



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

October 5, 2017

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 August 2017.

The air monitoring program consists of continuous air monitoring, passive sampling, intermittent sampling, including both VOC and PAH sampling program, and VOC canister 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 were above the 90% requirement.

All data collected in August 2017, with the exception of PM2.5, was compliant with the requirements outlined in the Air Monitoring Directive (Alberta Environment and Parks, 2016).

There were seven 1-hour exceedances and one 24-hour exceedance reported to AEP this month. On August 14, between the hours of 06:00 to 12:00, concentrations of 129, 217, 196, 183, 185, 177 and 110 µg/m3 were recorded. A 24-hour concentration of 75 µg/m3 on August 14 was recorded. AEP reference number: 328381.

As the LICA Environmental Program Manager and Data & Reporting Specialist, we certify that 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 certify 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, with the exception of electronic submission for the results of passive samples, intermittent samples and VOC canister



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

samples. The results for both intermittent samples and VOC canister samples is scheduled to be submitted by the end of January 2018.

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

Respectfully,

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

Michael Bisaga
Technical Program Managers
Lakeland Industry & Community Association
780-266-7068
mbisaga@otonabee.ca

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

Lily Lin
Data & Reporting Specialist
587-225-2248
rebbaca@gmail.com



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
COLD LAKE CONTINUOUS MONITORING STATION

JOB #: 2833-2017-08-1-C

August 2017

Prepared for:

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

Attention: MIKE BISAGA

DATE: **October 3, 2017**

Prepared by:

Maram Ghaleb

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

Reviewed by:

Cheri Sinclair

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

SUMMARY

In August 2017, Maxxam Analytics was contracted to manage the ambient air quality monitoring and maintenance activities at the Cold Lake 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 & Community Association.

All data collected this month, with the exception of PM_{2.5}, was compliant with the requirements outlined in the Air Monitoring Directive (Alberta Environment and Parks, 2016).

There were seven 1-hour exceedances reported to AEP this month. On August 14, between the hours of 06:00 to 12:00, concentrations of 129, 217, 196, 183, 185, 177 and 110 µg/m³ were recorded. All seven exceedances were reported under Alberta Environment and Sustainable Resource Development (ESRD) reference number 328381.

There was one 24-hour exceedance reported to AEP this month. A concentration of 75 µg/m³ on August 14 was reported under Alberta Environment and Sustainable Resource Development (ESRD) reference number 328381.

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

TRS: One hour of downtime was incurred due to an additional quality check performed to address a biased low span response.

THC: A brief power failure resulted in an analyzer flame-out on August 5. The flame-out event occurred in parallel with the scheduled daily span verification, which impacted the span execution. Five hours of downtime were recorded due to this event.

PM_{2.5}: On August 14 seven 1-Hr exceedances and one 24-Hr exceedance were recorded. This event was reported to AEP under reference number 328381.

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 Continuous Monitoring Station.

Should you have any questions concerning the results or if we can be of further assistance, please contact us at 403-219-3678 or toll-free at 1-800-386-7247.

Monthly Continuous Data Summary

Lakeland Industry & Community Association Cold Lake 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	0	2	16	15	8.6	SW	0	1	100.0
TRS (ppb)	-	-	-	-	0	2	6	7	2.2	SSW	1	4	99.9
THC (ppm)	-	-	-	-	2.21	3.91	12	3	0.4	NNE	2.53	3	99.3
NO ₂ (ppb)	159	-	0	-	2	8	28	8	2.1	W	4	16	100.0
NO (ppb)	-	-	-	-	0	10	29	7	1.7	W	1	2	100.0
NO _x (ppb)	-	-	-	-	2	16	29	7	1.7	W	4	2	100.0
O ₃ (ppb)	82	-	0	-	20.4	50.5	12	13	9.1	SSE	40.1	13	100.0
PM _{2.5} (µg/m ³)	80	30	7	1	10	217	14	7	3.2	WSW	75	14	100.0
RELATIVE HUMIDITY (%)	-	-	-	-	72	100	2	3	2.2	W	96	15	100.0
AMBIENT TEMPERATURE (°C)	-	-	-	-	16.5	26.5	27	15	6.9	WSW	20.6	13	100.0
VECTOR WS (kph)	-	-	-	-	1.4	19.7	13	13	-	SE	12.0	13	100.0
VECTOR WD (sec)	-	-	-	-	228 (SW)	-	-	-	-	-	-	-	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.

NO₂ 1-Hour Exceedances

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

PM_{2.5} 1-Hour Exceedances

DATE	TIME (MST)	READING (ppb)	WS (kph)	WD (deg)	ESRD Reference #
August 14	6:00	129	2.5	181	328381
August 14	7:00	217	3.2	241	328381
August 14	8:00	196	4.3	233	328381
August 14	9:00	183	4.3	239	328381
August 14	10:00	185	2.4	224	328381
August 14	11:00	177	2.9	262	328381
August 14	12:00	110	3.9	254	328381

PM_{2.5} 24-Hour Exceedances

DATE	READING (µg/m ³)	WS (kph)	WD (deg)	ESRD Reference #
August 14	75	1.6	208	328381

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), 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).

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

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

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

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

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

The AMD requires each instrument and accompanying data recording system to be operational 90% of the time, 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 100%.
- The routine monthly calibration was performed on August 16.
- Due to brief power failures, two hours of maximum instantaneous data were discarded on August 5, at hour 04:00 and August 14, at hour 10:00.

TOTAL REDUCED SULPHUR (TRS)

- Operational time, for the monitoring period was 99.9%, equivalent to one hour of downtime.
- The analyzer spanned outside the lower acceptance limit on August 15 at hour 20:00. A repeat zero/span check was triggered on August 16, at hour 07:00 and the response remained outside the lower acceptance limit. As there was no apparent reason for the span failures, an immediate site visit was scheduled, where a successful as-found response check and monthly calibration were completed. As the analyzer passed the as-found response check, data collected between August 14, post span verification and August 16 were deemed valid. One hour of downtime on August 16, at hour 07:00, was recorded due to the additional quality check.
- The routine monthly calibration was performed on August 16.
- Due to brief power failures, two hours of maximum instantaneous data were discarded on August 5, at hour 04:00 and August 14, at hour 10:00.

TOTAL HYDROCARBONS (THC)

- Operational time, for the monitoring period was 99.3%, equivalent to five hours of downtime.
- A brief power failure resulted in an analyzer flame-out on August 5. The analyzer burner was promptly ignited, which avoided the need for additional recovery. The flame-out event occurred in parallel with the scheduled daily span verification, which impacted the span execution. As the analyzer flame-out was an isolated event that was quickly rectified, there was no impact to data collection. The span verifications, on August 4 and 6 were both stable and valid.
- The routine monthly calibration was performed on August 17.
- Elevated concentrations for instantaneous maximum data were recorded on August 18, at hours 08:00 and 09:00. Review of the minute data indicates there were no isolated data spikes and supports the validity of these elevated concentrations.
- Due to a brief power failure, one hour of maximum instantaneous data was discarded on August 14, at hour 10:00.
- On August 18, at hour 18:00, one hour of maximum instantaneous data was invalidated as the analyzer yielded an off-scan error at 18:29.

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 August 16.
- Due to brief power failures, two hours of maximum instantaneous data were discarded on August 5, at hour 04:00 and August 14, at hour 10:00.

OZONE (O₃)

- Operational time, for the monitoring period, was 100%.
- The routine monthly calibration was performed on August 17.
- Due to brief power failures, two hours of maximum instantaneous data were discarded on August 5, at hour 04:00 and August 14, at hour 10:00.

PARTICULATE MATTER < 2.5 MICRONS (PM_{2.5})

- Operational time, for the monitoring period, was 100%.
- There were seven 1-hour exceedances reported to AEP this month. On August 14, between the hours of 06:00 to 12:00, concentrations of 129, 217, 196, 183, 185, 177 and 110 $\mu\text{g}/\text{m}^3$ were recorded. All seven exceedances were reported under Alberta Environment and Sustainable Resource Development (ESRD) reference number 328381.
- There was one 24-hour exceedance reported to AEP this month. A concentration of 75 $\mu\text{g}/\text{m}^3$ on August 14 was reported under Alberta Environment and Sustainable Resource Development (ESRD) reference number 328381.
- The quarterly audit was performed on August 24.
- Data was corrected in accordance with AMD (2016), Chapter 6, Table 2, *Zero Adjustment Criteria*. Data recorded between 0 and $-3 \mu\text{g}/\text{m}^3$ was corrected to $0 \mu\text{g}/\text{m}^3$. Data recorded below $-3 \mu\text{g}/\text{m}^3$ was invalidated. No hourly data was invalidated as all measurements were above $-3 \mu\text{g}/\text{m}^3$ this month.

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

- Operational time, for the monitoring period was 100%.
- Due to brief power failures, two hours of maximum instantaneous data were discarded on August 5, at hour 04:00 and August 14, at hour 10:00.
- 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 100%.

AMBIENT TEMPERATURE (AmbTPX)

- Operational time, for the monitoring period, was 100%.

2.0 Project Personnel

Mike Bisaga was the contact 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, with the exception of PM_{2.5}, was compliant with the requirements outlined in the Air Monitoring Directive (Alberta Environment and Parks, 2016).

There were seven 1-hour exceedances reported to AEP this month. On August 14, between the hours of 06:00 to 12:00, concentrations of 129, 217, 196, 183, 185, 177 and 110 µg/m³ were recorded. All seven exceedances were reported under Alberta Environment and Sustainable Resource Development (ESRD) reference number 328381.

There was one 24-hour exceedance reported to AEP this month. A concentration of 75 µg/m³ on August 14 was reported under Alberta Environment and Sustainable Resource Development (ESRD) reference number 328381.

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-00010: Thermo Model 5030 SHARP Monitor
- 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-00214: Ambient Hydrocarbon (THC) 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
- Total Hydrocarbons - Thermo 51C FID Analyzer
- Oxides of Nitrogen - Thermo 42i Chemiluminescent Analyzer
- Ozone - Thermo 49i Photometric Analyzer
- Particulate Matter (PM_{2.5}) - Thermo 5030 SHARP Unit
- Wind System - Met One Unit
- Relative Humidity - Met One Unit
- Ambient Temperature - Met One Unit
- Datalogger - ESC 8832

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

Level 0 Preliminary Verification

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

Level 1 Primary Validation

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

Level 2 Final Validation

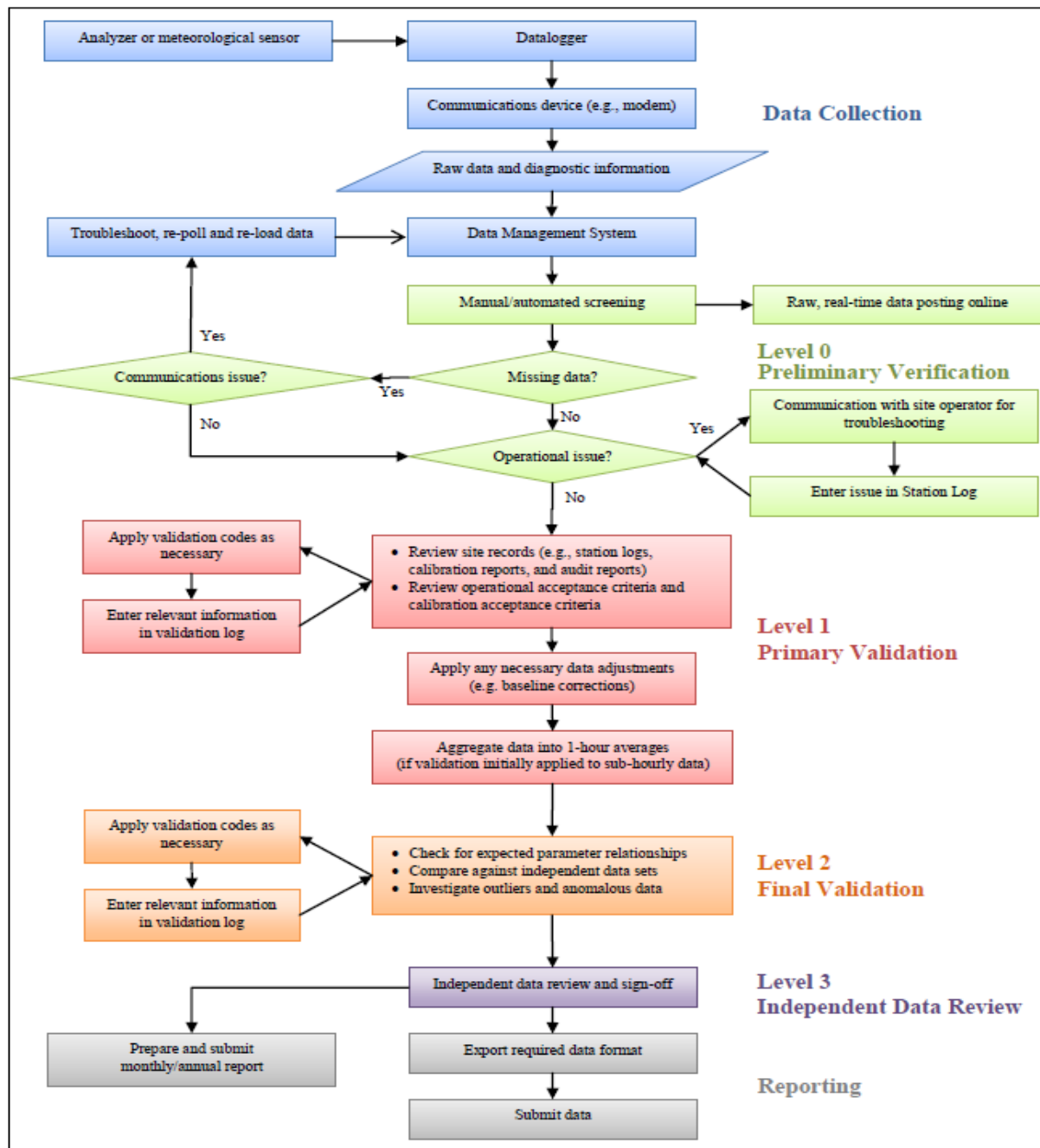
The purpose of Level 2 validation is to verify that there are no inconsistencies among related data, or among regional data measured at nearby sites.

Level 3 Independent Data Review

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

Post-Final Validation

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



Source: 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	S	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	24
2	0	0	0	0	0	0	0	0	1	1	1	S	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	24
3	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
4	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
5	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
6	0	0	0	0	0	0	S	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
7	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	24
8	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
9	0	0	0	S	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
10	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
11	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
12	S	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	1	0	24	
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	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	1	1	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	1	0	24
16	0	0	0	0	0	0	0	0	0	C	C	C	C	C	1	2	1	1	1	1	S	0	0	0	0	0	2	0	24
17	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
18	0	0	0	0	0	0	0	0	0	1	1	0	2	1	0	0	S	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	0	0	S	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	S	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	S	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	S	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	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	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	0	0	S	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	S	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	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	0	S	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	S	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	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
31	0	0	0	0	S	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
HOURLY MAX	0	0	0	0	0	0	0	1	1	1	1	1	1	2	1	2	1	1	1	1	0	1	1	0	0	0	1	0	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

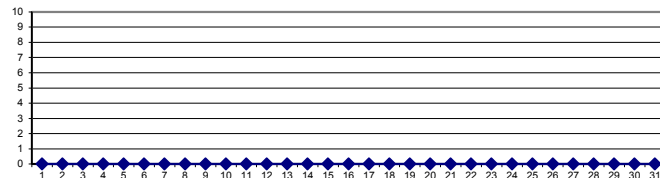
OBJECTIVE LIMIT:

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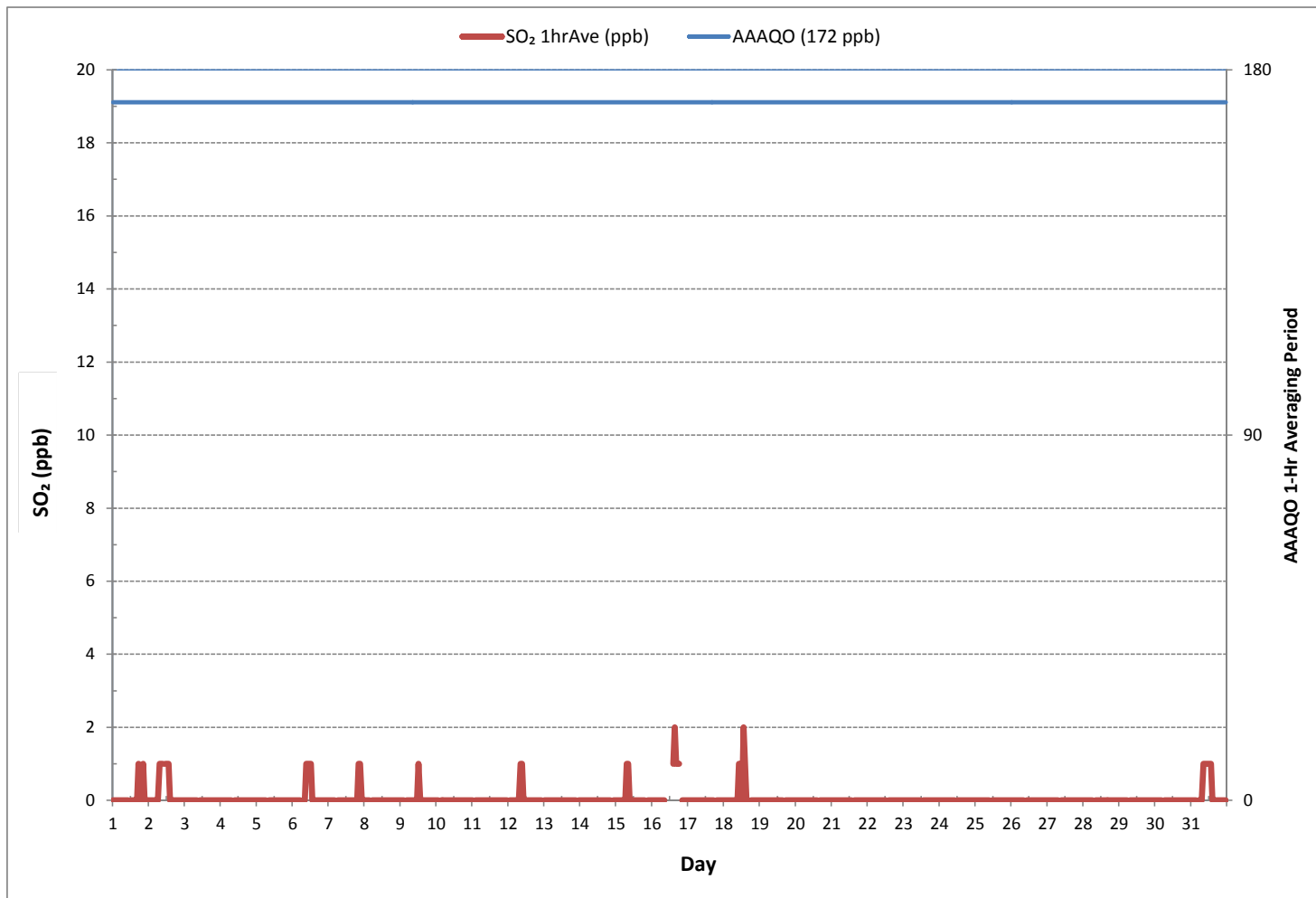
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0
NUMBER OF 24-HR EXCEEDANCES:	0
NUMBER OF NON-ZERO READINGS:	34
MINIMUM 1-HR AVERAGE:	0 ppb @ HOUR 0 ON DAY 1
MAXIMUM 1-HR AVERAGE:	2 ppb @ HOUR 15 ON DAY 16
MAXIMUM 24-HR AVERAGE:	0 ppb ON DAY 1
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	5 hrs
OPERATIONAL TIME:	744 hrs
AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	0
MONTHLY AVERAGE:	0 ppb

24 HR AVERAGES August 2017



SULPHUR DIOXIDE Hourly Averages (SO₂ ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake Continuous Monitoring Station - August 2017

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	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	1	0	1	0	1	0	0	0	0	1	S	0	1	0	0	0	3	0	1	1	1	0	0	0	0	3	0	24	
2	0	0	1	0	0	0	1	2	2	1	S	1	1	1	1	1	1	1	1	1	1	0	0	1	0	0	2	1	24	
3	0	0	0	0	0	0	1	0	0	S	0	1	1	1	1	1	0	1	1	1	1	1	1	0	0	0	1	0	24	
4	0	0	0	0	0	0	0	0	S	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	24	
5	0	0	0	0	P	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	23	
6	1	0	0	0	0	1	S	1	1	2	2	2	1	1	1	1	0	0	0	0	0	0	0	0	1	0	2	1	24	
7	0	1	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	1	0	24	
8	1	0	0	0	S	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	1	1	24	
9	0	1	0	S	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	1	24	
10	0	0	S	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	0	1	1	1	24	
11	0	S	0	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0	1	0	1	0	1	0	0	1	1	24	
12	S	1	0	1	0	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	S	0	1	1	24	
13	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	S	0	0	1	1	24	
14	0	1	1	1	1	1	0	1	1	0	P	0	1	0	0	0	1	1	0	0	1	S	0	0	0	0	1	1	23	
15	0	1	1	0	1	1	1	1	1	1	1	0	0	0	1	0	0	0	1	0	S	0	0	0	0	0	0	1	0	24
16	1	0	0	0	0	0	0	1	1	C	C	C	C	C	2	2	2	1	1	S	1	0	0	0	0	0	2	1	24	
17	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	S	0	0	0	0	0	0	0	1	0	24	
18	0	0	0	0	0	0	0	0	0	1	1	1	1	3	3	1	1	S	0	1	1	1	1	1	1	0	3	1	24	
19	0	1	0	0	0	0	0	0	1	1	0	0	1	0	0	0	S	1	0	0	0	0	0	0	0	0	1	0	24	
20	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	S	1	1	1	1	1	1	0	1	1	0	1	0	24	
21	0	0	0	0	1	0	1	1	0	1	1	0	1	0	S	1	1	1	1	1	1	1	0	0	0	0	1	1	24	
22	0	0	0	1	0	0	1	0	1	1	1	1	1	S	1	1	1	1	1	1	1	0	1	0	0	0	1	1	24	
23	1	1	1	0	0	1	0	0	0	0	1	0	S	0	0	1	0	0	0	0	0	1	1	0	0	0	1	0	24	
24	0	0	1	0	1	1	0	1	1	1	1	S	1	1	1	1	1	1	1	1	0	1	0	0	0	0	1	1	24	
25	1	0	0	0	1	0	0	0	1	1	S	1	0	1	1	0	0	0	1	0	0	1	1	1	1	0	1	0	24	
26	0	0	1	0	0	1	0	0	1	0	S	1	0	1	0	1	1	1	1	1	1	1	0	0	1	0	1	1	24	
27	0	1	0	0	0	0	1	1	S	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0	0	0	1	1	24	
28	0	0	0	0	1	1	0	S	0	1	1	0	0	1	0	0	1	1	0	0	0	1	0	0	0	0	1	0	24	
29	1	1	0	0	0	0	S	1	0	1	1	1	1	0	1	0	1	1	0	1	1	1	1	1	1	1	0	1	1	24
30	1	1	0	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	24	
31	0	0	0	0	S	1	1	1	2	2	2	2	2	1	1	1	0	0	0	0	1	1	0	0	0	0	2	1	24	
HOURLY MAX	1	1	1	1	1	1	1	2	2	2	2	2	2	3	3	2	2	3	1	1	1	1	1	1	1	1	1	1	1	
HOURLY AVG	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0		

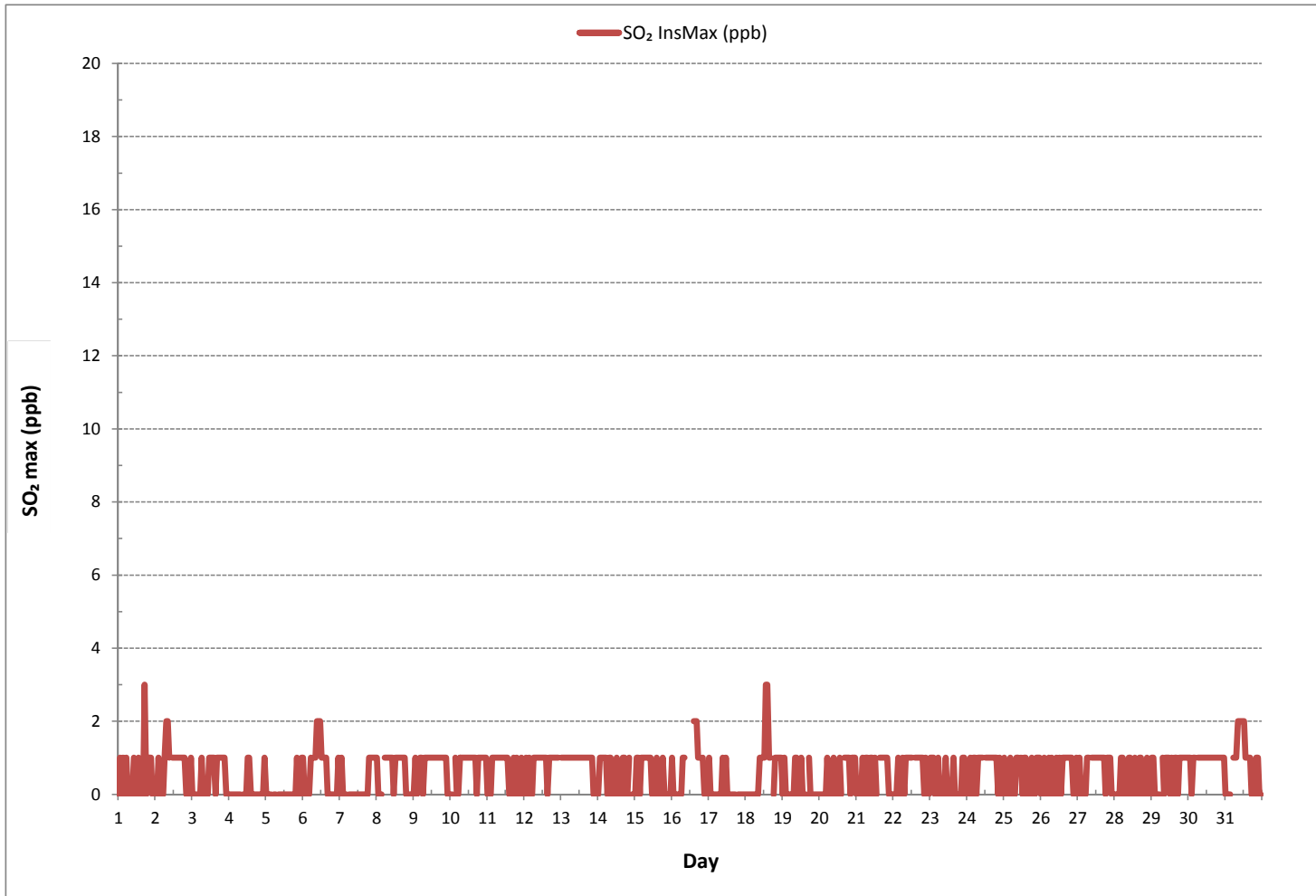
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	371
MAXIMUM INSTANTANEOUS VALUE:	3 ppb @ HOUR 17 ON DAY 1
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	5 hrs
OPERATIONAL TIME:	742 hrs
STANDARD DEVIATION:	1

SULPHUR DIOXIDE Instantaneous Maximum (SO₂ ppb)




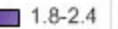
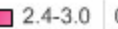



Wind: LICA COLD LAKE SOUTH
 Poll.: LICA COLD LAKE SOUTH-SO2[ppb]
 Monthly: 17/08
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

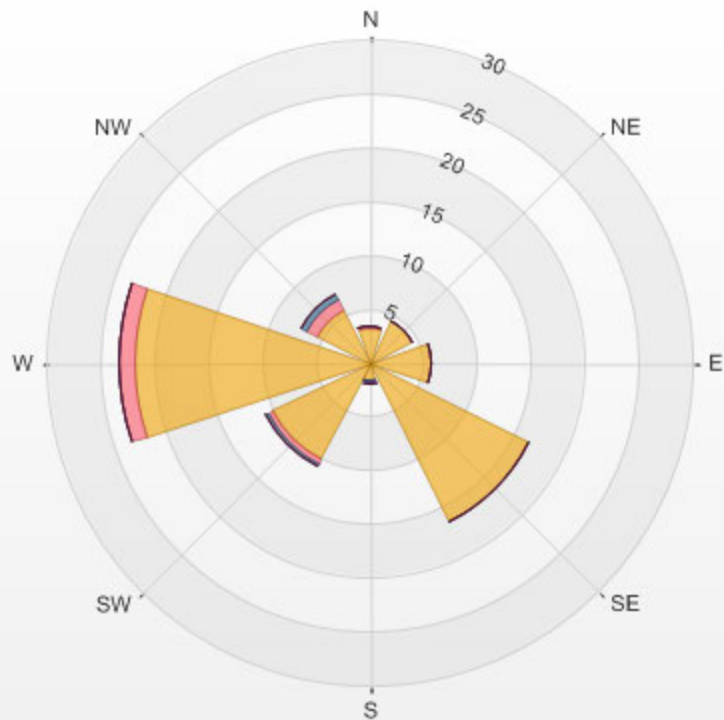
Calm: 26.95%

Calm Avg: 0.06 [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	3.3	0.1	0.0	0.0	0.0	0.0	3.4
NE	4.4	0.0	0.0	0.0	0.0	0.0	4.4
E	5.7	0.0	0.0	0.0	0.0	0.0	5.7
SE	16.5	0.0	0.0	0.0	0.0	0.0	16.5
S	1.7	0.0	0.1	0.1	0.0	0.0	2.0
SW	10.1	0.4	0.3	0.0	0.0	0.0	10.8
W	21.8	1.4	0.0	0.0	0.0	0.0	23.3
NW	5.5	1.1	0.4	0.0	0.0	0.0	7.1
Summary	68.9	3.1	0.9	0.1	0.0	0.0	73.0

% Icon	Classes (ppb)	69	 0.0-0.6	3	 0.6-1.2	1	 1.2-1.8	0	 1.8-2.4	0	 2.4-3.0	0	 >3.0
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LICA COLD LAKE SOUTH Poll.: LICA COLD LAKE SOUTH-SO2[ppb] 2017/08/01 00:00 - 2017/08/31 23:00 Calm: 26.95% Calm Poll Avg: 0.06[ppb]



SO2[ppb] Calibration: LICA COLD LAKE SOUTH Monthly: 17/08 Type: Span



Span Meas Span Ref Span Low Span High

TOTAL REDUCED SULPHUR

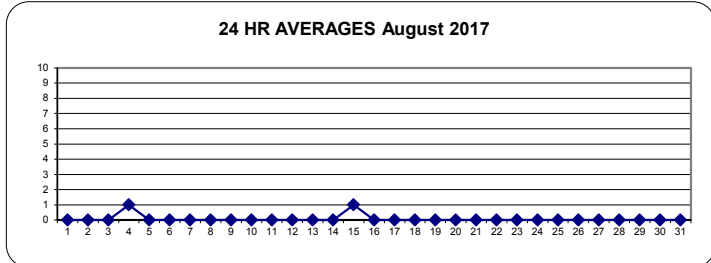
TOTAL REDUCED SULPHUR Hourly Averages (TRS ppb)

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	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	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	1	0	24																					
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	1	1	1	1	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	24																						
4	0	1	1	1	1	1	1	1	S	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	24																						
5	0	0	0	0	1	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24																						
6	0	0	0	1	1	1	S	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	24																						
7	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																						
8	1	0	0	0	S	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24																						
9	0	0	0	S	0	0	1	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	24																						
10	0	0	S	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24																						
11	0	S	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24																						
12	S	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	1	0	24																						
13	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	S	0	0	1	0	24																						
14	0	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	S	0	0	0	1	0	24																						
15	0	0	0	0	1	1	1	1	1	1	0	0	1	1	1	1	1	1	0	0	S	0	0	0	0	1	1	24																						
16	0	0	0	0	0	0	0	S1	0	C	C	C	C	C	C	0	0	0	0	S	0	0	0	0	0	0	0	23																						
17	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	1	0	1	0	24																						
18	1	0	1	0	0	0	1	1	1	1	0	0	0	0	0	0	0	S	0	0	0	0	1	0	0	1	0	24																						
19	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																						
20	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	1	0	24																						
21	0	0	0	0	0	1	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	1	0	24																						
22	0	0	0	0	1	0	0	1	1	1	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24																						
23	0	0	0	1	1	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24																						
24	0	0	0	0	0	0	0	1	1	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24																						
25	0	0	0	0	0	0	1	1	1	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24																						
26	0	0	0	0	0	1	2	1	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	24																						
27	0	0	0	0	0	0	1	1	S	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	S	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	S	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24																						
30	0	0	0	0	0	S	0	0	0	1	0	0	1	1	1	1	0	0	1	1	0	1	0	1	0	1	0	24																						
31	1	1	1	1	S	0	0	1	1	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	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1																										
HOURLY AVG	0	0	0	0	0	0	1	1	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

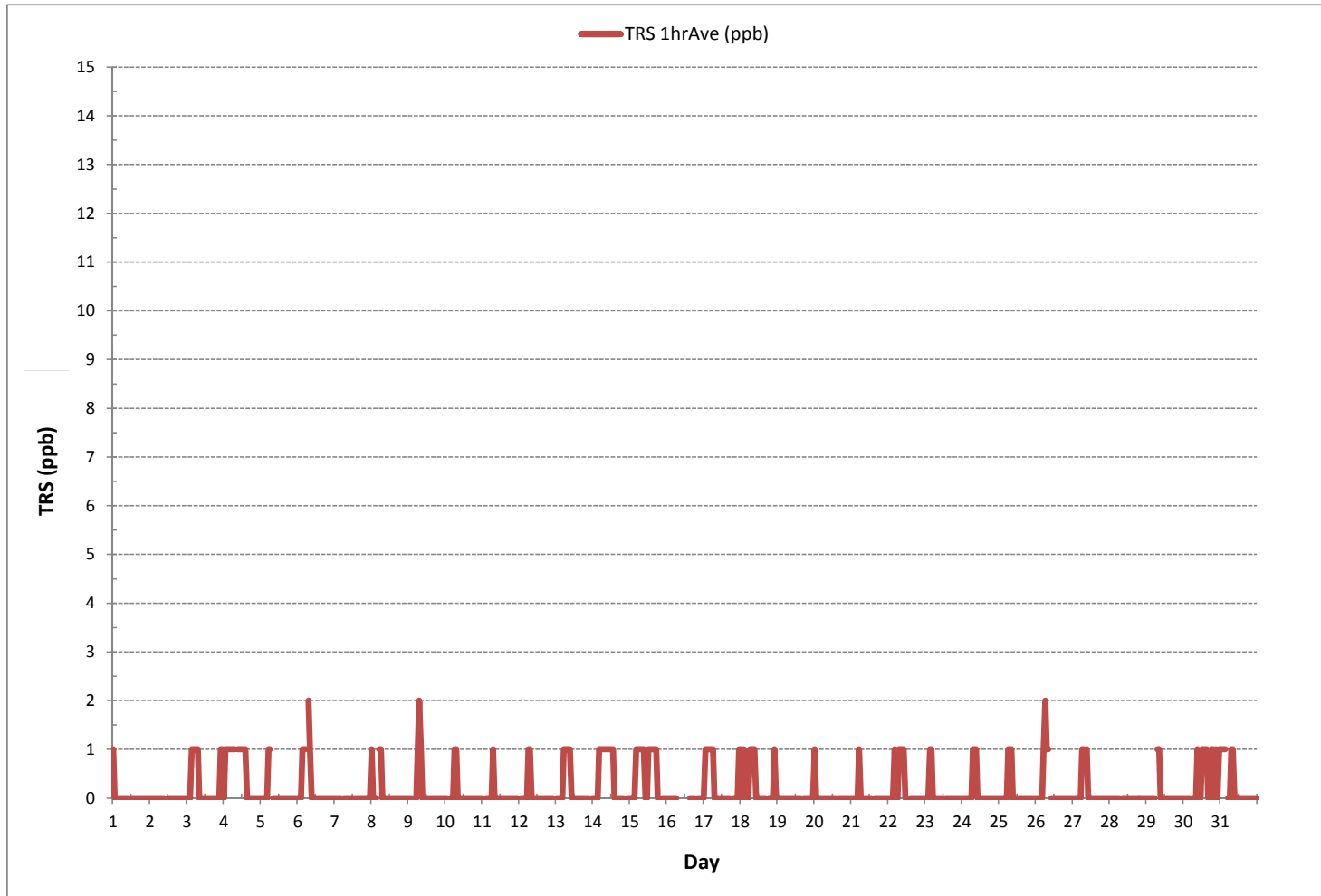
24 HR AVERAGES August 2017



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	119				
MINIMUM 1-HR AVERAGE:	0 ppb	@ HOUR	1	ON DAY	1
MAXIMUM 1-HR AVERAGE:	2 ppb	@ HOUR	7	ON DAY	6
MAXIMUM 24-HR AVERAGE:	1 ppb			ON DAY	4
IZS CALIBRATION TIME:	32 hrs	OPERATIONAL TIME:	743 hrs		
MONTHLY CALIBRATION TIME:	6 hrs	AMD OPERATION UPTIME:	99.9 %		
STANDARD DEVIATION:	0	MONTHLY AVERAGE:	0 ppb		

TOTAL REDUCED SULPHUR Hourly Averages (TRS ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake Continuous Monitoring Station - August 2017

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	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	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	2	1	24
2	2	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	2	1	24
3	1	1	1	1	2	2	2	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	24
4	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	1	1	24
5	1	1	1	1	P	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	23
6	1	1	1	1	1	1	S	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1	24
7	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
8	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	1	24
9	1	1	1	S	1	1	2	4	3	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	4	1	24
10	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
11	1	S	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	24
12	S	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	2	1	24
13	1	1	1	1	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	2	1	24
14	1	1	1	1	1	2	2	2	2	2	P	2	2	2	1	1	1	1	1	1	1	1	S	1	1	1	2	1	23
15	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	0	0	0	0	2	1	24
16	0	0	0	0	0	0	1	S1	1	C	C	C	C	C	C	C	1	1	1	S	1	1	1	1	0	1	1	23	
17	1	1	1	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	2	1	24
18	1	1	1	1	1	1	1	2	2	1	1	1	1	1	1	1	1	S	1	1	1	1	1	2	1	1	2	1	24
19	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	1	24
20	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
21	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
22	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
23	1	1	1	1	2	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	24
24	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	1	24
25	1	1	1	1	1	1	2	2	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	24
26	1	1	1	1	1	2	4	2	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	1	24	
27	1	1	1	1	1	1	2	2	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	24	
28	1	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	24
29	1	1	1	1	1	S	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	24	
30	1	1	1	1	1	S	1	1	2	1	1	1	1	1	1	2	1	1	1	1	1	1	1	2	1	2	1	24	
31	4	4	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	1	24
HOURLY MAX	4	4	1	2	2	2	4	4	3	2	1	2	2	2	1	2	1	1	1	1	1	1	2	2	2				
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	1	1	1	1	

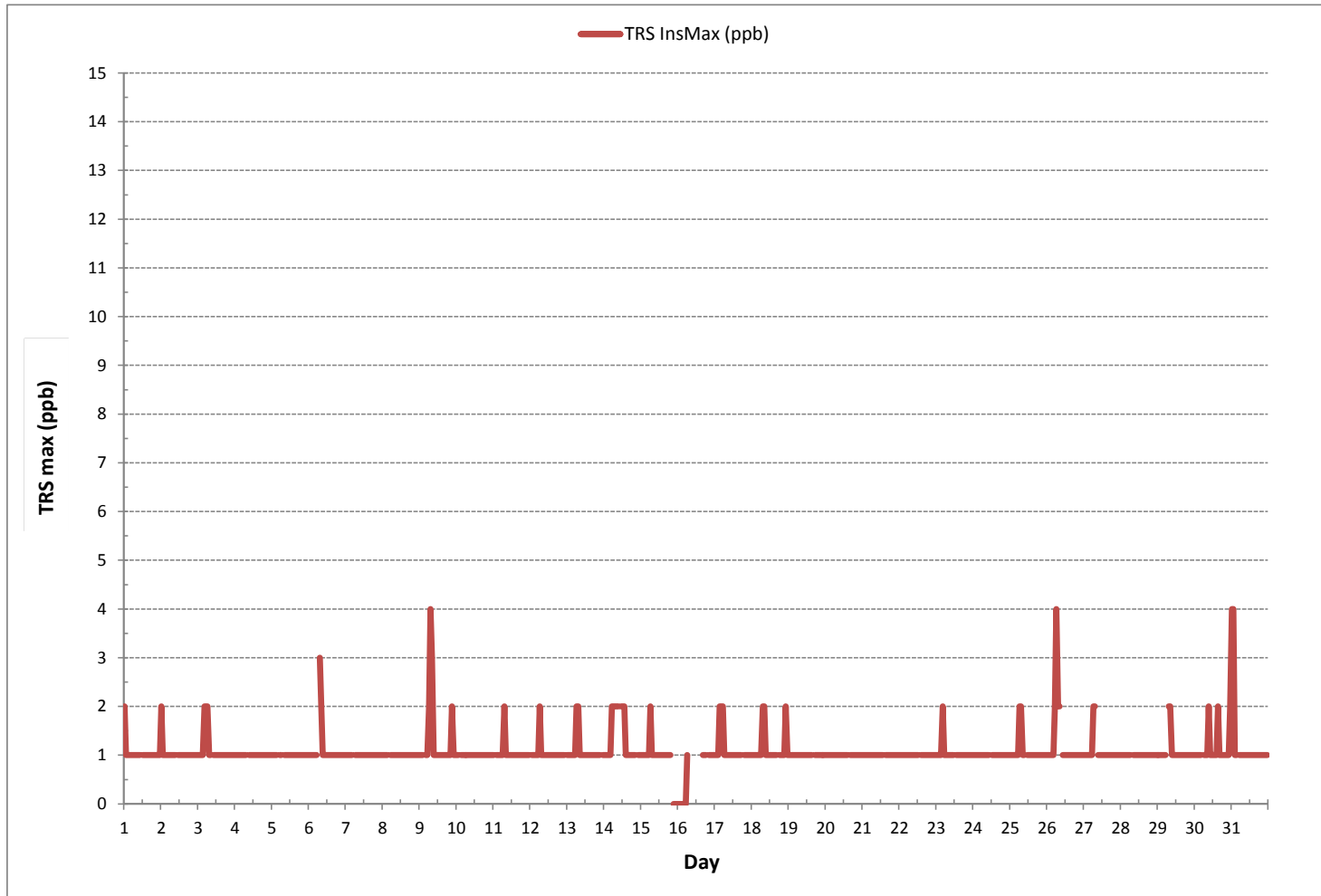
STATUS FLAG CODES

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:	693
MAXIMUM INSTANTANEOUS VALUE:	4 ppb @ HOUR 7 ON DAY 9
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	7 hrs
OPERATIONAL TIME:	741 hrs
STANDARD DEVIATION:	0

TOTAL REDUCED SULPHUR Instantaneous Maximum (TRS ppb)



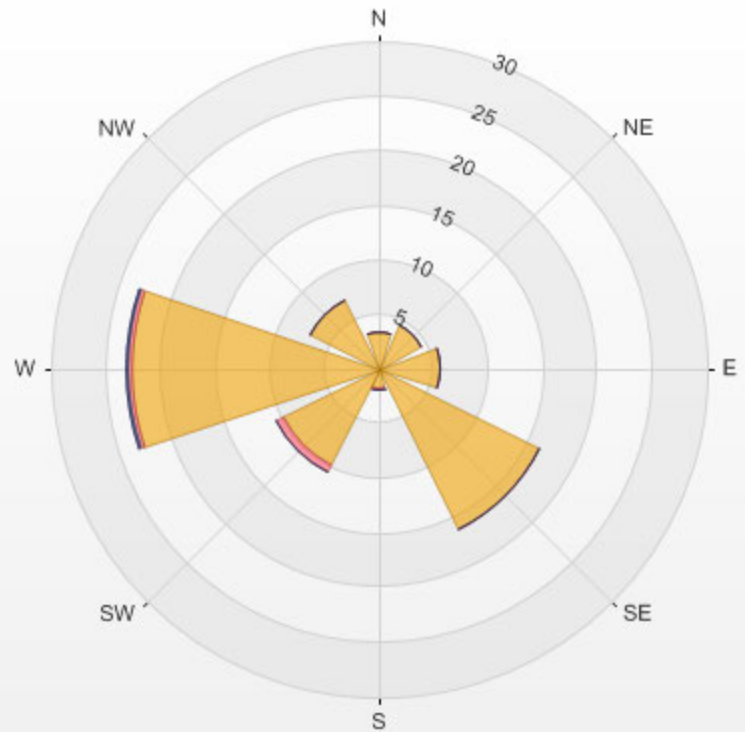
Wind: LICA COLD LAKE SOUTH
 Poll.: LICA COLD LAKE SOUTH-TRS[ppb]
 Monthly: 17/08
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 27.07% Calm Avg: 0.37 [ppb]

Direction	0.0-1.0	1.0-2.0	2.0-3.0	>3.0	Total
N	3.4	0.0	0.0	0.0	3.4
NE	4.4	0.0	0.0	0.0	4.4
E	5.7	0.0	0.0	0.0	5.7
SE	16.5	0.0	0.0	0.0	16.5
S	1.9	0.1	0.0	0.0	2.0
SW	9.8	0.7	0.0	0.0	10.5
W	22.7	0.3	0.3	0.0	23.2
NW	7.1	0.0	0.0	0.0	7.1
Summary	71.5	1.1	0.3	0.0	72.9

%	Icon	Classes (ppb)	72	0.0-1.0	1	1.0-2.0	0	2.0-3.0	0	>3.0

LICA COLD LAKE SOUTH Poll.: LICA COLD LAKE SOUTH-TRS[ppb] 2017/08/01 00:00 - 2017/08/31 23:00 Calm: 27.07% Calm Poll Avg: 0.37[ppb]



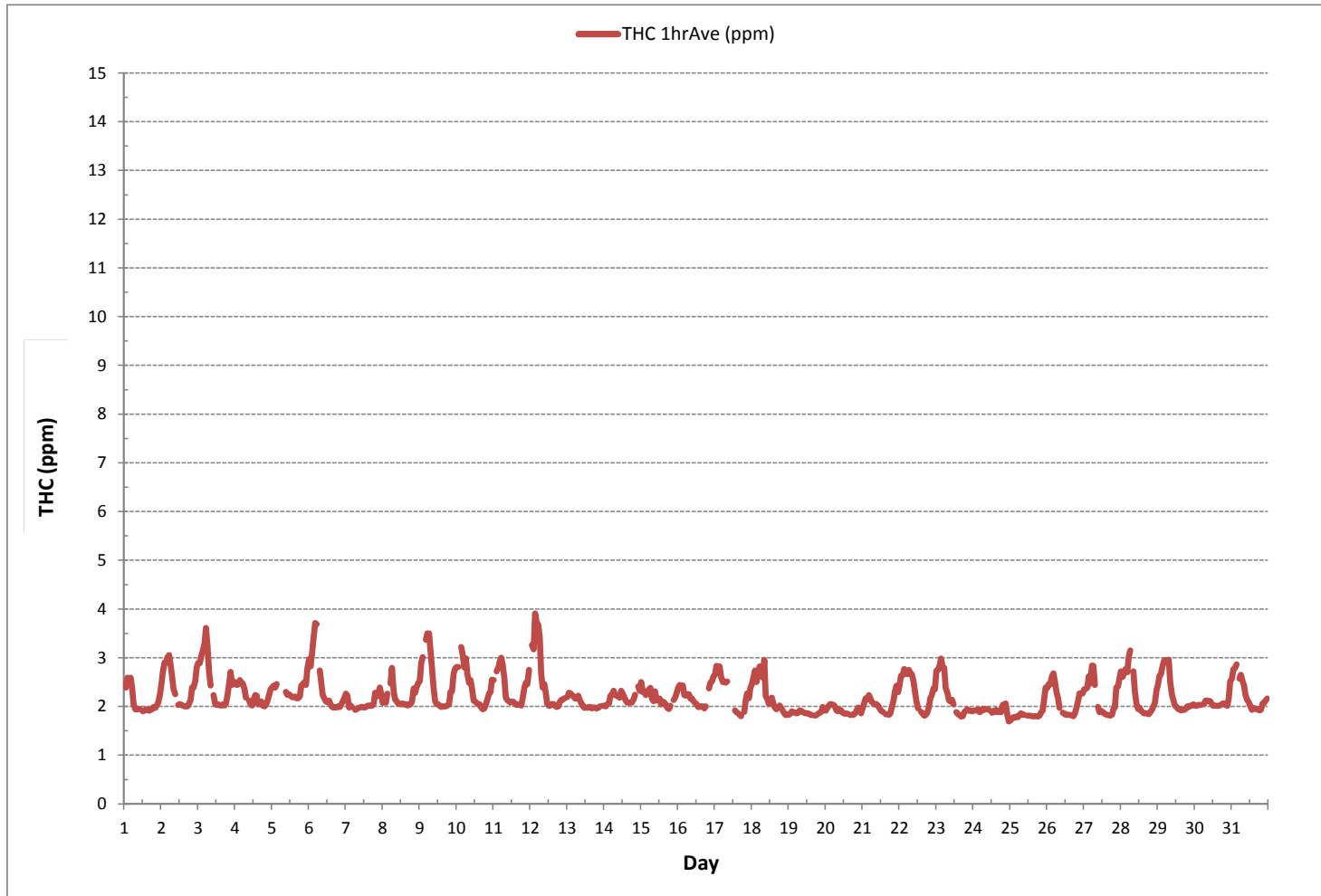
TRS[ppb] Calibration: LICA COLD LAKE SOUTH Monthly: 17/08 Type: Span



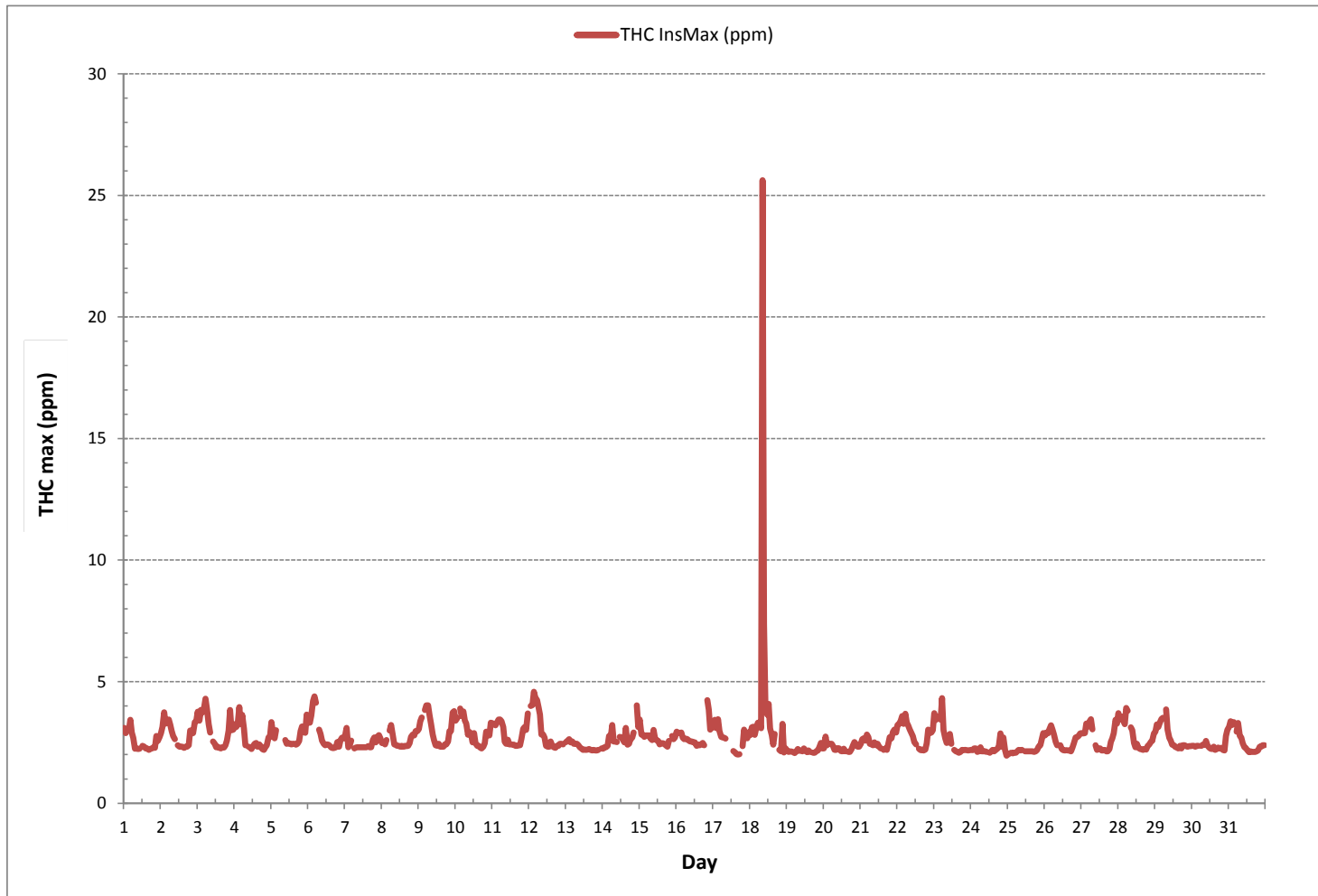
Span Meas Span Ref Span Low Span High

TOTAL HYDROCARBON

TOTAL HYDROCARBONS Hourly Averages (THC ppm)



TOTAL HYDROCARBONS Instantaneous Maximum (THC ppm)



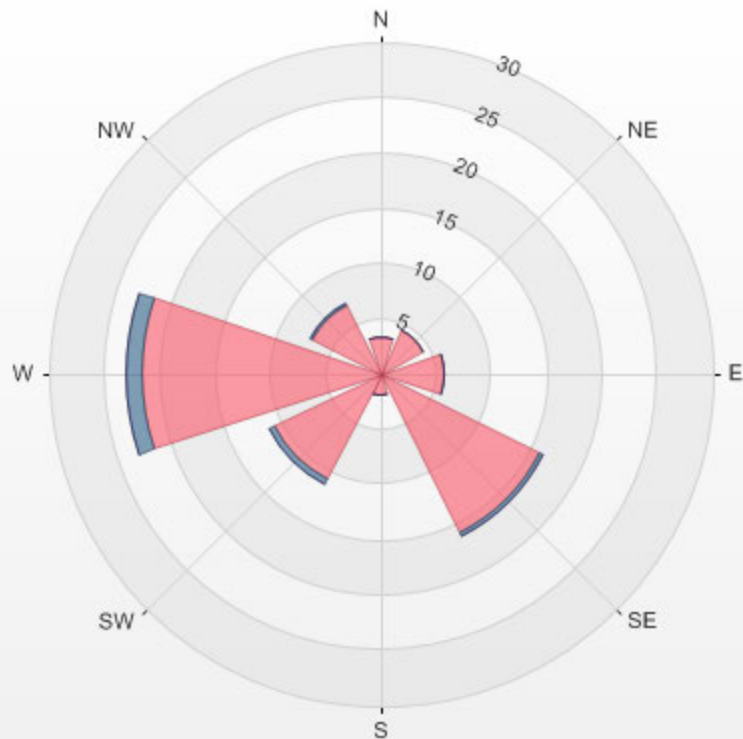
Wind: LICA COLD LAKE SOUTH
Poll.: LICA COLD LAKE SOUTH-THC[ppm]
Monthly: 17/08
Type: PollutionRose
Direction: Blowing From (Wind Frequency)
Based On 1 Hr.

