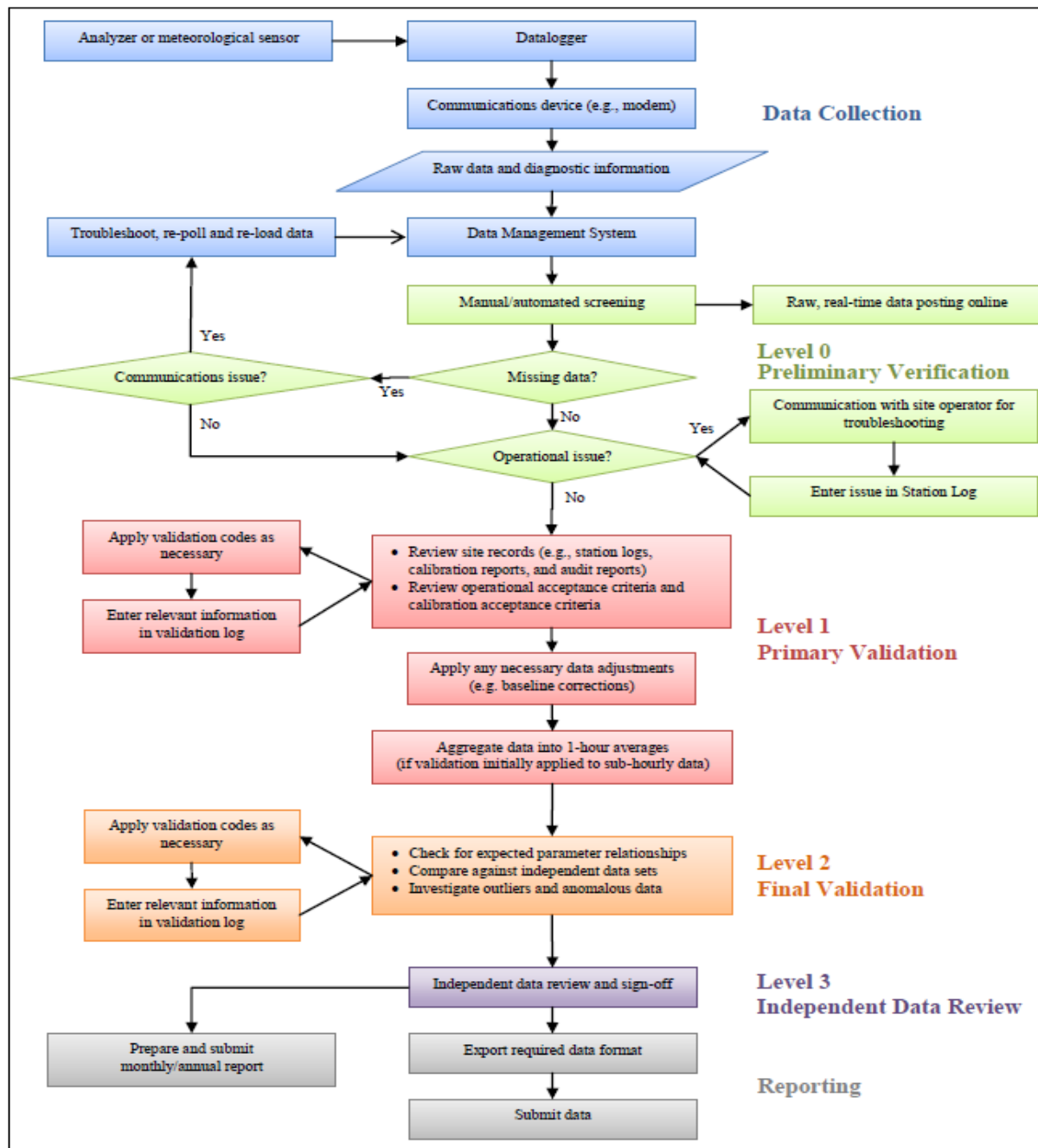
The purpose of Level 2 validation is to verify that there are no inconsistencies among related data, or among regional data measured at nearby sites.

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: Air Monitoring Directive (December 2016), Chapter 6, Ambient Data Quality; Figure 1 Data Collection and Management Process Flow Chart

APPENDIX I
CONTINUOUS MONITORING DATA RESULTS

SULPHUR DIOXIDE



SULPHUR DIOXIDE Hourly Averages (SO₂ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	24
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	1	1	0	1	0	24
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	24
4	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	24
5	0	0	0	0	0	0	0	0	0	0	1	2	1	1	S	0	0	0	0	0	0	0	0	0	0	0	2	0	24
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	24
7	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	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	23
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	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	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	24
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	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	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	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	24
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
18	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	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	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	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	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	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	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	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	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	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	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	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	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	24
HOURLY MAX	0	0	0	0	0	0	1	1	1	1	2	1	1	0	0	1	0	1	0	0	0	0	0	1	1				
HOURLY AVG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

STATUS FLAG CODES

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

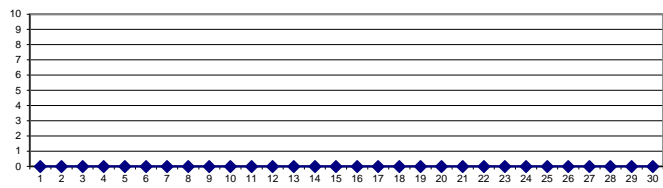
OBJECTIVE LIMIT:

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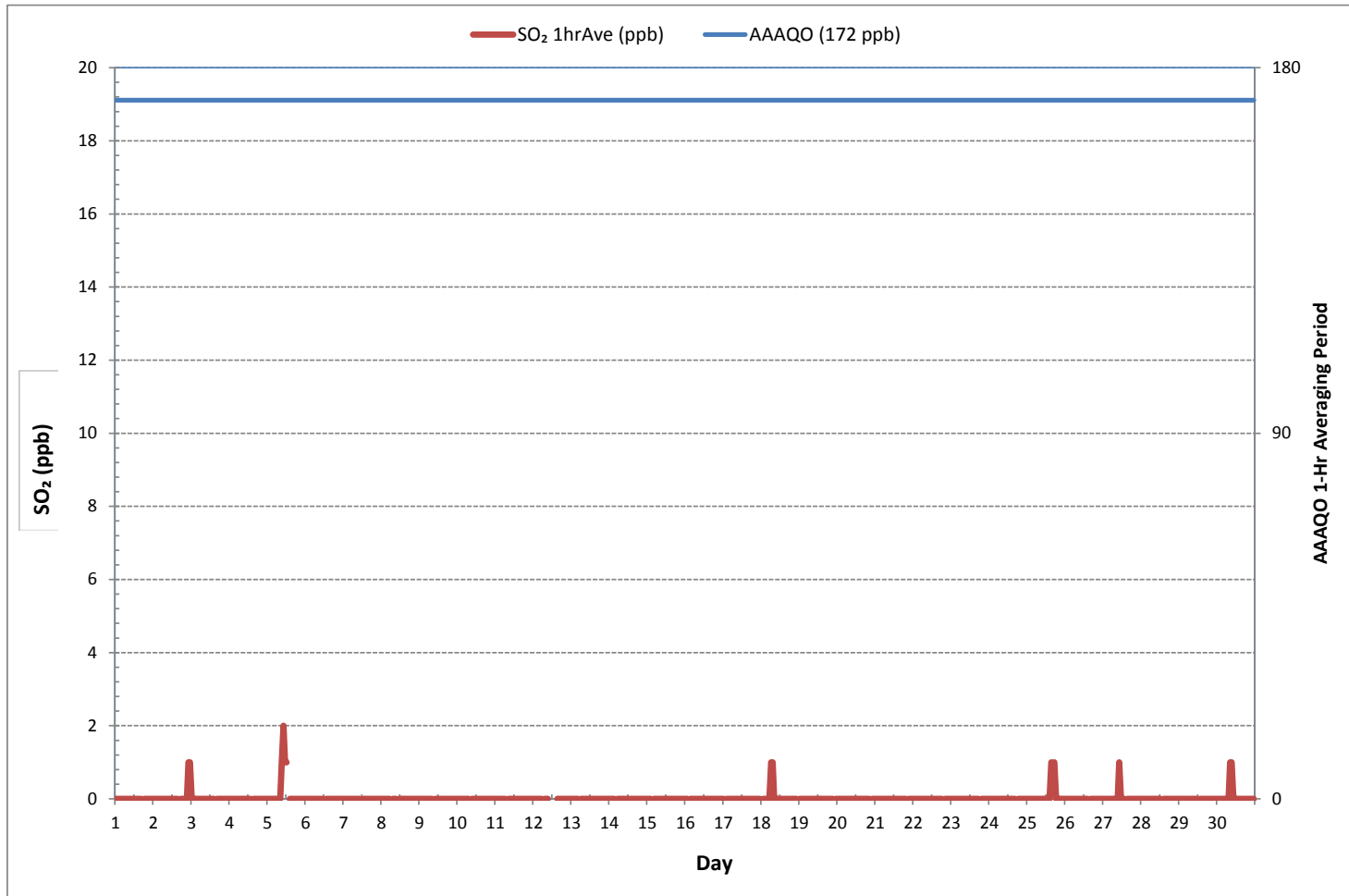
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0		
NUMBER OF 24-HR EXCEEDANCES:	0		
NUMBER OF NON-ZERO READINGS:	13		
MINIMUM 1-HR AVERAGE:	0 ppb @ HOUR	0 ON DAY	1
MAXIMUM 1-HR AVERAGE:	2 ppb @ HOUR	10 ON DAY	5
MAXIMUM 24-HR AVERAGE:	0 ppb	ON DAY	1
IZS CALIBRATION TIME:	31 hrs	OPERATIONAL TIME:	719 hrs
MONTHLY CALIBRATION TIME:	5 hrs	AMD OPERATION UPTIME:	99.9 %
STANDARD DEVIATION:	0	MONTHLY AVERAGE:	0 ppb

24 HR AVERAGES September 2018



SULPHUR DIOXIDE Hourly Averages (SO₂ ppb)



Wind: LICA ST. LINA
 Poll.: LICA ST. LINA-SO2[ppb]
 Monthly: 18/09
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

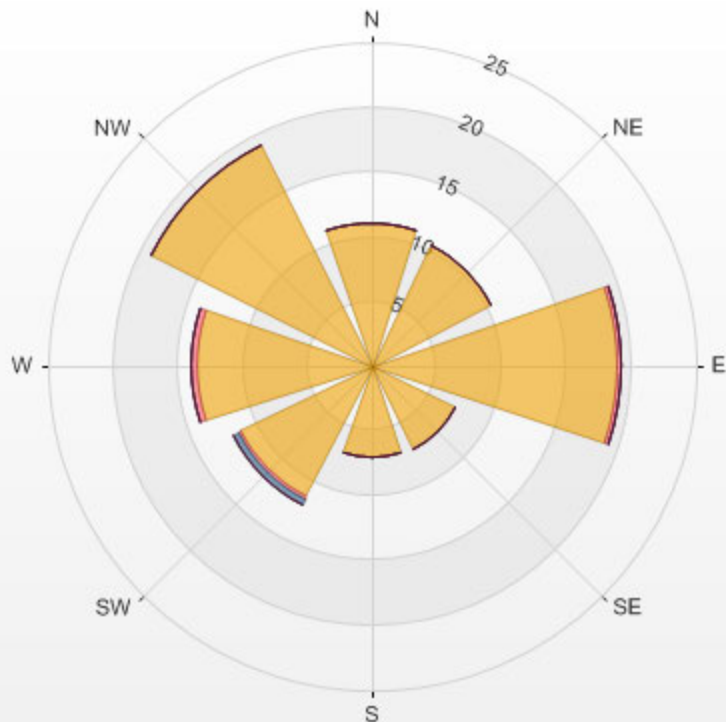
Calm: 0.00%

Calm Avg: 0.00 [ppb]

Direction	0.0-0.6	0.6-1.2	1.2-1.8	1.8-2.4	2.4-3.0	>3.0	Total
N	11.0	0.0	0.0	0.0	0.0	0.0	11.0
NE	10.4	0.0	0.0	0.0	0.0	0.0	10.4
E	19.0	0.3	0.0	0.0	0.0	0.0	19.3
SE	7.3	0.0	0.0	0.0	0.0	0.0	7.3
S	7.0	0.0	0.0	0.0	0.0	0.0	7.0
SW	11.3	0.3	0.4	0.0	0.0	0.0	12.0
W	13.5	0.4	0.0	0.0	0.0	0.0	13.9
NW	19.0	0.0	0.0	0.0	0.0	0.0	19.0
Summary	98.5	1.0	0.4	0.0	0.0	0.0	100.0

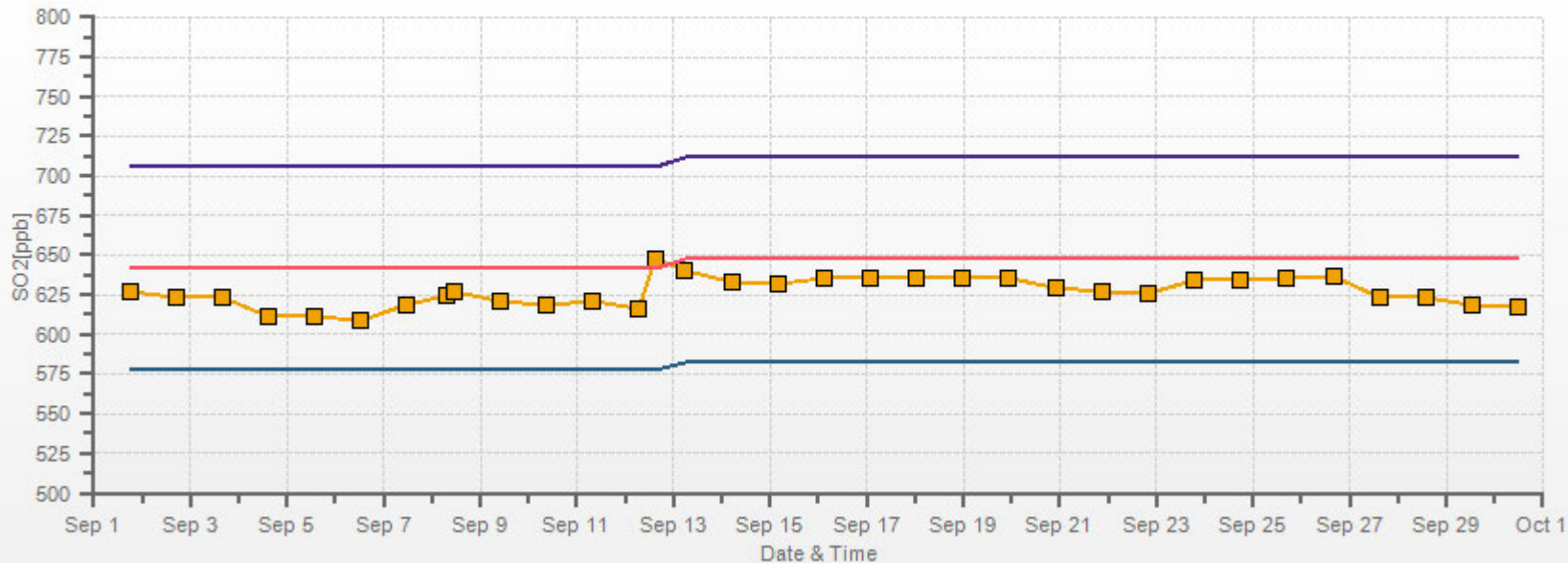
% Icon Classes (ppb) 99 0.0-0.6 1 0.6-1.2 0 1.2-1.8 0 1.8-2.4 0 2.4-3.0 0 >3.0

LICA ST. LINA Poll.: LICA ST. LINA-SO2[ppb] 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 0.00%



SO2[ppb] Calibration: LICA ST. LINA Monthly: 18/09 Type: Span

■ Span Meas
 — Span Ref
 — Span Low
 — Span High



HYDROGEN SULPHIDE



HYDROGEN SULPHIDE Hourly Averages (H₂S ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY																												
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	24
2	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	1	0	24
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	24
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	24
5	0	0	0	0	0	1	1	1	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	1	0	24
6	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
7	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	24
8	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
9	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	24
10	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	24
11	0	0	0	0	0	0	S	0	0	0	0	0	C	C	C	C	C	C	0	0	0	0	0	0	0	0	0	24
12	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
13	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	24
14	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
15	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	24
16	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
17	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	24
18	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	24
19	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	24
20	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
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	24
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	24
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	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	S	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	S	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	S	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	S	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	S	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	S	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	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
HOURLY MAX	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
HOURLY AVG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

STATUS FLAG CODES

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

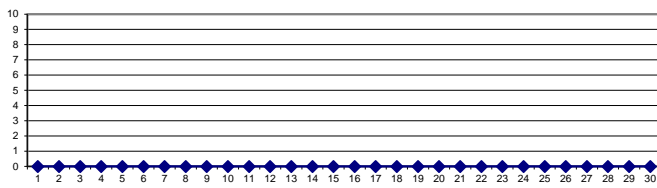
OBJECTIVE LIMIT:

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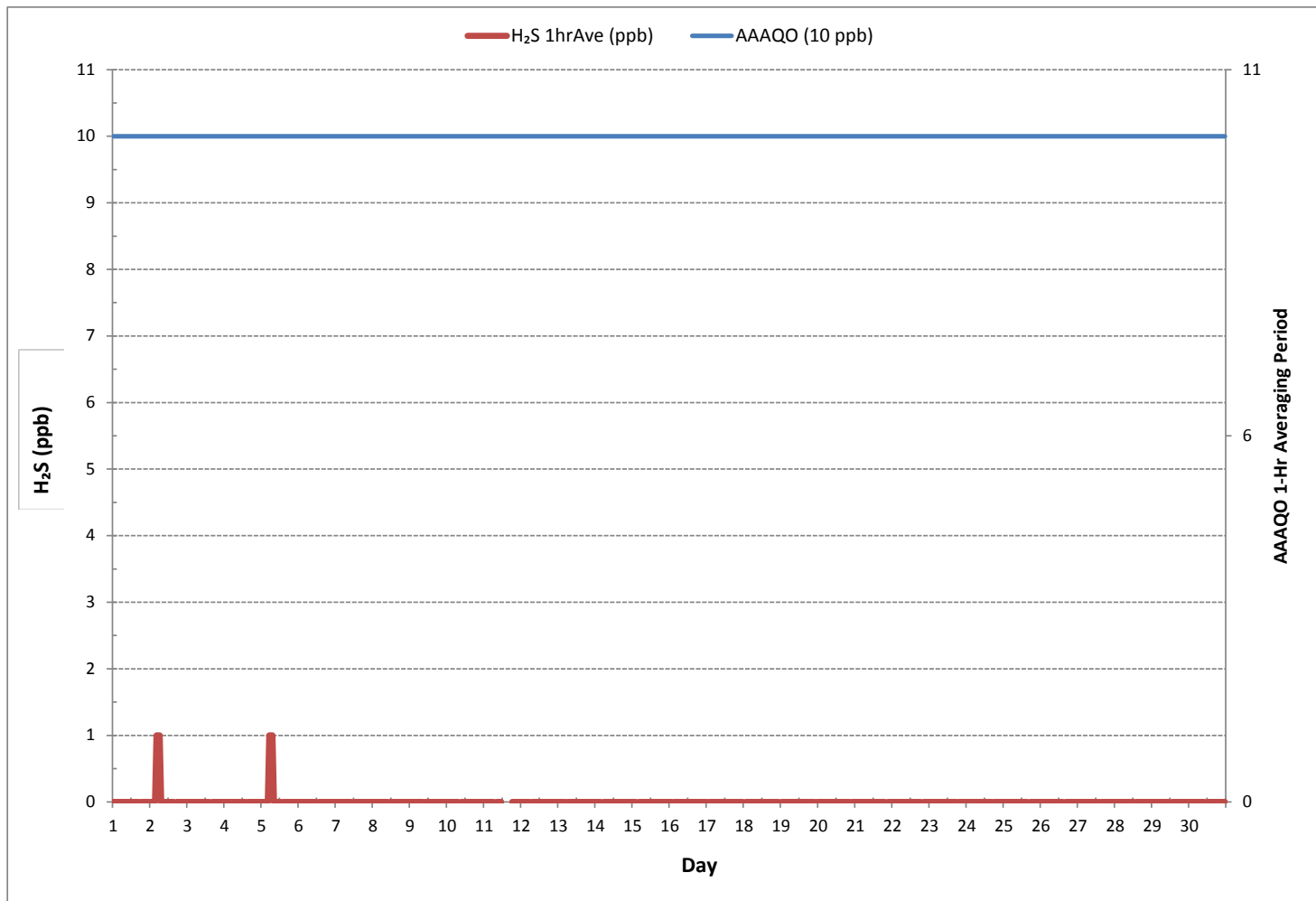
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0		
NUMBER OF 24-HR EXCEEDANCES:	0		
NUMBER OF NON-ZERO READINGS:	6		
MINIMUM 1-HR AVERAGE:	0 ppb @ HOUR	0 ON DAY	1
MAXIMUM 1-HR AVERAGE:	1 ppb @ HOUR	4 ON DAY	2
MAXIMUM 24-HR AVERAGE:	0 ppb	ON DAY	1
IZS CALIBRATION TIME:	31 hrs	OPERATIONAL TIME:	720 hrs
MONTHLY CALIBRATION TIME:	6 hrs	AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	0	MONTHLY AVERAGE:	0 ppb

24 HR AVERAGES September 2018

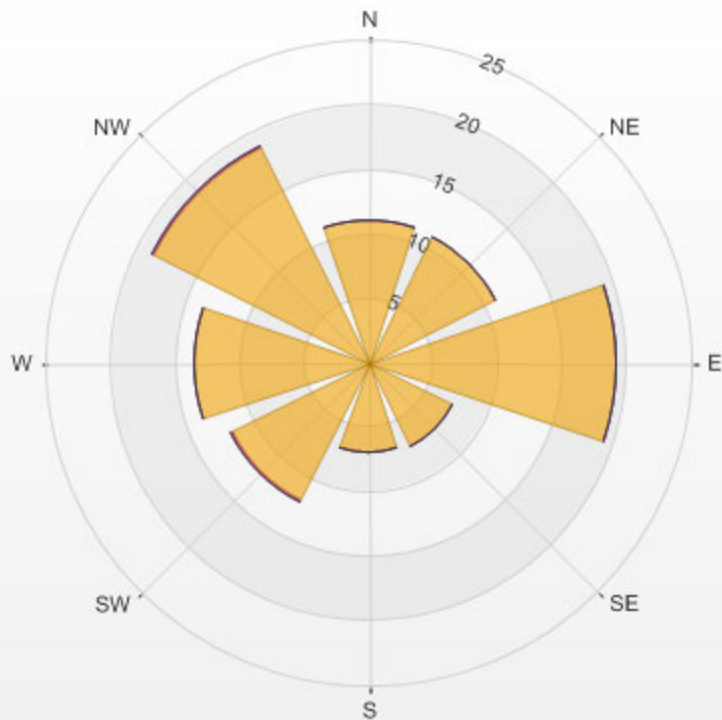


HYDROGEN SULPHIDE Hourly Averages (H₂S ppb)



% Icon Classes (ppb) 100 0.0-0.7 0 0.7-1.3 0 1.3-2.0 0 >2.0

LICA ST. LINA Poll.: LICA ST. LINA-H2S[ppb] 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 0.00%



H2S[ppb] Calibration: LICA ST. LINA Monthly: 18/09 Type: Span

Span Meas Span Ref Span Low Span High



TOTAL HYDROCARBON



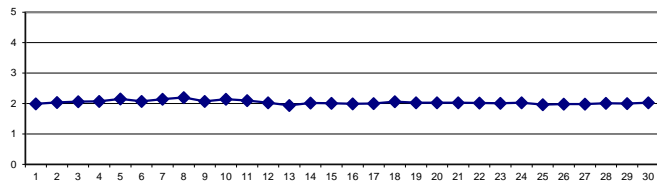
TOTAL HYDROCARBONS Hourly Averages (THC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY 1	1.98	1.96	1.98	1.97	1.98	1.98	1.98	1.99	1.99	2.00	1.98	2.01	1.99	2.05	2.00	1.99	1.98	S	1.99	2.05	1.97	1.99	1.98	1.99	1.96	2.05	1.99	24
2	2.00	2.00	2.00	2.00	2.02	2.05	2.07	2.07	2.06	2.04	2.01	2.02	2.00	1.98	1.97	1.98	S	2.18	1.99	2.04	2.07	2.13	2.14	2.13	1.97	2.18	2.04	24
3	2.16	2.14	2.17	2.24	2.16	2.05	2.02	2.02	2.02	2.02	2.04	2.08	2.07	2.03	2.04	S	2.01	2.00	2.00	2.03	2.02	2.02	2.02	2.02	2.00	2.24	2.06	24
4	2.03	2.07	2.12	2.14	2.16	2.05	2.03	2.18	2.05	2.04	2.06	2.05	2.03	2.03	S	2.05	2.05	2.03	2.02	2.04	2.08	2.10	2.13	2.15	2.02	2.18	2.07	24
5	2.16	2.12	2.11	2.12	2.14	2.16	2.18	2.19	2.16	2.13	2.11	2.09	2.06	S	2.04	2.05	2.03	2.08	2.19	2.24	2.32	2.31	2.35	2.19	2.03	2.35	2.15	24
6	2.12	2.09	2.09	2.08	2.06	2.07	2.06	2.06	2.06	2.07	2.07	2.06	S	2.04	2.05	2.05	2.05	2.06	2.06	2.09	2.09	2.09	2.10	2.10	2.04	2.12	2.07	24
7	2.13	2.12	2.14	2.16	2.19	2.18	2.17	2.17	2.17	2.16	2.14	S	2.08	2.09	2.10	2.12	2.11	2.11	2.10	2.12	2.12	2.12	2.15	2.18	2.08	2.19	2.14	24
8	2.21	2.24	2.25	2.24	2.22	2.21	S1	2.19	2.19	2.17	S	2.13	2.13	2.19	2.27	2.25	2.23	2.17	2.15	2.21	2.22	2.18	2.18	2.14	2.13	2.27	2.20	23
9	2.11	2.10	2.09	2.10	2.08	2.08	2.08	2.07	2.12	S	2.07	2.09	2.08	2.05	2.05	2.06	2.02	2.03	2.04	2.04	2.03	2.03	2.07	2.06	2.02	2.12	2.07	24
10	2.06	2.09	2.09	2.12	2.12	2.09	2.05	2.05	S	2.10	2.11	2.13	2.12	2.09	2.12	2.12	2.12	2.15	2.22	2.36	2.24	2.25	2.20	2.21	2.05	2.36	2.14	24
11	2.21	2.16	2.26	2.30	2.25	2.21	2.14	S	2.09	2.12	2.11	2.07	C	C	C	C	C	1.94	1.96	1.98	1.97	2.01	1.99	2.00	1.94	2.30	2.10	24
12	2.00	2.01	2.02	2.11	2.15	2.23	S	2.31	2.07	2.02	1.99	1.96	1.94	1.95	1.97	1.95	1.99	1.98	1.99	1.98	2.01	2.01	2.01	2.00	1.94	2.31	2.03	24
13	2.00	2.00	1.99	1.98	1.93	S	1.89	1.87	1.85	X	1.85	1.85	1.85	1.89	1.93	1.92	1.94	1.94	1.94	1.96	2.04	2.05	1.98	2.08	1.85	2.08	1.94	23
14	1.98	2.04	2.37	2.07	S	2.16	2.05	2.02	1.99	1.98	1.97	1.97	1.96	1.96	1.96	1.96	1.96	1.96	1.97	2.00	2.00	2.03	2.06	2.07	1.96	2.37	2.02	24
15	2.06	2.05	2.09	S	2.10	2.07	2.04	2.04	2.03	2.02	2.00	2.00	1.98	1.98	1.98	1.97	1.97	1.98	1.98	1.98	1.98	1.97	1.97	1.97	1.97	2.10	2.01	24
16	1.97	1.98	S	1.99	2.00	2.00	2.00	1.99	1.98	1.98	1.99	1.99	1.98	1.98	1.97	1.97	1.97	1.97	1.99	1.97	2.00	2.02	2.00	1.99	1.97	2.02	1.99	24
17	2.00	S	1.99	2.00	1.99	1.99	2.02	2.00	1.99	1.99	1.98	1.97	1.96	1.97	1.98	1.99	2.01	2.02	2.02	2.02	2.02	2.05	2.04	2.03	1.96	2.05	2.00	24
18	S	2.02	2.01	2.02	2.03	2.05	2.05	2.08	2.06	2.04	2.03	2.04	2.05	2.05	2.04	2.07	2.03	2.05	2.01	2.22	2.08	2.16	2.19	S	2.01	2.22	2.06	24
19	2.02	2.08	2.14	2.10	2.08	2.11	2.13	2.11	2.09	2.04	2.00	2.01	2.00	1.99	1.97	1.96	1.96	1.97	1.98	1.98	2.01	1.99	S	2.03	1.96	2.14	2.03	24
20	2.11	2.08	2.06	2.09	2.11	2.10	2.11	2.16	2.14	2.05	1.99	1.99	1.98	1.96	1.96	1.96	1.94	1.95	1.96	1.96	1.98	S	2.07	2.07	1.94	2.16	2.03	24
21	2.10	2.11	2.10	2.11	2.12	2.14	2.14	2.12	2.08	2.05	2.00	1.98	1.97	1.96	1.96	1.96	1.97	1.97	1.98	1.98	S	1.99	2.00	2.01	1.96	2.14	2.03	24
22	2.03	2.03	2.04	2.05	2.04	2.04	2.06	2.10	2.06	2.02	1.99	1.99	1.98	1.98	1.98	1.97	1.97	1.99	1.98	S	2.01	2.02	2.01	2.02	1.97	2.10	2.02	24
23	2.02	2.02	2.04	2.06	2.06	2.06	2.02	2.00	1.98	1.97	1.97	1.98	1.98	1.99	1.98	1.98	1.99	2.00	S	2.01	2.01	2.02	2.04	2.05	1.97	2.06	2.01	24
24	2.06	2.06	2.07	2.10	2.12	2.13	2.13	2.12	2.09	2.04	1.99	1.98	2.00	1.99	1.98	1.97	1.98	S	1.96	1.96	1.97	1.96	1.97	1.97	1.96	2.13	2.03	24
25	1.98	1.96	1.95	1.96	1.97	1.96	1.96	1.96	1.95	1.94	1.95	1.95	1.95	1.94	1.96	1.95	S	1.98	1.97	1.97	1.97	1.97	1.97	1.96	1.94	1.98	1.96	24
26	1.95	1.95	1.94	1.95	1.94	1.95	1.95	1.95	1.97	2.04	2.00	2.00	1.97	1.97	1.96	S	1.96	1.96	1.99	1.99	2.02	2.02	1.99	2.07	1.94	2.07	1.98	24
27	2.00	2.00	1.99	1.99	1.99	1.99	1.98	1.97	1.96	1.97	1.96	1.97	1.96	1.97	S	1.98	2.00	1.99	2.00	1.99	1.96	1.96	1.96	1.96	1.96	2.00	1.98	24
28	2.02	1.99	1.99	1.98	1.99	2.03	2.12	2.05	2.00	2.02	1.97	1.97	1.98	S	1.99	2.02	1.96	2.00	2.02	2.06	2.02	2.00	1.97	1.99	1.96	2.12	2.01	24
29	1.97	1.99	2.07	2.02	1.98	1.99	1.96	1.96	1.96	1.95	1.95	1.96	S	2.29	1.96	1.96	1.96	1.96	2.00	1.97	2.01	2.10	1.99	2.11	1.95	2.29	2.00	24
30	2.10	2.10	2.07	2.06	2.07	2.01	1.99	2.01	1.99	1.99	1.98	S	1.97	1.97	1.98	1.98	1.98	1.99	2.00	2.06	2.08	2.09	2.10	2.10	1.97	2.10	2.03	24
HOURLY MAX	2.21	2.24	2.37	2.30	2.25	2.23	2.18	2.31	2.19	2.17	2.14	2.13	2.13	2.29	2.27	2.25	2.23	2.18	2.22	2.36	2.32	2.31	2.35	2.21				
HOURLY AVG	2.05	2.05	2.08	2.07	2.07	2.07	2.05	2.06	2.04	2.03	2.01	2.01	2.00	2.01	2.01	2.01	2.01	2.01	2.02	2.04	2.04	2.06	2.06	2.06				

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 HR AVERAGES September 2018



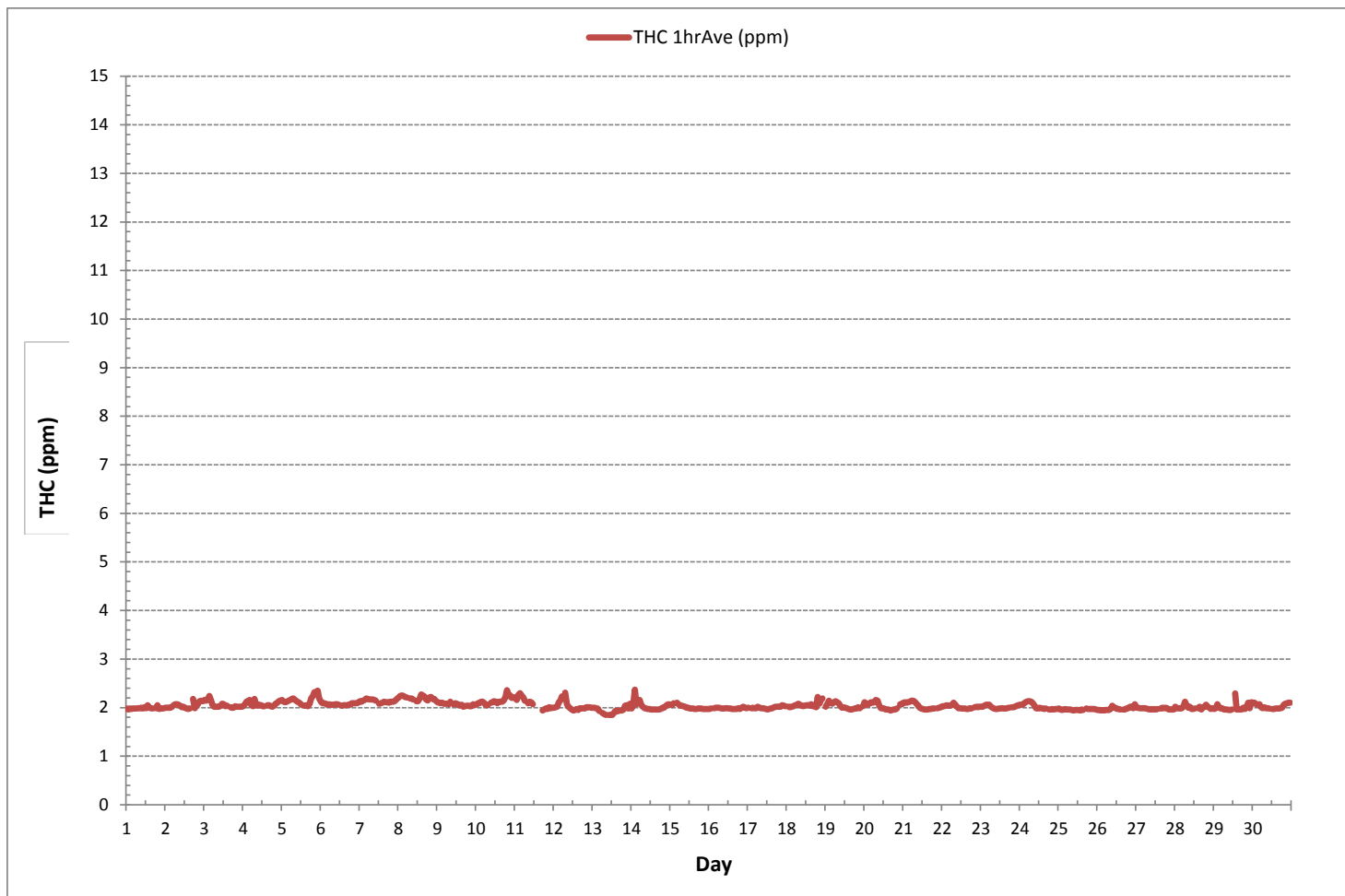
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	682			
MINIMUM 1-HR AVERAGE:	1.85 ppm	@ HOUR	8	ON DAY 13
MAXIMUM 1-HR AVERAGE:	2.37 ppm	@ HOUR	2	ON DAY 14
MAXIMUM 24-HR AVERAGE:	2.20 ppm			ON DAY 8
IZS CALIBRATION TIME:	31 hrs	OPERATIONAL TIME:	718 hrs	
MONTHLY CALIBRATION TIME:	5 hrs	AMD OPERATION UPTIME:	99.7 %	
STANDARD DEVIATION:	0.08	MONTHLY AVERAGE:	2.04 ppm	



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
St. Lina Continuous Monitoring Station - September 2018

TOTAL HYDROCARBONS Hourly Averages (THC ppm)



% Icon Classes (ppm)

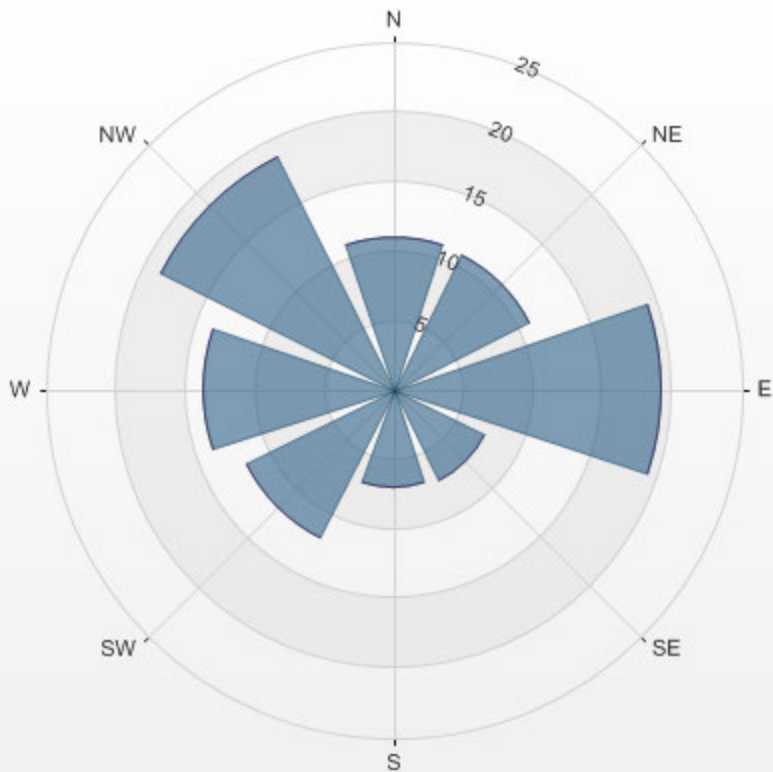
0 0.0-0.8

0 0.8-1.6

100 1.6-2.4

0 >2.4

LICA ST. LINA Poll.: LICA ST. LINA-THC[ppm] 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 0.00%



THC[ppm] Calibration: LICA ST. LINA Monthly: 18/09 Type: Span

■ Span Meas
 — Span Ref
 — Span Low
 — Span High



METHANE



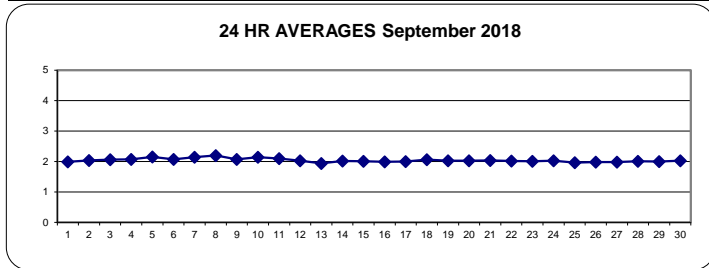
METHANE Hourly Averages (CH₄ ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY 1	1.98	1.96	1.98	1.97	1.98	1.98	1.98	1.99	1.99	2.00	1.98	2.01	1.99	2.05	2.00	1.99	1.98	S	1.99	2.05	1.97	1.99	1.99	1.99	1.96	2.05	1.99	24	
2	2.00	2.00	2.00	2.00	2.02	2.05	2.07	2.07	2.06	2.04	2.01	2.02	2.00	1.98	1.97	1.98	S	2.18	1.99	2.04	2.07	2.13	2.14	2.13	1.97	2.18	2.04	24	
3	2.16	2.14	2.17	2.24	2.16	2.05	2.02	2.02	2.02	2.04	2.08	2.07	2.03	2.04	S	2.01	2.00	2.00	2.03	2.02	2.02	2.02	2.02	2.02	2.00	2.24	2.06	24	
4	2.03	2.07	2.12	2.14	2.16	2.05	2.03	2.17	2.05	2.04	2.06	2.05	2.03	2.03	S	2.05	2.05	2.03	2.02	2.04	2.08	2.10	2.12	2.15	2.02	2.17	2.07	24	
5	2.16	2.12	2.11	2.12	2.14	2.16	2.18	2.19	2.16	2.13	2.11	2.09	2.06	S	2.04	2.05	2.03	2.08	2.20	2.24	2.32	2.32	2.35	2.19	2.03	2.35	2.15	24	
6	2.12	2.09	2.09	2.08	2.06	2.07	2.06	2.06	2.06	2.07	2.07	2.06	S	2.04	2.05	2.05	2.05	2.06	2.06	2.09	2.09	2.09	2.11	2.04	2.12	2.07	2.15	24	
7	2.13	2.12	2.14	2.16	2.19	2.18	2.17	2.17	2.17	2.16	2.14	S	2.09	2.09	2.10	2.12	2.11	2.10	2.10	2.12	2.12	2.12	2.15	2.18	2.09	2.19	2.14	24	
8	2.21	2.24	2.25	2.24	2.22	2.21	S1	2.19	2.19	2.17	S	2.13	2.13	2.19	2.27	2.25	2.23	2.17	2.15	2.21	2.22	2.18	2.18	2.14	2.13	2.27	2.20	23	
9	2.11	2.10	2.09	2.10	2.08	2.08	2.08	2.07	2.12	S	2.07	2.09	2.08	2.05	2.05	2.06	2.02	2.03	2.04	2.04	2.03	2.03	2.07	2.05	2.02	2.12	2.07	24	
10	2.06	2.09	2.09	2.12	2.12	2.09	2.05	2.05	S	2.10	2.12	2.13	2.12	2.09	2.12	2.12	2.12	2.16	2.21	2.36	2.24	2.25	2.20	2.20	2.05	2.36	2.14	24	
11	2.21	2.16	2.26	2.30	2.25	2.21	2.14	S	2.09	2.12	2.11	2.07	C	C	C	C	C	1.94	1.96	1.98	1.97	2.01	1.99	2.00	1.94	2.30	2.10	24	
12	2.00	2.01	2.02	2.11	2.15	2.23	S	2.31	2.07	2.02	1.99	1.96	1.94	1.95	1.97	1.95	1.99	1.98	1.99	1.98	2.01	2.01	2.01	2.01	1.94	2.31	2.03	24	
13	2.00	2.00	1.99	1.98	1.93	S	1.89	1.87	1.85	X	1.85	1.85	1.85	1.89	1.93	1.92	1.94	1.94	1.94	1.96	2.04	2.05	1.98	2.08	1.85	2.08	1.94	23	
14	1.98	2.04	2.36	2.07	S	2.16	2.05	2.02	1.99	1.98	1.97	1.97	1.96	1.96	1.96	1.96	1.96	1.96	1.97	2.00	2.00	2.03	2.06	2.07	1.96	2.36	2.02	24	
15	2.06	2.05	2.09	S	2.10	2.07	2.04	2.04	2.03	2.02	2.00	2.00	1.98	1.98	1.98	1.97	1.97	1.97	1.98	1.97	1.98	1.97	1.97	1.97	1.97	1.97	2.10	2.01	24
16	1.97	1.98	S	2.00	2.00	2.00	2.00	1.99	1.98	1.98	1.99	1.99	1.98	1.98	1.97	1.97	1.97	1.97	1.99	1.97	2.00	2.02	2.00	1.99	1.97	2.02	1.99	24	
17	2.00	S	1.99	2.00	1.99	1.99	2.02	2.00	1.99	1.99	1.98	1.97	1.96	1.97	1.98	1.99	2.01	2.02	2.02	2.02	2.03	2.05	2.04	2.03	1.96	2.05	2.00	24	
18	S	2.02	2.01	2.02	2.03	2.05	2.05	2.08	2.06	2.03	2.03	2.04	2.05	2.05	2.04	2.07	2.03	2.05	2.00	2.22	2.08	2.16	2.19	S	2.00	2.22	2.06	24	
19	2.02	2.08	2.14	2.10	2.08	2.11	2.13	2.11	2.09	2.04	2.00	2.01	2.00	1.99	1.97	1.96	1.96	1.97	1.98	1.98	2.01	1.99	S	2.03	1.96	2.14	2.03	24	
20	2.11	2.08	2.06	2.09	2.11	2.10	2.11	2.16	2.14	2.05	1.99	1.99	1.98	1.96	1.96	1.95	1.95	1.96	1.96	1.98	S	2.07	2.07	1.95	2.16	2.03	24		
21	2.10	2.11	2.10	2.11	2.12	2.14	2.14	2.12	2.08	2.05	2.00	1.98	1.98	1.96	1.96	1.97	1.97	1.97	1.98	1.98	S	1.99	2.00	2.01	1.96	2.14	2.04	24	
22	2.03	2.03	2.04	2.05	2.05	2.04	2.06	2.10	2.06	2.02	1.99	1.98	1.98	1.98	1.98	1.97	1.97	1.99	1.98	S	2.01	2.02	2.01	2.02	1.97	2.10	2.02	24	
23	2.02	2.02	2.04	2.06	2.06	2.06	2.02	2.00	1.98	1.97	1.97	1.97	1.98	1.99	1.98	1.98	1.99	2.00	S	2.01	2.01	2.02	2.04	2.05	1.97	2.06	2.01	24	
24	2.06	2.06	2.07	2.10	2.12	2.13	2.13	2.12	2.09	2.04	1.99	1.98	2.00	1.99	1.98	1.97	1.98	S	1.96	1.96	1.97	1.96	1.97	1.97	1.96	2.13	2.03	24	
25	1.98	1.96	1.96	1.96	1.97	1.96	1.96	1.96	1.95	1.95	1.95	1.95	1.95	1.94	1.96	1.95	S	1.98	1.97	1.97	1.97	1.97	1.97	1.96	1.94	1.98	1.96	24	
26	1.95	1.95	1.95	1.95	1.94	1.95	1.95	1.95	1.97	2.04	2.00	2.00	1.97	1.97	1.96	S	1.96	1.96	1.98	1.99	2.02	2.02	1.99	2.07	1.94	2.07	1.98	24	
27	2.00	2.00	1.99	1.99	1.99	1.99	1.98	1.97	1.97	1.97	1.96	1.97	1.96	1.97	S	1.98	2.00	1.99	2.00	1.99	1.96	1.96	1.96	1.97	1.96	2.00	1.98	24	
28	2.02	2.00	1.99	1.98	1.99	2.03	2.12	2.05	2.00	2.02	1.97	1.97	1.98	S	1.99	2.02	1.96	2.00	2.02	2.06	2.02	2.00	1.97	1.99	1.96	2.12	2.01	24	
29	1.97	1.99	2.08	2.02	1.98	1.99	1.96	1.96	1.96	1.95	1.95	1.96	S	1.96	2.28	1.96	1.96	1.96	2.00	1.97	2.01	2.10	1.99	2.11	1.95	2.28	2.00	24	
30	2.10	2.10	2.07	2.06	2.07	2.01	1.99	2.01	1.99	1.99	1.98	S	1.97	1.97	1.98	1.98	1.98	1.99	2.00	2.06	2.08	2.09	2.10	2.10	1.97	2.10	2.03	24	
HOURLY MAX	2.21	2.24	2.36	2.30	2.25	2.23	2.18	2.31	2.19	2.17	2.14	2.13	2.13	2.28	2.27	2.25	2.23	2.18	2.21	2.36	2.32	2.32	2.35	2.20					
HOURLY AVG	2.05	2.05	2.08	2.07	2.07	2.07	2.05	2.06	2.04	2.03	2.01	2.01	2.00	2.01	2.01	2.01	2.01	2.01	2.01	2.04	2.04	2.06	2.06	2.06					