Calm: 26.50% Calm Avg: 2.60 [ppm]

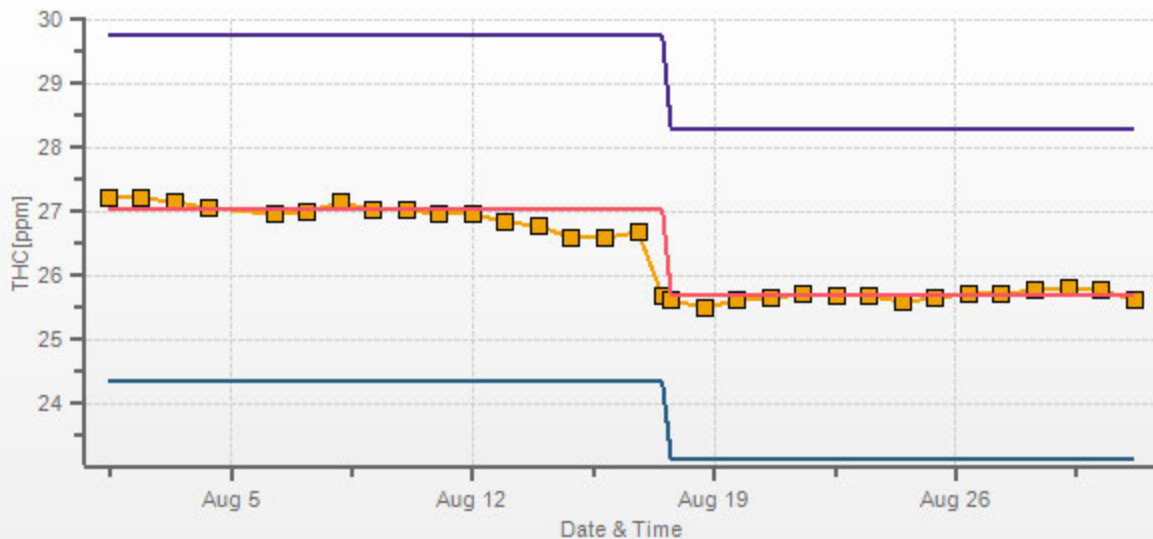
Direction	0.0-1.3	1.3-2.6	2.6-3.9	>3.9	Total
N	0.0	3.4	0.0	0.0	3.4
NE	0.0	4.4	0.0	0.0	4.4
E	0.0	5.7	0.0	0.0	5.7
SE	0.0	16.1	0.4	0.0	16.5
S	0.0	2.0	0.0	0.0	2.0
SW	0.0	10.7	0.6	0.0	11.3
W	0.0	21.5	1.6	0.0	23.1
NW	0.0	7.0	0.1	0.0	7.1
Summary	0.0	70.8	2.7	0.0	73.5

% Icon	Classes (ppm)	0	71	3	0
		0.0-1.3	1.3-2.6	2.6-3.9	>3.9

LICA COLD LAKE SOUTH Poll.: LICA COLD LAKE SOUTH-THC[ppm] 2017/08/01 00:00 - 2017/08/31 23:00 Calm: 26.50% Calm Poll Avg: 2.60[ppm]



THC[ppm] Calibration: LICA COLD LAKE SOUTH Monthly: 17/08 Type: Span



Span Meas Span Ref Span Low Span High

OXIDES OF NITROGEN



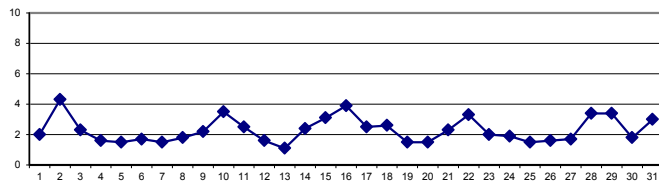
OXIDES OF NITROGEN Hourly Averages (NO_x ppb)

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	2	2	3	3	2	3	2	1	1	1	1	S	2	1	1	3	1	4	2	1	3	3	3	2	1	4	2	24	
2	2	4	6	8	7	9	12	12	8	6	S	3	2	2	2	1	1	1	2	3	3	3	2	1	1	12	4	24	
3	2	1	2	2	2	4	5	3	2	S	3	2	1	1	1	1	1	2	2	2	4	4	5	3	1	5	2	24	
4	3	2	1	2	1	1	3	2	S	3	2	2	2	2	1	1	1	1	1	1	1	2	2	2	1	3	2	24	
5	1	2	2	1	1	2	3	S	4	2	1	1	1	1	1	1	1	1	1	1	3	2	2	1	1	4	2	24	
6	2	2	2	2	3	3	S	3	2	2	2	1	1	1	1	1	1	1	1	1	2	2	2	1	1	3	2	24	
7	1	1	1	1	1	S	2	1	1	1	1	1	1	1	1	1	1	1	1	2	5	6	5	3	1	6	2	24	
8	1	1	1	2	S	4	7	3	2	1	1	0	1	2	1	1	1	1	1	2	2	2	2	2	0	7	2	24	
9	2	1	1	S	4	3	5	7	4	3	1	1	1	2	1	1	2	1	1	1	2	3	2	1	1	7	2	24	
10	1	1	S	2	2	4	12	7	4	6	4	2	2	1	1	1	1	2	2	4	5	5	4	5	1	12	4	24	
11	4	S	3	2	2	2	6	8	2	2	1	1	1	1	1	1	1	1	1	2	5	4	5	3	1	8	3	24	
12	S	3	2	2	2	2	3	3	2	2	1	1	1	1	1	1	1	1	1	3	2	1	1	S	1	3	2	24	
13	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	2	1	2	1	24	
14	1	1	1	1	1	1	2	3	3	3	3	3	4	4	3	2	2	2	2	2	3	S	4	3	1	4	2	24	
15	3	3	3	2	2	3	5	9	8	5	3	3	3	2	2	2	2	1	1	1	S	3	2	2	1	9	3	24	
16	3	4	4	5	3	3	4	4	5	C	C	C	C	C	C	C	C	6	3	S	5	3	3	3	3	6	4	24	
17	4	4	4	3	2	3	3	3	4	3	2	1	1	1	1	1	1	1	1	S	3	4	3	3	3	1	4	3	24
18	2	1	1	1	2	5	6	3	3	3	4	3	3	3	2	2	1	S	3	3	2	3	3	1	1	6	3	24	
19	1	2	2	3	2	3	3	3	2	1	1	1	0	0	0	0	S	2	1	1	2	2	2	2	0	3	2	24	
20	2	2	2	2	2	2	2	2	1	1	1	0	1	0	S	2	2	2	2	1	1	2	3	2	2	0	3	2	24
21	3	3	2	2	2	4	3	4	4	3	2	2	2	1	S	2	1	1	1	3	3	2	2	2	1	4	2	24	
22	2	2	2	2	2	4	6	6	5	8	4	2	2	S	3	2	2	2	3	4	4	4	4	4	2	8	3	24	
23	3	2	3	3	4	4	4	3	2	1	2	1	S	2	1	1	1	1	2	3	1	2	1	1	1	4	2	24	
24	1	1	1	1	1	2	3	2	2	2	1	S	3	2	2	2	3	4	3	3	3	3	1	1	1	4	2	24	
25	1	1	2	2	2	1	1	2	3	2	S	2	2	2	1	1	1	1	1	2	2	1	2	1	1	3	2	24	
26	1	1	2	2	2	2	2	3	2	S	3	1	1	1	1	1	1	1	1	2	2	2	2	2	1	3	2	24	
27	2	2	1	1	1	2	2	3	S	3	1	2	1	1	1	1	1	1	2	3	2	2	2	3	1	3	2	24	
28	2	2	2	3	4	6	8	S	12	6	4	3	2	2	1	1	1	0	1	5	5	3	3	3	0	12	3	24	
29	4	3	3	3	3	4	S	16	12	8	4	2	1	1	1	1	1	3	4	3	1	1	1	1	1	16	3	24	
30	1	0	1	1	1	S	3	2	2	1	1	1	2	1	2	2	2	5	4	3	2	2	2	2	0	5	2	24	
31	1	2	1	1	S	5	9	5	6	7	4	4	3	2	1	1	1	1	1	2	3	5	5	1	9	3	24		
HOURLY MAX	4	4	6	8	7	9	12	16	12	8	4	4	4	4	3	3	3	6	4	5	5	6	5	5					
HOURLY AVG	2	2	2	2	2	3	4	4	4	3	2	2	2	1	1	1	1	2	2	2	3	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

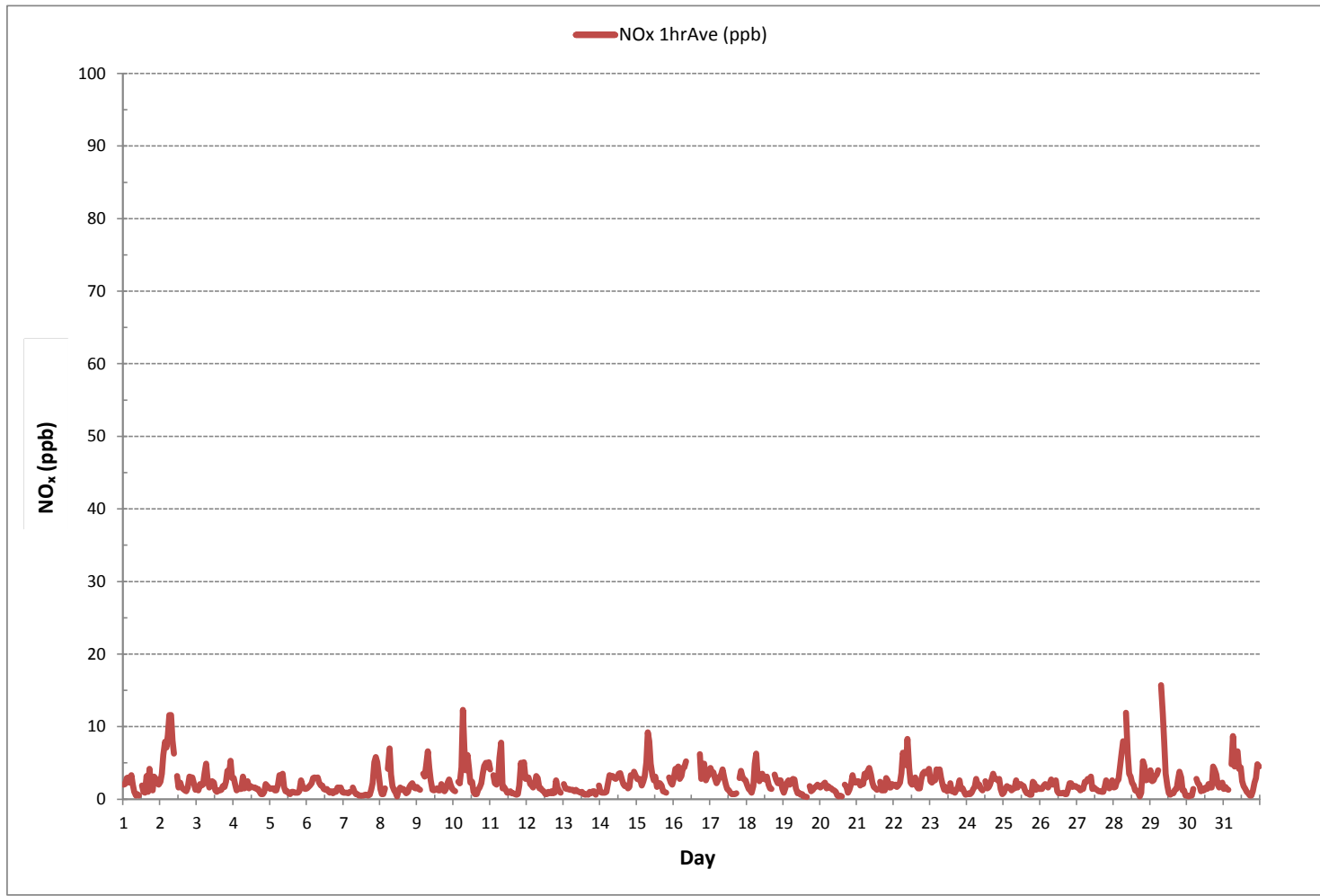
24 HR AVERAGES August 2017



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	704			
MINIMUM 1-HR AVERAGE:	0 ppb	@ HOUR	15	ON DAY 19
MAXIMUM 1-HR AVERAGE:	16 ppb	@ HOUR	7	ON DAY 29
MAXIMUM 24-HR AVERAGE:	4 ppb			ON DAY 2
IZS CALIBRATION TIME:	32 hrs	OPERATIONAL TIME:	744 hrs	
MONTHLY CALIBRATION TIME:	8 hrs	AMD OPERATION UPTIME:	100.0 %	
STANDARD DEVIATION:	2	MONTHLY AVERAGE:	2 ppb	

OXIDES OF NITROGEN Hourly Averages (NO_x ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake Continuous Monitoring Station - August 2017

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	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	3	3	4	4	3	6	4	2	1	4	1	S	4	2	2	23	3	17	4	8	9	4	3	3	1	23	5	24
2	4	4	11	11	9	13	13	13	11	9	S	6	2	12	4	6	2	2	2	10	5	4	7	2	2	13	7	24
3	3	2	4	3	3	10	8	10	4	S	35	36	7	2	3	5	3	7	3	3	14	6	40	4	2	40	9	24
4	13	6	2	4	3	5	5	3	S	6	4	9	3	2	4	4	4	2	1	1	2	3	3	3	1	13	4	24
5	2	2	2	2	P	3	6	S	6	3	2	5	2	1	4	2	1	1	2	2	7	3	3	3	1	7	3	23
6	3	4	3	4	5	5	S	5	4	2	4	2	2	5	3	2	8	1	2	2	8	5	3	3	1	8	4	24
7	2	2	4	3	3	S	4	3	2	3	1	2	1	2	2	2	2	1	3	3	7	7	7	8	1	8	3	24
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9	3	2	2	S	7	8	6	9	8	6	4	3	3	3	3	4	7	7	2	3	5	6	4	3	2	9	5	24
10	3	2	S	4	3	9	16	12	6	12	9	7	15	8	2	2	2	2	4	5	10	10	5	7	2	16	7	24
11	5	S	6	3	3	6	9	14	3	3	5	2	3	10	2	4	2	1	1	4	10	5	19	5	1	19	5	24
12	S	5	4	3	3	4	8	8	3	3	3	13	3	1	5	2	9	1	3	13	3	5	2	S	1	13	5	24
13	4	2	2	2	2	2	3	2	3	2	2	2	7	2	2	3	3	7	2	4	3	1	S	4	1	7	3	24
14	2	1	1	1	2	5	8	7	4	4	P	6	6	9	4	5	2	2	2	3	7	S	6	4	1	9	4	23
15	4	4	5	3	3	4	7	13	12	8	7	6	9	7	5	4	6	2	2	2	S	5	3	3	2	13	5	24
16	5	5	7	7	5	5	5	7	10	C	C	C	C	C	C	C	C	C	5	S	7	4	5	5	4	10	6	24
17	6	5	5	4	3	4	4	5	6	5	3	3	2	2	2	2	2	1	S	4	6	4	4	4	1	6	4	24
18	3	2	2	2	11	9	11	5	4	4	6	4	9	8	4	6	5	S	6	4	5	6	5	3	2	11	5	24
19	2	3	3	4	3	4	4	5	3	2	2	1	6	1	2	2	S	4	2	2	3	3	3	2	1	6	3	24
20	2	3	3	3	2	3	2	3	2	2	2	1	2	1	S	4	3	2	3	4	6	3	4	1	6	3	24	
21	3	4	3	3	4	5	4	6	8	6	4	4	5	3	S	5	4	3	2	5	4	3	3	5	2	8	4	24
22	3	7	2	4	5	14	13	7	8	12	9	3	3	S	5	3	4	3	4	7	6	6	8	6	2	14	6	24
23	4	4	4	4	6	6	12	11	7	3	13	4	S	6	3	3	3	5	3	8	4	10	8	1	1	13	6	24
24	2	2	1	3	6	3	16	5	8	5	5	S	6	2	3	4	10	6	4	4	4	5	3	1	1	16	5	24
25	2	2	2	2	2	2	3	5	6	3	S	4	6	8	3	2	2	2	1	9	5	4	3	3	1	9	4	24
26	4	3	3	3	3	3	3	4	5	S	8	2	2	2	4	2	1	2	4	4	4	3	3	3	1	8	3	24
27	3	3	2	4	3	4	4	5	S	6	3	5	5	4	2	5	2	2	16	16	3	3	4	11	2	16	5	24
28	3	3	4	4	6	19	13	S	14	9	7	5	3	5	5	5	3	1	4	7	6	4	4	4	1	19	6	24
29	18	4	4	5	8	8	S	24	28	22	7	5	2	1	2	3	3	2	7	6	13	2	2	1	1	28	8	24
30	1	1	2	2	3	S	5	4	5	2	4	4	6	3	17	3	4	37	6	6	4	4	4	4	1	37	6	24
31	3	3	3	3	S	10	47	12	10	9	7	6	4	3	2	2	2	1	1	3	3	4	6	7	1	47	7	24
HOURLY MAX	18	7	11	11	11	19	47	24	28	22	35	36	15	12	17	23	10	37	16	16	14	10	40	11				
HOURLY AVG	4	3	3	4	4	6	9	7	7	6	6	5	5	4	3	4	4	4	3	5	6	4	6	4				

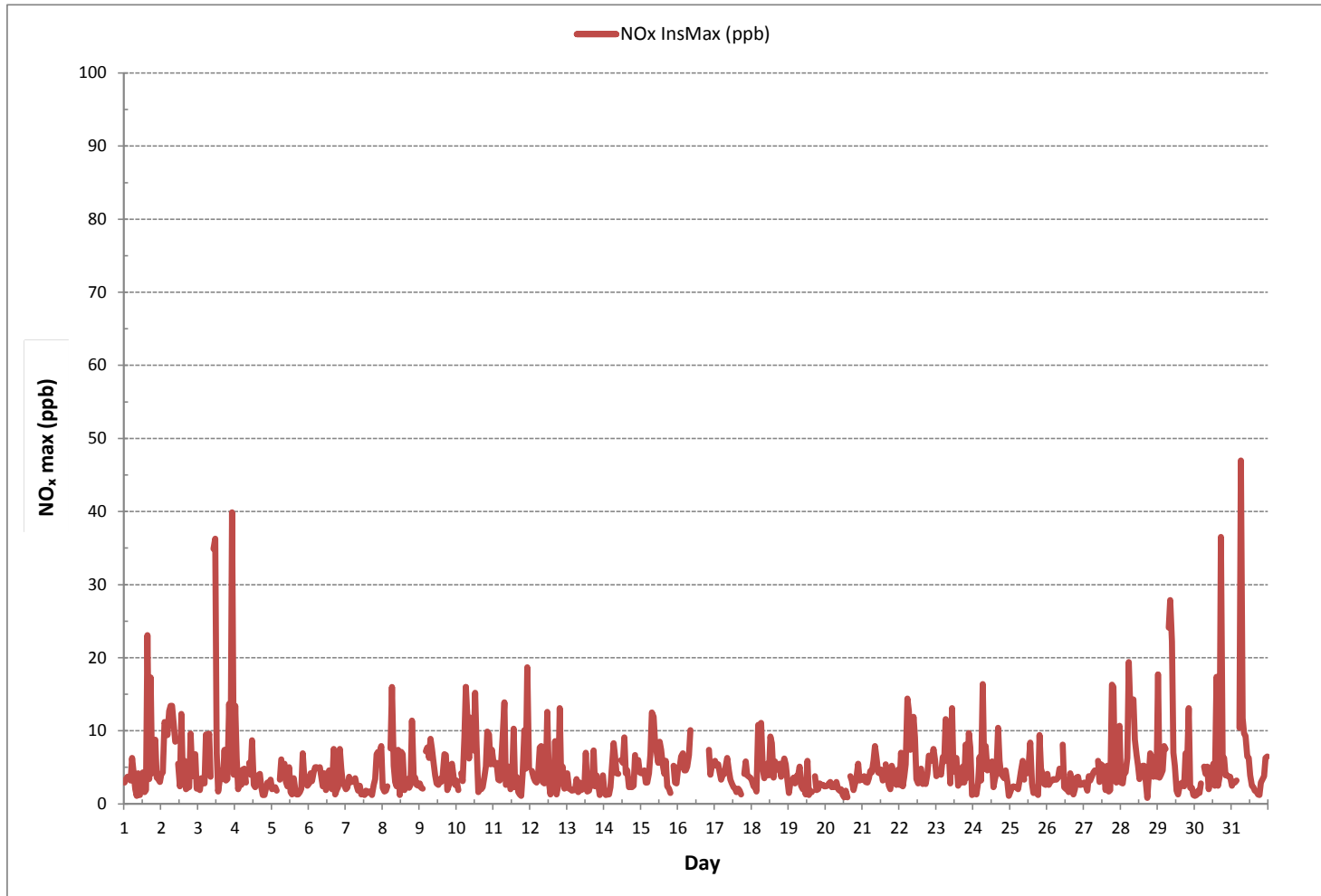
STATUS FLAG CODES

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:	701
MAXIMUM INSTANTANEOUS VALUE:	47 ppb @ HOUR 6 ON DAY 31
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	9 hrs
OPERATIONAL TIME:	742 hrs
STANDARD DEVIATION:	4

OXIDES OF NITROGEN Instantaneous Maximum (NO_x ppb)



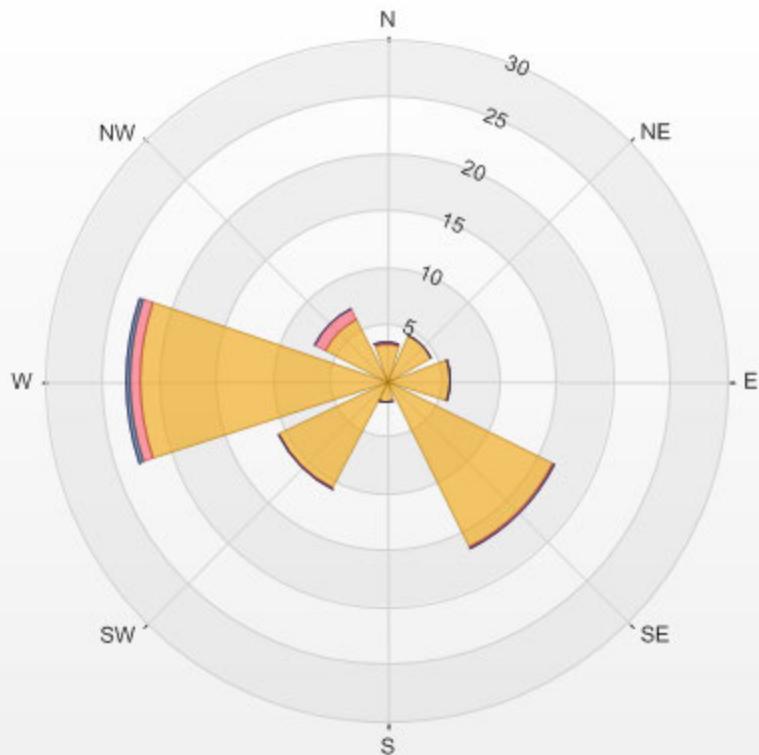
Wind: LICA COLD LAKE SOUTH
 Poll.: LICA COLD LAKE SOUTH-NOX[ppb]
 Monthly: 17/08
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 27.10% Calm Avg: 2.84 [ppb]

Direction	0.0-5.7	5.7-11.3	11.3-17.0	>17.0	Total
N	3.3	0.1	0.0	0.0	3.4
NE	4.4	0.0	0.0	0.0	4.4
E	5.7	0.0	0.0	0.0	5.7
SE	16.4	0.1	0.0	0.0	16.6
S	2.0	0.0	0.0	0.0	2.0
SW	10.6	0.1	0.0	0.0	10.7
W	21.7	0.9	0.4	0.0	23.0
NW	6.1	1.0	0.0	0.0	7.1
Summary	70.2	2.3	0.4	0.0	72.9

% Icon Classes (ppb) 70 0.0-5.7 2 5.7-11.3 0 11.3-17.0 0 >17.0

LICA COLD LAKE SOUTH Poll.: LICA COLD LAKE SOUTH-NOX[ppb] 2017/08/01 00:00 - 2017/08/31 23:00 Calm: 27.10% Calm Poll Avg: 2.84[ppb]



NOX[ppb] Calibration: LICA COLD LAKE SOUTH Monthly: 17/08 Type: Span



Span Meas Span Ref Span Low Span High

NITRIC OXIDES



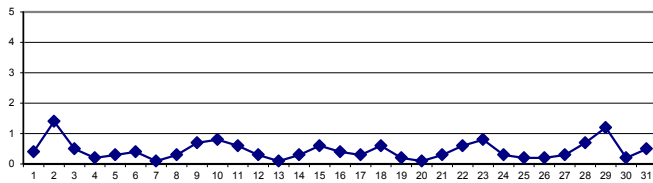
NITRIC OXIDE Hourly Averages (NO ppb)

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	1	1	0	0	0	0	S	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	0	24
2	0	0	1	1	2	5	8	7	4	2	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	1	24
3	0	0	0	0	1	2	2	1	0	S	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	1	24
4	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
5	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
6	1	1	1	1	1	2	S	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	24
7	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
8	0	0	0	0	S	1	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	24
9	0	0	0	S	1	2	3	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	24
10	0	0	S	0	0	1	7	2	1	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	7	1	24
11	0	S	0	0	1	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	4	1	24	
12	S	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	S	0	1	0	24	
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	24	
14	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	1	S	1	0	0	1	0	24	
15	0	0	0	0	0	0	1	3	2	1	1	1	1	0	0	0	0	0	0	0	S	0	0	0	0	3	1	24	
16	0	0	0	0	0	0	1	2	2	C	C	C	C	C	C	C	C	0	0	S	0	0	0	0	0	2	0	24	
17	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	1	0	24	
18	0	0	0	0	1	4	4	1	0	0	1	0	0	0	0	0	0	0	S	0	0	0	0	0	0	4	1	24	
19	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	S	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	S	0	0	0	0	0	0	0	0	0	0	0	24	
21	0	0	0	0	0	0	1	2	2	1	1	0	0	0	S	0	0	0	0	0	0	0	0	0	0	2	0	24	
22	0	0	0	0	0	1	2	1	1	2	1	0	0	S	0	0	0	0	0	0	0	0	1	2	0	2	1	24	
23	1	1	2	1	2	2	2	2	1	0	1	0	S	0	0	0	0	0	0	0	0	1	0	0	0	2	1	24	
24	0	0	0	0	0	0	1	1	1	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
25	0	0	0	0	0	0	0	1	1	1	S	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
26	0	0	0	0	0	0	0	1	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
27	0	0	0	0	0	1	1	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	24	
28	0	0	0	0	0	2	4	S	4	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	24
29	1	0	0	1	1	2	S	10	6	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	1	24	
30	0	0	0	0	0	S	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	24	
31	0	0	0	0	S	1	4	1	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	24
HOURLY MAX	1	1	2	1	2	5	8	10	6	3	1	1	1	1	1	1	0	1	0	1	1	1	1	2	0	4	1	24	
HOURLY AVG	0	0	0	0	0	1	2	2	1	1	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

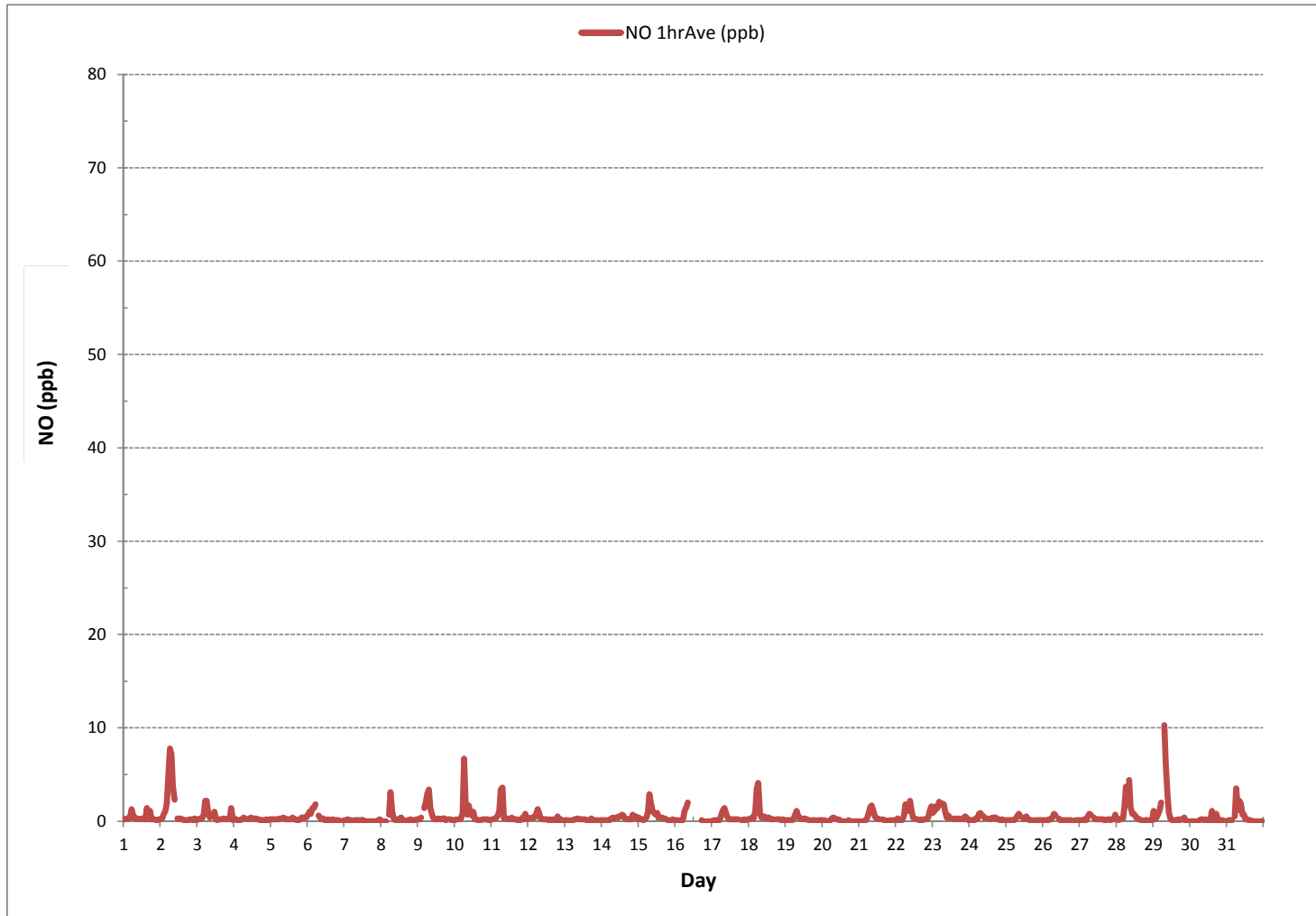
24 HR AVERAGES August 2017



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	627				
MINIMUM 1-HR AVERAGE:	0	ppb @ HOUR	21	ON DAY 6	
MAXIMUM 1-HR AVERAGE:	10	ppb @ HOUR	7	ON DAY 29	
MAXIMUM 24-HR AVERAGE:	1	ppb		ON DAY 2	
IZS CALIBRATION TIME:	32	hrs	OPERATIONAL TIME:	744	hrs
MONTHLY CALIBRATION TIME:	8	hrs	AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	1		MONTHLY AVERAGE:	0	ppb

NITRIC OXIDE Hourly Averages (NO ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake Continuous Monitoring Station - August 2017

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	1	1	1	1	1	3	2	1	1	2	1	S	2	0	1	11	1	6	2	2	2	0	0	1	0	11	2	24	
2	1	1	2	2	3	10	10	8	6	4	S	2	0	4	3	1	0	0	0	3	0	0	3	0	0	10	3	24	
3	1	1	1	1	1	7	5	4	2	S	29	32	2	0	1	2	1	5	2	0	3	1	22	0	0	32	5	24	
4	3	2	0	1	0	1	1	1	S	1	2	4	2	1	2	1	1	0	0	0	0	0	1	0	1	0	4	1	24
5	1	0	1	0	P	0	1	S	1	1	1	2	0	0	4	1	0	0	0	0	2	1	1	1	0	4	1	23	
6	2	3	2	4	3	3	S	1	1	1	2	0	1	1	1	1	2	0	0	0	3	1	0	0	0	4	1	24	
7	1	1	3	1	1	S	2	2	2	2	1	1	1	1	1	1	1	0	0	0	0	0	1	3	0	3	1	24	
8	1	1	0	1	S	3	11	2	1	1	4	0	5	4	0	1	1	1	1	4	1	1	1	1	0	11	2	24	
9	1	1	1	S	5	6	4	5	2	2	3	1	1	1	1	1	2	4	0	1	0	1	0	1	0	6	2	24	
10	1	1	S	1	1	4	9	6	2	6	3	6	12	2	1	0	0	0	1	0	2	1	0	0	0	12	3	24	
11	1	S	1	1	1	4	7	7	1	1	2	1	1	7	1	1	1	0	0	0	4	1	8	1	0	8	2	24	
12	S	2	1	1	1	2	3	4	1	1	1	4	2	1	2	1	3	0	1	4	1	2	1	S	0	4	2	24	
13	0	0	0	0	0	0	1	0	2	0	1	1	1	1	1	0	4	1	1	0	0	1	0	S	0	4	1	24	
14	0	0	0	0	0	1	2	2	1	1	P	2	1	4	1	2	0	0	0	1	4	S	1	0	0	4	1	23	
15	1	1	0	0	1	1	2	5	3	3	3	4	5	2	2	2	2	1	1	0	S	0	1	1	0	5	2	24	
16	0	0	1	0	0	1	2	3	4	C	C	C	C	C	C	C	C	C	0	S	1	0	1	1	0	4	1	24	
17	1	1	1	1	0	1	1	2	2	2	1	1	1	1	1	1	0	0	0	1	1	0	1	1	0	2	1	24	
18	1	1	1	1	10	7	8	2	1	1	1	1	2	2	1	1	1	S	0	0	1	2	2	0	0	10	2	24	
19	0	0	0	0	0	1	1	2	1	1	1	1	3	1	1	1	S	0	0	0	0	0	0	0	0	3	1	24	
20	0	0	0	0	0	0	1	1	1	1	1	0	0	1	0	S	0	1	0	0	0	0	0	0	0	1	0	24	
21	1	0	1	0	0	1	1	3	4	3	2	1	1	1	S	3	1	0	0	0	0	0	1	2	0	4	1	24	
22	1	4	1	1	2	10	6	2	2	4	3	1	1	S	1	1	1	1	1	1	2	1	3	3	1	10	2	24	
23	2	3	3	2	4	3	7	17	7	2	6	2	S	2	1	1	1	3	1	2	2	6	8	0	0	17	4	24	
24	0	1	0	1	2	1	9	6	3	2	1	S	1	1	1	3	4	1	1	0	0	0	0	0	0	9	2	24	
25	0	0	0	0	0	1	1	2	2	1	S	1	2	3	1	1	1	0	0	1	1	1	0	0	0	3	1	24	
26	1	0	0	1	1	1	1	1	2	S	3	1	1	1	1	1	1	0	0	0	0	0	0	1	0	3	1	24	
27	1	1	0	1	1	1	1	2	S	1	1	2	2	1	1	2	1	0	6	6	1	1	1	13	0	13	2	24	
28	1	1	1	1	1	15	8	S	6	3	4	2	2	2	2	2	1	0	0	1	0	1	1	1	0	15	2	24	
29	10	1	1	2	5	5	S	18	20	18	2	2	1	0	1	1	1	2	1	4	0	0	0	0	0	20	4	24	
30	0	0	0	0	1	S	1	1	2	0	2	2	3	1	30	1	3	17	1	1	2	3	1	0	0	30	3	24	
31	0	1	1	1	S	5	39	5	4	4	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	39	3	24
HOURLY MAX	10	4	3	4	10	15	39	18	20	18	29	32	12	7	30	11	4	17	6	6	4	6	22	13					
HOURLY AVG	1	1	1	1	2	3	5	4	3	2	3	3	2	1	2	2	1	2	1	1	1	1	2	1					

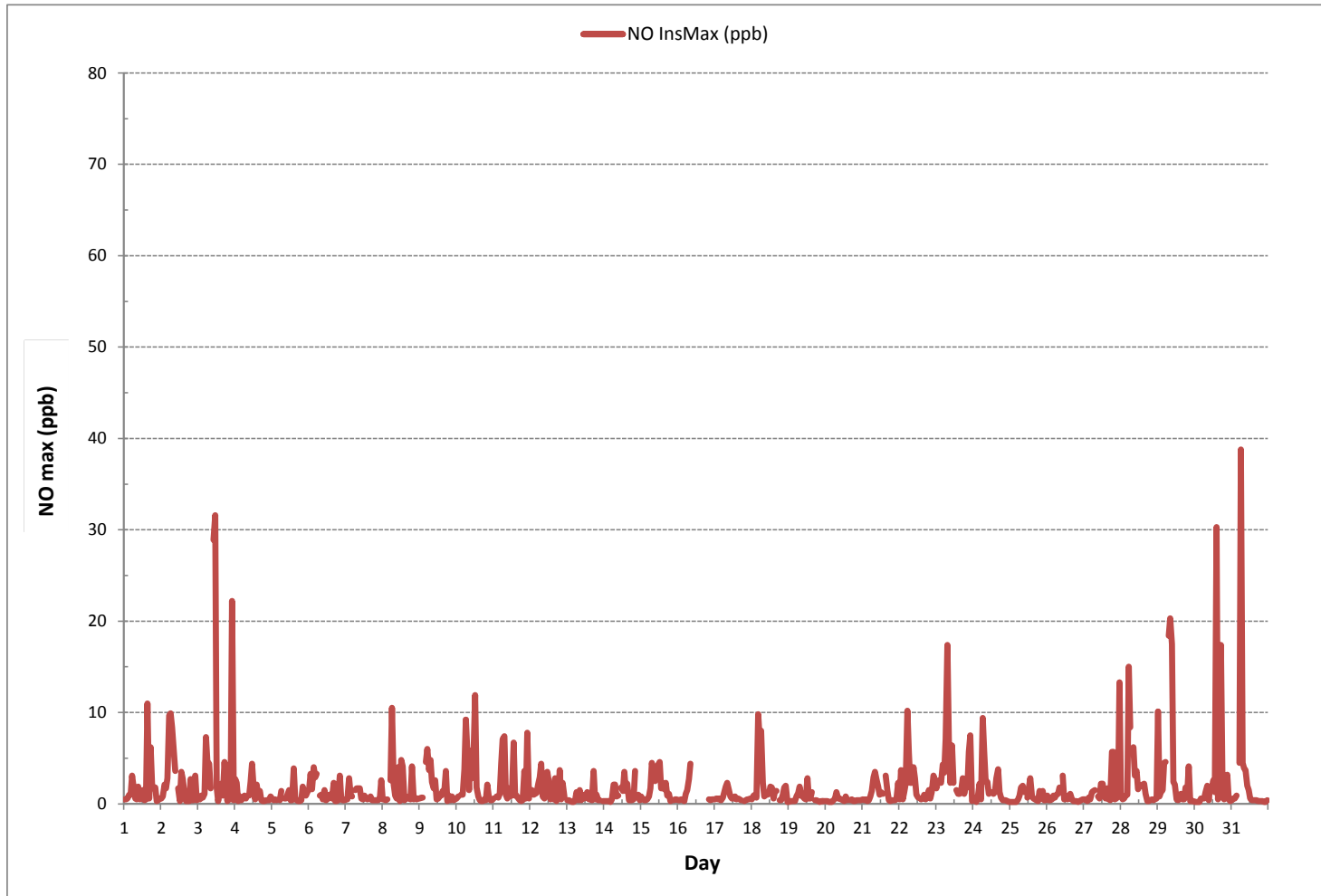
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	701
MAXIMUM INSTANTANEOUS VALUE:	39 ppb @ HOUR 6 ON DAY 31
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	9 hrs
STANDARD DEVIATION:	3
OPERATIONAL TIME:	742 hrs

NITRIC OXIDE Instantaneous Maximum (NO ppb)



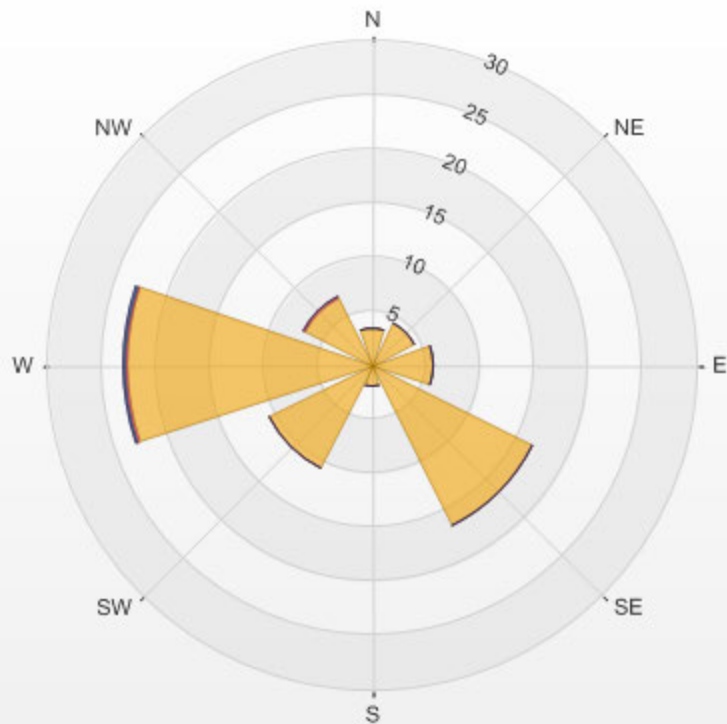
Wind: LICA COLD LAKE SOUTH
 Poll.: LICA COLD LAKE SOUTH-NO[ppb]
 Monthly: 17/08
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 27.10% Calm Avg: 0.68 [ppb]

Direction	0.0-3.7	3.7-7.3	7.3-11.0	>11.0	Total
N	3.4	0.0	0.0	0.0	3.4
NE	4.4	0.0	0.0	0.0	4.4
E	5.7	0.0	0.0	0.0	5.7
SE	16.6	0.0	0.0	0.0	16.6
S	2.0	0.0	0.0	0.0	2.0
SW	10.7	0.0	0.0	0.0	10.7
W	22.5	0.3	0.1	0.0	23.0
NW	7.0	0.1	0.0	0.0	7.1
Summary	72.3	0.4	0.1	0.0	72.9

% Icon Classes (ppb) 72 0.0-3.7 0 3.7-7.3 0 7.3-11.0 0 >11.0

LICA COLD LAKE SOUTH Poll.: LICA COLD LAKE SOUTH-NO[ppb] 2017/08/01 00:00 - 2017/08/31 23:00 Calm: 27.10% Calm Poll Avg: 0.68[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	2	3	3	2	2	1	1	0	0	0	S	2	1	1	2	1	3	1	1	3	3	2	2	0	3	2	24	
2	2	3	5	7	5	4	4	4	4	4	S	3	2	2	1	1	1	1	2	3	3	3	2	1	1	7	3	24	
3	1	1	2	2	1	1	3	2	1	S	2	1	1	1	1	1	1	2	1	2	4	3	4	3	1	4	2	24	
4	3	2	1	1	1	1	3	1	S	2	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	3	1	24	
5	1	1	1	1	1	2	3	S	3	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	1	3	1	24	
6	1	1	1	1	1	1	S	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	2	1	1	2	1	24	
7	1	1	1	1	1	S	2	1	1	1	1	0	0	1	1	1	1	1	1	2	5	6	5	3	0	6	2	24	
8	1	1	1	2	S	4	4	2	2	1	1	0	1	1	1	1	1	1	1	2	2	2	2	1	0	4	2	24	
9	2	1	1	S	2	1	2	3	3	2	1	1	1	1	1	1	2	1	1	1	2	3	2	1	1	3	2	24	
10	1	1	S	2	2	4	6	5	3	4	3	2	1	1	1	1	1	1	2	3	4	5	4	5	1	6	3	24	
11	4	S	3	2	1	1	2	4	1	1	1	1	1	1	1	1	1	1	1	2	5	3	4	3	1	5	2	24	
12	S	3	2	2	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	S	1	3	1	24	
13	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	2	1	2	1	24	
14	1	1	1	1	1	2	3	3	3	3	2	3	3	2	2	2	2	2	2	2	3	S	3	3	1	3	2	24	
15	2	2	3	2	2	3	4	6	6	4	2	2	2	1	2	2	2	1	1	1	S	3	2	2	1	6	3	24	
16	3	4	4	5	3	3	3	3	3	C	C	C	C	C	C	C	C	6	3	S	5	3	3	3	3	6	4	24	
17	4	4	4	3	2	2	2	2	3	2	2	1	1	1	1	1	1	1	1	S	3	4	3	3	3	1	4	2	24
18	2	1	1	1	1	1	2	2	2	3	3	3	2	3	2	1	1	S	3	3	2	3	2	1	1	3	2	24	
19	1	1	2	3	2	2	2	2	1	1	1	0	0	0	0	0	S	S	2	1	1	2	2	2	0	3	1	24	
20	2	2	2	2	2	2	1	1	1	1	1	0	0	0	S	2	2	1	1	2	3	2	2	2	0	3	2	24	
21	2	3	2	2	2	3	2	2	3	2	2	2	1	1	S	2	1	1	1	3	3	2	2	2	1	3	2	24	
22	2	2	2	2	2	3	5	4	4	6	3	2	2	S	3	2	1	1	3	3	4	3	3	3	1	6	3	24	
23	2	1	1	1	2	2	2	1	1	1	1	1	S	2	1	1	1	1	2	2	1	1	1	1	1	2	1	24	
24	1	1	1	1	1	2	2	1	1	1	1	S	2	1	1	2	2	3	3	3	3	3	1	1	1	3	2	24	
25	1	1	2	2	2	1	1	1	2	1	S	2	1	1	1	1	1	1	1	2	2	1	2	1	1	2	1	24	
26	1	1	2	2	2	2	2	2	2	S	2	1	1	1	1	1	1	1	1	2	2	2	2	2	1	2	1	24	
27	1	2	1	1	1	2	2	2	S	3	1	1	1	1	1	1	1	1	2	2	2	1	2	2	1	3	2	24	
28	1	2	2	2	4	5	4	S	8	5	3	2	2	2	1	1	1	0	1	5	4	3	3	3	0	8	3	24	
29	3	2	2	2	2	S	5	6	5	3	2	1	1	1	1	1	1	3	4	3	1	1	1	1	6	2	24		
30	1	0	1	1	1	S	3	2	2	1	1	1	1	1	2	2	4	4	3	2	2	2	2	0	4	2	24		
31	1	2	1	1	S	4	5	3	4	5	4	4	2	2	1	1	1	1	1	2	3	5	5	1	5	3	24		
HOURLY MAX	4	4	5	7	5	5	6	6	8	6	4	4	3	3	3	2	2	6	4	5	5	6	5	5					
HOURLY AVG	2	2	2	2	2	2	3	3	3	2	2	1	1	1	1	1	1	1	1	2	3	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

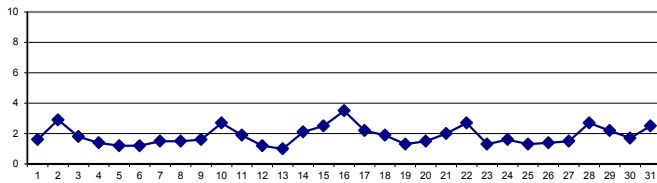
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR 159 ppb

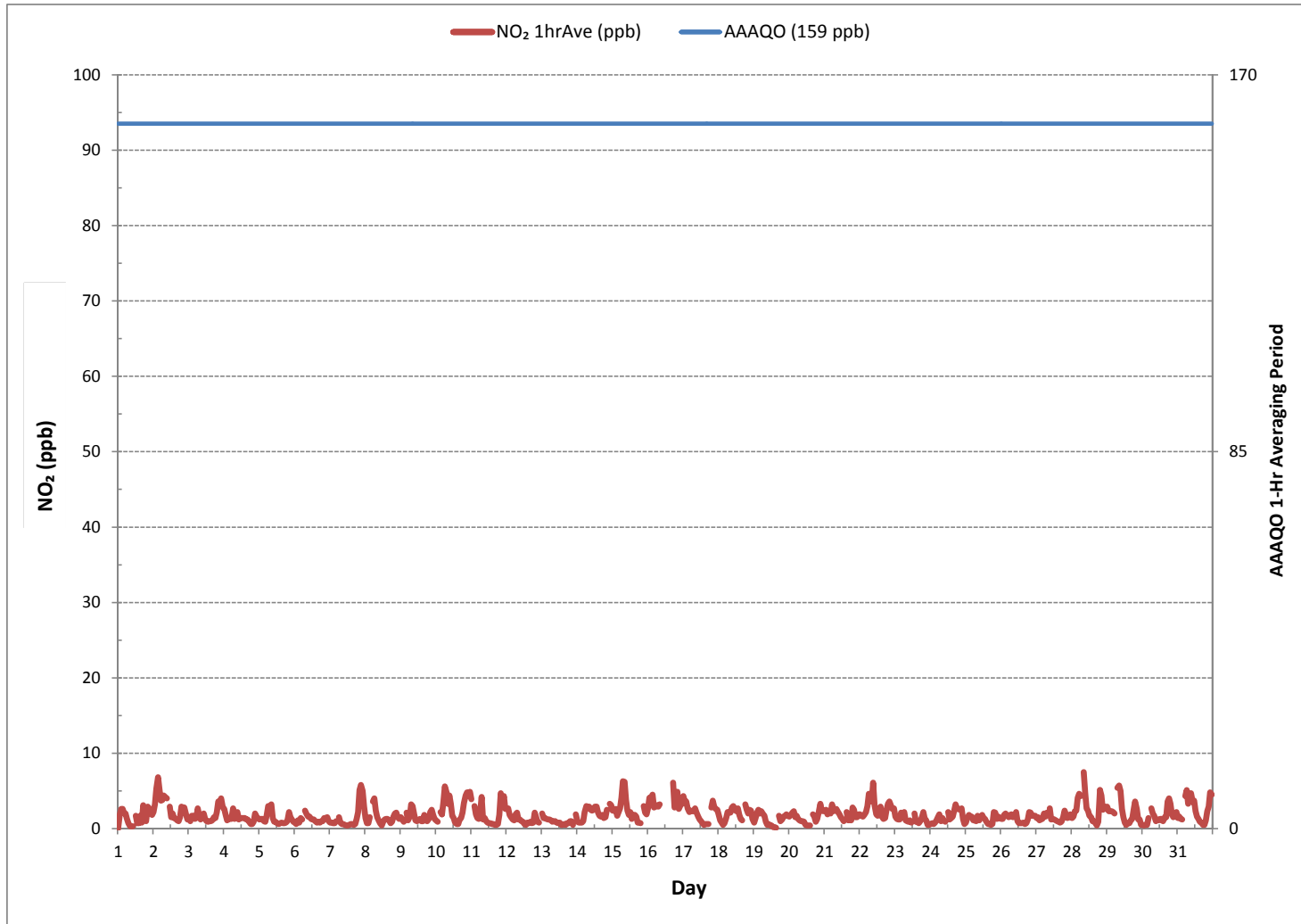
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0				
NUMBER OF NON-ZERO READINGS:	704				
MINIMUM 1-HR AVERAGE:	0 ppb	@ HOUR	15	ON DAY	19
MAXIMUM 1-HR AVERAGE:	8 ppb	@ HOUR	8	ON DAY	28
MAXIMUM 24-HR AVERAGE:	4 ppb			ON DAY	16
IZS CALIBRATION TIME:	32 hrs	OPERATIONAL TIME:	744 hrs		
MONTHLY CALIBRATION TIME:	8 hrs	AMD OPERATION UPTIME:	100.0 %		
STANDARD DEVIATION:	1	MONTHLY AVERAGE:	2 ppb		

24 HR AVERAGES August 2017



NITROGEN DIOXIDE Hourly Averages (NO₂ ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake Continuous Monitoring Station - August 2017

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	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	3	3	3	3	3	1	1	2	1	S	4	1	1	12	3	11	3	6	7	3	3	3	1	12	4	24		
2	4	4	9	9	7	5	4	5	5	5	S	5	2	9	2	5	2	2	2	9	5	4	4	2	2	9	5	24		
3	2	2	3	3	2	3	4	6	2	S	6	10	5	1	2	3	3	4	2	3	11	6	19	4	1	19	4	24		
4	11	4	2	3	2	4	4	2	S	5	2	5	2	2	3	3	3	2	1	1	2	3	2	2	1	11	3	24		
5	2	2	2	2	P	3	5	S	5	2	1	3	1	1	2	1	1	1	1	2	5	2	2	1	1	5	2	23		
6	1	1	2	1	3	2	S	4	3	2	3	2	2	4	2	1	5	1	2	2	5	4	2	2	1	5	2	24		
7	1	2	2	2	2	S	3	1	1	1	1	1	1	1	1	1	1	1	2	3	7	7	7	5	1	7	2	24		
8	2	1	2	2	S	5	6	3	2	2	4	1	6	4	2	2	3	2	2	7	3	3	2	2	1	7	3	24		
9	2	2	2	S	4	2	3	4	5	4	2	2	2	3	2	2	5	4	2	2	5	5	3	2	2	5	3	24		
10	3	1	S	4	3	6	8	7	5	7	6	5	8	6	1	2	2	2	3	5	8	9	5	7	1	9	5	24		
11	5	S	5	3	2	2	4	7	2	2	4	1	6	1	3	1	1	1	1	4	9	5	11	5	1	11	4	24		
12	S	4	3	2	2	2	5	4	2	2	3	9	1	1	4	1	6	1	6	1	2	11	3	3	1	S	1	11	3	24
13	4	2	2	2	2	2	2	1	2	1	1	2	6	1	1	2	2	4	2	3	2	1	S	4	1	6	2	24		
14	1	1	1	1	2	4	6	5	4	3	P	5	4	6	3	3	2	2	2	2	5	S	5	4	1	6	3	23		
15	4	4	4	3	3	4	5	8	9	6	5	2	6	6	3	3	4	2	2	1	S	5	3	2	1	9	4	24		
16	5	5	6	7	4	4	4	4	6	C	C	C	C	C	C	C	C	C	4	S	7	4	5	5	4	7	5	24		
17	6	5	5	4	3	3	3	3	4	3	2	2	2	1	1	1	1	1	S	4	6	4	3	3	1	6	3	24		
18	3	2	1	1	2	3	4	3	3	4	4	3	7	7	3	4	4	S	5	3	4	4	4	3	1	7	3	24		
19	1	3	3	3	3	3	3	3	2	1	1	1	3	1	1	1	S	4	2	2	3	2	2	2	1	4	2	24		
20	2	2	2	3	2	2	2	1	1	1	1	1	1	1	S	4	3	2	2	3	5	3	3	1	5	2	24			
21	3	3	3	3	3	4	3	3	4	4	3	3	3	2	S	4	3	2	2	5	4	2	2	3	2	5	3	24		
22	2	3	2	2	3	5	8	5	6	9	6	2	2	S	5	2	3	2	4	5	6	5	4	4	2	9	4	24		
23	3	2	2	2	3	3	6	3	2	2	7	2	S	5	2	2	2	2	2	6	2	5	3	1	1	7	3	24		
24	1	1	1	2	5	3	8	3	6	2	4	S	5	2	2	3	7	5	4	4	3	4	3	1	1	8	3	24		
25	1	2	2	2	2	2	2	3	4	2	S	4	4	6	2	1	1	1	1	8	4	3	2	2	1	8	3	24		
26	3	2	3	3	2	2	2	2	3	S	6	2	1	1	3	1	1	1	2	3	4	2	2	2	1	6	2	24		
27	3	2	2	3	3	3	3	3	S	5	2	3	3	3	1	4	1	2	11	10	3	2	3	3	1	11	3	24		
28	2	2	4	4	6	8	6	S	9	6	4	4	2	3	3	3	3	1	3	7	6	3	4	3	1	9	4	24		
29	9	3	3	4	3	3	S	9	10	8	5	3	1	1	2	2	2	2	5	5	9	2	2	1	1	10	4	24		
30	1	1	2	1	2	S	5	3	3	2	2	3	3	2	4	2	2	20	6	6	3	3	3	3	1	20	4	24		
31	2	2	2	2	S	7	13	7	6	6	5	5	3	2	2	2	1	1	1	3	3	4	6	6	1	13	4	24		
HOURLY MAX	11	5	9	9	7	8	13	9	10	9	7	10	8	9	5	12	7	20	11	11	11	9	19	7						
HOURLY AVG	3	2	3	3	3	3	5	4	4	3	3	3	3	3	2	3	3	3	3	4	5	4	4	3						

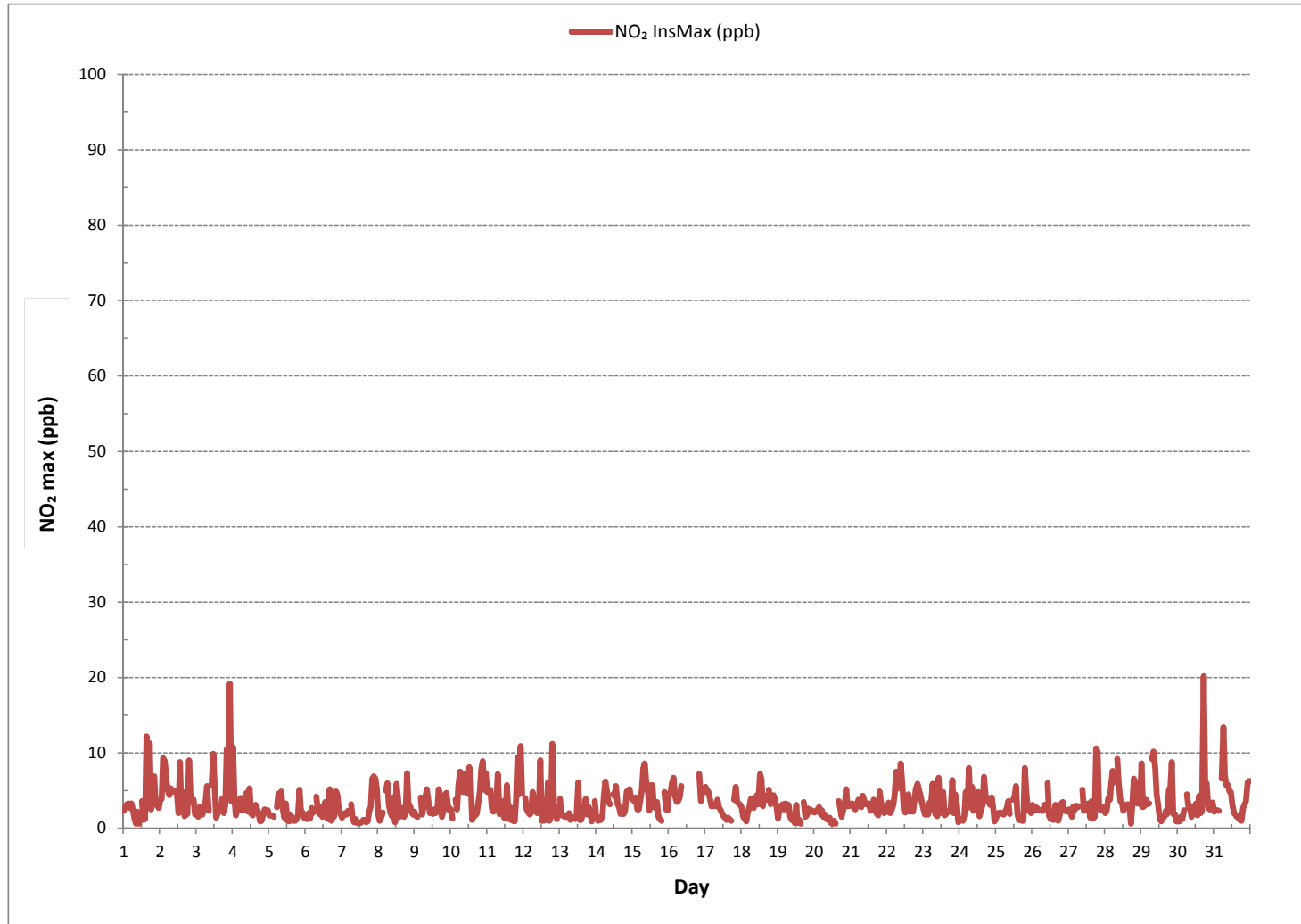
STATUS FLAG CODES

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:	701
MAXIMUM INSTANTANEOUS VALUE:	20 ppb @ HOUR 17 ON DAY 30
	VAR-VARIOUS
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	9 hrs
OPERATIONAL TIME:	742 hrs
STANDARD DEVIATION:	2

NITROGEN DIOXIDE Instantaneous Maximum (NO₂ ppb)



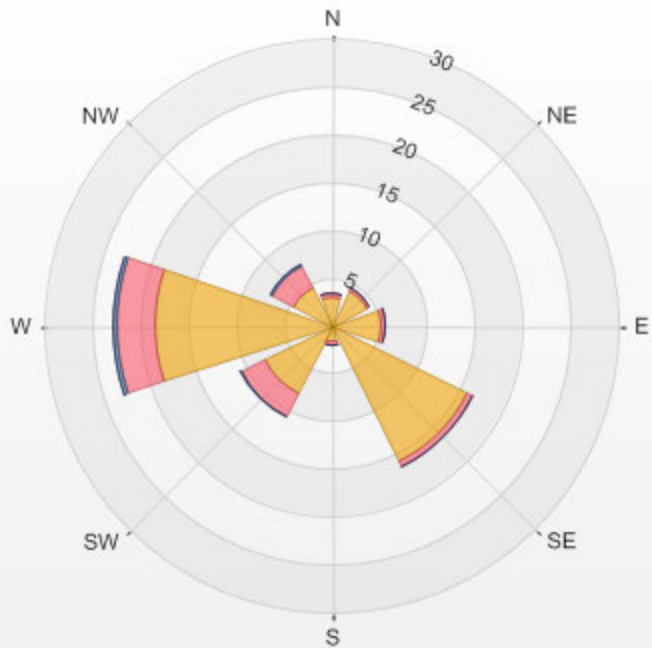
Wind: LICA COLD LAKE SOUTH
 Poll.: LICA COLD LAKE SOUTH-NO2[ppb]
 Monthly: 17/08
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 27.10% Calm Avg: 2.16 [ppb]

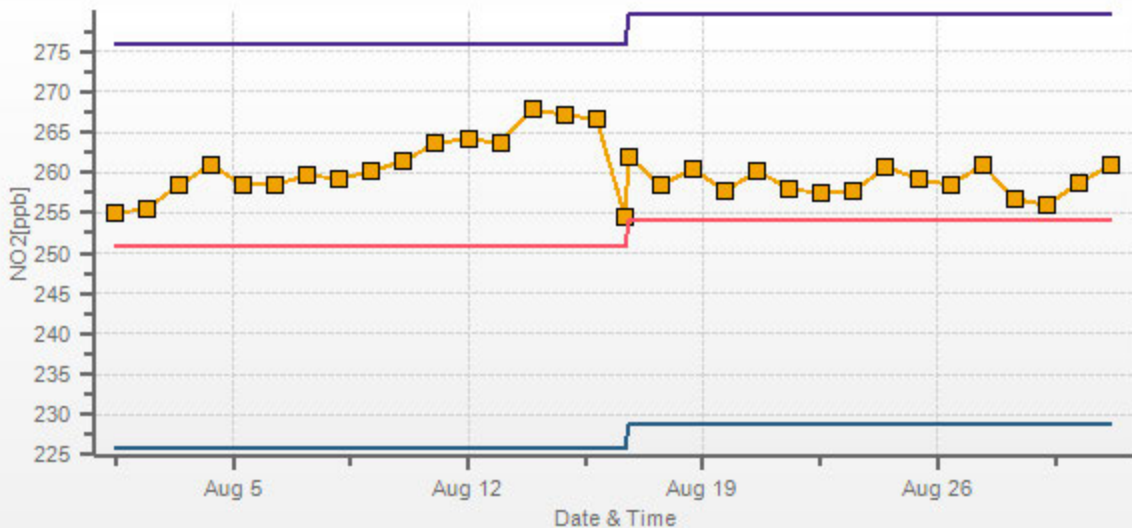
Direction	0.0-2.7	2.7-5.3	5.3-8.0	>8.0	Total
N	3.0	0.4	0.0	0.0	3.4
NE	4.1	0.3	0.0	0.0	4.4
E	5.1	0.6	0.0	0.0	5.7
SE	16.0	0.6	0.0	0.0	16.6
S	1.7	0.3	0.0	0.0	2.0
SW	7.9	2.7	0.1	0.0	10.7
W	18.4	4.0	0.6	0.0	23.0
NW	4.6	2.4	0.1	0.0	7.1
Summary	60.8	11.3	0.9	0.0	72.9

% Icon	Classes (ppb)	61		0.0-2.7	11		2.7-5.3	1		5.3-8.0	0		>8.0
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LICA COLD LAKE SOUTH Poll.: LICA COLD LAKE SOUTH-NO2[ppb] 2017/08/01 00:00 - 2017/08/31 23:00 Calm: 27.10% Calm Poll Avg: 2.16 [ppb]



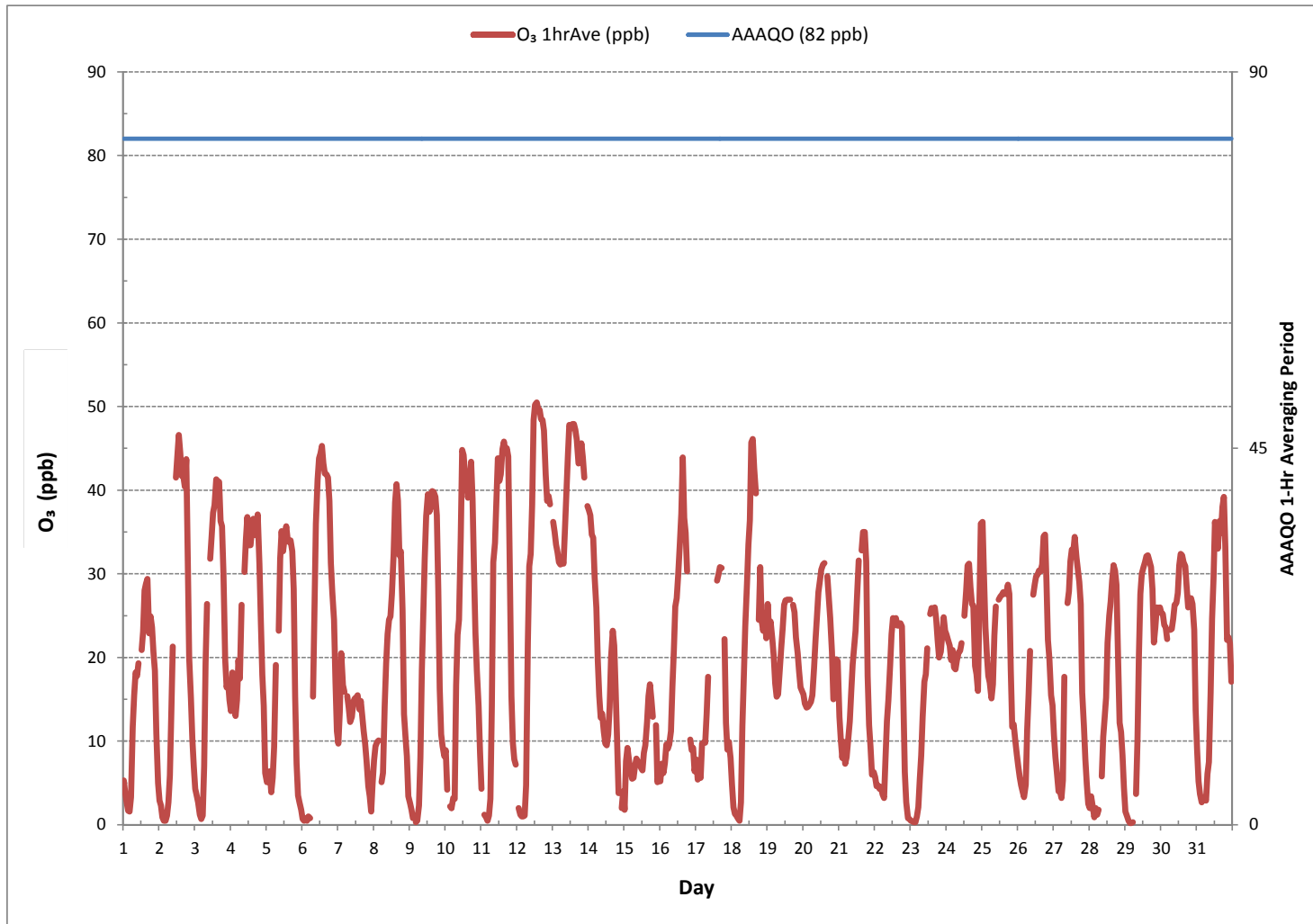
NO2[ppb] Calibration: LICA COLD LAKE SOUTH Monthly: 17/08 Type: Span



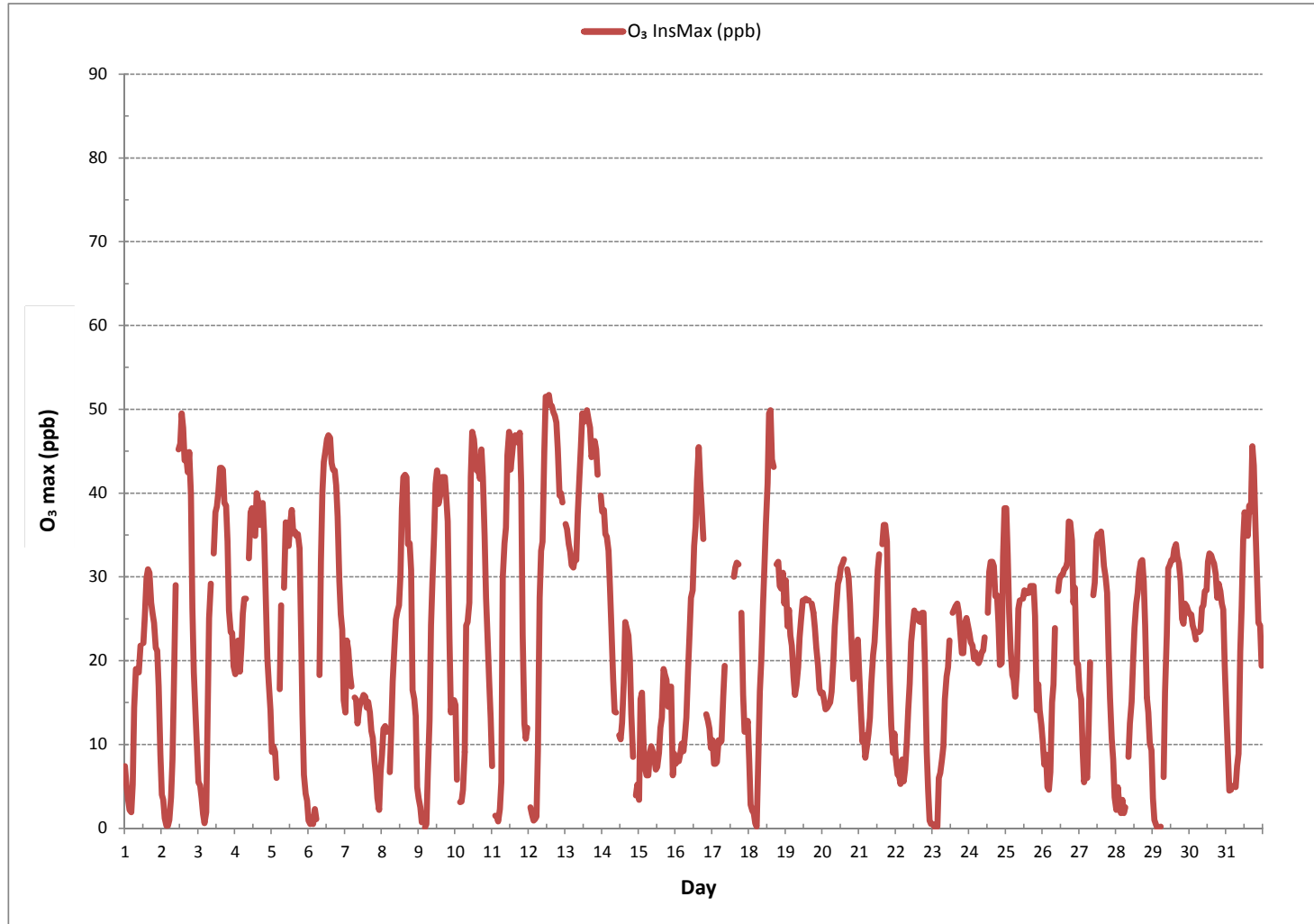
Span Meas Span Ref Span Low Span High

OZONE

OZONE Hourly Averages (O₃ ppb)



OZONE Instantaneous Maximum (O₃ ppb)



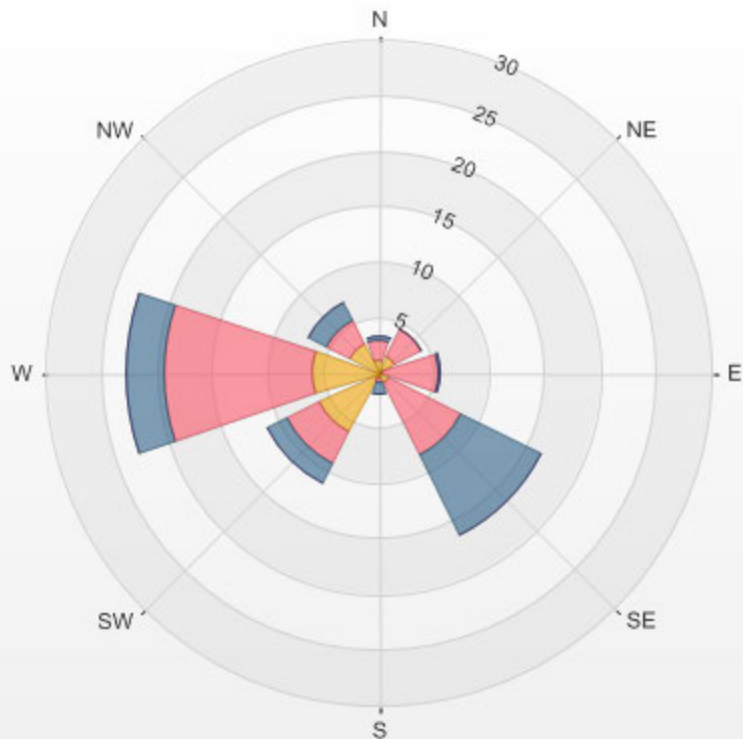
Wind: LICA COLD LAKE SOUTH
 Poll.: LICA COLD LAKE SOUTH-O3[ppb]
 Monthly: 17/08
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 26.95% Calm Avg: 7.80 [ppb]

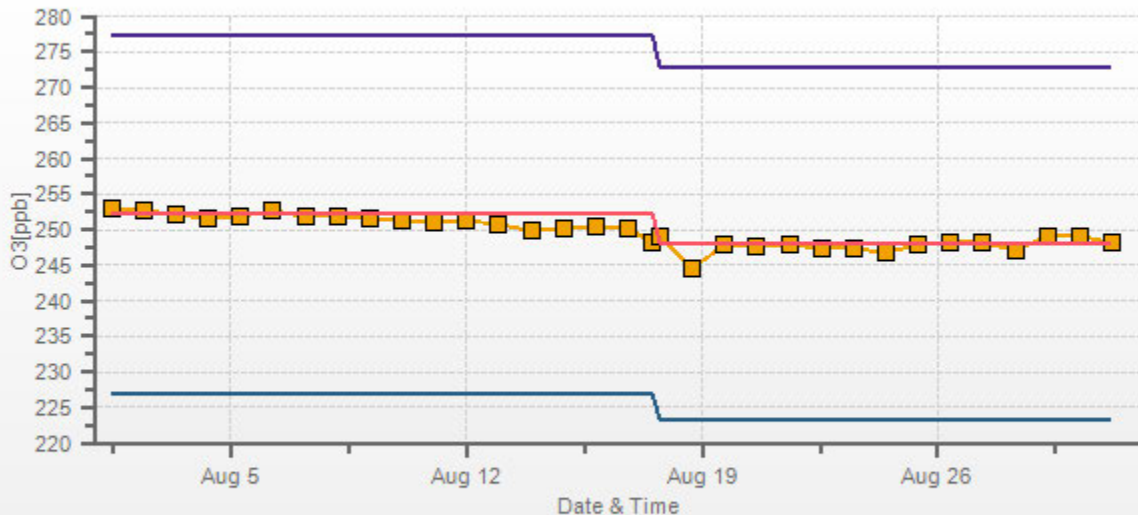
Direction	0.0-16.9	16.9-33.7	33.7-50.6	>50.6	Total
N	1.1	1.8	0.4	0.0	3.4
NE	1.7	2.7	0.0	0.0	4.4
E	0.4	5.0	0.3	0.0	5.7
SE	1.1	7.1	8.2	0.0	16.5
S	0.6	0.3	1.1	0.0	2.0
SW	6.0	3.3	2.0	0.0	11.2
W	6.0	13.5	3.4	0.0	22.8
NW	3.0	2.4	1.7	0.0	7.1
Summary	19.9	36.0	17.2	0.0	73.0

%	Icon	Classes (ppb)	20	36	17	0
		0.0-16.9				
		16.9-33.7				
		33.7-50.6				
		>50.6				

LICA COLD LAKE SOUTH Poll.: LICA COLD LAKE SOUTH-O3[ppb] 2017/08/01 00:00 - 2017/08/31 23:00 Calm: 26.95% Calm Poll Avg: 7.80[ppb]



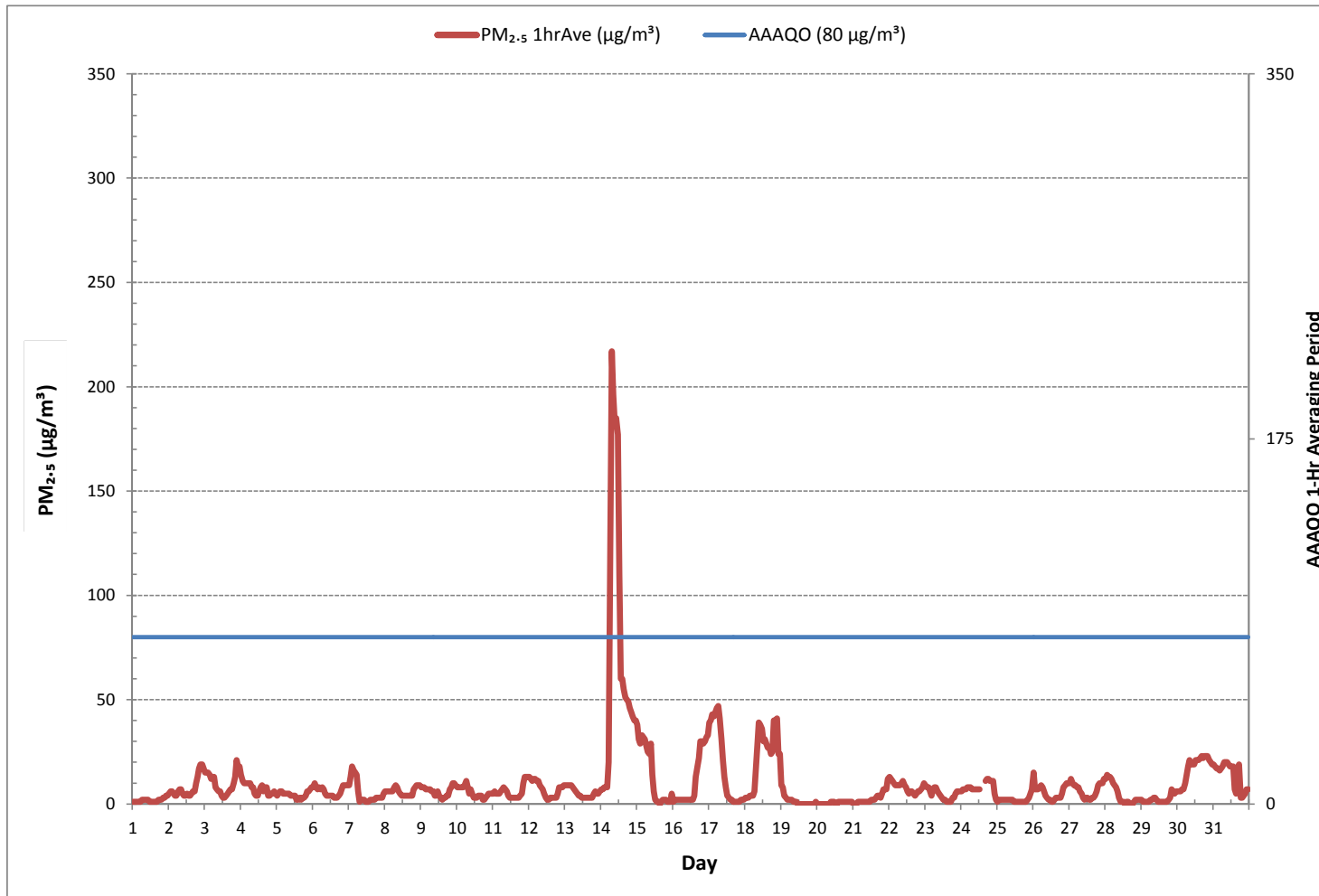
O3[ppb] Calibration: LICA COLD LAKE SOUTH Monthly: 17/08 Type: Span



Span Meas Span Ref Span Low Span High

PARTICULATE MATTER 2.5

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



Wind: LICA COLD LAKE SOUTH
 Poll.: LICA COLD LAKE SOUTH-PM2.5_2[ug/m3(L)]
 Monthly: 17/08
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 27.10%

Calm Avg: 9.21 [ug/m3(L)]

Direction	0.0-43.6	43.6-87.2	87.2-130.8	130.8-174.4	174.4-218.0	>218.0	Total
N	3.3	0.0	0.0	0.0	0.0	0.0	3.3
NE	4.5	0.0	0.0	0.0	0.0	0.0	4.5
E	5.7	0.0	0.0	0.0	0.0	0.0	5.7
SE	16.0	0.0	0.0	0.0	0.0	0.0	16.0
S	1.8	0.0	0.1	0.0	0.0	0.0	1.9
SW	10.3	0.3	0.0	0.0	0.4	0.0	11.0
W	22.9	0.7	0.1	0.0	0.1	0.0	23.9
NW	6.4	0.4	0.0	0.0	0.0	0.0	6.8
Summary	70.7	1.4	0.3	0.0	0.6	0.0	72.9

% Icon Classes (ug/m3(L))

71 0.0-43.6

1 43.6-87.2

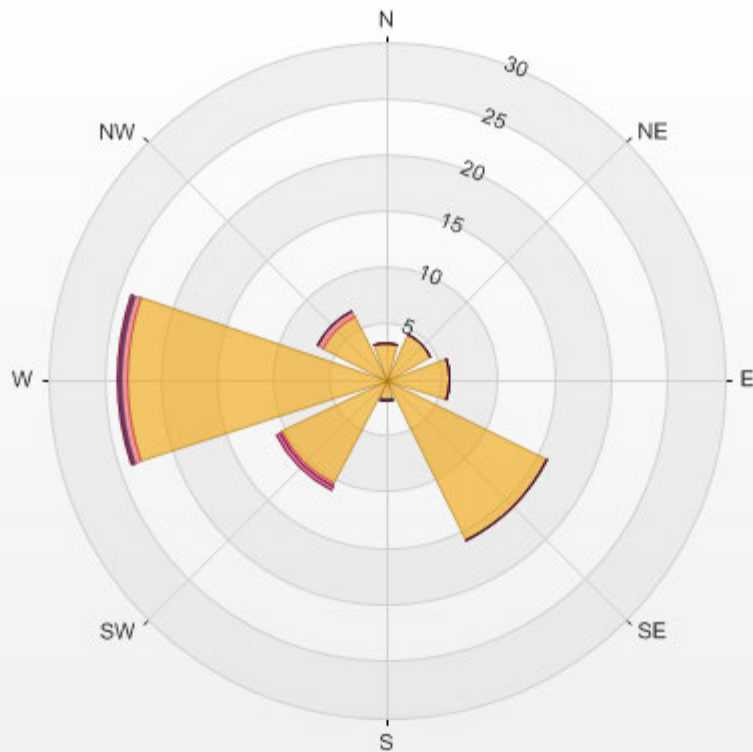
0 87.2-130.8

0 130.8-174.4

1 174.4-218.0

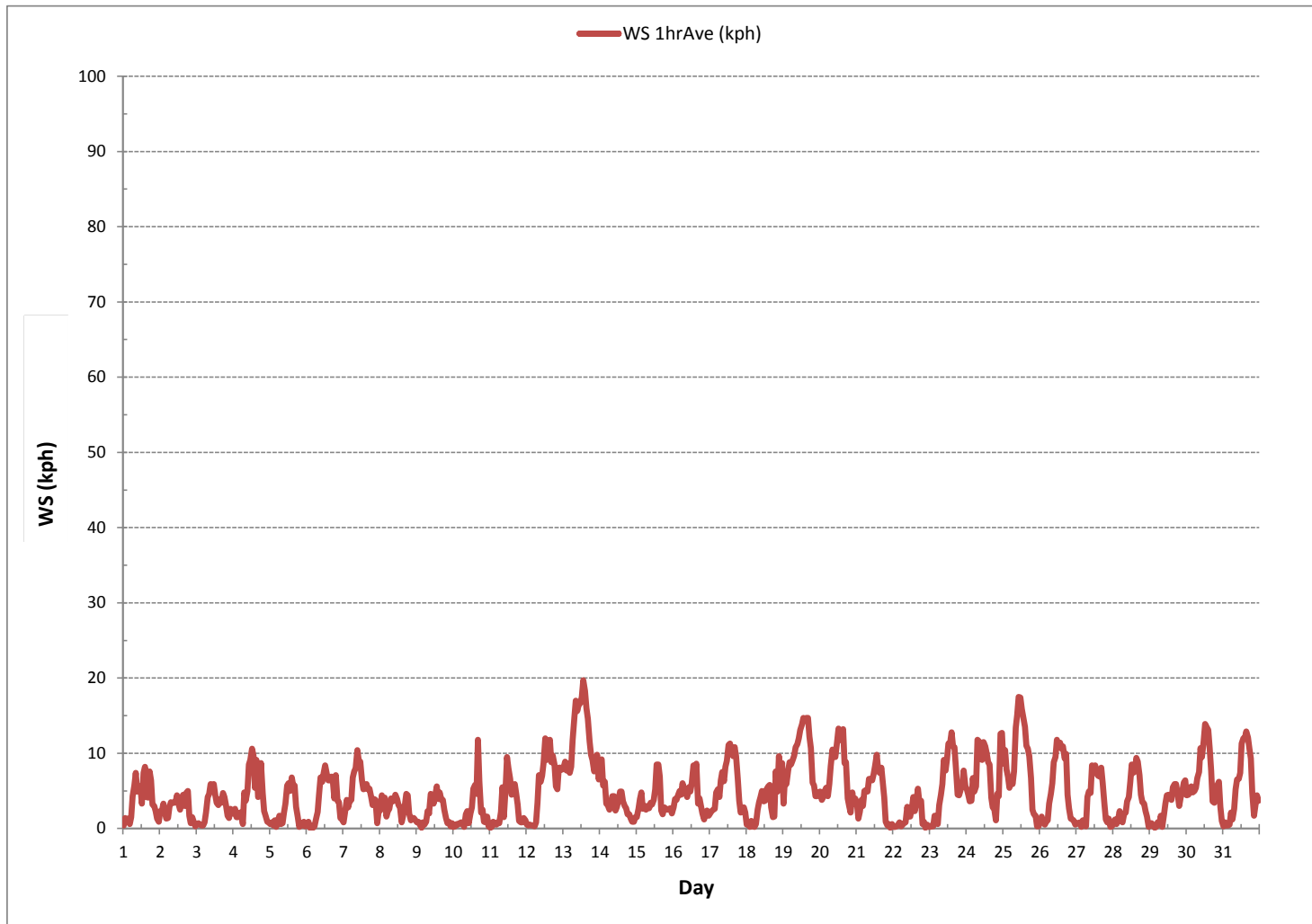
0 >218.0

LICA COLD LAKE SOUTH Poll.: LICA COLD LAKE SOUTH-PM2.5_2[ug/m3(L)] 2017/08/01 00:00 - 2017/08/31 23:00 Calm: 27.10% Calm Poll Avg: 9.21[ug/m3(L)]

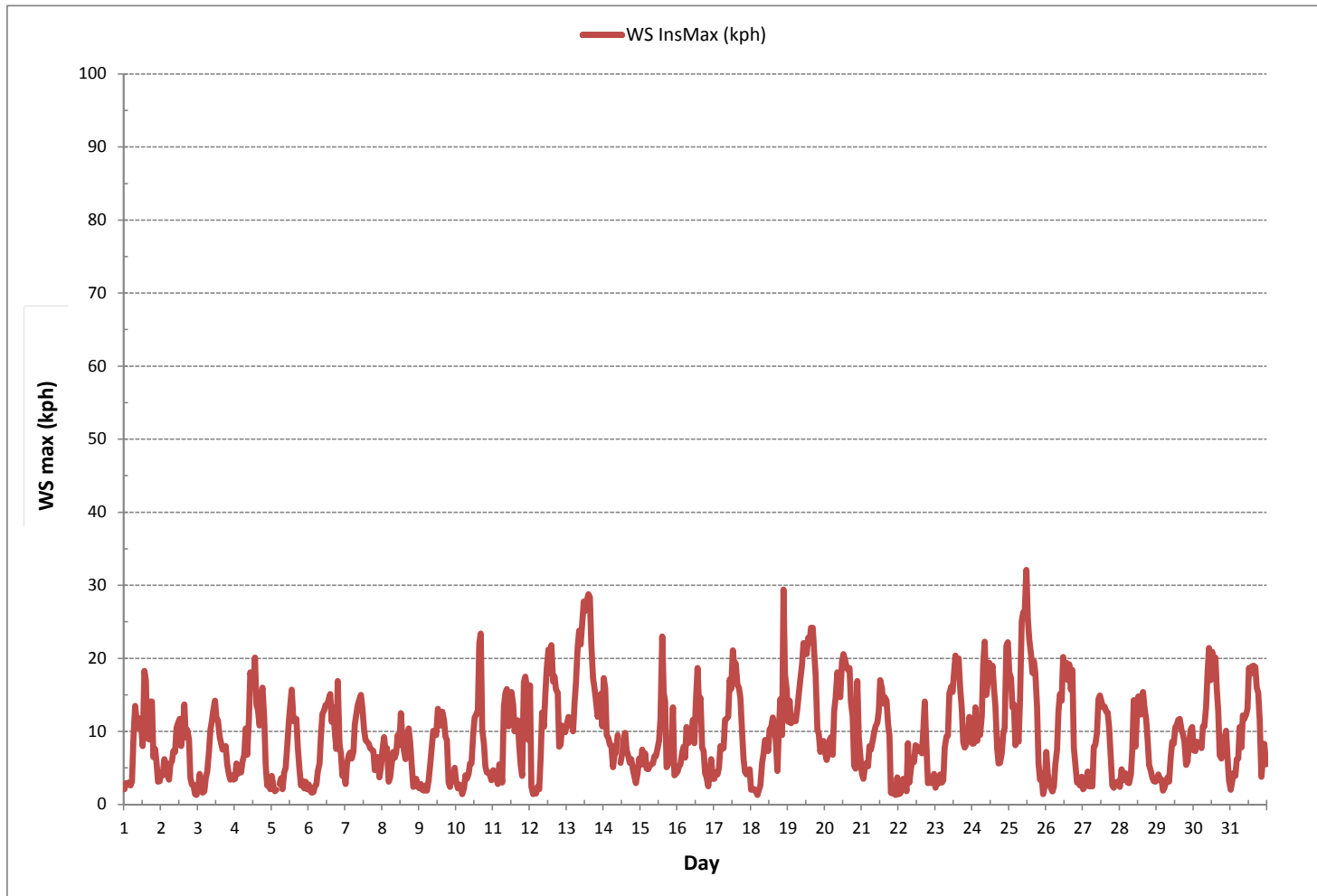


WIND SPEED

WIND SPEED Hourly Averages (WS kph)



WIND SPEED Instantaneous Maximum (WS kph)



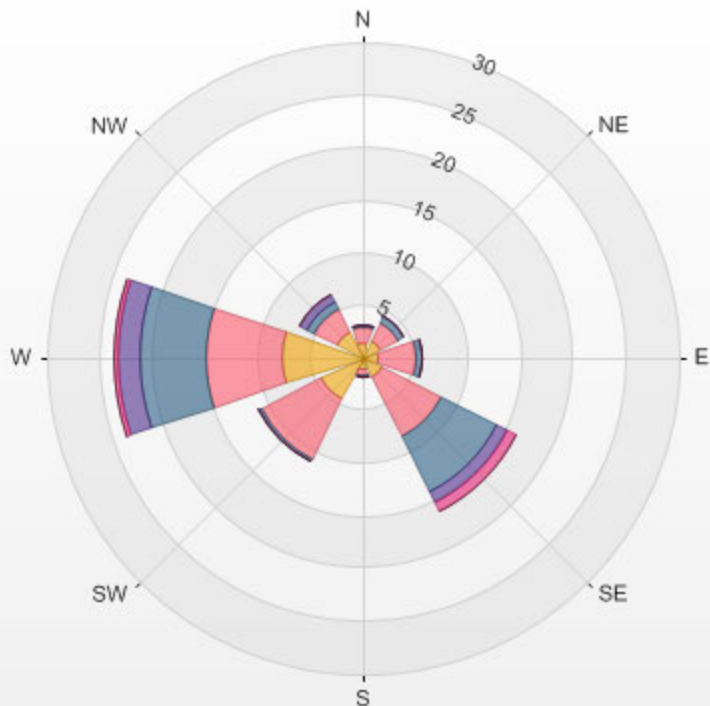
Wind: LICA COLD LAKE SOUTH
 Monitor: WSP [kph]
 Monthly: 17/08
 Type: WindRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 27.15%

Direction	1.8-4.0	4.0-7.9	7.9-11.9	11.9-15.8	15.8-19.8	>19.8	Total
N	1.3	1.6	0.3	0.0	0.0	0.0	3.2
NE	1.9	1.9	0.7	0.0	0.0	0.0	4.4
E	1.5	3.6	0.5	0.0	0.0	0.0	5.7
SE	2.2	6.2	5.9	1.1	0.9	0.0	16.3
S	1.2	0.5	0.1	0.0	0.0	0.0	1.9
SW	4.4	6.3	0.3	0.0	0.0	0.0	11.0
W	7.7	7.3	6.2	2.2	0.4	0.0	23.7
NW	2.7	2.6	0.8	0.7	0.0	0.0	6.7
Summary	22.9	30.0	14.8	3.9	1.3	0.0	72.8

% Icon Classes (kph) 23 1.8-4.0 30 4.0-7.9 15 7.9-11.9 4 11.9-15.8 1 15.8-19.8 0 >19.8

LICA COLD LAKE SOUTH 2017/08/01 00:00 - 2017/08/31 23:00 Calm: 27.15% Calm Wind Avg Speed: 0.80(kph)



WIND DIRECTION



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake Continuous Monitoring Station - August 2017

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

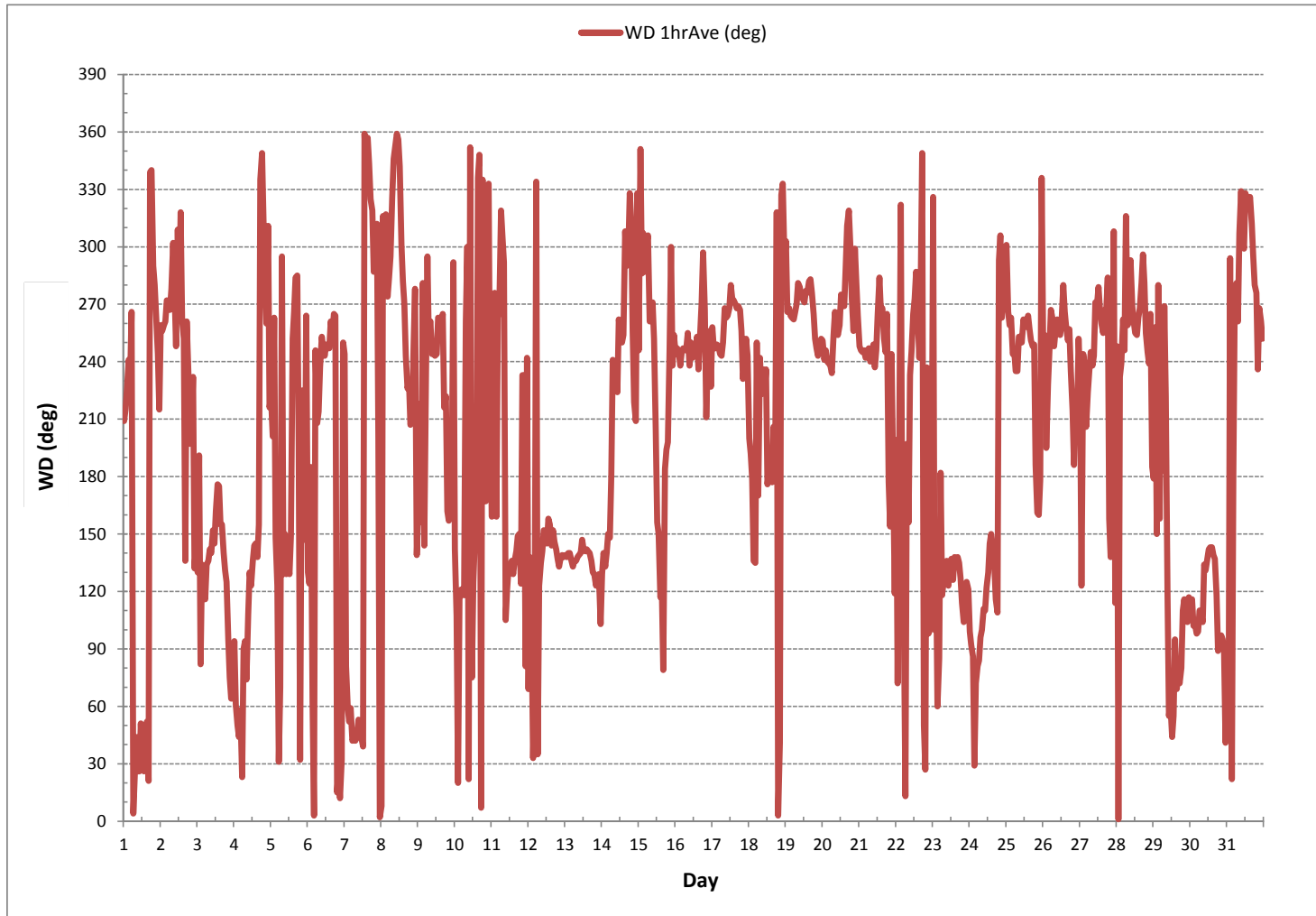
STATUS FLAG CODES

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

LAST CALIBRATION:	April 1, 2015
DECLINATION :	MAGNETIC DECLINATION 14 DEGREE EAST

MONTHLY CALIBRATION TIME:	0	hrs	OPERATIONAL TIME:	744	hrs
STANDARD DEVIATION:	84		AMD OPERATION UPTIME:	100.0	%
			MONTHLY AVERAGE:	228 (SW)	

WIND DIRECTION Hourly Averages (WD)



STANDARD DEVIATION WIND DIRECTION



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake Continuous Monitoring Station - August 2017

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		
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	RDGS.	
DAY																										
1	51	27	27	36	54	30	31	33	25	36	37	38	45	31	23	33	38	19	23	21	37	26	39	38	24	
2	15	17	20	48	38	39	36	28	35	38	41	39	72	55	41	33	43	31	25	24	38	25	21	59	24	
3	48	60	66	55	63	51	44	23	28	30	47	42	47	44	50	30	29	16	24	19	24	24	13	14	24	
4	30	21	33	47	41	41	58	27	31	30	25	25	23	22	40	15	30	26	29	28	24	20	41	43	24	
5	61	44	59	29	65	30	28	56	60	44	41	24	33	39	26	34	38	34	27	55	38	64	38	49	24	
6	46	32	57	62	38	51	55	43	35	30	35	33	30	33	32	31	31	25	20	20	22	17	29	29	24	
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21	9	36	23	14	25	18	21	25	24	28	26	29	26	26	30	28	27	24	21	27	42	47	80	58	24	
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28	38	68	62	62	20	61	35	32	49	41	27	23	24	29	31	26	27	21	19	12	8	10	40	53	24	
29	62	52	69	49	58	39	32	26	68	54	55	39	46	46	49	34	26	21	20	18	22	21	20	24	24	
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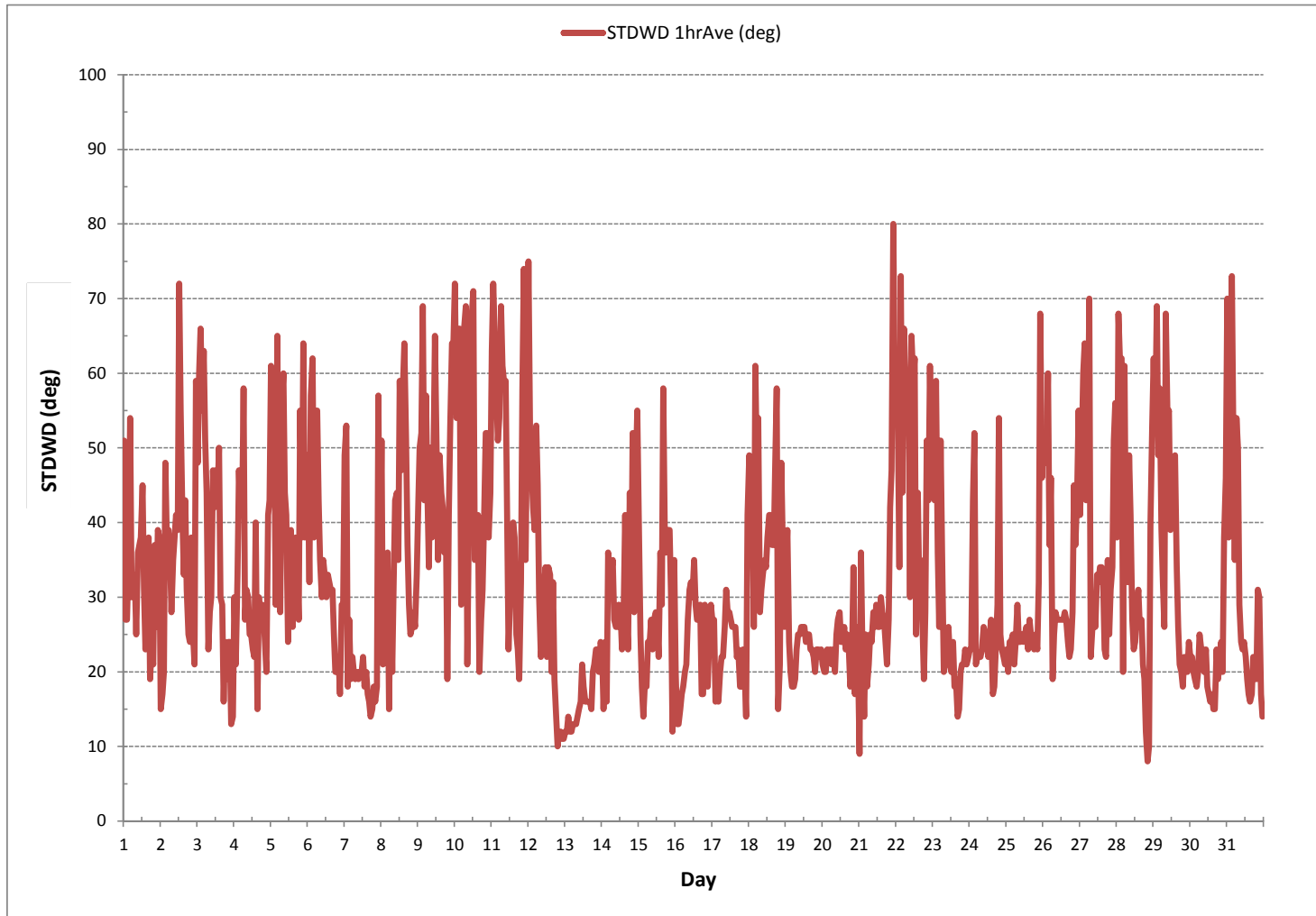
STATUS FLAG CODES

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: April 1, 2015

CALIBRATION TIME: 0 hrs OPERATIONAL TIME: 744 hrs

STANDARD DEVIATION WIND DIRECTION Hourly Averages (STDWD deg)



RELATIVE HUMIDITY

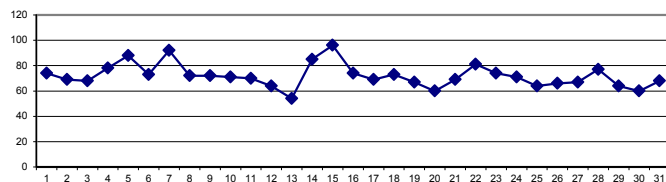
RELATIVE HUMIDITY Hourly Averages (RH %)

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	93	94	95	96	97	97	89	82	73	70	62	56	55	52	51	48	47	57	63	67	73	78	88	93	47	97	74	24
2	96	98	99	100	100	100	98	87	72	62	47	38	34	35	34	38	38	36	43	58	78	86	86	91	34	100	69	24
3	94	95	96	96	96	94	86	71	60	53	50	45	42	42	40	43	44	49	51	60	74	79	80	81	40	96	68	24
4	83	78	80	84	83	80	80	70	70	67	64	62	65	64	61	64	69	77	85	91	95	97	99	100	61	100	78	24
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17	90	93	94	97	97	93	87	78	70	63	58	52	46	44	42	42	41	42	46	59	74	84	86	89	41	97	69	24
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20	77	80	81	80	82	82	76	65	59	53	49	43	39	36	34	37	41	43	48	57	72	71	71	73	34	82	60	24
21	84	90	93	93	94	94	85	77	68	61	61	60	47	38	36	38	37	39	46	70	82	89	92	90	36	94	69	24
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24	74	75	76	81	81	84	79	75	72	71	67	62	60	57	57	59	63	65	66	77	81	86	74	69	57	86	71	24
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30	57	59	63	65	67	67	64	61	57	54	52	52	50	50	51	53	54	57	61	64	65	65	70	82	50	82	60	24
31	88	90	93	95	96	97	97	93	85	71	62	57	47	44	42	34	37	36	47	66	66	66	68	75	34	97	68	24
HOURLY MAX	100	100	100	100	100	100	100	100	94	94	91	95	99	98	99	96	97	97	96	98	97	98	99	100				
HOURLY AVG	89	90	91	92	92	92	88	80	72	66	61	56	53	50	50	49	50	53	57	68	77	81	84	86				

STATUS FLAG CODES

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

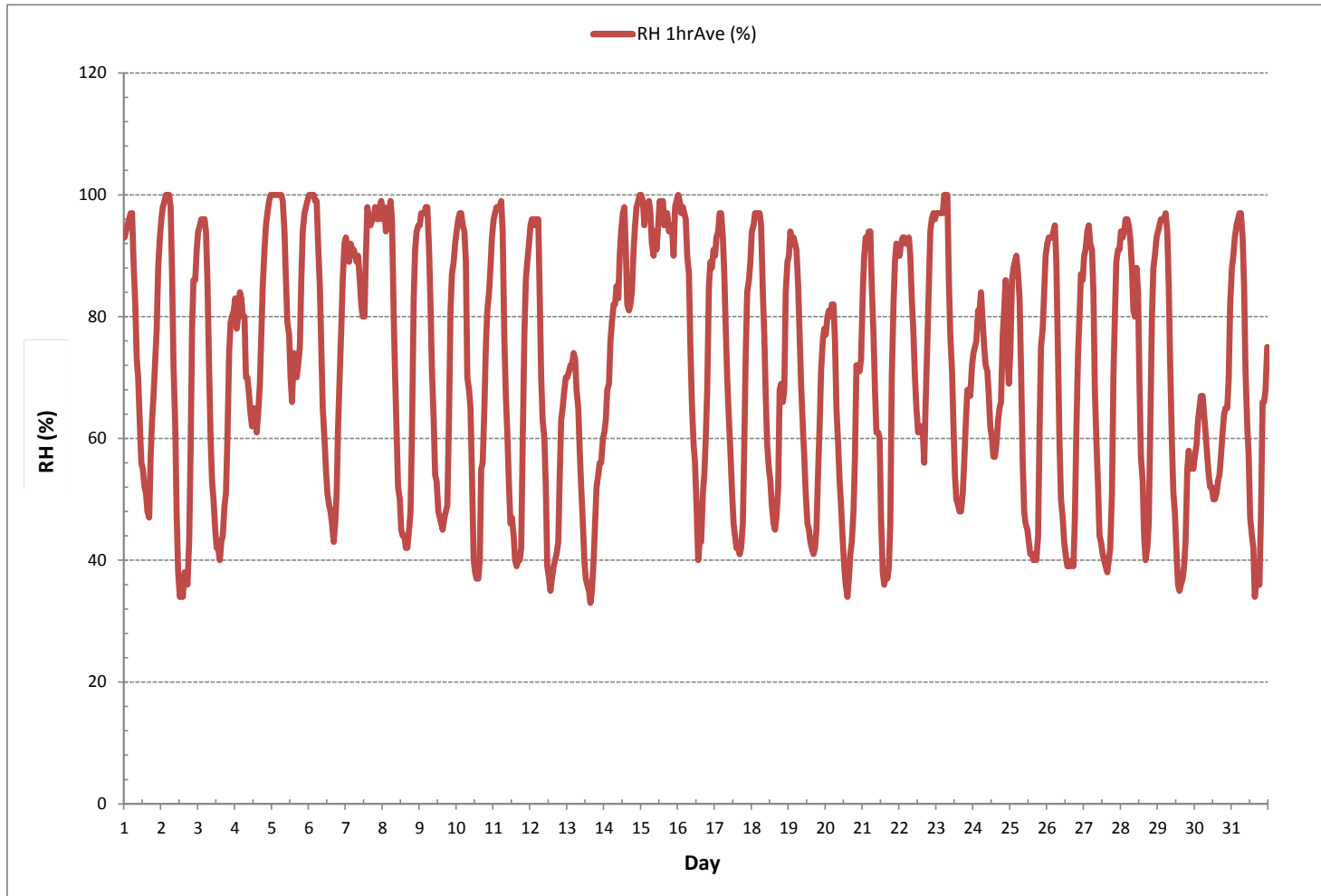
24 HR AVERAGES August 2017



MONTHLY SUMMARY

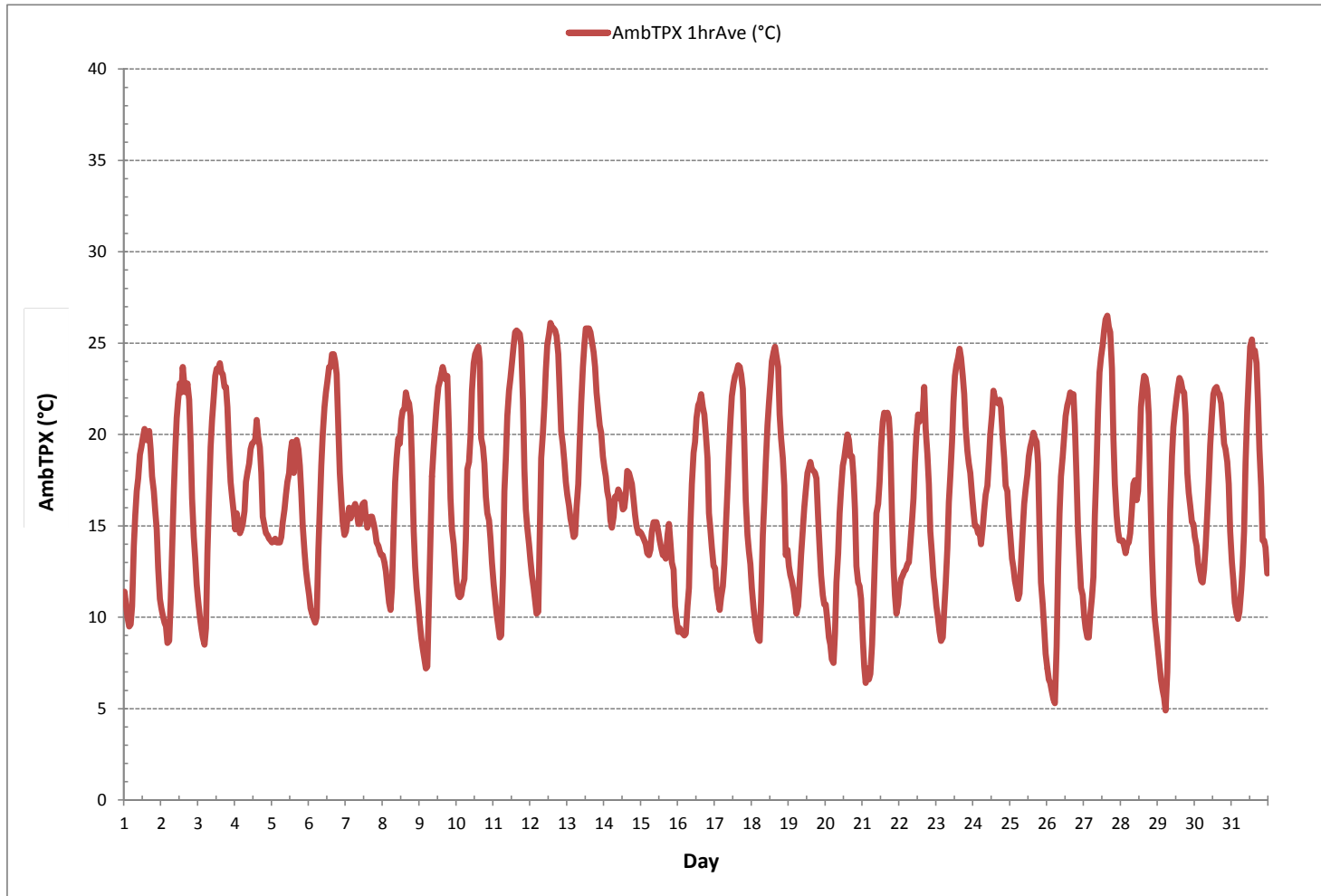
MINIMUM 1-HR AVERAGE:	33	%	@ HOUR	15	ON DAY	13
MAXIMUM 1-HR AVERAGE:	100	%	@ HOUR	3	ON DAY	2
MAXIMUM 24-HR AVERAGE:	96	%			ON DAY	15
					OPERATIONAL TIME:	744 hrs
					AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	21			MONTHLY AVERAGE:	72	%

RELATIVE HUMIDITY Hourly Averages (RH %)



AMBIENT TEMPERATURE

AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)



APPENDIX II
EQUIPMENT CALIBRATION RESULTS

SULPHUR DIOXIDE



Thermo 43i Sulphur Dioxide Analyzer Calibration

check to

Date:	August 16, 2017	Barometer/B.P./units:	F.S. 05544 expires December 5, 2018	939	millibars
Company/Airshed:	LICA	Thermometer/Station Temp:	Fluke 4295 expires November 14, 2017	22	°C
Location/Station Name:	Cold Lake South	Weather Conditions:	Mainly sunny		
Parameter:	Sulphur Dioxide	Calibration Purpose:	routine monthly		
Start Time 24 hr. (mst):	9:40	Performed By/Reviewer:	Alex Yakupov	Tom Bourque	
End Time 24 hr. (mst):	13:45	<input type="checkbox"/> Cal Gas Expiry Date:	July 18, 2019		
Calibration Method:	Gas Dilution	Converter Model & s/n (if applicable):	n/a		

Analyzer:	Range ppb:		
ID# or Serial Number:	80652842	As Found C.F.:	0.961
Last Calibration Date:	July 13, 2017	New C.F.:	1.001
Previous C.F.:	1.000		

Calibration Standards:	Standard Calibration Points for Ranges									
Low Flow Meter ID/Expiry Date:	Defender Low 152020 expires November 21, 2017	<table border="1" style="margin: auto;"> <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, 2017									
Calibrator ID/Expiry Date:	API id# 627 expires January 27, 2018									
Cal Gas Cylinder I.D. # :	LL 104222									
Cal Gas Conc. (ppm):	50.6									

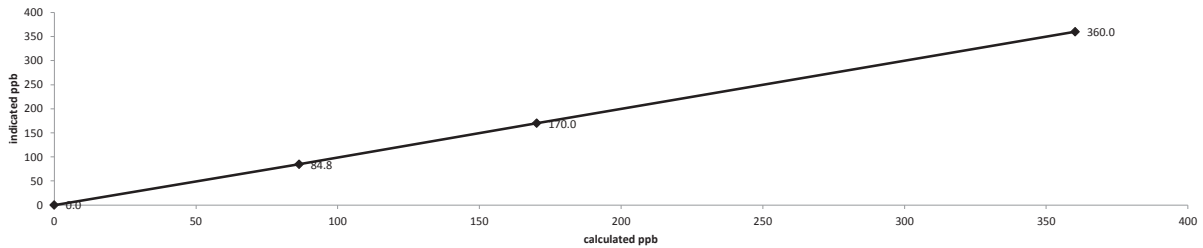
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration (ppb):	Indicated Concentration (ppb):	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total			
as found zero	5344	0.00	5344	0.0	0.0	n/a
as found high	5308	38.06	5346	360.2	375.0	0.961
adjusted zero	5344	0.00	5344	0.0	0.0	n/a
adjusted high	5308	38.06	5346	360.2	360.0	1.001
mid	5317	17.95	5335	170.2	170.0	1.001
low	5321	9.10	5330	86.4	84.8	1.019
calibrator zero	5344	0.00	5344	0.0	0.0	n/a
Average C.F. =						1.007

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) =	0.13%		± 3% F.S.
% change in C.F. from last cal =	3.94%		± 10%

Thermo 43i Sulphur Dioxide Analyzer Calibration

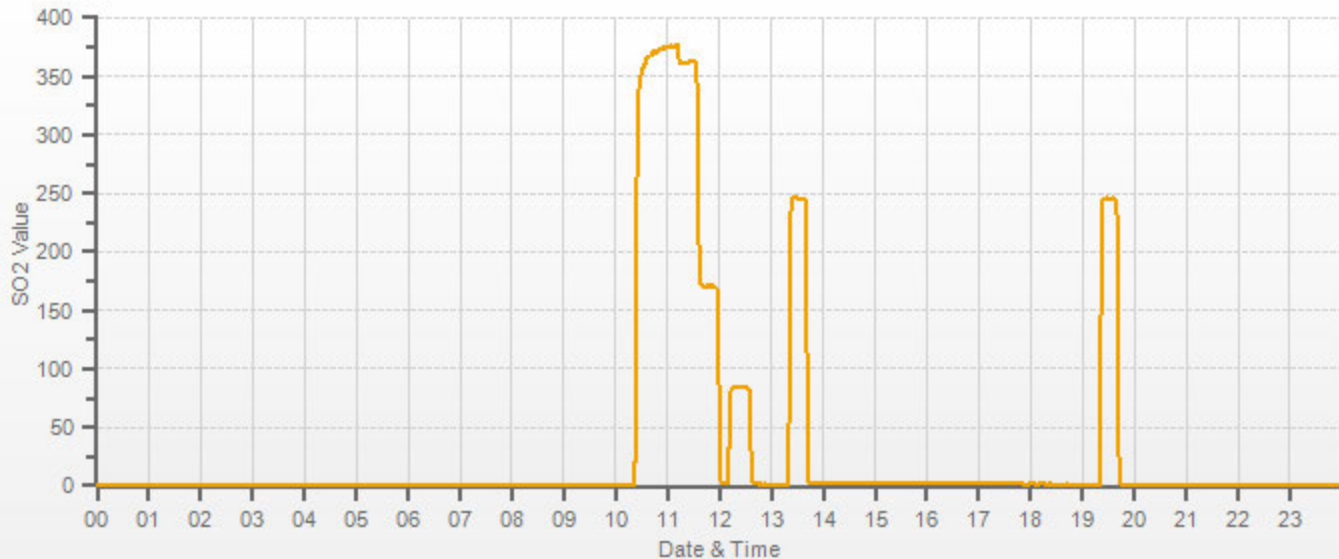


<table style="width: 100%;"> <tr><td style="text-align: right;">As found:</td><td style="text-align: center;">8.1</td></tr> <tr><td style="text-align: right;">Bkg:</td><td style="text-align: center;">0.956</td></tr> <tr><td style="text-align: right;">Coef:</td><td style="text-align: center;">-624.6</td></tr> <tr><td style="text-align: right;">Pmt:</td><td style="text-align: center;">764</td></tr> <tr><td style="text-align: right;">Flash:</td><td style="text-align: center;">28.3</td></tr> <tr><td style="text-align: right;">Internal:</td><td style="text-align: center;">45.2</td></tr> <tr><td style="text-align: right;">Chamber:</td><td style="text-align: center;">35.00</td></tr> <tr><td style="text-align: right;">Perm Oven Gas:</td><td style="text-align: center;">34.23</td></tr> <tr><td style="text-align: right;">Perm Oven Heater:</td><td style="text-align: center;">677.4</td></tr> <tr><td style="text-align: right;">Pressure:</td><td style="text-align: center;">0.473</td></tr> <tr><td style="text-align: right;">Sample Flow:</td><td style="text-align: center;">96</td></tr> <tr><td style="text-align: right;">Lamp Intensity:</td><td style="text-align: center;">n/a</td></tr> <tr><td style="text-align: right;">Converter:</td><td style="text-align: center;">n/a</td></tr> <tr><td style="text-align: right;">Converter Set:</td><td style="text-align: center;">120</td></tr> <tr><td style="text-align: right;">Averaging Time:</td><td style="text-align: center;">265.3</td></tr> <tr><td style="text-align: right;">Expected Value:</td><td></td></tr> </table>	As found:	8.1	Bkg:	0.956	Coef:	-624.6	Pmt:	764	Flash:	28.3	Internal:	45.2	Chamber:	35.00	Perm Oven Gas:	34.23	Perm Oven Heater:	677.4	Pressure:	0.473	Sample Flow:	96	Lamp Intensity:	n/a	Converter:	n/a	Converter Set:	120	Averaging Time:	265.3	Expected Value:		<table style="width: 100%;"> <tr><td style="text-align: right;">As left:</td><td style="text-align: center;">7.7</td></tr> <tr><td style="text-align: right;">Bkg:</td><td style="text-align: center;">0.917</td></tr> <tr><td style="text-align: right;">Coef:</td><td style="text-align: center;">-624.6</td></tr> <tr><td style="text-align: right;">Pmt:</td><td style="text-align: center;">763</td></tr> <tr><td style="text-align: right;">Flash:</td><td style="text-align: center;">28.4</td></tr> <tr><td style="text-align: right;">Internal:</td><td style="text-align: center;">44.9</td></tr> <tr><td style="text-align: right;">Chamber:</td><td style="text-align: center;">35.00</td></tr> <tr><td style="text-align: right;">Perm Oven Gas:</td><td style="text-align: center;">34.23</td></tr> <tr><td style="text-align: right;">Perm Oven Heater:</td><td style="text-align: center;">676.8</td></tr> <tr><td style="text-align: right;">Pressure:</td><td style="text-align: center;">0.473</td></tr> <tr><td style="text-align: right;">Sample Flow:</td><td style="text-align: center;">95</td></tr> <tr><td style="text-align: right;">Lamp Intensity:</td><td style="text-align: center;">n/a</td></tr> <tr><td style="text-align: right;">Converter:</td><td style="text-align: center;">n/a</td></tr> <tr><td style="text-align: right;">Converter Set:</td><td style="text-align: center;">120</td></tr> <tr><td style="text-align: right;">Averaging Time:</td><td style="text-align: center;">245.0</td></tr> <tr><td style="text-align: right;">Expected Value:</td><td></td></tr> </table>	As left:	7.7	Bkg:	0.917	Coef:	-624.6	Pmt:	763	Flash:	28.4	Internal:	44.9	Chamber:	35.00	Perm Oven Gas:	34.23	Perm Oven Heater:	676.8	Pressure:	0.473	Sample Flow:	95	Lamp Intensity:	n/a	Converter:	n/a	Converter Set:	120	Averaging Time:	245.0	Expected Value:	
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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.