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

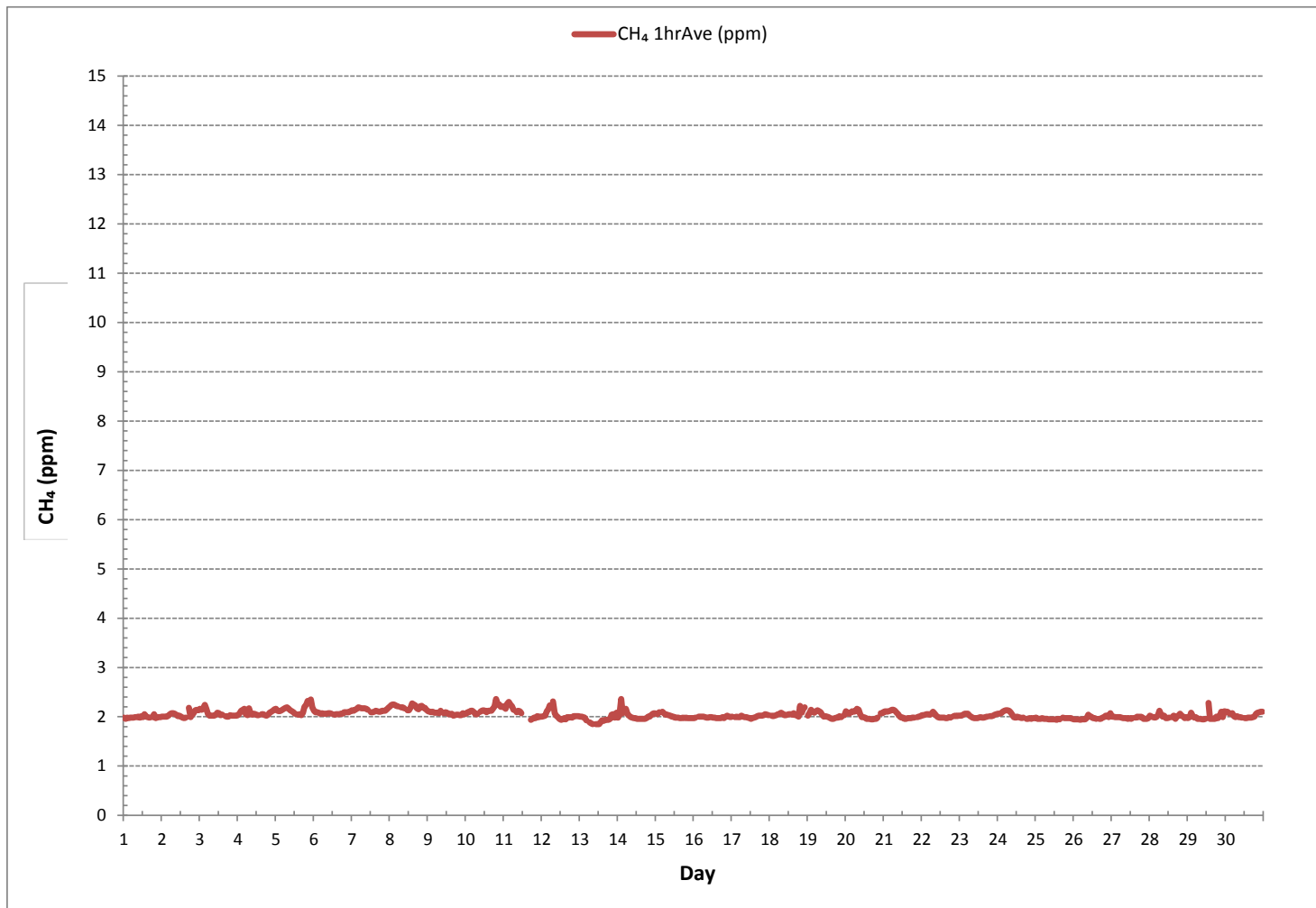
24 HR AVERAGES September 2018



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	682			
MINIMUM 1-HR AVERAGE:	1.85 ppm	@ HOUR	8	ON DAY 13
MAXIMUM 1-HR AVERAGE:	2.36 ppm	@ HOUR	19	ON DAY 10
MAXIMUM 24-HR AVERAGE:	2.20 ppm			ON DAY 8
IZS CALIBRATION TIME:	31 hrs	OPERATIONAL TIME:	718 hrs	
MONTHLY CALIBRATION TIME:	5 hrs	AMD OPERATION UPTIME:	99.7 %	
STANDARD DEVIATION:	0.08	MONTHLY AVERAGE:	2.04 ppm	

METHANE Hourly Averages (CH₄ ppm)



% Icon Classes (ppm)

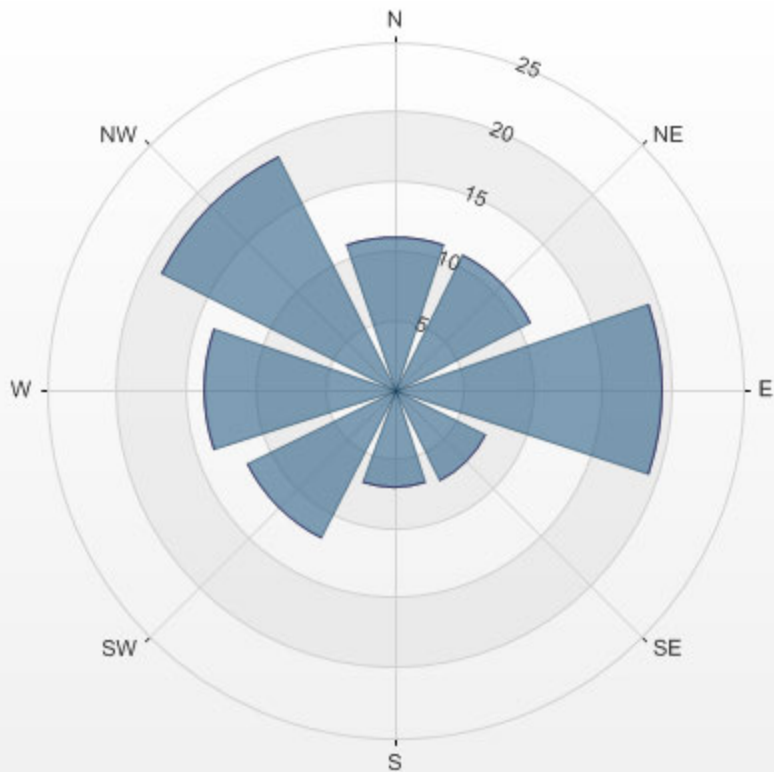
0 0.0-0.8

0 0.8-1.6

100 1.6-2.4

0 >2.4

LICA ST. LINA Poll.: LICA ST. LINA-CH4[ppm] 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 0.00%



CH4[ppm] Calibration: LICA ST. LINA Monthly: 18/09 Type: Span

Span Meas Span Ref Span Low Span High



NON-METHANE HYDROCARBON



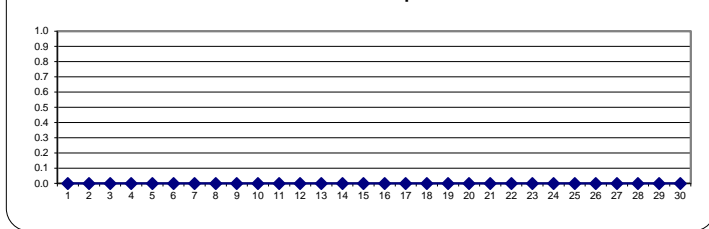
NON-METHANE HYDROCARBONS Hourly Averages (NMHC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	0.00	0.00	0.00	0.00	0.00	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
2	0.00	0.00	0.00	0.00	0.00	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
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
4	0.00	0.00	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	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	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
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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
8	0.00	0.00	0.00	0.00	0.00	0.00	S1	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	C	C	C	C	C	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
13	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	X	0.00	0.00	0.00	0.00	0.00	0.00	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
14	0.00	0.00	0.01	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	24
15	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
16	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
17	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
18	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
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	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
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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
23	0.00	0.00	0.00	0.00	0.00	0.00	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
24	0.00	0.00	0.00	0.00	0.00	0.00	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
25	0.00	0.00	0.00	0.00	0.00	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
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
27	0.00	0.00	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	24
28	0.00	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
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
HOURLY MAX	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
HOURLY AVG	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				

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 HR AVERAGES September 2018



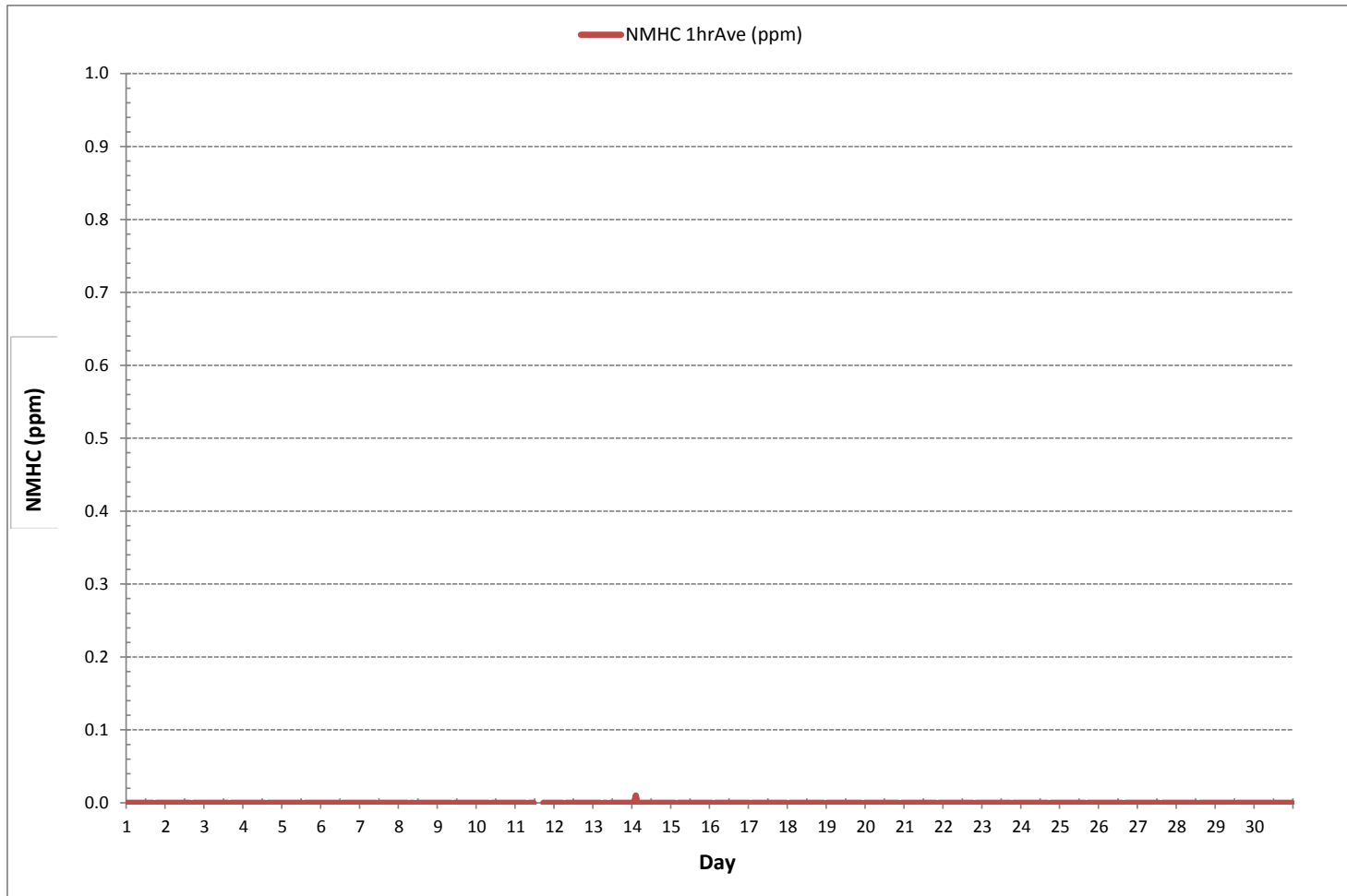
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	1
MINIMUM 1-HR AVERAGE:	0.00 ppm @ HOUR 0 ON DAY 1
MAXIMUM 1-HR AVERAGE:	0.01 ppm @ HOUR 2 ON DAY 14
MAXIMUM 24-HR AVERAGE:	0.00 ppm ON DAY 1
IZS CALIBRATION TIME:	31 hrs
MONTHLY CALIBRATION TIME:	5 hrs
OPERATIONAL TIME:	718 hrs
AMD OPERATION UPTIME:	99.7 %
STANDARD DEVIATION:	0.00
MONTHLY AVERAGE:	0.00 ppm



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
St. Lina Continuous Monitoring Station - September 2018

NON-METHANE HYDROCARBONS Hourly Averages (NMHC ppm)



Wind: LICA ST. LINA
 Poll.: LICA ST. LINA-NMHC[ppm]
 Monthly: 18/09
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

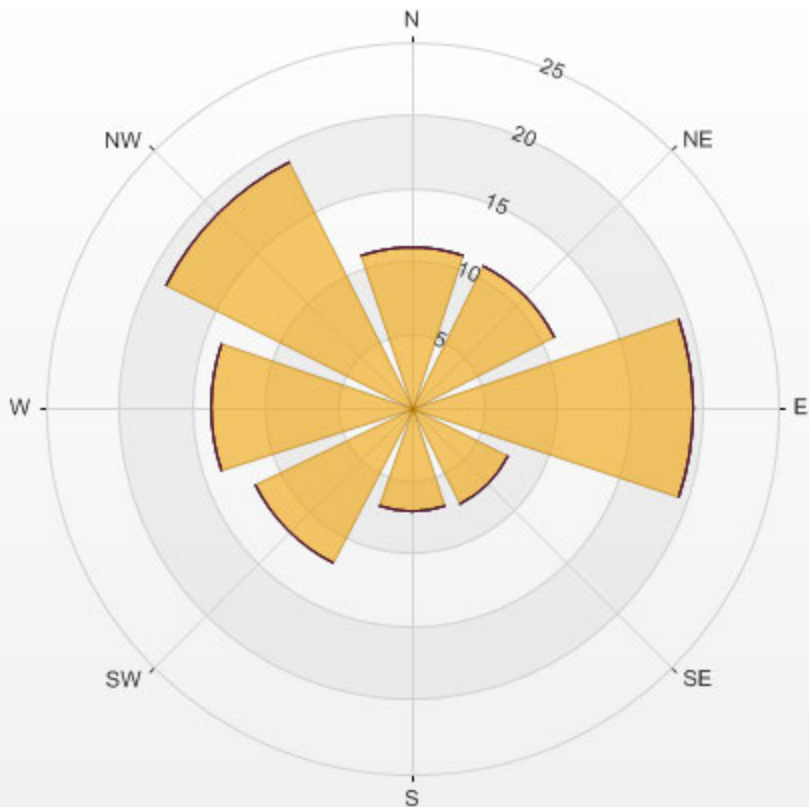
Calm: 0.00%

Calm Avg: 0.00 [ppm]

Direction	0-0.074	0.074-0.148	0.148-0.222	0.222-0.296	0.296-0.37	>0.4	Total
N	11.0	0.0	0.0	0.0	0.0	0.0	11.0
NE	10.9	0.0	0.0	0.0	0.0	0.0	10.9
E	19.3	0.0	0.0	0.0	0.0	0.0	19.3
SE	7.4	0.0	0.0	0.0	0.0	0.0	7.4
S	7.1	0.0	0.0	0.0	0.0	0.0	7.1
SW	11.9	0.0	0.0	0.0	0.0	0.0	11.9
W	13.7	0.0	0.0	0.0	0.0	0.0	13.7
NW	18.8	0.0	0.0	0.0	0.0	0.0	18.8
Summary	100.0	0.0	0.0	0.0	0.0	0.0	100.0

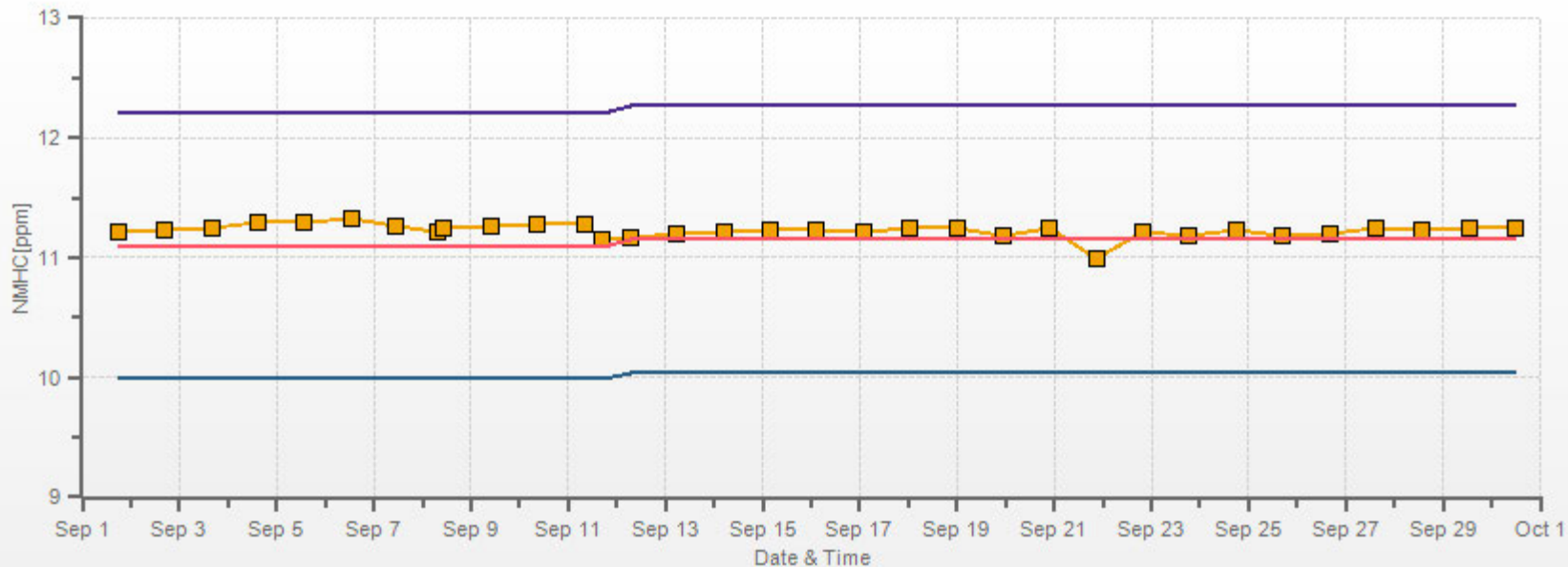
% Icon Classes (ppm) 100 0-0.074 0 0.074-0.148 0 0.148-0.222 0 0.222-0.296 0 0.296-0.37 0 >0.4

LICA ST. LINA Poll.: LICA ST. LINA-NMHC[ppm] 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 0.00%



NMHC[ppm] Calibration: LICA ST. LINA Monthly: 18/09 Type: Span

Span Meas Span Ref Span Low Span High



OXIDES OF NITROGEN



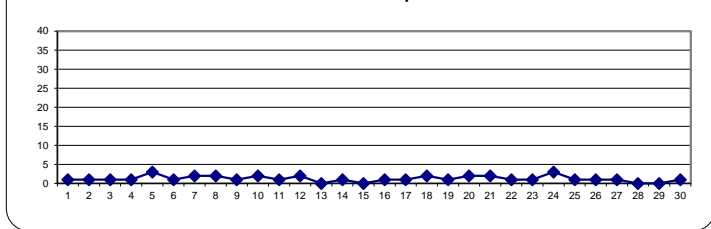
OXIDES OF NITROGEN Hourly Averages (NO_x ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	2	2	2	1	1	1	1	1	1	1	1	1	0	0	0	0	0	S	2	1	1	1	1	1	0	2	1	24	
DAY 2	1	0	0	0	1	1	1	1	1	2	2	2	1	1	0	0	S	3	2	2	2	2	2	2	0	3	1	24	
DAY 3	2	2	2	2	1	1	1	1	2	1	1	1	1	1	1	S	3	1	1	1	1	0	0	0	0	3	1	24	
DAY 4	0	0	0	0	0	0	1	0	1	0	1	1	0	0	S	3	1	1	1	1	1	1	1	1	0	3	1	24	
DAY 5	2	2	2	2	2	3	4	4	3	4	4	3	2	S	3	2	1	1	1	1	1	4	5	4	1	5	3	24	
DAY 6	2	1	1	1	0	1	1	0	0	1	1	1	S	2	1	1	1	1	1	1	1	1	1	1	0	2	1	24	
DAY 7	1	1	2	2	1	2	2	2	2	2	2	S	3	2	2	2	2	2	2	2	2	2	2	2	1	3	2	24	
DAY 8	2	2	2	2	1	1	S1	5	2	2	S	4	2	3	2	2	2	2	2	2	1	1	1	1	1	5	2	23	
DAY 9	1	0	0	0	0	0	0	0	1	S	3	2	1	1	1	1	1	1	1	1	1	1	1	2	2	0	3	1	24
DAY 10	2	2	2	2	2	2	1	1	S	3	2	2	2	1	2	1	1	1	1	1	2	1	1	1	1	3	2	24	
DAY 11	1	1	1	1	1	1	1	S	2	1	1	1	1	1	1	1	0	1	1	1	1	1	1	0	2	1	24		
DAY 12	1	1	1	1	2	3	S	8	5	3	C	C	C	C	C	C	C	0	2	1	1	0	0	0	0	8	2	24	
DAY 13	0	0	0	0	0	S	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
DAY 14	0	0	0	0	S	2	3	2	3	2	1	1	1	0	0	0	0	0	0	0	0	1	1	1	0	3	1	24	
DAY 15	1	0	1	S	2	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	24	
DAY 16	0	0	S	2	2	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1	0	2	1	24	
DAY 17	0	S	2	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	2	1	24	
DAY 18	S	2	1	1	1	1	3	5	3	2	2	2	1	1	1	1	0	1	1	1	1	1	1	S	0	5	2	24	
DAY 19	2	2	1	1	1	1	2	4	2	2	1	1	1	1	1	1	0	1	1	1	1	1	S	2	0	4	1	24	
DAY 20	2	1	1	2	2	2	2	4	3	3	1	1	1	1	1	0	0	0	0	0	0	S	4	4	0	4	2	24	
DAY 21	5	5	5	4	3	3	3	3	2	1	1	0	0	0	0	0	0	0	1	0	S	2	1	1	0	5	2	24	
DAY 22	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	S	2	1	1	1	0	2	1	24	
DAY 23	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	S	3	2	2	2	2	0	3	1	24	
DAY 24	2	2	2	3	3	8	8	7	4	5	3	3	1	1	1	1	1	S	2	1	1	1	1	0	8	3	24		
DAY 25	0	0	0	0	0	1	1	1	2	1	0	0	0	1	1	1	S	7	5	2	2	2	2	1	0	7	1	24	
DAY 26	1	0	0	0	0	1	1	1	1	1	0	1	0	0	0	S	2	1	1	1	1	1	1	1	0	2	1	24	
DAY 27	0	0	0	1	1	1	1	1	1	0	1	1	0	0	S	1	1	1	1	1	1	0	0	0	0	1	1	24	
DAY 28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	2	1	1	4	1	1	1	0	0	0	4	0	24	
DAY 29	0	0	0	0	0	0	0	0	0	0	0	0	S	1	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
DAY 30	0	0	0	0	0	0	0	0	0	0	0	S	1	1	0	0	0	0	1	2	3	2	2	2	0	3	1	24	
HOURLY MAX	5	5	5	4	3	8	8	8	5	5	4	4	3	3	3	3	3	7	5	3	3	4	5	4					
HOURLY AVG	1	1	1	1	1	1	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					

STATUS FLAG CODES

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

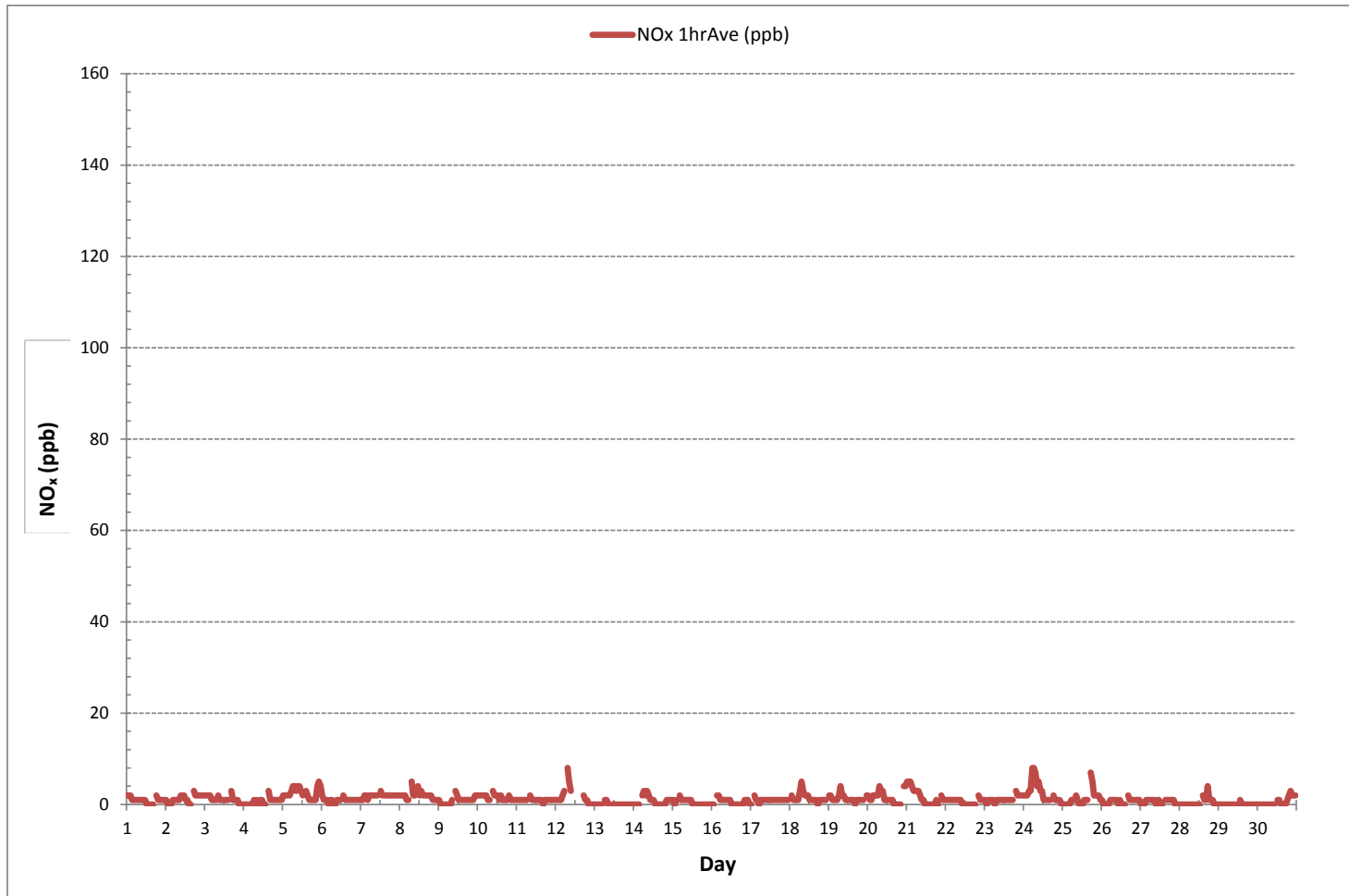
24 HR AVERAGES September 2018



MONTHLY SUMMARY

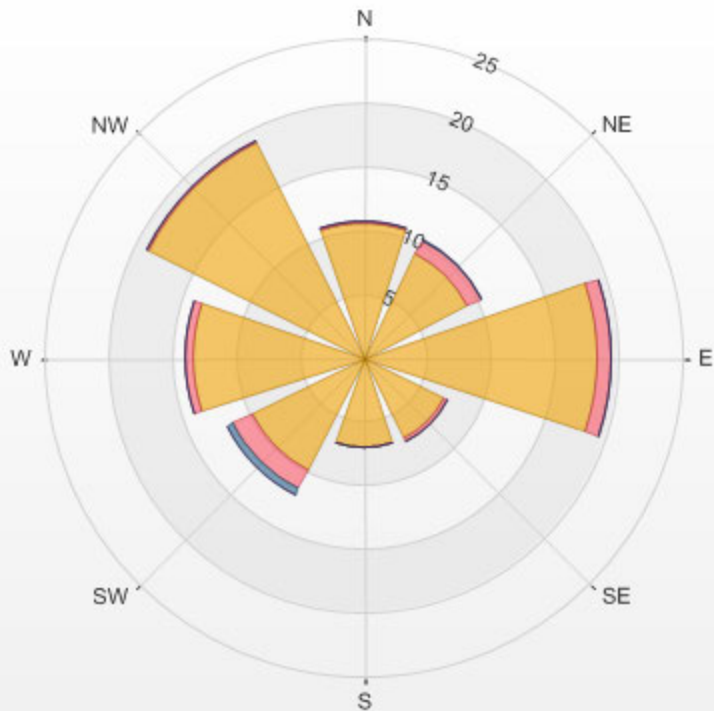
NUMBER OF NON-ZERO READINGS:	0	480		
MINIMUM 1-HR AVERAGE:	8	ppb	@ HOUR	12 ON DAY 1
MAXIMUM 1-HR AVERAGE:	8	ppb	@ HOUR	7 ON DAY 12
MAXIMUM 24-HR AVERAGE:	3	ppb		ON DAY 5
IZS CALIBRATION TIME:	31	hrs	OPERATIONAL TIME:	719 hrs
MONTHLY CALIBRATION TIME:	7	hrs	AMD OPERATION UPTIME:	99.9 %
STANDARD DEVIATION:	1		MONTHLY AVERAGE:	1 ppb

OXIDES OF NITROGEN Hourly Averages (NO_x ppb)



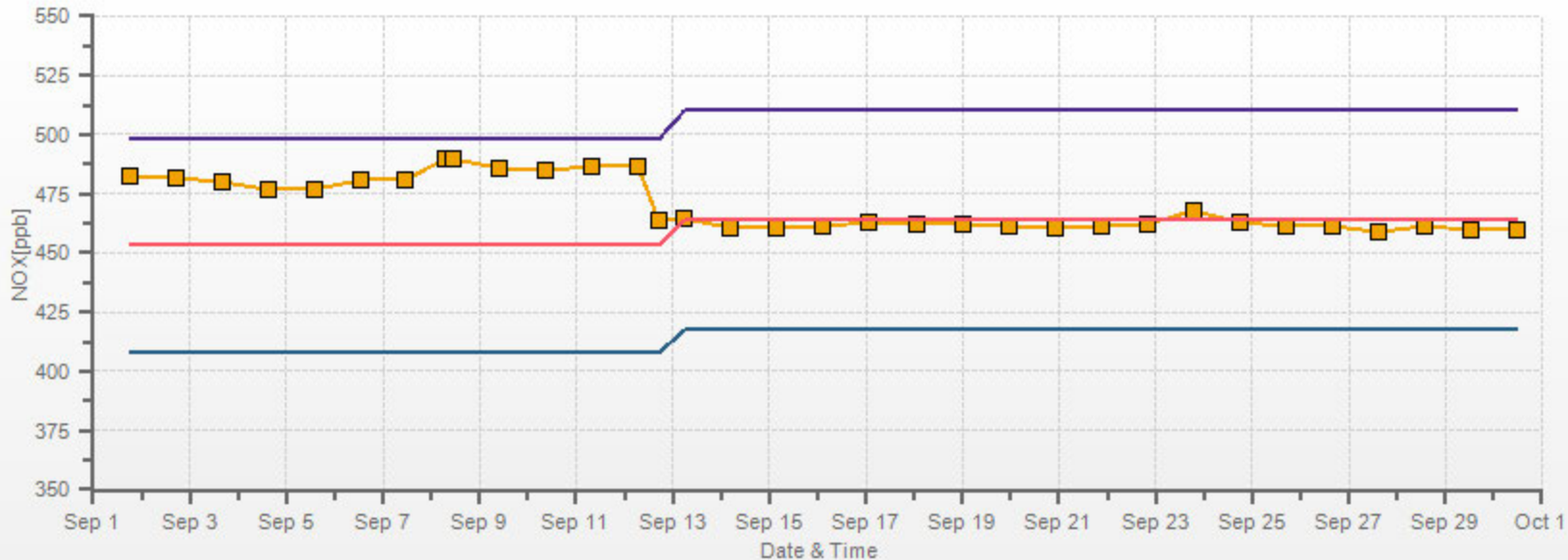
% Icon Classes (ppb) 94 0.0-3.0 5 3.0-6.0 1 6.0-9.0 0 >9.0

LICA ST. LINA Poll.: LICA ST. LINA-NOX[ppb] 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 0.00%



NOX[ppb] Calibration: LICA ST. LINA Monthly: 18/09 Type: Span

Span Meas Span Ref Span Low Span High



NITRIC OXIDE



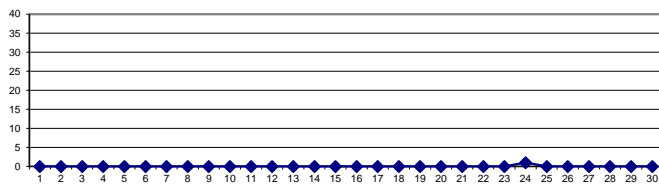
NITRIC OXIDE Hourly Averages (NO ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	0	0	0	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
2	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	S	0	0	0	0	0	0	0	0	0	1	0	24
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	24
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	1	0	0	0	0	0	0	0	0	0	0	1	0	24
5	0	0	0	0	0	0	1	1	1	2	2	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0	2	0	24
6	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	24
7	0	0	0	0	0	0	0	1	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
8	0	0	0	0	0	0	S1	0	0	1	S	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	23
9	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
10	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	1	0	24
11	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
12	0	0	0	0	0	0	S	1	1	0	C	C	C	C	C	C	C	0	0	0	0	0	0	0	0	0	1	0	24
13	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	S	0	1	1	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	24
15	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
16	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	24
17	0	S	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	24
18	S	0	0	0	0	0	0	2	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	S	0	0	2	0	24
19	0	0	0	0	0	0	1	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	2	0	24
20	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	1	0	24
21	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
22	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	24
23	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	24
24	0	0	0	0	0	4	4	4	2	3	2	1	0	0	0	0	0	S	0	0	0	0	0	0	0	0	4	1	24
25	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	S	0	1	0	0	0	0	0	0	0	1	0	24
26	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
27	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	24
28	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	1	0	24
29	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	24
30	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
HOURLY MAX	0	0	0	0	0	4	4	4	2	3	2	1	1	0	0	1	0	1	1	0	1	0	0	0	0				
HOURLY AVG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

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

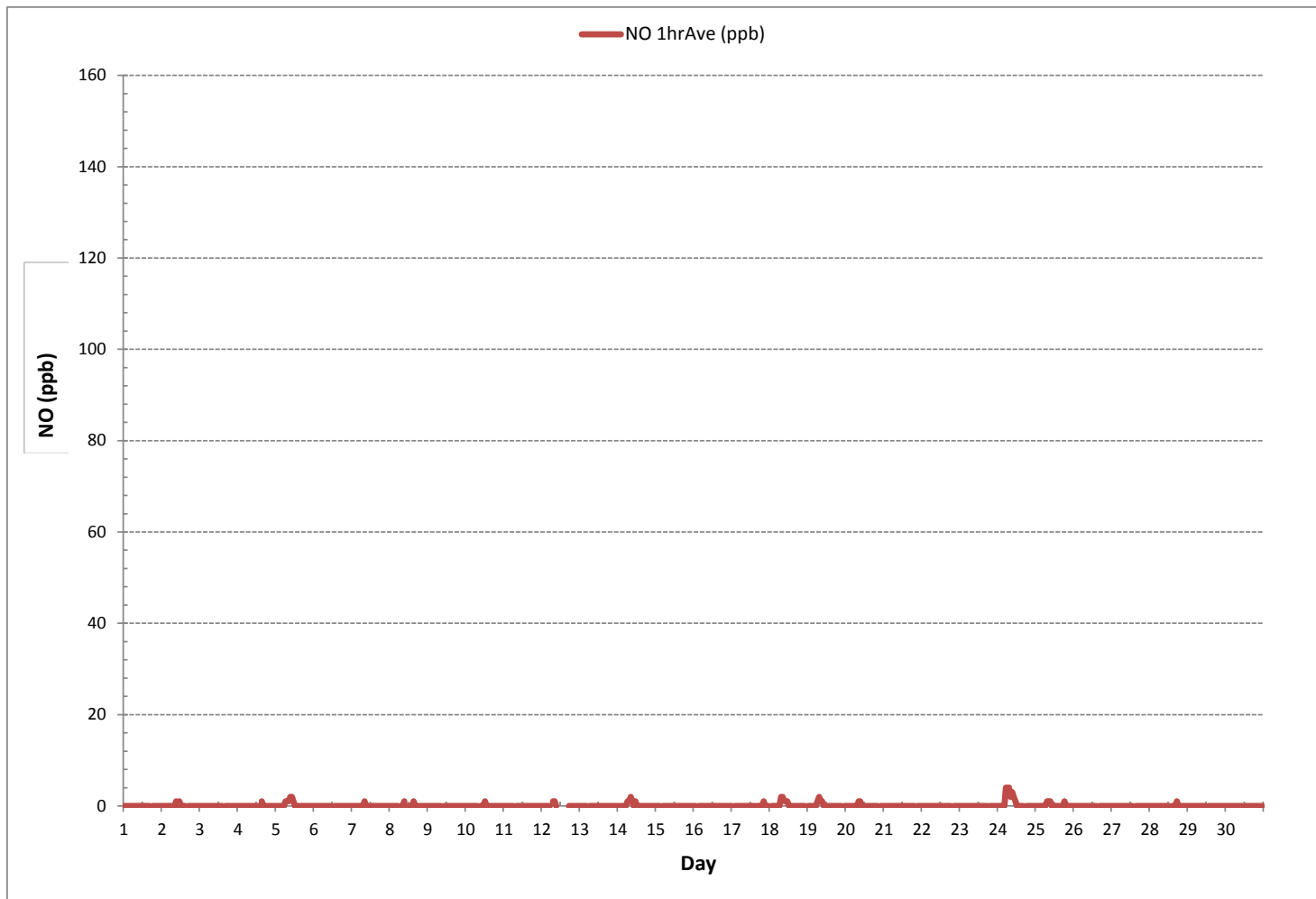
24 HR AVERAGES September 2018



MONTHLY SUMMARY

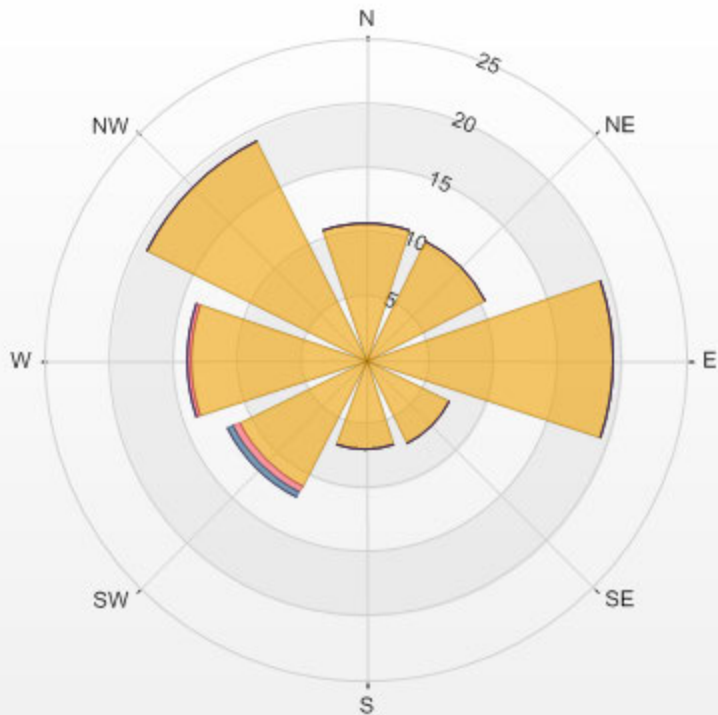
NUMBER OF NON-ZERO READINGS:	44			
MINIMUM 1-HR AVERAGE:	0	ppb @ HOUR	0	ON DAY 1
MAXIMUM 1-HR AVERAGE:	4	ppb @ HOUR	5	ON DAY 24
MAXIMUM 24-HR AVERAGE:	1	ppb		ON DAY 24
IZS CALIBRATION TIME:	31	hrs	OPERATIONAL TIME:	719 hrs
MONTHLY CALIBRATION TIME:	7	hrs	AMD OPERATION UPTIME:	99.9 %
STANDARD DEVIATION:	0		MONTHLY AVERAGE:	0 ppb

NITRIC OXIDE Hourly Averages (NO ppb)



% Icon Classes (ppb) 99 0.0-1.7 1 1.7-3.3 0 3.3-5.0 0 >5.0

LICA ST. LINA Poll.: LICA ST. LINA-NO[ppb] 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 0.00%



NITROGEN DIOXIDE



NITROGEN DIOXIDE Hourly Averages (NO₂ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	2	2	2	1	1	1	1	1	1	1	1	1	0	0	0	0	0	S	2	1	1	1	1	1	0	2	1	24	
DAY 2	1	0	0	0	1	1	1	0	1	1	1	2	1	0	0	0	S	3	2	2	2	2	2	2	0	3	1	24	
DAY 3	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	S	3	1	1	1	1	0	0	0	3	1	24	
DAY 4	0	0	0	0	0	0	0	0	0	0	1	0	0	0	S	2	1	1	1	1	1	1	1	1	0	2	0	24	
DAY 5	2	2	2	2	2	3	3	2	2	3	3	2	1	S	3	2	1	1	1	1	1	1	4	5	4	1	5	2	24
DAY 6	2	1	1	1	0	1	1	0	0	1	1	1	S	2	1	1	1	1	1	1	1	1	1	1	1	0	2	1	24
DAY 7	1	1	2	2	1	2	2	2	2	2	2	S	3	2	2	2	2	2	2	2	2	2	2	2	1	3	2	24	
DAY 8	2	2	2	1	1	1	S1	4	2	2	S	3	2	2	2	2	2	2	2	1	1	1	1	1	1	4	2	23	
DAY 9	1	0	0	0	0	0	0	0	1	S	2	1	1	1	1	1	1	1	1	1	1	1	1	2	1	0	2	1	24
DAY 10	2	2	2	2	2	2	1	1	S	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1	24	
DAY 11	1	1	1	1	1	1	1	S	2	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	0	2	1	24	
DAY 12	1	1	1	1	1	3	S	7	4	2	C	C	C	C	C	C	C	1	1	1	1	0	0	0	0	7	2	24	
DAY 13	0	0	0	0	0	S	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
DAY 14	0	0	0	0	S	2	2	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1	0	2	1	24	
DAY 15	1	0	1	S	2	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	24	
DAY 16	0	0	S	2	2	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1	0	2	1	24	
DAY 17	0	S	2	1	1	0	1	1	1	0	1	0	0	0	1	1	1	1	1	1	1	1	1	0	0	2	1	24	
DAY 18	S	2	1	1	1	1	3	3	2	1	1	1	1	1	1	1	0	1	1	1	1	1	1	S	0	3	1	24	
DAY 19	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	S	2	0	2	1	24	
DAY 20	2	1	1	2	2	2	2	3	3	2	1	1	1	1	1	0	0	0	0	0	0	S	4	4	0	4	1	24	
DAY 21	5	5	5	4	3	3	3	2	2	1	1	0	0	0	0	0	0	0	1	0	S	2	1	1	0	5	2	24	
DAY 22	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	S	2	1	1	1	0	2	1	24	
DAY 23	1	0	1	1	1	1	0	0	1	0	0	0	0	0	1	1	1	S	3	2	2	2	2	0	3	1	24		
DAY 24	2	2	2	3	3	4	4	3	2	2	1	1	1	1	0	0	S	2	1	1	1	0	0	0	4	2	24		
DAY 25	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1	1	S	7	5	2	2	2	2	1	0	7	1	24	
DAY 26	1	0	0	0	0	1	1	1	1	1	0	1	0	0	0	S	2	1	1	1	1	1	1	1	0	2	1	24	
DAY 27	0	0	0	1	1	1	1	1	1	0	0	0	0	0	S	1	1	1	1	1	1	0	0	0	0	1	1	24	
DAY 28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	1	1	1	2	1	1	0	0	0	0	2	0	24	
DAY 29	0	0	0	0	0	0	0	0	0	0	0	0	S	1	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
DAY 30	0	0	0	0	0	0	0	0	0	0	0	S	1	1	0	0	0	0	1	2	3	2	2	2	0	3	1	24	
HOURLY MAX	5	5	5	4	3	4	4	7	4	3	3	3	3	2	3	2	3	7	5	3	3	4	5	4					
HOURLY AVG	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					

STATUS FLAG CODES

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

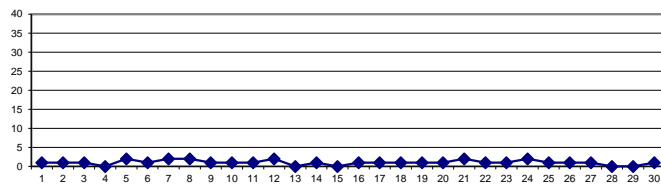
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR 159 ppb

MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0			
NUMBER OF NON-ZERO READINGS:	450			
MINIMUM 1-HR AVERAGE:	0	ppb @ HOUR	12	ON DAY
MAXIMUM 1-HR AVERAGE:	7	ppb @ HOUR	7	ON DAY
MAXIMUM 24-HR AVERAGE:	2	ppb		ON DAY
IZS CALIBRATION TIME:	31	hrs	OPERATIONAL TIME:	719
MONTHLY CALIBRATION TIME:	7	hrs	AMD OPERATION UPTIME:	99.9
STANDARD DEVIATION:	1		MONTHLY AVERAGE:	1
				ppb

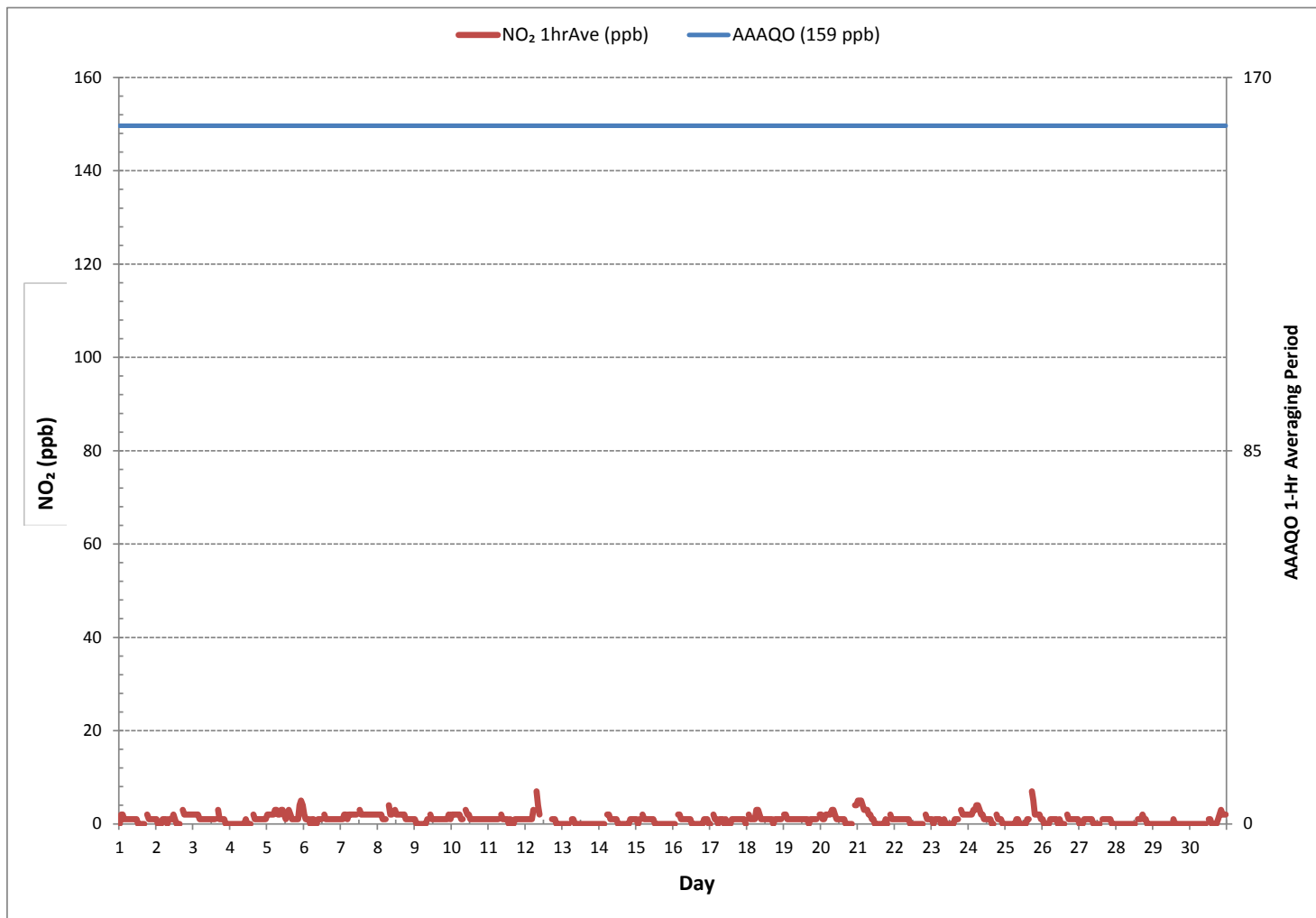
24 HR AVERAGES September 2018





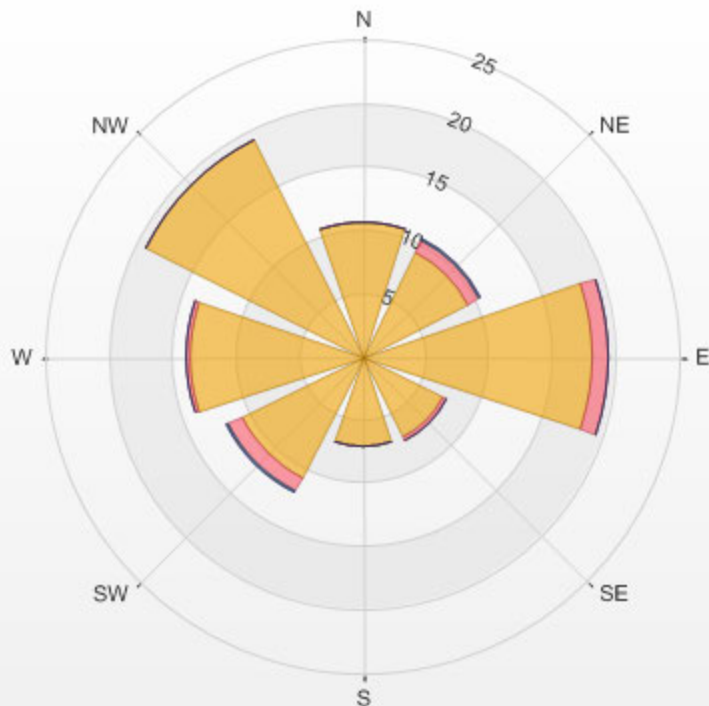
LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
St. Lina Continuous Monitoring Station - September 2018

NITROGEN DIOXIDE Hourly Averages (NO₂ ppb)



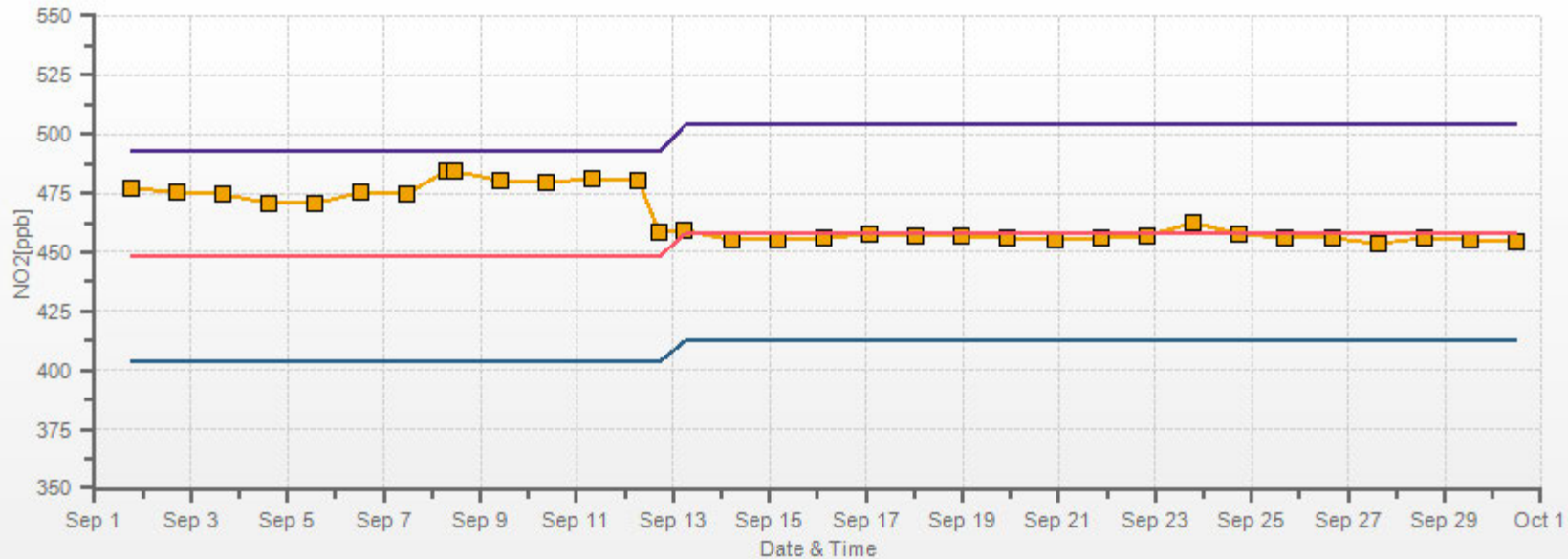
% Icon Classes (ppb) 96 0.0-2.7 4 2.7-5.3 0 5.3-8.0 0 >8.0

LICA ST. LINA Poll.: LICA ST. LINA-NO2[ppb] 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 0.00%



NO2[ppb] Calibration: LICA ST. LINA Monthly: 18/09 Type: Span

Span Meas Span Ref Span Low Span High



OZONE



OZONE Hourly Averages (O₃ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.		
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59						
DAY 1	30.7	29.1	24.6	24.6	23.7	24.0	22.5	21.9	21.0	21.2	21.3	22.0	22.2	20.4	22.2	23.3	25.8	S	25.6	27.5	25.8	22.3	21.1	18.1	18.1	30.7	23.5	24		
2	16.6	16.1	14.8	14.7	14.0	11.6	10.5	12.7	13.5	17.5	21.1	23.4	25.9	26.3	27.4	28.6	S	25.9	23.9	23.0	22.8	23.9	24.2	25.5	10.5	28.6	20.2	24		
3	23.6	23.9	23.3	20.7	23.5	23.6	21.4	17.7	17.6	19.3	18.2	21.6	25.8	23.9	20.8	S	21.2	19.7	15.1	14.8	14.2	15.2	17.6	16.6	14.2	25.8	20.0	24		
4	15.8	15.5	16.0	17.2	17.4	16.9	15.2	16.6	20.1	23.3	24.0	25.7	26.8	27.5	S	27.5	28.5	28.9	27.1	27.6	24.5	23.0	22.1	21.6	15.2	28.9	22.1	24		
5	19.9	16.8	15.8	16.3	15.5	14.0	12.7	11.9	13.3	15.8	19.9	23.6	30.7	S	37.0	34.0	30.5	28.2	28.7	29.3	27.4	22.6	18.5	18.8	11.9	37.0	21.8	24		
6	19.8	19.7	19.3	19.6	20.3	20.5	20.9	21.6	21.6	20.7	20.9	21.6	S	24.7	26.2	27.1	26.6	25.6	23.4	21.0	20.6	20.3	19.9	18.9	18.9	27.1	21.8	24		
7	17.7	16.8	16.6	16.1	15.2	15.3	15.4	16.4	20.1	24.4	27.7	S	34.1	35.0	35.2	34.9	34.2	33.2	31.1	29.2	28.2	27.9	24.4	19.8	15.2	35.2	24.7	24		
8	16.4	14.7	13.8	12.9	12.4	11.9	S1	12.5	12.5	13.7	S	22.9	25.8	25.4	23.8	22.8	21.2	22.9	20.5	16.6	15.7	17.6	16.9	14.7	11.9	25.8	17.6	23		
9	13.3	12.2	11.4	11.6	10.7	9.8	9.2	8.6	7.8	S	9.5	9.4	9.9	10.5	10.4	11.0	10.6	10.5	10.8	10.1	11.0	12.3	9.5	9.2	7.8	13.3	10.4	24		
10	8.8	7.7	7.1	6.6	6.2	7.2	10.0	10.2	S	8.0	8.2	7.6	8.5	8.5	8.5	8.9	9.2	8.5	7.7	6.7	6.9	7.7	7.4	6.4	6.2	10.2	7.9	24		
11	6.1	6.7	S	5.8	6.2	5.9	6.4	7.8	S	11.5	14.7	17.5	17.4	19.6	22.8	25.6	24.1	24.3	21.1	16.5	14.8	16.3	14.6	15.3	16.6	S	5.8	25.6	14.7	24
12	17.4	17.8	16.3	9.8	6.7	5.8	S	7.1	8.2	10.4	C	C	C	C	C	16.3	16.4	15.9	15.7	15.6	15.9	16.3	16.2	16.4	5.8	17.8	13.6	24		
13	17.2	17.6	18.0	17.6	17.6	S	17.8	17.9	18.5	18.4	18.4	19.3	19.9	20.9	22.3	23.9	23.3	22.2	21.9	18.5	16.5	15.8	16.4	15.2	15.2	23.9	18.9	24		
14	16.4	16.4	12.4	9.6	S	8.6	9.6	13.1	17.0	18.9	21.2	22.5	26.7	26.4	26.7	25.6	25.4	23.9	20.4	20.6	19.7	18.8	17.2	16.1	8.6	26.7	18.8	24		
15	15.5	16.2	14.6	S	12.5	12.1	13.3	12.6	11.8	11.7	13.0	14.1	16.8	18.4	19.4	19.4	18.7	18.7	17.9	18.3	19.2	19.8	20.5	20.5	11.7	20.5	16.3	24		
16	20.3	19.8	S	17.9	17.0	17.6	17.9	18.2	18.2	18.4	19.0	18.7	18.7	19.2	19.3	19.8	19.7	18.7	18.4	17.4	15.3	14.1	15.1	17.5	14.1	20.3	18.1	24		
17	16.5	S	15.2	14.7	15.7	15.2	13.2	13.4	13.3	13.6	14.9	15.4	16.3	16.2	15.7	15.6	14.4	14.4	12.6	9.9	10.9	8.6	8.6	8.9	8.6	16.5	13.6	24		
18	S	8.9	10.0	10.6	9.6	8.6	8.2	7.5	9.6	12.7	13.2	13.5	15.2	17.5	18.6	18.4	17.7	17.6	16.0	16.0	17.0	17.3	18.6	S	7.5	18.6	13.7	24		
19	12.5	7.6	7.7	10.1	10.7	10.2	9.4	9.5	12.8	17.5	23.0	26.6	29.5	32.7	33.6	35.1	34.9	34.1	35.4	34.6	34.2	36.2	S	33.5	7.6	36.2	23.1	24		
20	30.2	30.5	28.3	24.6	21.6	21.3	19.4	19.1	16.6	19.1	20.4	24.0	27.8	29.7	29.0	27.5	26.9	26.4	25.6	24.4	24.2	S	21.1	19.7	16.6	30.5	24.2	24		
21	19.0	18.6	17.9	17.0	16.7	15.7	15.5	15.8	18.7	21.8	26.2	28.9	29.4	30.2	30.9	30.0	29.8	28.9	28.1	26.7	S	26.8	26.1	25.1	15.5	30.9	23.6	24		
22	23.2	22.6	21.4	20.7	20.2	19.8	19.8	18.8	20.1	22.3	26.6	27.4	28.7	29.6	29.6	29.4	29.3	28.5	28.0	S	24.8	24.8	25.6	26.6	18.8	29.6	24.7	24		
23	27.6	25.1	22.5	21.1	20.7	20.6	20.3	18.6	18.3	18.6	18.5	19.5	21.2	22.0	23.5	24.4	24.4	22.9	S	19.5	18.9	18.0	16.8	15.3	15.3	27.6	20.8	24		
24	13.4	11.7	10.5	9.1	8.2	6.7	8.4	8.6	10.9	13.9	20.3	22.5	25.6	28.5	29.8	32.0	32.9	S	32.3	30.9	30.2	31.3	32.1	32.1	6.7	32.9	21.0	24		
25	31.3	29.7	27.9	25.6	23.1	22.0	21.6	19.0	20.5	27.0	30.4	32.0	31.2	32.5	33.6	35.9	S	27.9	28.5	29.8	28.5	28.5	28.7	30.9	19.0	35.9	28.1	24		
26	31.9	32.1	31.8	31.6	31.6	31.0	30.6	30.2	30.1	31.2	34.2	34.9	33.1	35.5	37.1	S	35.5	34.6	33.9	33.7	32.5	30.3	26.8	24.1	24.1	37.1	32.1	24		
27	22.5	20.8	19.2	16.7	15.9	16.5	16.8	24.1	27.6	30.1	32.5	32.9	33.7	34.3	S	29.8	27.8	27.0	26.0	25.1	24.6	24.1	23.9	24.8	15.9	34.3	25.1	24		
28	25.3	23.5	21.7	22.4	22.0	21.2	20.3	19.9	20.5	26.2	31.1	33.2	35.7	S	37.2	38.5	37.2	35.8	36.4	35.9	35.3	35.3	34.0	33.5	19.9	38.5	29.7	24		
29	32.3	31.8	29.5	30.8	32.3	33.4	31.5	31.3	31.7	32.4	31.9	31.5	S	31.4	31.4	31.5	30.8	30.3	30.2	29.1	27.9	27.6	27.7	27.1	27.1	33.4	30.7	24		
30	25.3	24.6	23.7	23.3	23.4	24.1	25.5	26.8	28.4	30.1	30.5	S	31.4	30.8	30.8	31.1	30.7	29.8	28.8	26.3	25.0	25.1	24.1	24.0	23.3	31.4	27.1	24		
HOURLY MAX	32.3	32.1	31.8	31.6	32.3	33.4	31.5	31.3	31.7	32.4	34.2	34.9	35.7	35.5	37.2	38.5	37.2	35.8	36.4	35.9	35.3	36.2	34.0	33.5						
HOURLY AVG	20.2	19.1	17.8	17.2	16.9	16.3	16.6	16.6	17.6	19.8	21.9	22.7	24.8	25.2	26.1	25.9	25.3	24.4	23.7	22.5	21.9	21.6	20.6	20.6						

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

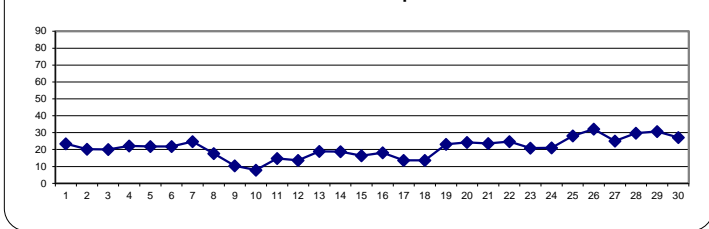
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR 82 ppb

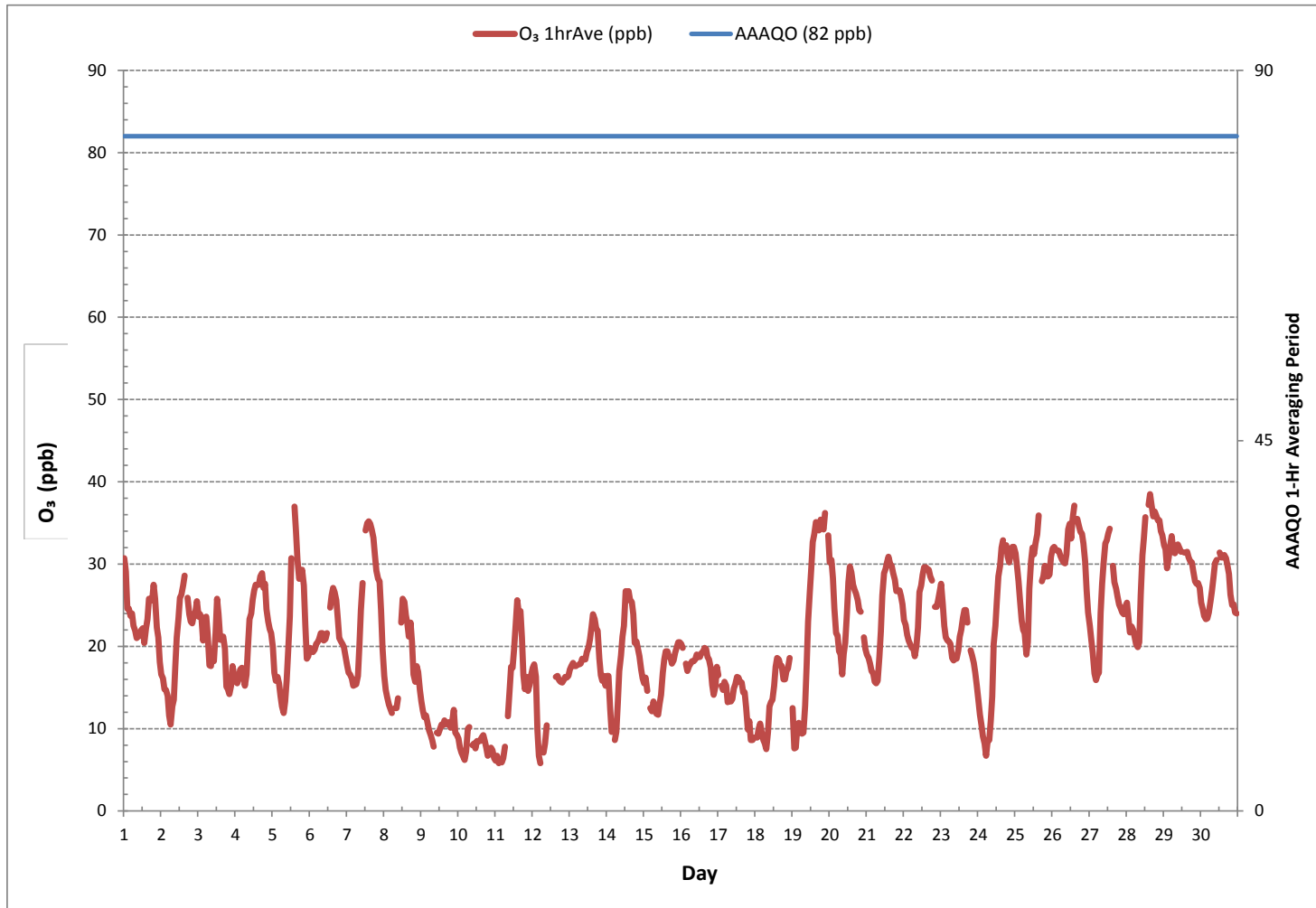
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0				
NUMBER OF NON-ZERO READINGS:	683				
MINIMUM 1-HR AVERAGE:	5.8	ppb	@ HOUR	2	ON DAY
MAXIMUM 1-HR AVERAGE:	38.5	ppb	@ HOUR	15	ON DAY
MAXIMUM 24-HR AVERAGE:	32.1	ppb			ON DAY
IZS CALIBRATION TIME:	31	hrs	OPERATIONAL TIME:	719	hrs
MONTHLY CALIBRATION TIME:	5	hrs	AMD OPERATION UPTIME:	99.9	%
STANDARD DEVIATION:	7.6		MONTHLY AVERAGE:	21.0	ppb

24 HR AVERAGES September 2018



OZONE Hourly Averages (O₃ ppb)



% Icon Classes (ppb)

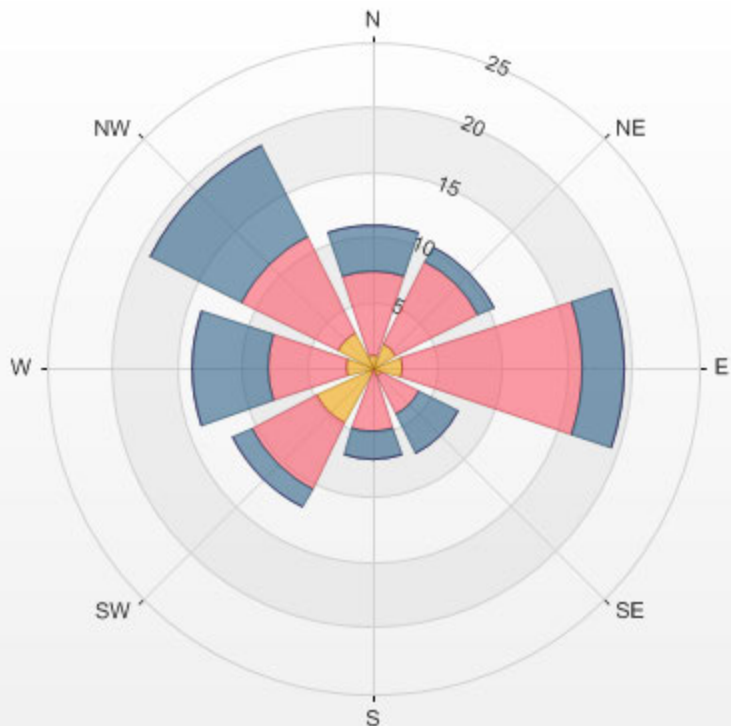
16 0.0-12.9

55 12.9-25.7

29 25.7-38.6

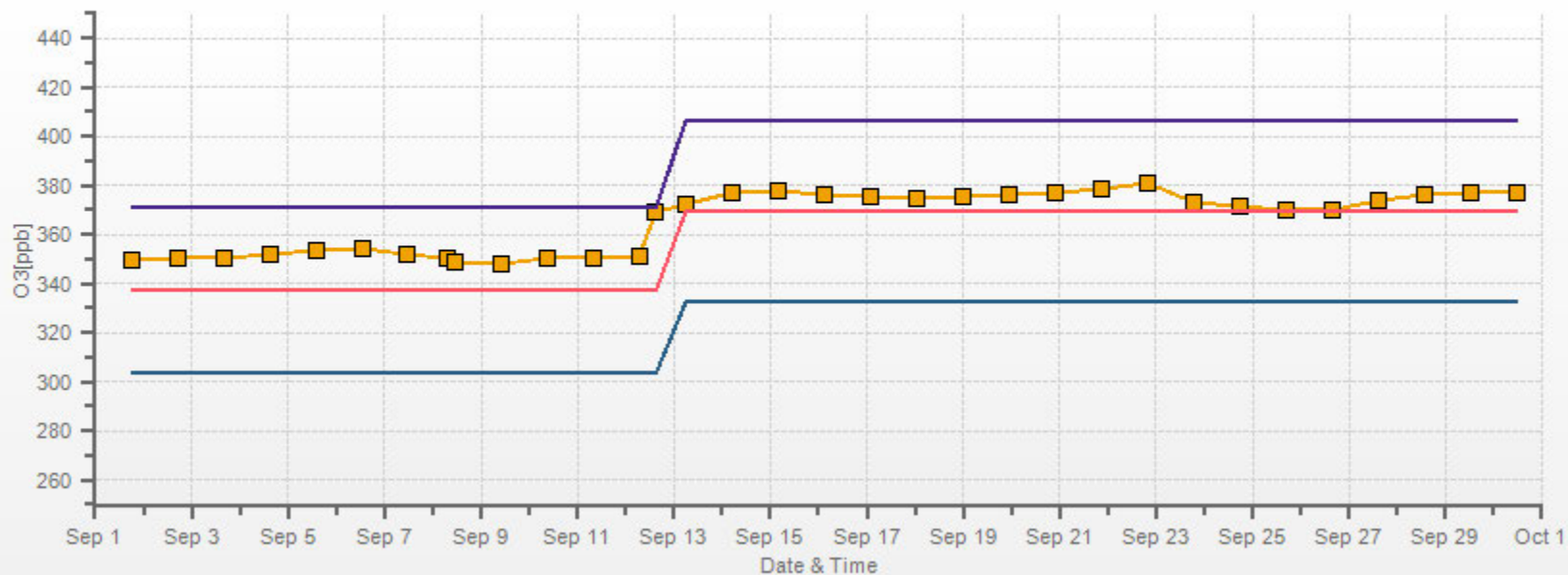
0 >38.6

LICA ST. LINA Poll.: LICA ST. LINA-O3[ppb] 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 0.00%



O3[ppb] Calibration: LICA ST. LINA Monthly: 18/09 Type: Span

Span Meas Span Ref Span Low Span High



PARTICULATE MATTER 2.5



PARTICULATE MATTER < 2.5 MICRONS Hourly Averages (PM_{2.5} µg/m³)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	43	41	38	37	39	37	32	33	31	24	15	8	4	3	2	1	1	1	1	1	1	1	1	1	1	43	17	24	
DAY 2	1	1	1	1	1	1	1	2	5	10	15	16	14	10	9	7	8	10	10	12	14	14	16	18	1	18	8	24	
DAY 3	20	26	27	26	28	20	17	17	17	16	16	15	11	11	12	6	7	6	1	1	1	0	1	1	0	28	13	24	
DAY 4	0	0	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	0	2	1	24	
DAY 5	4	5	6	7	7	8	9	9	9	10	9	8	6	6	6	5	4	4	4	3	3	3	3	3	3	10	6	24	
DAY 6	3	2	2	2	2	2	1	1	1	2	2	2	2	2	2	3	3	3	3	2	3	3	3	3	1	3	2	24	
DAY 7	3	3	3	4	4	5	5	6	8	9	9	9	8	8	8	8	8	8	7	6	6	6	6	6	3	9	6	24	
DAY 8	5	5	5	5	5	5	5	6	7	8	9	9	9	9	9	8	8	9	9	8	7	5	5	5	5	5	7	24	
DAY 9	3	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	2	2	7	4	5	7	5	0	7	2	24	
DAY 10	5	4	4	3	3	2	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	1	1	1	0	5	1	24	
DAY 11	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	24	
DAY 12	1	1	1	1	2	2	2	3	2	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	3	1	24	
DAY 13	0	0	0	0	0	5	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	0	5	1	24	
DAY 14	1	1	1	1	1	1	1	1	1	1	1	1	2	3	2	1	1	1	1	1	2	2	2	1	1	3	1	24	
DAY 15	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	24	
DAY 16	1	1	1	1	2	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	24	
DAY 17	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	0	1	0	24	
DAY 18	0	1	1	1	1	2	3	4	4	3	2	2	2	2	2	1	1	1	1	1	1	1	1	2	0	4	2	24	
DAY 19	2	2	2	2	2	2	2	2	5	7	6	5	4	4	C	3	3	3	3	3	4	4	4	8	15	2	15	4	24
DAY 20	4	4	4	4	4	4	5	4	4	4	5	4	3	3	3	3	4	3	3	2	2	2	2	2	2	5	4	24	
DAY 21	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	2	2	2	2	1	1	1	1	2	2	24	
DAY 22	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	24	
DAY 23	2	2	2	2	2	2	1	1	1	2	2	2	4	5	4	3	4	4	4	6	8	11	11	11	1	11	4	24	
DAY 24	10	10	10	10	9	9	7	6	5	5	4	4	4	4	3	3	2	2	2	2	2	1	1	1	1	10	5	24	
DAY 25	1	1	1	1	1	1	1	1	1	2	2	2	2	1	1	1	2	3	2	2	2	2	2	2	1	3	2	24	
DAY 26	2	2	2	2	3	3	4	4	4	3	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	4	2	24	
DAY 27	1	1	1	1	6	7	2	1	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	7	2	24	
DAY 28	1	1	1	1	1	1	2	1	1	1	1	1	1	0	0	0	1	2	1	1	2	3	2	0	3	1	24		
DAY 29	2	1	2	2	1	1	1	1	1	1	1	1	1	0	0	0	1	1	1	1	1	1	1	1	0	2	1	24	
DAY 30	1	0	2	1	0	0	1	1	2	1	1	1	2	2	2	1	1	1	2	3	3	3	2	2	0	3	1	24	
HOURLY MAX	43	41	38	37	39	37	32	33	31	24	16	16	14	11	12	8	8	10	10	12	14	14	16	18					
HOURLY AVG	4	4	4	4	4	4	4	4	4	4	4	4	3	3	3	2	2	3	2	2	3	3	3	3					

STATUS FLAG CODES

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

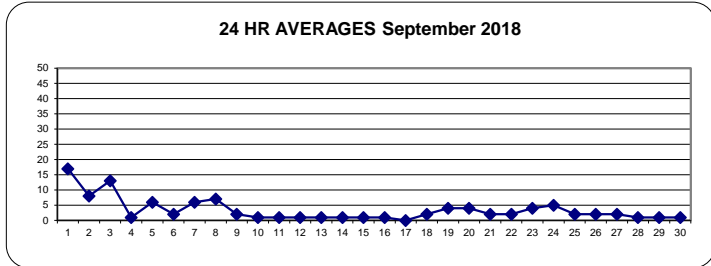
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT:	1-HR	80	µg/m ³	24-HR	30	µg/m ³
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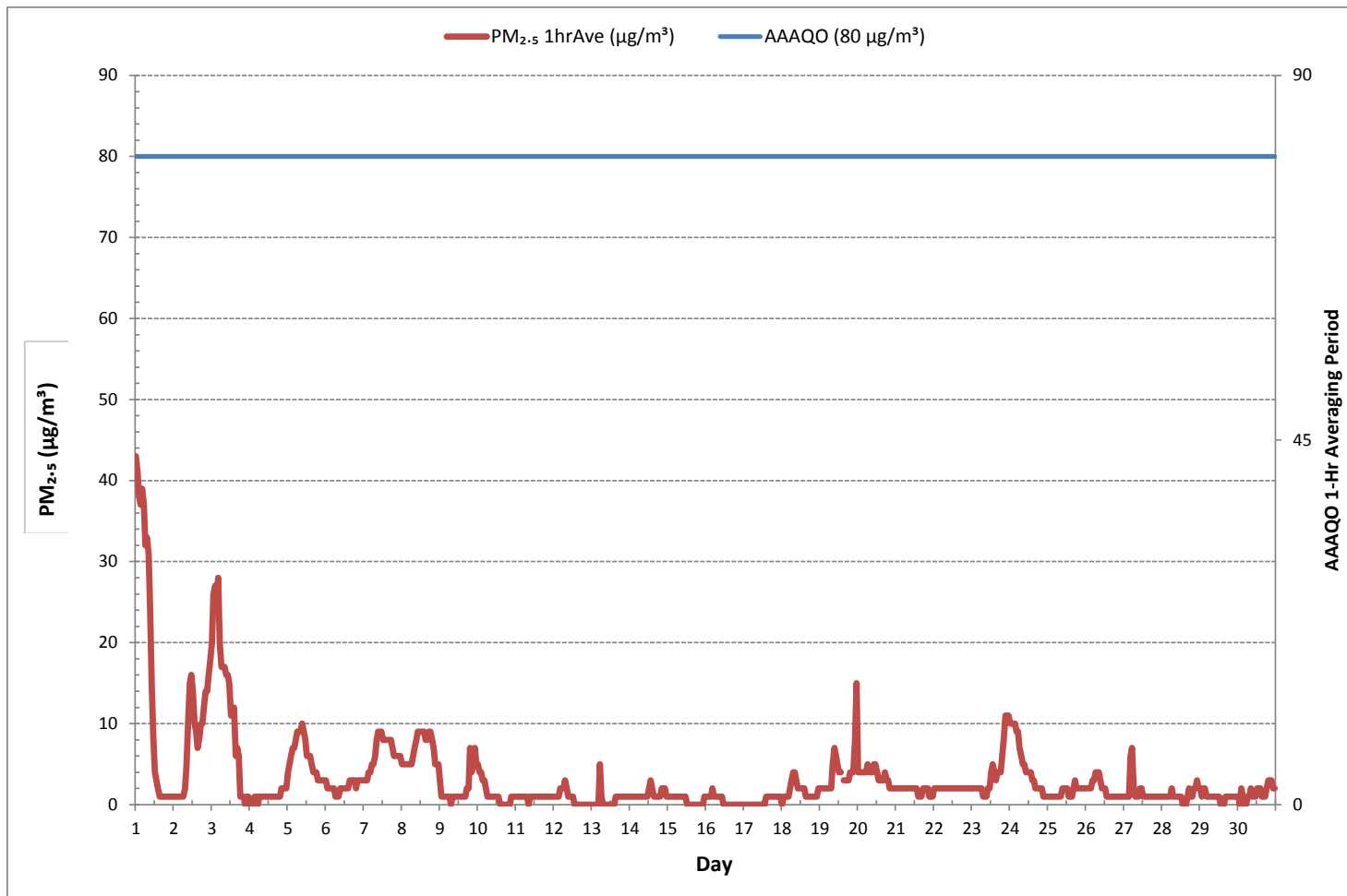
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0				
NUMBER OF 24-HR EXCEEDANCES:	0				
NUMBER OF NON-ZERO READINGS:	633				
MINIMUM 1-HR AVERAGE:	0 µg/m ³ @ HOUR	21	ON DAY	3	
MAXIMUM 1-HR AVERAGE:	43 µg/m ³ @ HOUR	0	ON DAY	1	
MAXIMUM 24-HR AVERAGE:	17 µg/m ³		ON DAY	1	
MONTHLY CALIBRATION TIME:	1	hrs	OPERATIONAL TIME:	720	hrs
STANDARD DEVIATION:	5		AMD OPERATION UPTIME:	100.0	%
			MONTHLY AVERAGE:	3	µg/m ³

24 HR AVERAGES September 2018



PARTICULATE MATTER < 2.5 MICRONS Hourly Averages (PM_{2.5} µg/m³)



Wind: LICA ST. LINA
 Poll.: LICA ST. LINA-PM25[ug/m3]
 Monthly: 18/09
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

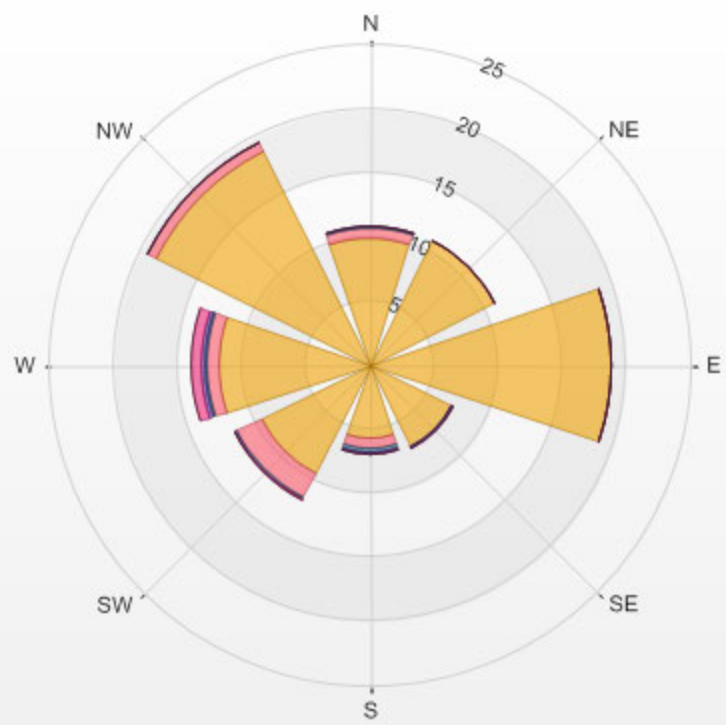
Calm: 0.00%

Calm Avg: 0.00 [ug/m3]

Direction	0.0-8.8	8.8-17.6	17.6-26.4	26.4-35.2	35.2-44.0	>44.0	Total
N	9.9	0.8	0.1	0.0	0.0	0.0	10.8
NE	10.9	0.0	0.0	0.0	0.0	0.0	10.9
E	18.8	0.0	0.0	0.0	0.0	0.0	18.8
SE	7.1	0.1	0.0	0.1	0.0	0.0	7.4
S	5.7	0.8	0.3	0.1	0.0	0.0	7.0
SW	9.5	2.1	0.1	0.0	0.1	0.0	11.8
W	11.8	0.8	0.1	0.4	0.7	0.0	13.9
NW	18.6	0.8	0.0	0.0	0.0	0.0	19.5
Summary	92.2	5.6	0.7	0.7	0.8	0.0	100.0

% Icon Classes (ug/m3(L)) 92 0.0-8.8 6 8.8-17.6 1 17.6-26.4 1 26.4-35.2 1 35.2-44.0 0 >44.0

LICA ST. LINA Poll.: LICA ST. LINA-PM25[ug/m3(L)] 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 0.00%



WIND SPEED



WIND SPEED Hourly Averages (WS kph)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY																												
1	18.0	9.8	9.9	11.5	13.2	12.6	12.4	12.2	10.7	14.3	18.5	16.6	15.2	11.9	16.2	15.1	16.5	12.9	9.7	16.5	11.0	11.9	12.4	11.4	9.7	18.5	12.4	24
2	9.7	9.4	10.1	11.8	9.2	7.6	7.6	8.1	11.2	13.2	12.3	14.2	17.2	17.0	17.4	15.9	12.0	6.1	5.1	6.1	6.2	6.6	7.8	8.2	5.1	17.4	9.4	24
3	5.3	4.3	5.1	5.7	1.9	9.1	7.3	6.3	6.8	6.8	6.1	9.2	9.3	8.5	11.9	14.4	9.2	14.6	17.4	15.5	15.6	14.7	13.0	10.2	1.9	17.4	7.6	24
4	9.6	8.9	8.4	8.3	7.7	8.7	7.0	8.3	8.1	12.8	11.4	11.2	11.0	12.8	13.9	9.9	9.5	10.8	6.1	4.1	7.1	8.7	10.2	9.6	4.1	13.9	7.3	24
5	9.4	9.1	8.6	8.8	8.9	8.1	7.9	7.7	7.8	7.3	6.9	4.9	4.9	4.9	6.0	6.5	8.4	5.7	7.4	6.3	8.3	9.5	10.4	12.9	4.9	12.9	1.2	24
6	13.4	12.9	14.7	14.8	16.3	15.7	16.1	15.9	15.7	12.9	14.2	14.8	16.7	17.0	15.9	14.7	13.3	12.9	11.5	12.1	12.2	12.8	12.3	11.2	11.2	17.0	14.1	24
7	9.5	10.2	11.2	10.5	10.0	10.2	10.9	11.7	12.6	12.2	14.4	15.6	15.6	16.1	15.7	14.7	14.6	14.0	12.2	12.3	12.0	11.1	10.7	9.1	9.1	16.1	11.5	24
8	9.7	9.6	10.0	9.5	9.7	9.9	7.7	6.8	5.5	5.7	5.9	5.8	4.6	11.5	10.3	10.9	11.8	11.1	12.0	11.6	12.5	13.2	11.7	11.3	4.6	13.2	5.5	24
9	15.3	14.9	15.0	14.7	14.1	13.7	13.9	14.6	13.6	13.5	13.8	14.9	14.4	11.8	12.4	11.5	12.8	12.0	9.0	6.3	7.3	5.3	4.7	4.3	4.3	15.3	10.0	24
10	3.6	3.3	4.6	4.2	6.9	6.7	9.4	11.6	10.6	7.1	7.3	4.4	5.4	4.7	3.8	3.1	1.2	1.4	3.0	4.3	5.2	5.9	5.8	6.9	1.2	11.6	2.7	24
11	6.2	5.7	4.8	5.4	5.8	8.2	9.1	8.2	8.5	7.8	8.2	5.4	4.1	4.1	6.8	5.0	2.3	3.7	4.5	5.8	6.8	5.1	6.7	6.3	2.3	9.1	2.9	24
12	7.5	7.7	6.2	5.8	6.9	6.7	8.7	9.9	12.4	11.4	13.4	13.9	13.7	15.0	15.2	15.7	13.6	X	12.1	13.0	12.8	13.4	14.1	13.5	5.8	15.7	5.3	23
13	13.8	14.0	13.2	12.7	13.0	11.9	11.7	11.5	11.6	6.9	9.9	X	10.2	8.8	8.2	7.6	8.6	7.6	7.1	5.5	5.0	5.5	4.9	3.9	3.9	14.0	2.3	23
14	3.5	2.6	1.5	3.1	3.3	2.8	3.3	4.7	6.5	6.3	5.1	6.3	5.4	5.0	4.6	5.7	3.2	3.4	4.3	6.0	5.5	6.1	6.7	7.2	1.5	7.2	1.7	24
15	7.4	8.2	8.1	7.9	7.3	6.7	8.5	9.2	9.3	11.8	12.3	11.9	12.8	13.6	14.8	14.7	13.6	13.0	12.0	11.5	11.8	12.8	13.9	14.2	6.7	14.8	11.1	24
16	15.0	14.3	13.2	13.1	13.7	13.7	12.7	12.3	12.3	12.7	12.4	13.3	13.1	12.9	12.9	12.2	11.1	9.8	8.2	7.8	6.1	7.0	8.4	9.8	6.1	15.0	10.7	24
17	12.9	11.7	2.3	6.4	6.9	6.1	5.0	4.9	5.7	6.4	4.7	3.6	3.0	3.7	4.0	3.5	4.7	2.9	1.5	3.4	4.2	3.6	5.0	7.7	1.5	12.9	1.1	24
18	8.0	8.4	9.0	9.9	7.2	8.9	9.9	10.9	6.3	6.0	11.6	13.3	12.1	11.4	11.6	8.5	8.4	6.9	5.5	4.6	7.3	7.0	6.2	5.2	4.6	13.3	7.2	24
19	4.5	6.3	7.2	5.4	5.7	6.5	7.8	6.1	8.7	11.5	12.4	13.2	11.5	10.8	9.1	12.5	7.7	4.6	7.6	7.8	8.0	9.4	9.9	9.6	4.5	13.2	7.5	24
20	9.0	9.4	8.1	6.5	6.6	5.6	7.0	10.2	14.4	12.9	14.1	13.2	13.7	12.1	11.3	9.7	7.8	8.3	7.0	7.4	7.2	6.7	7.6	7.7	5.6	14.4	5.6	24
21	7.7	8.0	7.4	6.6	6.9	5.5	6.3	6.7	6.1	5.8	8.3	9.4	9.2	8.8	7.2	7.5	7.0	6.0	5.8	7.0	8.2	9.0	8.2	8.2	5.5	9.4	7.1	24
22	7.9	7.9	7.9	7.8	8.0	8.0	9.3	9.8	9.3	9.6	13.8	14.0	13.5	14.2	10.9	11.8	10.0	8.5	9.4	8.7	9.1	8.1	11.1	11.4	7.8	14.2	8.9	24
23	11.2	10.6	8.8	10.0	9.1	9.2	10.0	10.5	10.5	9.8	9.8	9.8	10.7	10.8	10.8	10.6	10.5	9.6	10.2	11.7	11.2	9.9	8.3	9.4	8.3	11.7	9.0	24
24	12.3	11.5	10.0	11.5	9.6	8.4	9.1	8.5	10.4	9.9	10.8	11.1	13.0	13.5	13.6	13.5	11.9	10.5	7.4	9.6	9.3	7.7	9.5	10.8	7.4	13.6	8.6	24
25	10.0	9.8	9.2	9.1	9.1	9.0	8.0	5.4	5.2	6.3	8.1	10.3	10.5	13.1	13.2	14.1	11.5	7.6	9.7	9.6	9.4	11.0	9.2	12.8	5.2	14.1	9.1	24
26	10.8	11.6	11.9	12.2	12.3	10.0	11.6	10.9	10.2	13.0	15.3	16.4	15.1	19.3	18.6	15.9	13.6	11.2	12.0	10.2	11.1	9.3	8.9	6.0	6.0	19.3	11.3	24
27	7.7	8.2	8.2	8.2	8.7	7.8	8.5	13.9	15.5	16.2	12.8	8.6	11.8	12.4	13.1	13.5	12.0	9.6	9.0	7.6	9.6	9.9	8.4	8.2	7.6	16.2	10.0	24
28	5.8	7.4	8.0	10.4	8.5	8.3	10.0	8.7	5.5	5.4	5.1	6.5	8.8	10.5	8.8	9.4	7.5	6.7	8.2	8.8	9.2	8.8	8.3	9.3	5.1	10.5	7.7	24
29	11.1	10.0	8.5	10.6	11.4	11.8	14.7	12.3	12.6	14.5	13.6	13.5	15.1	14.0	13.7	14.7	12.6	12.2	9.6	8.7	6.6	6.5	6.9	6.4	6.4	15.1	10.7	24
30	3.6	4.0	3.8	4.4	4.0	5.1	4.4	4.3	5.4	3.5	2.4	4.5	6.5	5.5	3.8	4.8	5.1	5.9	8.1	9.5	10.9	10.9	9.0	8.4	2.4	10.9	3.2	24
HOURLY MAX	18.0	14.9	15.0	14.8	16.3	15.7	16.1	15.9	15.7	16.2	18.5	16.6	17.2	19.3	18.6	15.9	16.5	14.6	17.4	16.5	15.6	14.7	14.1	14.2				