No zero adjustment was required/made. The "as found" zero value was copied to the adjusted zero value field for linearity calculation purposes. Flow measurements after mid-point.



— SO2[ppb]

TOTAL REDUCED SULPHUR



Thermo 450i Total Reduced Sulphur Analyzer Calibration

check to

Date: August 16, 2017	Barometer/B.P./units: F.S. 05544 expires December 5, 2018	939	millibars
Company/Airshed: LICA	Thermometer/Station Temp: Fluke 4295 expires November 14, 2017	22	°C
Location/Station Name: Cold Lake South	Weather Conditions: Mainly sunny		
Parameter: Total Reduced Sulphur	Calibration Purpose: as found		
Start Time 24 hr. (mst): 9:40	Performed By/Reviewer: Alex Yakupov Tom Bourque		
End Time 24 hr. (mst): 10:58	<input checked="" type="checkbox"/> Cal Gas Expiry Date: June 14, 2019		
Calibration Method: Gas Dilution	Converter Model & s/n (if applicable): CDNova CDN-101 #501		

Analyzer:	Range ppb: 100
ID# or Serial Number: 812728560	As Found C.F.: 0.920
Last Calibration Date: July 14, 2017	New C.F.: n/a
Previous C.F.: 1.000	

Calibration Standards: Low Flow Meter ID/Expiry Date: Defender Low 152020 expires November 21, 2017 High Flow Meter ID/Expiry Date: Defender High 148943 expires November 21, 2017 Calibrator ID/Expiry Date: Envionics id# 5212 expires February 14, 2018 Cal Gas Cylinder I.D. #: EY 0000654 Cal Gas Conc. (ppm): 10.2	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
Point	ppb								
High	78								
Mid	38								
Low	19								

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

Point	Calibrator Flow Rates (cc/min)			Calculated Concentration (ppb):	Indicated Concentration (ppb):	Correction Factors (C.F.):
	Diluent	Cal Gas	Total			
as found zero	8057	0.00	8057	0.0	0.0	n/a
as found high	8001	59.00	8060	74.7	81.2	0.920
Average C.F.=						n/a

Linear Regression/Calibration Results:

	LIMITS	
Correlation Coefficient =	n/a	n/a
Slope =	n/a	n/a
b (Intercept as % of full scale)=	n/a	n/a
% change in C.F. from last cal=	8.05%	n/a

As found: Bkg: 14.8 Coef: 0.953 Pmt: -651.2 Flash: 740 Internal: 31.4 Chamber: 45.0 Converter Temp: 825 Converter Set: 825 Perm Oven Gas: 45.00 Perm Oven Htr: 44.37 Pressure: 631.0 Sample Flow: 0.485 Lamp Intensity: 92 Averaging Time: 120 Expected Value: 40.6	As left: Bkg: n/a Coef: n/a Pmt: n/a Flash: n/a Internal: n/a Chamber: n/a Converter Temp: n/a Converter Set: n/a Perm Oven Gas: n/a Perm Oven Htr: n/a Pressure: n/a Sample Flow: n/a Lamp Intensity: n/a Averaging Time: n/a Expected Value: n/a
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Comments:

The manifold blower was found to be working normally.

No high point adjustment was required/made.
 No zero adjustment was required/made.

As Found calibration was completed because a daily SPAN check was low 34.9/ 40.6 = -14.04%.



Thermo 450i Total Reduced Sulphur Analyzer Calibration

check to

Date:	August 16, 2017	Barometer/B.P./units:	F.S. 05544 expires December 5, 2018	939	millibars
Company/Airshed:	LICA	Thermometer/Station Temp:	Fluke 4295 expires November 14, 2017	22	°C
Location/Station Name:	Cold Lake South	Weather Conditions:	Mainly sunny		
Parameter:	Total Reduced Sulphur	Calibration Purpose:	routine monthly		
Start Time 24 hr. (mst):	11:00	Performed By/Reviewer:	Alex Yakupov	Tom Bourque	
End Time 24 hr. (mst):	15:00	Cal Gas Expiry Date:	June 14, 2019		
Calibration Method:	Gas Dilution	Converter Model & s/n (if applicable):	CDNova CDN-101 #501		

Analyzer:	ID# or Serial Number:	812728560	Range ppb:	100
	Last Calibration Date:	July 14, 2017	As Found C.F.:	0.911
	Previous C.F.:	1.000	New C.F.:	1.000

Calibration Standards:	Standard Calibration Points for Ranges
Low Flow Meter ID/Expiry Date:	Defender Low 152020 expires November 21, 2017
High Flow Meter ID/Expiry Date:	Defender High 148943 expires November 21, 2017
Calibrator ID/Expiry Date:	Environics id# 5212 expires February 14, 2018
Cal Gas Cylinder I.D. # :	EY 0000654
Cal Gas Conc. (ppm):	10.2

Point	ppb
High	78
Mid	38
Low	19

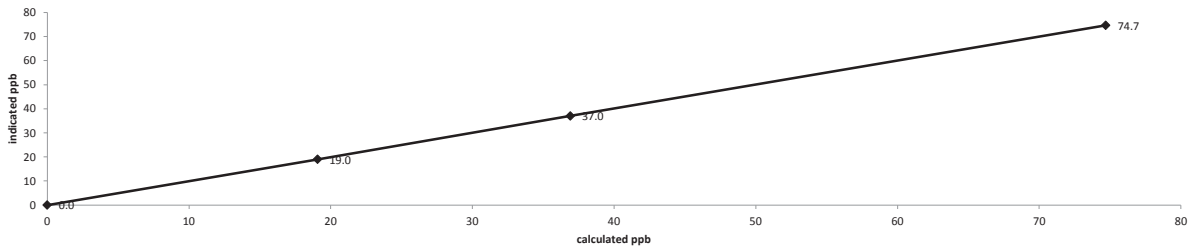
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated	Indicated Concentration (ppb):	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total	Concentration (ppb):		
as found zero	8069	0.00	8069	0.0	0.0	n/a
as found high	8001	59.03	8060	74.7	82.0	0.911
adjusted zero	8069	0.00	8069	0.0	0.0	n/a
adjusted high	8001	59.03	8060	74.7	74.7	1.000
mid	8033	29.18	8062	36.9	37.0	0.998
low	8045	15.08	8060	19.1	19.0	1.004
calibrator zero	8069	0.00	8069	0.0	0.0	n/a
Average C.F. =						1.001

Linear Regression/Calibration Results:

	LIMITS
Correlation Coefficient =	1.000 > or = 0.995
Slope =	1.000 0.95-1.05
b (Intercept as % of full scale) =	0.02% ± 3% F.S.
% change in C.F. from last cal =	8.90% ± 10%

Thermo 450i Total Reduced Sulphur Analyzer Calibration

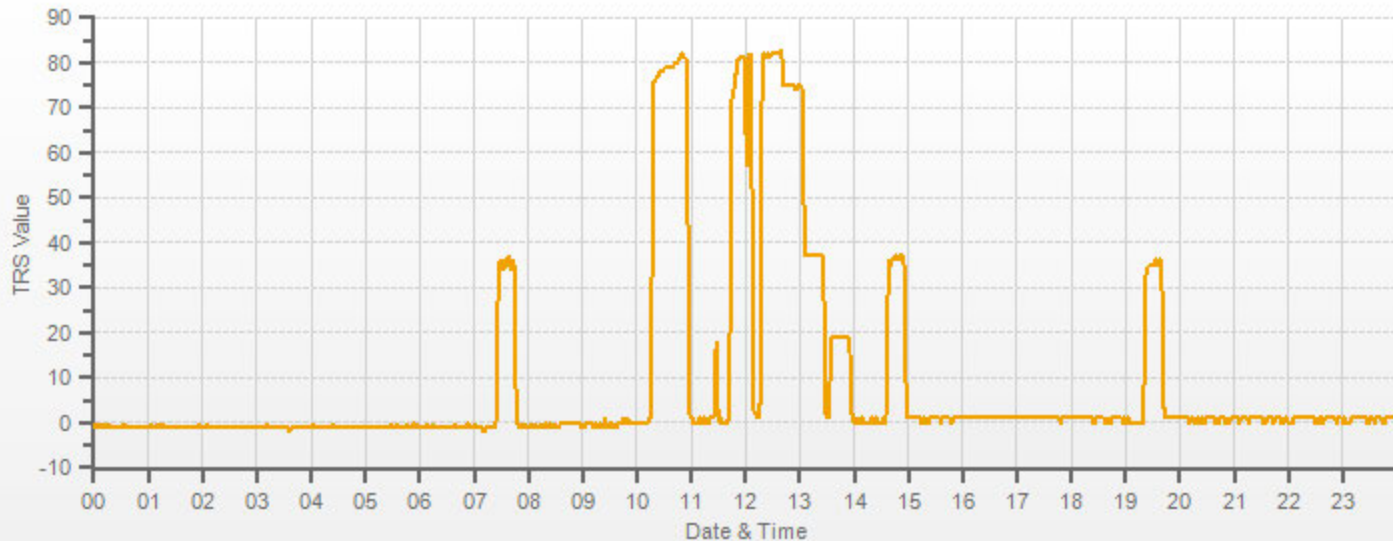


<p style="text-align: center;">As found:</p> <p>Bkg: 14.8</p> <p>Coef: 0.953</p> <p>Pmt: -651.2</p> <p>Flash: 740</p> <p>Internal: 31.4</p> <p>Chamber: 45.0</p> <p>Converter Temp: 825</p> <p>Converter Set: 825</p> <p>Perm Oven Gas: 45.00</p> <p>Perm Oven Htr: 44.37</p> <p>Pressure: 631.0</p> <p>Sample Flow: 0.485</p> <p>Lamp Intensity: 92</p> <p>Averaging Time: 120</p> <p>Expected Value: 40.6</p>	<p style="text-align: center;">As left:</p> <p>Bkg: 13.3</p> <p>Coef: 0.860</p> <p>Pmt: -651.2</p> <p>Flash: 738</p> <p>Internal: 31.5</p> <p>Chamber: 44.9</p> <p>Converter Temp: 825</p> <p>Converter Set: 825</p> <p>Perm Oven Gas: 45.00</p> <p>Perm Oven Htr: 44.38</p> <p>Pressure: 628.8</p> <p>Sample Flow: 0.486</p> <p>Lamp Intensity: 92</p> <p>Averaging Time: 120</p> <p>Expected Value: 36.7</p>
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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.

No zero adjustment was required/made. The "as found" zero value was copied to the adjusted zero value field for linearity calculation purposes. Flow measurements after mid-point.



— TRS[ppb]

TOTAL HYDROCARBON



Thermo 51C Total Hydrocarbon THC Analyzer Calibration

Date:	August 17, 2017	Barometer/B.P./units:	F.S. 05544 expires December 5, 2018	940	millibars
Company/Airshed:	LICA	Thermometer/Station Temp:	Fluke 4295 expires November 14, 2017	22	°C
Location/Station Name:	Cold Lake South	Weather Conditions:	Mainly sunny		
Parameter:	Total Hydrocarbon	Calibration Purpose:	routine monthly		
Start/End Time 24 hr. (mst):	9:04 / 12:41	Performed By/Reviewer:	Alex Yakupov	Tom Bourque	
Calibration Method:	Gas Dilution	Cal Gas Expiry Date:	November 25, 2023		

Analyzer:	ID# or Serial Number:	427408718	Range ppm:	50
	Last Calibration Date:	July 13, 2017	As Found C.F.:	0.973
	Previous Cal High Point C.F.:	0.998	New C.F.:	1.000

Calibration Standards:		Standard Calibration Points for a Range of: 50 ppm	
Low Flow Meter ID/Expiry Date:	Defender Low 152020 expires November 21, 2017	Point	Target ppm
High Flow Meter ID/Expiry Date:	Defender High 148943 expires November 21, 2017	High	38
Calibrator ID/Expiry Date:	Envionics id# 5212 expires February 14, 2018	Mid	18
Cal Gas Cylinder I.D. #:	LL 165372	Low	9
CH ₄ /C ₃ H ₈ Cylinder Conc. (ppm):	606.0 212.0		
CH ₄ as propane/total CH ₄ equivalents (ppm):	583.0 1189.0		

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

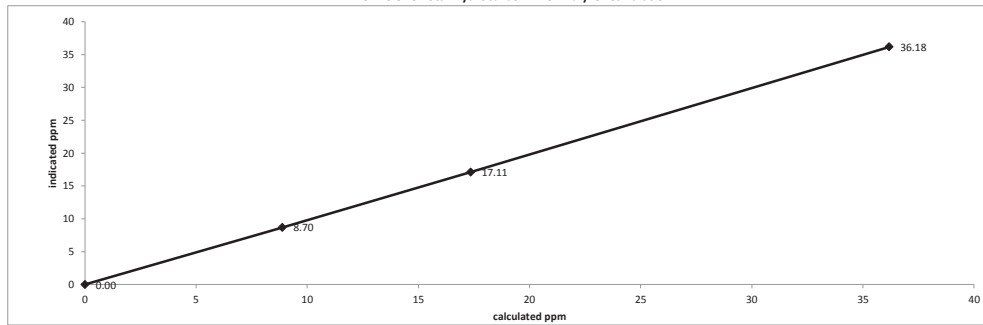
Point	Calibrator Flow Rates (cc/min)			Calculated Concentration: (ppm)	Indicated Concentration: (ppm)	Correction Factors:
	Diluent	Cal Gas	Total			
as found zero	2687	0.00	2687	0.0	0.30	n/a
as found high	2606	81.79	2688	36.18	37.50	0.973
adjusted zero	2687	0.00	2687	0.00	0.00	n/a
adjusted high	2606	81.79	2688	36.18	36.18	1.000
mid	2651	39.26	2690	17.35	17.11	1.014
low	2670	20.09	2690	8.88	8.70	1.021
calibrator zero	2687	0.00	2687	0.0	0.00	n/a

Average C.F.= 1.012

Linear Regression/Calibration Results:

Correlation Coefficient =	1.000	LIMITS
Slope =	0.999	> or = 0.995
b (Intercept as % of full scale)=	0.25%	0.95-1.05
% change in C.F. from last cal=	2.55%	± 3% F.S.
		± 10%

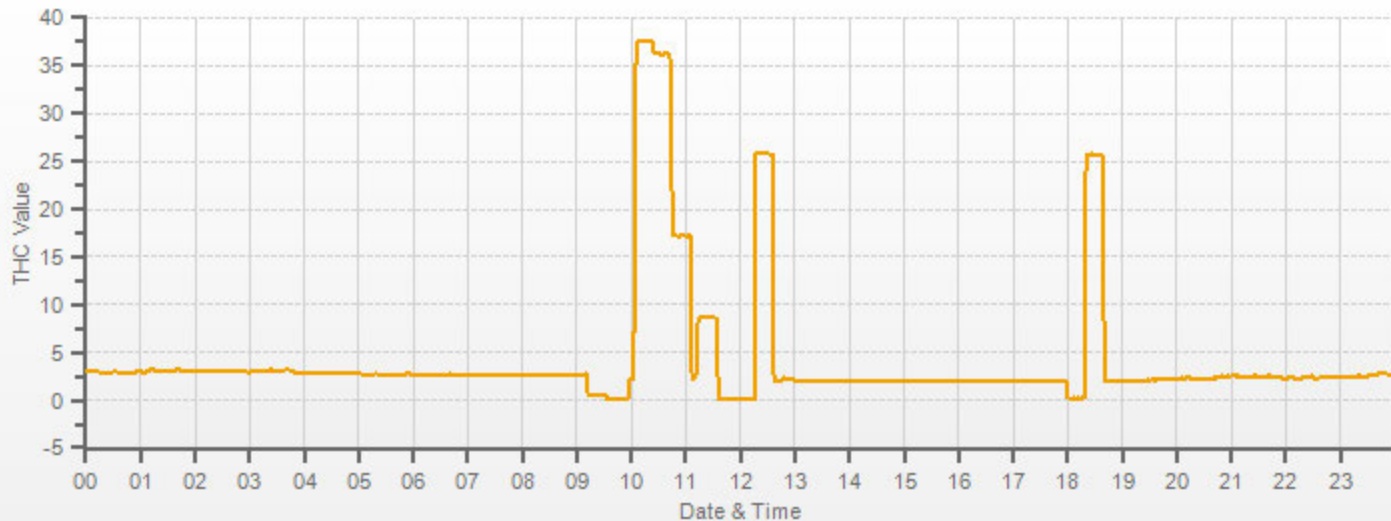
Thermo 51C Total Hydrocarbon THC Analyzer Calibration



As found:	As left:
H2 cylinder (psi): 1300	H2 cylinder (psi): 1300
H2 cylinder reg set (psi): 22	H2 cylinder reg set (psi): 22
Span Cylinder (psi): 800	Span Cylinder (psi): 800
Span Cylinder Reg Set (psi): 22	Span Cylinder Reg Set (psi): 22
Zero Air Gen Pressure: 42	Zero Air Gen Pressure: 42
measurement alarms: None	measurement alarms: None
service alarms: None	service alarms: None
cnt: 1291	cnt: 1295
rng: 1	rng: 1
try: 0	try: 0
flm: 179.7	flm: 180.1
det: 125.3	det: 125.3
Flame: 179	Flame: 180
Filter: 125	Filter: 125
Base: 125	Base: 125
Sample psi: 06.51	Sample psi: 06.51
Internal Air Pressure: 20	Internal Air Pressure: 20
Internal Fuel Pressure: 13	Internal Fuel Pressure: 13
Measured Flow: 0.554	Measured Flow: n/a
Expected Value: 27.03	Expected Value: 25.70

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. Flow measurements after mid-point.



— THC[ppm]

NITROGEN DIOXIDE



Thermo 42i NO-NO2-NOx Analyzer Calibration

Date: August 16, 2017	Barometer/B.P./units: F.S. 05544 expires December 5, 2018	939	millibars
Company/Airshed: LICA	Thermometer/Station Temp: Fluke 4295 expires November 14, 2017	22	°C
Location/Station Name: Cold Lake South	Weather Conditions: Mainly sunny		
Start/End Time 24 hr. (mst): 9:40 / 17:01	Calibration Purpose: routine monthly		
G.P.T. to be used for Ozone? Yes with 500 ppb NOx full scale	Performed By/Reviewer: Alex Yakupov	Tom Bourque	
Calibration Method: Gas Dilution & Gas Phase Titration	Cal Gas Expiry Date: June 14, 2019		

Analyzer:		Correction Factors:		
ID# or Serial Number: 1505664393	NO =	Previous C.F.: 1.001	As Found C.F.: 0.981	New C.F.: 1.000
Last Calibration Date: July 13, 2017	NO ₂ =	1.000	1.000	1.000
Range ppb: 500	NOx =	1.000	0.978	1.000

Calibration Standards:			
Low Flow Meter ID/Expiry Date: Defender Low 152020 expires November 21, 2017	Standard Calibration Points for a Range of: 500 ppb		
High Flow Meter ID/Expiry Date: Defender High 148943 expires November 21, 2017	Point	Target NO (ppb)	Target NO ₂ (ppb)
Calibrator ID/Expiry Date: API id# 627 expires January 27, 2018	High	380	330
Cal Gas Cylinder I.D. #: LL 104222	Mid	180	245
Cal Gas Conc. (ppm): 50.7 50.7	Low	90	175
	Extra Point #1	n/a	133
	Extra Point #2	n/a	53
			Cc Ozone ?
			<--high ozone
			n/a
			n/a
			<--mid ozone
			<--low ozone

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	5344	0.0	5344	0	0	0.0	0.0	n/a	n/a	
as found high	5308	38.1	5346	361.0	361.0	368.0	369.0	0.981	0.978	
adjusted zero	5344	0.00	5344	0.0	0.0	0.0	0.0	n/a	n/a	
adjusted high	5308	38.06	5346	361.0	361.0	361.0	361.0	1.000	1.000	
mid	5317	17.95	5335	170.6	170.6	171.0	171.0	0.998	0.998	
low	5321	9.10	5330	86.6	86.6	86.4	86.4	1.002	1.002	
calibrator zero	5344	0.00	5344	0	0	0.0	0.0	n/a	n/a	
								Average C.F.=	1.000	1.000

ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015										
Calibrator Flow Rates (cc/min)				Calibrator Setting	Indicated NO	Indicated NOx	Indicated NO ₂	NO drop	NO ₂ gain	NO ₂ C.F.
Point	Diluent	Cal Gas	Total Flow	volts or ppb	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)
NOx reference	5308	38.06	5346	0.0	363.0	363.0	0.0	0.0	0.0	
as found high NO2	5308	38.06	5346	245.0	125.0	364.0	238.0	238.0	238.0	1.000
adjusted high NO2	5308	38.06	5346	245.0	125.0	364.0	238.0	238.0	238.0	1.000
gpt mid	5308	38.06	5346	135.0	234.0	364.0	130.0	129.0	130.0	0.992
gpt low	5308	38.06	5346	50.0	314.0	364.0	49.0	49.0	49.0	1.000
								Average NO ₂ C.F.=	0.997	

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	0.999	0.95-1.05
b (Intercept as % of full scale)=	0.00%	0.00%	0.03%	± 3% F.S.
% change in C.F. from last cal=	2.01%	2.18%	0.00%	± 10%
NO2 converter efficiency			1.00	0.96 to 1.04

As found:		As left:	
NO Bkg:	3.6	NO Bkg:	3.5
NOx Bkg:	3.8	NOx Bkg:	3.7
NO Coef:	0.983	NO Coef:	0.966
NO ₂ Coef:	0.990	NO ₂ Coef:	0.990
NOx Coef:	1.000	NOx Coef:	0.998
PMT:	-855.1	PMT:	-854.7
Internal:	25.6	Internal:	25.8
Chamber:	50.5	Chamber:	50.2
Cooler:	-2.8	Cooler:	-2.8
NO ₂ Converter:	325.3	NO ₂ Converter:	324.7
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:	34.23	Perm Oven Heater:	34.25
Pressure:	176.6	Pressure:	176.0
Flow:	0.763	Flow:	0.762
Ozonator Flow:	OK	Ozonator Flow:	OK
Expected Value NO:	3	Expected Value NO:	4
Expected Value NO ₂ :	251	Expected Value NO ₂ :	254
Expected Value NOx:	254	Expected Value NOx:	259

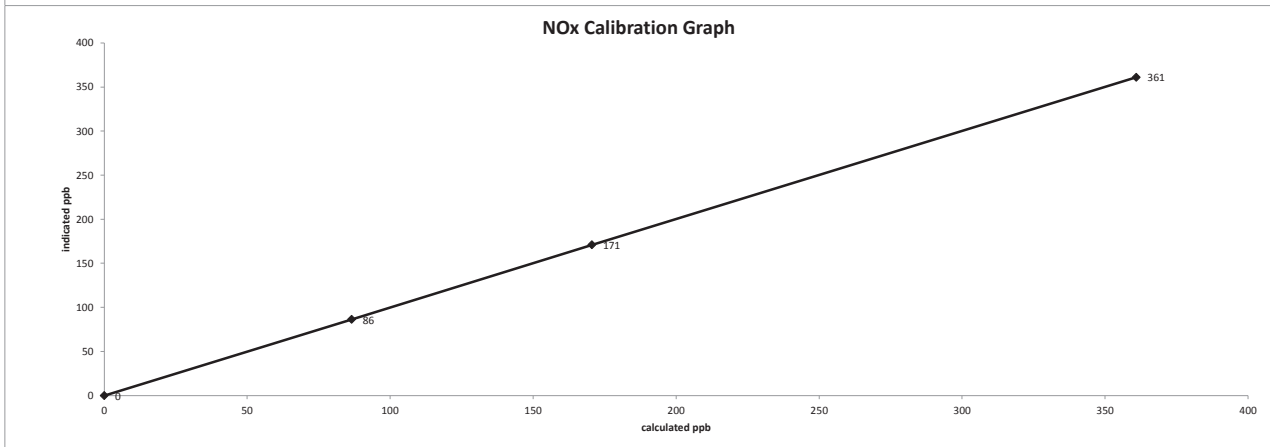
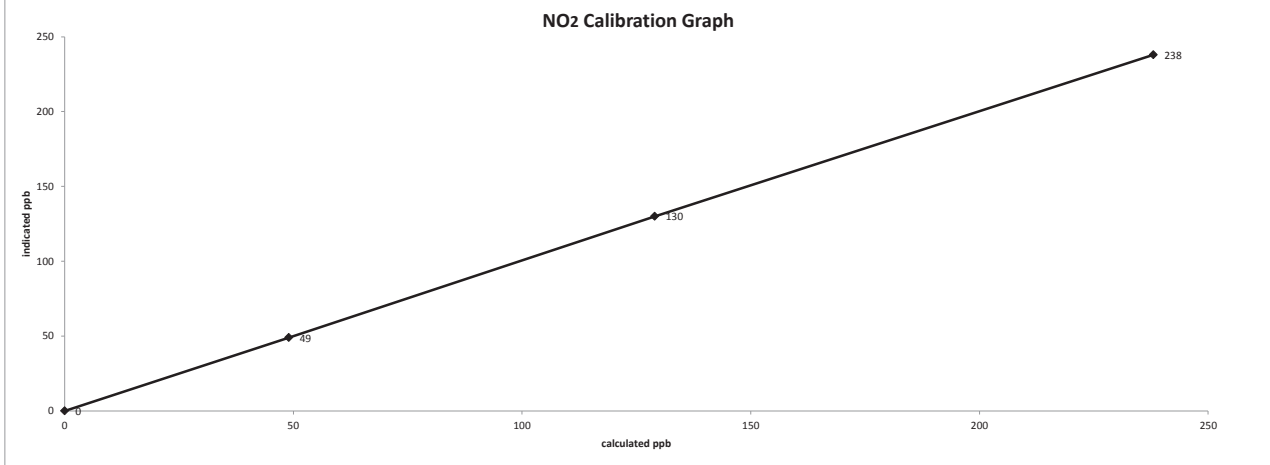
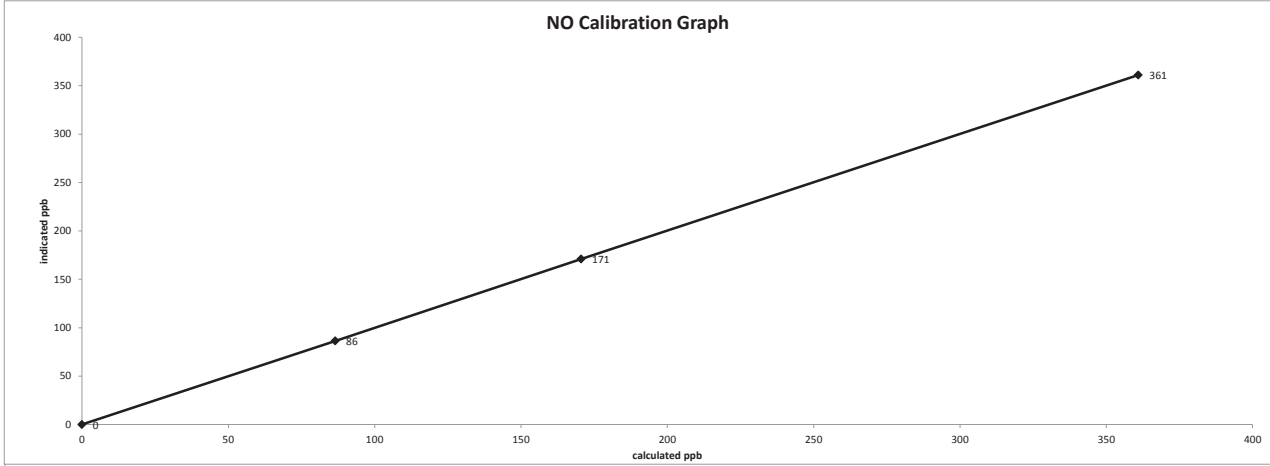
Comments:
 The analyzer sample inlet filter was changed.
 The manifold blower was found to be working normally.
 No zero adjustment was required/made. As found zero values were copied to adjusted zero values for linearity calculation purposes.
 The analyzer cooling fan filter(s) were cleaned.

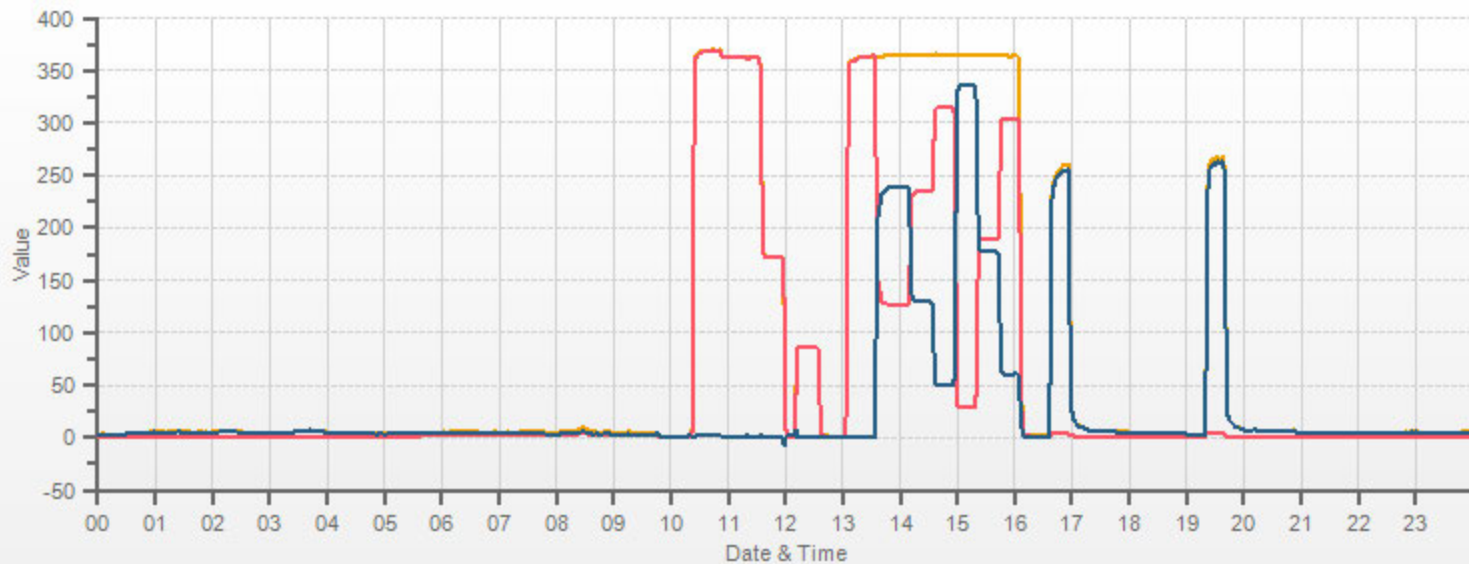
GPT for O3 three points: High O3= 345 , High NO drop= 335 ; Mid O3=180 , Mid NO drop=175 ; Low O3=60 , Low NO drop=60 .

Date: August 16, 2017
Company/Airshed: LICA
Location/Station Name: Cold Lake South

Start/End Time 24 hr. (mst): 9:40 / 17:01
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

check to

Date: August 17, 2017	Barometer/B.P./units: F.S. 05544 expires December 5, 2018	940	millibars
Company/Airshed: LICA	Thermometer/Station Temp: Fluke 4295 expires November 14, 2017	22	°C
Location/Station Name: Cold Lake South	Weather Conditions: Mainly sunny		
Start/End Time 24 hr. (mst): 9:04 / 13:26	Calibration Purpose: routine monthly		
Ozone Calibration Method: Direct G.P.T.	Performed By/Reviewer: Alex Yakupov	Tom Bourque	
G.P.T. Date: August 16, 2017	Cal Gas Expiry Date:	June 14, 2019	

Analyzer:	Ozone Range ppb: 500
ID# or Serial Number: 700419951	As Found C.F.: 0.988
Last Calibration Date: July 14, 2017	New C.F.: 1.000
Previous Cal High Point C.F.: 1.000	

Calibration Standards:	
Low Flow Meter ID/Expiry Date: Defender Low 152020 expires November 21, 2017	
High Flow Meter ID/Expiry Date: Defender High 148943 expires November 21, 2017	
Calibrator ID/Expiry Date: API id# 627 expires January 27, 2018	
Cal Gas Cylinder I.D. #: n/a	

Point	AMD Required Range of Ozone Calibration Points
High	300-400 ppb
Mid	150-200 ppb
Low	50-100 ppb

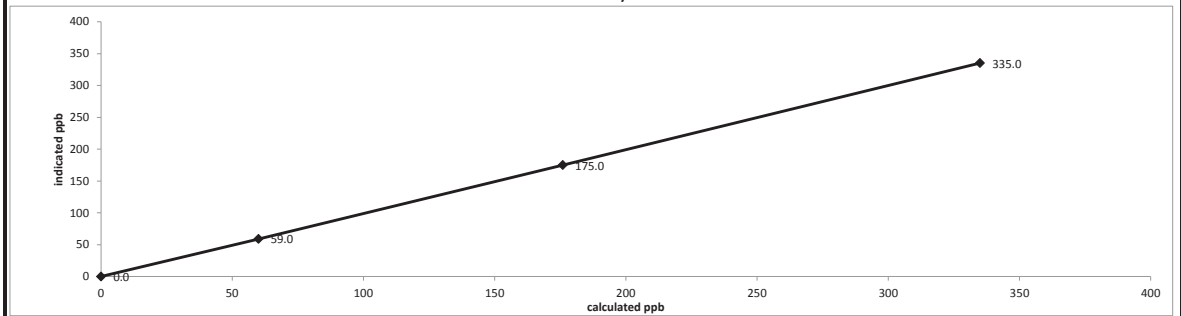
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

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	335.0	335.0	339.0	0.988
adjusted zero	5000	5000	0.0	0.0	0.0	n/a
adjusted high	5000	5000	335.0	335.0	335.0	1.000
mid	5000	5000	176.0	176.0	175.0	1.006
low	5000	5000	60.0	60.0	59.0	1.017
calibrator zero	5000	5000	0.0	n/a	0.0	n/a
Average C.F. =						1.008

Linear Regression/Calibration Results:

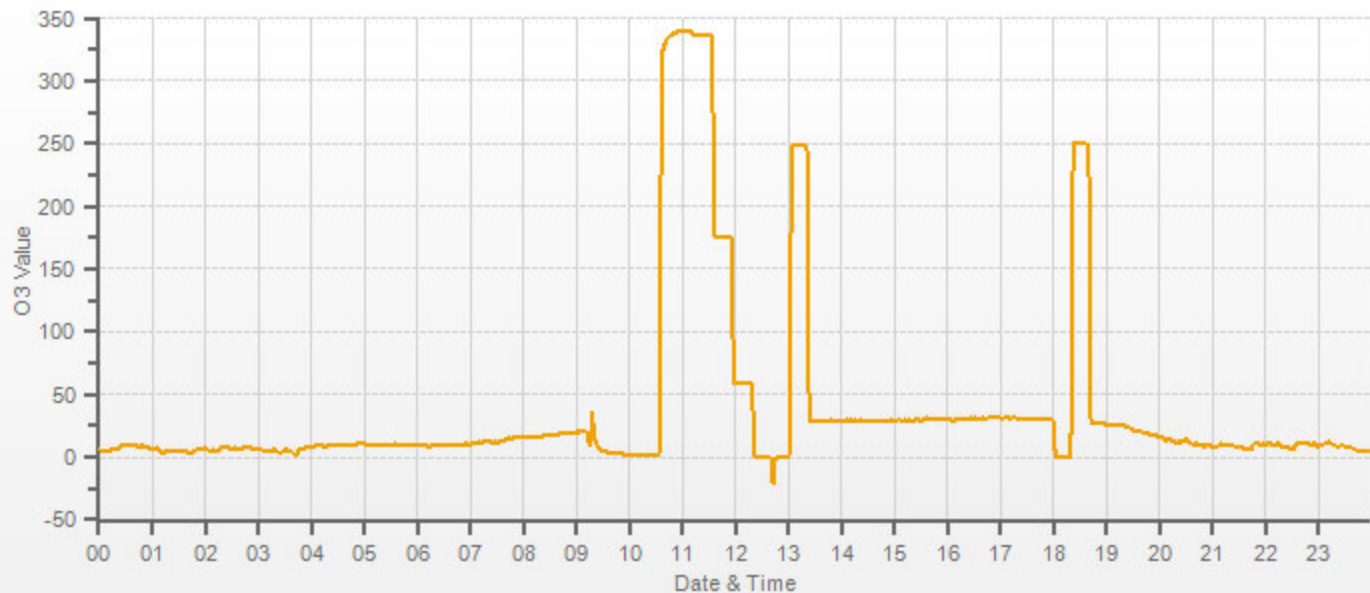
Correlation Coefficient = 1.000	LIMITS
Slope = 0.999	> or = 0.995
b (Intercept as % of full scale) = 0.12%	0.95-1.05
% change in C.F. from last cal = 1.18%	± 3% F.S.
	± 10%

Thermo 49i Ozone Analyzer Calibration



As found:	As left:
O3 Bkg: 0.4	O3 Bkg: 0.4
O3 Coef: 1.004	O3 Coef: 0.991
Photo Lamp: 9.6	Photo Lamp: 9.6
O3 Lamp: 9.0	O3 Lamp: 9.0
Bench: 28.5	Bench: 28.2
Bench Lamp: 53.5	Bench Lamp: 53.4
O3 Lamp: 67.3	O3 Lamp: 67.3
Pressure: 705.0	Pressure: 704.7
Cell A lpm: 0.716	Cell A lpm: 0.716
Cell B lpm: 0.756	Cell B lpm: 0.755
O3 ppb: 4.8	O3 ppb: 0.0
Cell A ppb: 2.7	Cell A ppb: -5.7
Cell B ppb: 6.8	Cell B ppb: 5.7
Cell A int: 86977	Cell A int: 86945
Cell B int: 87228.0	Cell B int: 87208.0
Expected Value: 252.1	Expected Value: 248.0

Comments: No zero adjustment was required/made. As found zero values were copied to adjusted zero values for linearity calculation purposes.
 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 5030 SHARP Monitor Audit

Date: August 24, 2017
 Company: LICA
 Station Name/Location: Cold Lake South
 Previous Audit Date: July 21, 2017
 Parameter: PM 2.5

Performed By/Reviewer: Alex Yakupov | Tom Bourque
 Start Time (mst): 13:01
 End Time (mst): 15:34
 Calibration Purpose: Quarterly
 Weather Conditions: A few clouds

SHARP Information and Status:

Serial Number: CM-2209 Status Code: 0
 Approx. % Tape Reaming: 1/5 Error Code: 0

Reference Standards/I.D./Cert. Date:

High Flow: Airmetrics/Chinook High Maxxam ID #2 expires March 24, 2018
 Digital Manometer: Dwyer 475 Mark III id# 3 expires January 3, 2018
 Temperature: F.S. 160459244 expires May 18, 2018
 Pressure: Brunton 05535 expires December 5, 2017

As Found Temperatures, Pressure, Humidity:

	T1 (°C)	T2 (°C)	T3 (°C)	T4 (°C)	P3 (hPa)	RH (%)
SHARP:	21	23	23	22	941	50
Reference:	23.9	21.8	21.8	21.8	941.6	54.0
Difference:	2.9	1.2	1.2	0.2	0.6	4.0

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

	T1 (°C)	T2 (°C)	T3 (°C)	T4 (°C)	P3 (hPa)	RH (%)
SHARP:	24	22	22	22	942	64
Reference:	24.0	22.0	22.0	22.0	942.0	64.0
Difference:	0.0	0.0	0.0	0.0	0.0	0.0%

Mass Foil Calibration:

	Mass Foil:	ZERO:	Span Sensitivity
Mass Foil ID:	9015	QLF:	7057
Spanfoil Value (µg):	1294	CONFID:	7011

Nephelometer Zero:

	As Found	As Left
Analog	157.00	157.00
NEPH	-0.30	-0.30
C14	1.00	1.00
Conc	-0.40	-0.30

Flow rate:

	As Found	As Left	$%D = 100 \times \frac{Q_m - Q_i}{Q_i}$
SHARP AirFlow l/hr	1000	1000	
Reference AirFlow (l/min)	16.68	16.68	
Reference AirFlow (l/hr)	1001	1001	
% Difference:	-0.1%	Difference: -0.1%	

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 test: 16:68 - 16:62, difference -0.06. The "as found" Sharp 5030 RH sensor was found to be marginally out of tolerance. It was immediately re-calibrated and brought back in to tolerance.

WIND SYSTEM



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

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

Sonic Wind Sensor Certificate of Calibration

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

Calibration Equipment

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

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

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

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

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

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

CALIBRATORS

Company Maxxam/SIA **Operator:** Chris

Calibrator:		Flow Measurement Device:	
Make/Model	<u>API 700</u>	Make/Model	<u>Definer 530</u>
Serial Number	<u>627</u>	Serial Number	<u>H-148944, L-152019</u>
Last Verification Date	<u>February 3, 2016</u>	Temperature (°C)	<u>23.5</u>
NO Cylinder S/N	<u>EY0000597</u>	Barometric Pressure	<u>707.1 mmHg</u>
NO [PPM]	<u>49.0</u>	NOx [PPM]	<u>49.0</u>
Expiry Date	<u>December 8, 2019</u>		

Dilution Flow (sccm)		
Pt. #1	<u>4892</u>	Pt. #3 <u>4951</u>
Pt. #2	<u>4975</u>	
Gas Flow (sccm)		
Pt. #1	<u>79.7</u>	Pt. #3 <u>19.4</u>
Pt. #2	<u>38.8</u>	

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO ₂	NOx	NO	NOx
	0.0	0.0000	0.0000	0.0000	-0.0004	-0.0004	Limit ± 10%	
4972	79.7	0.7855	0.7855	0.7883	0.0004	0.7887	0.4%	0.5%
4936	38.8	0.3822	0.3822	0.3816	0.0005	0.3822	-0.2%	0.1%
4970	19.4	0.1913	0.1913	0.1902	0.0006	0.1913	-0.6%	0.2%
Absolute Average Percent Difference							0.1%	0.3%

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)= 1.0041	0.90-1.10	m (Slope)= 1.0046
b (Intercept % of FS)= -0.1118	± 3% F.S.	b (Intercept % of FS)= -0.0871

Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
4972	0	0.0000	0.7867	0.0014	0.7881	NO ₂	% Diff, Limit
4972	500	0.5127	0.2740	0.5104	0.7849	-0.7%	± 10%
4972	275	0.2863	0.5004	0.2860	0.7865	-0.6%	± 10%
4972	90	0.0940	0.6927	0.0954	0.7880	0.0%	± 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)= 0.9924	0.90-1.10
b (Intercept % of FS)= 0.1755	± 3% F.S.

AENV Standards	NO_x Analyzer
Audit Calibrator	Make/Model <u>Thermo 42i</u>
Make/Model <u>Thermo 146i</u>	Serial/AMU Number <u>AMU 1868</u>
Serial/AMU Number <u>AMU1809</u>	Last Calibration Date <u>January 25, 2017</u>
SRM Gas Cylinder No. <u>CAL018140</u>	Full Scale (ppm) <u>1.0</u>
Cylinder Conc. (ppm) <u>48.79</u>	Cylinder Gas Expiry Date <u>March 25, 2019</u>

COMMENTS: _____

Auditor: Shea Beaton Date: January 27, 2017
Operator Signature: _____ Location: McIntyre Center Edmonton

Company <u>Maxxam</u>		Operator: <u>Mike</u>	
Calibrator:		Flow Measurement Device:	
Make/Model	<u>Envionics 6100</u>	Make/Model	<u>Bios Defender 530</u>
Serial Number	<u>5212</u>	Serial Number	<u>Hi148944 Lo 152019</u>
Last Verification Date	<u>February 3, 2016</u>	Temperature (°C)	<u>24.6</u>
NO Cylinder S/N	<u>EY0000597</u>	Barometric Pressure	<u>701.4mmHg</u>
NO [PPM]	<u>49.0</u>	NOx [PPM]	<u>49.0</u>
Expiry Date	<u>December 8, 2019</u>		

Dilution Flow (sccm)		
Pt. #1 <u>4919</u>	Pt. #2 <u>4934</u>	Pt. #3 <u>4960</u>
Gas Flow (sccm)		
Pt. #1 <u>79.2</u>	Pt. #2 <u>38.3</u>	Pt. #3 <u>19.1</u>

Dilution	Calibrator Flow (sccm)	Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
		NO	NOx	NO	NO ₂	NOx	NO	NOx
4987	0.0	0.0000	0.0000	0.0000	0.0002	0.0002	Limit ± 10%	
4998	79.2	0.7765	0.7765	0.7801	-0.0003	0.7798	0%	0%
4977	38.3	0.3775	0.3775	0.3790	0.0000	0.3790	0%	0%
4979	19.1	0.1880	0.1880	0.1888	-0.0001	0.1887	0%	0%
Absolute Average Percent Difference							0%	0%

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)= 1.0046	0.90-1.10	m (Slope)= 1.0041
b (Intercept % of FS)= -0.0080	± 3% F.S.	b (Intercept % of FS)= 0.0057

Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOx	% Diff. Vs Audit gas	
4998	0.000	0.0000	0.7799	-0.0008	0.7790	NO ₂	% Diff. Limit
4998	0.500	0.4949	0.2850	0.4909	0.7776	-1%	± 10%
4998	0.275	0.2765	0.5034	0.2742	0.7776	-1%	± 10%
4998	0.100	0.1003	0.6796	0.0989	0.7786	-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)= 0.9936	0.90-1.10	
b (Intercept % of FS)= -0.0733	± 3% F.S.	

AENV Standards	NO_x Analyzer
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>February 13, 2017</u>
SRM Gas Cylinder No. <u>CAL018140</u>	Full Scale (ppm) <u>1.0</u>
Cylinder Conc. (ppm) <u>48.79</u>	Cylinder Gas Expiry Date <u>March 28, 2019</u>

COMMENTS: Gas has ~50ppm SO2

Auditor: Shea Beaton
Operator Signature: [Signature]

Date: February 14, 2017
Location: McIntyre Center Edmonton

CALIBRATION GASES



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2016-335CGA

Company: Maxxam **Operator's Name:** Russell Kirchner

Cylinder #: LL104222 Concentration PPM: 50.6 Tolerance(%) 1 Certified By: Praxair

Expiry Date: July 2019

Reference Calibrator and Gas:	Flow Measurement Device:
Make/Model: <u>R&R MFC 201</u>	Make/Model: <u>Bios DC2</u>
Serial Number: <u>AMU 1690</u>	Serial Number: <u>AMY 1659</u>
Last Verification Date: <u>October 19, 2016</u>	Temp. °C: <u>24.5 C</u>
Gas Type: <u>SO2</u> Conc. <u>98.07</u>	B.P. <u>706 mmhg</u>
Cylinder Number: <u>CA:016625</u>	
Expiry Date: <u>January 2019</u>	

Reference Analyzer:

Make/Model: Teco 43C Serial/AMU Number: 1623

Instrument Settings: Zero: 9.2 Span: 1.024 Range: 1.0

Last Calibration: Date: Oct 19/16 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	0.0000	0.0000	0.000
4935	82.0	0.830	0.01662	60.183	50.0
4968	40.8	0.412	0.00821	121.765	50.2
4955	20.2	0.203	0.00408	245.297	49.8
Average Cylinder Concentration:					50.0

Previous Stated Concentration PPM: 50.6

Percent variance from Stated: 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: October 19, 2016

Location: McIntyre Center Edmonton



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2016-334CGA

Company: Maxxam **Operator's Name:** Russell Kirchner

Cylinder #: EY0000654 Concentration PPM: 10.2 Tolerance(%) 2 Certified By: Praxair

Expiry Date: June 2019

Reference Calibrator and Gas:	Flow Measurement Device:
Make/Model: <u>R&R MFC 201</u>	Make/Model: <u>Bios DC2</u>
Serial Number: <u>AMU 1690</u>	Serial Number: <u>AMU 1659</u>
Last Verification Date: <u>October 19, 2016</u>	Temp. °C: <u>24.0 C</u>
Gas Type: <u>H2S</u> Conc. <u>20.43</u>	B.P. <u>706 mmhg</u>
Cylinder Number: <u>CAL015584</u>	
Expiry Date: <u>January 2019</u>	

Reference Analyzer:

Make/Model: Teco 450i Serial/AMU Number: 1980

Instrument Settings: Zero: 16.6 Span: 1.231 Range: 0.1

Last Calibration: Date: Oct 19/16 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	0.0000	0.0000	0.0000	0.0000
5050	38.0	0.0764	0.00752	132.895	10.2
5050	17.8	0.0355	0.00352	283.708	10.1
5023	9.1	0.0182	0.00181	551.978	10.0
Average Cylinder Concentration:					10.1

Previous Stated Concentration PPM: 10.2

Percent variance from Stated: 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 Date: October 19, 2016

Operator Signature: *Al Clark* Location: McIntyre Center Edmonton



Calibration Gas Audit

CH4 / C3H8 Cylinder Gas

File No. 2015-092CGA

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

Reference Calibrator and Gas:

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

Flow Measurement Device:

Make/Model Bios DC-2
Serial Number Bios D
Temp. °C 24.5
B.P. 698mmHg

Reference Analyzer:

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

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

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

Cylinder gas tolerances based on CH4 only

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

Auditor: Shea Beaton
Operator Signature: _____

Date: January 19, 2016
Location: McIntyre Center Edmonton



Calibration Gas Audit

NO Cylinder Gas

File No. 2016-336CGA

Company: Maxxam **Operators name:** Russell Kirchner

Cylinder #: LL104222 Conc (PPM) 50.7/50.9 Tolerance (%) 1 Certified By: Praxair

Expiry Date: July 2019

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>October 19, 2019</u>			Temp. °C	<u>24.5 C</u>
Gas Type	<u>NO</u>	Conc.	<u>48.79</u>	B.P.	<u>706 mmhg</u>
Cylinder Number	<u>CAL018188</u>				
Expiry Date	<u>March 2019</u>				

Reference Analyzer:

Make/Model Teco 42i Serial/AMU Number: 1868

Instrument Settings Zero: 4.4 Span: 1.080 Range: 1.0

Last Calibration: Date: Oct 18/16 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				
4935	82.0	0.838	0.837	0.017	60.183	50.4	50.4
4968	40.8	0.417	0.417	0.008	121.765	50.8	50.8
4955	20.2	0.207	0.207	0.004	245.297	50.8	50.8
Average Cylinder Concentration:						50.7	50.6

<u>NO</u>	<u>NOx</u>
Previous Stated Concentration PPM: <u>50.7</u>	<u>50.9</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 Contains 50.6 ppm SO2.

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

Auditor: Al Clark Date: October 19, 2016

Operator Signature: *Al Clark* Location: McIntyre Center Edmonton

***APPENDIX III
REPORT CERTIFICATION FORM***

Report Certification Form

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

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

Maram Ghaleb

Signature of the Representative of the Person
Responsible / External Person Certifying the Report
03/10/2017

Report Issued Date (dd-mm-yyyy)

APPENDIX IV
DATA VALIDATION CERTIFICATION FORM



Validation Certificate Form

Client: <u>Lakeland Industry & Community Association</u>	Project #: <u>2833-2017-08-1-C</u>
Site: <u>Cold Lake Continuous Monitoring Station</u>	Contact: <u>Mike Bisaga</u>

Level 0 Preliminary Verification	<u>Maram Ghaleb</u>	Date <u>September 22, 2017</u>
Level 1 Primary Validation	<u>Maram Ghaleb</u>	Date <u>September 22, 2017</u>
Level 2 Final Validation	<u>Maram Ghaleb</u>	Date <u>September 27, 2017</u>
Level 3 Independent Data Review	<u>Cheri Sinclair</u>	Date <u>September 28, 2017</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

October 5, 2017

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 August 2017.

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 August 2017 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 certify that 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 certify 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 me.

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 Managers
Lakeland Industry & Community Association
780-266-7068
mbisaga@otonabee.ca

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

Lily Lin
Data & Reporting Specialist
587-225-2248
rebbacaa@gmail.com



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
MASKWA CONTINUOUS MONITORING STATION

JOB #: 2833-2017-08-30-C

August 2017

Prepared for:

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

Attention: MIKE BISAGA

DATE: **September 28, 2017**

Prepared by: *Maram Ghaleb*

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

Reviewed by: *Wunmi Adekanmbi*

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

SUMMARY

In August, 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).

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

NO_x/NO/NO₂: The analyzer was recording elevated readings in the hour following the zero/span cycle. These data were invalidated as they were not representative of ambient concentrations. Thirty-two hours of downtime were therefore incurred this month.

The summary of results is presented on the following pages.

Any deviations or modifications made to the sampling or analytical methods are outlined in Section 1.0, Discussion. On this basis, Maxxam 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 403-219-3678 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	0	16	7	22	2.3	NW	2	7	100.0
H ₂ S (ppb)	10	3	0	0	0	5	13	22	6.4	ESE	1	13	100.0
THC (ppm)	-	-	-	-	2.01	3.28	10	6	2	NE	2.18	9	100.0
NO ₂ (ppb)	159	-	0	-	2	13	18	22	3.6	W	4	18	95.7
NO (ppb)	-	-	-	-	0	9	7	7	2.3	NW	1	2	95.7
NO _x (ppb)	-	-	-	-	3	16	10	9	2.8	SW	5	18	95.7
RELATIVE HUMIDITY (%)	-	-	-	-	72	94	1	5	1.2	NE	90	15	100.0
BAROMETRIC PRESSURE (millibar)	-	-	-	-	944	957	2	7	2	WNW	955	1	100.0
AMBIENT TEMPERATURE (°C)	-	-	-	-	16.0	27.1	12	13	8	S	20.5	13	100.0
PRECIPITATION (mm)	-	-	-	-	0.0	2.4	5	3	3	S	0.4	15	100.0
VECTOR WS (kph)	-	-	-	-	1.4	13.5	13	12	-	SSE	8.3	13	100.0
VECTOR WD (sec)	-	-	-	-	203 (SSW)	-	-	-	-	-	-	-	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.

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), Oxides of Nitrogen (NO_x), Nitric Oxides (NO), Nitrogen Dioxide (NO₂), Relative Humidity (RH), Barometric Pressure (BP), Precipitation, Ambient Temperature (AmbTPX), Wind Speed (WS), Wind Direction (WD) and Standard Deviation Wind Direction (STDWD).

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

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

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

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

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

The AMD requires each instrument and accompanying data recording system to be operational 90% of the time, 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 100%.
- The routine monthly calibration was performed on August 11.
- Three instances of maximum instantaneous data were discarded due to brief power outages.

HYDROGEN SULPHIDE (H₂S)

- Operational time, for the monitoring period, was 100%.
- The routine monthly calibration was performed on August 11.
- Elevated concentrations for maximum instantaneous data were recorded on August 5 and August 10. Review of the minute data supports the validity of these elevated concentrations.
- Three instances of maximum instantaneous data were discarded due to brief power outages.

TOTAL HYDROCARBONS (THC)

- Operational time, for the monitoring period, was 100%.
- The routine monthly calibration was performed on August 11.
- Three instances of maximum instantaneous data were discarded due to brief power outages.
- On August 18, at hour 18:00, one hour of maximum instantaneous data was invalidated as the analyzer yielded an off-scan error at 18:32.

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

- Operational time, for the monitoring period was 95.7% equivalent to thirty-two hours of downtime.
- The routine monthly calibration was performed on August 11.
- It was observed that the analyzer was recording elevated readings in the hour following the zero/span cycle. These elevated readings were caused by a delay of the reaction cell purging with ambient air and re-stabilizing at ambient baseline levels; and were therefore invalidated. The resident analyzer has been temporarily replaced on September 7 with another Maxxam supplied analyzer, pending the return of LICA's analyzer from the manufacturer. This issue resulted in thirty-two hours of downtime.
- Three instances of maximum instantaneous data were discarded due to brief power outages.

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

- Operational time, for the monitoring period, was 100%.
- Three instances of maximum instantaneous data were discarded due to brief power outages.
- One instance of maximum instantaneous data was invalidated on August 13 at hour 05:00, due to an anomalous spike. Review of the minute data, bracketing the spike, did not support the validity of the elevated measurement.
- 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%.
- A precipitation sensor audit was conducted on August 11. The results were satisfactory.

AMBIENT TEMPERATURE (AmbTPX)

- Operational time, for the monitoring period, was 100%.