STATUS FLAG CODES

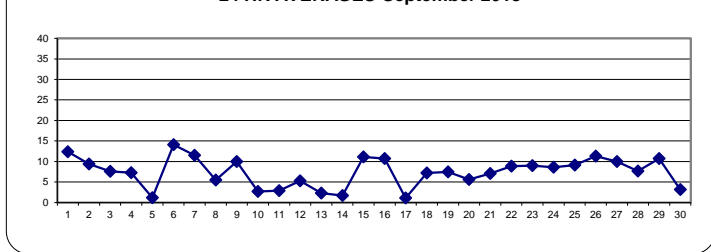
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

LAST CALIBRATION:	May 25, 2017
DECLINATION :	MAGNETIC DECLINATION 19 DEGREE EAST

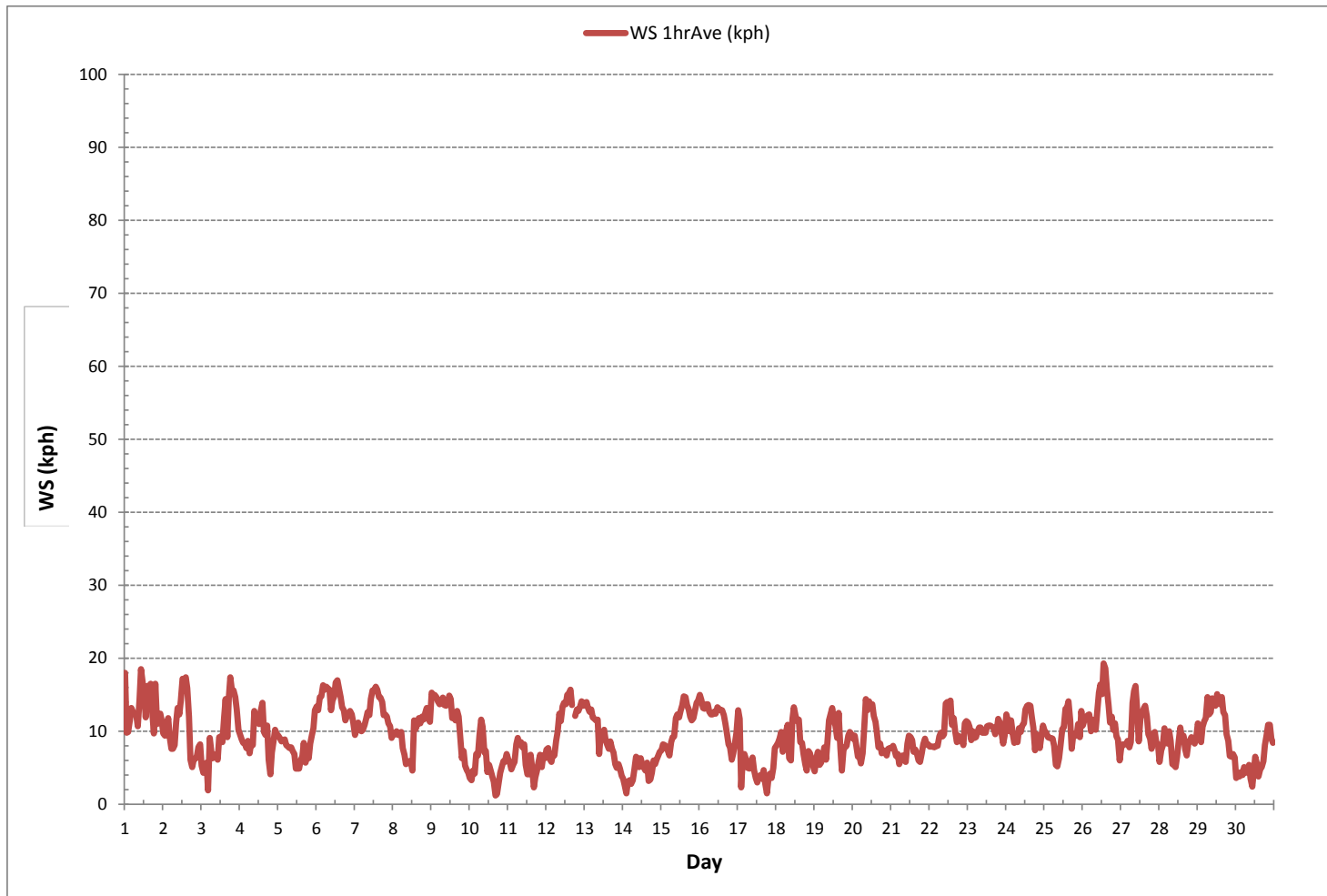
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	718
MINIMUM 1-HR AVERAGE:	1.2 kph @ HOUR 16 ON DAY 10
MAXIMUM 1-HR AVERAGE:	19.3 kph @ HOUR 13 ON DAY 26
MAXIMUM 24-HR AVERAGE:	14.1 kph ON DAY 6
MONTHLY CALIBRATION TIME:	0 hrs
OPERATIONAL TIME:	718 hrs
AMT OPERATION UPTIME:	99.7 %
STANDARD DEVIATION:	3.5
MONTHLY AVERAGE:	1.6 kph

24 HR AVERAGES September 2018



WIND SPEED Hourly Averages (WS kph)



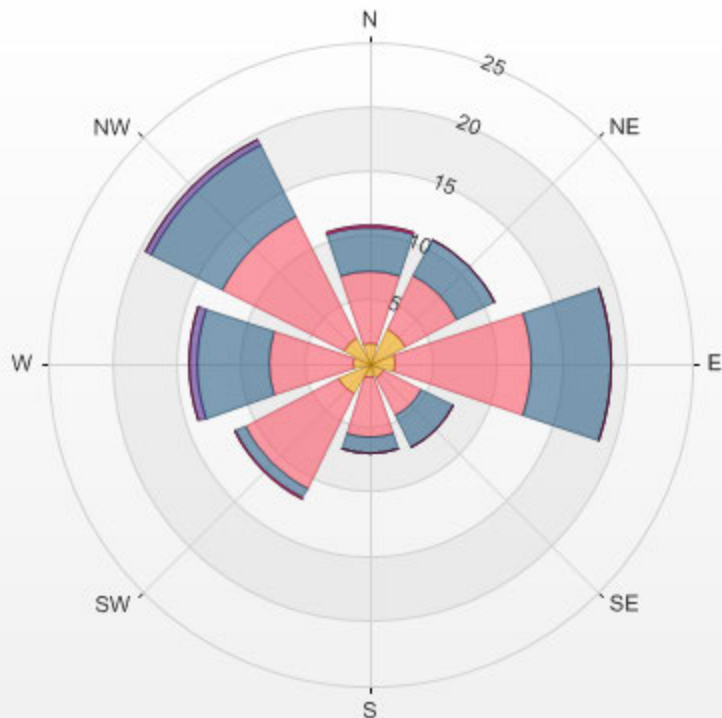
Wind: LICA ST. LINA
 Monitor: WSP [kph]
 Monthly: 18/09
 Type: WindRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 0.00%

Direction	0.4-5.7	5.7-11.5	11.5-17.2	17.2-23.0	23.0-28.7	>28.7	Total
N	1.7	5.6	3.5	0.0	0.1	0.0	10.8
NE	3.1	4.6	3.2	0.0	0.0	0.0	10.8
E	2.1	10.4	6.3	0.0	0.0	0.0	18.8
SE	1.3	3.2	2.9	0.0	0.0	0.0	7.4
S	1.1	4.6	1.3	0.0	0.0	0.0	6.9
SW	2.6	8.2	0.8	0.0	0.1	0.0	11.8
W	1.3	6.5	5.7	0.6	0.0	0.0	14.0
NW	2.2	10.6	6.3	0.4	0.0	0.0	19.5
Summary	15.3	53.6	29.9	1.0	0.3	0.0	100.0

% Icon	Classes (kph)	15	 0.4-5.7	54	 5.7-11.5	30	 11.5-17.2	1	 17.2-23.0	0	 23.0-28.7	0	 >28.7
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LICA ST. LINA 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 0.00%



WIND DIRECTION



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
St. Lina Continuous Monitoring Station - September 2018

WIND DIRECTION Hourly Averages (WD)

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

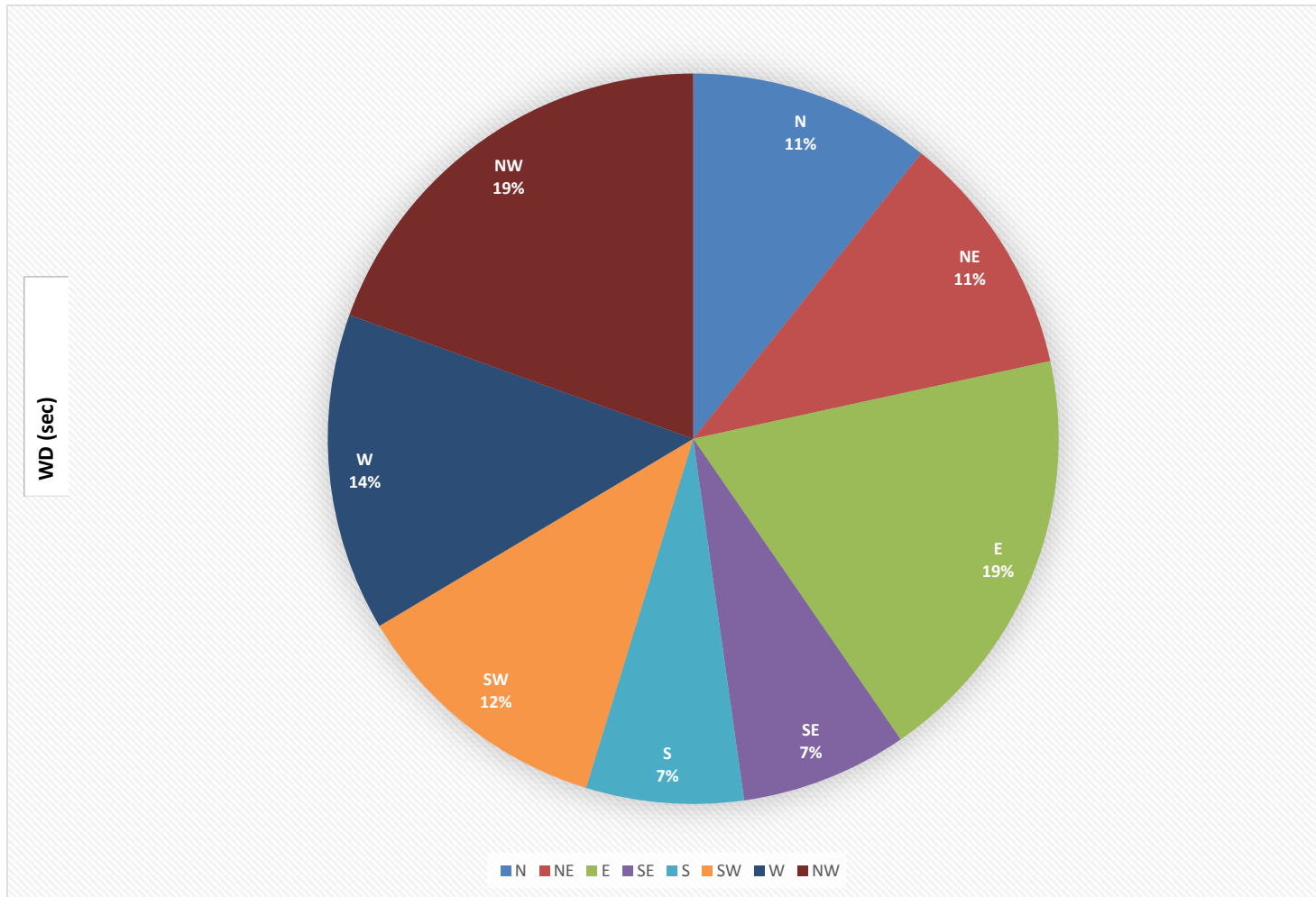
STATUS FLAG CODES

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

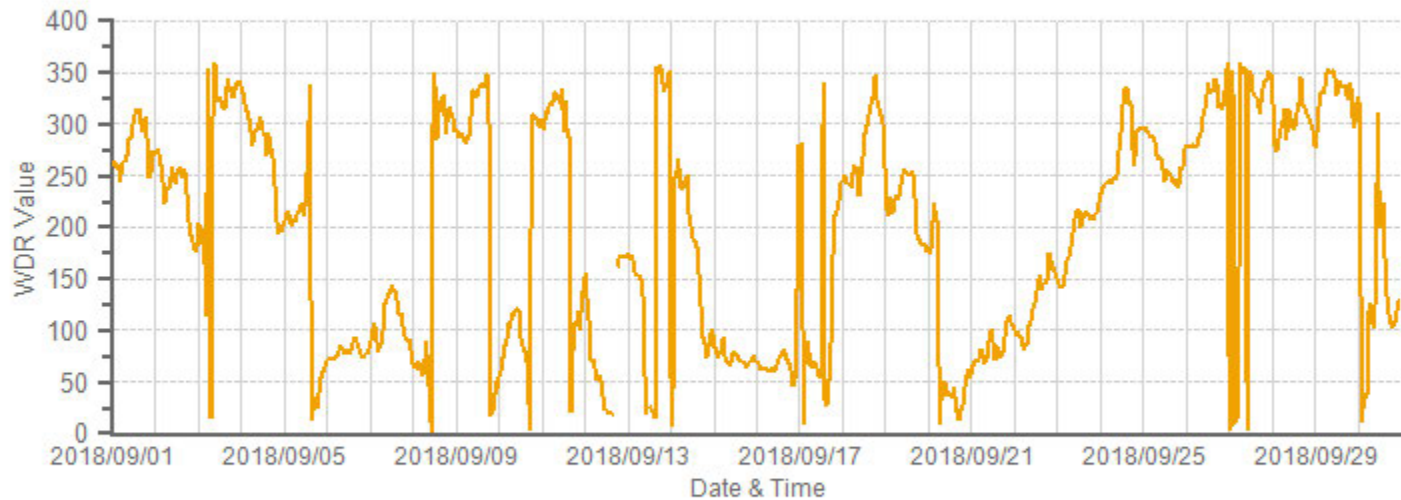
LAST CALIBRATION:	May 25, 2017
DECLINATION:	MAGNETIC DECLINATION 19 DEGREE EAST

MONTHLY CALIBRATION TIME:	0	hrs	OPERATIONAL TIME:	718	hrs
STANDARD DEVIATION:	108		AMD OPERATION UPTIME:	99.7	%
			MONTHLY AVERAGE:	337	(NNW)

WIND DIRECTION Hourly Averages (WD)



WDR[degwdr] Station: LICA ST. LINA Monthly: 18/09 Type: AVG 1 Hr. [1 Hr.]



— WDR[degwdr]

STANDARD DEVIATION WIND DIRECTION



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
St. Lina Continuous Monitoring Station - September 2018

STANDARD DEVIATION WIND DIRECTION Hourly Averages (STDWD deg)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59		
DAY																										
1	11	10	9	12	11	11	10	12	14	18	17	19	22	22	19	20	18	19	30	25	17	12	12	11	24	
2	13	17	10	10	11	10	14	18	16	17	19	21	16	19	16	14	17	15	11	8	14	7	7	13	24	
3	14	14	27	30	66	19	16	18	18	18	25	22	19	21	17	19	21	17	17	18	17	18	18	17	24	
4	17	15	16	17	15	14	14	18	24	23	25	24	23	21	25	24	23	18	9	27	6	7	9	10	24	
5	10	12	11	10	10	9	9	13	15	19	23	31	36	39	27	28	18	15	13	11	14	13	15	15	24	
6	15	14	14	15	15	15	18	16	15	16	16	17	17	18	18	19	19	17	15	14	15	15	14	13	24	
7	15	11	11	15	13	12	14	17	18	18	17	12	12	11	9	9	8	6	6	4	4	4	6	7	24	
8	4	5	5	4	4	5	5	11	23	20	18	22	49	18	15	8	8	27	9	10	5	6	7	10	24	
9	7	7	6	7	7	8	7	8	12	8	7	8	8	11	10	10	9	9	11	8	6	13	15	16	24	
10	20	10	10	9	10	15	6	8	11	9	10	17	10	14	14	13	38	45	18	9	12	9	9	10	24	
11	11	9	11	11	7	10	8	15	12	13	12	20	38	36	23	29	35	21	6	4	8	18	18	6	24	
12	6	4	11	10	8	10	6	6	7	7	6	6	7	7	4	4	6	X	47	6	4	4	5	4	23	
13	8	5	5	9	8	8	8	11	12	X	19	56	8	9	11	15	12	8	8	7	7	9	21	23		
14	14	36	28	15	18	16	18	6	9	11	18	18	24	28	21	12	24	16	4	5	13	6	6	6	24	
15	3	4	9	7	9	12	6	5	26	5	6	6	5	5	5	4	4	4	6	5	5	5	5	5	24	
16	5	4	4	4	5	5	4	4	4	5	5	6	7	8	6	7	6	17	25	37	4	22	51	24		
17	7	5	69	10	8	22	8	13	16	15	21	23	41	29	28	23	17	18	46	13	13	10	5	4	24	
18	5	10	3	5	9	8	13	7	16	17	11	15	18	18	13	12	16	15	8	16	5	5	8	13	24	
19	26	15	5	9	9	9	5	7	13	19	15	18	18	20	16	12	15	17	3	4	5	4	3	3	24	
20	6	4	9	8	8	11	28	4	8	13	6	7	10	10	12	10	13	6	6	8	5	4	5	4	24	
21	3	4	7	8	7	9	10	10	9	21	16	15	17	35	23	19	17	7	8	5	5	5	4	15	24	
22	7	6	5	5	6	5	4	6	9	10	8	15	16	10	13	9	11	13	5	5	6	9	7	7	24	
23	7	5	6	7	8	10	7	8	11	10	11	11	14	14	20	11	9	8	4	3	4	3	6	7	24	
24	2	3	3	2	4	12	5	4	3	9	15	21	15	16	7	14	8	8	14	16	20	21	7	6	24	
25	8	4	5	6	4	3	6	12	9	21	21	15	19	14	12	12	9	4	3	4	5	4	4	5	24	
26	5	4	4	4	4	5	7	5	7	11	9	8	8	6	6	7	8	7	8	7	5	7	11	13	24	
27	10	7	9	11	5	5	9	7	11	13	10	23	16	17	15	12	10	11	9	11	5	5	8	6	24	
28	15	7	7	3	7	5	4	10	22	19	32	31	20	19	22	16	19	11	7	3	6	5	4	11	24	
29	5	7	5	8	5	8	6	8	8	9	10	13	10	12	10	11	10	8	9	6	13	6	5	10	24	
30	36	20	26	7	7	9	21	15	15	36	53	42	30	36	40	35	19	15	6	3	3	3	6	6	24	

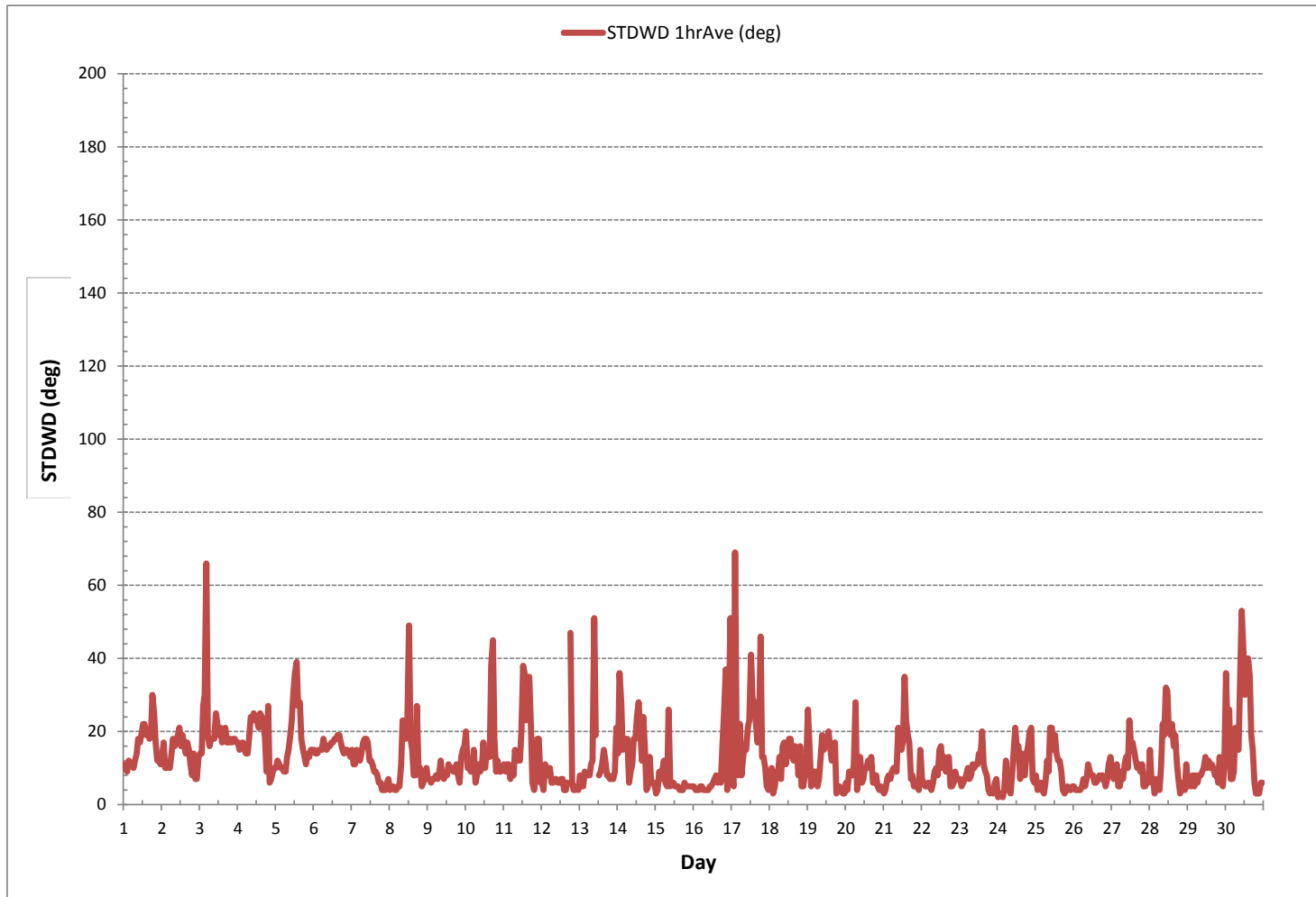
STATUS FLAG CODES

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

LAST CALIBRATION: May 25, 2017

CALIBRATION TIME: 0 hrs OPERATIONAL TIME: 718 hrs

STANDARD DEVIATION WIND DIRECTION Hourly Averages (STDWD deg)



RELATIVE HUMIDITY



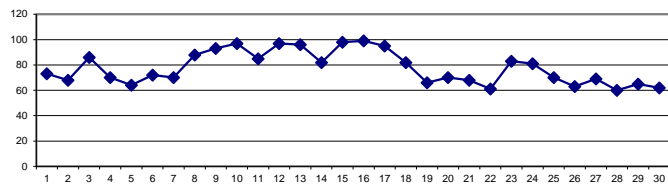
RELATIVE HUMIDITY Hourly Averages (RH %)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY 1	63	69	78	77	79	79	81	80	80	78	78	71	65	78	62	57	48	48	53	69	91	94	91	92	48	94	73	24
2	92	91	90	91	94	96	95	86	80	71	62	59	54	47	40	36	35	47	53	62	63	63	66	68	35	96	68	24
3	71	69	70	75	76	85	89	94	96	96	97	96	91	82	77	74	90	91	88	90	93	93	92	93	69	97	86	24
4	94	94	93	93	93	94	94	85	74	66	60	55	51	49	46	47	44	45	49	57	68	73	74	76	44	94	70	24
5	80	84	85	85	86	92	89	82	76	67	57	52	43	38	34	38	44	49	49	52	54	59	65	69	34	92	64	24
6	75	80	82	82	81	80	78	76	75	75	73	69	62	58	55	52	53	57	66	73	76	78	80	83	52	83	72	24
7	85	85	83	83	85	85	84	77	70	66	60	59	52	51	51	51	53	57	63	69	72	76	81	88	51	88	70	24
8	94	96	97	98	98	98	98	94	88	81	73	67	68	69	74	76	81	84	91	96	97	95	95	97	67	98	88	24
9	90	89	88	87	88	89	91	92	95	94	92	94	92	91	96	95	96	95	96	97	95	94	95	96	87	97	93	24
10	95	97	98	98	99	99	98	98	98	98	97	97	96	96	95	95	94	95	97	98	98	99	99	99	94	99	97	24
11	99	99	99	99	99	99	98	95	91	86	80	79	73	68	64	64	71	81	87	85	87	88	86	86	64	99	85	24
12	85	84	84	92	97	98	99	99	99	99	99	99	98	97	98	98	98	99	100	100	100	100	100	100	84	100	97	24
13	100	100	100	100	100	100	100	100	99	99	98	97	95	91	91	90	88	90	89	95	96	96	95	96	88	100	96	24
14	95	95	96	97	97	97	98	94	87	81	75	72	63	63	63	65	65	68	77	78	80	81	84	87	63	98	82	24
15	89	88	90	94	95	98	99	99	99	99	99	98	98	98	99	99	100	100	100	100	100	100	100	100	88	100	98	24
16	100	100	100	100	100	100	100	99	99	99	99	98	97	97	97	98	98	99	100	100	100	100	100	100	97	100	99	24
17	100	100	100	100	100	100	100	100	100	100	96	91	85	83	83	83	87	89	91	94	96	98	99	99	83	100	95	24
18	99	98	95	94	94	96	94	93	84	72	73	72	70	64	64	68	68	73	77	81	81	82	82	86	64	99	82	24
19	95	97	98	96	95	97	98	89	78	69	61	54	48	C	38	33	34	38	45	50	50	47	54	57	33	98	66	24
20	63	62	66	74	81	80	83	81	83	81	83	75	63	56	56	56	56	58	63	67	69	71	72	72	56	83	70	24
21	73	75	77	81	83	85	86	86	81	73	61	53	C	C	46	47	48	51	60	67	65	67	70	46	86	68	24	
22	74	74	75	77	77	80	81	81	74	67	51	45	41	37	39	39	37	40	44	56	64	68	72	77	37	81	61	24
23	85	88	90	92	92	92	95	98	95	91	87	79	72	67	61	62	61	69	78	84	87	90	92	96	61	98	83	24
24	98	99	100	100	100	100	99	95	92	83	70	63	57	53	65	73	73	66	72	77	76	77	78	83	53	100	81	24
25	89	94	97	99	99	98	97	94	85	65	52	46	44	43	43	45	48	56	61	66	68	68	69	65	43	99	70	24
26	64	63	64	64	64	65	65	64	62	56	50	47	52	50	48	48	48	49	53	62	72	76	84	91	47	94	63	24
27	91	90	92	96	96	94	92	76	70	62	53	50	46	44	45	46	50	54	58	61	65	70	75	75	44	96	69	24
28	77	83	91	88	88	89	91	88	81	66	52	45	39	34	32	30	34	38	43	46	51	51	56	57	30	91	60	24
29	63	61	65	71	88	95	86	80	76	67	63	59	57	52	50	50	51	53	55	63	65	65	67	69	50	95	65	24
30	72	72	74	78	83	88	86	70	59	51	49	45	46	48	48	48	49	52	57	61	62	63	65	65	45	88	62	24
HOURLY MAX	100	100	100	100	100	100	100	100	100	100	99	99	98	98	99	99	99	100	100	100	100	100	100	100				
HOURLY AVG	85	86	87	89	90	92	91	88	84	79	73	70	66	64	62	62	63	66	71	76	78	80	81	83				

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

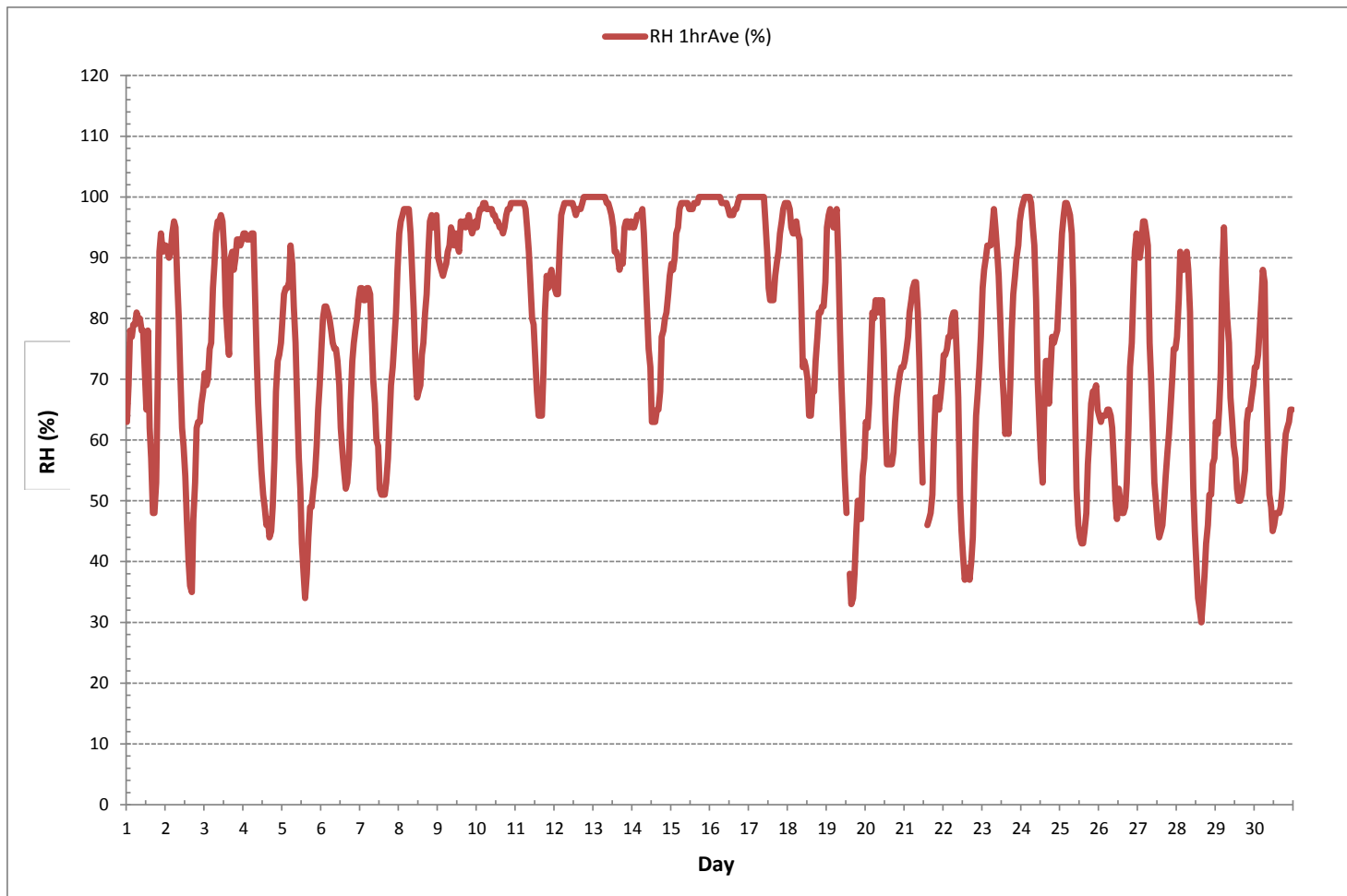
24 HR AVERAGES September 2018



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	30	%	@ HOUR	15	ON DAY	28
MAXIMUM 1-HR AVERAGE:	100	%	@ HOUR	18	ON DAY	12
MAXIMUM 24-HR AVERAGE:	99	%			ON DAY	16
OPERATIONAL TIME:						720 hrs
AMD OPERATION UPTIME:						100.0 %
STANDARD DEVIATION:	18					MONTHLY AVERAGE: 78 %

RELATIVE HUMIDITY Hourly Averages (RH %)



BAROMETRIC PRESSURE



BAROMETRIC PRESSURE Hourly Averages (BP mbar)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.					
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.						
DAY																																	
1	921	920	920	920	921	921	922	922	923	924	924	925	925	926	927	927	928	928	928	927	927	927	927	927	920	928	924	24					
2	928	927	927	928	927	927	927	928	929	929	929	930	929	930	930	930	930	931	932	933	933	934	935	936	936	927	930	928	24				
3	927	926	926	927	926	927	927	927	927	927	928	928	928	929	930	930	931	932	933	933	934	935	936	936	926	936	930	24					
4	936	936	937	937	938	938	938	939	939	940	940	940	940	941	941	941	941	941	940	940	940	941	941	941	936	940	938	24					
5	936	936	936	936	936	936	936	937	938	939	940	940	941	941	941	941	941	941	940	940	940	941	941	941	936	941	939	24					
6	941	941	941	941	941	941	941	941	941	941	942	942	942	941	941	941	941	941	940	939	938	938	937	937	937	942	940	24					
7	937	936	936	935	935	935	934	934	934	934	934	934	933	933	933	933	933	932	932	931	930	929	928	928	928	937	933	24					
8	927	927	926	925	925	924	924	924	924	925	925	925	926	926	926	926	926	926	926	926	926	926	926	926	924	927	926	24					
9	926	926	926	926	926	926	927	927	927	928	929	929	929	930	930	930	931	931	931	931	931	931	931	931	930	926	931	929	24				
10	930	929	929	928	928	927	927	927	927	926	926	925	925	925	925	924	924	924	924	924	924	924	924	924	924	924	930	926	24				
11	924	924	924	924	924	924	925	925	926	926	927	927	927	928	928	928	928	927	927	927	927	927	927	927	924	928	926	24					
12	927	927	927	927	927	927	927	927	926	927	927	927	927	927	927	927	927	928	928	928	928	928	929	929	929	926	929	927	24				
13	929	929	929	929	929	929	929	930	930	931	931	931	931	931	932	932	933	933	933	934	934	935	935	935	929	935	931	24					
14	935	935	936	936	936	936	936	937	937	938	938	938	938	938	938	938	938	938	938	938	938	938	938	938	935	938	937	24					
15	938	937	937	937	937	937	937	937	937	936	936	936	936	936	935	935	935	935	935	935	935	935	935	935	935	935	938	936	24				
16	934	934	934	934	933	933	933	933	933	933	933	933	933	933	933	933	933	933	933	933	933	932	932	932	932	934	933	24					
17	932	932	932	932	932	932	932	932	932	932	933	933	933	933	933	933	933	933	934	934	934	934	934	934	932	934	933	24					
18	934	934	933	933	933	933	933	933	934	934	935	935	934	935	935	935	935	935	935	935	935	935	935	935	933	935	934	24					
19	935	935	935	934	934	934	934	934	935	936	936	936	X	935	935	935	935	934	934	933	933	933	932	932	932	936	934	23					
20	932	932	932	931	931	931	932	932	934	934	935	935	936	937	937	937	937	937	937	937	937	937	937	937	931	937	935	24					
21	937	937	936	936	936	936	936	936	936	936	937	937	937	937	937	937	937	936	936	936	935	935	935	934	934	937	936	24					
22	934	934	934	934	934	934	934	934	935	935	936	936	936	936	936	935	935	935	934	934	934	934	933	933	933	936	935	24					
23	932	931	931	930	930	929	929	928	928	928	928	928	928	927	927	927	926	926	926	925	925	925	924	924	924	932	928	24					
24	924	924	923	924	924	924	924	924	925	926	927	927	928	929	929	929	930	931	930	931	931	931	931	932	923	932	927	24					
25	932	932	932	932	932	932	932	932	933	934	934	934	934	934	933	933	932	932	931	930	929	928	928	928	928	934	932	24					
26	928	928	928	928	927	927	927	928	928	928	929	930	931	931	932	932	932	932	933	933	933	933	933	934	927	934	930	24					
27	934	935	935	935	936	936	937	938	938	939	939	940	940	940	940	939	939	939	939	939	939	939	939	939	934	940	938	24					
28	938	938	938	938	937	937	937	937	937	938	938	937	937	937	936	936	935	935	934	934	934	933	933	933	933	938	936	24					
29	933	933	934	934	934	935	935	936	937	937	938	938	939	939	939	939	940	940	940	940	940	940	940	941	933	941	938	24					
30	941	940	940	940	939	939	939	939	939	939	939	939	938	937	936	936	935	934	933	932	931	931	931	930	930	941	937	24					
HOURLY MAX	941	941	941	941	941	941	941	941	941	941	942	942	942	941	941	941	941	941	940	940	940	940	941	941	941								
HOURLY AVG	932	932	932	932	932	932	932	932	932	933	933	933	933	933	933	933	933	933	933	933	933	933	933	933	933								

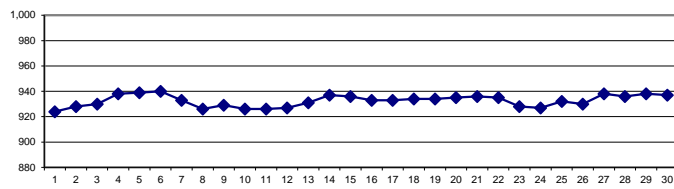
STATUS FLAG CODES

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

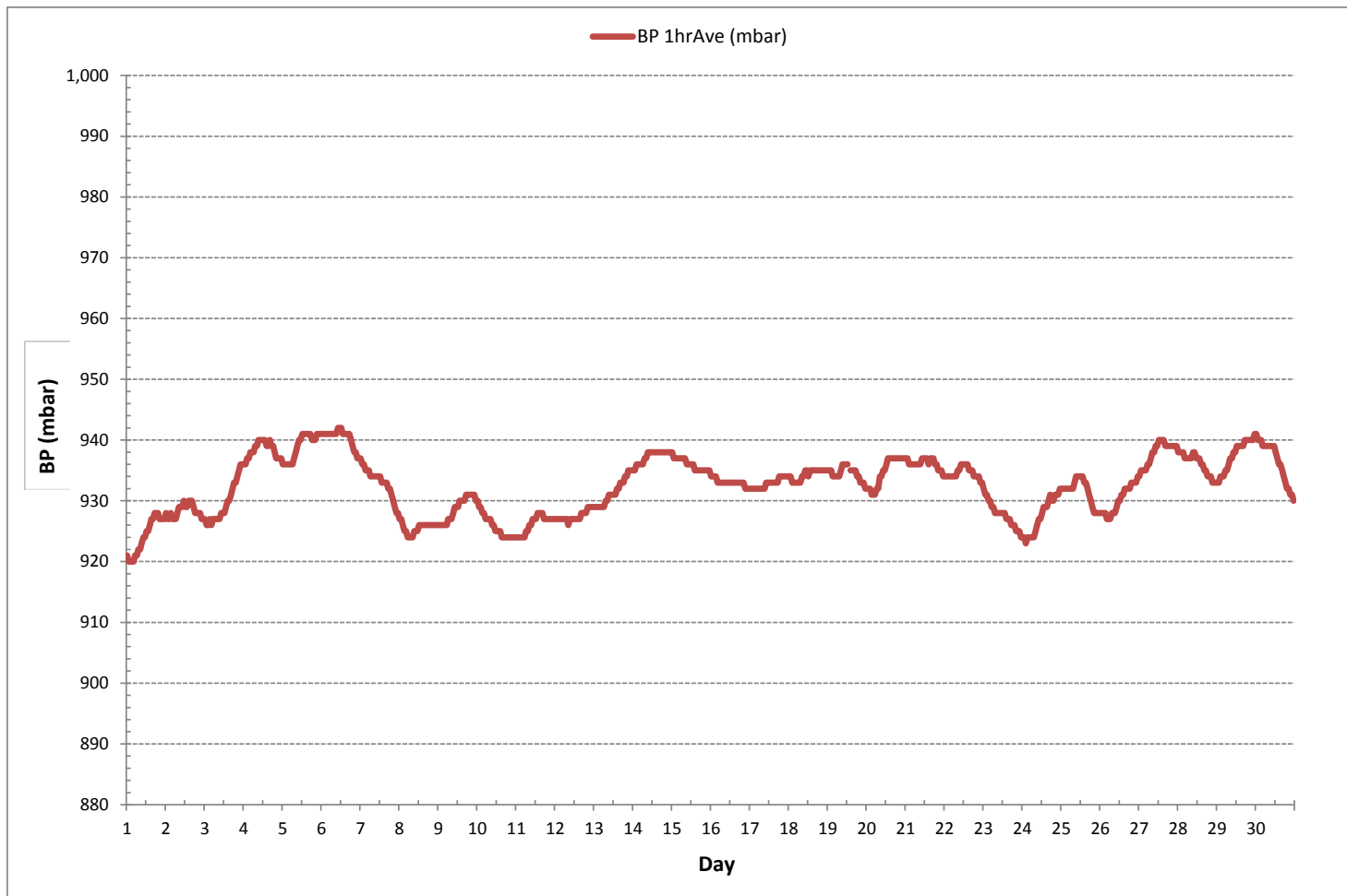
MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	920	mbar	@ HOUR	1	ON DAY	1
MAXIMUM 1-HR AVERAGE:	942	mbar	@ HOUR	10	ON DAY	6
MAXIMUM 24-HR AVERAGE:	940	mbar			ON DAY	6
OPERATIONAL TIME:						719 hrs
AMD OPERATION UPTIME:						99.9 %
STANDARD DEVIATION:	5					MONTHLY AVERAGE: 933 mbar

24 HR AVERAGES September 2018



BAROMETRIC PRESSURE Hourly Averages (BP mbar)



AMBIENT TEMPERATURE



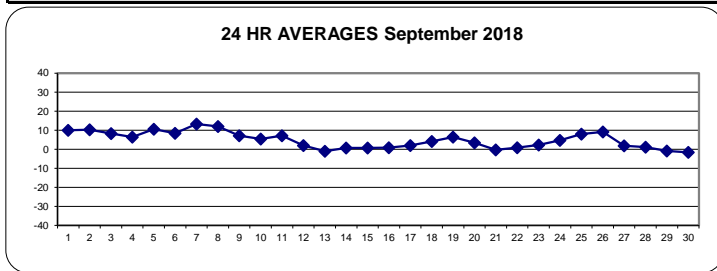
AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY 1	12.4	10.8	9.2	8.9	8.3	8.3	8.1	8.6	9.1	10.1	10.4	11.4	12.3	11.1	13.1	13.5	14.4	13.9	12.6	9.0	6.4	5.5	6.1	5.9	5.5	14.4	10.0	24
2	5.2	4.8	4.9	4.5	3.8	3.1	3.7	6.2	8.5	10.0	11.9	13.3	14.4	15.6	16.8	17.2	16.8	15.2	14.1	12.5	12.0	11.5	10.6	9.9	3.1	17.2	10.3	24
3	9.4	9.6	9.2	8.8	8.9	8.7	8.5	8.2	8.0	8.2	8.3	8.3	9.4	10.7	11.4	11.1	9.0	8.3	7.5	6.7	6.0	5.5	4.8	4.2	4.2	11.4	8.3	24
4	3.9	3.4	3.2	2.7	2.3	1.7	1.9	2.9	4.4	5.5	6.7	7.8	8.6	9.4	10.9	11.0	11.9	11.8	11.3	9.2	7.8	6.5	5.8	5.1	1.7	11.9	6.5	24
5	4.4	3.9	3.7	3.8	3.0	2.2	3.0	5.1	8.1	11.8	14.9	16.2	17.3	17.7	19.0	18.4	17.3	15.5	13.6	12.3	11.8	11.3	10.4	10.0	2.2	19.0	10.6	24
6	8.9	8.2	7.6	7.2	6.6	6.1	5.9	6.1	6.3	6.5	6.9	8.1	10.0	10.9	12.1	13.1	13.0	12.1	10.2	8.6	8.0	7.6	7.1	6.5	5.9	13.1	8.5	24
7	6.6	7.0	7.3	7.3	7.1	7.1	7.4	9.6	12.1	14.0	15.8	16.9	19.4	20.2	20.6	20.7	20.1	18.6	16.7	15.0	14.0	13.0	11.8	10.5	6.6	20.7	13.3	24
8	9.2	8.8	8.5	8.1	7.7	7.3	7.6	8.8	10.7	12.7	15.0	17.0	17.2	17.0	16.0	15.4	14.3	13.8	13.1	12.7	12.4	11.8	11.1	10.9	7.3	17.2	12.0	24
9	9.9	8.8	8.5	8.4	8.5	8.5	8.4	8.3	8.3	7.9	7.4	6.9	6.9	7.3	6.8	6.7	6.5	6.4	6.1	5.9	5.5	5.2	5.0	4.6	4.6	9.9	7.2	24
10	4.4	4.1	4.2	4.0	4.1	4.1	4.2	4.3	4.4	4.7	5.1	5.5	6.0	6.2	6.7	6.7	7.1	6.6	6.3	6.2	6.1	6.0	6.0	6.1	4.0	7.1	5.4	24
11	6.2	6.2	6.3	6.3	6.2	5.9	5.5	5.6	6.1	6.4	6.9	7.3	8.3	9.2	9.5	9.7	9.8	9.1	7.9	6.6	6.7	6.3	5.9	6.1	5.5	9.8	7.1	24
12	6.1	6.3	6.2	5.7	5.1	5.2	4.9	4.3	3.8	3.6	2.7	1.8	1.0	0.5	-0.1	-0.2	-0.1	-0.6	-0.8	-1.0	-1.2	-1.3	-1.3	-1.5	-1.5	6.3	2.0	24
13	-1.6	-1.6	-1.7	-1.8	-2.1	-2.3	-2.2	-2.0	-1.8	-1.3	-0.8	-0.6	0.1	0.5	0.4	0.4	0.3	-0.2	-0.4	-0.7	-0.8	-1.0	-1.0	-1.0	-2.3	0.5	-1.0	24
14	-1.1	-1.2	-1.1	-1.2	-1.2	-1.2	-1.1	-0.5	0.1	0.9	1.4	1.6	2.2	2.4	2.5	2.2	2.7	2.5	1.8	1.4	1.1	0.8	0.8	0.9	-1.2	2.7	0.7	24
15	0.9	0.9	0.8	0.6	0.5	0.3	0.2	0.7	0.9	1.0	1.2	1.4	1.5	1.5	0.9	0.6	0.5	0.1	0.1	0.3	0.5	0.7	0.7	0.7	0.1	1.5	0.7	24
16	0.7	0.8	0.8	0.8	0.7	0.7	0.7	0.8	0.9	1.1	1.6	2.0	2.2	2.3	1.9	1.4	1.1	0.5	0.2	-0.1	-0.5	-0.7	-0.6	-0.1	-0.7	2.3	0.8	24
17	0.1	0.2	0.3	0.3	0.2	0.1	0.2	0.3	0.8	1.4	2.2	2.8	3.5	3.9	4.2	4.1	3.9	3.5	3.2	2.9	2.7	2.5	2.5	2.7	0.1	4.2	2.0	24
18	2.6	2.5	2.3	2.2	1.7	1.3	1.4	1.9	3.6	5.8	5.5	6.1	6.3	7.1	6.7	6.5	6.8	5.9	5.3	4.3	4.1	3.8	3.8	3.4	1.3	7.1	4.2	24
19	2.6	2.1	1.9	2.1	2.3	1.5	0.9	3.1	5.5	7.6	8.8	10.1	11.0	C	11.7	12.7	12.6	11.1	9.1	7.8	6.9	6.8	5.2	5.1	0.9	12.7	6.5	24
20	4.5	5.1	4.6	3.5	2.6	3.1	2.4	2.3	2.6	3.5	3.3	4.5	6.6	6.5	6.1	5.8	5.0	4.1	3.0	2.1	1.1	0.0	-0.5	-1.1	-1.1	6.6	3.4	24
21	-1.4	-1.7	-1.8	-1.9	-2.0	-2.0	-1.9	-1.7	-1.2	0.1	1.3	1.9	C	C	3.1	3.5	3.2	2.4	0.5	-0.8	-1.1	-1.1	-1.5	-1.8	-2.0	3.5	-0.3	24
22	-2.1	-2.3	-2.5	-2.6	-2.5	-2.6	-2.6	-2.1	-0.6	1.1	2.6	3.7	4.2	4.6	4.2	4.2	4.2	3.6	2.9	2.2	1.7	1.2	0.8	0.3	-2.6	4.6	0.9	24
23	-0.4	-0.6	-0.6	-0.6	-0.5	-0.4	-0.6	-0.4	0.2	0.9	1.5	2.8	4.2	5.3	6.6	6.5	7.1	5.7	4.6	3.6	3.2	3.0	2.6	1.6	-0.6	7.1	2.3	24
24	0.6	-0.1	-0.6	-0.9	-0.9	-0.9	-0.6	0.4	2.3	5.1	7.4	9.1	10.2	10.7	9.2	8.4	8.4	8.9	7.2	5.9	6.2	6.3	5.9	5.3	-0.9	10.7	4.7	24
25	4.4	3.9	3.3	2.7	2.1	1.7	1.7	2.5	5.0	7.5	9.8	11.1	12.3	12.6	13.9	14.2	14.0	12.5	11.1	9.5	8.8	9.0	8.6	9.1	1.7	14.2	8.0	24
26	9.2	9.4	9.3	9.2	9.1	8.8	8.9	9.2	9.9	10.8	11.6	11.7	11.3	10.9	10.9	11.0	10.8	9.8	8.7	7.2	6.2	5.6	5.0	3.7	3.7	11.7	9.1	24
27	3.1	3.1	1.8	0.6	-0.3	-0.6	-0.8	-0.3	-0.3	0.3	1.5	2.5	3.5	4.3	4.7	5.3	4.6	4.3	3.8	3.3	2.3	1.0	-0.2	-0.8	-0.8	5.3	1.9	24
28	-1.5	-1.7	-2.7	-2.7	-2.7	-2.9	-3.1	-2.4	-0.6	1.2	2.9	3.9	4.4	5.6	6.3	6.7	5.9	4.4	3.0	2.2	1.6	0.8	0.0	-0.1	-3.1	6.7	1.2	24
29	-0.8	-0.6	-0.8	-0.8	-1.4	-1.6	-1.9	-2.0	-1.3	-0.6	-0.6	-0.2	0.4	0.7	0.7	0.7	0.4	0.0	-0.4	-0.9	-1.5	-1.9	-2.5	-2.3	-2.5	0.7	-0.8	24
30	-2.4	-2.6	-2.7	-3.1	-4.3	-5.1	-4.7	-2.9	-1.5	-0.1	-0.1	1.0	0.6	0.6	0.9	0.8	0.6	0.2	-1.0	-1.8	-2.4	-2.7	-3.0	-2.6	-5.1	1.0	-1.6	24
HOURLY MAX	12.4	10.8	9.3	9.2	9.1	8.8	8.9	9.6	12.1	14.0	15.8	17.0	19.4	20.2	20.6	20.7	20.1	18.6	16.7	15.0	14.0	13.0	11.8	10.9				
HOURLY AVG	3.5	3.3	3.0	2.7	2.4	2.2	2.2	2.8	3.8	4.9	5.8	6.5	7.4	7.7	7.9	7.9	7.7	7.0	6.0	5.1	4.5	4.1	3.7	3.4				

STATUS FLAG CODES

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

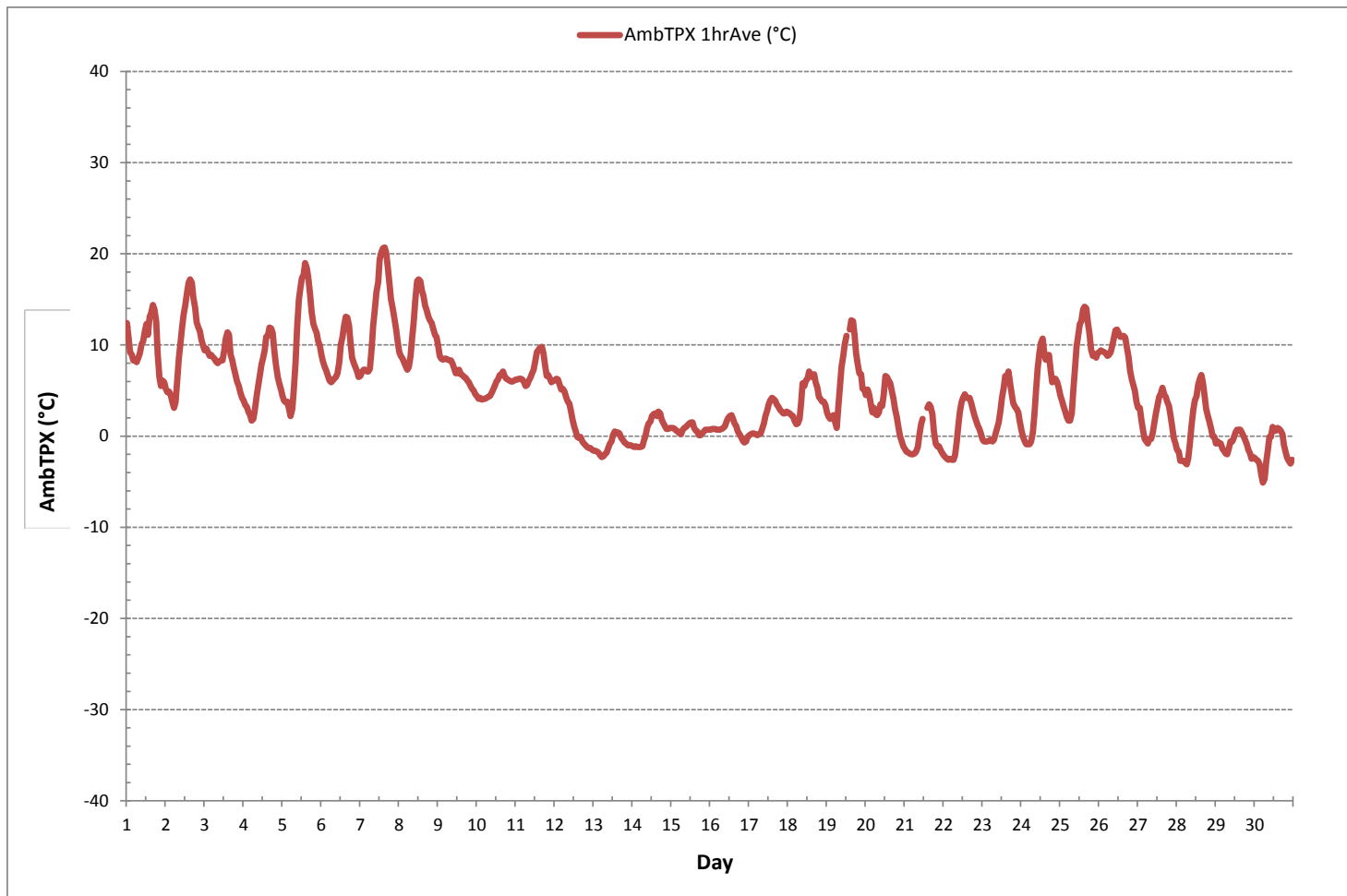
24 HR AVERAGES September 2018



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	-5.1 °C	@ HOUR	5	ON DAY	30
MAXIMUM 1-HR AVERAGE:	20.7 °C	@ HOUR	15	ON DAY	7
MAXIMUM 24-HR AVERAGE:	13.3 °C			ON DAY	7
OPERATIONAL TIME:				720	hrs
AMD OPERATION UPTIME:				100.0	%
STANDARD DEVIATION:	5.0	MONTHLY AVERAGE:		4.8	°C

AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)



PRECIPITATION



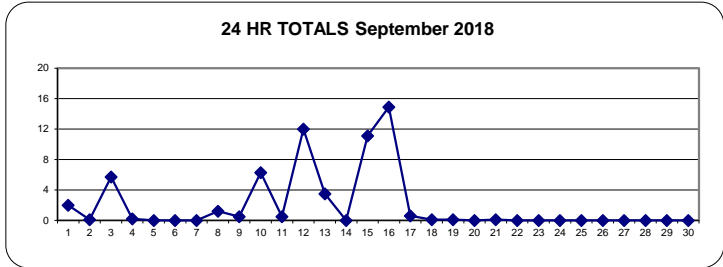
PRECIPITATION Hourly Totals (mm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	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.	TOTALS	
DAY																												
1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0.0	1.2	2.0	24
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.1	0.1	24
3	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0.0	2.3	5.7	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	0.1	0.2	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	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	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	24
8	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	1.0	1.2	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	0.5	24
10	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0.0	1.4	6.3	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	0.3	0.5	24
12	0	0	0	0	0	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0.0	2.4	12.0	24
13	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.6	3.5	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	24
15	0	0	0	0	0	0	0	0	0	0	1	2	1	1	1	1	1	1	1	0	0	0	0	0	0.0	1.6	11.1	24
16	0	0	0	0	0	0	0	0	0	1	1	1	0	0	2	2	1	2	2	1	1	0	1	0	0.0	2.0	14.9	24
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.2	0.6	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	0.1	0.1	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	0.1	0.1	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	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	0.1	0.1	24
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	24
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	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	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	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	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	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	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	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	24
HOURLY MAX	0.4	0.2	0.3	0.2	0.2	2.0	2.4	2.0	1.7	1.4	1.1	1.6	1.2	1.2	1.9	1.8	2.3	2.0	1.8	1.0	0.6	0.5	0.6	0.4				
HOURLY AVG	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0				

STATUS FLAG CODES

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

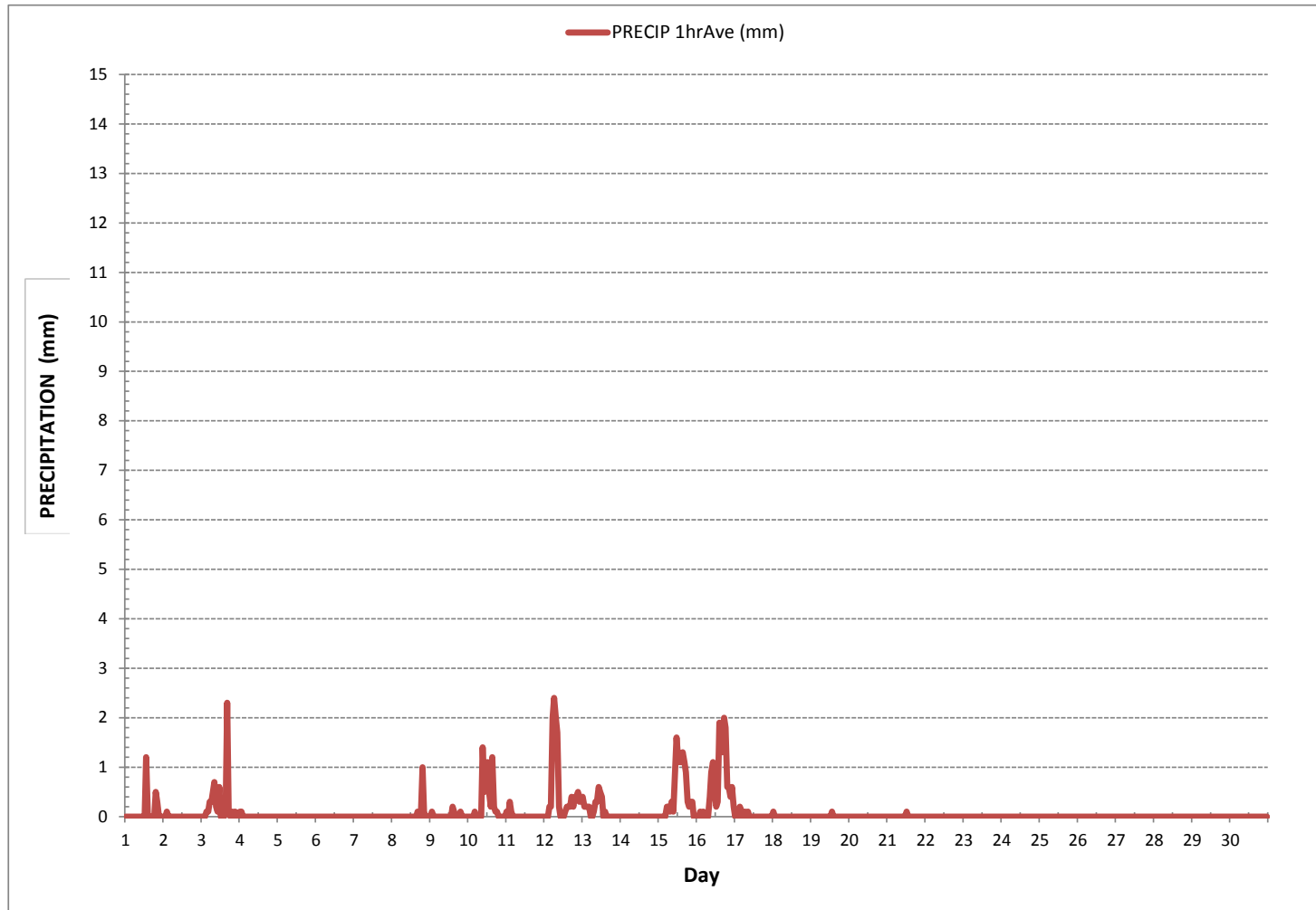
24 HR TOTALS September 2018



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	0.0	mm	@ HOUR	0	ON DAY	1
MAXIMUM 1-HR AVERAGE:	2.4	mm	@ HOUR	6	ON DAY	12
MAXIMUM 24-HR AVERAGE:	14.9	mm			ON DAY	16
MONTHLY TOTAL	58.9	mm				
OPERATIONAL TIME:						720 hrs
AMD OPERATION UPTIME:						100.0 %
STANDARD DEVIATION:	0.3					MONTHLY AVERAGE: 0.1 mm

PRECIPITATION Hourly Totals (mm)



APPENDIX II
EQUIPMENT CALIBRATION RESULTS

SULPHUR DIOXIDE



Thermo 431-TLE Sulphur Dioxide Analyzer Calibration

Date: <u>September 12, 2018</u>	Barometer/B.P./units: <u>F.S. 05544 expires January 15, 2019</u> <u>926</u> <u>millibars</u>
Company/Airshed: <u>LICA</u>	Thermometer/Station Temp: <u>F.S. 170286131 expires April 19, 2019</u> <u>23</u> <u>°C</u>
Location/Station Name: <u>St. Lina</u>	Weather Conditions: <u>Mainly cloudy with drizzle</u>
Parameter: <u>Sulphur Dioxide</u>	Calibration Purpose: <u>routine monthly</u>
Start Time 24 hr. (mst): <u>10:36</u>	Performed By/Reviewer: <u>Alex Yakupov</u> <u>Rob Fisher</u>
End Time 24 hr. (mst): <u>14:43</u>	Cal Gas Expiry Date: <u>October 24, 2020</u>
Calibration Method: <u>Gas Dilution</u>	Converter Model & s/n (if applicable): <u>n/a</u>
Analyzer:	
Serial Number/Owner: <u>1180930030</u> <u>LICA</u>	Range ppb: <u>1000</u>
Last Calibration Date: <u>August 15, 2018</u>	As Found C.F.: <u>1.059</u>
Previous C.F.: <u>1.000</u>	New C.F.: <u>1.000</u>

Calibration Standards: Low Flow Meter ID/Expiry Date: <u>Defender Low 152019 expires December 13, 2018</u> High Flow Meter ID/Expiry Date: <u>Defender High 148944 expires December 13, 2018</u> Calibrator ID/Expiry Date: <u>Envionics id# 5212 expires March 1, 2019</u> Cal Gas Cylinder I.D. #: <u>LL 104225</u> Cal Gas Conc. (ppm): <u>49.2</u>	Standard Calibration Points for Ranges <table border="1" style="margin: auto;"> <tr><th>Point</th><th>ppb</th></tr> <tr><td>High</td><td>780</td></tr> <tr><td>Mid</td><td>380</td></tr> <tr><td>Low</td><td>190</td></tr> </table>	Point	ppb	High	780	Mid	380	Low	190
Point	ppb								
High	780								
Mid	380								
Low	190								

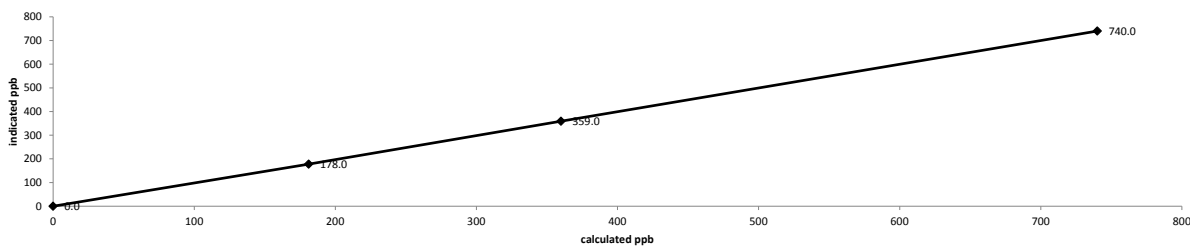
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration (ppb):	Indicated Concentration (ppb):	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total			
as found zero	5059	0.00	5059	0.0	0.0	n/a
as found high	4986	76.14	5062	740.0	699.0	1.059
adjusted zero	5059	0.00	5059	0.0	0.0	n/a
adjusted high	4986	76.14	5062	740.0	740.0	1.000
mid	5020	37.00	5057	360.0	359.0	1.003
low	5040	18.62	5059	181.1	178.0	1.017
calibrator zero	5059	0.00	5059	0.0	0.0	n/a
Average C.F. =						1.007

Linear Regression/Calibration Results:

Correlation Coefficient = <u>1.000</u>	LIMITS
Slope = <u>0.999</u>	> or = 0.995
b (Intercept as % of full scale) = <u>0.14%</u>	0.95-1.05
% change in C.F. from last cal = <u>-5.87%</u>	± 3% F.S.
	± 10%

Thermo 431-TLE Sulphur Dioxide Analyzer Calibration

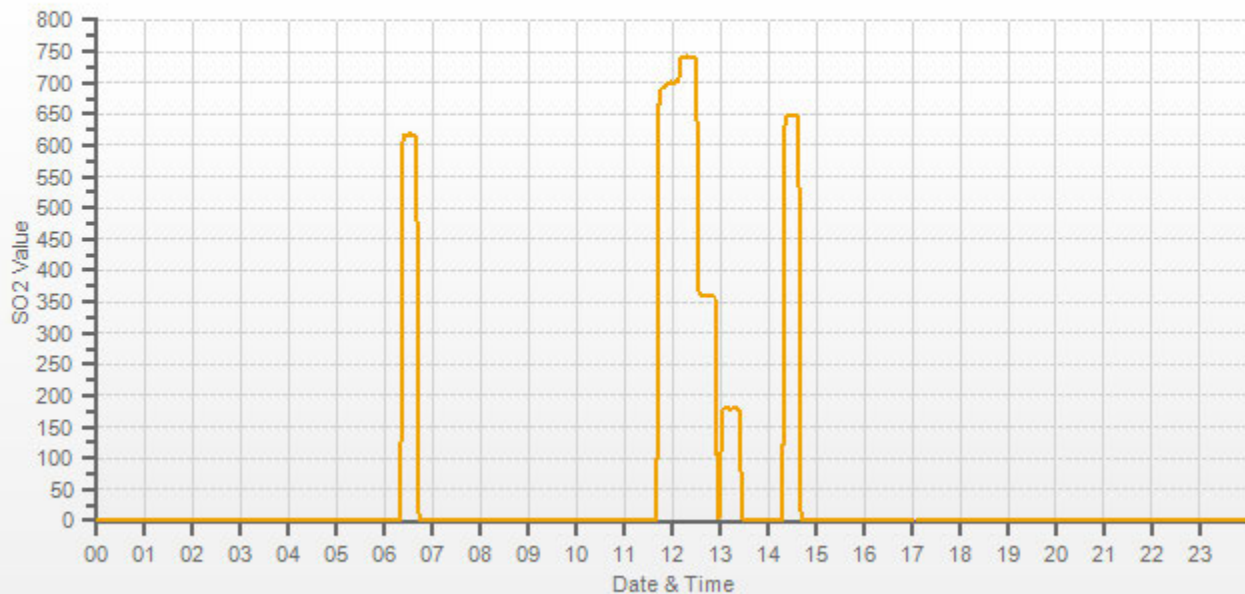


As found: Bkg: <u>3.06</u> Coef: <u>0.941</u> Pmt: <u>-696.0</u> Flash: <u>979</u> Internal: <u>30.4</u> Chamber: <u>45.2</u> Perm Oven Gas: <u>45.00</u> Perm Oven Heater: <u>44.14</u> Pressure: <u>667.0</u> Sample Flow: <u>0.437</u> Lamp Intensity: <u>90</u> Converter: <u>n/a</u> Converter Set: <u>n/a</u> Averaging Time: <u>120</u> Expected Value: <u>642.0</u>	As left: Bkg: <u>3.34</u> Coef: <u>0.991</u> Pmt: <u>-696.0</u> Flash: <u>980</u> Internal: <u>30.4</u> Chamber: <u>44.9</u> Perm Oven Gas: <u>45.00</u> Perm Oven Heater: <u>44.15</u> Pressure: <u>667.8</u> Sample Flow: <u>0.437</u> Lamp Intensity: <u>90</u> Converter: <u>n/a</u> Converter Set: <u>n/a</u> Averaging Time: <u>120</u> Expected Value: <u>647.0</u>
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Comments:

The analyzer sample inlet filter was changed. The analyzer cooling fan filter(s) were cleaned. The manifold blower was found to be working normally.

SO2[ppb]



HYDROGEN SULPHIDE



Thermo 450i Hydrogen Sulphide Analyzer Calibration

Date:	September 11, 2018	Barometer/B.P./units:	F.S. 05544 expires January 15, 2019	927	millibars
Company/Airshed:	LICA	Thermometer/Station Temp:	F.S. 170286131 expires April 19, 2019	23	°C
Location/Station Name:	St. Lina	Weather Conditions:	A few clouds		
Parameter:	Hydrogen Sulphide	Calibration Purpose:	routine monthly		
Start Time 24 hr. (mst):	12:42	Performed By/Reviewer:	Alex Yakupov	Rob Fisher	
End Time 24 hr. (mst):	17:29	Cal Gas Expiry Date:	October 20, 2020		
Calibration Method:	Gas Dilution	Converter Model & s/n (if applicable):	n/a		
Analyzer:					
Serial Number/Owner:	CM 18010058 LICA	Range ppb:	100		
Last Calibration Date:	August 23, 2018	As Found C.F.:	1.024		
Previous C.F.:	1.000	New C.F.:	0.995		

Calibration Standards: Low Flow Meter ID/Expiry Date: Defender Low 152019 expires December 13, 2018 High Flow Meter ID/Expiry Date: Defender High 148944 expires December 13, 2018 Calibrator ID/Expiry Date: Sabio id# 11900613 expires August 22, 2019 Cal Gas Cylinder I.D. #: EY 0001003 Cal Gas Conc. (ppm): 9.55	Standard Calibration Points for Ranges <table border="1"> <tr><th>Point</th><th>ppb</th></tr> <tr><td>High</td><td>78</td></tr> <tr><td>Mid</td><td>38</td></tr> <tr><td>Low</td><td>19</td></tr> </table>	Point	ppb	High	78	Mid	38	Low	19	SO2 Scrubber Check (10 minutes): Start/End Time 24 hr.: 13:44 / 13:54 SO2 Analyzer Range: 1000 Target Concentration (ppb): 780 As Found Zero: 0.0 Analyzer Response (ppb): 0.0 Zero Corrected Result (ppb): 0.0
Point	ppb									
High	78									
Mid	38									
Low	19									

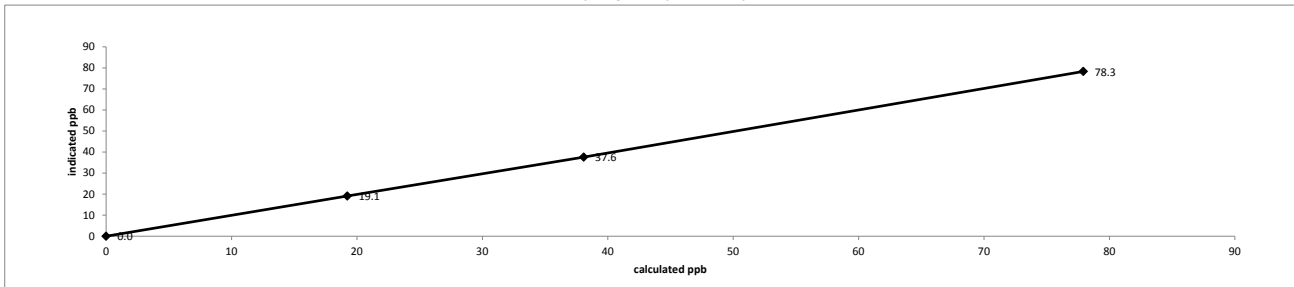
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration (ppb):	Indicated Concentration (ppb):	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total			
as found zero	7591	0.00	7591	0.0	1.6	n/a
as found high	7501	61.70	7563	77.9	77.7	1.024
adjusted zero	7591	0.00	7591	0.0	0.0	n/a
adjusted high	7501	61.70	7563	77.9	78.3	0.995
mid	7550	30.23	7580	38.1	37.6	1.013
low	7551	15.23	7566	19.2	19.1	1.006
calibrator zero	7591	0.00	7591	0.0	0.0	n/a
Average C.F. =						1.005

Linear Regression/Calibration Results:

Correlation Coefficient =	1.000	LIMITS	> or = 0.995
Slope =	0.995		0.95-1.05
b (Intercept as % of full scale) =	0.23%		± 3% F.S.
% change in C.F. from last cal =	-2.38%		± 10%

Thermo 450i Hydrogen Sulphide Analyzer Calibration

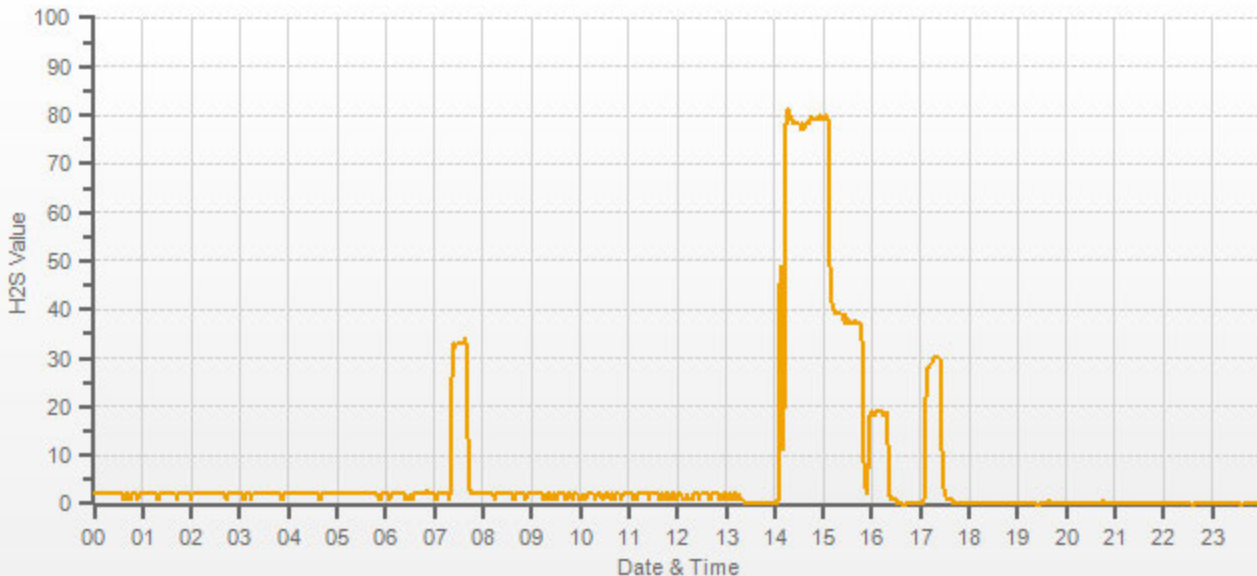


As found: Bkg: 25.5 Coef: 0.878 Pmt: -634.2 Flash: 902 Internal: 34.2 Chamber: 45.0 Converter Temp: 323.9 Converter Set: 325.0 Perm Oven Gas: 45.00 Perm Oven Htr: 44.11 Pressure: 582.1 Sample Flow: 0.824 Lamp Intensity: 91 Averaging Time: 120 Expected Value: 30.6	As left: Bkg: 27.4 Coef: 0.887 Pmt: -634.2 Flash: 903 Internal: 33.9 Chamber: 45.1 Converter Temp: 325.7 Converter Set: 325.0 Perm Oven Gas: 45.00 Perm Oven Htr: 44.12 Pressure: 580.0 Sample Flow: 0.823 Lamp Intensity: 90 Averaging Time: 120 Expected Value: 31.5
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Comments: The analyzer sample inlet filter was changed. The analyzer cooling fan filter(s) were cleaned. The manifold blower was found to be working normally.

The As Found High starts at 14:12 after evacuating the regulator.

H2S[ppb]



TOTAL HYDROCARBON



Thermo 55i Methane/Non-Methane Analyzer Calibration

Date:	September 11, 2018	Barometer/B.P./units:	F.S. 05544 expires January 15, 2019	927	millibars
Company/Airshed:	LICA	Thermometer/Station Temp:	F.S. 170286131 expires April 19, 2019	23	°C
Location/Station Name:	St. Lina	Weather Conditions:	A few clouds		
Parameter:	CH4 / NMHC / THC	Calibration Purpose:	routine monthly		
Start/End Time 24 hr. (mst):	12:42 / 16:55	Performed By/Reviewer:	Alex Yakupov	Rob Fisher	
Calibration Method:	Gas Dilution	Cal Gas Expiry Date:	October 18, 2025		

Analyzer:		Correction Factors:			
Serial Number/Owner:	1180930025 LICA	Previous C.F.:	As Found C.F.:	New C.F.:	
Measured Flow:	1244	CH ₄ =	1.002	0.969	1.005
Last Calibration Date:	August 29, 2018	NMHC =	1.000	0.989	0.999
Range ppm:	20 CH4/20 NMHC/40 THC	THC =	1.002	0.979	1.002

Calibration Standards:		Standard Calibration Points for Analyzer Range of 20/20/40 ppm			
Low Flow Meter ID/Expiry Date:	Defender Low 152019 expires December 13, 2018	Point	CH4	NMHC	THC
High Flow Meter ID/Expiry Date:	Defender High 148944 expires December 13, 2018	High	13.00	13.00	26.00
Calibrator ID/Expiry Date:	Enviroics id# 5212 expires March 1, 2019	Mid	7.00	7.00	14.00
Cal Gas Cylinder I.D. #:	LL 119471	Low	3.00	3.00	6.00
CH4 Cylinder Conc. =	599.0 207.0 = C ₂ H ₆ Cylinder Conc.				
CH ₄ expressed as C ₂ H ₆ =	569.3 1168.3 = total CH4 equivalent				

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

Point	Calibrator Flow Rates (cc/min)			Calculated CH ₄ (ppm)	Calculated NMHC (ppm)	Calculated THC (ppm)	Indicated CH ₄ (ppm)	Indicated NMHC (ppm)	Indicated THC (ppm)	Correction Factors:		
	Diluent	Cal Gas	Total Flow							CH ₄	NMHC	THC
as found zero	3043	0.00	3043	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
as found high	2977	67.66	3045	13.31	12.65	25.96	13.73	12.79	26.51	0.969	0.989	0.979
adjusted zero	3043	0.00	3043	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
adjusted high	2977	67.66	3045	13.31	12.65	25.96	13.24	12.66	25.90	1.005	0.999	1.002
mid	3008	36.40	3044	7.16	6.81	13.97	7.14	6.88	14.02	1.003	0.989	0.996
low	3030	15.63	3046	3.07	2.92	5.99	3.05	2.93	5.98	1.008	0.997	1.002
calibrator zero	3043	0.00	3043	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
Average C.F. =										1.005	0.995	1.000

Linear Regression/Calibration Results:

Correlation Coefficient =	CH ₄	NMHC	THC	LIMITS
	1.000	1.000	1.000	> or = 0.995
Slope =	0.995	1.002	0.998	0.95-1.05
b (Intercept as % of full scale) =	0.00%	0.07%	0.03%	± 3% F.S.
% change in C.F. from last cal =	3.25%	1.10%	2.28%	± 10%

As Left Instrument Diagnostics:

Interface Board Voltages:	Bias Supply:	-296.9	Calibration History cnt'd:	NM Peak Area:	81388
Temperatures:	Detector Oven:	175.1	Crucial Settings:	Methane Start:	n/a
	Filter:	175.0		Methane End:	n/a
	Column Oven:	75.0		Backflush:	n/a
	Internal:	29.5		NMHV Start:	n/a
Cylinder Pressures/reg.:	Carrier:	2000 55	Run History>1:	NMHC End:	n/a
	Fuel:	1200 57		Date:	Sep 11, 2018
	Span Gas:	1600 10		Time:	13:19
	Zero Air Generator:	44		CH ₄ PK HT:	0
Internal Pressures:	Carrier:	32.0		CH ₄ RT:	8.0
	Fuel:	48.2		CH ₄ Baseline:	3854
	Air:	36.2		CH ₄ LOD:	56
FID Status:	Status:	LIT		CH ₄ SD:	18
	Counts:	42230		CH ₄ CONC:	0.00
	Flame:	405.0		NM PK HT:	0
	Det Base:	175.1		NM Peak Area:	0
Flame and Power Stats:	Last Power On:	Aug 23, 2018		NM CONC:	0.00
	Flameouts:	2		NM Base Start:	3787
	Det Oven at Start:	43.5		NM Base End:	3842
	Col Oven at Start:	24.8		NM LOD:	50
Calibration History:	Time:	Aug 29, 2018		NM Start IDX:	4
	Type:	SPAN		NM End IDX:	61
	Status:	GOOD		NM Max Slope:	2.1e+00
	Check/Adjust:	ADJUST		NM Min Slope:	-6.0e-01
	CH ₄ Span Conc:	13.35	Expected Values:	NM PT Count:	0
	CH ₄ SP Ratio:	0.000744		Previous CH ₄ :	10.16
	CH ₄ RT:	13.2		Previous NMHC:	11.09
	CH ₄ PK IDX:	26		Previous THC:	21.26
	CH ₄ PK HT:	17945		New CH ₄ :	10.20
	NM Span Conc:	12.68		New NMHC:	11.15
	NM SP Ratio:	0.000156		New THC:	21.35

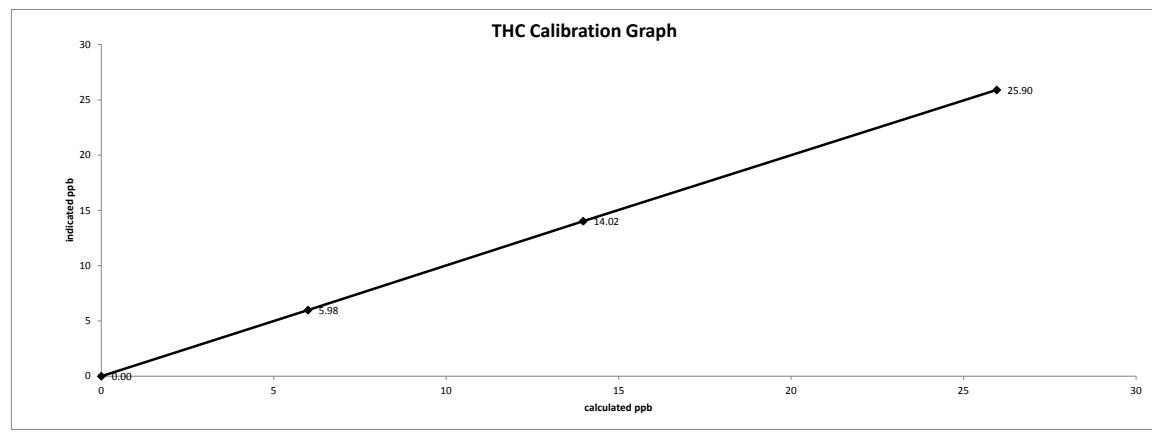
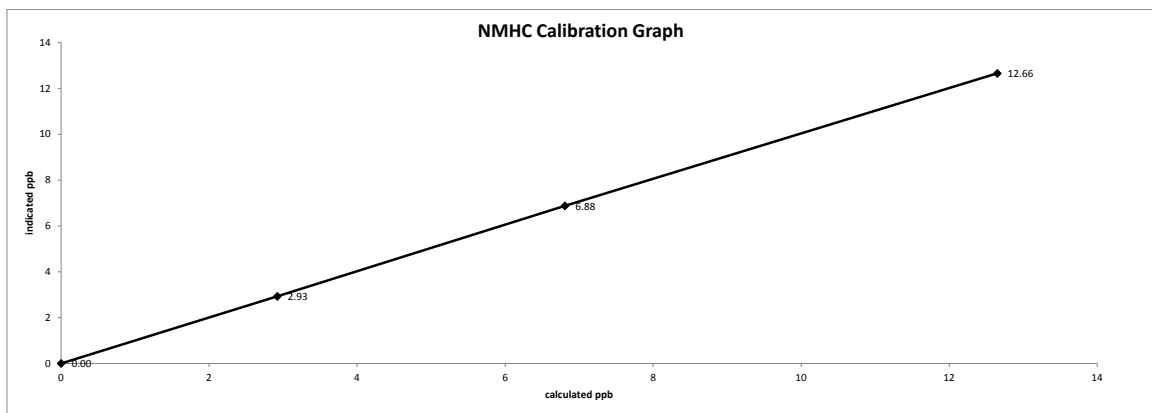
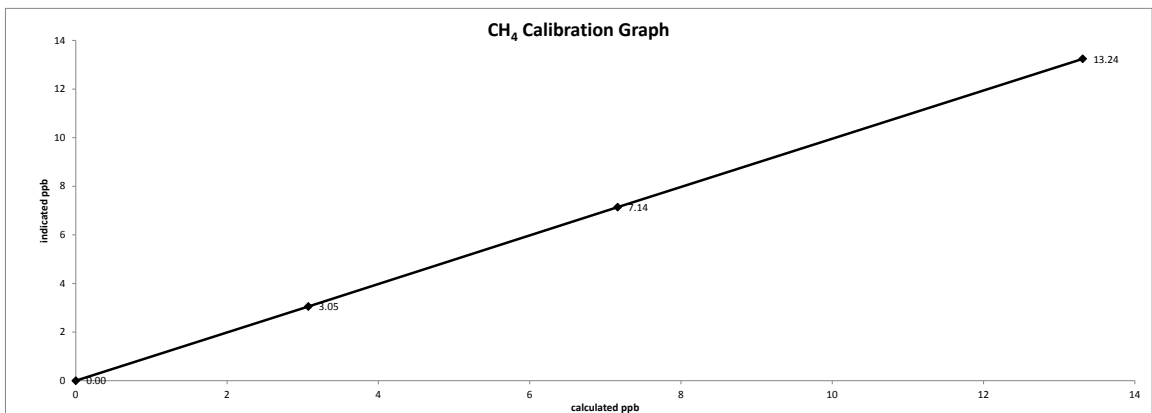
Comments:
 The analyzer sample inlet filter was changed.

No zero adjustment was required/made. As found zero values were copied to adjusted zero values for linearity calculation purposes.

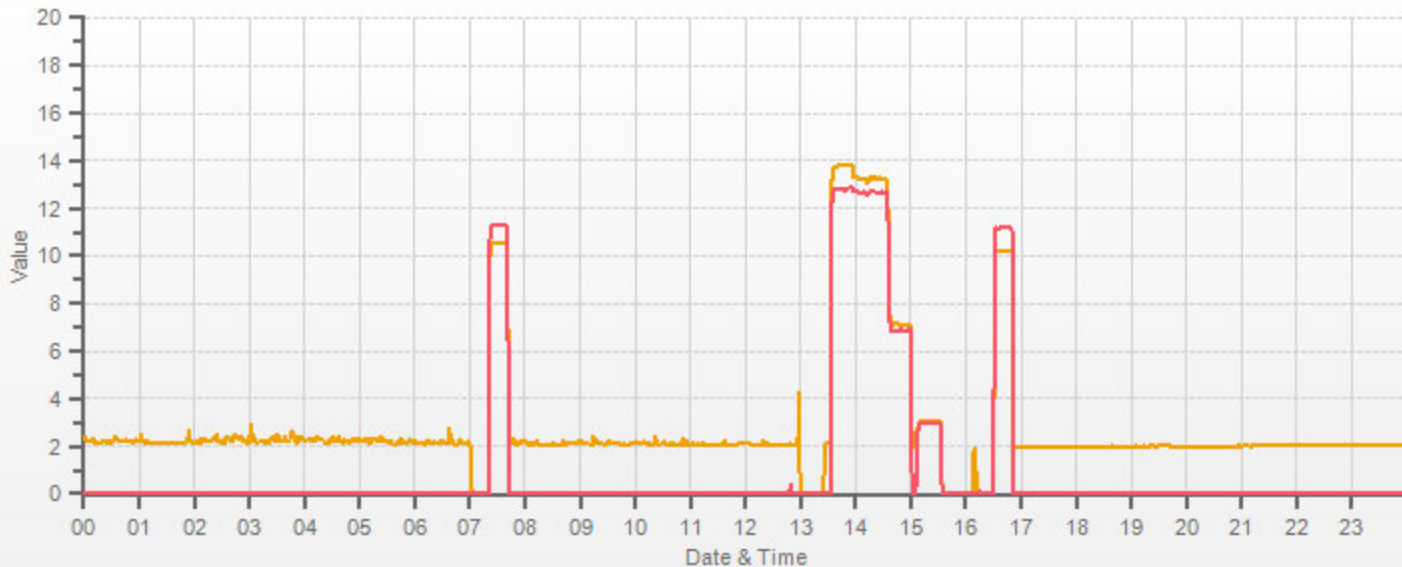
The manifold blower was found to be working normally.