2.0 Project Personnel

Mike Bisaga was the contact 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-00209: Ambient Sulphur Monitoring
- Maxxam AIR SOP-00213: Ambient NO/NO₂/NO_x Monitoring
- Maxxam AIR SOP-00214: Ambient Hydrocarbon (THC) Monitoring
- Maxxam AIR SOP-00242: Precipitation Collector Installation/Maintenance
- 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 - API 100E UV Fluorescent Analyzer
- Hydrogen Sulphide - API 101E UV Fluorescent Analyzer
- Total Hydrocarbons - Thermo 51C FID Analyzer
- Oxides of Nitrogen - API 200A Chemiluminescent Analyzer
- Wind System - Met One Unit
- Relative Humidity - Met One Unit
- Barometric Pressure - Met One Unit
- Ambient Temperature - Met One Unit
- Precipitation - Met One Unit
- Datalogger - ESC 8832

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

Level 0 Preliminary Verification

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

Level 1 Primary Validation

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

Level 2 Final Validation

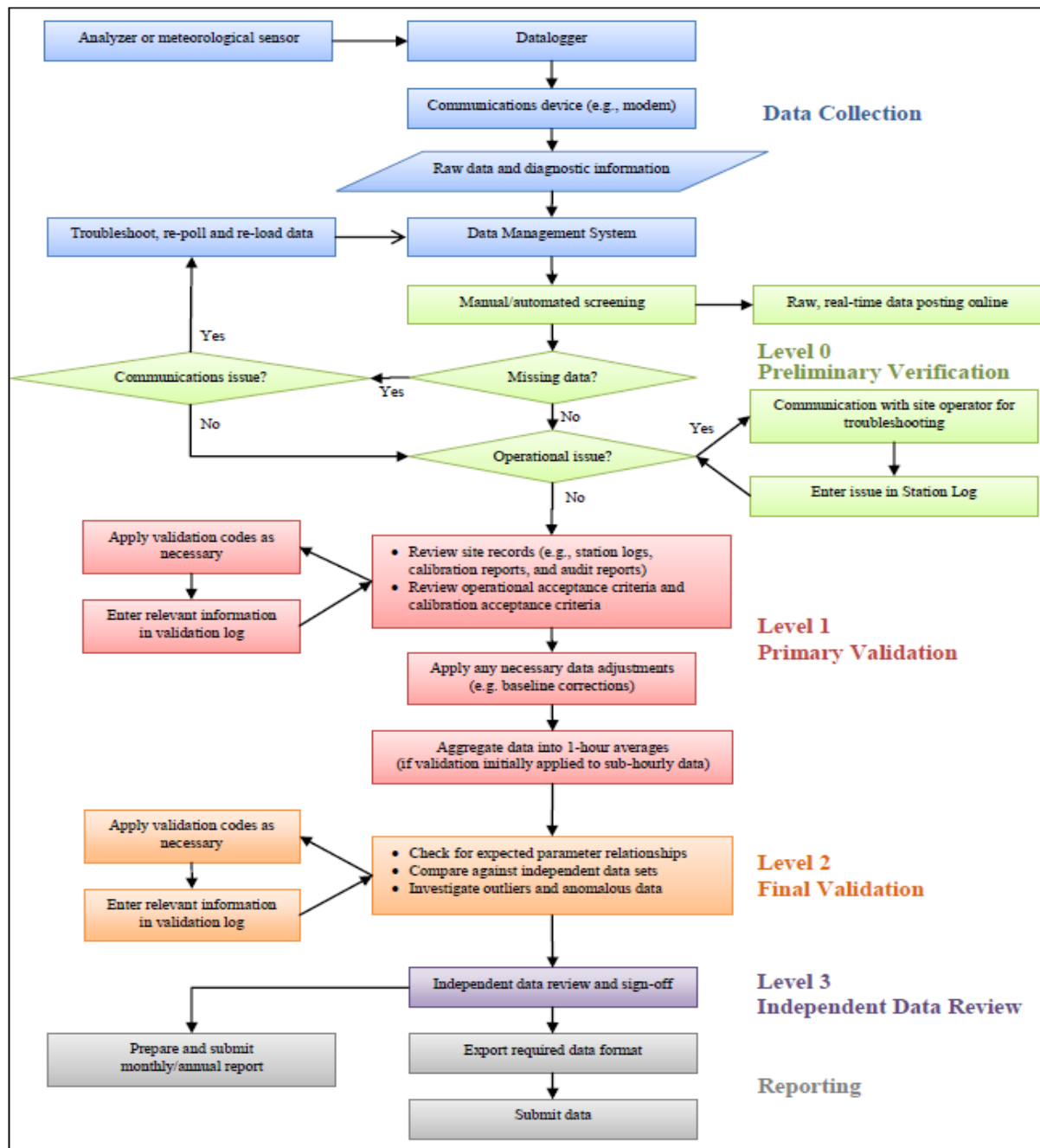
The purpose of Level 2 validation is to verify that there are no inconsistencies among related data, or among regional data measured at nearby sites.

Level 3 Independent Data Review

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

Post-Final Validation

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



Source: 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	S	1	5	0	0	0	1	1	1	0	0	0	5	0	24
2	0	1	1	0	0	0	0	3	6	6	3	1	1	S	0	0	0	0	0	0	0	0	0	0	0	0	6	1	24
3	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
4	0	0	0	0	0	0	0	0	0	0	0	0	S	1	1	1	0	0	0	0	0	0	0	0	0	1	0	24	
5	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
6	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	5	5	16	2	0	16	2	24
8	0	0	0	1	1	0	0	S	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	0	24
9	0	0	0	0	0	0	0	S	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	1	0	24
10	0	0	0	0	0	S	0	0	6	3	2	2	1	1	0	0	0	0	1	1	2	0	0	0	0	6	1	24	
11	0	0	0	0	S	0	1	1	2	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	2	0	24	
12	0	0	0	S	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
13	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	3	2	1	3	0	3	1	24	
14	2	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	24	
15	S	0	0	0	0	0	1	1	2	5	2	2	1	0	0	0	0	1	1	0	0	0	0	S	0	5	1	24	
16	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	1	0	0	0	0	0	0	S	0	0	3	0	24	
17	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	S	1	1	0	1	0	24
18	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	1	1	0	1	0	S	0	1	1	0	2	0	24	
19	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	1	0	0	1	0	24	
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2	S	0	0	0	2	0	0	3	0	24	
21	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
22	0	0	0	0	0	0	0	0	0	1	1	2	1	0	0	0	S	0	0	0	0	0	0	0	0	0	2	0	24
23	0	0	0	0	0	0	0	0	1	1	1	0	1	3	3	S	4	5	7	4	7	1	0	0	0	7	2	24	
24	0	0	2	0	0	0	0	0	0	1	1	2	1	0	S	0	0	0	1	0	5	1	1	3	0	5	1	24	
25	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	
26	0	0	0	0	1	0	1	1	0	0	0	0	S	0	0	0	0	1	2	1	1	0	0	0	0	2	0	24	
27	0	1	1	0	1	0	1	2	3	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	24	
28	0	0	1	2	1	0	0	3	0	S	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3	0	24
29	0	0	0	0	0	0	0	0	0	S	0	0	1	0	1	1	1	1	0	0	1	2	8	6	0	8	1	24	
30	2	0	0	0	0	0	2	2	S	3	0	0	0	1	0	0	0	2	2	3	1	0	0	0	0	3	1	24	
31	0	0	0	0	0	0	0	S	3	1	1	1	1	1	1	2	5	0	0	0	1	2	0	0	0	5	1	24	
HOURLY MAX	2	1	2	2	1	0	2	3	6	6	3	2	1	3	3	2	5	5	7	8	7	5	16	6	0	5	1	24	
HOURLY AVG	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	1	1	1	1	1	1	1	0	0	0	0	

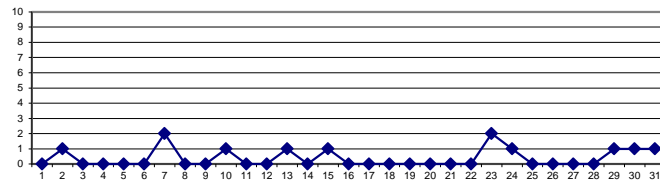
STATUS FLAG CODES

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

OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT:	1-HR	172	ppb	24-HR	48	ppb
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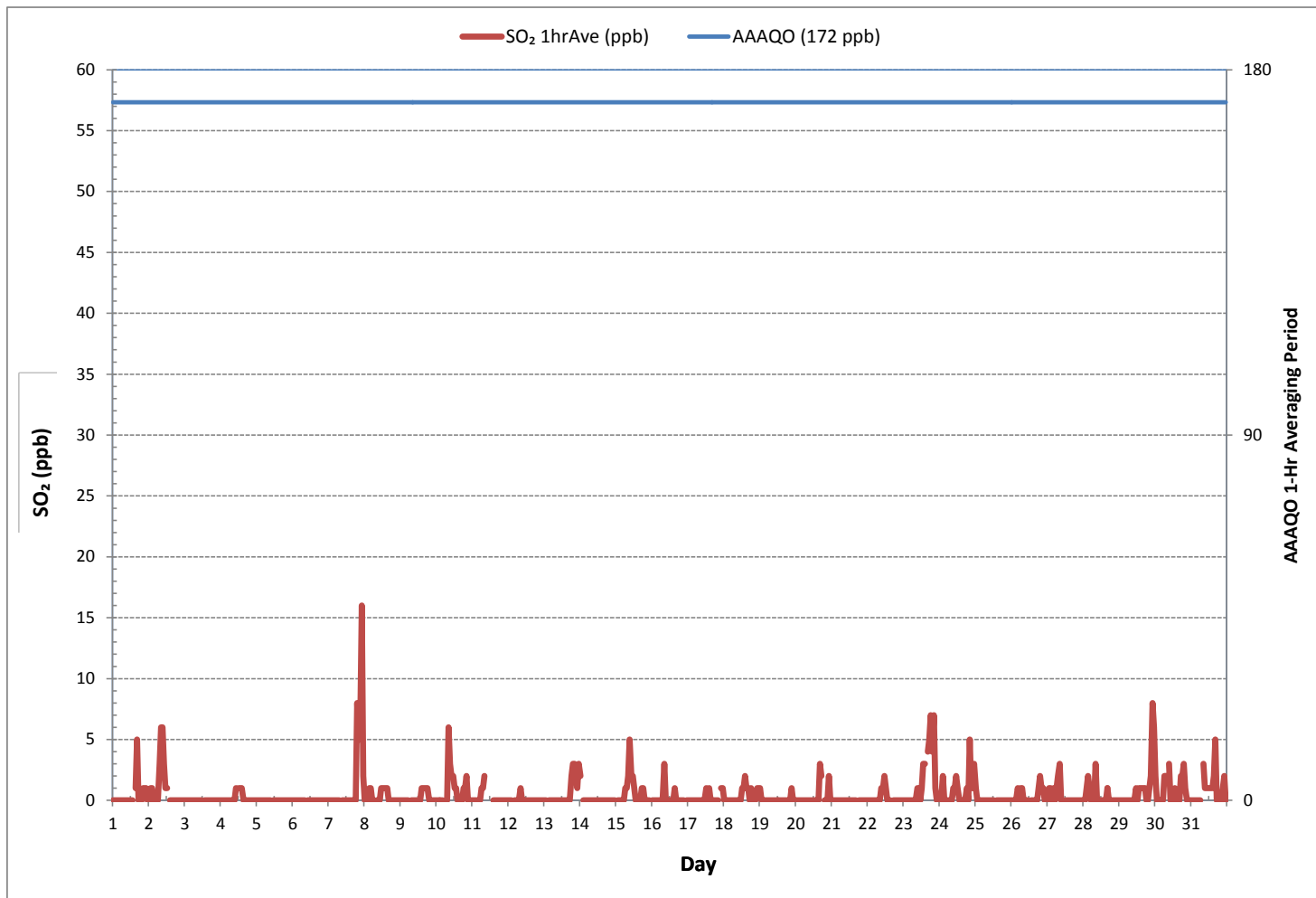
24 HR AVERAGES August 2017



MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0
NUMBER OF 24-HR EXCEEDANCES:	0
NUMBER OF NON-ZERO READINGS:	156
MINIMUM 1-HR AVERAGE:	0 ppb @ HOUR ON DAY 1
MAXIMUM 1-HR AVERAGE:	16 ppb @ HOUR 22 ON DAY 7
MAXIMUM 24-HR AVERAGE:	2 ppb ON DAY 7
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	5 hrs
OPERATIONAL TIME:	744 hrs
AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	1
MONTHLY AVERAGE:	0 ppb

SULPHUR DIOXIDE Hourly Averages (SO₂ ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Maskwa Continuous Monitoring Station - August 2017

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	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	4	4	3	4	4	4	4	4	3	4	3	6	4	S	11	19	4	4	8	8	7	7	5	3	19	6	24	
2	5	5	5	4	4	3	4	10	12	14	11	8	6	S	5	4	4	4	4	4	4	4	4	4	3	14	6	24	
3	4	4	4	4	4	4	4	6	6	5	6	5	S	5	5	5	5	5	5	5	5	5	P	5	4	6	5	23	
4	5	5	5	5	5	5	5	5	5	5	7	S	8	8	9	5	5	5	5	5	5	5	5	5	5	9	6	24	
5	5	5	5	5	4	5	5	5	5	5	S	5	5	5	4	4	4	P	5	5	5	5	5	5	4	5	5	23	
6	5	5	5	5	5	5	5	5	5	S	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	24
7	5	5	5	5	5	5	5	5	S	4	5	5	5	5	5	5	5	5	5	29	21	16	30	17	4	30	9	24	
8	5	5	6	7	8	5	5	S	5	5	7	7	8	10	7	P	5	5	5	5	5	5	5	5	5	10	6	23	
9	5	5	5	5	5	5	S	5	6	5	5	5	5	5	5	5	6	6	5	5	5	5	5	5	5	6	5	24	
10	5	5	5	5	5	S	5	5	20	11	10	7	6	6	6	5	6	6	6	8	9	5	6	5	5	20	7	24	
11	5	5	5	5	S	5	5	5	5	C	C	C	C	C	2	2	2	2	2	2	2	2	2	2	2	5	3	24	
12	2	2	2	S	2	2	2	2	3	5	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	5	2	24
13	3	3	S	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	7	7	7	7	4	11	3	11	4	24	
14	6	S	3	3	3	3	3	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	6	3	24	
15	S	3	3	3	3	3	3	5	9	11	7	8	4	4	3	3	3	4	4	3	4	3	3	S	3	11	4	24	
16	3	3	3	3	3	3	3	3	9	4	3	3	3	3	3	4	3	3	3	3	3	3	S	3	3	9	3	24	
17	3	3	3	3	3	3	3	3	3	4	5	3	3	8	3	12	3	3	3	3	3	S	4	4	3	12	4	24	
18	3	3	3	3	3	3	3	3	3	4	4	4	4	4	6	6	4	4	5	4	S	5	10	7	3	10	4	24	
19	6	4	3	3	3	3	3	3	3	4	3	3	4	3	3	3	3	3	3	S	5	5	4	3	3	6	3	24	
20	3	3	3	3	3	4	4	3	3	3	3	3	3	3	3	4	12	13	S	3	3	7	9	3	3	13	4	24	
21	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	S	3	3	3	3	3	3	3	3	24	
22	3	3	3	3	3	3	3	3	3	6	5	5	4	4	3	4	S	3	4	3	3	3	3	3	3	6	3	24	
23	3	3	3	3	3	3	3	4	4	6	6	4	6	10	9	S	9	11	13	9	14	8	4	3	3	14	6	24	
24	4	4	14	4	4	3	4	4	4	7	7	7	9	5	S	5	5	5	5	4	14	8	9	16	3	16	7	24	
25	8	5	4	4	4	4	4	4	5	4	4	4	4	S	3	4	3	4	5	4	3	3	3	4	3	8	4	24	
26	4	3	3	3	4	4	4	5	3	3	4	3	S	3	3	3	4	3	6	7	4	4	3	4	3	7	4	24	
27	4	5	5	4	5	4	5	10	10	4	3	S	3	3	3	3	3	3	3	4	4	4	3	3	3	10	4	24	
28	3	4	5	8	5	3	3	4	12	5	S	3	3	3	3	3	10	4	3	3	3	3	3	3	3	12	4	24	
29	3	3	3	3	3	3	3	3	3	S	3	5	5	5	5	5	6	6	4	4	6	12	15	16	3	16	5	24	
30	8	4	4	5	3	4	8	9	S	9	5	4	4	5	4	5	5	9	9	11	6	5	5	5	3	11	6	24	
31	5	4	4	5	4	4	5	S	14	6	5	8	5	8	14	16	16	4	7	6	4	10	11	6	4	16	7	24	
HOURLY MAX	8	5	14	8	8	5	8	10	20	14	11	8	9	10	14	16	19	13	13	29	21	16	30	17					
HOURLY AVG	4	4	4	4	4	4	4	5	6	5	5	5	5	5	5	5	6	5	5	6	6	5	6	6					

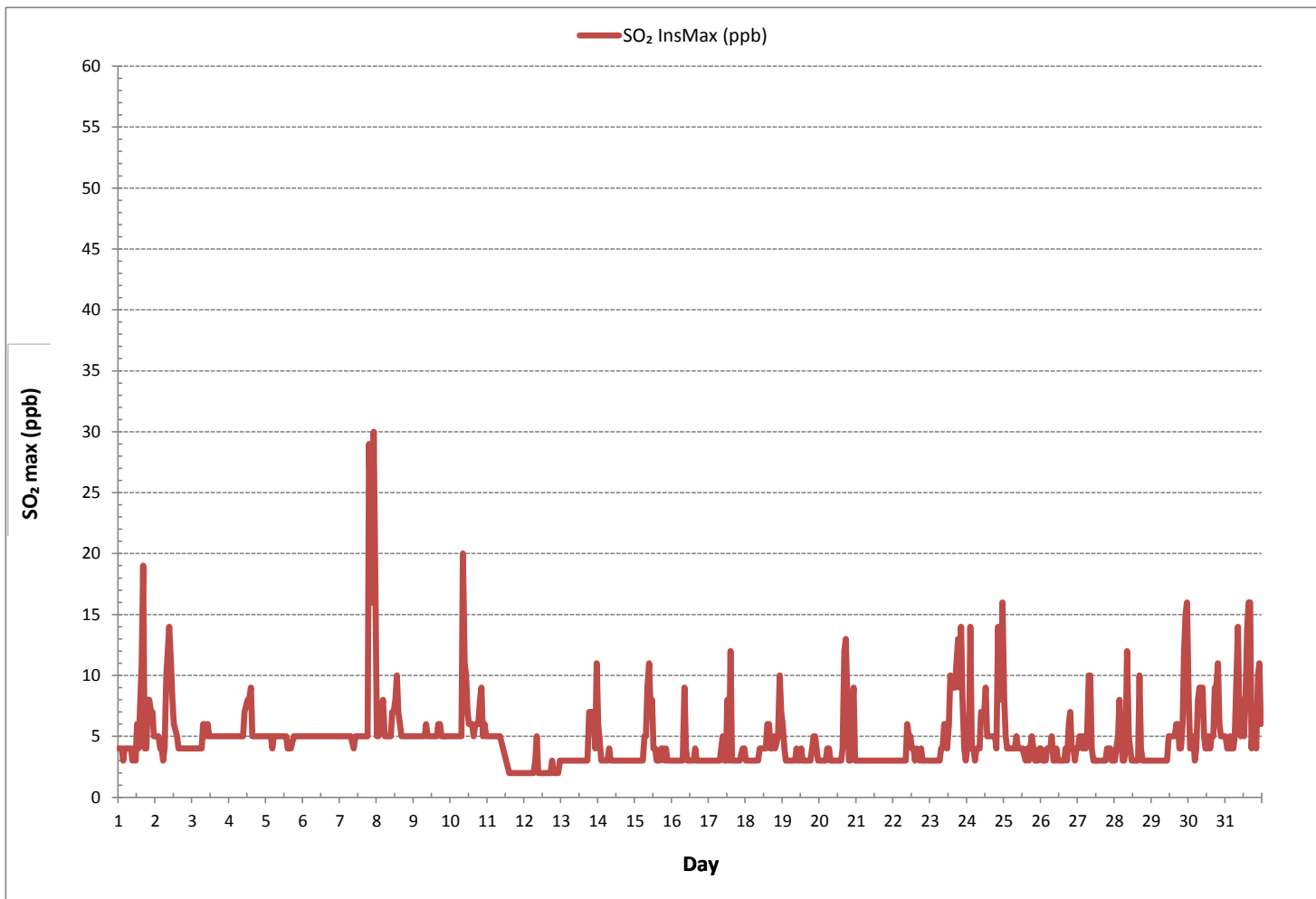
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	704
MAXIMUM INSTANTANEOUS VALUE:	30 ppb @ HOUR 22 ON DAY 7
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	5 hrs
STANDARD DEVIATION:	3
OPERATIONAL TIME:	741 hrs

SULPHUR DIOXIDE Instantaneous Maximum (SO₂ ppb)



Wind: LICA MASKWA
 Poll.: LICA MASKWA-SO2[ppb]
 Monthly: 17/08
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

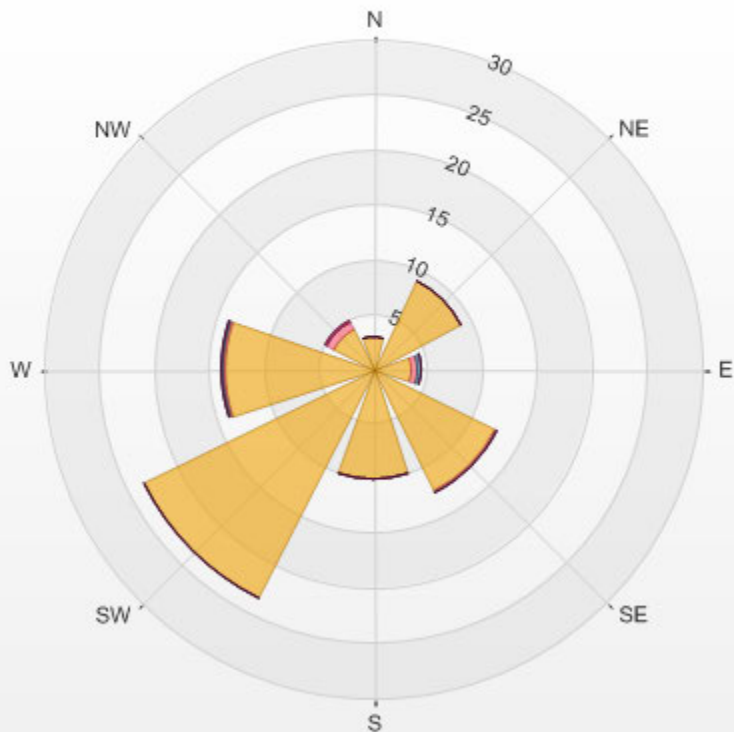
Calm: 18.72%

Calm Avg: 0.34 [ppb]

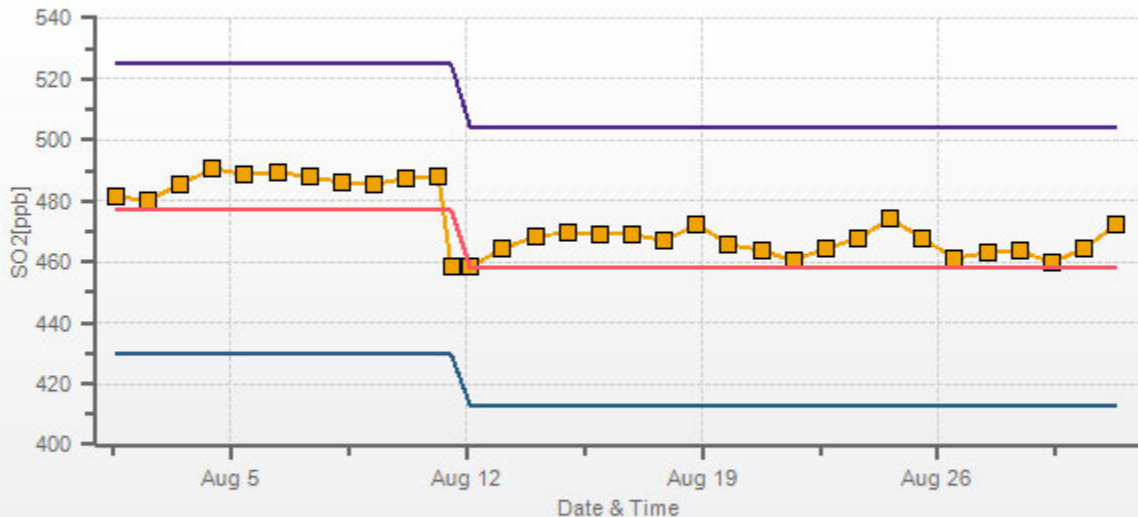
Direction	0.0-3.4	3.4-6.8	6.8-10.2	10.2-13.6	13.6-17.0	>17.0	Total
N	3.0	0.0	0.0	0.0	0.0	0.0	3.0
NE	8.9	0.0	0.0	0.0	0.0	0.0	8.9
E	3.4	0.6	0.4	0.0	0.0	0.0	4.4
SE	12.5	0.1	0.0	0.0	0.0	0.0	12.6
S	10.1	0.0	0.0	0.0	0.0	0.0	10.1
SW	23.4	0.0	0.0	0.0	0.0	0.0	23.4
W	13.6	0.1	0.1	0.0	0.0	0.0	13.9
NW	4.1	0.7	0.0	0.0	0.1	0.0	5.0
Summary	79.0	1.6	0.6	0.0	0.1	0.0	81.3

% Icon	Classes (ppb)	79	2	1	0	0	0
	0.0-3.4						
	3.4-6.8						
	6.8-10.2						
	10.2-13.6						
	13.6-17.0						
	>17.0						

LICA MASKWA Poll.: LICA MASKWA-SO2[ppb] 2017/08/01 00:00 - 2017/08/31 23:00 Calm: 18.72% Calm Poll Avg: 0.34[ppb]



SO2[ppb] Calibration: LICA MASKWA Monthly: 17/08 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	S	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	S	0	0	0	0	0	0	0	0	0	0	0	0	0	24
3	0	0	0	0	0	0	3	1	0	0	0	0	S	0	0	0	0	0	0	0	1	0	0	0	0	0	3	0	24
4	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
5	0	0	0	0	0	0	0	0	1	0	S	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	3	0	24
6	0	0	0	0	0	0	1	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
7	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
8	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
9	1	1	1	2	2	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	24
10	0	0	0	0	0	S	1	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	24
11	0	0	0	0	S	0	0	0	0	C	C	C	C	C	0	0	0	0	0	0	0	1	0	0	0	0	1	0	24
12	1	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	1	0	24
13	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3	4	3	S	2	0	5	1	24
14	3	S	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	24
15	S	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1	1	0	0	0	0	0	S	0	0	2	0	24
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	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	S	0	0	0	0	0	0	24
18	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	1	0	24
19	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
20	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
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	24
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	1	0	0	1	0	24
23	5	4	1	0	0	0	0	0	2	1	0	0	0	0	S	0	0	0	0	0	0	2	1	0	0	0	5	1	24
24	0	1	1	0	0	0	0	0	0	0	0	0	1	1	S	0	0	0	1	2	1	1	0	0	0	0	2	0	24
25	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
26	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
27	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
28	2	1	0	1	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	24
29	0	1	0	1	1	1	0	0	0	S	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	1	0	24
30	4	2	2	3	0	1	4	3	S	2	1	1	1	1	1	0	0	2	3	1	0	0	0	0	0	0	4	1	24
31	0	0	0	0	0	0	1	S	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
HOURLY MAX	5	4	2	3	2	1	4	3	3	2	1	1	3	1	1	2	1	2	3	3	4	3	5	2					
HOURLY AVG	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

STATUS FLAG CODES

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

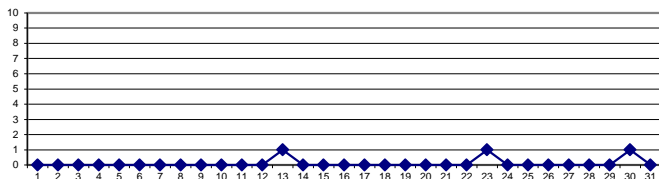
OBJECTIVE LIMIT:

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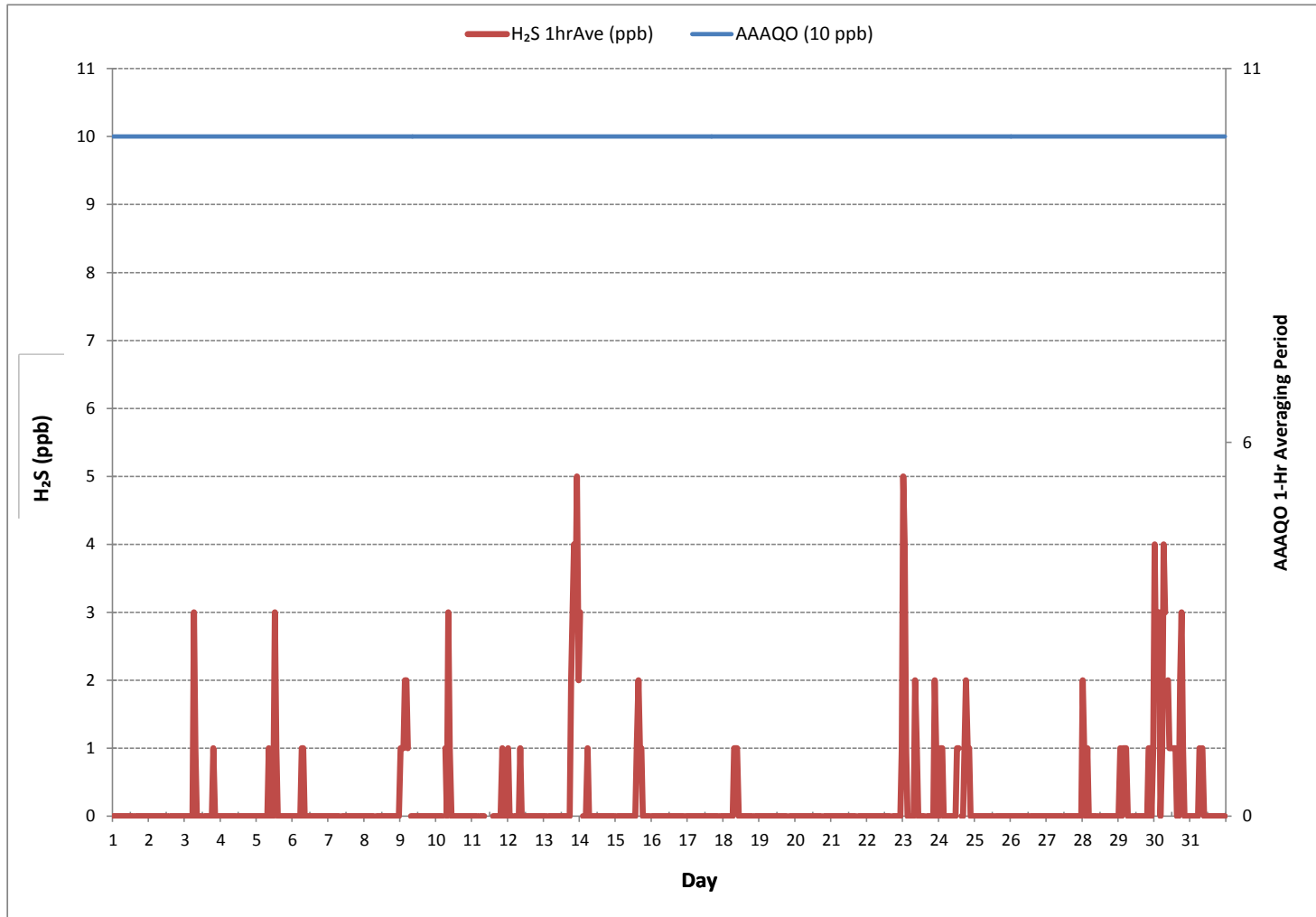
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0				
NUMBER OF 24-HR EXCEEDANCES:	0				
NUMBER OF NON-ZERO READINGS:	79				
MINIMUM 1-HR AVERAGE:	0 ppb @ HOUR	0	ON DAY	1	
MAXIMUM 1-HR AVERAGE:	5 ppb @ HOUR	22	ON DAY	13	
MAXIMUM 24-HR AVERAGE:	1 ppb		ON DAY	13	
IZS CALIBRATION TIME:	32	hrs	OPERATIONAL TIME:	744	hrs
MONTHLY CALIBRATION TIME:	5	hrs	AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	1		MONTHLY AVERAGE:	0	ppb

24 HR AVERAGES August 2017



HYDROGEN SULPHIDE Hourly Averages (H₂S ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Maskwa Continuous Monitoring Station - August 2017

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	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	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	2	1	1	1	1	1	1	1	2	1	24
2	1	1	1	1	1	1	1	1	1	1	1	1	1	S	2	1	1	1	1	1	1	1	1	1	1	1	2	1	24
3	1	1	2	1	1	1	7	3	2	1	1	1	S	1	1	1	1	1	2	3	2	1	P	2	1	7	2	23	
4	3	2	2	2	2	2	2	2	2	2	2	S	2	3	2	2	2	1	2	2	2	2	2	2	2	1	3	2	24
5	2	2	2	2	1	2	2	2	2	2	S	1	25	11	1	1	1	P	2	2	2	2	2	1	2	25	3	23	
6	2	2	2	2	2	2	2	2	2	S	2	2	2	2	1	2	2	2	1	2	2	1	2	2	1	2	2	2	24
7	2	1	2	2	2	1	1	1	S	1	1	2	2	2	1	1	2	2	2	2	2	1	1	1	2	1	2	2	24
8	2	1	1	1	2	1	1	S	1	1	1	1	1	2	1	P	2	2	2	1	2	2	1	1	1	2	1	23	
9	4	4	4	4	4	2	S	2	2	2	2	1	2	1	1	1	2	2	1	2	2	2	2	2	2	1	4	2	24
10	2	2	2	2	2	S	3	2	14	8	2	2	2	2	2	2	2	2	2	2	2	2	3	3	2	2	14	3	24
11	2	2	2	2	S	2	2	2	2	C	C	C	C	C	1	1	1	1	1	1	2	3	1	1	1	1	3	2	24
12	2	1	1	S	1	1	1	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1	24
13	1	1	S	1	1	1	2	2	2	2	1	1	1	1	1	1	1	2	5	6	6	6	6	7	6	1	7	3	24
14	7	S	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	2	3	1	7	2	24	
15	S	2	2	2	2	2	2	2	2	2	2	2	2	2	6	7	2	2	2	2	2	2	2	1	S	1	7	2	24
16	2	1	1	1	1	1	1	1	2	1	1	2	1	1	1	1	1	2	1	1	1	1	S	1	1	2	1	24	
17	1	1	1	1	2	1	1	1	1	1	1	1	2	1	1	1	2	1	1	1	1	1	S	1	1	1	2	1	24
18	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	S	2	6	3	1	6	2	24
19	3	2	1	2	1	1	2	2	2	2	1	1	2	1	2	1	1	1	S	1	1	1	1	1	1	1	3	1	24
20	1	1	1	1	1	1	1	1	1	2	1	1	1	2	1	1	3	2	S	1	1	1	2	2	1	1	3	1	24
21	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
22	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	2	2	1	6	1	6	1	24
23	8	8	3	2	1	2	2	2	4	4	2	2	1	2	S	2	1	1	2	3	5	5	2	1	8	3	24	24	
24	2	6	6	2	1	2	2	2	2	2	3	3	S	2	2	4	4	2	6	2	3	3	1	6	3	1	6	3	24
25	2	2	2	2	2	2	2	2	2	2	2	2	2	S	2	2	1	2	1	2	1	2	3	1	1	3	2	24	
26	1	1	1	1	2	2	2	2	1	1	1	S	1	1	1	1	3	1	1	1	1	1	1	1	1	1	3	1	24
27	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	1	24
28	4	4	2	3	1	1	1	1	2	1	S	1	1	1	1	1	2	1	1	1	1	2	1	1	1	1	4	2	24
29	1	2	1	5	3	2	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	3	3	1	3	1	5	2	24
30	6	5	6	7	1	3	7	5	S	4	3	3	2	2	3	2	2	7	7	2	2	2	2	2	1	7	4	24	
31	2	2	2	2	2	3	4	S	4	2	2	2	2	2	3	2	3	2	2	2	2	2	2	2	2	2	4	2	24
HOURLY MAX	8	8	6	7	4	3	7	5	14	8	3	3	25	11	6	7	3	7	7	6	6	6	7	6					
HOURLY AVG	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2				

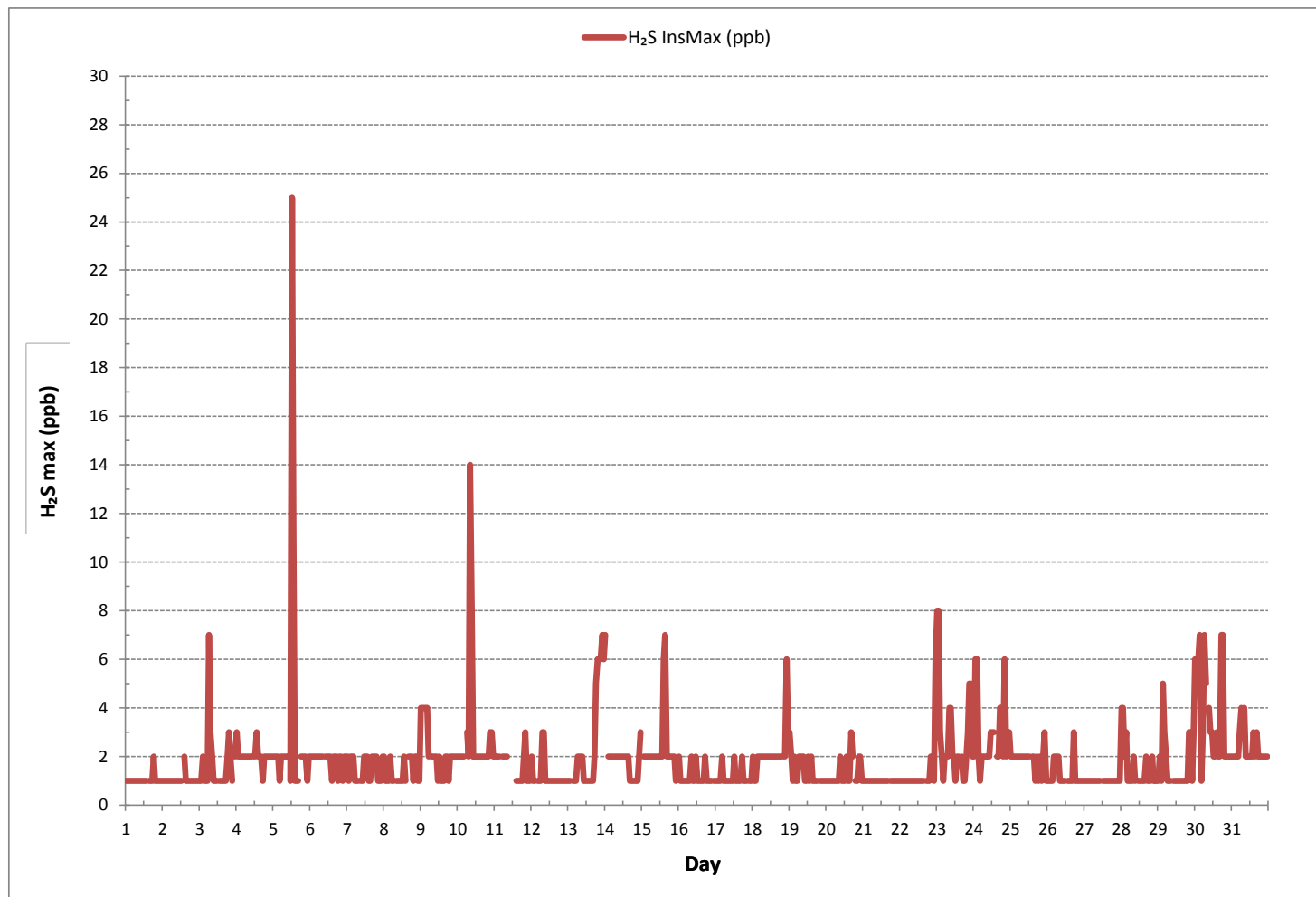
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	704
MAXIMUM INSTANTANEOUS VALUE:	25 ppb @ HOUR 12 ON DAY 5
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	5 hrs
OPERATIONAL TIME:	741 hrs
STANDARD DEVIATION:	2

HYDROGEN SULPHIDE Instantaneous Maximum (H₂S ppb)



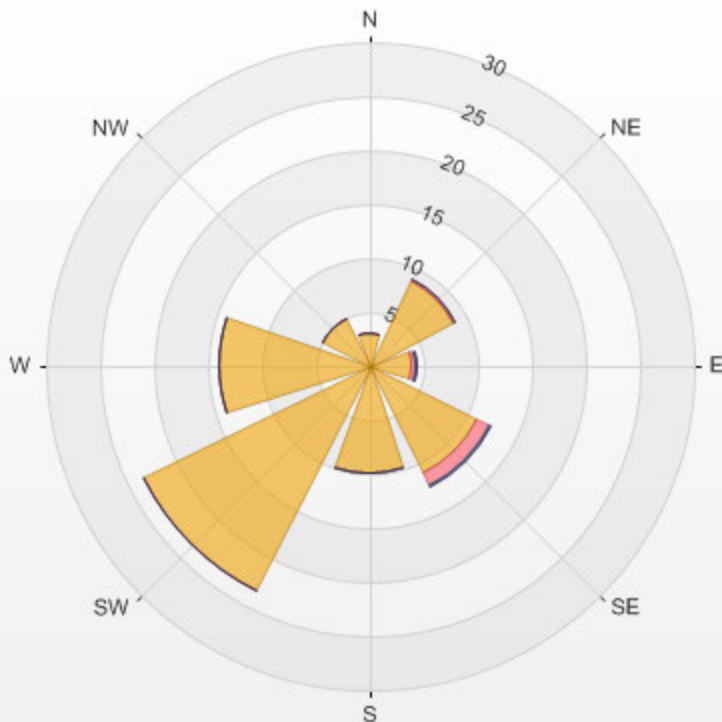
Wind: LICA MASKWA
 Poll.: LICA MASKWA-H2S[ppb]
 Monthly: 17/08
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 18.72% Calm Avg: 0.30 [ppb]

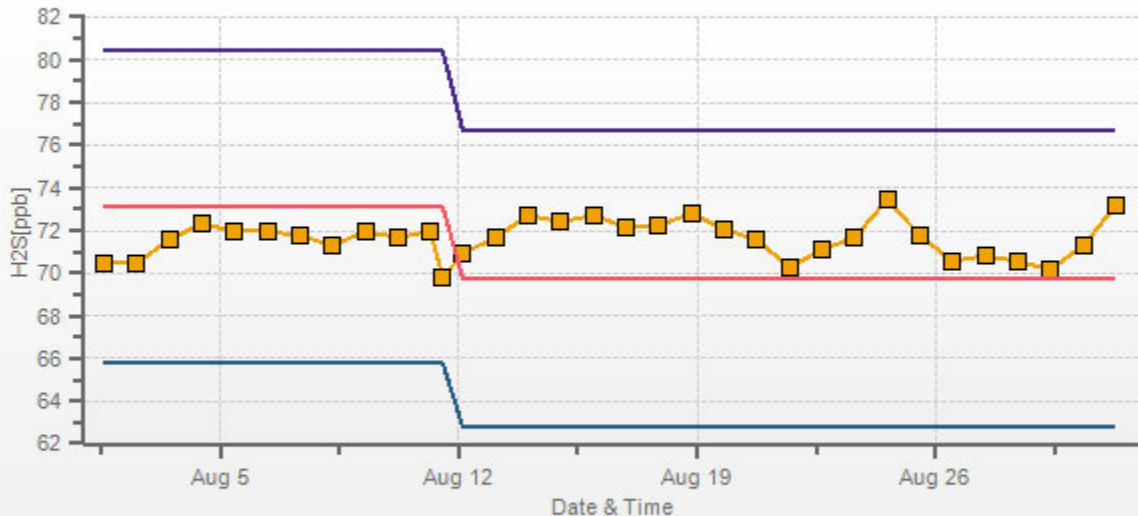
Direction	0.0-2.0	2.0-4.0	4.0-6.0	>6.0	Total
N	3.0	0.0	0.0	0.0	3.0
NE	8.8	0.1	0.0	0.0	8.9
E	4.0	0.3	0.1	0.0	4.4
SE	11.1	1.4	0.1	0.0	12.6
S	10.1	0.0	0.0	0.0	10.1
SW	23.4	0.0	0.0	0.0	23.4
W	13.9	0.0	0.0	0.0	13.9
NW	5.0	0.0	0.0	0.0	5.0
Summary	79.1	1.8	0.3	0.0	81.3

% Icon Classes (ppb) 79 0.0-2.0 2 2.0-4.0 0 4.0-6.0 0 >6.0

LICA MASKWA Poll.: LICA MASKWA-H2S[ppb] 2017/08/01 00:00 - 2017/08/31 23:00 Calm: 18.72% Calm Poll Avg: 0.30[ppb]



H2S[ppb] Calibration: LICA MASKWA Monthly: 17/08 Type: Span



Span Meas Span Ref Span Low Span High

TOTAL HYDROCARBON

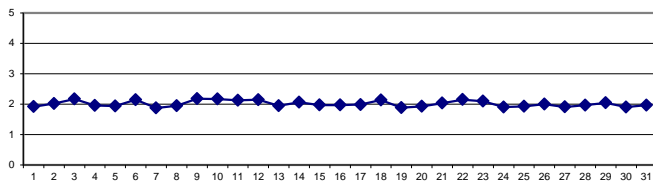
TOTAL HYDROCARBONS Hourly Averages (THC ppm)

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	2.01	2.07	2.05	2.10	2.14	2.15	2.04	1.82	1.79	1.81	1.83	1.84	1.85	1.83	S	1.81	1.82	1.80	1.82	1.85	1.86	1.91	1.97	1.99	1.79	2.15	1.92	24	
2	2.04	2.11	2.20	2.22	2.21	2.26	2.24	2.18	2.03	1.95	1.90	1.87	1.86	S	1.82	1.82	1.83	1.85	1.87	1.90	1.96	2.05	2.09	2.15	1.82	2.26	2.02	24	
3	2.27	2.48	2.48	2.68	2.66	2.71	2.76	2.63	1.89	1.98	2.04	1.95	S	1.89	1.92	1.91	1.89	1.90	1.92	1.90	1.92	1.97	2.01	2.08	1.89	2.76	2.17	24	
4	2.11	2.23	2.25	2.17	2.08	2.02	2.00	2.02	1.94	1.89	1.89	S	1.82	1.84	1.93	1.96	1.87	1.78	1.81	1.83	1.84	1.87	1.90	1.92	1.78	2.25	1.96	24	
5	1.95	1.98	1.99	1.88	1.86	1.88	1.92	1.89	1.84	1.77	S	1.78	1.95	1.88	1.81	1.82	1.85	1.89	1.88	1.93	2.04	2.18	2.38	2.33	1.77	2.38	1.94	24	
6	2.46	2.52	2.49	2.54	2.66	2.83	2.53	2.39	2.17	S	2.01	2.00	1.94	1.89	1.86	1.86	1.85	1.86	1.88	1.83	1.87	1.94	1.95	2.02	1.83	2.83	2.15	24	
7	1.98	1.95	1.97	1.95	1.90	1.79	1.78	1.81	S	1.81	1.82	1.82	1.82	1.85	1.87	1.86	1.86	1.87	1.88	1.91	1.89	1.90	1.91	1.92	1.78	1.98	1.87	24	
8	1.97	1.97	2.00	2.08	2.10	2.10	2.13	S	1.92	1.88	1.82	1.86	1.86	1.85	1.85	1.84	1.82	1.83	1.82	1.83	1.88	1.98	2.22	2.24	1.82	2.24	1.95	24	
9	2.87	2.48	2.68	2.94	2.94	2.89	S	2.34	2.07	1.99	1.92	1.87	1.83	1.86	1.93	1.94	1.88	1.87	1.88	1.89	1.94	2.00	2.00	2.18	1.83	2.94	2.18	24	
10	2.45	2.69	2.60	2.55	2.42	S	3.28	2.94	2.67	2.26	1.94	1.88	1.88	1.87	1.85	1.82	1.77	1.74	1.77	1.80	1.86	1.83	2.00	2.12	1.74	3.28	2.17	24	
11	2.17	2.21	2.24	2.35	S	2.30	2.56	2.24	2.11	2.10	2.07	2.07	2.11	C	C	C	C	C	1.90	1.92	1.97	1.94	1.92	2.03	1.80	2.56	2.13	24	
12	2.48	2.44	2.41	S	2.54	2.64	2.63	2.53	2.03	2.03	2.08	2.06	1.95	1.94	1.97	2.02	1.95	1.95	1.95	1.94	1.94	1.95	1.97	1.98	1.94	2.64	2.15	24	
13	2.00	2.02	S	2.05	2.04	2.01	1.97	1.99	2.04	2.01	1.98	1.95	1.92	1.91	1.89	1.89	1.92	1.93	1.94	1.91	1.87	1.85	1.88	1.89	1.85	2.05	1.95	24	
14	1.91	S	1.86	1.88	1.92	2.02	2.09	2.10	2.30	2.34	2.32	2.18	2.10	2.08	2.06	1.98	1.96	1.95	1.92	1.90	1.99	2.11	2.14	2.25	1.86	2.34	2.06	24	
15	S	2.30	2.33	2.24	2.26	2.13	2.11	2.03	1.99	1.88	1.81	1.79	1.81	1.83	1.83	1.89	1.90	1.81	1.78	1.77	1.86	1.89	2.12	S	1.77	2.33	1.97	24	
16	2.18	1.98	1.98	2.02	2.05	2.16	2.11	2.09	2.02	1.91	1.95	1.98	1.92	1.90	1.91	1.90	1.88	1.85	1.85	1.89	1.98	2.02	S	1.86	1.85	2.18	1.97	24	
17	1.97	2.12	2.11	2.14	2.18	2.34	2.31	2.09	1.92	1.86	1.88	1.87	1.89	1.85	1.84	1.84	1.84	1.83	1.82	1.82	1.91	S	2.02	2.22	1.82	2.34	1.99	24	
18	2.31	2.37	2.40	2.51	2.35	2.29	2.28	2.24	2.20	2.29	2.25	2.14	2.00	1.97	1.97	1.96	1.99	1.99	2.00	1.97	S	1.95	1.91	1.84	1.84	2.51	2.14	24	
19	1.83	1.89	1.91	1.89	1.91	1.91	1.93	1.89	1.87	1.84	1.84	1.82	1.85	1.84	1.84	1.82	1.82	1.82	1.83	S	1.84	1.98	2.05	2.06	1.82	2.06	1.88	24	
20	2.06	1.98	1.95	1.95	1.97	2.02	2.03	2.00	1.97	1.91	1.86	1.86	1.86	1.88	1.88	1.87	1.86	S	1.84	1.94	1.98	1.91	1.97	1.84	2.06	1.93	24		
21	2.04	2.04	2.11	2.10	2.15	2.26	2.23	2.10	2.05	2.01	2.00	2.01	1.92	1.89	1.88	1.86	1.87	S	1.81	1.87	1.88	2.08	2.34	2.36	1.81	2.36	2.04	24	
22	2.37	2.14	2.10	2.12	2.10	2.57	2.66	2.95	2.44	2.20	2.08	1.97	1.92	1.97	2.05	1.97	S	1.79	1.87	1.85	1.91	2.04	2.16	2.20	1.79	2.95	2.15	24	
23	2.32	2.22	2.29	2.43	2.50	2.79	2.67	2.19	1.96	2.03	2.16	1.97	1.98	1.92	1.87	S	1.88	1.87	1.94	1.89	1.87	1.84	1.84	1.86	1.84	2.79	2.10	24	
24	1.87	1.86	1.97	1.98	1.87	1.93	1.89	1.88	1.85	1.86	1.88	1.88	1.86	1.88	S	1.84	1.86	1.89	2.00	2.07	2.06	1.92	1.85	1.78	1.78	2.07	1.90	24	
25	1.75	1.78	1.83	1.87	1.88	1.97	2.04	2.00	1.96	1.91	2.15	2.18	2.19	S	1.79	1.81	1.82	1.81	1.81	1.82	1.93	2.00	2.01	2.07	1.75	2.19	1.93	24	
26	2.09	2.16	2.24	2.20	2.36	2.49	2.38	2.19	1.94	1.92	1.85	1.79	S	1.81	1.81	1.81	1.82	1.83	1.80	1.82	1.85	1.90	1.93	1.94	1.79	2.49	2.00	24	
27	1.94	1.96	2.08	2.06	1.94	1.91	1.97	2.16	2.06	1.89	1.84	S	1.76	1.75	1.74	1.76	1.77	1.76	1.77	1.81	1.92	1.95	2.02	2.08	1.74	2.16	1.91	24	
28	2.31	2.31	2.24	2.12	2.03	2.00	2.08	1.91	1.86	1.85	S	1.80	1.82	1.79	1.80	1.79	1.80	1.80	1.78	1.81	1.90	1.95	2.23	2.26	1.78	2.31	1.97	24	
29	2.24	2.39	2.29	2.36	2.44	2.41	2.37	2.28	1.99	S	1.87	1.90	1.87	1.87	1.87	1.88	1.88	1.87	1.84	1.87	1.88	1.86	1.95	1.92	1.84	2.44	2.05	24	
30	1.91	1.90	1.90	1.89	1.90	1.90	1.93	1.93	S	1.88	1.90	1.94	1.92	1.87	1.87	1.87	1.87	1.87	1.89	1.87	1.86	1.93	1.94	2.02	1.91	1.86	2.02	1.90	24
31	2.04	2.06	2.15	2.20	2.23	2.40	2.49	S	2.04	1.97	1.94	1.88	1.82	1.82	1.79	1.81	1.87	1.82	1.79	1.79	1.82	1.84	1.82	1.81	1.79	2.49	1.97	24	
HOURLY MAX	2.87	2.69	2.68	2.94	2.94	2.89	3.28	2.95	2.67	2.34	2.32	2.18	2.19	2.08	2.06	2.02	1.99	1.99	2.00	2.07	2.06	2.18	2.38	2.36					
HOURLY AVG	2.13	2.15	2.17	2.18	2.19	2.24	2.25	2.17	2.03	1.97	1.96	1.93	1.91	1.88	1.88	1.87	1.86	1.85	1.86	1.87	1.91	1.95	2.02	2.05					

STATUS FLAG CODES

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

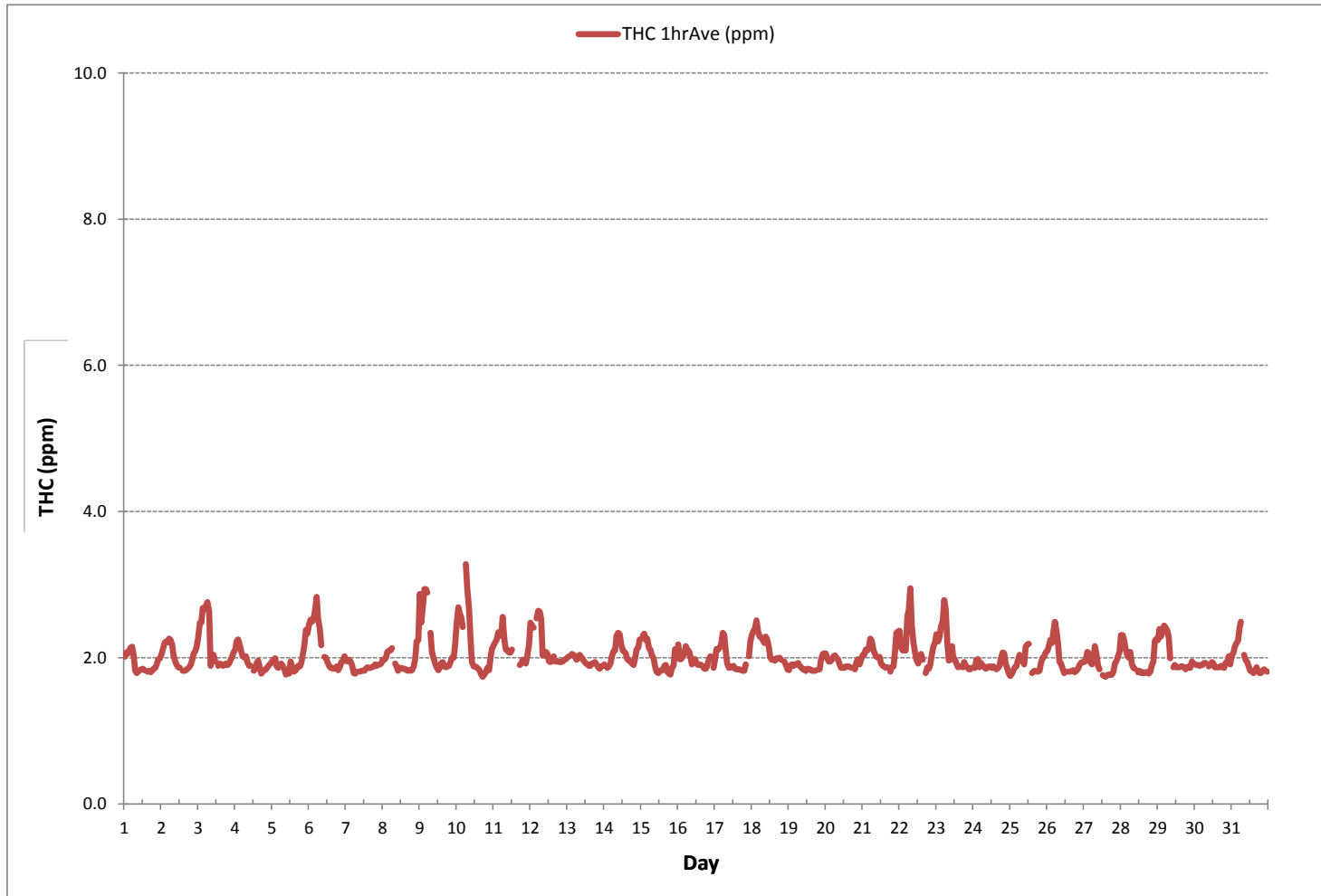
24 HR AVERAGES August 2017



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	708			
MINIMUM 1-HR AVERAGE:	1.74 ppm @ HOUR	17 ON DAY	10	
MAXIMUM 1-HR AVERAGE:	3.28 ppm @ HOUR	6 ON DAY	10	
MAXIMUM 24-HR AVERAGE:	2.18 ppm		9 ON DAY	
IZS CALIBRATION TIME:	32 hrs	OPERATIONAL TIME:	744 hrs	
MONTHLY CALIBRATION TIME:	4 hrs	AMD OPERATION UPTIME:	100.0 %	
STANDARD DEVIATION:	0.22	MONTHLY AVERAGE:	2.01 ppm	

TOTAL HYDROCARBONS Hourly Averages (THC ppm)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Maskwa Continuous Monitoring Station - August 2017