Date: September 11, 2018
Company/Airshed: LICA
Location/Station Name: St. Lina

Start/End Time 24 hr. (mst): 12:42 / 16:55
Calibration Purpose: routine monthly
Calibration Method: Gas Dilution



CH4[ppm] NMHC[ppm]



NITROGEN DIOXIDE



Thermo 42i NO-NO2-NOx Analyzer Calibration

Date: September 12, 2018	Barometer/B.P./units: F.S. 05544 expires January 15, 2019	926	millibars
Company/Airshed: LICA	Thermometer/Station Temp: F.S. 170286131 expires April 19, 2019	23	°C
Location/Station Name: St. Lina	Weather Conditions: Mainly cloudy with drizzle		
Start/End Time 24 hr. (mst): 10:36 / 16:52	Calibration Purpose: routine monthly		
G.P.T. to be used for Ozone?: No	Performed By/Reviewer: Alex Yakupov	Rob Fisher	
Calibration Method: Gas Dilution & Varying UV Lamp Power	Cal Gas Expiry Date: October 24, 2020		

Analyzer: Serial Number/Owner: 1180930029 LICA Last Calibration Date: August 15, 2018 Range ppb: 1000	Correction Factors: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Previous C.F.:</th> <th>As Found C.F.:</th> <th>New C.F.:</th> </tr> </thead> <tbody> <tr> <td>NO =</td> <td>1.000</td> <td>0.959</td> <td>1.000</td> </tr> <tr> <td>NO₂ =</td> <td>1.000</td> <td>0.998</td> <td>1.000</td> </tr> <tr> <td>NO_x =</td> <td>1.001</td> <td>0.959</td> <td>1.000</td> </tr> </tbody> </table>		Previous C.F.:	As Found C.F.:	New C.F.:	NO =	1.000	0.959	1.000	NO ₂ =	1.000	0.998	1.000	NO _x =	1.001	0.959	1.000
	Previous C.F.:	As Found C.F.:	New C.F.:														
NO =	1.000	0.959	1.000														
NO ₂ =	1.000	0.998	1.000														
NO _x =	1.001	0.959	1.000														

Calibration Standards: Low Flow Meter ID/Expiry Date: Defender Low 152019 expires December 13, 2018 High Flow Meter ID/Expiry Date: Defender High 148944 expires December 13, 2018 Calibrator ID/Expiry Date: EnviroNics id# 5212 expires March 1, 2019 Cal Gas Cylinder I.D. #: LL 104225 Cal Gas Conc. (ppm): 51.5 51.6	Standard Calibration Points for a Range of: 1000 ppb <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Point</th> <th>Target NO (ppb)</th> <th>Target NO₂ (ppb)</th> <th>Cc Ozone ?</th> </tr> </thead> <tbody> <tr> <td>High</td> <td>780</td> <td>500</td> <td>n/a</td> </tr> <tr> <td>Mid</td> <td>380</td> <td>275</td> <td>n/a</td> </tr> <tr> <td>Low</td> <td>190</td> <td>100</td> <td>n/a</td> </tr> <tr> <td>Extra Point #1</td> <td>n/a</td> <td>n/a</td> <td>n/a</td> </tr> <tr> <td>Extra Point #2</td> <td>n/a</td> <td>n/a</td> <td>n/a</td> </tr> </tbody> </table>	Point	Target NO (ppb)	Target NO ₂ (ppb)	Cc Ozone ?	High	780	500	n/a	Mid	380	275	n/a	Low	190	100	n/a	Extra Point #1	n/a	n/a	n/a	Extra Point #2	n/a	n/a	n/a
Point	Target NO (ppb)	Target NO ₂ (ppb)	Cc Ozone ?																						
High	780	500	n/a																						
Mid	380	275	n/a																						
Low	190	100	n/a																						
Extra Point #1	n/a	n/a	n/a																						
Extra Point #2	n/a	n/a	n/a																						

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

Calibrator Flow Rates (cc/min)				Calculated NO	Calculated NO _x	Indicated NO	Indicated NO _x	NO C.F.	NO _x C.F.
Point	Diluent	Cal Gas	Total Flow	(ppb)	(ppb)	(ppb)	(ppb)		
as found zero	5059	0.0	5059	0	0	0.0	0.0	n/a	n/a
as found high	4986	76.1	5062	774.6	776.1	808.0	809.0	0.959	0.959
adjusted zero	5059	0.00	5059	0.0	0.0	0.0	0.0	n/a	n/a
adjusted high	4986	76.14	5062	774.6	776.1	775.0	776.0	1.000	1.000
mid	5020	37.00	5057	376.8	377.5	378.0	379.0	0.997	0.996
low	5040	18.62	5059	189.5	189.9	189.0	190.0	1.003	1.000
calibrator zero	5059	0.00	5059	0	0	0.0	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 NO _x	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)
NO _x reference	4986	76.14	5062	0.0	776.0	777.0	1.0	0.0	1.0	
as found high NO ₂	4986	76.14	5062	520.0	259.0	777.0	519.0	517.0	518.0	0.998
adjusted high NO ₂	4986	76.14	5062	520.0	257.0	777.0	520.0	519.0	519.0	1.000
gpt mid	4986	76.14	5062	275.0	499.0	777.0	278.0	277.0	277.0	1.000
gpt low	4986	76.14	5062	100.0	677.0	777.0	100.0	99.0	99.0	1.000
Average NO ₂ C.F.=										1.000

Linear Regression/Calibration Results:

	NO	NO _x	NO ₂	LIMITS
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995
Slope =	0.999	1.000	1.001	0.95-1.05
b (Intercept as % of full scale)=	0.00%	0.04%	0.06%	± 3% F.S.
% change in C.F. from last cal=	4.13%	4.16%	0.19%	± 10%
NO ₂ converter efficiency			1.00	0.96 to 1.04

As found:		As left:	
NO Bkg:	5.5	NO Bkg:	5.2
NO _x Bkg:	5.6	NO _x Bkg:	5.3
NO Coef:	1.204	NO Coef:	1.155
NO ₂ Coef:	0.995	NO ₂ Coef:	1.000
NO _x Coef:	1.002	NO _x Coef:	1.001
PMT:	-824.4	PMT:	-824.4
Internal:	28.9	Internal:	28.3
Chamber:	49.9	Chamber:	50.4
Cooler:	-2.7	Cooler:	-2.9
NO ₂ Converter:	326.8	NO ₂ Converter:	327.4
NO ₂ Converter Set:	325.0	NO ₂ Converter Set:	325.0
Perm Oven Gas:	45.01	Perm Oven Gas:	45.00
Perm Oven Heater:	44.18	Perm Oven Heater:	44.16
Pressure:	254.5	Pressure:	254.5
Flow:	0.534	Flow:	0.536
Ozonator Flow:	OK	Ozonator Flow:	OK
Expected Value NO:	5	Expected Value NO:	5
Expected Value NO ₂ :	448	Expected Value NO ₂ :	458
Expected Value NO _x :	453	Expected Value NO _x :	464

Comments: The converter cooling fan filter was cleaned.

The analyzer sample inlet filter was changed.

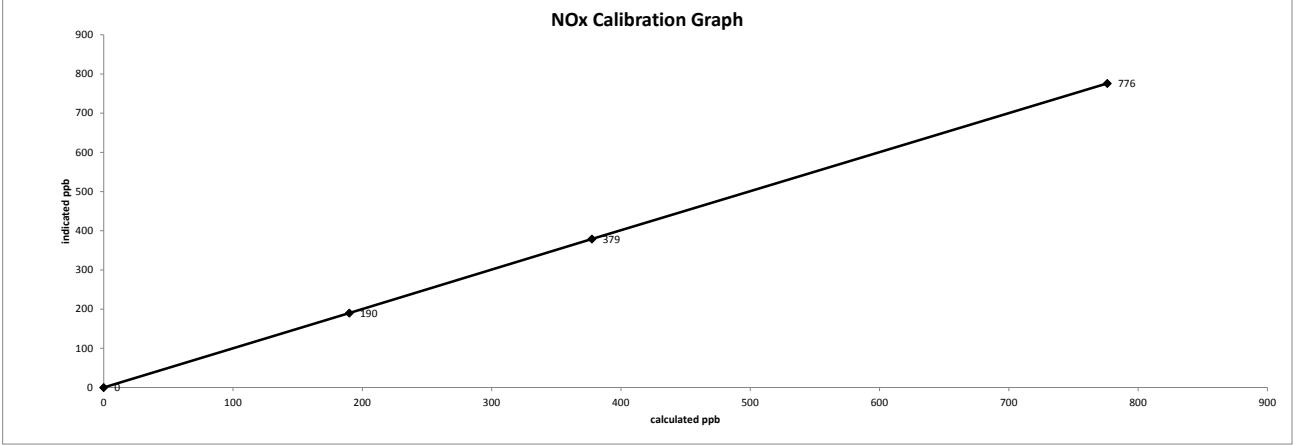
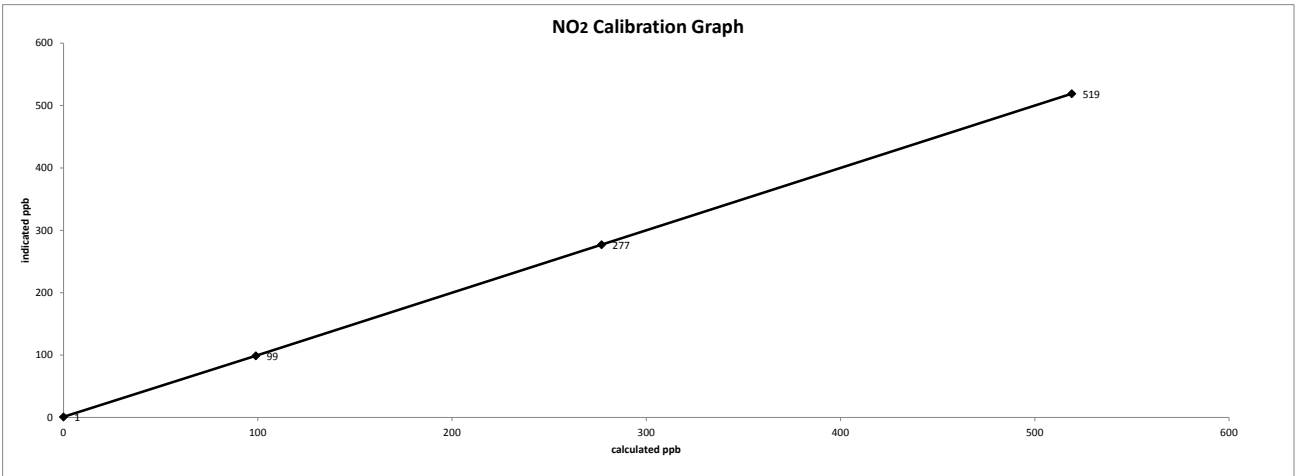
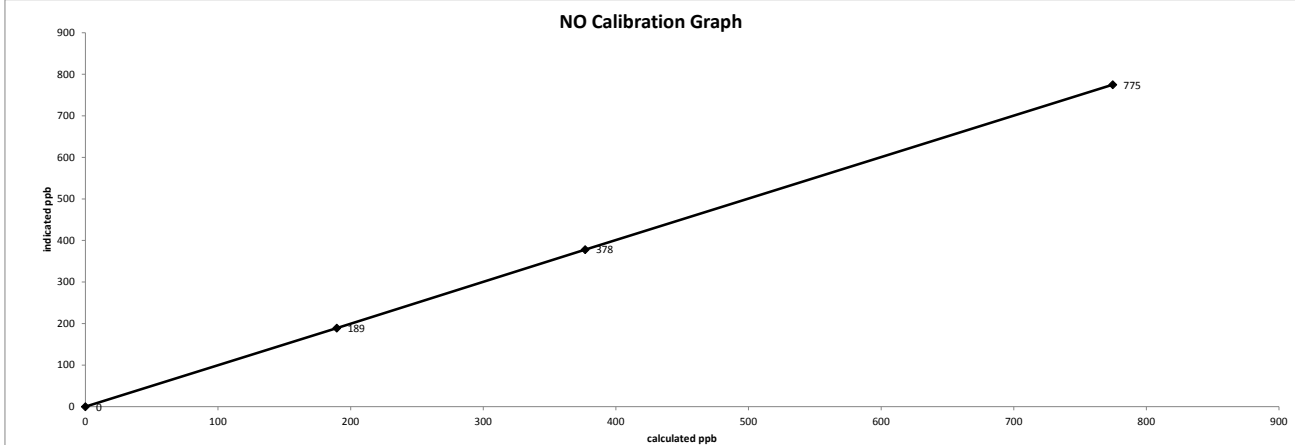
The manifold blower was found to be working normally.

The analyzer cooling fan filter(s) were cleaned.

Date: September 12, 2018
Company/Airshed: LICA
Location/Station Name: St. Lina

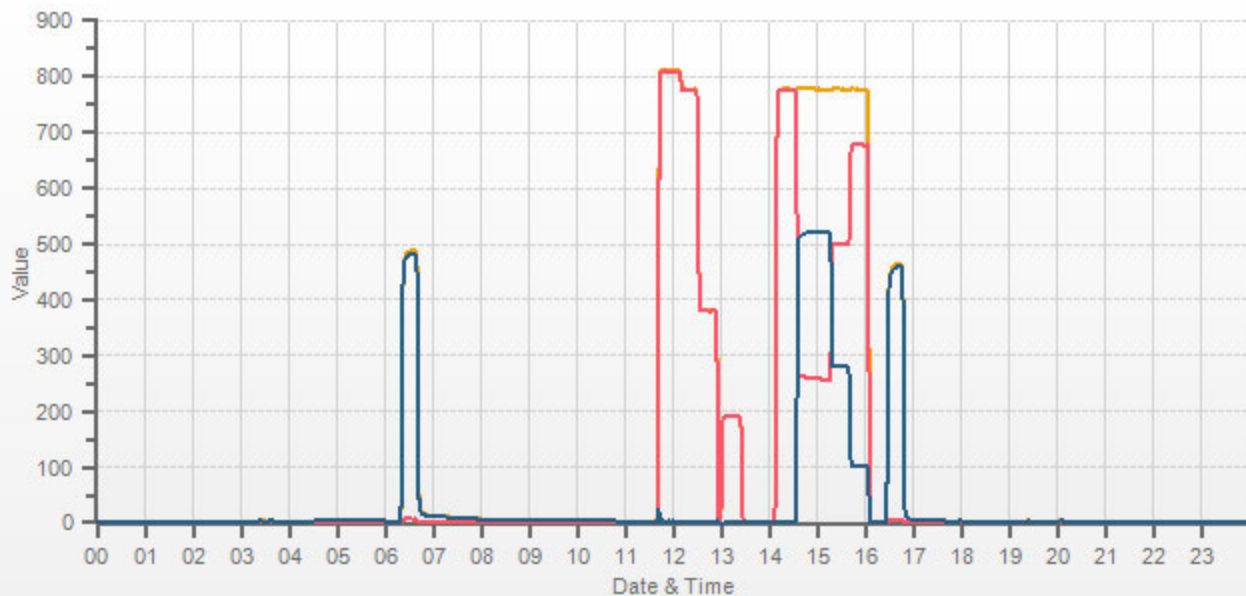
Start/End Time 24 hr. (mst): 10:36 / 16:52
Calibration Purpose: routine monthly
Calibration Method: Gas Dilution & Varying UV Lamp Power

Thermo 42i NO-NO2-NOx Analyzer Calibration



Station: LICA ST. LINA Daily: 18/09/12 Type: AVG 1 Min. [1 Min.]

NOX[ppb] NO[ppb] NO2[ppb]



OZONE



Thermo 49i Ozone Analyzer Calibration

Date: September 12, 2018 Company/Airshed: LICA Location/Station Name: St. Lina Start/End Time 24 hr. (mst): 10:36 / 14:58 Ozone Calibration Method: Varying UV Lamp Power G.P.T. Date: n/a-done by Varying UV Lamp Power Analyzer: Serial Number/Owner: 1002240371 LICA Last Calibration Date: August 15, 2018 Previous Cal High Point C.F.: 1.000	Barometer/B.P./units: F.S. 05544 expires January 15, 2019 926 millibars Thermometer/Station Temp: F.S. 170286131 expires April 19, 2019 23 °C Weather Conditions: Mainly cloudy with drizzle Calibration Purpose: routine monthly Performed By/Reviewer: Alex Yakupov Rob Fisher Cal Gas Expiry Date: n/a-done by Varying UV Lamp Power Ozone Range ppb: 500 As Found C.F.: 1.050 New C.F.: 1.000
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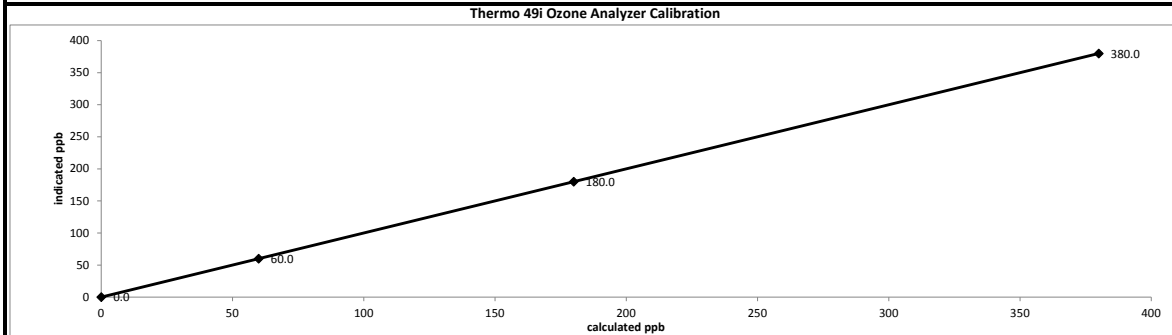
Calibration Standards: Low Flow Meter ID/Expiry Date: Defender Low 152019 expires December 13, 2018 High Flow Meter ID/Expiry Date: Defender High 148944 expires December 13, 2018 Calibrator ID/Expiry Date: Sabio id# 11900613 expires August 22, 2019 Cal Gas Cylinder I.D. #: n/a	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Point</th> <th>AMD Required Range of Ozone Calibration Points</th> </tr> <tr> <td>High</td> <td>300-400 ppb</td> </tr> <tr> <td>Mid</td> <td>150-200 ppb</td> </tr> <tr> <td>Low</td> <td>50-75 ppb</td> </tr> </table>	Point	AMD Required Range of Ozone Calibration Points	High	300-400 ppb	Mid	150-200 ppb	Low	50-75 ppb
Point	AMD Required Range of Ozone Calibration Points								
High	300-400 ppb								
Mid	150-200 ppb								
Low	50-75 ppb								

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

Point	Calibrator Flow Rate (cc/min)		Calculated Concentration:	Corrected Calculated Concentration:	Indicated Concentration:	Correction Factors:
	Total Flow @ Point Start	Total Flow @ Point Finish	(ppb)	(ppb)	(ppb)	
as found zero	5000	5000	0.0	n/a	0.0	n/a
as found high	5000	5000	380.0	380.0	362.0	1.050
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:

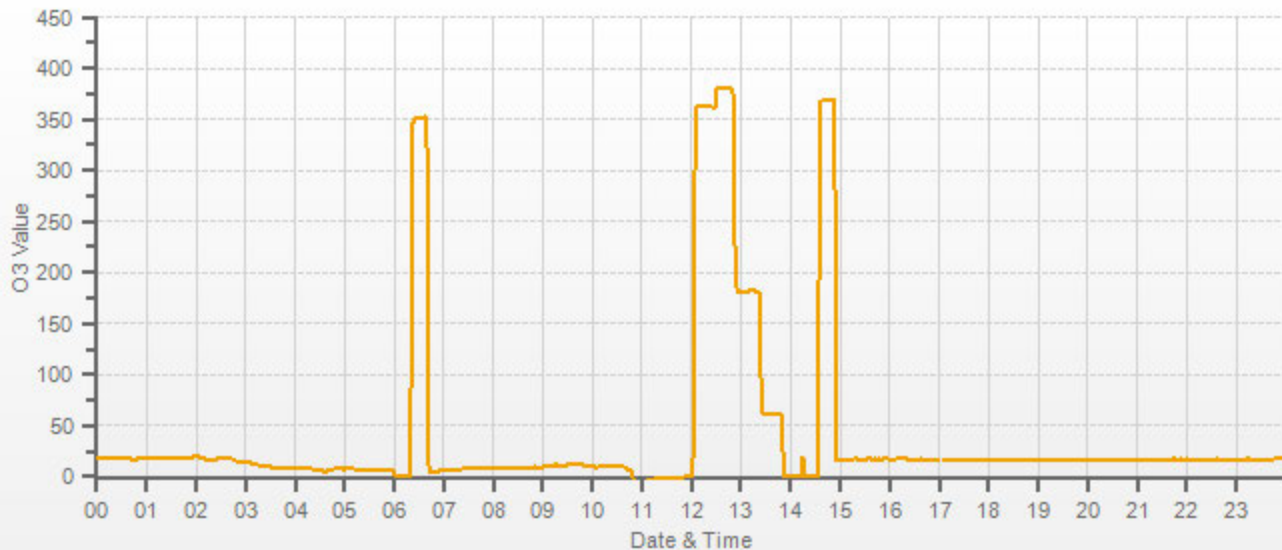
Correlation Coefficient = <u>1.000</u>	LIMITS
Slope = <u>1.000</u>	> or = 0.995
b (Intercept as % of full scale) = <u>0.00%</u>	0.95-1.05
% change in C.F. from last cal = <u>-4.97%</u>	± 3% F.S.
	± 10%



As found: O3 Bkg: <u>-0.3</u> O3 Coef: <u>0.971</u> Photo Lamp: <u>10.7</u> O3 Lamp: <u>8.2</u> Bench: <u>29.5</u> Bench Lamp: <u>53.6</u> O3 Lamp: <u>67.8</u> Pressure: <u>678.8</u> Cell A lpm: <u>0.730</u> Cell B lpm: <u>0.772</u> O3 ppb: <u>-6.2</u> Cell A ppb: <u>-7.4</u> Cell B ppb: <u>-5.1</u> Cell A int (Hz): <u>74169</u> Cell B int (Hz): <u>94014</u> Expected Value: <u>337.0</u>	As left: O3 Bkg: <u>-0.3</u> O3 Coef: <u>1.019</u> Photo Lamp: <u>10.7</u> O3 Lamp: <u>8.2</u> Bench: <u>28.5</u> Bench Lamp: <u>53.6</u> O3 Lamp: <u>67.8</u> Pressure: <u>680.6</u> Cell A lpm: <u>0.730</u> Cell B lpm: <u>0.766</u> O3 ppb: <u>-0.1</u> Cell A ppb: <u>-0.2</u> Cell B ppb: <u>-0.5</u> Cell A int (Hz): <u>74237</u> Cell B int (Hz): <u>94087</u> Expected Value: <u>369.0</u>
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Comments:
 The analyzer sample inlet filter was changed.
 The analyzer cooling fan filter(s) were cleaned.
 The manifold blower was found to be working normally.

O3[ppb]



PARTICULATE MATTER



Thermo 5030i SHARP Monitor Monthly Audit

Date: September 19, 2018
 Company: LICA
 Station Name/Location: St Lina
 Previous Audit Date: August 28, 2018
 Parameter: PM 2.5

Performed By/Reviewer: Alex Yakupov | Robert Fisher
 Start Time (mst): 14:00
 End Time (mst): 14:36
 Calibration Purpose: Monthly
 Weather Conditions: Mix of sun and clouds

SHARP 5030i Information and Status:

Serial Number: CM17091001 Filter Tape Counter 395

Reference Standards:

Air Flow

	Manometer	Orifice	Pressure:	Temp / RH:
Make:	Dwyer	Chinook	Fisher Scientific	Fisher Scientific
Model:	475 Mk.III	CHN0901	FB 1291	11-661-7A, 11745843
Serial Number:	#3	#2	130168457 / 05544	170286131
Calibration Date:	January 9, 2019	April 24, 2019	January 15, 2019	April 19, 2019

Ambient Temperature (°C)

	Reference	SHARP	Difference	Range	Action
#1	11.70	11.4	0.3	< ± 2°C	OK
				2-3 °C	Recalibrate
				> 3°C	Fail

Ambient Relative Humidity (%RH)

	Reference	SHARP	Difference	Range	Action
#1	44.90	45.1	-0.2	< ± 2 %RH	OK
				2-5 %RH	Recalibrate
				> 5 %RH	Fail

Barometric Pressure (mmHg)

	Reference	SHARP	Difference	Range	Action
#1	701.3	701.4	-0.1	< ± 10 mmHg	OK
				10-12 mmHg	Recalibrate
				> 12 %RH	Fail

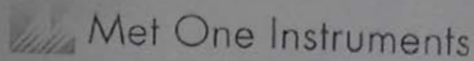
Flow Audit (L/min)

	Reference	SHARP		Range	Action
#1	16.64	16.66	% Difference 0.119928043	< ± 4%	OK
#2	16.68	16.70		4-5%	Recalibrate
#3	16.71	16.73		>5%	Fail
Average	16.68	16.70			

Leak Check (L/min)

	Without Leak Check Adapter			With leak Check Adapter			
	Reference	SHARP	Difference	Reference	SHARP	Difference	
#1	16.68	16.69	-0.01	16.63	16.65	-0.02	Leak Limit: 0.08 L/min
						LEAK RATE: -0.01	

WIND SYSTEM



Sonic Wind Sensor Certificate of Calibration

Sensor Model No.: 50.5H
 Sensor Output Swing: 0V - 1.0V
 Customer: MAXXAM Analytics
 Tested per PO: 35-67600
 Calibrated by: David Frith *DF*

Sensor Serial No.: H12635
 Sensor Output Range: 0 - 50.0 MPS
 Sales Order No.: 122618
 Calibration Date: 05/25/2017

QC Inspection *Chris Paul*

Instrument Condition Within Tolerance: As Found As Left
 Corrective Action: No Adjustment Adjust Repair
 Preventative Maintenance

As Found Test Date: N/A As Left Test Date: 05/25/2017

Quality Control Manual Revision: September 16, 2013 MP42201 Rev. G.
 All Work Performed per Customer Purchase Order Requirements.
 Calibration Document No. 50.5-6100

Test Equipment Used for Calibration of Instruments

Description	Manufacturer	Model No.	Serial No.	Cal Date	Cal Due	Voltage Accuracy	Time Base Accuracy
Data Acquisition	Campbell Scientific	CR1000	6569	4/06/2015	4/06/2018	+/- 3mV	< 6 ppm
NIST Cupset	Met One Instruments	170-41	3309	1/26/2017	1/26/2022	Accuracy < 0.15 mph or 1% WS	

Environmental Data: Temperature 65 to 80 Deg F Vibration none
 Humidity 20 to 70% Radiation none

Firmware Version: 3194-01 R2.62

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



Meteorological System Checklist

Date:	September 19, 2018		
Technician:	Alex Yakupov		
Reviewer:	Rob Fisher		
Station:	St. Lina		
Unit:	Make:	Model:	Serial #:
Temperature Sensor:	RM Young	41372 VC Temp Sensor	1920/01983
Relative Humidity Sensor:	RM Young	41372 VC Temp Sensor	1920/01983
AMBIENT TEMPERATURE SENSOR CHECK			
Previous check date:	May 2, 2018		
Parameter:	Temperature @ 2 metres (1 C tolerance)		
Reference Thermometer ID:	F.S. 170286131 expires April 19, 2019		
Reference Temperature (°C):	11.9		
Station - Ambient Temperature (°C):	11.1		
Temperature Difference (°C):	0.8		
RELATIVE HUMIDITY (HYGROMETER) SENSOR CHECK			
Previous check date:	May 2, 2018		
Reference Hygrometer ID:	F.S. 170286131 expires April 19, 2019		
Reference Hygrometer % RH- Reading:	44.00		
Station Hygrometer % RH- Reading:	45.73		
RH Tolerance +/- 15% of difference:	37.40 - 50.60	-3.9%	



Meteorological System Checklist

Date:	September 21, 2018		
Technician:	Alex Yakupov		
Reviewer:	Rob Fisher		
Station:	St. Lina		
Unit:	Make:	Model:	Serial #:
Temperature Sensor:	Rotronic	HC2A-S3	20257103
Relative Humidity Sensor:	Rotronic	HC2A-S3	20257103
AMBIENT TEMPERATURE SENSOR CHECK			
Previous check date:	N/A		
Parameter:	Temperature @ 2 metres (1 C tolerance)		
Reference Thermometer ID:	F.S. 170286131 expires April 19, 2019		
Reference Temperature (°C):	2.4		
Station - Ambient Temperature (°C):	2.9		
Temperature Difference (°C):	-0.5		
RELATIVE HUMIDITY (HYGROMETER) SENSOR CHECK			
Previous check date:	N/A		
Reference Hygrometer ID:	F.S. 170286131 expires April 19, 2019		
Reference Hygrometer % RH- Reading:	51.90		
Station Hygrometer % RH- Reading:	49.10		
RH Tolerance +/- 15% of difference:	44.12 - 59.69	5.4%	

CALIBRATORS

Company: Maxxam Operator: Chris W

Calibrator:			Flow Measurement Device:		
Make/Model	<u>Envionics 6100</u>		Make/Model	<u>Mesa Defender 530</u>	
Serial Number	<u>5212</u>		Serial Number	<u>L-153351 H-152571</u>	
Last Verification Date	<u>February 2017</u>		Temperature (°C)	<u>24.0 C</u>	
NO Cylinder S/N	<u>EY0000715</u>		Barometric Pressure	<u>702 mmHg</u>	
NO [PPM]	<u>50.7</u>	NOx [PPM] <u>50.8</u>			
Expiry Date	<u>May 2021</u>				

Dilution Flow (sccm)					
Pt. #1	<u>5000</u>	Pt. #2	<u>5000</u>	Pt. #3	<u>5000</u>
Gas Flow (sccm)					
Pt. #1	<u>80</u>	Pt. #2	<u>40</u>	Pt. #3	<u>20</u>

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO ₂	NOx	NO	NOx
5000	0.0	0.0000	0.0000	0.0000	0.0000	0.0000	Limit ± 10%	
5004	77.2	0.7822	0.7837	0.7769	0.0006	0.7774	-1%	-1%
5018	37.7	0.3809	0.3817	0.3777	0.0005	0.3782	-1%	-1%
5012	18.8	0.1902	0.1905	0.1884	-0.0002	0.1885	-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)=	0.9934	0.90-1.10		m (Slope)=	0.9921
b (Intercept % of FS)=	-0.0332	± 3% F.S.		b (Intercept % of FS)=	-0.0277

Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
5004	0.000	0.0000	0.7766	0.0007	0.7773	NO ₂	% Diff. Limit
5004	0.500	0.4846	0.2920	0.4797	0.7717	-1%	± 10%
5004	0.280	0.2731	0.5035	0.2713	0.7747	-1%	± 10%
5004	0.100	0.0958	0.6808	0.0962	0.7770	0%	± 10%
Absolute Average Percent Difference						1%	± 10%

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

NO₂		LIMITS
Correlation=	1.0000	≥ 0.995
m (Slope)=	0.9880	0.90-1.10
b (Intercept % of FS)=	0.1153	± 3% F.S.

AENV Standards		NO_x Analyzer	
Audit Calibrator		Make/Model	<u>Teco 42i</u>
Make/Model	<u>Teco 146i</u>	Serial/AMU Number	<u>AMU 1868</u>
Serial/AMU Number	<u>AMU 1809</u>	Last Calibration Date	<u>March 1, 2018</u>
SRM Gas Cylinder No.	<u>APEX1170572</u>	Full Scale (ppm)	<u>1.0</u>
Cylinder Conc. (ppm)	<u>49.99</u>	Cylinder Gas Expiry Date	<u>November 2020</u>

COMMENTS: Cylinder contains 25 ppm SO₂.

Auditor: Al Clark Date: March 1, 2018
 Operator Signature: *Chris W* Location: McIntyre Center Edmonton

Company Maxxam Operator: Mike

Calibrator:		Flow Measurement Device:	
Make/Model	<u>Sabio</u>	Make/Model	<u>Bios Definer 220</u>
Serial Number	<u>11900613</u>	Serial Number	<u>H=128686; L=129069</u>
Last Verification Date	<u>March 16, 2018</u>	Temperature (°C)	<u>22.9 C</u>
NO Cylinder S/N	<u>LL104183</u>	Barometric Pressure	<u>698 mmHg</u>
NO [PPM]	<u>50.8</u>	NOx [PPM]	<u>50.9</u>
Expiry Date	<u>October 24, 2020</u>		

Dilution Flow (sccm)			
Pt. #1	<u>5059</u>	Pt. #2	<u>5073</u>
Pt. #3	<u>5073</u>		
Gas Flow (sccm)			
Pt. #1	<u>77.5</u>	Pt. #2	<u>38.2</u>
Pt. #3	<u>19.1</u>		

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO ₂	NOx	NO	NOx
5124	0.0	0.0000	0.0000	0.0000	-0.0001	0.0000	Limit ± 10%	
5059	77.5	0.7782	0.7797	0.7763	0.0005	0.7767	0%	0%
5073	38.2	0.3825	0.3833	0.3794	0.0000	0.3795	-1%	-1%
5073	19.1	0.1913	0.1916	0.1904	0.0000	0.1904	0%	-1%
Absolute Average Percent Difference							1%	1%

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

<u>NO</u>		<u>LIMITS</u>		<u>NOx</u>	
Correlation=	1.0000	≥ 0.990		Correlation=	1.0000
m (Slope)=	0.9975	0.90-1.10		m (Slope)=	0.9960
b (Intercept % of FS)=	-0.0616	± 3% F.S.		b (Intercept % of FS)=	-0.0661

Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
5059	0.0	0.0000	0.7741	0.0000	0.7741	NO ₂	% Diff. Limit
5059	500.0	0.4918	0.2823	0.4916	0.7739	0%	± 10%
5059	275.0	0.2774	0.4967	0.2780	0.7747	0%	± 10%
5059	100.0	0.1031	0.6710	0.1032	0.7743	0%	± 10%
Absolute Average Percent Difference						0%	± 10%

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

<u>NO₂</u>		<u>LIMITS</u>	
Correlation=	1.0000	≥ 0.995	
m (Slope)=	0.9998	0.90-1.10	
b (Intercept % of FS)=	0.0173	± 3% F.S.	

<u>AENV Standards</u>		<u>NO_x Analyzer</u>	
Audit Calibrator		Make/Model <u>Thermo 42i</u>	
Make/Model	<u>Thermo 146i</u>	Serial/AMU Number	<u>1868</u>
Serial/AMU Number	<u>1809</u>	Last Calibration Date	<u>August 16, 2018</u>
SRM Gas Cylinder No.	<u>APEX1170572</u>	Full Scale (ppm)	<u>1.0</u>
Cylinder Conc. (ppm)	<u>49.99</u>	Cylinder Gas Expiry Date	<u>November 15, 2020</u>

COMMENTS: _____

Auditor: Shea Beaton
Operator Signature: _____

Date: August 22, 2018
Location: McIntyre Center Edmonton

CALIBRATION GASES



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2017-482CGA

Company: Maxxam **Operator's Name:** Mike
Cylinder #: LL104225 **Concentration PPM:** 49.2 **Tolerance(%)** 2 **Certified By:** Praxair
Expiry Date: October 2020

Reference Calibrator and Gas:

Make/Model: R&R MFC 201
Serial Number: AMU 1690
Last Verification Date: December 13, 2017
Gas Type: SO2 **Conc.** 98.07
Cylinder Number: CAL016625
Expiry Date: January 2019

Flow Measurement Device:

Make/Model: Mesa Definer 220
Serial Number: H-133034 / L-132702
Temp. °C: 23.4 C
B.P. 707 mmHg

Reference Analyzer:

Make/Model: Teco 43C **Serial/AMU Number:** 1623
Instrument Settings: **Zero:** 10.0 **Span:** 1.006 **Range:** 1.0
Last Calibration: **Date:** Dec12/17 **C.F.** 1.000 **Done By:** Al Clark

Calibrator Flows (sccm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.000	0.000	0.000	0.000
4989	79.5	0.764	0.01594	62.755	47.9
4995	39.6	0.380	0.00793	126.136	47.9
4992	19.6	0.188	0.00393	254.694	47.9
Average Cylinder Concentration:					47.9

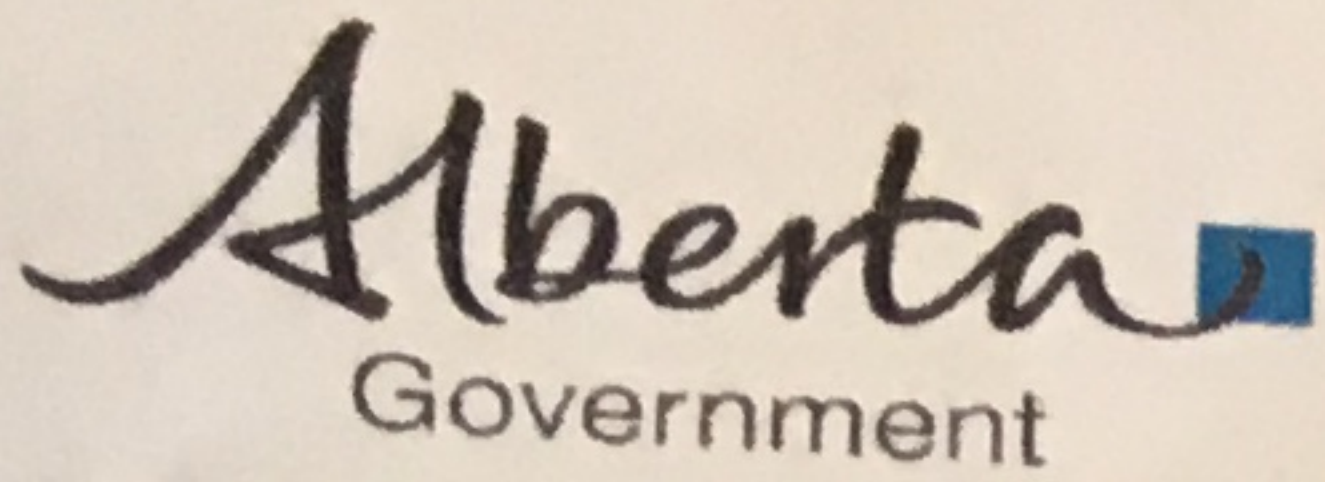
Previous Stated Concentration PPM: 49.2

Percent variance from Stated: 3

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

Auditor: Al Clark
Operator Signature: *Al Clark*

Date: December 13, 2017
Location: McIntyre Center Edmonton



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2017-493CGA

Company: Maxxam Operator's Name: Mike
 Cylinder #: EY0001003 Concentration PPM: 9.55 Tolerance(%): 2 Certified By: Praxair
 Expiry Date: October 2020

Reference Calibrator and Gas:
 Make/Model: Sabio 2010
 Serial Number: AMU 2092
 Last Verification Date: January 17, 2018
 Gas Type: H2S Conc. 20.43
 Cylinder Number: CAL015272
 Expiry Date: January 2019

Flow Measurement Device:
 Make/Model: Mesa Defender 530
 Serial Number: H-153961 / L-153874
 Temp. °C: 23.0 C
 B.P.: 697 mmHg

Reference Analyzer:
 Make/Model: Teco 450i Serial/AMU Number: 1980
 Instrument Settings: Zero: 12.9 Span: 0.955 Range: 0.1
 Last Calibration: Date: Jan 17/18 C.F. 1.000 Done By: Al Clark

Calibrator Flows (sccm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.0000	0.0000	0.0000	0.0000
5051	39.6	0.0753	0.00784	127.551	9.60
5028	20.2	0.0387	0.00402	248.911	9.63
5033	10.5	0.0198	0.00209	479.333	9.49
Average Cylinder Concentration:					9.58

Previous Stated Concentration PPM: 9.55

Percent variance from Stated: 0

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

Auditor: Al Clark

Date: January 18, 2018

Operator Signature: [Signature]

Location: McIntyre Center Edmonton



Calibration Gas Audit

CH4 / C3H8 Cylinder Gas

File No. 2017-481CGA

Company: Maxxam **Operators name:** Mike

Cylinder #: LL119471 Conc CH4 (PPM) 599/207 Tolerance (%) 2 Certified By: Praxair

Expiry Date: October 2025

Reference Calibrator and Gas:				Flow Measurement Device:	
Make/Model	<u>R&R MFC 201</u>			Make/Model	<u>Mesa Definer 220</u>
Serial Number	<u>AMU 1690</u>			Serial Number	<u>H-133034 / L-132702</u>
Last Verification Date	<u>December 13, 2017</u>			Temp. °C	<u>23.1 C</u>
Gas Type	<u>CH4</u>	Conc.	<u>990.4</u>	B.P.	<u>707 mmHg</u>
Cylinder Number	<u>5604875</u>	Expiry Date	<u>July 2021</u>		
Gas Type	<u>C3H8</u>	Conc.	<u>246.5</u>		
Cylinder Number	<u>XF003845B</u>	Expiry Date	<u>July 2022</u>		

Reference Analyzer:

Make/Model Teco 55i Serial/AMU Number: 2108

Instrument Settings Zero: N/A Span: N/A Range: 20.0

Last Calibration: Date: Dec 12/17 C.F. 1.000 Done By: Al Clark

Calibrator Flows (scem)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	CH4	C3H8			CH4	C3H8
3500	0.0	0.00	0.00				
3618	80.4	13.41	12.75	0.02	45.00	603	209
3547	39.8	6.73	6.47	0.01	89.12	600	210
3560	19.8	3.34	3.21	0.01	179.80	601	210
Average Cylinder Concentration:						601	209

CH4	C3H8
Previous Stated Concentration PPM: <u>599</u>	<u>207</u>
Percent variance from Stated: <u>0</u>	<u>1</u>

Cylinder gas tolerances based on CH4 only

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

< =5% Outside Manufacturer Tolerance. Use manufacturers concentration

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

Auditor: Al Clark Date: December 13, 2017

Operator Signature: *Al Clark* Location: McIntyre Center Edmonton



Calibration Gas Audit

NO Cylinder Gas

File No. 2017-483CGA

Company: Maxxam **Operators name:** Mike

Cylinder #: LL104225 Conc (PPM) 51.5/51.6 Tolerance (%) 2 Certified By: Praxair

Expiry Date: October 2020

Reference Calibrator and Gas:				Flow Measurement Device:	
Make/Model	<u>Teco 146i</u>			Make/Model	<u>Mesa Definer 220</u>
Serial Number	<u>AMU 1809</u>			Serial Number	<u>H-133034 / L-132702</u>
Last Verification Date	<u>December 13, 2017</u>			Temp. °C	<u>23.4 C</u>
Gas Type	<u>NO</u>	Conc.	<u>50.03</u>	B.P.	<u>707 mmHg</u>
Cylinder Number	<u>APEX 1223938</u>				
Expiry Date	<u>June 2020</u>				

Reference Analyzer:

Make/Model Teco 42i Serial/AMU Number: 1868

Instrument Settings Zero: 4.7 Span: 1.004 Range: 1.0

Last Calibration: Date: Dec12/17 C.F. 1.000 Done By: Al Clark

Calibrator Flows (sccm)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
Dilution	Gas	NO	NOX			NO	NOX
5000	0.0	0.000	0.000				
4989	79.5	0.813	0.812	0.016	62.755	51.0	51.0
4995	39.6	0.407	0.406	0.008	126.136	51.3	51.2
4992	19.6	0.202	0.201	0.004	254.694	51.4	51.2
Average Cylinder Concentration:						51.3	51.1

<u>NO</u>	<u>NOx</u>
Previous Stated Concentration PPM: <u>51.5</u>	<u>51.6</u>
Percent variance from Stated: <u>0</u>	<u>1</u>

Cylinder gas tolerances based on NO only

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

<=5% Outside Manufacturer Tolerance. Use manufacturers concentration

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

Auditor: Al Clark Date: December 13, 2017

Operator Signature: *Al Clark* Location: McIntyre Center Edmonton

APPENDIX III
MAXIMUM INSTANTANEOUS DATA



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
St. Lina Continuous Monitoring Station - September 2018

SULPHUR DIOXIDE Instantaneous Maximum (SO₂ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	24	
2	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0	S	0	0	0	0	1	1	1	1	0	1	0	24
3	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	1	0	24
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	24
5	0	0	0	0	0	0	0	0	1	2	2	2	2	S	1	1	0	0	0	0	0	0	1	1	0	2	1	24	
6	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	24
7	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
8	0	0	0	0	0	S1	1	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	23
9	0	0	0	0	0	0	0	0	0	S	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
10	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	24
11	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
12	0	0	0	0	0	0	S	0	0	0	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	0	24
13	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	S	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	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
16	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	24
17	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
18	S	0	0	0	0	0	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	2	0	24	
19	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	1	0	1	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	1	0	1	0	24
21	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	1	0	24	
22	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
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	24
24	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	1	0	24
25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	S	1	1	0	0	0	0	0	0	0	1	0	24
26	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
27	0	0	0	0	0	0	1	1	0	1	1	1	0	0	S	0	0	0	0	0	0	0	0	0	0	0	1	0	24
28	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
29	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	24
30	0	0	0	0	0	0	0	1	1	1	1	S	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
HOURLY MAX	1	1	1	1	0	1	2	1	1	2	2	2	2	1	1	1	0	1	1	0	0	1	1	1	1	1	1	1	24
HOURLY AVG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24