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 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	2.54	2.59	2.69	2.69	2.69	2.72	2.62	2.48	2.33	2.35	2.38	2.38	2.40	2.38	S	2.37	2.40	2.34	2.40	2.43	2.43	2.50	2.56	2.55	2.33	2.72	2.49	24	
2	2.60	2.71	2.87	2.89	2.80	2.86	2.83	2.90	2.62	2.57	2.48	2.44	2.47	S	2.37	2.38	2.37	2.40	2.41	2.44	2.51	2.59	2.63	2.71	2.37	2.90	2.60	24	
3	3.04	3.07	3.13	3.40	3.40	3.35	3.40	3.40	2.59	2.50	2.55	2.44	S	2.35	2.37	2.35	2.34	2.34	2.36	2.33	2.42	2.46	P	2.53	2.33	3.40	2.73	23	
4	2.56	2.84	2.74	2.62	2.56	2.45	2.40	2.47	2.45	2.30	2.30	S	2.23	2.27	2.38	2.38	2.37	2.19	2.23	2.25	2.29	2.31	2.34	2.35	2.19	2.84	2.40	24	
5	2.38	2.44	2.53	2.33	2.30	2.35	2.43	2.33	2.33	2.24	S	2.22	3.14	2.66	2.27	2.27	2.28	P	2.30	2.40	2.60	2.72	3.01	2.92	2.22	3.14	2.48	23	
6	3.11	2.99	2.95	2.99	3.63	3.66	3.32	2.84	2.63	S	2.44	2.43	2.35	2.30	2.25	2.25	2.25	2.27	2.28	2.24	2.35	2.36	2.48	2.50	2.24	3.66	2.65	24	
7	2.41	2.35	2.44	2.45	2.33	2.22	2.21	2.22	S	2.24	2.25	2.25	2.25	2.28	2.31	2.30	2.31	2.31	2.33	2.40	2.35	2.35	2.37	2.41	2.21	2.45	2.32	24	
8	2.43	2.44	2.50	2.63	2.60	2.58	2.63	S	2.41	2.37	2.33	2.40	2.37	2.33	2.33	P	2.30	2.33	2.33	2.34	2.40	2.59	2.86	2.84	2.30	2.86	2.47	23	
9	3.63	3.17	3.41	3.66	3.66	3.70	S	3.23	2.66	2.51	2.41	2.35	2.33	2.38	2.40	2.43	2.35	2.34	2.35	2.38	2.45	2.48	2.54	2.81	2.33	3.70	2.77	24	
10	3.19	3.44	3.23	3.20	3.05	S	5.14	3.78	3.63	3.23	2.47	2.34	2.33	2.33	2.30	2.31	2.21	2.21	2.24	2.27	2.38	2.41	2.48	2.63	2.21	5.14	2.82	24	
11	2.69	2.77	2.86	2.92	S	2.78	3.09	2.75	2.43	2.35	2.30	2.31	C	C	C	C	C	C	C	1.94	2.04	1.97	1.95	2.09	2.43	1.94	3.09	2.45	24
12	2.81	2.54	2.47	S	2.54	2.66	2.71	2.72	2.04	2.03	2.04	2.06	1.89	1.86	1.89	1.94	1.89	1.85	1.86	1.84	1.84	1.84	1.84	1.85	1.84	2.81	2.13	24	
13	1.86	1.89	S	1.89	1.89	1.86	1.81	1.84	1.86	1.86	1.81	1.78	1.75	1.72	1.72	1.75	1.72	1.75	1.72	1.75	1.72	1.66	1.64	1.66	1.67	1.64	1.89	1.78	24
14	1.69	S	1.67	1.69	1.81	1.92	1.95	2.00	2.27	2.27	2.30	2.19	2.06	2.06	2.07	2.00	1.98	2.00	1.98	2.00	2.10	2.34	2.33	2.48	1.67	2.48	2.05	24	
15	S	2.57	2.55	2.50	2.43	2.33	2.21	2.16	2.04	1.92	1.92	1.94	1.98	1.95	2.01	2.15	1.92	1.89	1.91	1.98	2.06	2.41	S	1.89	1.89	2.57	2.14	24	
16	2.45	2.15	2.12	2.15	2.20	2.30	2.24	2.24	2.23	2.06	2.02	2.09	2.03	2.00	2.00	2.00	2.00	1.95	1.95	2.00	2.10	2.15	S	1.97	1.95	2.45	2.11	24	
17	2.12	2.25	2.22	2.27	2.40	2.46	2.45	2.30	2.07	2.00	2.00	1.98	2.07	1.95	1.98	1.95	1.95	1.94	1.92	1.95	2.04	S	2.20	2.37	1.92	2.46	2.12	24	
18	2.45	2.53	2.60	2.68	2.77	2.37	2.35	2.33	2.33	2.35	2.35	2.22	2.12	2.03	2.03	2.03	2.03	2.15	X	2.00	S	2.09	2.20	2.01	2.00	2.77	2.27	23	
19	1.92	1.95	1.97	1.95	1.97	1.98	2.00	1.95	1.95	1.97	1.92	1.92	2.12	1.95	1.95	1.94	1.95	1.95	S	2.03	2.15	2.18	2.18	1.92	1.92	2.18	1.99	24	
20	2.21	2.15	2.07	2.07	2.09	2.17	2.18	2.12	2.10	2.03	2.00	2.33	2.00	2.13	2.09	2.00	2.03	2.03	S	2.00	2.12	2.30	2.09	2.15	2.00	2.33	2.11	24	
21	2.27	2.21	2.31	2.37	2.38	2.48	2.51	2.33	2.25	2.21	2.21	2.22	2.16	2.12	2.10	2.09	2.10	S	2.04	2.12	2.18	2.60	2.80	2.72	2.04	2.80	2.29	24	
22	2.72	2.46	2.43	2.40	2.34	3.13	3.33	3.25	3.04	2.47	2.33	2.29	2.15	2.27	2.28	2.24	S	2.07	2.12	2.09	2.19	2.48	2.45	2.47	2.07	3.33	2.48	24	
23	2.61	2.51	2.54	2.78	2.83	3.40	3.20	2.72	2.15	2.47	2.86	2.18	2.18	2.13	2.03	S	2.04	2.06	2.09	2.04	2.04	1.97	1.95	1.97	1.95	3.40	2.38	24	
24	1.97	1.97	2.18	2.10	1.98	2.18	1.95	1.94	1.91	1.92	1.94	1.92	1.89	1.89	S	1.85	1.86	1.92	2.15	2.16	2.25	1.95	1.94	1.88	1.85	2.25	1.99	24	
25	1.79	1.82	1.86	1.89	1.91	2.06	2.07	2.03	2.01	1.95	2.21	2.21	2.22	S	2.27	2.28	2.31	2.30	2.28	2.31	2.51	2.50	2.58	2.69	1.79	2.69	2.18	24	
26	2.63	2.73	2.86	2.80	3.05	3.16	3.02	2.98	2.58	2.55	2.53	2.41	S	2.43	2.43	2.43	2.43	2.44	2.43	2.45	2.48	2.51	2.54	2.56	2.41	3.16	2.63	24	
27	2.56	2.58	2.75	2.74	2.58	2.56	2.66	2.86	2.83	2.55	2.48	S	2.37	2.37	2.34	2.36	2.36	2.36	2.36	2.49	2.62	2.65	2.76	2.80	2.34	2.86	2.56	24	
28	2.92	2.95	2.94	2.82	2.68	2.69	2.74	2.55	2.47	2.41	S	2.36	2.39	2.36	2.40	2.38	2.43	2.39	2.40	2.43	2.53	2.65	2.98	3.07	2.36	3.07	2.61	24	
29	3.01	3.14	3.07	3.13	3.13	3.17	3.07	3.13	2.83	S	2.53	2.53	2.50	2.50	2.49	2.49	2.50	2.49	2.43	2.47	2.50	2.44	2.58	2.53	2.43	3.17	2.72	24	
30	2.49	2.46	2.46	2.44	2.44	2.44	2.47	2.46	S	2.40	2.43	2.46	2.44	2.37	2.36	2.34	2.34	2.36	2.33	2.38	2.48	2.63	2.66	2.41	2.33	2.66	2.44	24	
31	2.78	2.59	2.59	2.73	2.71	2.83	3.02	S	2.53	2.40	2.34	2.30	2.24	2.25	2.28	2.30	2.36	2.27	2.24	2.24	2.27	2.33	2.28	2.27	2.24	3.02	2.44	24	
HOURLY MAX	3.63	3.44	3.41	3.66	3.66	3.70	5.14	3.78	3.63	3.23	2.86	2.53	3.14	2.66	2.49	2.49	2.50	2.49	2.43	2.49	2.62	2.72	3.01	3.07					
HOURLY AVG	2.53	2.54	2.57	2.57	2.57	2.63	2.67	2.56	2.40	2.30	2.28	2.24	2.23	2.20	2.20	2.19	2.19	2.18	2.18	2.20	2.27	2.33	2.41	2.42					

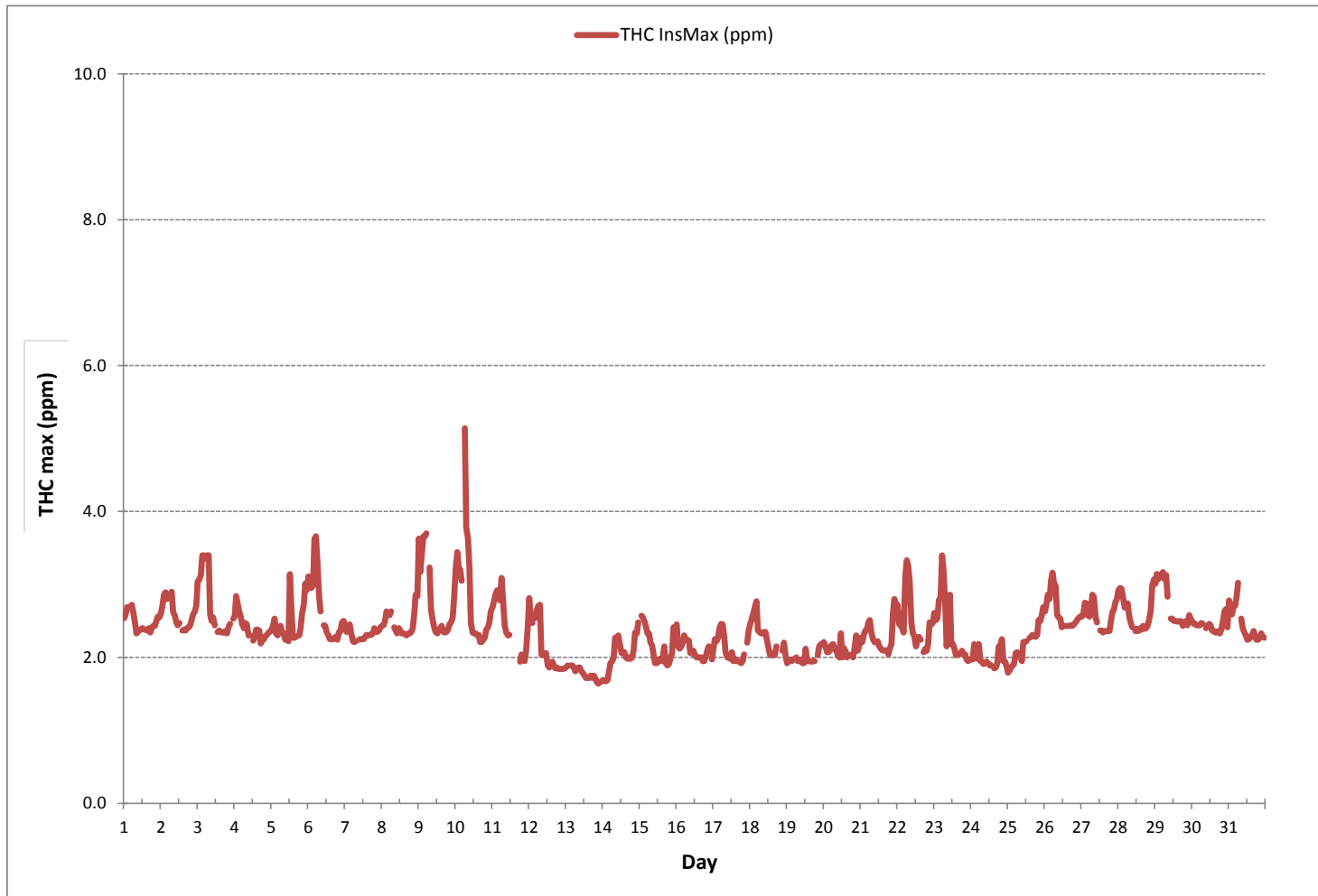
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	702
MAXIMUM INSTANTANEOUS VALUE:	5.14 ppm @ HOUR 6 ON DAY 10
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	6 hrs
STANDARD DEVIATION:	0.38
OPERATIONAL TIME:	740 hrs

TOTAL HYDROCARBONS Instantaneous Maximum (THC ppm)



Wind: LICA MASKWA
 Poll.: LICA MASKWA-THC[ppm]
 Monthly: 17/08
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 18.80% Calm Avg: 2.19 [ppm]

Direction	0.0-1.1	1.1-2.2	2.2-3.3	>3.3	Total
N	0.0	2.9	0.0	0.0	2.9
NE	0.0	7.6	1.4	0.0	9.0
E	0.0	4.3	0.3	0.0	4.6
SE	0.0	12.3	0.1	0.0	12.4
S	0.0	8.1	1.9	0.0	10.0
SW	0.0	19.0	4.6	0.0	23.5
W	0.0	13.4	0.6	0.0	14.0
NW	0.0	5.0	0.0	0.0	5.0
Summary	0.0	72.4	8.8	0.0	81.2

% Icon Classes (ppm)

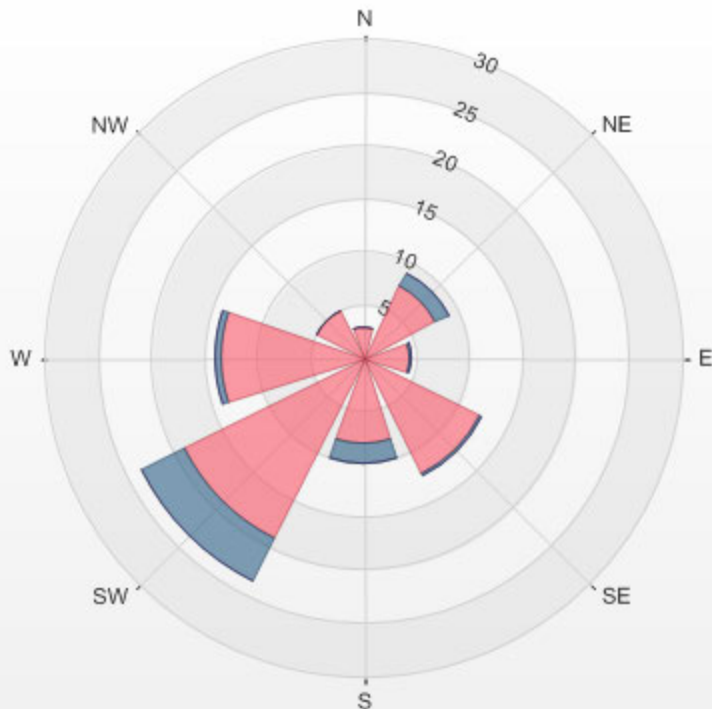
0 0.0-1.1

72 1.1-2.2

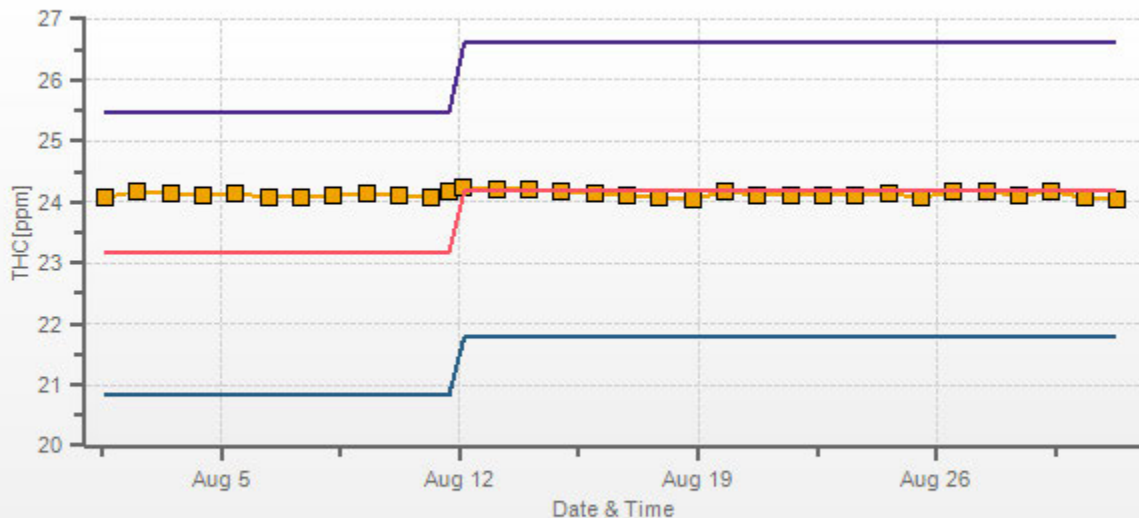
9 2.2-3.3

0 >3.3

LICA MASKWA Poll.: LICA MASKWA-THC[ppm] 2017/08/01 00:00 - 2017/08/31 23:00 Calm: 18.80% Calm Poll Avg: 2.19[ppm]



THC[ppm] Calibration: LICA MASKWA Monthly: 17/08 Type: Span



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

OXIDES OF NITROGEN



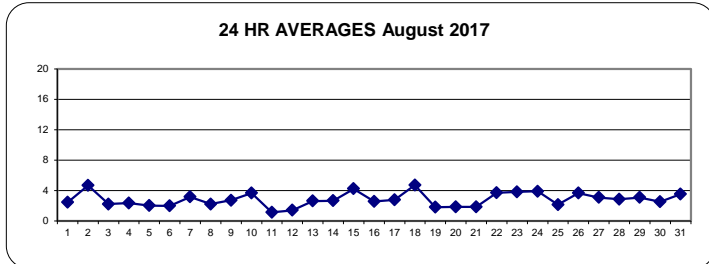
OXIDES OF NITROGEN Hourly Averages (NO_x ppb)

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	2	1	1	1	1	1	2	0	0	0	0	0	0	1	S	X	15	5	4	3	5	5	5	2	0	15	2	23				
2	2	6	5	2	2	3	9	11	13	9	4	2	1	S	X	7	5	4	4	3	3	3	3	2	1	13	5	23				
3	2	2	1	1	1	1	1	2	1	1	2	1	S	X	8	5	4	3	3	2	2	3	2	1	1	8	2	23				
4	1	1	1	1	1	1	1	1	1	1	1	2	S	X	10	7	5	4	3	3	2	2	1	1	1	10	2	23				
5	1	1	1	1	1	1	1	1	1	1	1	S	X	9	6	4	3	3	2	2	1	1	1	1	1	9	2	23				
6	1	0	0	0	0	1	3	3	2	S	X	9	6	4	3	2	2	2	1	1	1	1	1	1	0	9	2	23				
7	1	0	0	0	0	0	0	0	S	X	8	5	3	2	2	2	2	2	3	9	6	5	15	5	0	15	3	23				
8	1	0	0	3	2	1	1	S	X	8	5	4	3	4	3	3	2	1	1	1	1	1	2	2	0	8	2	23				
9	1	1	1	4	3	2	S	X	12	7	4	3	2	2	3	2	2	2	1	1	1	2	2	2	1	12	3	23				
10	1	1	1	1	1	S	X	9	14	16	4	3	3	2	1	1	2	3	4	5	5	2	1	1	1	16	4	23				
11	1	0	0	0	S	X	7	3	2	C	C	C	C	C	C	C	C	2	1	0	0	0	0	0	0	7	1	23				
12	0	0	0	S	X	4	3	3	5	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	5	1	23				
13	1	1	S	X	5	3	3	2	2	2	1	1	1	1	1	0	0	0	5	6	8	5	3	7	0	8	3	23				
14	6	S	X	5	4	4	5	6	5	4	4	3	2	2	3	1	1	2	1	1	0	0	0	0	0	6	3	23				
15	S	X	5	5	5	3	10	6	6	12	6	8	2	2	2	2	2	4	3	2	2	1	1	S	1	12	4	23				
16	X	5	3	5	2	2	5	4	12	2	2	2	1	1	1	2	1	1	1	1	1	0	S	X	0	12	3	22				
17	5	3	3	6	4	7	5	4	3	2	1	1	2	1	2	0	0	0	0	0	0	S	X	12	0	12	3	23				
18	9	7	6	7	4	4	4	4	4	5	4	4	3	2	2	2	2	2	2	2	S	X	16	9	2	16	5	23				
19	9	3	2	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	S	X	10	6	4	0	10	2	23				
20	4	2	1	0	0	2	2	1	0	0	0	0	0	0	0	0	7	5	S	X	4	4	7	2	0	7	2	23				
21	1	1	1	1	1	1	3	3	2	2	2	3	1	0	0	0	0	S	X	5	3	3	3	5	0	5	2	23				
22	5	3	4	4	3	2	3	4	7	6	7	5	3	3	2	S	X	6	4	3	2	2	1	1	1	7	4	23				
23	1	1	1	1	0	0	1	2	2	4	3	2	2	5	5	S	X	12	13	9	13	4	2	1	0	13	4	23				
24	1	1	11	2	1	1	1	1	1	3	3	3	3	2	S	X	6	4	4	3	15	6	6	8	1	15	4	23				
25	5	3	1	1	1	3	2	2	1	0	0	0	S	X	4	3	3	3	1	2	3	3	3	3	0	5	2	23				
26	3	3	2	3	7	9	9	7	2	2	1	0	S	X	4	2	2	2	3	6	3	4	4	3	0	9	4	23				
27	3	5	6	3	3	3	5	8	10	2	0	S	X	5	3	2	2	2	1	1	1	1	1	1	0	10	3	23				
28	1	1	4	10	3	2	4	2	10	3	S	X	5	3	2	2	2	4	1	1	1	1	1	1	1	10	3	23				
29	2	3	2	1	2	1	1	1	0	S	X	5	3	2	2	3	2	2	1	2	4	4	13	12	0	13	3	23				
30	6	1	0	1	0	0	6	5	S	X	5	4	3	2	2	2	2	4	4	5	1	1	1	1	0	6	3	23				
31	1	0	0	0	0	2	4	S	X	9	5	6	2	3	4	6	11	1	2	2	1	4	8	7	0	11	4	23				
HOURLY MAX	9	7	11	10	7	9	10	11	14	16	8	9	9	10	8	7	15	12	13	9	15	10	16	12								
HOURLY AVG	3	2	2	2	2	2	4	3	4	4	3	3	2	3	3	2	3	3	3	3	3	3	4	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

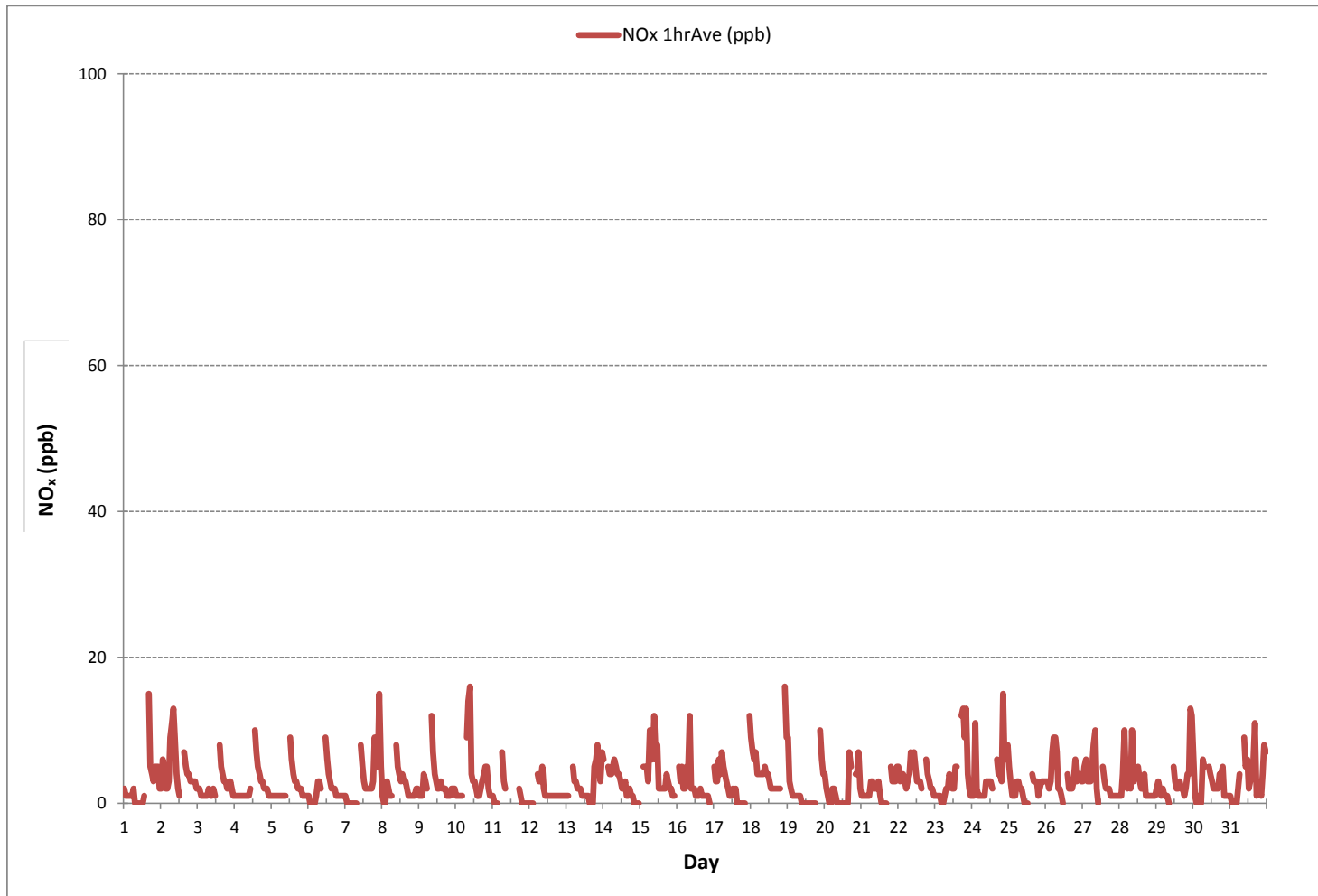
24 HR AVERAGES August 2017



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	589			
MINIMUM 1-HR AVERAGE:	0	ppb @ HOUR	7	ON DAY 1
MAXIMUM 1-HR AVERAGE:	16	ppb @ HOUR	9	ON DAY 10
MAXIMUM 24-HR AVERAGE:	5	ppb		ON DAY 18
IZS CALIBRATION TIME:	32	hrs	OPERATIONAL TIME:	712 hrs
MONTHLY CALIBRATION TIME:	8	hrs	AMD OPERATION UPTIME:	95.7 %
STANDARD DEVIATION:	3		MONTHLY AVERAGE:	3 ppb

OXIDES OF NITROGEN Hourly Averages (NO_x ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Maskwa Continuous Monitoring Station - August 2017

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	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	3	3	3	2	2	3	3	2	2	2	1	1	4	13	S	X	31	7	6	9	9	9	9	8	1	31	6	23	
2	6	10	10	4	4	7	50	16	16	13	8	4	3	S	X	11	7	6	5	4	4	4	4	4	3	50	9	23	
3	4	3	3	2	3	2	2	5	4	2	4	2	S	X	12	7	6	4	4	3	3	4	P	2	2	12	4	22	
4	2	2	2	2	2	2	1	1	3	2	5	S	X	16	14	6	6	3	3	3	2	2	2	2	1	16	4	23	
5	2	2	2	2	2	2	2	2	2	2	S	X	15	7	6	4	4	P	3	3	2	2	2	2	2	15	3	22	
6	2	2	2	2	2	3	4	5	3	S	X	12	8	6	4	4	3	3	3	3	3	2	2	2	2	12	4	23	
7	2	2	1	1	1	1	1	1	S	X	12	7	5	3	3	3	4	3	6	23	14	16	21	13	1	23	7	23	
8	2	2	4	7	7	2	3	S	X	12	7	7	7	9	6	P	3	2	3	2	2	2	3	3	2	12	5	22	
9	3	2	3	8	6	5	S	X	16	10	6	5	4	3	4	3	3	3	3	2	2	3	3	3	2	16	5	23	
10	3	2	2	2	2	S	X	12	26	26	8	6	5	5	3	3	3	6	8	7	10	3	2	2	2	26	7	23	
11	2	2	1	1	S	X	12	6	4	C	C	C	C	C	C	C	C	6	3	3	2	2	2	1	1	12	3	23	
12	1	1	1	S	X	5	3	6	8	2	3	2	1	1	1	2	1	2	2	1	1	1	1	1	1	8	2	23	
13	1	1	S	X	7	4	3	3	3	2	2	2	2	2	1	1	1	1	7	9	10	11	5	14	1	14	4	23	
14	7	S	X	6	4	6	6	10	6	5	4	4	4	3	5	2	3	4	3	2	1	1	1	1	1	10	4	23	
15	S	X	7	7	7	7	7	19	12	18	20	14	16	3	3	4	3	4	6	4	2	7	2	2	S	2	20	8	23
16	X	7	4	10	2	3	14	12	17	5	3	3	2	2	2	3	2	1	1	2	2	1	S	X	1	17	5	22	
17	7	4	3	7	7	8	7	6	7	7	2	1	9	2	30	2	1	2	0	1	2	S	X	13	0	30	6	23	
18	12	9	8	9	6	5	5	6	4	6	5	4	2	3	3	2	4	3	S	X	44	39	2	44	9	23	23		
19	21	6	3	2	2	2	2	3	3	2	1	1	4	0	0	0	0	0	S	X	14	9	6	0	21	4	23		
20	6	4	2	2	2	7	6	2	2	2	1	3	2	2	1	4	22	S	X	6	13	14	4	1	22	6	23		
21	2	2	2	2	2	3	6	5	3	4	3	4	3	1	10	13	1	S	X	6	4	4	4	7	1	13	4	23	
22	8	4	5	5	4	3	5	8	9	9	10	7	4	3	4	4	S	X	9	5	4	3	3	2	2	10	5	23	
23	2	2	1	1	1	1	1	5	5	7	7	4	6	9	9	S	X	15	17	11	17	12	3	2	1	17	6	23	
24	2	4	38	3	2	1	1	1	1	7	5	6	7	2	S	X	7	4	5	4	28	18	13	28	1	38	9	23	
25	18	7	2	2	2	4	6	3	4	10	1	1	3	S	X	6	4	4	4	2	3	4	4	4	1	18	4	23	
26	4	3	3	5	9	12	12	3	3	4	1	S	X	6	4	4	3	7	10	4	5	5	4	1	12	6	23		
27	4	7	7	6	6	5	8	16	17	4	2	S	X	6	4	4	3	2	2	2	2	2	2	2	2	17	5	23	
28	2	3	9	23	10	3	7	5	23	9	S	X	7	5	4	4	13	5	1	2	2	2	2	2	1	23	7	23	
29	3	4	4	3	3	3	2	2	0	S	X	8	4	5	4	5	5	4	2	6	8	12	20	19	0	20	6	23	
30	10	3	2	4	0	1	13	10	S	X	7	4	4	3	3	2	2	7	8	10	3	2	1	1	0	13	5	23	
31	1	1	1	1	1	7	8	S	X	12	7	12	3	9	21	31	30	2	13	13	1	16	23	19	1	31	11	23	
HOURLY MAX	21	10	38	23	10	12	50	16	26	26	14	16	15	16	30	31	31	22	17	23	28	18	44	39					
HOURLY AVG	5	4	5	5	4	4	7	6	8	7	5	5	5	5	6	5	6	5	5	5	5	5	6	7	7				

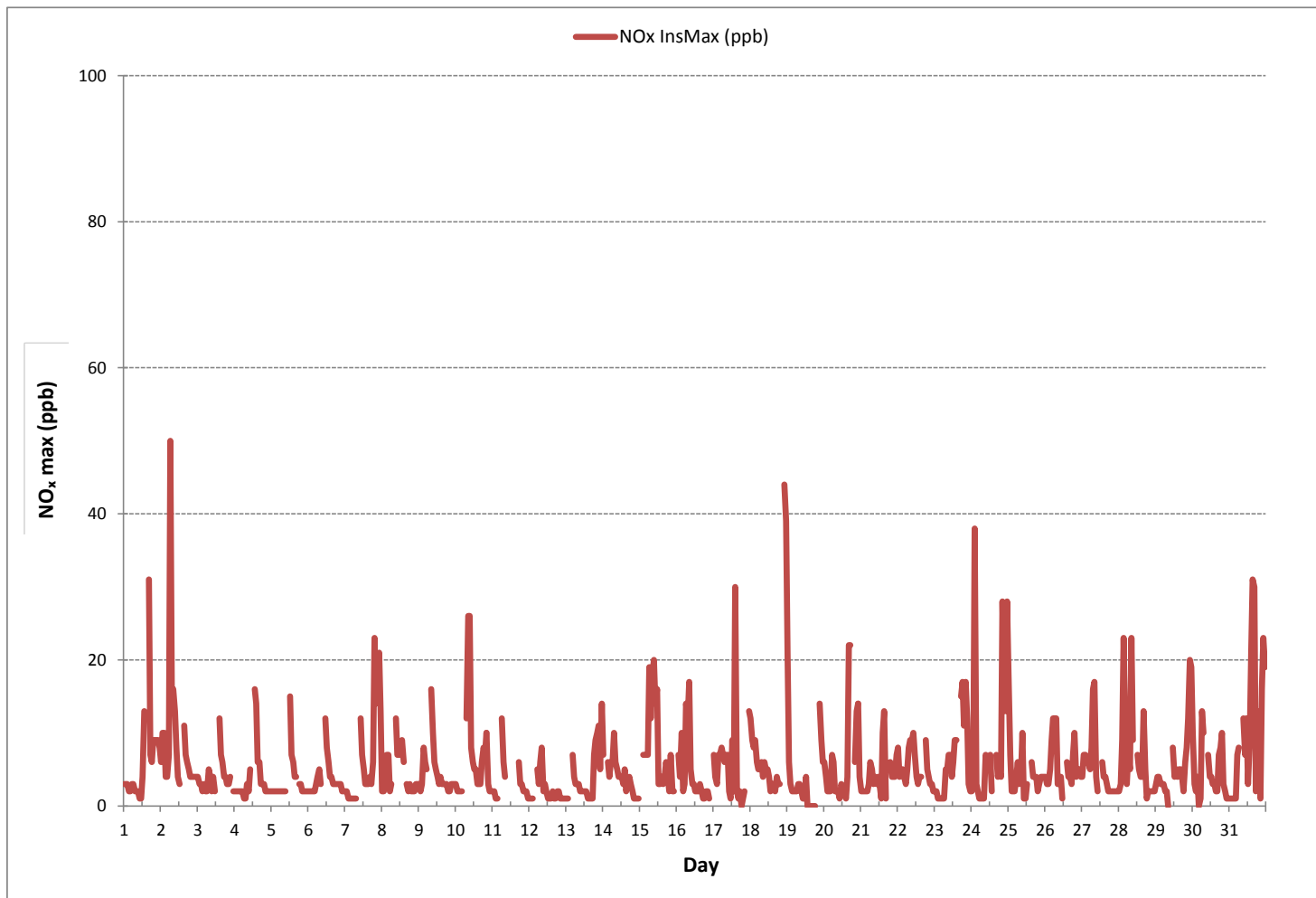
STATUS FLAG CODES

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:	660
MAXIMUM INSTANTANEOUS VALUE:	50 ppb @ HOUR 6 ON DAY 2
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	8 hrs
OPERATIONAL TIME:	709 hrs
STANDARD DEVIATION:	6

OXIDES OF NITROGEN Instantaneous Maximum (NO_x ppb)



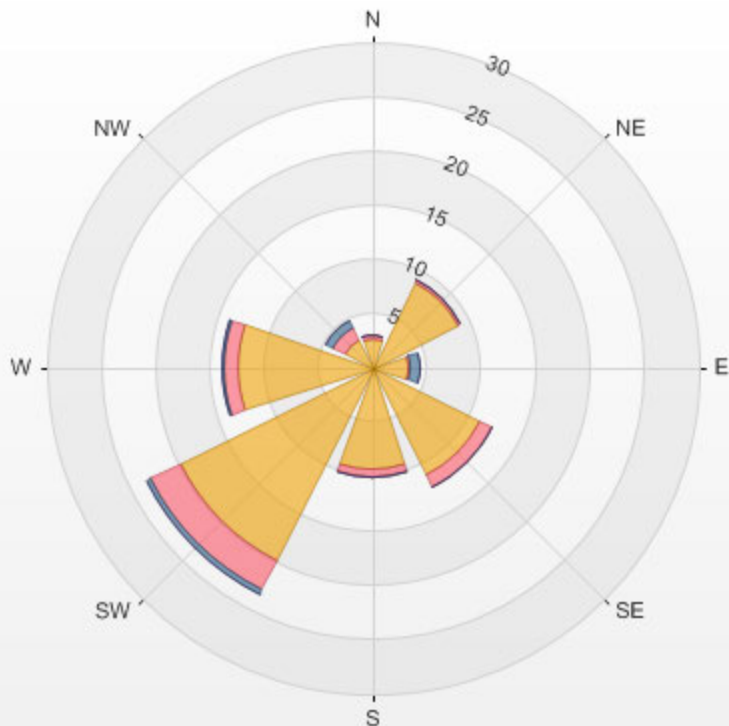
Wind: LICA MASKWA
 Poll.: LICA MASKWA-NOX[ppb]
 Monthly: 17/08
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 18.96% Calm Avg: 2.24 [ppb]

Direction	0.0-5.7	5.7-11.3	11.3-17.0	>17.0	Total
N	2.7	0.3	0.0	0.0	3.0
NE	8.8	0.3	0.0	0.0	9.1
E	3.3	0.3	0.8	0.0	4.3
SE	11.0	1.3	0.0	0.0	12.4
S	9.4	0.8	0.0	0.0	10.2
SW	19.9	3.0	0.5	0.0	23.3
W	12.4	1.3	0.2	0.0	13.9
NW	2.8	1.3	0.8	0.0	4.9
Summary	70.3	8.7	2.1	0.0	81.1

% Icon	Classes (ppb)	70	0.0-5.7	9	5.7-11.3	2	11.3-17.0	0	>17.0

LICA MASKWA Poll.: LICA MASKWA-NOX[ppb] 2017/08/01 00:00 - 2017/08/31 23:00 Calm: 18.96% Calm Poll Avg: 2.24[ppb]



NOX[ppb] Calibration: LICA MASKWA Monthly: 17/08 Type: Span



Span Meas Span Ref Span Low Span High

NITRIC OXIDES

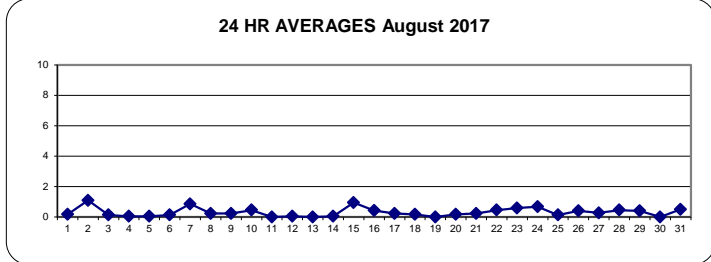
NITRIC OXIDE Hourly Averages (NO ppb)

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	0	0	0	0	1	S	X	3	0	0	0	0	0	0	0	0	0	3	0	23
2	0	1	1	0	0	1	5	6	6	3	1	0	0	S	X	0	0	0	0	0	0	0	0	0	0	6	1	23	
3	0	0	0	0	0	1	1	1	0	0	0	0	S	X	0	0	0	0	0	0	0	0	0	0	0	1	0	23	
4	0	0	0	0	0	0	0	0	0	0	0	S	X	1	0	0	0	0	0	0	0	0	0	0	0	1	0	23	
5	0	0	0	0	0	0	0	0	0	0	S	X	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	23	
6	0	0	0	0	0	0	1	1	1	S	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	23	
7	0	0	0	0	0	0	0	0	S	X	0	0	0	0	0	0	0	0	0	0	4	2	2	9	2	9	1	23	
8	0	0	0	1	0	0	1	S	X	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	1	0	23	
9	0	0	0	0	1	1	S	X	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	23	
10	0	0	0	0	0	S	X	1	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	23	
11	0	0	0	0	S	X	0	0	C	C	C	C	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	23	
12	0	0	0	S	X	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	23	
13	0	0	S	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	
14	0	S	X	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	23	
15	S	X	0	0	0	0	3	2	3	6	2	3	0	0	0	0	0	1	0	0	0	0	0	0	S	6	1	23	
16	X	0	0	0	0	0	2	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	X	6	0	22	
17	0	0	0	0	0	0	1	1	1	0	0	0	1	0	1	0	0	0	0	0	0	0	S	X	0	1	0	23	
18	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	S	X	2	1	0	2	0	23
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	X	0	0	0	0	0	0	23
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	S	X	0	0	0	0	0	0	2	0	23	
21	0	0	0	0	0	0	1	1	0	1	1	1	0	0	0	0	0	S	X	0	0	0	0	0	0	1	0	23	
22	0	0	0	0	0	0	0	1	2	2	2	1	1	0	1	0	S	X	0	0	0	0	0	0	0	2	0	23	
23	0	0	0	0	0	0	0	1	1	1	1	0	1	2	S	X	1	1	1	1	1	0	0	0	0	2	1	23	
24	0	0	3	0	0	0	0	0	0	1	1	1	1	1	S	X	0	0	0	0	3	1	1	2	0	3	1	23	
25	0	0	0	0	0	0	1	1	0	0	0	0	S	X	0	0	0	0	0	0	0	0	0	0	0	1	0	23	
26	0	0	0	0	0	1	3	3	1	1	0	0	S	X	0	0	0	0	0	0	0	0	0	0	0	3	0	23	
27	0	0	0	0	0	0	1	2	3	0	S	X	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	23	
28	0	0	0	3	0	0	1	0	4	1	S	X	0	0	0	1	0	0	0	0	0	0	0	0	0	4	0	23	
29	0	0	0	0	0	0	1	1	0	S	X	1	0	1	1	1	1	0	0	0	0	0	1	1	0	1	0	23	
30	0	0	0	0	0	0	0	0	S	X	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	
31	0	0	0	0	0	1	S	X	1	1	1	0	1	1	1	3	0	0	0	0	0	0	0	0	0	0	3	1	23
HOURLY MAX	0	1	3	3	1	1	5	6	6	6	2	3	1	2	2	1	3	2	1	4	3	2	9	2					
HOURLY AVG	0	0	0	0	0	0	1	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

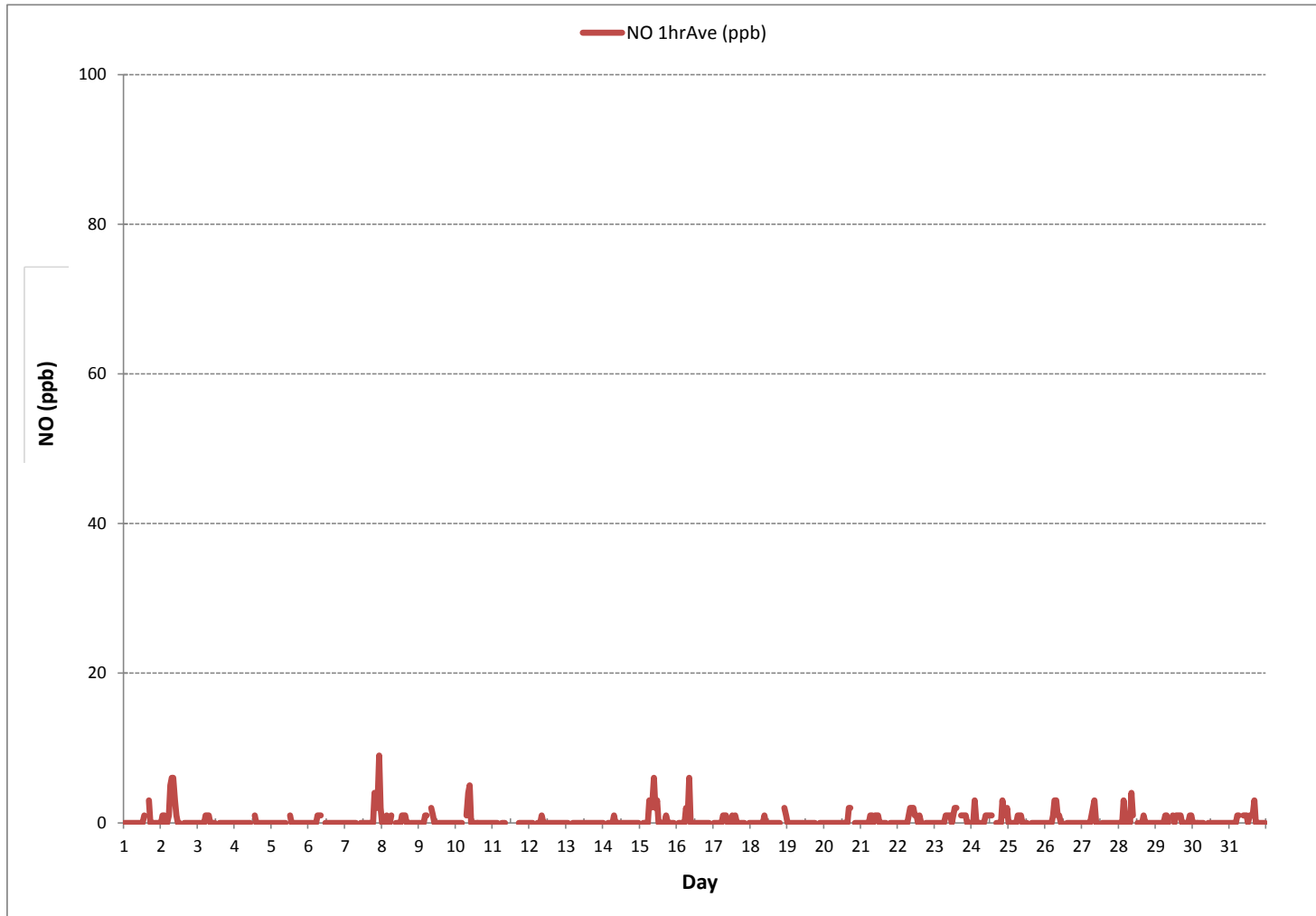
24 HR AVERAGES August 2017



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	124			
MINIMUM 1-HR AVERAGE:	0 ppb @ HOUR	0	ON DAY	1
MAXIMUM 1-HR AVERAGE:	9 ppb @ HOUR	7	ON DAY	7
MAXIMUM 24-HR AVERAGE:	1 ppb		ON DAY	2
IZS CALIBRATION TIME:	32 hrs	OPERATIONAL TIME:	712 hrs	
MONTHLY CALIBRATION TIME:	8 hrs	AMD OPERATION UPTIME:	95.7 %	
STANDARD DEVIATION:	1	MONTHLY AVERAGE:	0 ppb	

NITRIC OXIDE Hourly Averages (NO ppb)





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	1	1	1	1	0	0	1	10	S	X	10	0	1	1	1	1	1	1	1	0	10	1	23			
2	1	2	3	1	1	3	35	9	9	5	3	1	1	S	X	1	1	1	1	1	1	1	0	0	0	0	35	4	23			
3	1	0	0	0	1	1	1	1	1	1	1	1	S	X	1	1	1	0	0	1	0	1	P	0	0	0	1	1	22			
4	0	1	0	0	0	0	0	0	1	1	1	S	X	1	3	1	0	0	0	0	0	0	1	1	0	0	3	1	23			
5	0	0	0	0	0	0	0	0	0	1	S	X	3	1	1	1	0	P	0	1	0	0	1	0	0	0	3	0	22			
6	1	1	0	0	0	1	1	1	1	S	X	1	1	1	1	0	0	0	0	1	0	0	0	0	0	0	1	1	23			
7	0	0	0	1	0	1	0	0	S	X	1	0	1	0	1	1	1	1	1	14	7	8	12	7	0	14	3	23				
8	1	0	0	1	1	1	1	S	X	1	1	1	2	2	1	P	1	0	0	0	0	0	0	1	0	0	2	1	22			
9	0	0	0	1	2	4	S	X	3	1	1	1	0	1	1	0	1	1	0	0	0	0	0	0	0	0	4	1	23			
10	0	0	0	0	0	S	X	1	9	9	2	1	1	1	0	0	0	1	1	0	0	1	0	0	0	0	9	1	23			
11	0	0	0	0	S	X	1	1	0	C	C	C	C	C	C	C	C	0	0	0	0	0	0	1	0	1	0	1	0	23		
12	0	0	0	S	X	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	23		
13	0	0	S	X	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	1	0	23		
14	0	S	X	0	0	0	0	0	2	1	1	0	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	2	0	23		
15	S	X	0	1	1	1	8	4	11	12	6	8	1	1	1	0	1	1	1	0	1	0	0	0	S	0	12	3	23			
16	X	0	0	2	0	1	7	5	9	1	1	1	1	0	0	0	0	0	0	0	0	0	0	S	X	0	9	1	22			
17	0	0	0	0	0	1	2	2	3	3	0	0	3	1	16	1	0	0	0	0	0	0	S	X	1	0	16	2	23			
18	1	0	0	0	1	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	S	X	19	14	0	19	2	23		
19	3	0	0	0	0	0	0	1	1	1	1	0	0	1	0	0	0	0	0	0	S	X	1	0	0	0	3	0	23			
20	0	0	0	0	0	2	1	1	0	1	0	1	1	1	0	1	8	9	S	X	0	3	3	0	0	0	9	1	23			
21	0	0	0	0	0	1	2	2	1	1	1	1	1	0	7	7	0	S	X	0	0	0	0	1	0	0	7	1	23			
22	1	0	0	0	0	0	0	3	3	3	4	2	1	1	1	S	X	1	0	0	0	1	0	1	0	0	4	1	23			
23	0	0	0	0	0	0	1	2	2	3	3	1	2	4	3	S	X	2	3	1	3	1	0	0	0	0	4	1	23			
24	0	0	17	0	0	0	0	0	0	3	2	2	2	0	S	X	0	0	0	0	0	8	3	2	8	0	17	2	23			
25	3	0	0	0	0	0	1	1	2	5	0	0	1	S	X	0	0	0	1	0	0	0	1	0	0	0	5	1	23			
26	0	0	0	0	1	2	5	5	1	1	1	0	S	X	1	0	0	0	0	0	0	0	0	0	0	0	5	1	23			
27	0	0	0	0	0	2	5	7	1	0	S	X	0	0	1	0	0	0	0	0	0	0	0	0	0	0	7	1	23			
28	0	1	1	11	0	0	2	1	13	3	S	X	1	0	1	1	4	1	0	0	0	0	0	0	0	0	13	2	23			
29	0	0	0	0	0	0	1	1	0	S	X	1	1	1	1	1	1	1	0	0	0	1	3	3	0	0	3	1	23			
30	1	0	0	0	0	0	1	2	S	X	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	0	23			
31	0	0	0	0	0	3	3	S	X	1	1	3	0	3	6	12	9	0	1	1	0	1	1	1	1	0	12	2	23			
HOURLY MAX	3	2	17	11	2	4	35	9	13	12	6	8	3	10	16	12	10	9	3	14	8	8	19	14								
HOURLY AVG	0	0	1	1	0	1	3	2	3	2	1	1	1	1	2	1	1	1	0	1	1	1	2	1								

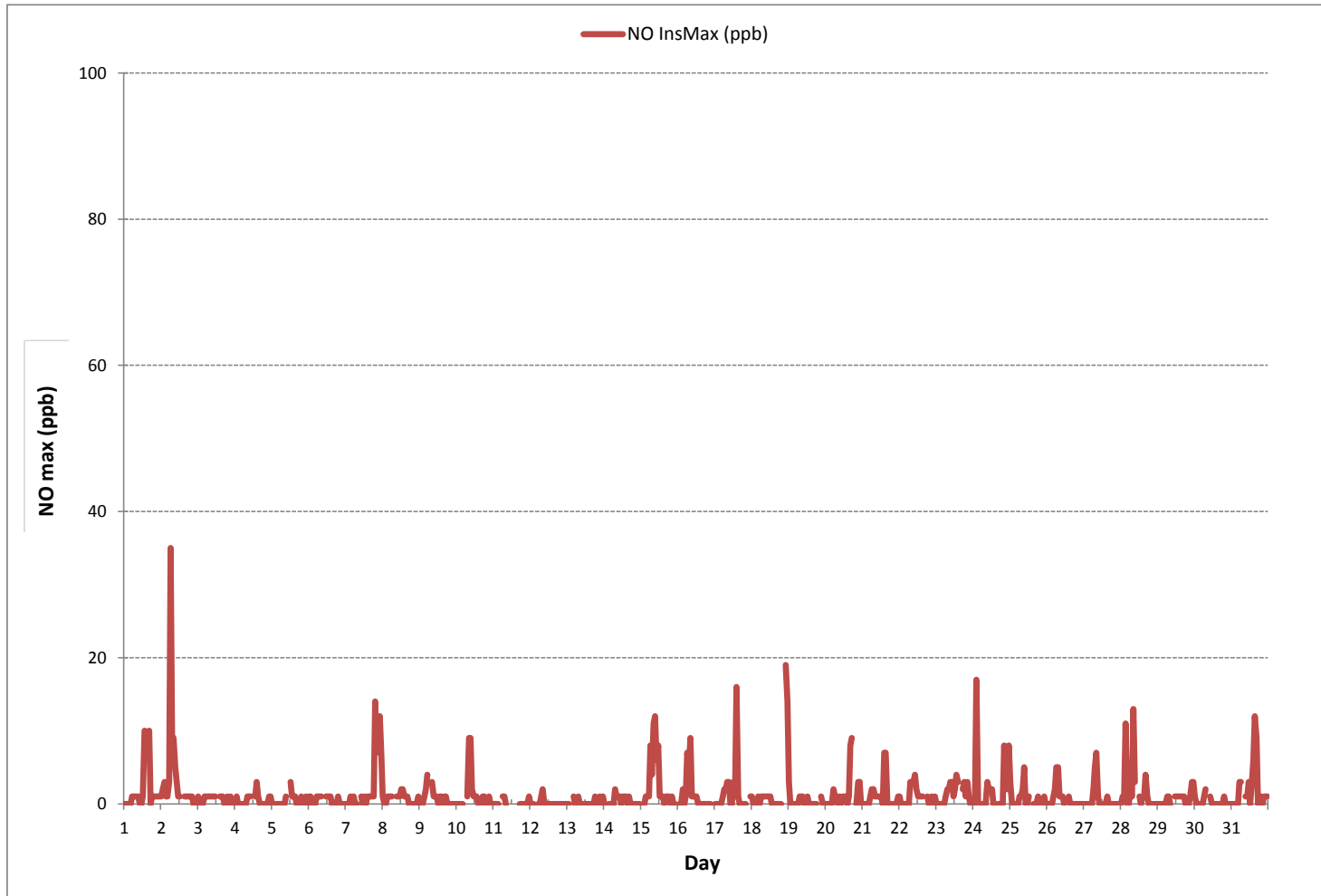
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	315
MAXIMUM INSTANTANEOUS VALUE:	35 ppb @ HOUR 6 ON DAY 2
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	8 hrs
STANDARD DEVIATION:	3
OPERATIONAL TIME:	709 hrs

NITRIC OXIDE Instantaneous Maximum (NO ppb)



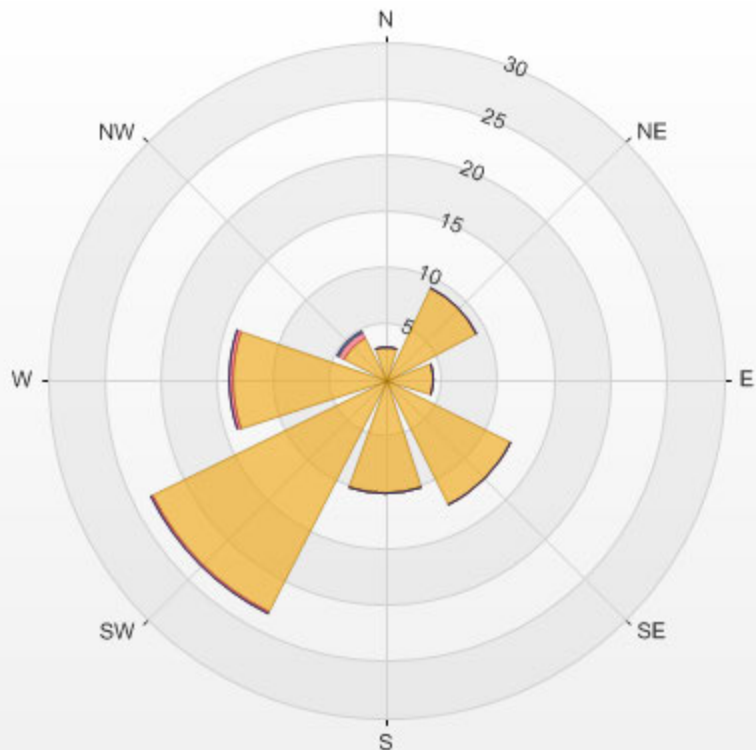
Wind: LICA MASKWA
 Poll.: LICA MASKWA-NO[ppb]
 Monthly: 17/08
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 18.96% Calm Avg: 0.32 [ppb]

Direction	0.0-3.3	3.3-6.7	6.7-10.0	>10.0	Total
N	3.0	0.0	0.0	0.0	3.0
NE	9.1	0.0	0.0	0.0	9.1
E	4.3	0.0	0.0	0.0	4.3
SE	12.4	0.0	0.0	0.0	12.4
S	10.2	0.0	0.0	0.0	10.2
SW	23.1	0.2	0.0	0.0	23.3
W	13.6	0.3	0.0	0.0	13.9
NW	4.2	0.6	0.2	0.0	4.9
Summary	79.9	1.1	0.2	0.0	81.1

% Icon Classes (ppb) 80 0.0-3.3 1 3.3-6.7 0 6.7-10.0 0 >10.0

LICA MASKWA Poll.: LICA MASKWA-NO[ppb] 2017/08/01 00:00 - 2017/08/31 23:00 Calm: 18.96% Calm Poll Avg: 0.32[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	1	1	1	1	1	1	0	0	0	0	0	1	S	X	12	5	4	3	4	5	4	2	0	12	2	23			
2	2	5	4	2	2	2	4	5	6	5	3	1	1	S	X	7	5	4	3	3	3	3	2	1	7	3	23			
3	2	2	1	1	1	1	1	1	1	1	1	1	S	X	8	5	4	3	3	2	2	2	2	1	1	8	2	23		
4	1	1	1	1	1	1	0	1	1	1	1	2	S	X	10	7	5	4	3	3	2	2	2	1	1	10	2	23		
5	1	1	1	1	1	1	1	1	1	1	1	S	X	9	5	4	3	3	2	2	2	1	1	1	1	9	2	23		
6	1	0	0	0	0	0	2	2	2	S	X	9	6	4	3	2	2	2	1	1	1	1	1	1	0	9	2	23		
7	1	0	0	0	0	0	0	0	S	X	8	5	3	2	2	2	2	2	3	4	3	3	7	3	0	8	2	23		
8	1	0	0	3	2	0	1	S	X	8	5	4	3	3	3	3	1	1	1	1	1	1	2	2	0	8	2	23		
9	1	1	1	4	2	1	S	X	10	6	4	3	2	2	2	2	2	1	1	1	1	2	2	2	1	10	2	23		
10	1	1	1	1	1	S	X	8	10	11	4	3	3	2	1	1	2	3	4	5	5	2	1	1	1	11	3	23		
11	1	0	0	0	S	X	7	3	2	C	C	C	C	C	C	C	2	1	0	0	0	0	0	0	0	7	1	23		
12	0	0	0	S	X	4	3	3	4	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	4	1	23		
13	1	1	S	X	5	3	3	2	2	2	1	1	1	0	0	0	0	5	6	8	5	3	7	0	8	3	23			
14	6	S	X	5	4	4	5	5	4	4	3	3	2	2	2	1	2	1	1	0	0	0	0	0	0	6	3	23		
15	S	X	5	5	5	3	7	4	4	5	4	5	2	2	2	2	2	3	2	2	2	1	1	S	1	7	3	23		
16	X	5	3	5	2	2	4	3	6	1	2	2	1	1	1	2	1	1	1	1	1	1	S	X	0	6	2	22		
17	5	3	3	6	4	6	4	3	2	2	1	0	2	0	1	0	0	0	0	0	0	S	X	12	0	12	2	23		
18	9	7	6	7	4	4	4	3	3	4	3	4	3	2	2	2	2	2	2	2	S	X	13	8	2	13	4	23		
19	8	3	2	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	S	X	10	6	4	0	10	2	23		
20	4	2	1	0	0	2	2	1	0	0	0	0	0	0	0	4	3	S	X	4	4	7	2	0	7	2	23			
21	1	1	1	1	1	1	2	2	1	2	2	2	1	0	0	0	0	S	X	5	3	3	3	4	0	5	2	23		
22	5	3	4	4	3	2	3	3	5	5	3	2	3	3	S	X	10	6	4	3	2	2	1	1	6	3	23			
23	1	1	1	1	0	0	1	2	2	3	2	1	2	4	S	X	10	12	8	12	4	2	1	0	12	3	23			
24	1	1	8	1	1	1	0	1	1	2	2	2	2	1	S	X	6	4	3	3	12	5	5	6	0	12	3	23		
25	4	2	1	1	1	3	3	1	2	1	0	0	0	S	X	4	3	3	3	1	2	3	3	3	0	4	2	23		
26	3	3	2	3	7	8	7	4	1	1	1	0	S	X	4	2	2	2	3	6	3	4	4	3	0	8	3	23		
27	3	5	6	3	3	3	5	6	6	2	0	S	X	5	3	2	2	2	1	1	1	1	1	1	0	6	3	23		
28	1	1	4	7	3	2	3	2	5	3	S	X	5	3	2	2	3	1	0	1	1	1	1	1	0	7	2	23		
29	1	3	2	1	2	1	1	0	0	S	X	4	2	2	2	2	2	2	1	2	4	3	12	11	0	12	3	23		
30	6	1	0	1	0	0	6	4	S	X	5	3	3	2	2	2	2	3	4	5	1	1	1	0	0	6	2	23		
31	0	0	0	0	0	1	3	S	X	8	4	5	2	2	3	5	8	0	2	2	0	4	8	7	0	8	3	23		
HOURLY MAX	9	7	8	7	7	8	7	8	10	11	8	9	9	10	8	7	12	10	12	8	12	10	13	12						
HOURLY AVG	3	2	2	2	2	2	3	3	3	3	2	2	2	2	2	2	3	2	3	3	3	3	3	3						