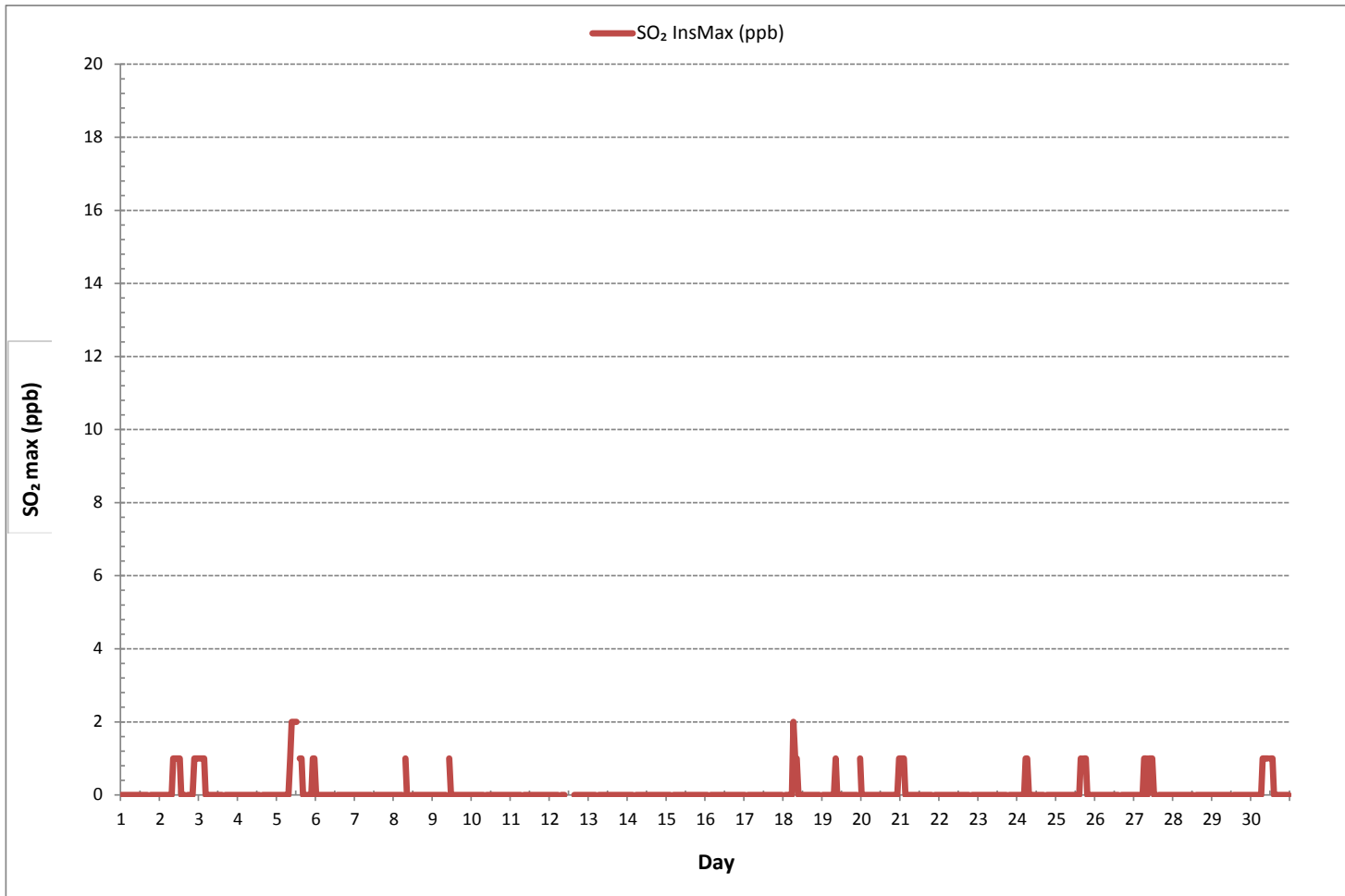
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	48
MAXIMUM INSTANTANEOUS VALUE:	2 ppb @ HOUR 9 ON DAY 5
IZS CALIBRATION TIME:	31 hrs
MONTHLY CALIBRATION TIME:	5 hrs
STANDARD DEVIATION:	0
OPERATIONAL TIME:	719 hrs

SULPHUR DIOXIDE Instantaneous Maximum (SO₂ ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
St. Lina Continuous Monitoring Station - September 2018

HYDROGEN SULPHIDE Instantaneous Maximum (H₂S ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	1	1	2	1	2	1	2	1	2	1	1	1	1	2	1	2	1	S	2	1	1	1	1	1	1	1	2	1	24
2	1	1	1	2	2	2	2	2	2	1	1	1	1	1	1	1	S	1	1	1	1	2	1	2	1	2	1	2	24
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5	2	2	2	2	2	2	2	2	2	2	2	2	2	S	2	2	2	2	2	2	2	2	2	2	2	2	2	2	24
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13	1	0	0	0	0	S	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	1	0	1	0	1	24
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16	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	24
17	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	24
18	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	24
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27	2	2	2	2	2	2	2	2	2	2	2	2	2	S	2	2	2	2	2	2	2	2	1	2	2	1	2	2	24
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29	2	2	2	2	2	1	2	1	2	2	2	2	S	2	2	2	1	1	1	1	1	2	2	2	2	1	2	2	24
30	2	1	2	1	1	2	2	2	1	2	S	2	1	1	2	1	1	2	1	1	2	1	1	2	1	1	2	1	24
HOURLY MAX	2	2	2	2	2	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	2	3	2	2	2	2	24
HOURLY AVG	2	1	1	1	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	24

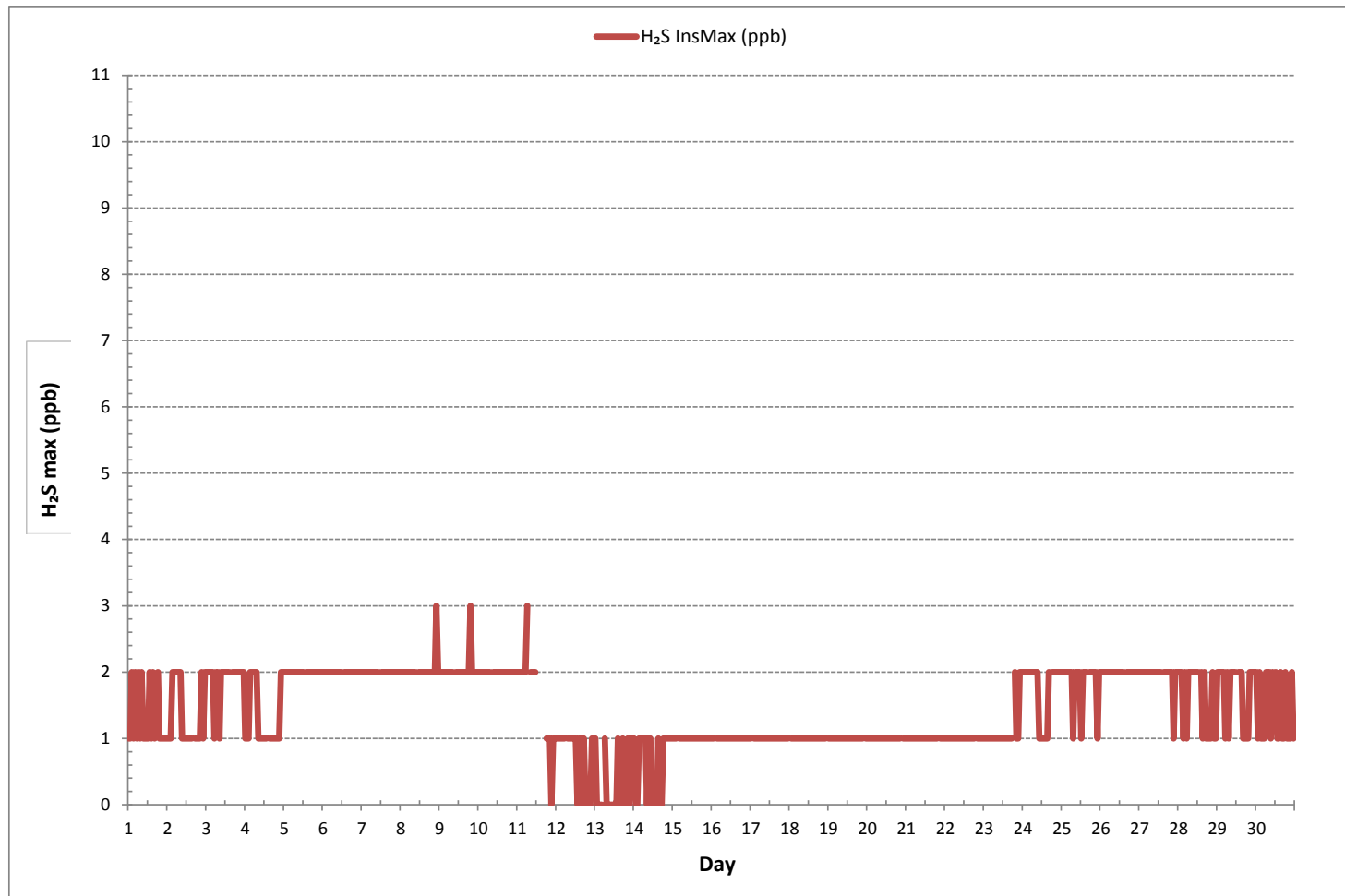
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	651
MAXIMUM INSTANTANEOUS VALUE:	3 ppb @ HOUR 22 ON DAY 8
IZS CALIBRATION TIME:	31 hrs
MONTHLY CALIBRATION TIME:	6 hrs
STANDARD DEVIATION:	1
OPERATIONAL TIME:	720 hrs

HYDROGEN SULPHIDE Instantaneous Maximum (H₂S ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
St. Lina Continuous Monitoring Station - September 2018

TOTAL HYDROCARBONS Instantaneous Maximum (THC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY																													
1	2.05	1.98	1.99	2.02	2.01	2.00	1.99	2.00	2.00	2.11	2.06	2.26	2.14	2.46	2.09	2.16	2.17	S	2.35	2.63	1.98	2.00	1.99	2.00	1.98	2.63	2.11	24	
2	2.01	2.13	2.01	2.02	2.10	2.07	2.09	2.09	2.09	2.06	2.03	2.04	2.01	2.03	2.02	2.01	S	5.16	2.00	2.31	2.30	2.15	2.17	2.18	2.00	5.16	2.22	24	
3	2.18	2.19	2.42	2.82	2.27	2.19	2.09	2.04	2.07	2.03	2.42	2.70	2.51	2.40	2.20	S	2.39	2.09	2.09	2.25	2.11	2.14	2.12	2.09	2.03	2.82	2.25	24	
4	2.09	2.33	2.50	2.50	2.49	2.26	2.25	9.12	2.25	2.18	2.25	2.19	2.25	2.14	S	2.29	2.29	2.63	2.07	2.20	2.15	2.11	2.15	2.17	2.07	9.12	2.56	24	
5	2.18	2.15	2.12	2.20	2.17	2.19	2.20	2.21	2.20	2.15	2.13	2.12	2.14	S	2.15	2.13	2.05	2.55	2.69	3.37	2.97	2.93	2.71	2.27	2.05	3.37	2.35	24	
6	2.17	2.10	2.11	2.09	2.08	2.11	2.07	2.06	2.07	2.08	2.08	2.07	S	2.05	2.06	2.06	2.06	2.08	2.08	2.19	2.13	2.11	2.10	2.14	2.05	2.19	2.09	24	
7	2.14	2.13	2.16	2.20	2.21	2.25	2.18	2.18	2.18	2.19	2.16	S	2.12	2.10	2.14	2.16	2.13	2.19	2.12	2.13	2.13	2.15	2.17	2.22	2.10	2.25	2.16	24	
8	2.25	2.28	2.29	2.26	2.24	2.23	S1	2.20	2.22	2.18	S	2.20	2.26	2.42	2.47	2.50	2.37	2.38	2.30	2.41	2.51	2.30	2.37	2.45	2.18	2.51	2.32	23	
9	2.20	2.23	2.13	2.23	2.16	2.10	2.14	2.15	2.28	S	2.24	2.24	2.31	2.22	2.20	2.24	2.04	2.08	2.11	2.05	2.05	2.05	2.08	2.07	2.04	2.31	2.16	24	
10	2.12	2.11	2.11	2.14	2.14	2.16	2.07	2.07	S	2.11	2.14	2.16	2.14	2.10	2.25	2.16	2.17	2.54	3.60	3.04	2.78	2.61	2.55	2.54	2.07	3.60	2.34	24	
11	2.45	2.77	2.60	2.93	2.52	2.61	2.75	S	2.29	2.44	2.46	2.44	C	C	C	C	C	1.98	1.98	2.01	1.98	2.07	2.02	2.02	1.98	2.93	2.35	24	
12	2.01	2.04	2.08	2.14	2.18	2.29	S	2.45	2.15	2.06	2.01	1.97	2.05	1.98	2.07	1.99	2.24	2.24	2.24	2.08	2.09	2.09	2.08	2.09	1.97	2.45	2.11	24	
13	2.09	2.25	2.07	2.05	1.98	S	1.91	1.88	1.87	X	1.89	1.88	1.86	1.92	1.96	1.94	2.04	1.95	1.95	2.01	2.58	2.78	2.37	3.31	1.86	3.31	2.12	23	
14	1.99	2.98	8.12	5.19	S	5.49	2.59	2.05	2.01	2.00	2.00	1.98	1.97	1.98	1.97	1.97	1.97	1.97	1.99	2.02	2.02	2.05	2.09	2.08	1.97	8.12	2.63	24	
15	2.07	2.06	2.12	S	2.11	2.09	2.07	2.05	2.04	2.04	2.04	2.02	2.00	1.99	1.99	2.12	1.98	1.99	2.26	1.99	2.01	2.00	2.06	1.98	1.98	2.26	2.05	24	
16	1.98	2.01	S	2.01	2.01	2.01	2.02	2.00	1.99	2.05	2.03	2.04	2.00	2.02	1.98	1.98	1.98	2.05	2.27	1.98	2.02	2.03	2.03	2.01	1.98	2.27	2.02	24	
17	2.00	S	2.01	2.02	2.03	2.07	2.14	2.02	2.03	1.99	1.99	1.99	1.97	2.16	2.05	2.08	2.11	2.03	2.03	2.04	2.04	2.07	2.06	2.05	1.97	2.16	2.04	24	
18	S	2.05	2.02	2.03	2.06	2.09	2.07	2.11	2.09	2.06	2.04	2.06	2.21	2.21	2.15	2.27	2.33	2.39	2.02	4.19	2.33	2.55	2.90	S	2.02	4.19	2.28	24	
19	2.07	2.14	2.17	2.12	2.11	2.15	2.17	2.14	2.13	2.07	2.02	2.28	2.09	2.03	2.09	1.97	2.16	1.99	1.99	2.01	2.02	2.03	S	2.35	1.97	2.35	2.10	24	
20	2.27	2.17	2.08	2.10	2.13	2.27	2.19	2.25	2.21	2.09	2.04	2.00	1.99	1.98	1.97	1.97	1.95	1.96	1.97	1.98	2.03	S	2.09	2.10	1.95	2.27	2.08	24	
21	2.12	2.13	2.13	2.12	2.13	2.17	2.16	2.16	2.11	2.07	2.02	1.99	1.99	1.97	1.97	1.99	1.98	1.98	2.02	2.00	S	2.08	2.05	2.04	1.97	2.17	2.06	24	
22	2.07	2.08	2.08	2.11	2.09	2.06	2.09	2.12	2.09	2.06	2.00	2.00	1.99	2.00	2.02	1.98	2.03	2.01	2.00	S	2.05	2.06	2.05	2.05	1.98	2.12	2.05	24	
23	2.03	2.03	2.06	2.08	2.07	2.09	2.03	2.01	2.00	1.98	1.99	1.98	1.99	2.00	1.99	2.02	2.01	2.04	2.02	S	2.02	2.03	2.05	2.05	2.06	1.98	2.09	2.03	24
24	2.08	2.07	2.09	2.11	2.13	2.14	2.15	2.15	2.12	2.09	2.04	2.16	2.34	2.13	2.16	2.19	2.25	S	2.11	2.02	2.09	2.14	2.26	2.35	2.02	2.35	2.15	24	
25	2.35	2.10	2.10	2.06	2.04	1.97	1.98	1.97	1.96	1.95	2.05	1.97	1.96	1.96	1.97	1.96	S	1.99	2.08	1.99	1.99	1.98	1.98	1.97	1.95	2.35	2.01	24	
26	1.96	2.00	1.95	1.95	1.95	1.96	1.98	2.05	2.49	2.70	2.19	2.12	2.13	2.04	2.01	S	2.05	1.99	2.08	2.09	2.17	2.18	2.13	2.38	1.95	2.70	2.11	24	
27	2.08	2.12	2.15	2.08	2.01	2.08	2.01	1.98	1.97	1.98	1.97	2.08	2.04	2.09	S	2.14	2.24	2.08	2.17	2.04	1.98	1.97	1.97	1.98	1.97	2.24	2.05	24	
28	3.11	2.11	2.00	2.00	2.01	2.55	2.66	2.31	2.08	2.39	1.99	2.14	2.12	S	2.18	2.43	2.00	2.23	2.15	2.25	2.25	2.18	2.02	2.05	1.99	3.11	2.23	24	
29	1.98	2.10	2.21	2.16	2.05	2.08	1.99	1.98	2.00	1.96	1.98	2.02	S	5.11	1.96	2.00	1.99	2.01	2.18	2.07	2.36	2.54	2.19	2.57	1.96	5.11	2.24	24	
30	2.74	2.74	2.31	2.21	2.33	2.20	2.13	2.22	2.04	2.01	1.99	S	1.98	1.98	1.99	1.99	2.03	2.20	2.20	2.22	2.33	2.21	2.11	2.11	1.98	2.74	2.19	24	
HOURLY MAX	3.11	2.98	8.12	5.19	2.52	5.49	2.75	9.12	2.49	2.70	2.46	2.70	2.51	5.11	2.47	2.50	2.39	5.16	3.60	4.19	2.97	2.93	2.90	3.31					
HOURLY AVG	2.17	2.19	2.35	2.27	2.13	2.27	2.15	2.35	2.10	2.11	2.08	2.11	2.09	2.20	2.08	2.10	2.11	2.24	2.18	2.26	2.19	2.19	2.17	2.20					

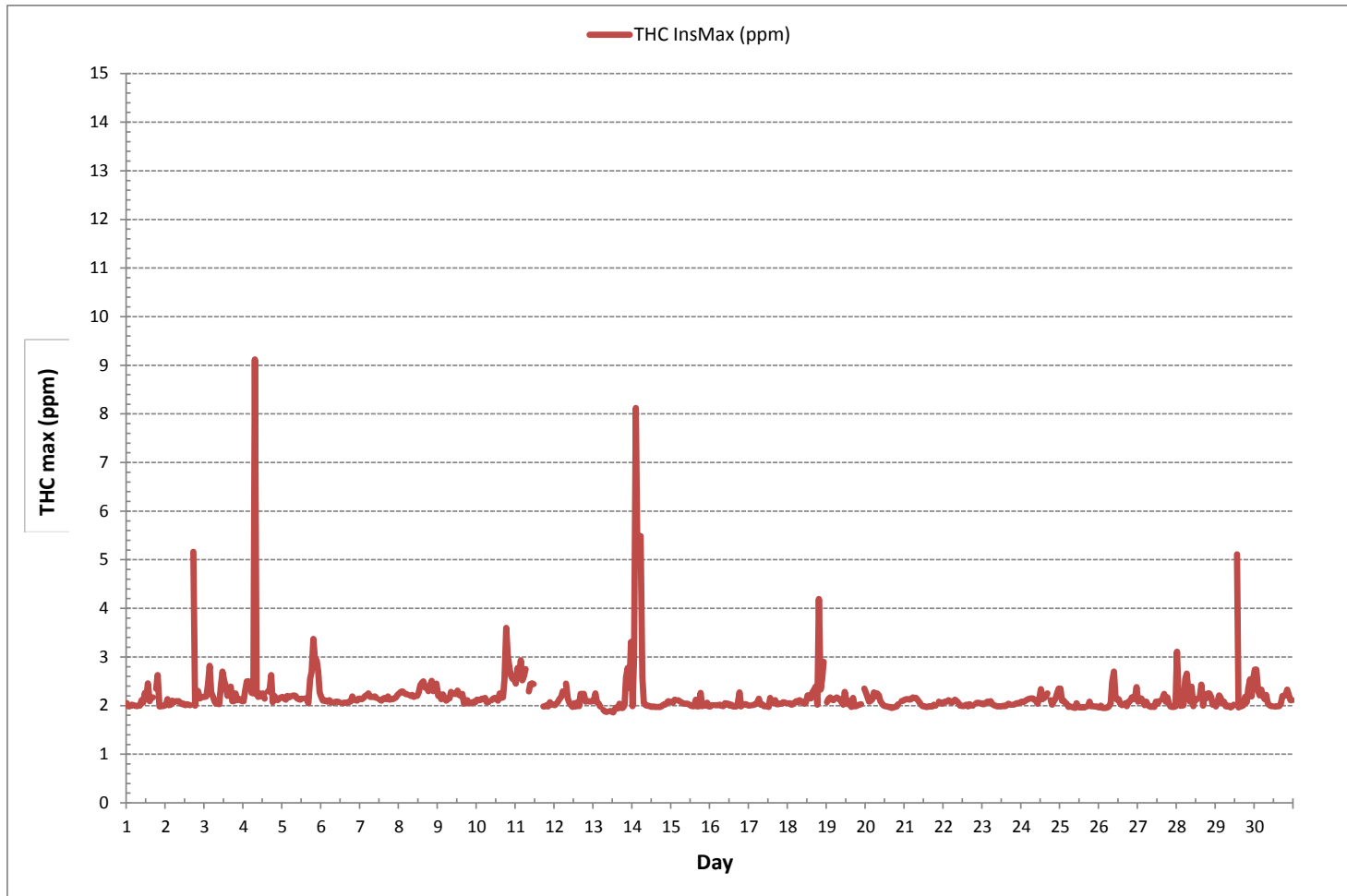
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	682
MAXIMUM INSTANTANEOUS VALUE:	9.12 ppm @ HOUR 7 ON DAY 4
IZS CALIBRATION TIME:	31 hrs
MONTHLY CALIBRATION TIME:	5 hrs
OPERATIONAL TIME:	718 hrs
STANDARD DEVIATION:	0.47

TOTAL HYDROCARBONS Instantaneous Maximum (THC ppm)





METHANE MAX Instantaneous Maximum (CH₄ ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
DAY 1	2.05	1.98	1.99	1.99	2.01	1.99	1.99	2.00	2.00	2.11	2.06	2.26	2.14	2.46	2.09	2.16	2.17	S	2.35	2.63	1.98	2.00	1.99	2.00	1.98	2.63	2.10	24
2	2.01	2.13	2.01	2.02	2.10	2.07	2.09	2.09	2.09	2.06	2.03	2.04	2.01	2.03	2.02	2.01	S	5.16	2.00	2.31	2.30	2.15	2.17	2.18	2.00	5.16	2.22	24
3	2.18	2.19	2.42	2.82	2.27	2.19	2.09	2.04	2.07	2.03	2.42	2.70	2.51	2.40	2.20	S	2.39	2.09	2.09	2.25	2.12	2.14	2.12	2.09	2.03	2.82	2.25	24
4	2.09	2.33	2.50	2.50	2.49	2.26	2.25	8.88	2.25	2.18	2.25	2.19	2.25	2.14	S	2.29	2.29	2.63	2.07	2.20	2.15	2.11	2.15	2.17	2.07	8.88	2.55	24
5	2.18	2.15	2.12	2.20	2.17	2.18	2.20	2.21	2.19	2.15	2.13	2.11	2.14	S	2.15	2.13	2.05	2.55	2.69	3.37	2.98	2.93	2.71	2.27	2.05	3.37	2.35	24
6	2.17	2.10	2.11	2.09	2.08	2.08	2.07	2.06	2.07	2.08	2.08	2.07	S	2.05	2.06	2.06	2.06	2.08	2.08	2.19	2.13	2.11	2.10	2.14	2.05	2.19	2.09	24
7	2.14	2.13	2.16	2.20	2.21	2.20	2.18	2.18	2.18	2.18	2.16	S	2.12	2.10	2.14	2.13	2.13	2.12	2.12	2.13	2.13	2.15	2.17	2.22	2.10	2.22	2.16	24
8	2.25	2.28	2.29	2.26	2.24	2.23	S1	2.20	2.20	2.18	S	2.20	2.26	2.42	2.47	2.50	2.37	2.38	2.30	2.41	2.51	2.30	2.37	2.45	2.18	2.51	2.32	23
9	2.20	2.23	2.13	2.23	2.16	2.10	2.14	2.15	2.28	S	2.24	2.24	2.31	2.22	2.20	2.24	2.04	2.08	2.11	2.05	2.05	2.05	2.08	2.07	2.04	2.31	2.16	24
10	2.12	2.11	2.11	2.14	2.14	2.16	2.07	2.07	S	2.11	2.14	2.16	2.14	2.10	2.18	2.16	2.17	2.54	3.60	3.04	2.78	2.61	2.55	2.54	2.07	3.60	2.34	24
11	2.45	2.77	2.60	2.93	2.52	2.61	2.75	S	2.29	2.44	2.46	2.44	C	C	C	C	C	1.98	1.98	2.01	1.98	2.07	2.02	2.02	1.98	2.93	2.35	24
12	2.01	2.04	2.08	2.14	2.18	2.29	S	2.45	2.11	2.06	2.01	1.97	2.05	1.98	2.07	1.99	2.24	2.24	2.24	2.08	2.09	2.09	2.08	2.09	1.97	2.45	2.11	24
13	2.09	2.25	2.07	2.05	1.98	S	1.91	1.88	1.87	X	1.89	1.88	1.86	1.92	1.96	1.94	2.04	1.95	1.95	2.01	2.58	2.78	2.37	3.31	1.86	3.31	2.12	23
14	1.99	2.98	7.90	5.19	S	5.49	2.59	2.05	2.01	2.00	2.00	1.98	1.97	1.98	1.97	1.97	1.97	1.97	1.99	2.02	2.02	2.05	2.09	2.08	1.97	7.90	2.62	24
15	2.07	2.06	2.12	S	2.11	2.09	2.07	2.05	2.04	2.04	2.02	2.02	2.00	1.99	1.99	1.98	1.98	1.99	1.98	1.99	2.01	1.98	2.04	1.98	1.98	2.12	2.03	24
16	1.98	2.01	S	2.01	2.01	2.01	2.00	2.00	1.99	2.01	2.03	2.04	2.00	2.02	1.98	1.98	1.98	2.05	2.27	1.98	2.02	2.03	2.03	2.01	1.98	2.27	2.02	24
17	2.00	S	2.01	2.02	2.03	2.07	2.14	2.02	2.00	1.99	1.99	1.99	1.97	2.16	2.05	2.08	2.02	2.03	2.03	2.04	2.04	2.07	2.06	2.05	1.97	2.16	2.04	24
18	S	2.05	2.02	2.03	2.06	2.06	2.07	2.11	2.09	2.06	2.04	2.05	2.21	2.21	2.15	2.27	2.33	2.39	2.02	4.19	2.33	2.55	2.90	S	2.02	4.19	2.28	24
19	2.07	2.14	2.17	2.12	2.11	2.15	2.17	2.14	2.13	2.07	2.02	2.28	2.09	2.01	2.10	1.97	2.16	1.99	1.99	2.01	2.02	2.03	S	2.35	1.97	2.35	2.10	24
20	2.27	2.17	2.08	2.10	2.13	2.27	2.19	2.25	2.21	2.09	2.04	2.00	1.99	1.98	1.97	1.97	1.95	1.96	1.97	1.98	2.03	S	2.09	2.10	1.95	2.27	2.08	24
21	2.12	2.13	2.13	2.12	2.13	2.17	2.16	2.16	2.11	2.07	2.02	1.99	1.99	1.97	1.97	1.97	1.98	1.98	2.00	2.00	S	2.08	2.05	2.04	1.97	2.17	2.06	24
22	2.07	2.08	2.08	2.11	2.09	2.06	2.09	2.12	2.09	2.05	2.00	2.00	1.99	2.00	2.02	1.98	1.98	2.01	2.00	S	2.02	2.06	2.05	2.05	1.98	2.12	2.04	24
23	2.03	2.03	2.06	2.07	2.07	2.09	2.03	2.01	2.00	1.98	1.99	1.98	1.99	2.00	1.99	2.01	2.00	2.02	S	2.02	2.03	2.05	2.05	2.06	1.98	2.09	2.02	24
24	2.08	2.07	2.09	2.11	2.13	2.14	2.15	2.15	2.12	2.09	2.04	2.16	2.34	2.13	2.16	2.19	2.25	S	2.11	2.02	2.09	2.14	2.26	2.35	2.02	2.35	2.15	24
25	2.35	2.10	2.10	2.06	2.04	1.97	1.98	1.97	1.96	1.95	1.95	1.97	1.96	1.96	1.97	1.96	S	1.99	2.08	1.99	1.99	1.98	1.98	1.97	1.95	2.35	2.01	24
26	1.96	1.96	1.95	1.95	1.95	1.96	1.98	2.05	2.49	2.70	2.19	2.12	2.13	2.04	2.01	S	2.05	1.99	2.08	2.09	2.17	2.18	2.13	2.38	1.95	2.70	2.11	24
27	2.08	2.12	2.15	2.08	2.01	2.08	2.01	1.98	1.97	1.98	1.97	2.08	2.04	2.09	S	2.14	2.24	2.08	2.17	2.04	1.98	1.97	1.97	1.98	1.97	2.24	2.05	24
28	3.11	2.11	2.00	2.00	2.01	2.55	2.66	2.31	2.08	2.39	1.99	2.14	2.12	S	2.18	2.43	2.00	2.23	2.15	2.16	2.25	2.18	2.02	2.05	1.99	3.11	2.22	24
29	1.98	2.10	2.21	2.16	2.05	2.08	1.97	1.98	2.00	1.96	1.98	2.02	S	5.11	1.96	2.00	1.99	2.01	2.18	2.07	2.36	2.54	2.19	2.57	1.96	5.11	2.24	24
30	2.74	2.74	2.31	2.21	2.33	2.20	2.13	2.22	2.04	2.01	1.99	S	1.98	1.98	1.99	2.03	2.20	2.20	2.22	2.33	2.21	2.11	2.11	1.98	2.74	2.19	24	
HOURLY MAX	3.11	2.98	7.90	5.19	2.52	5.49	2.75	8.88	2.49	2.70	2.46	2.70	2.51	5.11	2.47	2.50	2.39	5.16	3.60	4.19	2.98	2.93	2.90	3.31				
HOURLY AVG	2.17	2.19	2.34	2.27	2.13	2.27	2.15	2.34	2.10	2.11	2.07	2.11	2.09	2.20	2.07	2.09	2.11	2.24	2.17	2.26	2.19	2.19	2.17	2.20				

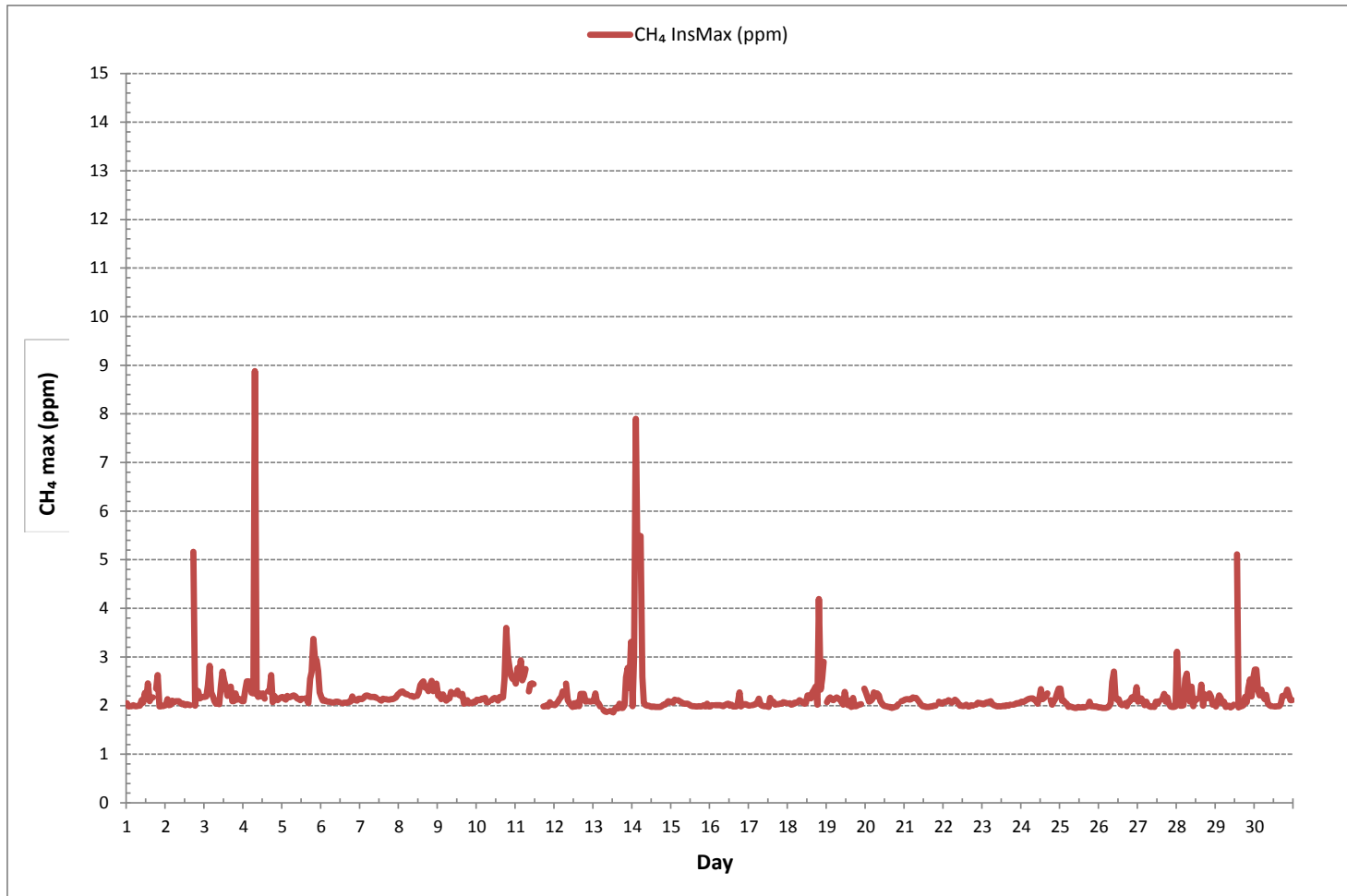
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	682
MAXIMUM INSTANTANEOUS VALUE:	8.88 ppm @ HOUR 7 ON DAY 4
IZS CALIBRATION TIME:	31 hrs
MONTHLY CALIBRATION TIME:	5 hrs
STANDARD DEVIATION:	0.47
OPERATIONAL TIME:	718 hrs

METHANE MAX Instantaneous Maximum (CH₄ ppm)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
St. Lina Continuous Monitoring Station - September 2018

NON-METHANE HYDROCARBONS Instantaneous Maximum (NMHC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	0.00	0.00	0.00	0.05	0.00	0.01	0.00	0.00	0.01	0.00	0.02	0.01	0.00	0.00	0.01	0.00	0.00	S	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.05	0.01	24
2	0.00	0.04	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.03	S	0.01	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.01	24
3	0.00	0.00	0.00	0.02	0.00	0.01	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	24
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.01	0.00	0.00	0.00	0.00	0.00	S	0.02	0.04	0.00	0.00	0.01	0.02	0.00	0.00	0.01	0.00	0.24	0.02	24	
5	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.05	0.00	0.00	0.04	0.00	S	0.00	0.00	0.01	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.01	24	
6	0.00	0.00	0.00	0.00	0.00	0.03	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	0.03	0.00	24	
7	0.01	0.01	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.01	0.01	S	0.01	0.00	0.00	0.04	0.00	0.10	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.10	0.01	24	
8	0.00	0.00	0.00	0.00	0.00	S1	0.00	0.04	0.00	S	0.02	0.00	0.00	0.00	0.04	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.01	23	
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	24	
10	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	S	0.01	0.00	0.00	0.01	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.15	0.01	24	
11	0.00	0.00	0.00	0.00	0.01	0.00	S	0.00	0.00	0.00	0.00	C	C	C	C	C	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	24	
12	0.00	0.00	0.01	0.00	0.00	S	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	24	
13	0.00	0.02	0.00	0.02	0.01	S	0.01	0.00	X	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.01	23	
14	0.00	0.00	0.22	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	0.01	0.00	0.00	0.00	0.00	0.00	0.22	0.01	24	
15	0.00	0.01	0.00	S	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.30	0.00	0.03	0.03	0.03	0.09	0.00	0.00	0.30	0.03	24	
16	0.00	0.00	S	0.00	0.00	0.00	0.03	0.00	0.00	0.07	0.04	0.02	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.07	0.01	24	
17	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.01	0.01	0.00	0.00	0.00	0.01	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.01	24	
18	S	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	S	0.00	0.04	0.00	24	
19	0.02	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.03	0.00	0.06	0.01	24	
20	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	S	0.00	0.00	0.00	0.04	0.00	24	
21	0.00	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	0.02	0.00	0.00	0.00	0.03	0.00	S	0.00	0.00	0.00	0.00	0.03	0.00	24	
22	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.01	0.01	0.00	0.01	0.00	0.06	0.00	0.02	S	0.04	0.00	0.00	0.00	0.00	0.00	0.06	0.01	24	
23	0.00	0.00	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.06	0.00	S	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.06	0.00	24	
24	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.03	0.00	S	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.03	0.01	24	
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.11	0.01	24	
26	0.01	0.05	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.01	0.00	0.00	0.00	0.00	0.04	0.01	0.00	0.05	0.01	24	
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.04	0.00	24
28	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.01	S	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	
29	0.00	0.00	0.00	0.00	0.03	0.00	0.02	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	0.03	0.00	24	
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.04	0.00	24
HOURLY MAX	0.02	0.05	0.22	0.05	0.03	0.06	0.04	0.24	0.05	0.07	0.11	0.04	0.04	0.06	0.15	0.15	0.11	0.10	0.30	0.02	0.04	0.03	0.09	0.03					
HOURLY AVG	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.00	0.00	0.00					

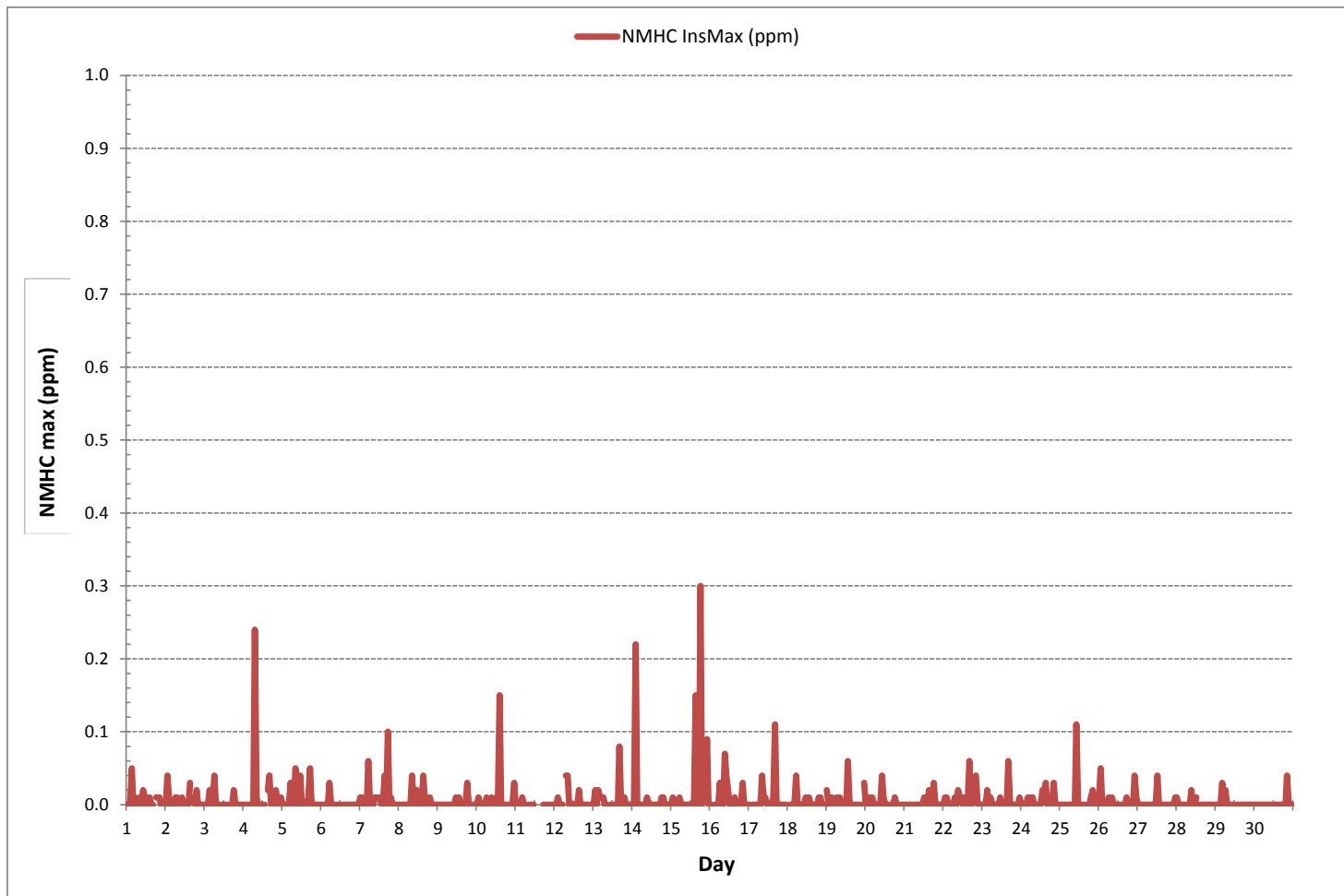
STATUS FLAG CODES

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:	150
MAXIMUM INSTANTANEOUS VALUE:	0.30 ppm @ HOUR 18 ON DAY 15
IZS CALIBRATION TIME:	31 hrs
MONTHLY CALIBRATION TIME:	5 hrs
STANDARD DEVIATION:	0.02
OPERATIONAL TIME:	718 hrs

NON-METHANE HYDROCARBONS Instantaneous Maximum (NMHC ppm)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
St. Lina Continuous Monitoring Station - September 2018

OXIDES OF NITROGEN Instantaneous Maximum (NO_x ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	2	2	2	2	2	1	7	2	2	1	1	3	2	1	1	2	3	S	4	7	11	3	1	1	1	11	3	24	
2	1	1	1	1	1	1	3	1	3	3	4	4	3	1	2	1	S	11	4	5	3	2	2	2	2	1	11	3	24
3	2	2	2	2	2	2	1	2	3	2	5	4	4	3	2	S	12	3	1	3	3	1	1	1	1	12	3	24	
4	1	1	1	0	0	2	9	1	8	8	12	13	2	2	S	20	2	2	2	2	2	2	2	2	2	0	20	4	24
5	2	2	2	3	5	10	12	9	4	9	7	5	3	S	5	10	2	2	1	1	3	8	6	6	1	12	5	24	
6	4	1	1	1	1	1	1	1	1	2	2	1	S	5	2	1	1	1	1	2	1	2	1	1	1	5	2	24	
7	1	2	2	2	2	2	2	2	3	2	2	2	S	5	3	2	2	2	2	3	2	2	2	3	1	5	2	24	
8	2	2	2	2	2	2	S1	14	3	8	S	8	5	10	5	10	9	3	6	11	11	1	1	1	1	14	5	23	
9	1	1	1	1	1	1	1	1	2	S	5	5	3	1	2	2	1	3	4	1	1	1	2	2	1	5	2	24	
10	3	3	3	3	2	2	1	1	S	5	3	3	2	2	2	2	2	6	4	12	1	1	1	1	1	12	3	24	
11	1	1	1	1	1	1	5	S	4	2	2	2	2	1	3	3	1	8	1	1	2	2	1	1	1	8	2	24	
12	1	1	1	2	2	3	S	11	6	4	C	C	C	C	C	C	C	7	2	2	2	1	1	1	1	11	3	24	
13	1	1	1	1	1	S	4	1	1	1	1	1	1	1	1	2	1	1	1	3	4	1	1	1	1	4	1	24	
14	1	1	1	1	S	4	12	14	24	29	4	12	7	2	3	1	1	1	1	1	1	1	1	1	1	29	5	24	
15	1	1	1	S	4	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	4	1	24	
16	0	1	S	4	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	0	4	1	24	
17	1	S	3	1	1	1	1	1	1	1	1	1	3	6	8	6	1	1	2	7	19	2	2	1	1	19	3	24	
18	S	4	2	1	1	3	9	9	6	3	5	5	3	3	2	8	4	1	5	3	1	1	1	S	1	9	4	24	
19	4	2	2	2	2	1	15	52	4	3	2	3	4	7	7	12	1	2	1	2	2	S	4	1	52	6	24		
20	2	2	2	2	3	4	3	6	5	4	2	2	2	2	1	1	1	1	1	1	1	S	5	6	1	6	3	24	
21	5	5	5	5	4	4	3	3	3	2	1	1	1	1	1	1	1	1	2	1	S	3	2	1	1	5	2	24	
22	2	1	1	2	2	1	1	2	2	2	1	1	1	1	1	1	1	1	1	1	S	3	2	1	1	3	1	24	
23	1	1	1	1	1	1	1	1	3	2	3	3	3	3	4	2	3	6	S	4	4	2	3	3	1	6	2	24	
24	3	3	3	3	4	63	77	40	24	26	25	14	2	6	2	4	S	16	6	2	7	15	4	1	1	77	15	24	
25	1	1	1	1	1	9	3	7	21	17	5	3	2	6	3	5	S	16	15	17	4	7	7	2	1	21	7	24	
26	1	1	1	1	1	8	6	4	3	6	1	3	1	4	1	S	8	3	4	2	9	1	1	2	1	9	3	24	
27	1	1	1	1	1	2	2	18	3	1	1	1	1	S	4	5	2	3	2	4	1	1	0	0	18	2	24		
28	1	1	0	0	2	5	3	2	1	7	1	2	1	S	10	8	7	19	5	7	4	1	1	1	0	19	4	24	
29	1	1	1	1	6	1	2	1	2	1	1	1	S	9	1	1	2	1	7	1	0	1	1	0	0	9	2	24	
30	1	0	1	1	1	1	1	1	1	4	1	S	3	6	2	3	1	1	2	3	3	3	3	2	0	6	2	24	
HOURLY MAX	5	5	5	5	6	63	77	52	24	29	25	14	7	10	10	20	12	19	15	17	19	15	7	6					
HOURLY AVG	2	2	2	2	2	5	7	7	5	5	4	4	3	3	3	4	3	4	3	4	4	2	2	2					