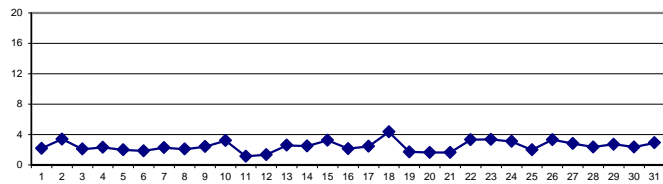
STATUS FLAG CODES

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 159 ppb

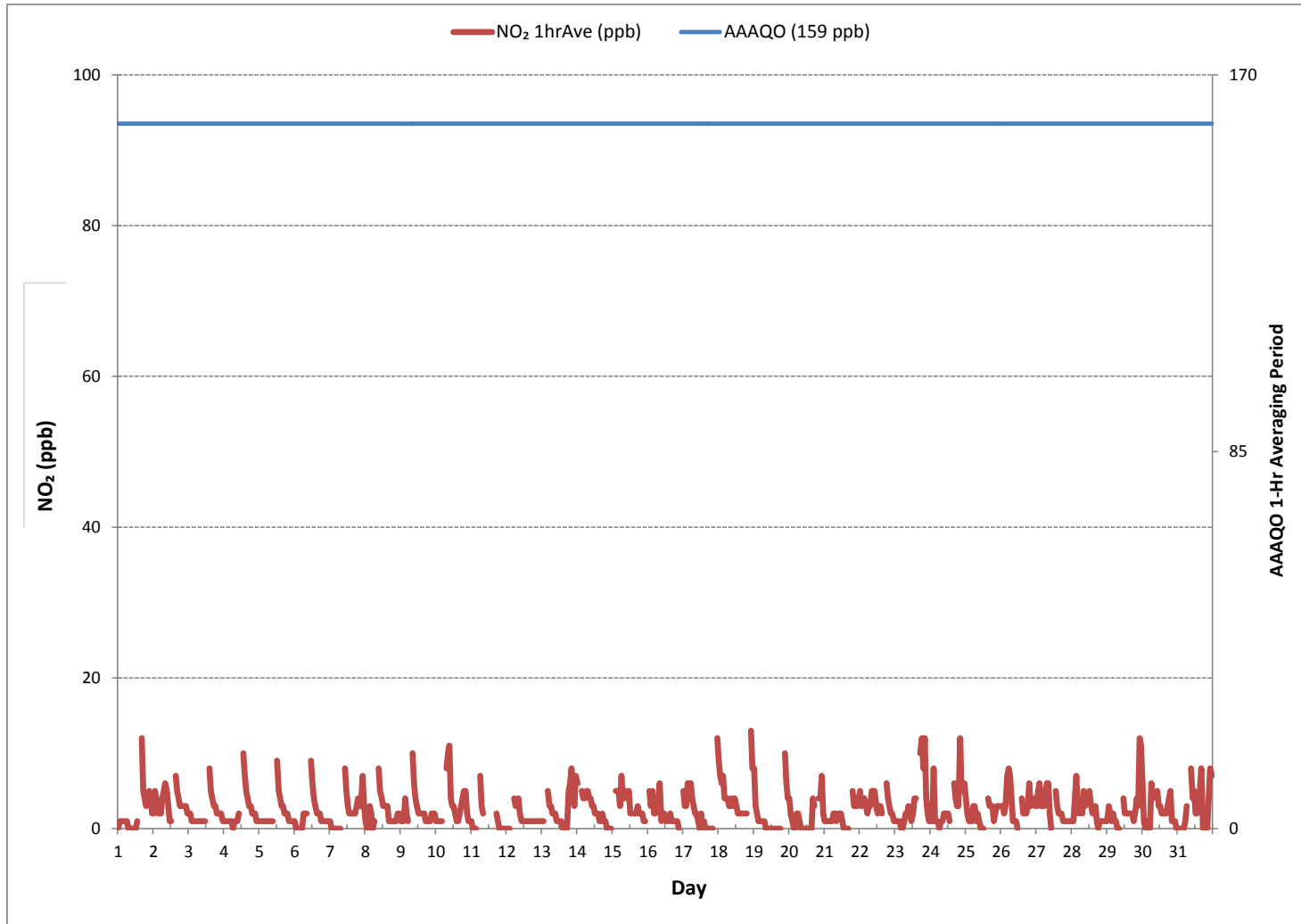
24 HR AVERAGES August 2017



MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0			
NUMBER OF NON-ZERO READINGS:	575			
MINIMUM 1-HR AVERAGE:	0 ppb	@ HOUR	7	ON DAY 1
MAXIMUM 1-HR AVERAGE:	13 ppb	@ HOUR	22	ON DAY 18
MAXIMUM 24-HR AVERAGE:	4 ppb			ON DAY 18
IZS CALIBRATION TIME:	32 hrs	OPERATIONAL TIME:	712 hrs	
MONTHLY CALIBRATION TIME:	8 hrs	AMD OPERATION UPTIME:	95.7 %	
STANDARD DEVIATION:	2	MONTHLY AVERAGE:	2 ppb	

NITROGEN DIOXIDE Hourly Averages (NO₂ ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Maskwa Continuous Monitoring Station - August 2017

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	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	3	3	2	2	2	2	3	2	1	1	1	1	3	6	S	X	21	7	5	7	7	8	8	7	1	21	5	23
2	5	8	8	3	4	4	17	7	8	8	6	3	3	S	X	11	7	5	5	4	4	4	4	4	3	17	6	23
3	3	3	3	2	2	2	2	4	4	2	3	2	S	X	11	7	5	4	4	3	3	4	P	2	2	11	4	22
4	2	1	1	1	1	1	1	1	3	1	4	S	X	14	11	5	5	3	3	3	2	2	2	1	1	14	3	23
5	1	1	1	1	1	1	1	1	1	2	S	X	12	7	5	4	4	P	3	3	2	2	1	1	1	12	3	22
6	1	1	1	1	1	2	3	4	3	S	X	12	8	5	4	4	3	3	3	2	2	3	2	2	1	12	3	23
7	1	1	1	1	1	1	1	1	S	X	11	7	4	4	3	3	3	3	5	10	7	7	8	7	1	11	4	23
8	2	1	4	5	5	1	2	S	X	11	7	6	5	6	4	P	3	2	3	2	2	2	3	3	1	11	4	22
9	3	2	3	7	5	3	S	X	14	9	5	4	4	3	4	3	3	3	3	2	3	3	3	3	2	14	4	23
10	3	2	2	2	2	S	X	11	17	17	6	4	4	4	3	3	3	5	7	7	10	3	3	2	2	17	5	23
11	1	1	1	1	S	X	11	6	4	C	C	C	C	C	C	C	6	4	3	2	1	1	1	1	1	11	3	23
12	1	1	1	1	S	X	5	3	5	6	2	2	1	1	1	1	1	1	2	1	1	1	1	1	1	6	2	23
13	1	1	1	S	X	7	4	3	3	3	2	2	1	1	1	1	1	1	7	8	10	11	5	14	1	14	4	23
14	7	S	X	7	4	6	5	8	6	4	4	4	3	3	4	2	2	4	3	1	1	1	1	1	1	8	4	23
15	S	X	7	7	7	6	11	7	7	8	7	9	3	3	3	3	5	3	3	7	1	1	S	1	1	11	5	23
16	X	7	4	8	3	3	7	7	8	3	3	3	2	1	2	3	1	1	1	1	1	1	S	X	1	8	3	22
17	7	4	3	7	7	8	5	4	4	5	1	1	6	1	14	1	1	1	1	1	1	S	X	13	1	14	4	23
18	11	8	8	8	6	5	4	5	4	5	4	4	2	3	3	3	3	3	3	S	X	27	27	2	27	7	23	
19	19	6	3	2	2	2	1	2	2	1	1	1	3	0	0	1	0	0	S	X	13	8	5	0	19	3	23	
20	6	4	2	1	1	5	5	1	1	1	1	1	1	1	3	14	13	S	X	5	10	11	4	1	14	4	23	
21	2	2	3	3	1	3	4	4	2	3	3	2	1	4	8	1	S	X	6	4	4	4	4	7	1	8	3	23
22	7	4	5	5	4	3	5	4	6	6	6	5	3	3	3	S	X	7	5	4	3	3	2	2	7	4	23	
23	1	1	1	1	1	1	1	3	3	5	4	3	4	5	5	S	X	13	14	10	15	12	3	2	1	15	5	23
24	1	4	20	3	2	1	1	1	1	5	3	4	5	2	S	X	7	5	5	4	21	15	12	21	1	21	7	23
25	15	7	1	1	1	4	4	3	3	5	1	1	1	1	S	X	6	4	4	4	2	3	4	4	1	15	4	23
26	4	4	3	5	8	10	8	7	2	3	3	1	S	X	6	4	4	3	7	9	4	5	5	4	1	10	5	23
27	4	7	7	5	7	5	7	10	10	3	1	S	X	6	4	3	3	2	1	1	1	1	1	1	1	10	4	23
28	1	3	8	12	9	3	5	4	10	6	S	X	7	5	3	3	10	4	1	1	1	1	2	1	1	12	5	23
29	3	4	4	3	3	3	2	1	1	S	X	7	4	4	3	4	4	2	5	8	11	18	17	1	18	5	23	
30	9	3	2	4	1	1	11	8	S	X	7	4	3	3	3	3	2	7	7	10	3	1	1	1	1	11	4	23
31	1	1	1	1	1	4	5	S	X	10	6	9	3	6	15	21	21	1	13	12	1	15	22	18	1	22	9	23
HOURLY MAX	19	8	20	12	9	10	17	11	17	17	11	12	12	14	15	21	21	13	14	12	21	15	27	27				
HOURLY AVG	4	3	4	4	3	3	5	4	5	5	4	4	4	4	5	4	5	4	4	4	5	5	6	6				

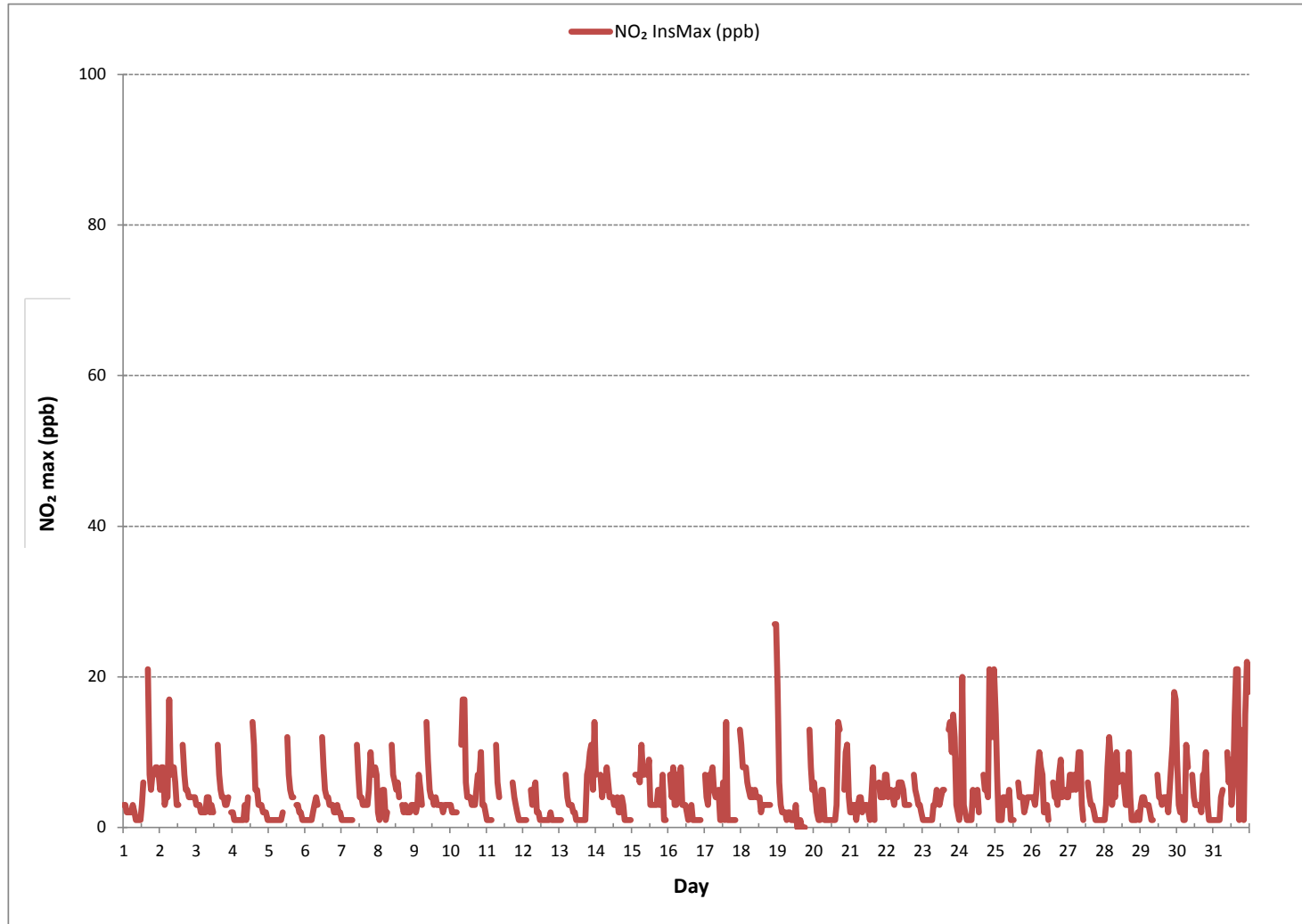
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	664
MAXIMUM INSTANTANEOUS VALUE:	27 ppb @ HOUR 22 ON DAY 18
VAR-VARIOUS	
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	8 hrs
OPERATIONAL TIME:	709 hrs
STANDARD DEVIATION:	4

NITROGEN DIOXIDE Instantaneous Maximum (NO₂ ppb)



Wind: LICA MASKWA
 Poll.: LICA MASKWA-NO2[ppb]
 Monthly: 17/08
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 18.96% Calm Avg: 1.93 [ppb]

Direction	0.0-4.7	4.7-9.3	9.3-14.0	>14.0	Total
N	2.5	0.5	0.0	0.0	3.0
NE	8.8	0.3	0.0	0.0	9.1
E	3.3	0.3	0.8	0.0	4.3
SE	10.3	1.9	0.2	0.0	12.4
S	9.0	1.2	0.0	0.0	10.2
SW	19.0	3.7	0.6	0.0	23.3
W	12.7	1.0	0.2	0.0	13.9
NW	3.1	1.5	0.3	0.0	4.9
Summary	68.7	10.4	2.0	0.0	81.1

% Icon Classes (ppb)

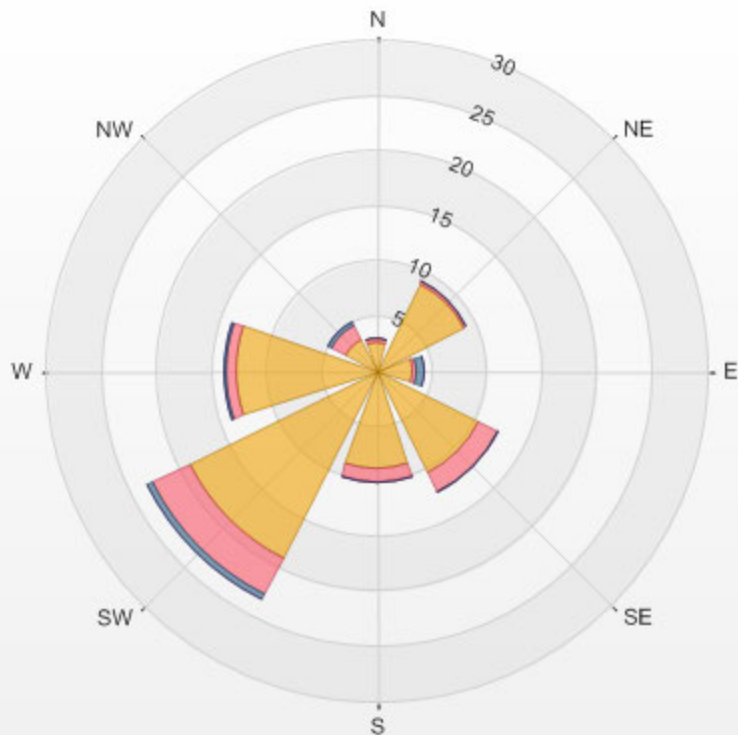
69 0.0-4.7

10 4.7-9.3

2 9.3-14.0

0 >14.0

LICA MASKWA Poll.: LICA MASKWA-NO2[ppb] 2017/08/01 00:00 - 2017/08/31 23:00 Calm: 18.96% Calm Poll Avg: 1.93[ppb]



NO₂[ppb] Calibration: LICA MASKWA Monthly: 17/08 Type: Span



Span Meas Span Ref Span Low Span High

WIND SPEED



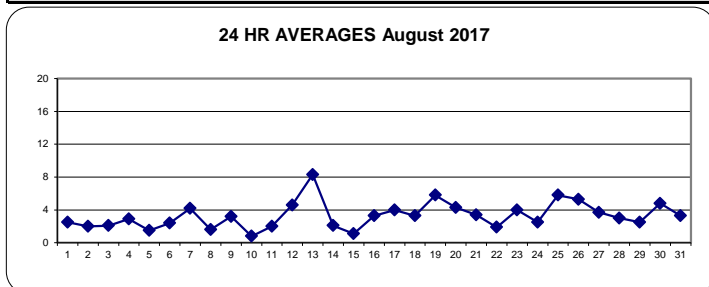
WIND SPEED Hourly Averages (WS kph)

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	2.6	2.4	0.7	1.2	1.4	1.2	3.4	6.3	5.9	1.9	6.1	3.9	5.1	4.1	2.9	3.6	4.5	6.2	2.6	2.1	1.9	1.5	0.8	0.7	0.7	6.3	2.5	24
2	1.2	1.3	1.8	2.2	2.5	1.9	1.8	2.0	1.6	1.6	1.4	2.5	2.7	2.1	6.1	5.8	4.1	3.4	3.6	4.6	3.2	4.1	3.2	1.4	1.2	6.1	2.0	24
3	1.3	1.6	0.7	1.1	0.8	0.4	2.5	2.3	2.9	3.2	4.5	4.8	5.5	4.7	5.2	4.2	3.9	2.7	2.7	2.0	2.6	1.7	2.5	2.3	0.4	5.5	2.1	24
4	2.1	3.0	2.6	2.8	2.7	3.0	3.8	1.6	4.6	3.8	5.4	4.8	5.8	6.4	6.2	5.0	11.0	2.1	3.7	3.1	0.6	1.2	2.3	1.3	0.6	11.0	2.9	24
5	1.1	0.2	2.4	3.4	1.5	1.1	2.4	1.6	1.0	2.3	3.7	3.2	1.0	2.0	5.9	3.9	3.2	2.4	0.7	1.8	1.5	1.2	1.8	1.3	0.2	5.9	1.5	24
6	0.6	0.7	1.0	0.3	0.2	1.9	5.2	6.0	5.2	6.1	7.2	6.0	7.4	7.7	8.3	6.7	5.1	4.4	6.7	5.6	1.9	1.1	1.7	3.0	0.2	8.3	2.4	24
7	3.6	3.0	3.2	3.4	7.1	7.7	9.3	9.1	9.6	8.8	9.4	9.3	5.1	2.3	1.1	3.2	3.2	3.7	2.0	2.4	2.1	1.6	2.3	1.3	1.1	9.6	4.2	24
8	1.5	0.9	2.1	2.0	1.9	1.7	2.0	2.7	2.4	2.4	2.8	3.2	2.5	2.4	4.2	2.6	4.7	4.9	6.7	5.0	4.3	3.9	3.3	0.9	0.9	6.7	1.6	24
9	1.6	1.5	1.7	3.0	1.7	1.6	0.4	2.1	3.8	5.9	5.3	4.1	4.2	3.3	4.0	2.5	4.1	3.6	5.5	4.6	4.7	4.3	3.6	1.3	0.4	5.9	3.2	24
10	1.3	2.2	1.9	1.1	1.1	1.5	1.6	1.3	0.8	2.8	1.8	3.8	5.1	6.3	4.5	9.5	5.4	2.4	1.5	1.7	1.3	0.7	0.4	0.5	0.4	9.5	0.8	24
11	0.8	1.0	0.7	1.2	1.1	1.2	3.0	3.8	5.1	6.0	3.8	5.1	5.1	2.6	4.0	4.3	3.6	3.8	3.0	2.7	3.3	3.4	0.2	0.4	0.2	6.0	2.0	24
12	0.4	1.2	1.6	0.6	1.7	1.0	2.2	2.6	3.3	5.5	6.8	8.2	8.1	8.1	9.9	8.3	8.5	7.7	5.4	4.3	4.8	6.9	7.9	8.4	0.4	9.9	4.6	24
13	9.3	8.2	8.8	8.0	7.5	9.4	7.5	7.3	7.9	8.4	9.6	11.0	13.5	13.2	11.3	10.1	9.5	8.0	5.8	5.0	5.8	6.4	6.4	5.8	5.0	13.5	8.3	24
14	4.9	4.1	5.6	5.1	4.7	4.1	2.7	2.5	4.7	4.5	3.8	5.2	3.6	3.6	3.5	3.0	3.1	2.2	1.9	0.1	0.8	1.0	0.6	0.5	0.1	5.6	2.1	24
15	0.3	1.5	0.6	1.6	1.0	0.9	1.7	2.4	4.6	5.0	4.5	3.2	3.8	1.8	3.2	2.0	2.1	1.9	5.1	5.6	2.7	0.4	2.4	1.4	0.3	5.6	1.1	24
16	2.7	3.0	3.0	2.8	3.2	2.6	2.3	3.8	2.2	3.2	7.3	6.2	5.9	4.7	4.9	2.9	4.5	3.0	2.6	2.4	2.9	2.9	4.5	2.5	2.2	7.3	3.3	24
17	2.6	2.5	3.3	4.3	4.6	4.1	3.7	3.4	5.1	5.0	5.3	6.0	7.6	6.6	6.3	6.4	7.3	6.9	4.1	2.7	3.8	4.8	4.8	3.1	2.5	7.6	4.0	24
18	2.1	2.8	5.0	3.0	5.4	3.9	6.4	5.9	5.8	4.9	4.8	4.8	7.3	7.8	8.2	4.7	2.3	1.4	4.3	3.9	2.2	2.5	3.6	5.8	1.4	8.2	3.3	24
19	0.6	4.6	2.7	3.7	3.8	4.0	4.4	6.6	9.3	7.8	7.9	7.9	8.8	9.5	9.2	8.4	9.7	7.8	6.1	3.5	5.7	5.4	5.2	4.3	0.6	9.7	5.8	24
20	4.1	3.9	3.8	4.0	2.8	5.5	4.4	4.3	5.5	5.4	6.4	7.5	6.9	7.1	8.3	5.2	5.3	7.0	4.4	2.8	2.0	6.4	4.3	2.9	2.0	8.3	4.3	24
21	2.4	2.7	2.9	3.1	2.7	2.8	2.6	2.8	3.8	4.6	7.2	7.7	4.4	5.2	4.9	4.3	5.2	3.8	3.0	4.0	3.3	3.0	1.5	0.6	0.6	7.7	3.4	24
22	2.3	2.1	3.1	3.5	1.6	0.6	0.8	1.6	1.8	3.3	2.8	3.2	4.2	4.8	4.5	4.7	0.6	1.6	1.2	0.7	1.1	1.6	1.3	0.3	0.3	4.8	1.9	24
23	0.4	0.5	0.5	1.6	3.7	5.4	2.3	3.0	4.2	3.9	5.1	6.4	5.7	6.5	6.4	5.1	4.4	5.0	3.9	4.2	5.0	5.3	6.3	5.7	0.4	6.5	4.0	24
24	5.9	5.1	2.3	3.7	4.9	5.2	6.6	8.4	7.7	7.2	7.2	8.0	8.1	6.1	6.4	5.3	2.4	2.3	1.3	1.5	4.2	3.3	8.8	8.5	1.3	8.8	2.5	24
25	5.0	4.3	4.5	3.5	4.4	6.1	7.0	8.2	8.6	8.6	9.0	10.6	9.5	7.1	7.4	7.9	6.2	7.1	6.5	4.6	5.0	5.0	4.6	3.1	3.1	10.6	5.8	24
26	2.8	3.5	4.3	6.3	7.5	5.0	5.6	5.7	5.2	6.5	7.2	7.9	7.2	6.5	7.1	6.9	6.4	4.7	3.9	4.1	5.2	5.0	5.2	6.6	2.8	7.9	5.3	24
27	5.7	4.6	4.0	4.8	6.1	4.3	5.3	6.2	4.8	5.0	5.6	5.5	5.9	6.2	4.9	5.6	4.8	3.8	2.9	2.0	1.3	1.7	1.0	0.5	0.5	6.2	3.7	24
28	1.6	2.2	2.2	2.5	3.1	1.6	2.1	2.2	3.5	2.3	3.5	4.6	5.1	7.2	7.4	7.3	6.4	6.6	3.4	2.8	1.7	1.5	2.9	2.5	1.5	7.4	3.0	24
29	1.8	2.3	1.6	2.1	2.0	0.8	1.5	4.3	4.7	3.8	4.8	3.1	3.2	3.2	4.9	4.9	4.4	2.9	2.3	2.5	4.2	5.2	4.1	4.6	0.8	5.2	2.5	24
30	4.6	5.8	6.0	6.1	5.9	5.9	4.9	5.4	6.3	6.9	6.8	6.2	5.9	7.9	8.3	7.4	5.1	3.1	2.7	3.3	5.0	4.7	3.7	2.8	2.7	8.3	4.8	24
31	3.5	2.8	0.4	1.1	0.2	1.4	2.1	2.3	2.5	4.7	5.6	5.8	7.7	7.3	6.9	6.5	6.9	5.9	6.7	4.4	4.0	5.3	4.1	4.9	0.2	7.7	3.3	24
HOURLY MAX	9.3	8.2	8.8	8.0	7.5	9.4	9.3	9.1	9.6	8.8	9.6	11.0	13.5	13.2	11.3	10.1	11.0	8.0	6.7	5.6	5.8	6.9	8.8	8.5				
HOURLY AVG	1.0	1.1	1.3	1.5	1.4	1.2	0.5	0.4	0.5	1.3	1.8	2.5	2.2	2.2	3.0	2.1	1.7	1.5	1.1	1.2	1.2	1.3	1.3	1.0				

STATUS FLAG CODES

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

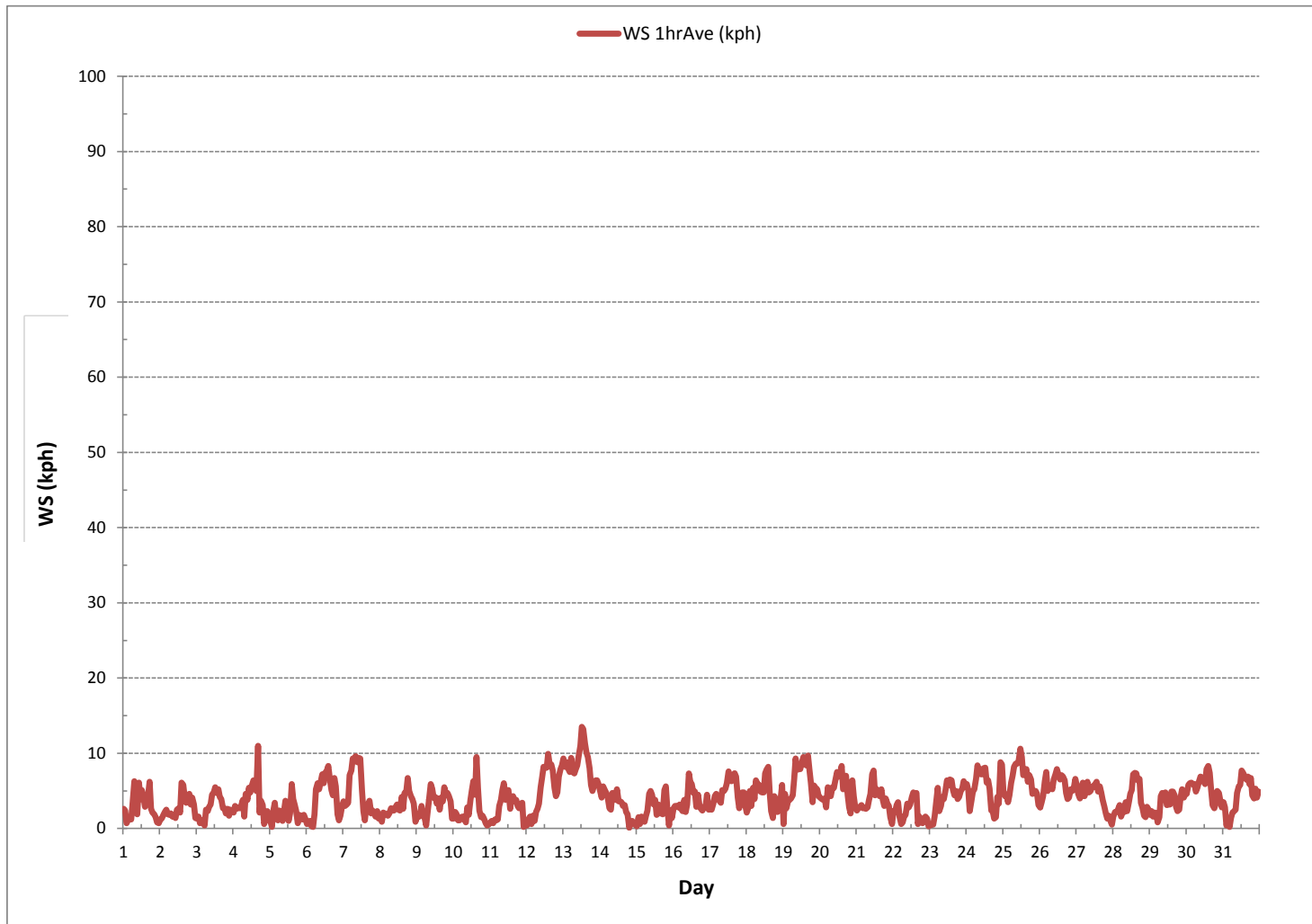
LAST CALIBRATION:	March 30, 2016
DECLINATION :	MAGNETIC DECLINATION 19 DEGREE EAST



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	744
MINIMUM 1-HR AVERAGE:	0.1 kph @ HOUR 19 ON DAY 14
MAXIMUM 1-HR AVERAGE:	13.5 kph @ HOUR 12 ON DAY 13
MAXIMUM 24-HR AVERAGE:	8.3 kph ON DAY 13
MONTHLY CALIBRATION TIME:	0 hrs
OPERATIONAL TIME:	744 hrs
AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	2.4
MONTHLY AVERAGE:	1.4 kph

WIND SPEED Hourly Averages (WS kph)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Maskwa Continuous Monitoring Station - August 2017

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	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	11.5	9.3	5.6	6.5	6.3	6.1	9.8	15.5	14.8	16.1	19.4	15.9	24.9	20.5	12.8	16.4	23.4	23.0	9.4	10.3	9.2	8.8	8.0	5.8	5.6	24.9	12.9	24	
2	8.5	6.7	6.3	6.3	5.2	5.0	5.2	6.5	8.5	7.8	12.8	16.8	15.7	14.8	20.7	18.5	15.2	14.6	12.4	12.2	8.3	8.0	5.6	4.8	4.8	20.7	10.3	24	
3	3.2	2.8	2.6	3.2	2.3	2.6	4.9	8.1	14.2	15.3	17.4	22.5	19.0	26.2	19.4	13.1	12.2	8.0	9.8	5.4	7.4	4.8	P	7.8	2.3	26.2	10.1	23	
4	11.1	9.6	7.1	8.5	8.0	12.0	9.3	6.7	14.1	18.3	26.2	20.2	31.9	25.6	26.9	19.1	38.8	25.2	12.5	11.3	7.6	6.3	8.0	3.9	3.9	38.8	15.3	24	
5	3.0	2.8	6.5	9.6	6.7	3.4	5.4	4.5	4.8	8.0	13.3	12.0	10.0	19.6	28.6	12.6	12.2	P	3.7	4.0	4.0	5.6	4.8	5.4	2.8	28.6	8.3	23	
6	4.5	3.7	3.4	10.2	3.0	7.8	13.5	15.0	14.4	18.8	20.3	20.7	21.6	27.1	24.2	20.3	21.1	17.4	31.7	20.5	8.7	7.1	5.8	9.1	3.0	31.7	14.6	24	
7	8.9	7.6	8.3	12.6	20.7	17.2	21.8	24.1	20.8	22.8	21.5	23.6	13.1	8.9	6.3	13.3	12.4	13.1	12.2	11.3	10.0	10.4	12.8	6.7	6.3	24.1	14.2	24	
8	6.7	6.9	6.9	6.5	7.8	5.2	7.4	8.7	11.1	11.8	17.7	16.4	15.7	15.2	16.8	P	16.4	16.7	17.8	14.9	6.9	7.1	6.5	5.8	5.2	17.8	11.0	23	
9	3.6	3.7	3.4	5.8	3.9	4.8	3.2	8.7	13.7	17.0	17.2	18.1	17.9	17.9	17.9	20.3	22.5	17.2	13.5	12.0	9.1	8.3	7.8	6.3	3.2	22.5	11.4	24	
10	4.5	7.4	8.9	3.2	4.0	3.1	7.0	4.9	4.6	10.9	13.7	12.4	20.5	19.0	21.8	41.9	18.8	13.7	15.3	7.4	21.0	5.8	6.3	7.4	3.1	41.9	11.8	24	
11	3.7	4.1	3.9	10.5	11.1	5.4	9.6	9.3	12.2	14.8	21.4	23.3	25.3	17.7	21.1	17.2	14.6	12.8	15.5	6.1	7.1	8.3	2.6	2.9	2.6	25.3	11.7	24	
12	3.1	5.3	4.2	2.8	6.1	5.6	6.3	12.0	13.9	19.4	23.5	28.1	28.4	29.9	30.8	28.6	27.7	24.6	18.5	12.2	13.9	17.4	22.5	26.8	2.8	30.8	17.2	24	
13	29.1	22.9	22.7	24.2	24.9	X	24.0	27.5	26.8	27.9	34.7	38.9	45.2	52.2	37.6	35.8	33.2	28.8	24.2	23.3	26.2	27.7	29.3	24.2	22.7	52.2	30.1	23	
14	27.1	14.4	19.7	14.2	16.2	16.7	11.8	10.4	12.8	12.0	11.8	17.7	12.6	12.2	12.8	12.0	12.0	10.7	9.1	4.3	3.9	3.6	4.1	5.2	3.6	27.1	12.0	24	
15	3.9	4.8	6.3	6.9	6.1	6.9	12.2	9.8	17.7	20.1	14.1	11.5	9.3	24.7	26.4	15.5	19.7	9.9	13.4	14.0	25.2	5.1	6.3	7.4	3.9	26.4	12.4	24	
16	14.8	12.4	13.7	9.6	9.8	9.1	10.0	15.5	12.2	15.7	15.9	19.0	21.0	25.5	20.7	17.4	20.3	12.2	9.6	8.9	6.9	9.3	22.7	15.3	6.9	25.5	14.5	24	
17	8.9	5.9	8.0	10.4	12.2	9.8	8.6	16.7	18.7	20.6	24.3	28.8	31.4	25.7	30.3	27.7	26.0	21.8	8.3	10.7	11.8	12.2	8.9	5.9	5.9	31.4	17.2	24	
18	7.4	8.0	8.7	7.4	12.9	12.8	14.8	14.4	18.1	14.8	15.9	12.8	18.5	21.4	23.3	18.8	11.1	22.5	22.0	12.2	12.8	31.0	16.8	26.4	7.4	31.0	16.0	24	
19	8.9	26.2	14.6	14.2	18.7	16.2	17.0	24.9	36.3	38.7	43.1	33.6	35.2	52.0	41.1	42.8	40.4	32.3	35.0	18.8	17.4	17.0	21.0	19.6	8.9	52.0	27.7	24	
20	21.8	18.1	15.5	17.0	15.3	15.5	14.2	17.0	21.4	26.9	26.9	28.4	33.1	32.9	38.3	41.2	31.8	31.5	20.0	14.7	12.4	37.0	36.1	9.1	9.1	41.2	24.0	24	
21	7.4	7.4	10.2	8.0	10.2	8.0	8.0	11.3	12.0	13.9	19.9	22.7	23.8	26.4	21.8	17.9	20.7	18.3	16.8	6.1	5.4	6.1	7.8	3.3	3.3	26.4	13.1	24	
22	12.5	6.2	6.8	8.4	10.5	5.0	8.3	6.5	10.9	8.7	9.1	11.3	13.5	12.8	11.8	15.9	35.2	10.2	4.8	4.3	3.6	9.1	3.6	3.0	3.0	35.2	9.7	24	
23	3.2	3.2	4.1	11.3	16.8	15.3	10.0	9.3	14.6	16.6	21.6	29.7	26.0	26.2	29.9	23.2	17.9	23.2	14.0	14.5	22.1	18.9	23.9	16.6	3.2	29.9	17.2	24	
24	23.4	22.3	20.5	16.1	14.6	13.5	27.9	29.9	39.3	33.0	29.1	33.2	35.8	25.8	29.0	19.4	10.7	9.1	4.8	28.2	20.3	17.2	35.8	33.2	4.8	39.3	23.8	24	
25	28.8	24.7	22.1	17.0	16.1	18.6	17.7	28.8	44.6	45.7	39.1	43.2	40.2	44.0	37.2	35.3	34.8	30.7	26.5	9.8	11.3	10.4	12.0	10.9	9.8	45.7	27.1	24	
26	7.8	7.1	10.0	13.1	16.6	16.4	13.7	16.8	19.0	21.1	28.6	32.8	27.3	31.2	34.7	29.3	30.6	23.1	13.1	11.8	11.1	10.4	13.3	15.0	7.1	34.7	18.9	24	
27	12.6	14.8	10.1	11.4	17.5	12.3	12.7	13.9	13.7	26.8	33.0	22.0	27.1	32.8	28.4	27.1	19.8	18.3	14.8	5.2	3.4	5.2	3.6	6.5	3.4	33.0	16.4	24	
28	6.9	9.1	8.5	11.1	9.1	6.7	10.7	14.1	17.0	21.0	14.1	21.8	27.7	29.9	29.2	26.6	25.3	28.4	17.0	10.2	6.7	5.2	6.1	6.1	5.2	29.9	15.4	24	
29	4.6	5.5	5.5	4.9	4.8	5.0	6.9	10.9	11.8	12.2	17.0	15.5	17.7	20.5	24.6	19.4	20.3	9.8	8.3	7.1	15.9	17.2	14.8	19.6	4.6	24.6	12.5	24	
30	17.9	23.1	19.7	20.1	23.8	25.3	23.1	25.3	31.2	25.8	27.3	30.1	21.8	26.8	28.8	27.7	20.8	11.4	9.9	12.3	10.5	11.4	11.4	7.4	7.4	31.2	20.5	24	
31	7.8	8.0	4.3	4.3	15.5	6.7	7.1	10.9	15.7	20.3	21.4	25.7	31.4	30.8	28.1	35.8	31.0	26.8	27.5	15.9	18.1	19.4	18.3	29.7	4.3	35.8	19.2	24	
HOURLY MAX	29.1	26.2	22.7	24.2	24.9	25.3	27.9	29.9	44.6	45.7	43.1	43.2	45.2	52.2	41.1	42.8	40.4	32.3	35.0	28.2	26.2	37.0	36.1	33.2					
HOURLY AVG	10.6	10.1	9.6	10.2	11.5	9.9	11.7	14.1	17.4	19.4	21.7	22.7	23.9	25.9	25.1	23.8	22.5	19.0	15.6	11.5	11.5	12.0	13.0	11.6					

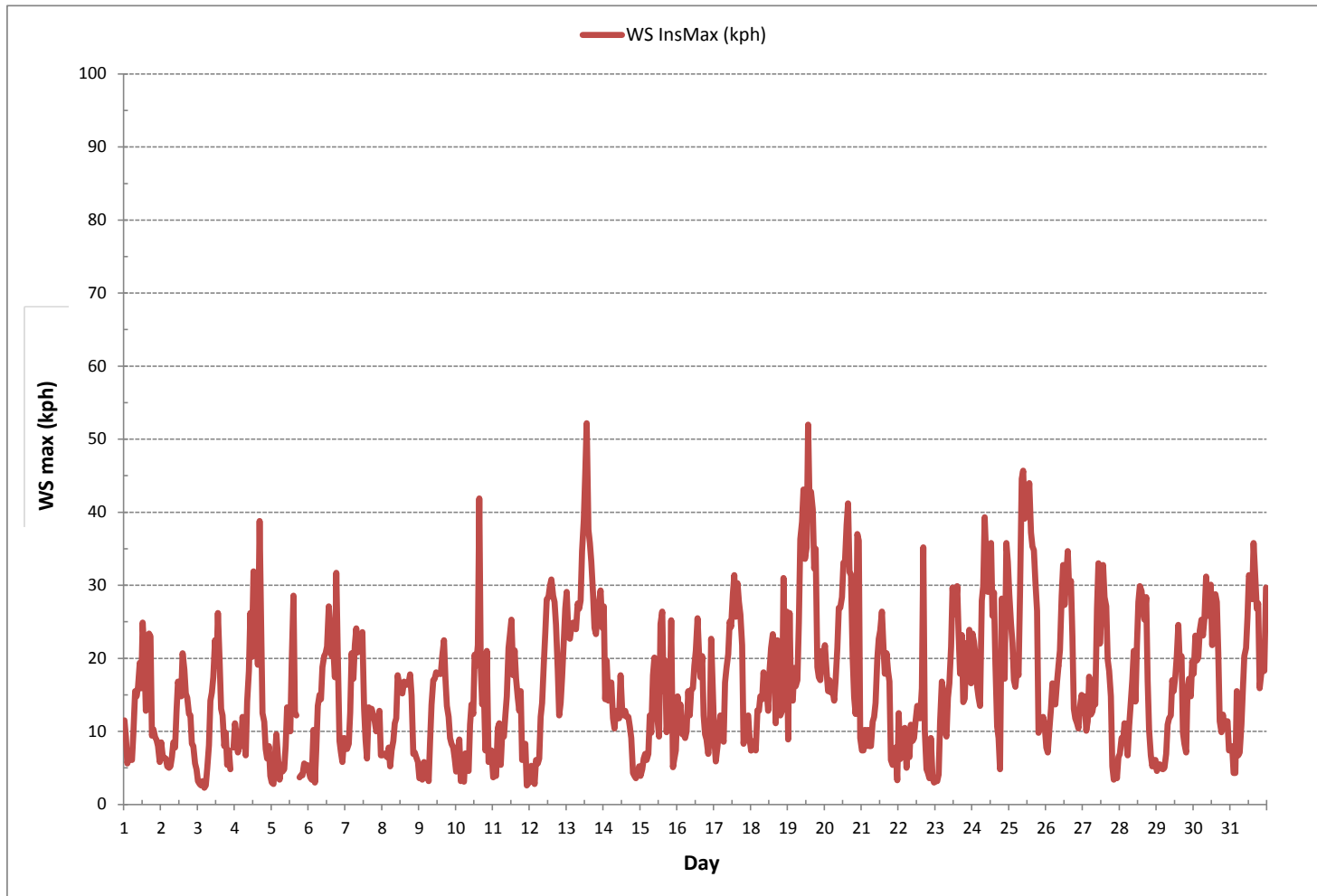
STATUS FLAG CODES

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

MONTHLY SUMMARY

MAXIMUM INSTANTANEOUS VALUE:	52.2	kph	@ HOUR	13	ON DAY	13	
OPERATIONAL TIME:						740	hrs

WIND SPEED Instantaneous Maximum (WS kph)



Wind: LICA MASKWA
 Monitor: WSP [kph]
 Monthly: 17/08
 Type: WindRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 18.68%

Direction	1.8-2.7	2.7-5.4	5.4-8.2	8.2-10.9	10.9-13.6	>13.6	Total
N	1.3	1.2	0.5	0.1	0.0	0.0	3.2
NE	2.0	4.7	1.1	0.9	0.1	0.0	8.9
E	0.7	3.1	0.9	0.0	0.0	0.0	4.7
SE	0.9	4.7	5.2	1.3	0.5	0.0	12.8
S	1.5	6.5	1.3	0.5	0.0	0.0	9.8
SW	3.8	12.6	5.9	0.5	0.0	0.0	22.8
W	1.6	6.2	5.0	1.3	0.0	0.0	14.1
NW	2.2	1.6	1.1	0.1	0.0	0.0	5.0
Summary	14.0	40.6	21.1	5.0	0.7	0.0	81.3

% Icon Classes (kph)

14



1.8-2.7

41



2.7-5.4

21



5.4-8.2

5



8.2-10.9

1



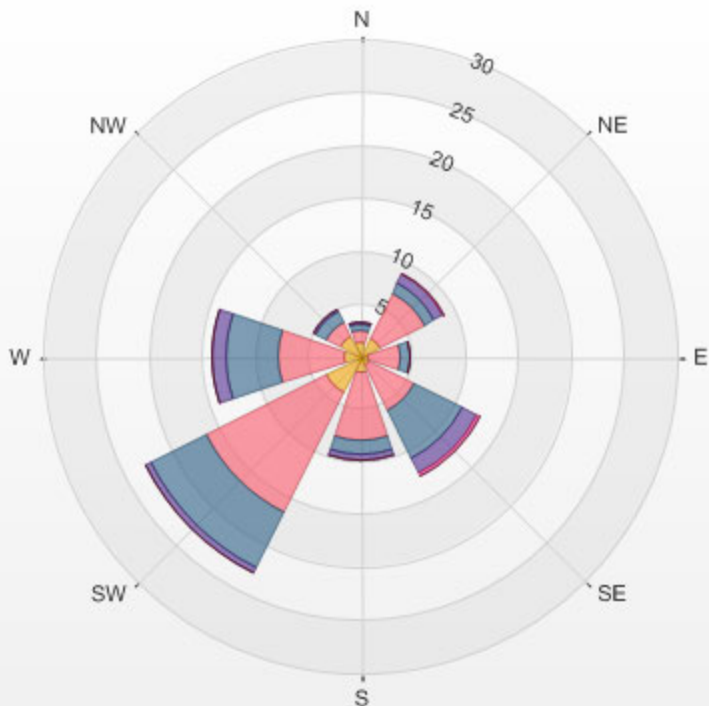
10.9-13.6

0



>13.6

LICA MASKWA 2017/08/01 00:00 - 2017/08/31 23:00 Calm: 18.68% Calm Wind Avg Speed: 1.11(kph)



WIND DIRECTION



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Maskwa Continuous Monitoring Station - August 2017

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

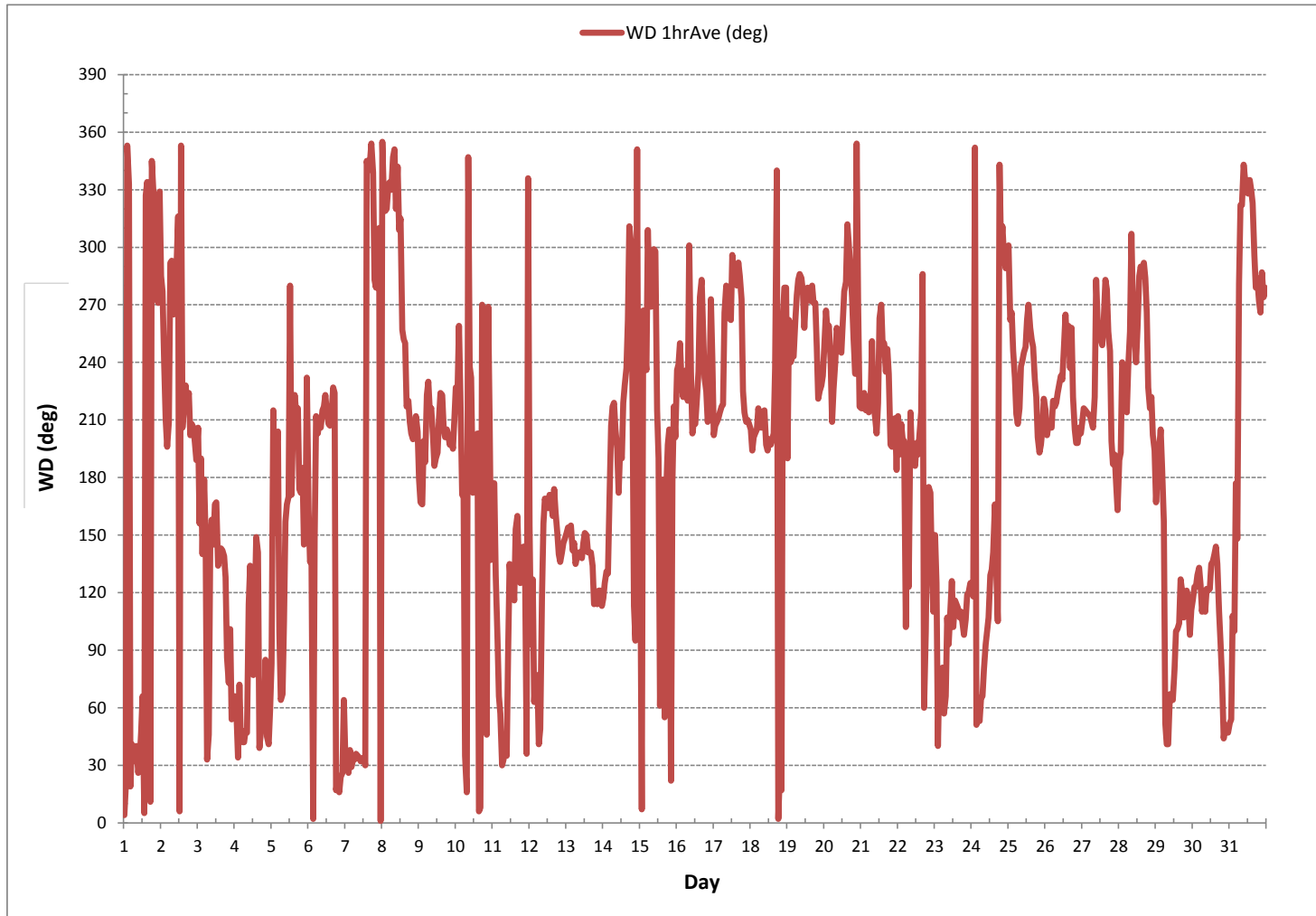
STATUS FLAG CODES

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

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

MONTHLY CALIBRATION TIME:	0	hrs	OPERATIONAL TIME:	744	hrs
STANDARD DEVIATION:	84		AMD OPERATION UPTIME:	100.0	%
			MONTHLY AVERAGE:	203 (SSW)	

WIND DIRECTION Hourly Averages (WD)



STANDARD DEVIATION WIND DIRECTION



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Maskwa Continuous Monitoring Station - August 2017

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	29	46	43	32	31	44	22	20	26	58	34	50	42	38	46	51	44	44	37	41	52	46	57	68	24
2	56	44	34	27	18	17	30	51	59	63	61	58	57	58	50	33	44	39	33	11	9	9	8	16	24
3	20	15	50	25	39	31	22	32	47	48	46	45	35	42	32	34	28	19	25	18	21	20	17	23	24
4	29	19	18	22	22	26	22	48	31	39	43	52	42	40	45	39	21	54	31	22	27	40	27	29	24
5	28	52	21	20	28	32	19	29	42	47	40	44	43	59	32	34	36	34	49	23	22	43	24	39	24
6	55	65	48	68	55	27	20	23	29	31	31	37	34	34	28	34	38	35	39	21	37	40	30	21	24
7	20	21	20	26	14	15	16	20	17	18	19	20	21	46	54	41	45	40	57	42	48	51	46	49	24
8	46	68	31	34	32	24	31	37	45	50	48	63	67	63	43	47	40	33	21	11	7	10	13	31	24
9	33	25	17	10	28	29	65	35	35	27	42	56	47	54	47	62	49	44	18	11	9	14	11	42	24
10	34	38	34	33	56	22	43	36	54	42	60	42	50	35	40	37	31	39	53	67	60	67	56	49	24
11	59	43	59	48	53	38	20	21	24	26	49	46	46	64	51	49	47	30	21	14	8	13	69	65	24
12	47	46	40	55	31	50	29	30	46	37	31	35	34	34	31	31	29	29	23	17	19	22	25	25	24
13	24	22	22	23	26	25	32	33	34	37	34	32	32	32	35	34	31	28	40	39	38	39	39	39	24
14	44	34	31	25	25	28	40	40	24	25	28	22	32	31	37	41	34	46	40	64	28	51	49	49	24
15	36	27	47	38	54	58	47	43	42	37	37	31	19	42	55	55	43	31	20	18	48	65	42	53	24
16	32	31	33	31	17	29	39	32	54	50	20	23	29	49	39	41	40	37	27	27	24	29	38	36	24
17	16	24	17	14	18	13	21	39	41	40	45	46	37	43	45	40	39	39	36	27	20	14	12	14	24
18	31	26	9	11	15	25	16	22	26	29	27	26	22	26	24	29	38	58	33	20	39	58	48	41	24
19	63	38	41	38	40	40	37	36	35	42	43	44	40	44	42	42	40	40	43	41	23	31	34	38	24
20	41	41	39	42	42	23	30	39	42	46	40	42	43	46	41	40	46	43	38	41	48	37	37	22	24
21	23	16	25	24	21	47	28	38	31	40	19	29	52	51	43	37	39	46	37	8	6	13	57	42	24
22	23	29	14	19	33	39	30	42	38	26	39	44	39	22	26	37	56	47	36	55	27	43	40	70	24
23	60	57	67	25	23	24	21	33	37	38	39	38	44	37	38	43	37	34	30	30	36	35	33	29	24
24	32	42	52	49	27	22	25	30	36	42	40	42	38	38	32	33	28	32	42	36	40	42	39	38	24
25	45	40	46	43	35	21	21	27	40	42	41	41	42	46	44	42	44	37	28	14	13	14	15	31	24
26	19	11	12	11	12	20	17	23	32	33	38	37	42	49	42	42	40	44	28	15	10	14	16	14	24
27	14	20	29	14	18	15	14	15	29	44	45	45	46	45	50	47	43	46	36	40	45	28	51	29	24
28	55	28	37	37	38	50	30	43	47	58	39	45	49	44	44	39	40	36	39	30	37	33	17	19	24
29	25	21	37	17	17	50	51	19	29	39	39	64	59	59	46	45	39	30	31	22	24	28	32	36	24
30	34	35	32	32	30	37	43	45	43	40	41	43	36	38	30	31	30	28	27	28	16	16	21	18	24
31	15	25	54	48	57	48	37	40	55	39	40	45	43	43	43	45	40	40	36	33	35	35	36	31	24