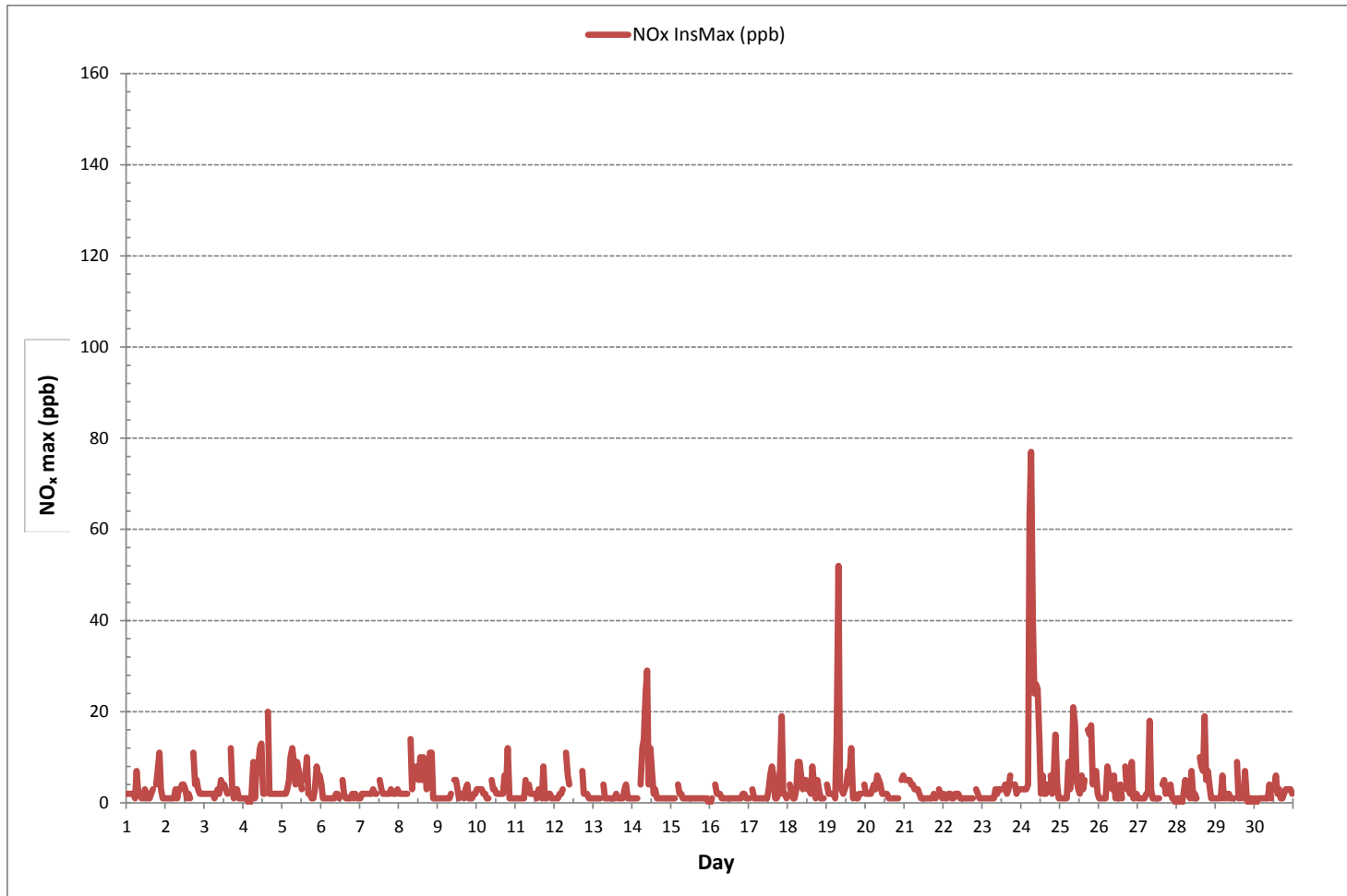
STATUS FLAG CODES

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:	671
MAXIMUM INSTANTANEOUS VALUE:	77 ppb @ HOUR 6 ON DAY 24
IZS CALIBRATION TIME:	31 hrs
MONTHLY CALIBRATION TIME:	7 hrs
STANDARD DEVIATION:	6
OPERATIONAL TIME:	719 hrs

OXIDES OF NITROGEN Instantaneous Maximum (NO_x ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
St. Lina Continuous Monitoring Station - September 2018

NITRIC OXIDE Instantaneous Maximum (NO ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.		
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59						
DAY 1	0	0	0	0	0	0	3	0	1	0	0	1	1	1	0	0	2	S	0	2	5	1	0	0	0	0	5	1	24	
2	0	0	0	0	0	0	1	0	2	1	2	2	1	0	1	1	S	3	0	0	0	0	0	0	0	0	3	1	24	
3	0	0	0	0	0	0	0	0	0	0	3	2	2	1	0	S	8	0	0	1	1	0	0	0	0	0	8	1	24	
4	0	0	0	0	0	1	6	1	4	5	5	6	1	1	S	14	1	1	0	0	0	0	0	0	0	0	14	2	24	
5	0	0	0	0	1	5	7	4	2	4	3	1	1	S	0	3	0	0	0	0	0	0	0	0	0	0	7	1	24	
6	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	24
7	0	0	0	0	0	0	0	1	1	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
8	0	0	0	0	0	0	S1	0	1	3	S	2	1	4	1	6	5	1	2	11	11	0	0	0	0	0	11	2	23	
9	0	0	0	0	0	0	0	1	0	S	2	3	1	0	1	1	0	2	2	0	0	0	0	0	0	0	3	1	24	
10	0	0	0	0	0	0	0	0	S	0	0	1	1	0	1	0	0	5	1	8	0	0	0	0	0	0	8	1	24	
11	0	0	0	0	0	0	0	S	1	0	0	1	1	0	1	1	0	5	0	0	0	0	0	0	0	0	5	1	24	
12	0	0	0	0	0	0	S	1	1	1	C	C	C	C	C	C	C	4	0	0	0	0	0	0	0	0	4	0	24	
13	0	0	0	0	0	S	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	1	0	24	
14	0	0	0	0	S	1	9	11	20	23	2	7	3	0	1	0	0	0	0	0	0	0	0	0	0	0	23	3	24	
15	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	24
16	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
17	0	S	0	0	0	0	0	0	0	0	0	2	4	4	3	0	0	0	0	4	14	1	1	0	0	0	14	1	24	
18	S	0	0	0	0	1	5	3	4	1	2	4	2	2	1	4	3	0	2	0	0	0	0	S	0	0	5	2	24	
19	0	0	0	0	0	0	10	47	2	1	1	1	2	2	4	8	0	0	0	0	0	0	S	0	0	0	47	3	24	
20	0	0	0	0	0	1	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	1	0	24	
21	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	24
22	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	1	0	24	
23	0	0	0	0	0	0	0	0	1	0	1	1	1	2	1	2	S	1	1	2	S	1	1	0	0	0	2	1	24	
24	0	0	0	0	0	51	68	36	22	20	25	10	1	3	1	1	S	2	0	3	5	3	0	0	0	68	11	24		
25	0	0	0	0	0	9	2	6	15	12	3	1	1	3	1	2	S	3	4	8	1	3	2	0	0	0	15	3	24	
26	0	0	0	0	0	5	3	2	1	5	0	0	0	2	0	S	4	1	1	1	5	0	0	0	0	0	5	1	24	
27	0	0	0	0	0	0	1	8	1	0	0	0	0	0	S	2	2	1	1	0	2	0	0	0	0	0	8	1	24	
28	0	0	0	0	0	4	2	1	1	3	0	2	1	S	5	4	3	8	1	3	2	0	0	0	0	0	8	2	24	
29	0	0	0	0	3	0	1	0	1	0	0	1	S	2	0	0	1	0	4	0	0	0	0	0	0	0	4	1	24	
30	0	0	0	0	0	0	0	0	0	2	0	S	0	3	0	1	0	0	0	0	0	0	0	0	0	0	0	3	0	24
HOURLY MAX	0	0	0	0	3	51	68	47	22	23	25	10	3	4	5	14	8	8	4	11	14	5	3	0						
HOURLY AVG	0	0	0	0	0	3	4	4	3	3	2	2	1	1	1	2	1	1	1	1	2	0	0	0						

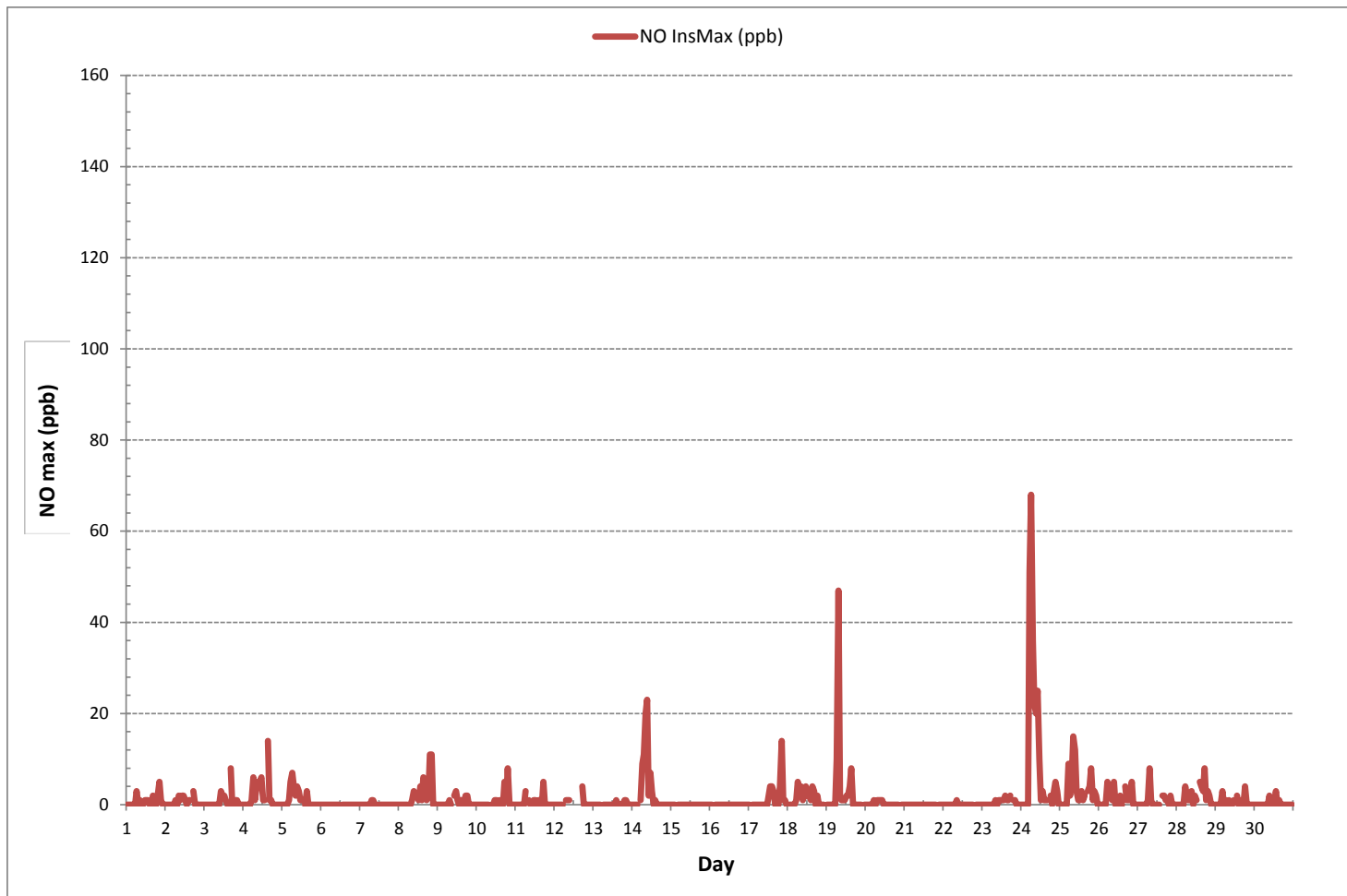
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	222
MAXIMUM INSTANTANEOUS VALUE:	68 ppb @ HOUR 6 ON DAY 24
IZS CALIBRATION TIME:	31 hrs
MONTHLY CALIBRATION TIME:	7 hrs
OPERATIONAL TIME:	719 hrs
STANDARD DEVIATION:	5

NITRIC OXIDE Instantaneous Maximum (NO ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
St. Lina Continuous Monitoring Station - September 2018

NITROGEN DIOXIDE Instantaneous Maximum (NO₂ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
DAY 1	2	2	2	2	2	1	4	2	2	1	1	2	1	1	1	2	S	4	5	5	2	1	1	1	5	2	24	
2	1	1	1	1	1	1	1	1	2	2	3	2	2	1	1	1	S	8	4	5	3	2	2	2	1	8	2	24
3	2	2	2	2	2	2	1	2	2	2	4	2	2	2	S	5	2	1	2	2	2	1	1	1	1	5	2	24
4	1	1	1	1	1	1	4	1	4	4	7	7	1	1	S	7	2	2	2	2	2	2	2	2	1	7	3	24
5	2	3	3	3	4	5	6	5	3	4	4	3	2	S	4	7	2	2	1	1	3	8	6	6	1	8	4	24
6	4	2	1	1	1	1	1	1	1	1	1	1	S	4	2	1	1	1	1	2	1	2	1	1	1	4	1	24
7	1	2	2	2	2	2	2	2	2	2	2	S	5	3	2	2	2	2	2	3	2	2	2	3	1	5	2	24
8	2	2	2	2	2	2	S1	14	3	5	S	6	4	6	4	5	4	3	4	2	4	1	1	1	1	14	4	23
9	1	1	1	1	1	1	1	1	1	S	4	3	2	1	1	1	1	1	2	1	1	1	2	2	1	4	1	24
10	3	3	3	3	3	2	2	1	S	5	2	2	2	1	1	1	1	2	2	4	1	1	1	1	1	5	2	24
11	1	1	1	1	1	1	2	S	4	2	1	2	2	1	2	2	1	4	1	2	2	2	2	1	1	4	2	24
12	1	1	1	2	2	3	S	10	5	3	C	C	C	C	C	C	C	4	2	2	2	1	1	1	1	10	3	24
13	1	1	1	1	1	S	4	1	1	1	1	1	1	1	2	1	1	1	1	2	2	1	1	1	1	4	1	24
14	1	1	1	1	S	4	5	4	7	7	2	5	4	2	2	1	1	1	1	1	1	1	2	2	1	7	2	24
15	1	1	1	S	4	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	1	24
16	0	1	S	4	3	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	0	4	1	24
17	1	S	3	1	1	1	1	1	1	1	1	1	2	2	4	3	1	1	2	4	6	2	1	1	1	6	2	24
18	S	4	2	1	2	2	5	7	3	2	3	2	2	2	2	4	2	1	3	2	1	1	1	S	1	7	2	24
19	4	2	2	2	1	1	6	7	2	2	2	2	2	4	5	4	1	2	1	2	2	2	S	4	1	7	3	24
20	2	2	2	2	3	4	3	5	4	3	2	1	1	1	1	1	1	1	1	1	1	S	5	6	1	6	2	24
21	5	5	5	5	4	4	3	3	2	2	1	1	1	1	1	1	2	2	1	S	3	2	1	1	5	2	24	
22	2	2	1	2	2	1	1	2	2	1	1	1	1	1	1	1	1	1	2	1	S	4	2	2	1	4	1	24
23	1	1	1	1	1	1	1	1	2	1	1	2	2	2	2	2	2	3	S	4	3	3	3	3	1	4	2	24
24	3	3	3	3	4	13	10	10	9	8	4	4	1	3	1	2	3	S	12	4	2	4	10	2	1	13	5	24
25	1	1	1	1	1	2	2	2	7	5	2	2	1	3	2	2	S	12	11	10	3	5	5	2	1	12	4	24
26	1	1	1	1	1	3	4	2	2	3	1	3	1	3	1	S	5	2	3	2	4	1	1	2	1	5	2	24
27	1	1	1	1	1	2	2	9	1	1	1	1	1	S	3	3	1	3	2	3	1	1	1	1	1	9	2	24
28	1	1	1	1	1	2	1	1	1	5	1	1	1	S	5	4	4	12	4	4	2	1	1	1	1	12	2	24
29	1	1	1	1	4	1	1	1	2	1	0	1	S	7	1	1	1	1	3	1	1	1	1	0	0	7	1	24
30	1	1	1	1	1	1	1	1	2	1	S	3	3	1	3	1	1	2	3	3	3	3	2	2	1	3	2	24
HOURLY MAX	5	5	5	5	4	13	10	14	9	8	7	7	5	7	5	7	5	12	11	10	6	10	6	6				
HOURLY AVG	2	2	2	2	2	2	3	3	3	3	2	2	2	2	2	2	2	3	2	3	2	2	2	2				

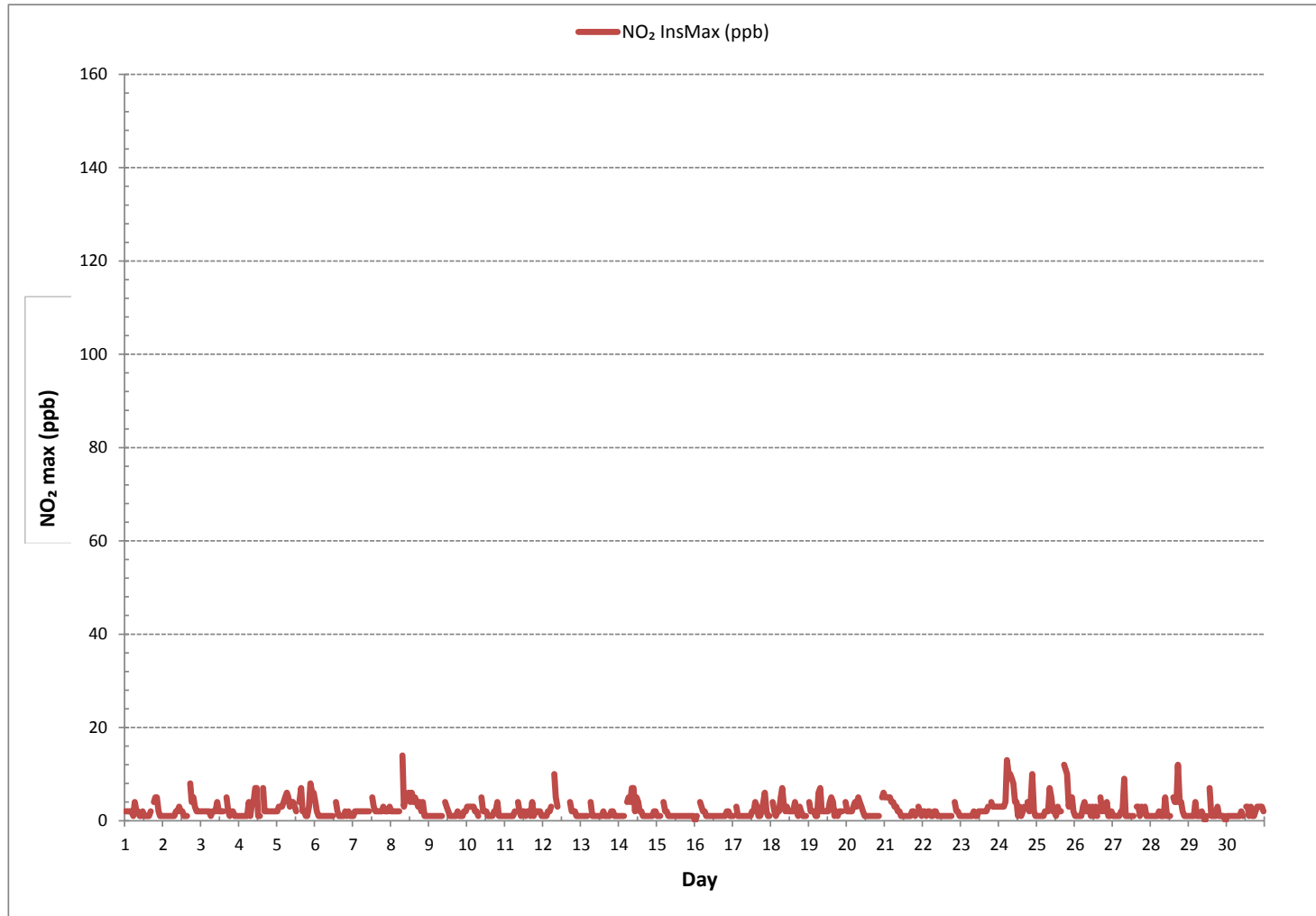
STATUS FLAG CODES

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:	678
MAXIMUM INSTANTANEOUS VALUE:	14 ppb @ HOUR 7 ON DAY 8
	VAR-VARIOUS
IZS CALIBRATION TIME:	31 hrs
MONTHLY CALIBRATION TIME:	7 hrs
STANDARD DEVIATION:	2
OPERATIONAL TIME:	719 hrs

NITROGEN DIOXIDE Instantaneous Maximum (NO₂ ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
St. Lina Continuous Monitoring Station - September 2018

OZONE Instantaneous Maximum (O₃ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	33.9	31.4	27.4	25.8	25.4	25.4	23.5	23.0	22.5	21.9	22.0	23.8	23.7	22.9	24.0	24.7	27.8	S	28.4	28.3	29.3	23.8	23.2	19.6	19.6	33.9	25.3	24	
2	18.0	17.8	16.7	16.3	14.7	14.5	12.6	14.8	16.7	19.5	22.8	25.6	26.9	27.2	29.2	30.2	S	29.6	27.4	25.5	23.9	24.8	25.5	26.9	12.6	30.2	22.0	24	
3	25.2	28.0	28.3	24.9	32.5	25.8	23.6	20.3	19.1	20.7	20.0	26.4	27.6	28.6	23.1	S	24.4	24.2	16.5	16.1	14.8	19.2	19.4	18.3	14.8	32.5	22.9	24	
4	16.9	16.5	18.4	18.3	18.3	18.3	16.4	19.9	22.5	24.6	25.7	26.9	28.1	28.5	S	29.3	29.4	29.9	29.1	28.9	27.0	24.2	23.0	22.4	16.4	29.9	23.6	24	
5	21.8	18.3	16.5	17.4	17.0	15.1	14.1	12.6	15.3	18.6	22.3	28.2	33.5	S	38.0	38.1	32.6	30.6	30.4	30.2	30.4	25.2	20.2	20.1	12.6	38.1	23.8	24	
6	20.7	20.5	20.2	20.4	21.2	21.6	22.0	22.4	22.4	22.2	21.8	23.0	S	25.7	27.5	27.8	27.7	27.1	24.7	22.3	21.2	22.5	20.7	19.9	19.9	27.8	22.8	24	
7	18.4	17.6	17.5	17.4	16.1	16.3	16.0	18.6	24.2	26.5	29.0	S	35.5	36.0	36.7	36.5	34.9	34.6	32.8	29.9	28.9	28.7	26.5	22.8	16.0	36.7	26.1	24	
8	17.7	15.7	14.4	14.2	13.3	12.6	S1	13.4	13.5	16.5	S	26.2	27.7	28.5	25.4	24.8	22.4	25.4	22.8	17.6	17.7	18.6	17.5	16.3	12.6	28.5	19.2	23	
9	13.9	13.8	11.8	12.2	11.8	12.7	9.7	9.3	8.7	S	10.1	10.1	10.4	11.8	11.2	12.5	12.1	11.4	12.4	11.9	14.6	14.7	12.2	11.3	8.7	14.7	11.8	24	
10	12.7	9.6	8.6	8.0	7.1	10.3	11.0	11.9	S	9.0	9.1	8.4	9.5	9.5	9.4	10.0	10.1	10.1	8.9	7.8	7.8	8.6	8.5	7.1	7.1	12.7	9.3	24	
11	6.9	7.3	6.8	6.9	6.5	7.4	9.3	S	12.5	19.2	20.0	19.5	23.4	25.9	27.3	26.4	26.1	23.9	19.7	15.8	17.5	17.3	17.1	18.4	6.5	27.3	16.6	24	
12	18.4	19.5	19.4	14.2	8.4	7.4	S	9.0	9.4	11.9	C	C	C	C	C	17.3	17.3	16.9	16.4	16.3	16.7	17.0	16.9	17.2	7.4	19.5	15.0	24	
13	18.2	18.4	18.7	18.6	18.4	S	18.6	18.6	19.6	19.4	19.4	20.5	21.4	22.2	23.6	25.7	25.4	23.5	23.0	22.3	17.8	17.7	18.0	16.9	16.9	25.7	20.3	24	
14	19.1	19.6	16.4	12.5	S	14.1	13.3	16.7	18.6	21.6	23.0	24.4	28.7	29.2	29.6	26.6	26.5	25.8	23.5	21.9	21.8	19.9	18.8	16.9	12.5	29.6	21.2	24	
15	16.2	17.0	16.6	S	13.4	13.2	15.3	13.8	14.0	12.9	14.4	15.9	18.1	20.1	20.7	20.6	20.0	19.8	18.8	19.4	20.5	21.1	21.7	21.3	12.9	21.7	17.6	24	
16	21.2	21.0	S	19.2	18.0	19.0	19.1	19.4	19.6	19.8	19.8	19.9	19.9	20.2	20.6	20.8	21.0	19.7	19.6	18.7	17.8	15.0	18.0	18.5	15.0	21.2	19.4	24	
17	17.8	S	16.1	15.8	16.8	16.4	14.8	14.4	14.0	15.1	16.3	16.7	17.6	17.4	17.4	16.9	15.9	16.3	14.5	12.8	13.8	10.8	9.9	10.3	9.9	17.8	15.1	24	
18	S	10.5	10.9	11.4	10.9	9.6	9.2	8.5	12.4	14.5	14.7	14.8	18.7	18.6	20.2	19.6	18.5	18.8	17.6	17.2	17.7	18.4	19.6	S	8.5	20.2	15.1	24	
19	14.7	10.4	10.1	12.0	12.4	11.4	10.6	11.4	16.0	21.6	25.3	28.7	32.2	34.5	35.9	36.6	36.7	36.5	36.3	35.6	35.6	37.2	S	35.0	10.1	37.2	25.1	24	
20	33.0	31.6	30.4	26.3	24.3	22.4	22.7	21.5	19.3	21.7	22.2	25.9	29.8	30.9	30.2	28.4	27.9	28.3	28.3	26.2	25.1	S	22.1	21.2	19.3	33.0	26.1	24	
21	19.7	19.5	18.9	17.9	17.7	17.3	16.7	17.2	20.3	25.0	29.0	30.6	30.8	31.8	32.3	31.2	31.3	30.4	29.8	27.8	S	27.7	27.5	26.8	16.7	32.3	25.1	24	
22	24.3	23.3	22.6	21.5	21.0	20.6	20.9	20.2	21.1	25.5	27.6	29.0	29.5	30.6	30.5	30.3	30.2	29.4	28.9	S	25.5	26.0	26.8	28.4	20.2	30.6	25.8	24	
23	29.1	27.0	24.5	21.8	21.6	21.8	21.5	19.8	19.5	19.8	19.7	21.5	22.7	23.3	25.0	25.4	25.7	24.5	S	20.6	20.1	19.2	18.2	17.2	17.2	29.1	22.2	24	
24	14.7	13.0	11.6	10.2	8.9	8.3	10.3	10.2	12.8	18.6	22.6	25.2	28.1	30.4	32.2	33.9	34.0	S	33.6	32.0	32.0	33.0	33.1	33.0	8.3	34.0	22.7	24	
25	32.1	31.3	29.2	27.5	24.9	22.8	23.0	21.2	23.8	32.1	33.7	33.3	32.2	33.9	35.8	38.3	S	30.3	30.8	31.4	29.3	29.6	29.5	32.0	21.2	38.3	29.9	24	
26	32.4	32.7	32.3	32.2	32.3	31.7	31.2	31.0	31.1	32.8	35.8	36.2	34.7	37.1	38.1	S	36.5	35.8	34.8	34.8	33.6	32.1	29.0	26.1	26.1	38.1	33.2	24	
27	23.8	22.6	20.7	18.5	17.1	17.6	20.0	27.7	28.6	32.1	33.7	33.8	34.5	34.9	S	31.2	29.2	27.8	27.1	26.0	25.5	25.0	24.9	25.9	17.1	34.9	26.4	24	
28	26.2	26.1	22.8	23.2	23.0	22.1	21.2	20.7	24.0	30.6	34.2	34.7	37.5	S	39.2	39.9	39.5	38.3	37.8	37.2	36.3	36.4	35.4	35.1	20.7	39.9	31.4	24	
29	33.4	32.6	32.0	34.0	34.1	34.5	32.6	32.1	32.9	33.3	33.1	32.4	S	32.6	32.1	32.2	31.6	31.3	31.1	30.3	28.8	28.2	28.4	28.5	28.2	34.5	31.8	24	
30	26.8	25.4	25.2	24.6	24.5	26.2	27.4	29.0	30.4	31.1	31.4	S	32.7	31.9	31.8	32.1	31.7	31.0	30.4	27.4	25.9	26.1	25.0	24.8	24.5	32.7	28.4	24	
HOURLY MAX	33.9	32.7	32.3	34.0	34.1	34.5	32.6	32.1	32.9	33.3	35.8	36.2	37.5	37.1	39.2	39.9	39.5	38.3	37.8	37.2	36.3	37.2	35.4	35.1					
HOURLY AVG	21.6	20.6	19.5	18.7	18.3	17.8	18.1	18.2	19.5	22.0	23.5	24.5	26.5	26.8	27.7	27.4	26.7	26.1	25.4	23.9	23.3	23.0	22.0	22.0					

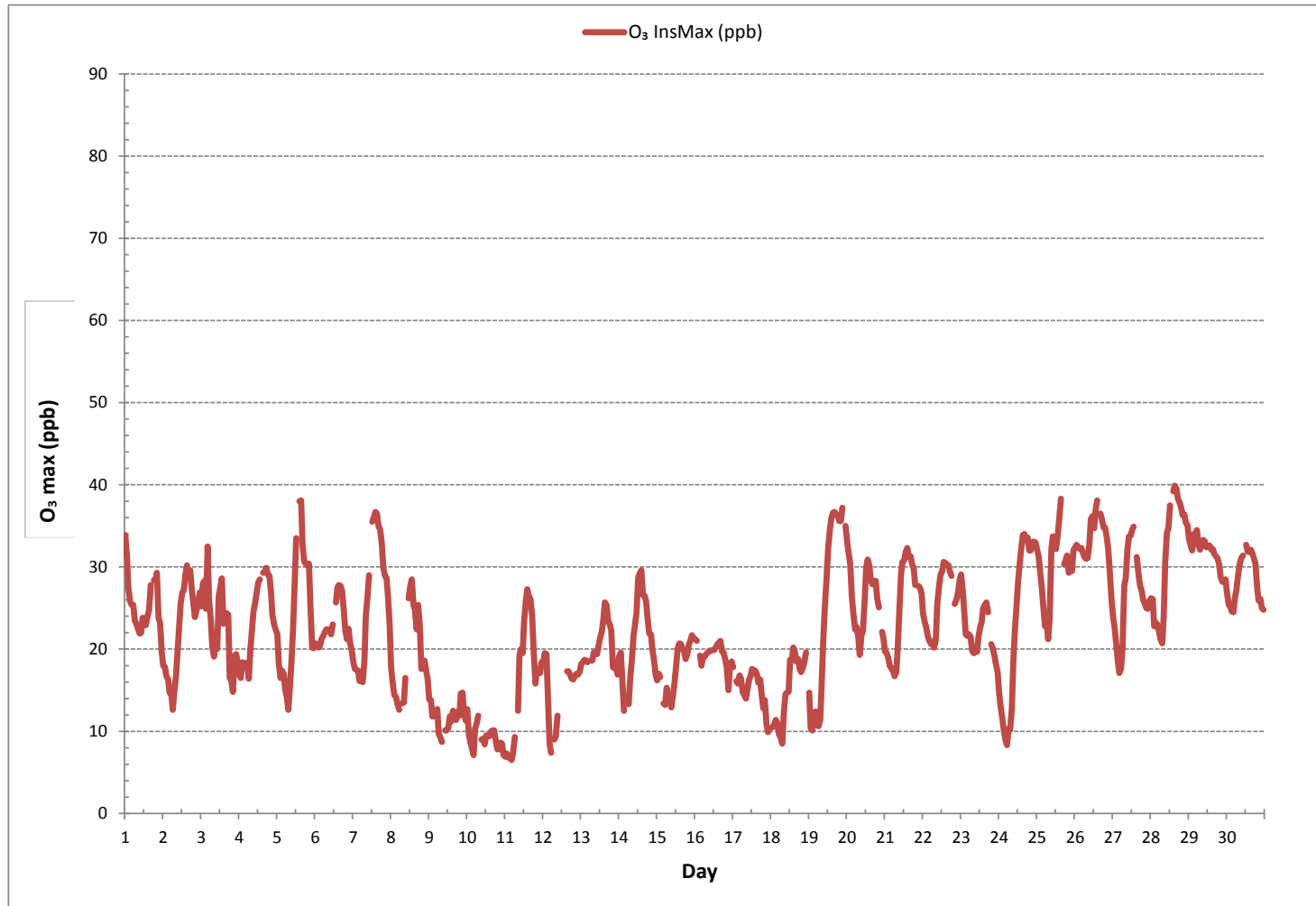
STATUS FLAG CODES

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:	39.9 ppb @ HOUR 15 ON DAY 28
IZS CALIBRATION TIME:	31 hrs
MONTHLY CALIBRATION TIME:	5 hrs
STANDARD DEVIATION:	7.6
OPERATIONAL TIME:	719 hrs

OZONE Instantaneous Maximum (O₃ ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
St. Lina Continuous Monitoring Station - September 2018

WIND SPEED Instantaneous Maximum (WS kph)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
DAY 1	46.6	24.8	15.3	21.5	28.5	25.6	22.8	22.1	22.3	44.7	49.2	43.4	41.8	46.6	43.1	49.9	55.6	40.5	30.9	74.0	43.6	23.0	22.3	20.0	15.3	74.0	35.8	24
2	18.2	16.9	18.4	19.1	17.1	12.7	13.8	18.4	25.6	23.2	26.5	34.2	40.7	39.6	35.9	29.6	29.4	18.0	7.7	8.3	9.5	9.0	12.5	12.5	7.7	40.7	20.7	24
3	12.9	8.2	11.0	14.1	14.7	39.0	16.9	17.3	17.3	16.7	19.1	25.5	30.2	26.7	36.6	43.8	41.2	42.0	48.0	40.7	40.8	44.2	39.9	30.9	8.2	48.0	28.2	24
4	25.8	18.8	23.0	18.4	16.7	19.5	17.1	18.4	21.9	28.3	30.5	28.5	36.1	38.3	43.4	46.4	23.9	23.4	14.9	8.2	11.0	13.8	19.3	15.6	8.2	46.4	23.4	24
5	16.5	18.2	18.2	16.7	14.3	15.4	13.4	18.0	16.2	16.2	X	16.7	15.6	18.0	28.0	23.4	24.5	13.6	15.0	11.0	14.0	22.8	23.3	33.3	11.0	33.3	18.4	23
6	41.6	30.2	43.2	41.0	43.8	45.6	46.9	48.2	51.0	34.6	43.6	45.3	53.0	49.0	49.3	42.7	41.8	42.0	30.9	40.1	31.3	32.7	28.3	28.9	28.3	53.0	41.0	24
7	18.7	20.8	21.2	22.8	19.3	18.6	28.7	27.6	27.6	27.6	32.2	39.6	35.6	47.9	36.6	33.9	36.0	32.2	26.9	25.6	24.5	21.9	21.0	15.8	15.8	47.9	27.6	24
8	16.7	16.2	17.3	18.0	18.6	18.0	19.7	18.4	15.1	16.2	16.0	17.1	21.9	29.6	26.3	32.0	28.5	34.8	26.7	28.7	32.2	30.5	27.1	25.8	15.1	34.8	23.0	24
9	36.1	36.4	40.1	36.6	30.2	34.4	34.4	32.3	37.9	39.7	36.4	37.0	36.1	32.2	32.9	32.9	32.7	30.9	30.0	16.7	20.6	16.5	13.0	11.4	11.4	40.1	30.7	24
10	13.4	11.0	13.6	16.5	24.5	20.4	23.2	24.1	21.9	19.3	16.2	12.3	13.4	11.9	13.2	9.2	3.8	5.5	7.7	9.7	11.8	13.6	13.2	16.9	3.8	24.5	14.4	24
11	16.0	20.8	15.6	16.7	18.2	20.4	24.3	30.2	22.6	19.5	21.0	14.3	14.7	16.2	19.1	18.9	8.7	9.5	9.7	11.0	13.2	10.1	12.3	11.0	8.7	30.2	16.4	24
12	12.5	14.3	12.3	9.7	13.2	14.0	23.0	24.3	30.3	33.8	38.3	44.0	43.2	42.3	44.9	42.1	42.3	X	X	36.4	28.9	26.7	27.6	32.0	9.7	44.9	28.9	22
13	27.0	26.5	26.1	24.1	26.5	26.3	25.4	25.7	23.5	32.5	X	X	27.4	27.8	22.8	24.8	29.6	23.1	24.6	13.6	11.2	11.9	10.8	9.5	9.5	32.5	22.8	22
14	9.5	7.0	4.0	6.0	6.7	6.2	7.0	8.8	12.5	14.1	14.3	17.1	16.2	13.2	14.3	13.6	9.1	11.6	10.1	11.6	13.0	12.3	13.6	16.5	4.0	17.1	11.2	24
15	15.4	16.9	18.0	17.1	16.9	15.2	31.4	28.1	28.1	30.5	35.5	40.1	32.0	43.2	43.8	42.5	40.5	34.4	34.4	28.5	29.4	40.4	47.5	42.5	15.2	47.5	31.3	24
16	45.8	42.3	34.4	34.2	34.1	40.8	35.5	36.1	34.2	31.6	31.8	39.2	40.5	41.4	46.5	42.9	28.7	30.5	25.0	27.9	28.1	17.1	20.8	39.7	17.1	46.5	34.5	24
17	34.2	19.7	23.0	21.7	22.8	22.1	15.6	18.9	18.0	18.2	18.6	12.5	10.3	12.8	12.7	12.3	14.5	9.5	5.3	6.2	8.8	7.5	12.7	15.8	5.3	34.2	15.6	24
18	15.8	17.8	16.1	19.3	14.0	16.9	17.6	16.9	14.5	17.8	22.8	33.5	40.3	30.0	28.3	21.3	19.5	21.5	14.3	9.7	12.3	11.4	10.8	8.8	8.8	40.3	18.8	24
19	7.7	13.8	10.8	10.1	11.0	10.6	11.9	13.0	20.2	31.6	28.0	28.3	32.0	30.9	26.1	27.8	22.8	13.2	12.7	14.7	11.6	16.0	14.9	16.0	7.7	32.0	18.2	24
20	14.1	16.2	15.1	13.2	11.9	11.2	21.9	29.8	38.8	35.5	37.0	33.1	43.8	31.6	28.7	32.0	21.7	22.6	17.6	16.5	14.7	15.8	15.6	15.8	11.2	43.8	23.1	24
21	19.1	16.7	17.8	14.7	15.8	12.3	13.2	15.4	12.7	18.0	24.5	24.5	22.8	X	22.1	22.8	19.9	15.4	11.4	9.9	11.9	14.0	14.0	16.7	9.9	24.5	16.8	23
22	16.3	15.4	15.6	15.6	17.8	16.7	20.6	26.5	27.8	28.9	31.1	35.3	35.5	34.4	47.8	26.5	25.4	21.9	20.8	18.4	27.2	21.7	30.5	31.1	15.4	47.8	25.4	24
23	25.9	25.4	23.7	26.1	23.2	29.4	20.4	29.6	34.0	31.6	23.5	24.8	32.0	25.0	28.3	29.4	31.6	26.5	23.3	24.8	27.2	21.0	16.9	16.9	16.9	34.0	25.9	24
24	19.5	16.0	12.9	14.5	12.7	12.3	12.3	12.1	17.2	17.3	31.1	X	33.3	37.9	37.0	39.0	33.3	35.0	13.8	20.2	21.3	19.9	25.6	22.8	12.1	39.0	22.5	23
25	21.0	20.8	19.4	18.0	17.6	15.8	X	12.7	11.3	15.6	19.6	25.2	29.8	33.4	27.2	43.4	21.8	12.1	15.8	14.9	15.6	19.1	14.7	24.8	11.3	43.4	20.4	23
26	19.3	22.1	20.4	24.6	22.8	19.5	22.6	25.0	26.1	35.0	40.3	44.7	50.2	58.9	46.4	42.7	39.4	31.8	31.8	22.6	23.7	23.3	23.3	13.0	13.0	58.9	30.4	24
27	18.4	31.1	25.2	26.8	19.1	17.6	41.6	43.8	44.3	48.9	39.2	26.8	31.8	40.8	38.1	34.6	30.2	25.0	22.8	21.7	27.6	22.8	20.4	16.9	16.9	48.9	29.8	24
28	14.7	11.6	13.8	15.4	13.2	14.9	16.9	16.2	12.9	14.3	18.0	23.7	26.7	26.5	28.3	27.2	19.7	13.8	15.1	16.5	17.8	18.6	16.5	20.8	11.6	28.3	18.0	24
29	17.8	19.4	20.4	32.9	25.8	30.0	43.4	37.3	39.9	44.7	45.1	39.7	38.8	42.9	37.7	33.3	37.5	35.3	26.7	29.4	17.1	12.5	12.3	14.5	12.3	45.1	30.6	24
30	10.8	8.6	11.2	9.7	7.5	7.0	6.8	9.2	12.9	12.5	14.3	22.2	20.0	17.6	15.4	14.0	12.5	13.4	14.0	16.1	21.1	21.0	16.9	16.9	6.8	22.2	13.8	24
HOURLY MAX	46.6	42.3	43.2	41.0	43.8	45.6	46.9	48.2	51.0	48.9	49.2	45.3	53.0	58.9	49.3	49.9	55.6	42.0	48.0	74.0	43.6	44.2	47.5	42.5				

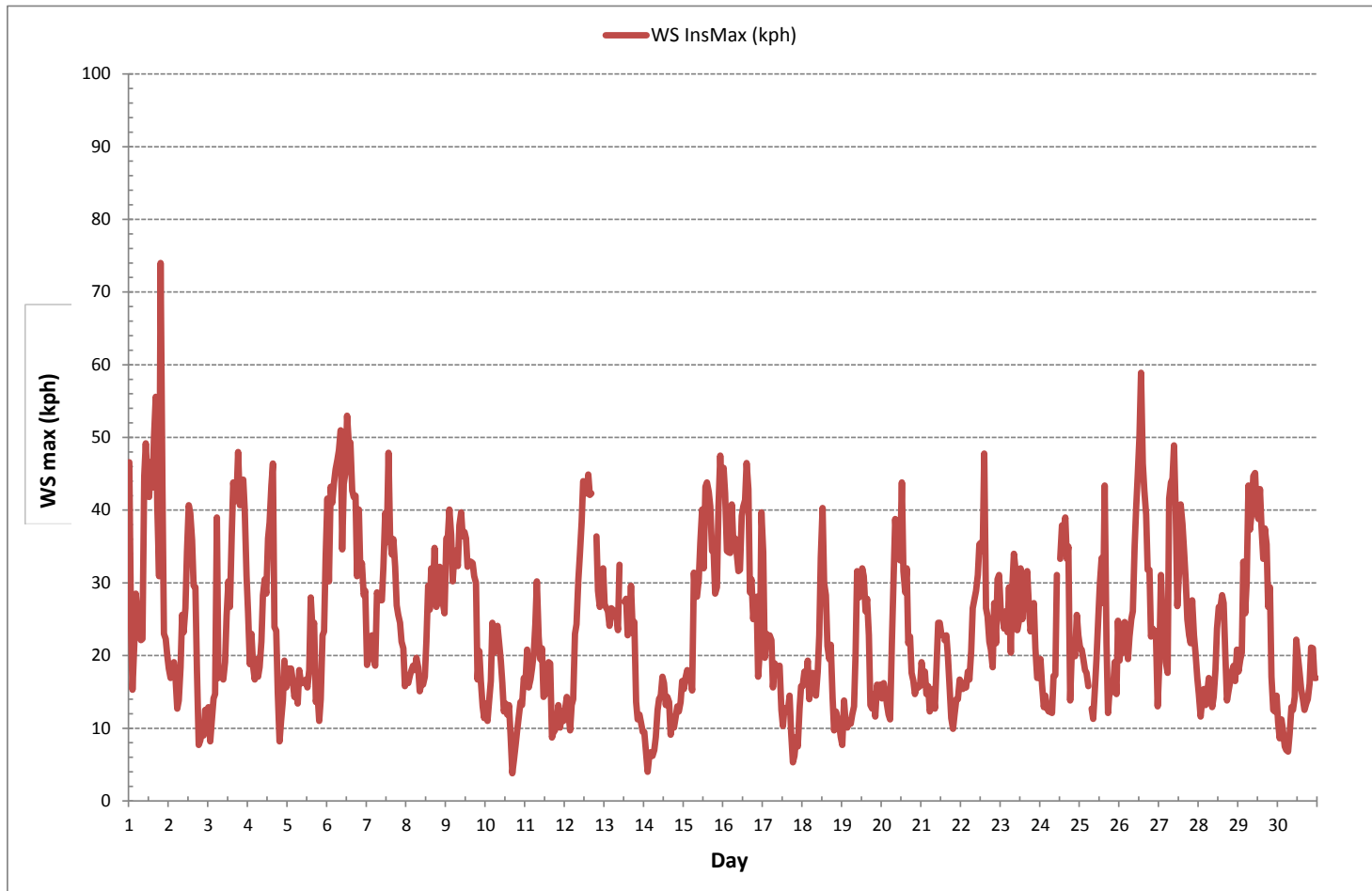
STATUS FLAG CODES

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

MONTHLY SUMMARY

MAXIMUM INSTANTANEOUS VALUE:	74.0	kph	@ HOUR	19	ON DAY	1	
OPERATIONAL TIME:						712	hrs

WIND SPEED Instantaneous Maximum (WS kph)



***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 CONTINUOUS MONITORING STATION
Name of the Representative of the Person Responsible	Position / Title of the Representative of the Person Responsible
Mike Bisaga	Environment Monitoring Program Manager
Is an External Party Certifying the Report?	
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Name of External Person Certifying the Report	Position / Title of External Person Certifying the Report
Wunmi Adekanmbi	Project Team Lead, Customer Service - Air Services
Company Name for External Person Certifying the Report	Identification of Qualifications / Professional Designations of the External Person Certifying the Report
Maxxam Analytics, A Bureau Veritas Group Company	M.Sc., EPT., PMP

Maxxam Analytics is the designated contractor conducting monitoring and reporting activities. I certify that the submitted data has been (a) reviewed and validated as per the AMD Chapter 6: Ambient Data Quality. I certify that the submitted report (b) accurately reflects the monitoring results and reporting timeframe and (c) meets the specified analysis, summarization and reporting requirements as per the AMD Chapter 9: Reporting.



 Signature of the External Person Certifying the Report

24 - Oct - 2018

 Report Issued Date (dd-mon-yyyy)

APPENDIX V
DATA VALIDATION CERTIFICATION FORM



Validation Certificate Form

Client: <u>Lakeland Industry & Community Association</u>	Project #: <u>2833-2018-09-31-C</u>
Site: <u>St. Lina Continuous Monitoring Station</u>	Contact: <u>Mike Bisaga</u>

Level 0 Preliminary Verification	<u>Maram Ghalet</u>	Date <u>12 - Oct -2018</u>
Level 1 Primary Validation	<u>Maram Ghalet</u>	Date <u>17 - Oct -2018</u>
Level 2 Final Validation	<u>Maram Ghalet</u>	Date <u>19 - Oct -2018</u>
Level 3 Independent Data Review	<u>Michael</u>	Date <u>24 - Oct -2018</u>
Post-Final Validation	<u>NA</u>	Date <u>NA</u>

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