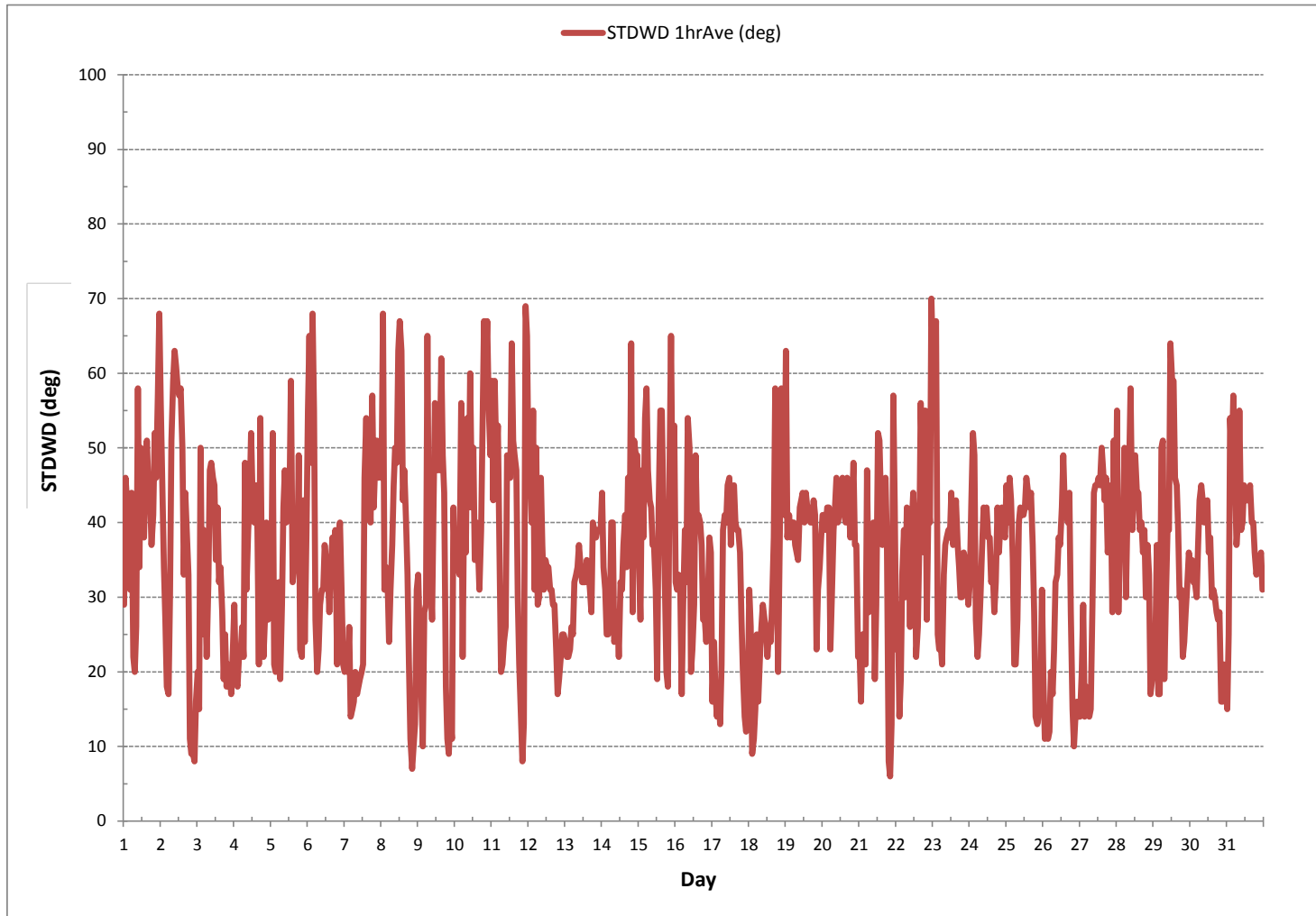
STATUS FLAG CODES

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

LAST CALIBRATION: March 30, 2016

CALIBRATION TIME: 0 hrs OPERATIONAL TIME: 744 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	86	90	92	93	93	94	93	87	79	68	60	54	52	69	57	56	64	68	73	76	82	87	92	93	52	94	77	24	
2	94	94	94	94	94	94	94	88	65	47	38	32	33	34	34	36	35	41	47	59	77	84	90	92	32	94	66	24	
3	93	93	94	94	94	94	94	81	56	51	51	47	47	47	49	50	54	62	60	74	83	87	92	93	47	94	73	24	
4	93	93	93	92	89	86	83	85	71	61	56	55	57	54	56	54	66	72	78	89	91	93	93	93	54	93	77	24	
5	94	94	94	94	94	94	93	92	89	79	71	71	84	75	84	79	77	80	81	89	93	93	94	94	71	94	87	24	
6	94	94	94	94	94	94	94	93	78	69	63	58	54	52	49	48	47	50	62	72	85	89	92	90	47	94	75	24	
7	89	89	90	90	89	87	87	88	86	85	82	80	83	86	86	88	90	89	90	91	92	91	91	91	80	92	88	24	
8	92	92	93	93	93	93	93	82	71	58	49	46	42	41	41	40	41	43	53	66	80	89	90	92	40	93	70	24	
9	93	93	93	94	94	94	94	92	69	60	54	54	51	47	46	48	47	48	53	70	82	82	87	92	46	94	72	24	
10	93	93	94	94	94	94	93	86	72	59	42	37	37	40	40	58	78	84	85	89	87	90	93	93	37	94	76	24	
11	94	94	94	94	94	94	94	92	75	65	54	46	45	45	44	44	44	46	57	74	77	80	91	93	44	94	72	24	
12	93	94	94	94	94	94	94	90	62	55	51	46	40	38	39	42	44	46	52	65	72	70	68	68	38	94	67	24	
13	66	67	69	70	72	72	69	62	59	55	50	45	40	38	39	40	39	44	53	62	65	63	62	66	38	72	57	24	
14	68	73	73	76	78	81	84	79	82	84	88	90	88	90	87	79	81	82	82	89	92	93	93	94	68	94	84	24	
15	94	94	94	94	94	94	94	92	87	80	73	79	84	88	91	91	92	88	89	91	90	93	94	94	73	94	90	24	
16	94	94	94	94	94	94	94	92	75	62	62	60	55	45	45	50	46	57	65	74	81	86	76	76	45	94	74	24	
17	88	92	93	92	91	91	88	78	66	57	51	46	44	43	42	42	41	43	51	69	77	80	80	88	41	93	68	24	
18	92	93	94	93	93	92	86	79	73	69	65	66	57	53	50	53	58	69	69	72	81	82	88	88	50	94	76	24	
19	90	91	91	91	92	91	89	78	66	57	52	49	47	45	45	45	44	44	47	57	63	68	73	74	44	92	66	24	
20	75	75	74	73	77	80	76	67	61	55	49	44	39	39	41	42	46	40	52	60	74	65	68	82	39	82	61	24	
21	87	90	90	90	91	92	93	79	66	57	62	60	47	37	40	43	38	41	55	77	86	90	92	91	37	93	71	24	
22	90	89	87	83	83	88	88	90	87	78	71	66	62	67	67	63	70	87	87	93	93	94	94	94	62	94	82	24	
23	94	94	94	94	94	94	94	91	86	75	64	59	58	55	55	60	65	73	79	78	79	76	75	55	55	94	78	24	
24	76	75	80	89	90	89	86	81	76	71	67	63	63	63	63	65	70	74	79	84	78	81	75	75	63	90	76	24	
25	81	90	89	88	89	89	86	78	63	56	51	50	50	51	47	45	46	47	52	67	76	77	80	80	45	90	68	24	
26	85	90	92	88	88	89	83	73	60	55	50	47	43	41	41	40	42	43	55	66	72	75	78	76	40	92	66	24	
27	77	76	80	74	66	68	71	67	57	48	45	41	40	40	39	39	41	44	56	74	84	88	91	92	39	92	62	24	
28	92	92	87	85	82	87	86	79	69	79	79	63	52	43	38	38	41	40	47	66	80	84	88	91	38	92	70	24	
29	92	93	93	93	93	93	93	90	61	47	41	40	35	29	29	34	38	47	57	71	72	65	72	68	29	93	64	24	
30	63	62	63	65	65	65	64	61	57	53	51	53	54	52	53	56	60	66	75	79	80	82	86	90	51	90	65	24	
31	91	92	93	93	94	94	94	89	78	67	58	52	47	44	38	36	40	35	46	54	61	61	64	63	35	94	66	24	
HOURLY MAX	94	94	94	94	94	94	94	94	91	86	88	90	88	90	91	91	92	89	90	93	93	94	94	94					
HOURLY AVG	87	88	89	89	88	89	88	83	71	64	58	55	53	51	51	52	54	58	64	74	80	82	84	85					

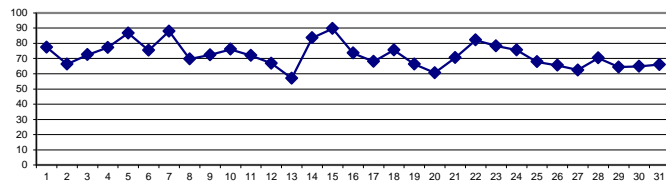
STATUS FLAG CODES

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

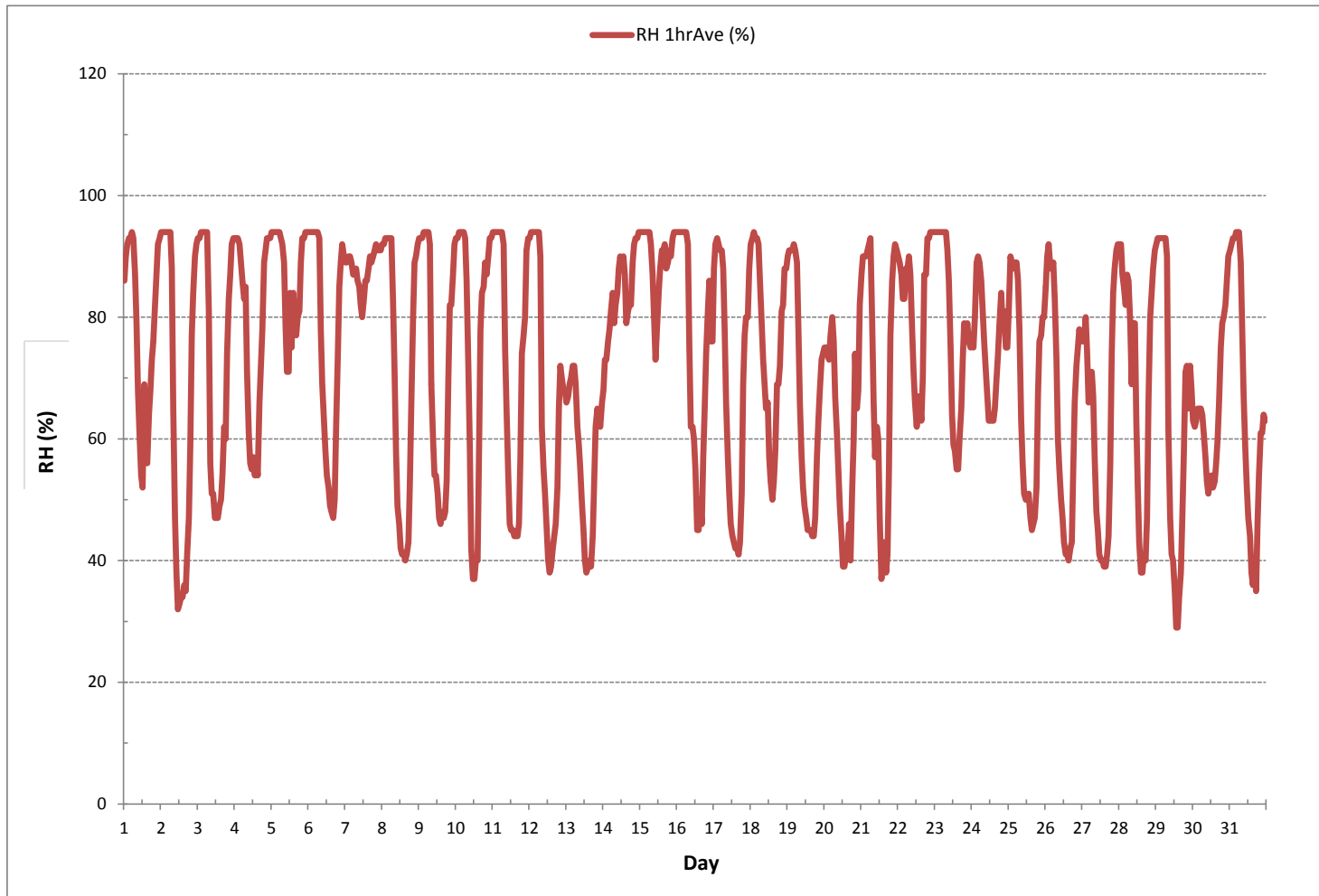
MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	29	%	@ HOUR	13	ON DAY	29
MAXIMUM 1-HR AVERAGE:	94	%	@ HOUR	5	ON DAY	1
MAXIMUM 24-HR AVERAGE:	90	%			ON DAY	15
OPERATIONAL TIME:						744 hrs
AMD OPERATION UPTIME:						100.0 %
STANDARD DEVIATION:	19		MONTHLY AVERAGE:			72 %

24 HR AVERAGES August 2017



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	953	953	953	954	954	954	955	955	957	956	956	956	956	956	956	956	956	956	956	956	956	956	955	955	953	956	955	24					
2	956	955	955	955	955	955	956	957	957	957	957	957	956	956	956	955	955	954	954	953	953	952	952	952	952	957	955	24					
3	952	951	951	951	951	950	951	951	951	951	950	950	949	949	948	948	948	947	946	946	945	945	945	945	945	945	945	949	24				
4	945	944	944	944	943	943	944	944	945	946	946	946	946	946	946	946	946	946	947	946	946	946	946	946	946	943	947	24					
5	946	947	946	947	947	947	947	948	948	948	949	949	948	948	948	948	948	947	947	947	947	947	947	947	947	946	949	24					
6	946	946	946	946	946	946	947	947	948	948	948	948	947	947	947	947	947	947	946	947	947	947	947	947	947	946	948	24					
7	947	948	948	948	948	948	949	949	949	949	949	950	950	950	950	950	950	949	949	950	950	950	950	950	947	950	949	24					
8	950	950	949	949	950	950	950	951	951	951	951	951	951	950	950	950	948	949	949	949	948	948	948	948	948	948	951	24					
9	948	948	948	948	948	948	949	949	950	950	950	950	950	950	949	949	949	949	949	948	948	948	948	948	948	948	950	24					
10	947	947	948	948	948	948	948	948	948	949	949	949	948	948	947	948	948	948	947	947	947	947	947	947	947	947	949	24					
11	947	947	947	947	947	947	947	948	949	949	949	949	949	949	949	948	948	948	948	947	947	946	946	946	946	946	949	24					
12	946	946	945	945	945	945	946	946	947	947	947	946	946	945	945	944	943	943	943	942	941	941	941	941	941	941	947	24					
13	940	940	940	939	939	938	938	938	938	938	938	937	937	937	936	936	936	936	936	935	935	935	935	934	934	934	940	24					
14	934	934	933	933	933	933	934	934	935	935	935	935	935	936	936	936	936	936	936	935	935	935	935	935	935	933	936	24					
15	935	934	934	933	933	933	932	932	933	933	933	933	933	933	933	933	934	934	934	934	935	935	935	936	932	936	934	24					
16	936	936	936	937	937	938	938	939	939	940	939	939	939	939	938	938	938	938	938	938	937	937	938	938	938	936	940	24					
17	938	937	937	938	938	938	938	939	940	940	940	940	940	940	940	940	940	940	940	940	940	940	940	940	939	937	940	24					
18	939	939	939	939	938	938	939	939	939	938	938	937	937	937	936	936	936	936	935	935	935	934	934	935	936	934	939	24					
19	935	936	936	935	935	936	936	936	937	937	938	938	938	938	938	938	938	938	938	938	938	939	938	939	935	939	937	24					
20	939	938	938	938	938	938	939	940	940	940	940	940	940	940	940	940	940	940	940	940	941	942	942	942	938	942	940	24					
21	942	942	943	943	943	944	944	945	946	947	947	946	947	947	947	946	946	946	946	945	945	945	945	945	942	947	945	24					
22	945	945	945	945	945	945	946	946	946	946	946	946	946	945	945	944	944	944	944	944	944	944	944	944	943	943	946	24					
23	943	943	943	943	943	944	944	944	945	945	945	944	944	944	943	943	943	942	942	941	941	941	941	941	941	941	945	24					
24	940	940	940	940	939	939	938	937	936	936	936	935	934	934	933	933	933	932	932	932	932	932	932	934	934	932	940	24					
25	934	934	935	935	935	936	936	937	937	938	938	938	939	939	940	940	940	940	941	941	940	940	941	941	941	934	941	24					
26	941	942	942	943	943	944	944	945	946	946	946	946	946	946	946	946	946	946	945	945	945	945	945	945	941	946	24						
27	945	945	945	945	946	946	946	946	947	947	947	947	946	946	945	945	945	945	945	944	944	944	944	944	944	944	947	24					
28	944	945	945	945	946	946	946	946	947	947	947	947	947	946	946	946	946	946	946	946	946	946	946	946	944	947	24						
29	946	947	947	947	947	947	948	949	950	951	951	951	950	950	950	949	949	949	948	947	947	947	947	947	946	951	948	24					
30	947	946	946	945	944	944	944	944	943	943	942	941	941	941	940	940	939	938	938	937	936	936	935	934	934	947	941	24					
31	934	933	934	933	934	934	934	935	935	936	936	936	937	937	937	937	937	937	938	938	938	938	939	939	933	939	936	24					
HOURLY MAX	956	955	955	955	955	955	956	957	957	957	957	957	956	956	956	956	956	956	956	956	956	956	955	955	953	956	955	24					
HOURLY AVG	943	943	943	943	943	943	944	944	944	945	945	944	944	944	944	944	944	943	943	943	943	943	943	943	943	943	943	943	24				

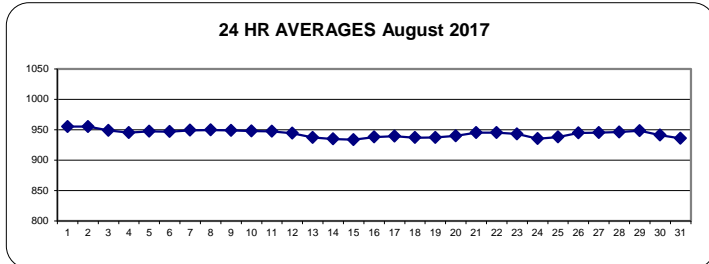
STATUS FLAG CODES

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

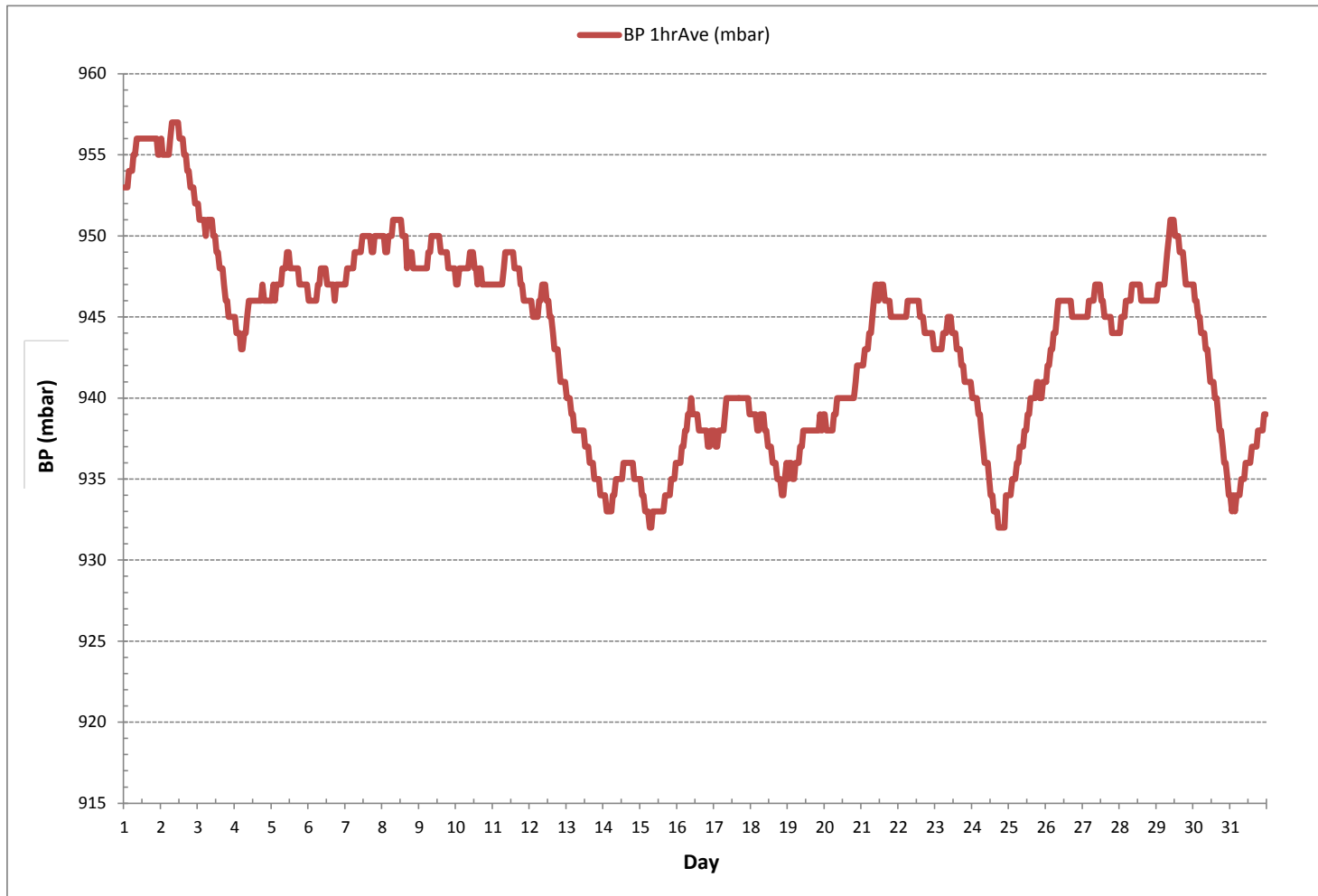
MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	932 mbar	@ HOUR	6	ON DAY	15
MAXIMUM 1-HR AVERAGE:	957 mbar	@ HOUR	7	ON DAY	2
MAXIMUM 24-HR AVERAGE:	955 mbar			ON DAY	1
OPERATIONAL TIME:					744 hrs
AMD OPERATION UPTIME:					100.0 %
STANDARD DEVIATION:	6			MONTHLY AVERAGE:	944 mbar

24 HR AVERAGES August 2017



BAROMETRIC PRESSURE Hourly Averages (BP mbar)



AMBIENT TEMPERATURE

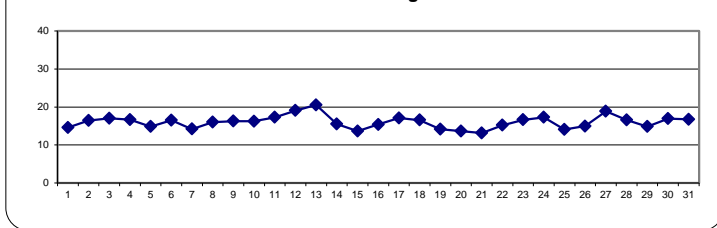
AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)

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	11.1	10.2	9.6	9.0	8.6	9.7	11.7	13.5	15.4	18.4	19.6	20.4	20.8	17.8	20.3	20.1	18.8	16.7	15.7	15.1	13.9	12.3	10.8	10.3	8.6	20.8	14.6	24
2	10.1	9.4	9.1	8.2	7.5	8.0	10.6	14.0	18.4	21.6	22.9	24.2	23.7	23.8	24.1	23.5	23.9	22.4	21.2	18.6	14.8	13.1	11.3	10.3	7.5	24.2	16.4	24
3	9.6	8.9	8.3	7.8	7.3	8.3	10.8	16.3	21.5	22.5	23.7	24.6	24.1	24.6	24.4	23.9	23.1	21.7	22.1	18.5	15.6	14.5	13.3	13.0	7.3	24.6	17.0	24
4	12.5	11.9	11.8	12.3	12.7	13.1	14.3	15.1	18.8	21.0	22.6	23.3	22.4	23.5	23.7	23.3	18.9	16.2	15.3	14.0	13.6	13.2	13.2	13.0	11.8	23.7	16.7	24
5	13.1	13.0	12.9	13.5	13.1	12.9	13.9	14.3	15.2	17.4	19.2	19.0	17.0	19.1	15.6	17.1	17.7	17.0	16.8	14.6	12.8	11.2	10.4	9.9	9.9	19.2	14.9	24
6	9.7	8.9	8.6	8.2	7.9	8.7	12.5	14.5	18.0	20.1	21.2	22.6	23.6	23.8	24.2	24.5	24.6	23.7	20.6	17.3	14.4	13.3	12.8	13.3	7.9	24.6	16.5	24
7	13.6	13.9	14.1	14.4	14.6	14.3	14.2	13.8	13.7	14.0	14.6	15.1	15.1	15.3	15.8	15.2	15.0	14.9	14.0	13.7	13.1	13.0	12.8	12.3	12.3	15.8	14.2	24
8	11.8	11.2	9.9	9.8	9.6	9.1	10.6	13.8	17.2	20.2	20.7	22.0	22.6	22.7	23.1	23.4	23.9	22.1	20.0	16.7	13.2	11.0	10.2	9.2	9.1	23.9	16.0	24
9	8.5	7.8	7.4	7.2	6.8	6.9	9.6	14.0	18.5	20.1	21.7	22.3	23.1	23.7	24.2	23.8	24.4	24.1	22.5	18.7	15.7	15.2	13.2	11.5	6.8	24.4	16.3	24
10	10.6	10.4	10.8	11.0	10.9	11.2	12.5	15.4	18.1	21.7	25.4	26.0	26.7	25.8	25.9	19.7	15.7	14.9	14.7	14.3	14.2	12.6	11.0	9.9	9.9	26.7	16.2	24
11	9.2	8.5	8.0	7.7	7.4	7.5	9.6	13.5	17.9	20.5	23.6	25.3	25.9	26.2	26.6	26.8	26.7	26.1	23.6	18.9	16.3	15.0	12.4	11.7	7.4	26.8	17.3	24
12	11.1	10.5	10.5	9.6	9.6	9.5	11.6	15.9	22.3	24.0	24.8	25.6	26.7	27.1	26.9	26.7	25.9	25.6	23.5	19.6	17.5	17.9	18.0	17.4	9.5	27.1	19.1	24
13	17.1	16.1	15.5	15.0	14.3	14.6	15.7	18.5	20.5	22.7	24.8	26.4	26.6	26.8	26.6	26.1	25.3	23.8	22.1	20.1	19.1	19.0	18.7	17.4	14.3	26.8	20.5	24
14	17.0	15.8	15.5	14.9	14.4	14.6	14.9	16.8	16.4	16.3	16.3	15.6	16.2	15.3	16.5	18.1	17.3	16.8	16.3	14.6	13.4	13.0	12.9	12.8	12.8	18.1	15.5	24
15	12.9	13.1	13.2	12.9	12.0	11.8	12.9	13.6	14.5	15.5	17.2	16.4	15.6	15.3	13.9	13.6	13.6	14.8	14.8	14.2	12.8	11.3	10.8	10.0	10.0	17.2	13.6	24
16	9.6	9.0	9.1	9.0	8.7	8.8	10.7	12.0	16.5	19.4	19.1	18.8	20.5	22.4	22.5	21.1	22.3	20.2	18.1	16.2	14.3	12.8	14.2	13.7	8.7	22.5	15.4	24
17	10.4	9.4	9.2	9.8	10.0	10.1	11.8	15.5	18.8	21.0	22.9	23.9	23.8	24.7	24.3	24.3	24.1	23.6	24.1	16.9	14.7	13.8	13.9	12.1	9.2	24.7	17.1	24
18	10.8	10.1	10.8	10.1	10.6	11.0	12.8	14.5	16.2	17.6	19.6	20.5	22.7	23.9	24.4	23.6	23.5	21.0	19.4	17.9	14.9	15.1	13.6	12.6	10.1	24.4	16.6	24
19	11.6	11.4	11.0	10.6	9.7	8.9	9.2	11.7	14.1	16.4	17.6	18.2	18.5	19.3	18.4	18.0	17.7	18.1	16.6	14.2	12.8	12.4	11.6	10.9	8.9	19.3	14.1	24
20	10.4	9.6	9.4	8.9	8.0	7.4	8.5	11.7	14.1	15.9	17.8	19.1	20.0	20.3	20.5	19.5	18.0	18.8	15.5	13.2	10.3	11.9	11.5	7.9	7.4	20.5	13.7	24
21	6.4	6.0	6.0	5.9	5.5	5.1	6.4	11.1	15.2	18.1	16.9	17.7	19.9	22.0	20.7	20.7	21.9	20.7	17.7	13.0	10.3	9.0	9.1	10.1	5.1	22.0	13.1	24
22	11.1	11.7	12.6	13.1	13.2	12.4	12.8	13.2	14.6	16.4	18.6	19.5	20.6	19.7	20.0	21.6	20.0	17.1	17.3	14.6	12.9	11.7	10.6	9.6	9.6	21.6	15.2	24
23	9.1	8.5	8.7	8.4	8.4	9.2	11.0	14.1	16.9	17.5	19.7	22.4	24.0	23.8	24.5	24.9	24.0	22.3	19.5	17.3	16.9	16.4	16.2	15.4	8.4	24.9	16.6	24
24	14.9	15.0	14.8	13.4	12.9	12.9	13.8	15.0	16.3	17.8	19.3	20.7	20.9	21.8	21.9	20.9	20.5	19.7	19.1	17.7	18.1	17.1	16.4	14.5	12.9	21.9	17.3	24
25	13.2	12.0	11.6	11.2	10.8	10.0	10.1	11.5	14.0	15.6	17.2	17.2	17.4	17.6	19.1	20.1	19.5	19.1	17.0	13.6	10.9	10.5	9.9	9.6	9.6	20.1	14.1	24
26	8.1	6.6	6.5	7.8	7.8	7.5	8.9	11.9	15.5	17.4	19.2	20.3	21.8	22.3	22.7	22.8	22.2	22.1	18.9	15.9	13.8	13.2	12.7	13.3	6.5	22.8	15.0	24
27	12.9	12.6	11.4	12.8	14.4	14.1	14.0	16.6	20.1	23.1	24.3	25.5	26.1	26.3	26.9	26.7	26.4	25.3	21.5	17.6	15.1	13.9	12.8	12.9	11.4	26.9	18.9	24
28	13.1	13.5	14.4	14.0	14.7	13.5	14.2	16.3	17.8	16.7	17.1	20.9	22.9	23.9	24.2	24.0	23.4	22.2	18.8	14.8	11.5	10.0	8.7	7.8	7.8	24.2	16.6	24
29	7.3	6.7	6.2	5.8	5.4	4.9	5.9	9.3	15.9	19.7	21.7	23.2	23.3	24.0	24.2	23.9	23.0	20.7	17.8	14.0	13.2	14.1	13.3	13.3	4.9	24.2	14.9	24
30	13.2	13.0	13.1	12.8	12.7	12.6	13.5	15.0	17.0	18.9	20.5	21.3	22.5	23.6	23.5	22.3	21.3	19.8	17.4	15.9	15.4	14.9	13.7	12.5	12.5	23.6	16.9	24
31	11.5	10.7	10.0	9.2	9.5	10.0	10.8	13.2	16.2	19.9	22.7	24.5	25.4	25.0	24.7	25.0	23.2	20.2	17.9	16.0	14.8	14.9	13.3	13.5	9.2	25.4	16.8	24
HOURLY MAX	17.1	16.1	15.5	15.0	14.7	14.6	15.7	18.5	22.3	24.0	25.4	26.4	26.7	27.1	26.9	26.8	26.7	26.1	23.6	20.1	19.1	19.0	18.7	17.4				
HOURLY AVG	11.3	10.8	10.6	10.5	10.3	10.3	11.6	14.1	17.0	18.9	20.4	21.4	21.9	22.3	22.4	22.1	21.5	20.4	18.6	16.1	14.2	13.5	12.7	12.0				

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

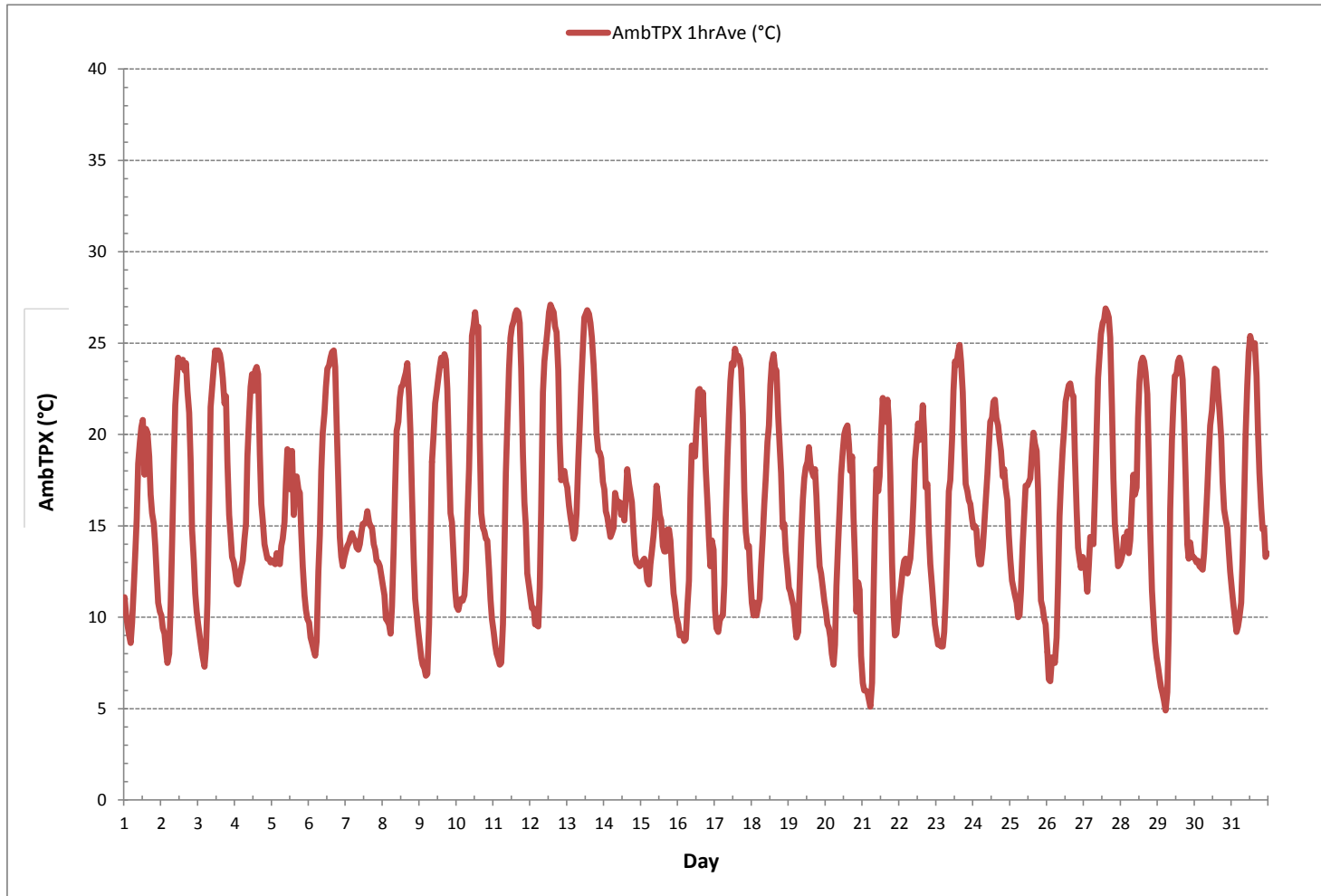
24 HR AVERAGES August 2017



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	4.9 °C	@ HOUR	5	ON DAY	29
MAXIMUM 1-HR AVERAGE:	27.1 °C	@ HOUR	13	ON DAY	12
MAXIMUM 24-HR AVERAGE:	20.5 °C			ON DAY	13
OPERATIONAL TIME:				744	hrs
AMD OPERATION UPTIME:				100.0	%
STANDARD DEVIATION:	5.3			MONTHLY AVERAGE:	16.0 °C

AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)



PRECIPITATION

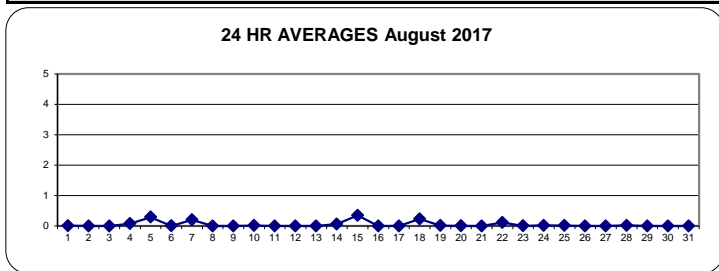
PRECIPITATION Hourly Averages (mm)

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.	AVG.		
DAY																													
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	24
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.6	0.2	0.3	0.1	0.1	0.0	0.6	0.1	24	
5	0.5	0.7	0.8	2.4	0.7	0.3	0.1	0.1	0.0	0.0	0.0	0.0	1.1	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.3	24
6	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	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	0.5	1.1	1.2	1.1	0.6	0.3	0.0	0.0	0.0	0.1	0.0	0.0	0.0	1.2	0.2	24	
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.3	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	C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.1	0.6	0.4	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.1	24
15	0.1	0.2	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	2.2	1.7	1.5	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	2.2	0.4	24	
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	2.0	1.2	0.0	2.4	0.2	24	
19	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	24	
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.0	24	
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
22	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	2.4	0.1	24	
23	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	24	
24	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	24	
25	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	24	
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
27	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	24	
29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
HOURLY MAX	0.5	0.7	0.8	2.4	0.7	0.3	0.2	0.1	0.0	0.5	0.6	0.4	1.1	2.2	1.7	1.5	2.4	0.3	0.5	0.6	0.2	2.4	2.0	1.2	0.0	0.0	0.0	0.0	24
HOURLY AVG	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.1	0.1	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

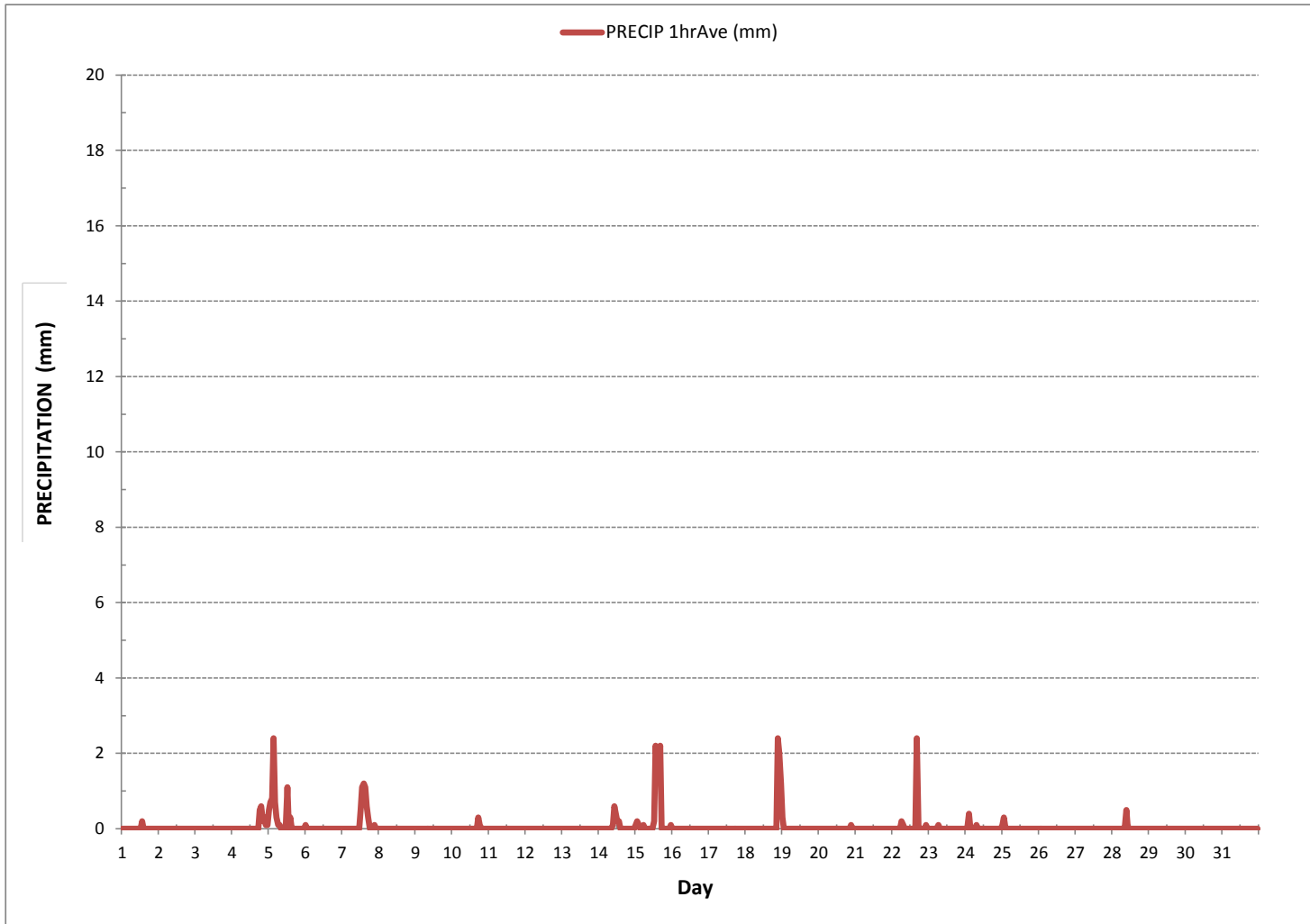
24 HR AVERAGES August 2017



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	0.0	mm	@ HOUR	0	ON DAY	1
MAXIMUM 1-HR AVERAGE:	2.4	mm	@ HOUR	3	ON DAY	5
MAXIMUM 24-HR AVERAGE:	0.4	mm			ON DAY	15
MONTHLY TOTAL	34.6	mm				
OPERATIONAL TIME:					744	hrs
AMD OPERATION UPTIME:					100.0	%
STANDARD DEVIATION:	0.2		MONTHLY AVERAGE:		0.0	mm

PRECIPITATION Hourly Averages (mm)



APPENDIX II
EQUIPMENT CALIBRATION RESULTS

SULPHUR DIOXIDE



API 100E Sulphur Dioxide Analyzer Calibration

Date:	August 11, 2017	Barometer/B.P./units:	F.S. 05544 expires December 5, 2018	948	millibars
Company/Airshed:	LICA	Thermometer/Station Temp:	Fluke 4295 expires November 14, 2017	24	°C
Location/Station Name:	Maskwa	Weather Conditions:	Mainly sunny		
Parameter:	Sulphur Dioxide	Calibration Purpose:	routine monthly		
Start Time 24 hr. (mst):	9:28	Performed By/Reviewer:	Alex Yakupov	Tom Bourque	
End Time 24 hr. (mst):	13:52	Cal Gas Expiry Date:	July 18, 2019		
Calibration Method:	Gas Dilution	Converter Model & s/n (if applicable):	n/a		

Analyzer:	Range ppb:
ID# or Serial Number:	508
Last Calibration Date:	July 6, 2017
Previous C.F.:	0.999
	As Found C.F.:
	0.946
	New C.F.:
	0.999

Calibration Standards:	Standard Calibration Points for Ranges
Low Flow Meter ID/Expiry Date:	Defender Low 152020 expires November 21, 2017
High Flow Meter ID/Expiry Date:	Defender High 148943 expires November 21, 2017
Calibrator ID/Expiry Date:	API id# 627 expires January 27, 2018
Cal Gas Cylinder I.D. # :	LL104222
Cal Gas Conc. (ppm):	50.6

Point	ppb
High	780
Mid	380
Low	190

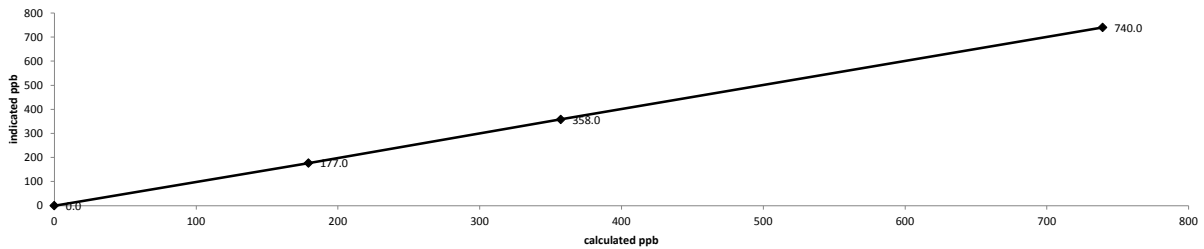
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Point	Calibrator Flow Rates (cc/min)			Calculated Concentration (ppb):	Indicated Concentration (ppb):	Correction Factors (C.F.):
	Diluent	Cal Gas	Total			
as found zero	5338	0.00	5338	0.0	4.0	n/a
as found high	5267	78.11	5345	739.5	786.0	0.946
adjusted zero	5338	0.00	5338	0.0	0.0	n/a
adjusted high	5267	78.11	5345	739.5	740.0	0.999
mid	5325	37.86	5363	357.2	358.0	0.998
low	5325	18.93	5344	179.2	177.0	1.013
calibrator zero	5338	0.00	5338	0.0	0.0	n/a
Average C.F. =						1.003

Linear Regression/Calibration Results:

	LIMITS
Correlation Coefficient =	1.000 > or = 0.995
Slope =	0.998 0.95-1.05
b (Intercept as % of full scale) =	0.08% ± 3% F.S.
% change in C.F. from last cal =	5.35% ± 10%

API 100E Sulphur Dioxide Analyzer Calibration

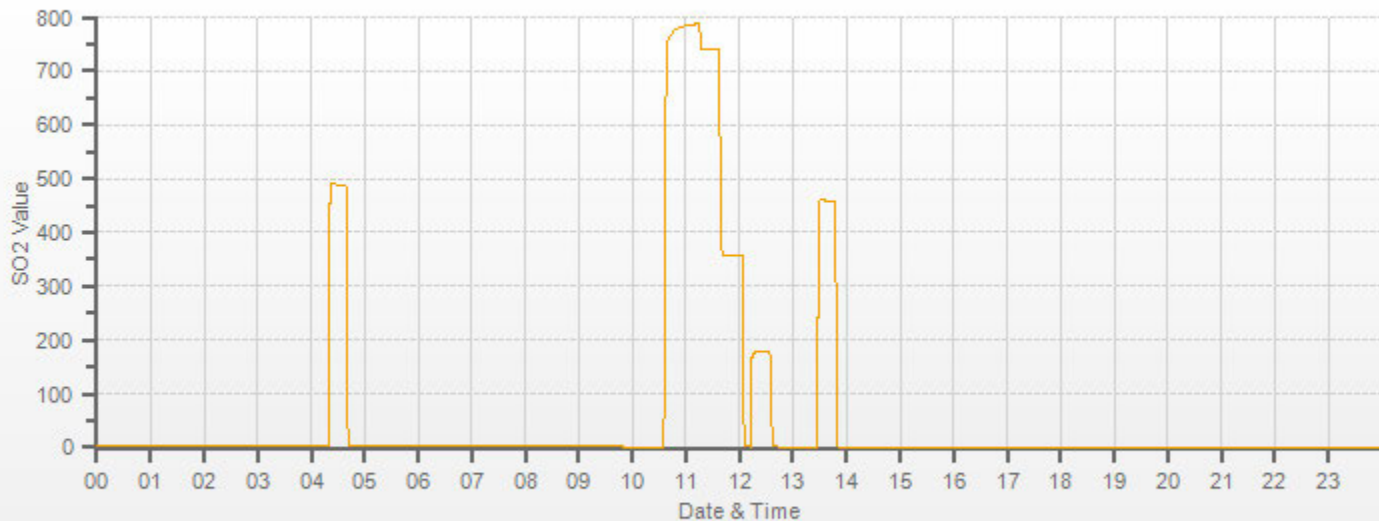


	As found:		As left:
Slope:	0.976	Slope:	0.922
Offset:	137.6	Offset:	145.0
Hvps:	483	Hvps:	483
Rcell Temp:	50.0	Rcell Temp:	50.0
Box Temp:	30.8	Box Temp:	31.3
Pmt Temp:	7.6	Pmt Temp:	7.6
Izs Temp:	50.0	Izs Temp:	50.0
Pres:	24.9	Pres:	24.8
Samp Fl:	587	Samp Fl:	588
Norm Pmt:	145.0	Norm Pmt:	146.4
Uv Lamp:	2566.0	Uv Lamp:	2564.5
Lamp Ratio:	93.7	Lamp Ratio:	93.6
Str Lgt:	67.2	Str Lgt:	66.8
Drk Pmt:	10.4	Drk Pmt:	10.5
Expected Value:	477.0	Expected Value:	458.0

Comments:

The analyzer sample inlet filter was changed.

The manifold blower was found to be working normally.
Flow measurements after mid-point.



— SO2[ppb]

HYDROGEN SULPHIDE



API 101E Hydrogen Sulphide Analyzer Calibration

Date: August 11, 2017	Barometer/B.P./units: F.S. 05544 expires December 5, 2018	948	millibars
Company/Airshed: LICA	Thermometer/Station Temp: Fluke 4295 expires November 14, 2017	24	°C
Location/Station Name: Maskwa	Weather Conditions: Mainly sunny		
Parameter: Hydrogen Sulphide	Calibration Purpose: routine monthly		
Start Time 24 hr. (mst): 9:28	Performed By/Reviewer: Alex Yakupov	Tom Bourque	
End Time 24 hr. (mst): 13:34	Cal Gas Expiry Date: June 14, 2019		
Calibration Method: Gas Dilution	Converter Model & s/n (if applicable):	n/a	

Analyzer ID# or Serial Number: 722	Range ppb: 100
Last Calibration Date: July 13, 2017	As Found C.F.: 0.993
Previous C.F.: 0.998	New C.F.: 1.000

Calibration Standards: Low Flow Meter ID/Expiry Date: Defender Low 152020 expires November 21, 2017 High Flow Meter ID/Expiry Date: Defender High 148943 expires November 21, 2017 Calibrator ID/Expiry Date: Envionics id# 5212 expires February 14, 2018 Cal Gas Cylinder I.D. #: EY 0000654 Cal Gas Conc. (ppm): 10.2	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
Point	ppb								
High	78								
Mid	38								
Low	19								

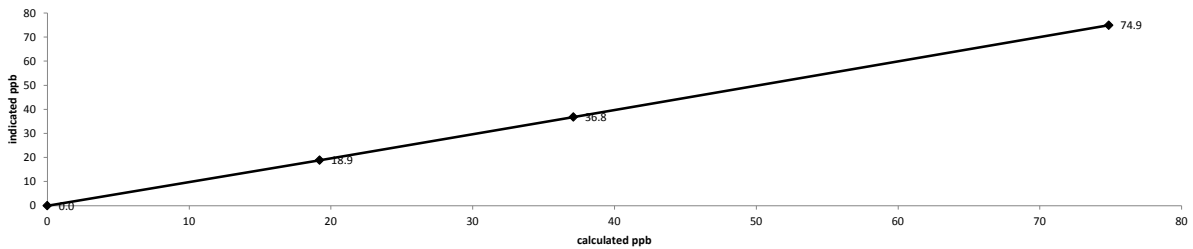
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Point	Calibrator Flow Rates (cc/min)			Total	Calculated Concentration (ppb):	Indicated Concentration (ppb):	Correction Factors (C.F.):
	Diluent	Cal Gas					
as found zero	8049	0.00		8049	0.0	1.1	n/a
as found high	8002	59.17		8061	74.9	76.5	0.993
adjusted zero	8049	0.00		8049	0.0	0.0	n/a
adjusted high	8002	59.17		8061	74.9	74.9	1.000
mid	8030	29.32		8059	37.1	36.8	1.008
low	8035	15.16		8050	19.2	18.9	1.016
calibrator zero	8049	0.00		8049	0.0	0.0	n/a
Average C.F. =							1.008

Linear Regression/Calibration Results:

Correlation Coefficient =	<u>1.000</u>	LIMITS	> or = 0.995
Slope =	<u>0.999</u>		0.95-1.05
b (Intercept as % of full scale) =	<u>0.19%</u>		± 3% F.S.
% change in C.F. from last cal =	<u>0.50%</u>		± 10%

API 101E Hydrogen Sulphide Analyzer Calibration



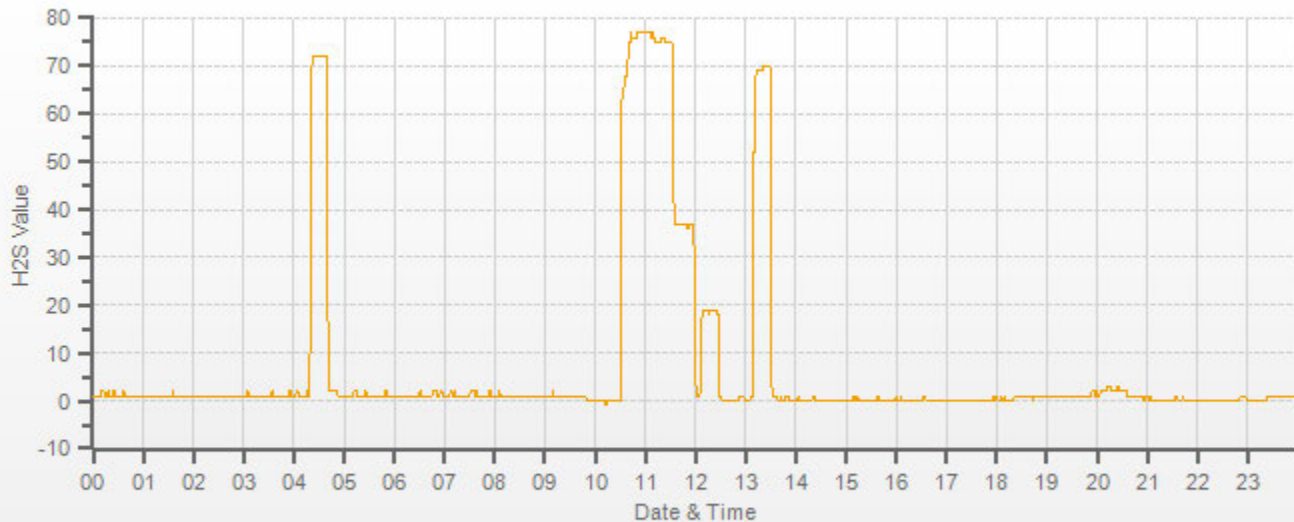
As found: Slope: <u>0.833</u> Offset: <u>97.5</u> Hvps: <u>583</u> Rcell Temp: <u>50.0</u> Box Temp: <u>31.7</u> Pmt Temp: <u>8.2</u> Izs Temp: <u>32.0</u> Converter Temp: <u>315.0</u> Pres: <u>23.5</u> Samp Fl: <u>621</u> Uv Lamp: <u>3254.8</u> Lamp Ratio: <u>99.6</u> Str Lgt: <u>40.6</u> Drk Pmt: <u>25.8</u> Expected Value: <u>73.1</u>	As left: Slope: <u>0.824</u> Offset: <u>100.1</u> Hvps: <u>582</u> Rcell Temp: <u>50.0</u> Box Temp: <u>32.3</u> Pmt Temp: <u>8.2</u> Izs Temp: <u>32.0</u> Converter Temp: <u>315.0</u> Pres: <u>23.4</u> Samp Fl: <u>620</u> Uv Lamp: <u>3257.5</u> Lamp Ratio: <u>99.6</u> Str Lgt: <u>41.2</u> Drk Pmt: <u>26.2</u> Expected Value: <u>69.7</u>
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Comments:

The analyzer sample inlet filter was changed.

The manifold blower was found to be working normally.

Flow measurements after mid-point.



— H2S[ppb]

TOTAL HYDROCARBON



Thermo 51C Total HydrocarbonTHC Analyzer Calibration

Date:	August 11, 2017	Barometer/B.P./units:	F.S. 05544 expires December 5, 2018	948	millibars
Company/Airshed:	LICA	Thermometer/Station Temp:	Fluke 4295 expires November 14, 2017	24	°C
Location/Station Name:	Maskwa	Weather Conditions:	Mainly sunny		
Parameter:	Total Hydrocarbon	Calibration Purpose:	routine monthly		
Start/End Time 24 hr. (mst):	12:50 / 17:07	Performed By/Reviewer:	Alex Yakupov	Tom Bourque	
Calibration Method:	Gas Dilution	Cal Gas Expiry Date:	November 25, 2023		

Analyzer:	Range ppm:
ID# or Serial Number: 436609739	50
Last Calibration Date: July 10, 2017	As Found C.F.: 1.018
Previous Cal High Point C.F.: 1.000	New C.F.: 1.000

Calibration Standards:	
Low Flow Meter ID/Expiry Date:	Defender Low 152020 expires November 21, 2017
High Flow Meter ID/Expiry Date:	Defender High 148943 expires November 21, 2017
Calibrator ID/Expiry Date:	Envionics id# 5212 expires February 14, 2018
Cal Gas Cylinder I.D. #:	LL165372
CH ₄ /C ₃ H ₈ Cylinder Conc. (ppm):	606.0 212.0
CH ₄ as propane/total CH ₄ equivalents (ppm):	583.0 1189.0

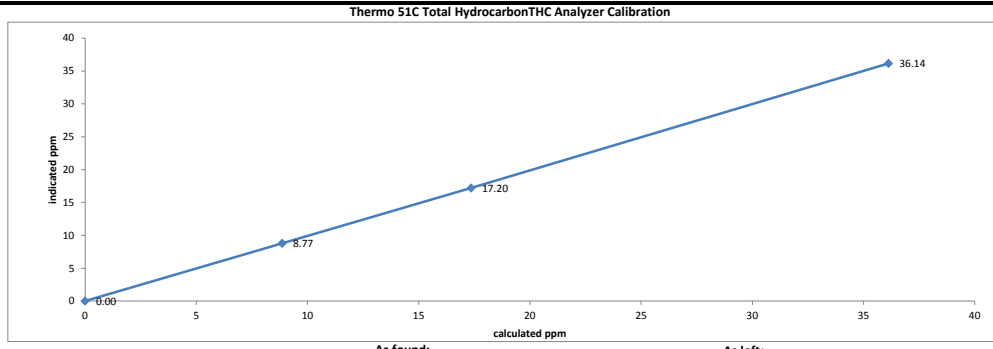
Standard Calibration Points for a Range of: 50 ppm	
Point	Target ppm
High	38
Mid	18
Low	9

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

Point	Calibrator Flow Rates (cc/min)			Calculated Concentration: (ppm)	Indicated Concentration: (ppm)	Correction Factors:
	Diluent	Cal Gas	Total			
as found zero	2697	0.00	2697	0.0	0.40	n/a
as found high	2616	81.97	2698	36.12	35.88	1.018
adjusted zero	2697	0.00	2697	0.00	0.00	n/a
adjusted high	2616	81.97	2698	36.12	36.14	1.000
mid	2656	39.34	2695	17.36	17.20	1.009
low	2677	20.09	2697	8.86	8.77	1.010
calibrator zero	2697	0.00	2697	0.0	0.00	n/a
Average C.F. =						1.006

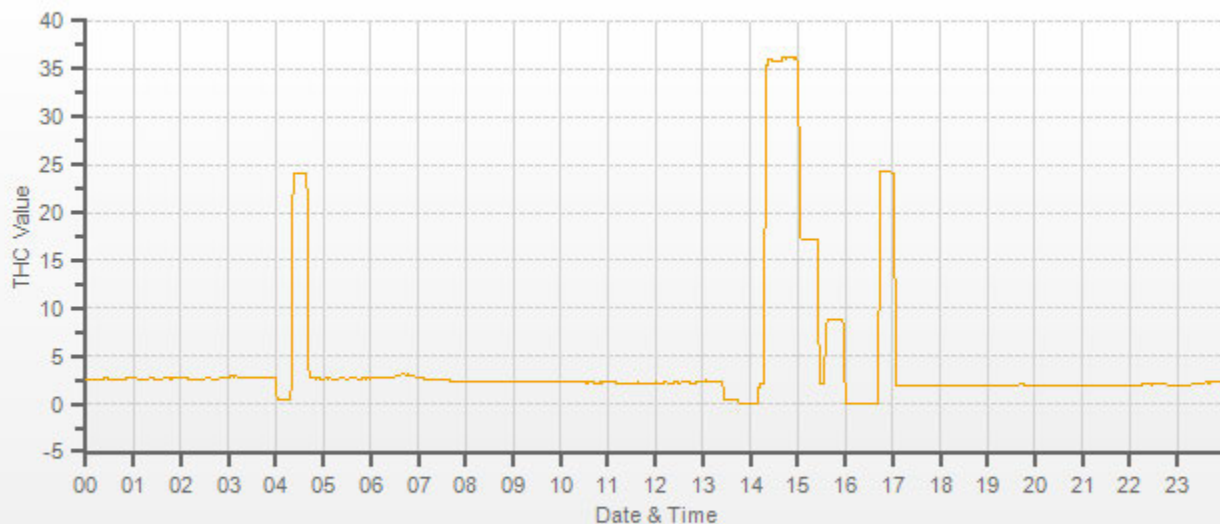
Linear Regression/Calibration Results:

Correlation Coefficient = 1.000	LIMITS > or = 0.995
Slope = 0.999	0.95-1.05
b (Intercept as % of full scale) = 0.14%	± 3% F.S.
% change in C.F. from last cal = -1.81%	± 10%



<p style="text-align: center;">As found:</p> H2 cylinder (psi): 1600 H2 cylinder reg set (psi): 22 Span Cylinder (psi): 1000 Span Cylinder Reg Set (psi): 22 Zero Air Gen Pressure: 40 measurement alarms: None service alarms: None cnt: 2671 rng: 1 try: 3 flm: 212.5 det: 125.3 Flame: 212 Filter: 125 Base: 125 Sample psi: 06.80 Internal Air Pressure: 20 Internal Fuel Pressure: 12 Measured Flow: 1.008 lpm Expected Value: 23.15	<p style="text-align: center;">As left:</p> H2 cylinder (psi): 1600 H2 cylinder reg set (psi): 22 Span Cylinder (psi): 1000 Span Cylinder Reg Set (psi): 22 Zero Air Gen Pressure: 40 measurement alarms: None service alarms: None cnt: 2693 rng: 1 try: 3 flm: 213.0 det: 125.3 Flame: 213 Filter: 125 Base: 125 Sample psi: 08.81 Internal Air Pressure: 20 Internal Fuel Pressure: 12 Measured Flow: n/a Expected Value: 24.18
---	--

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



— THC[ppm]

NITROGEN DIOXIDE



API 200A NO-NO2-NOx Analyzer Calibration

Date: August 6, 2017	Barometer/B.P./units: F.S. 05544 expires December 5, 2018	948	millibars
Company/Airshed: LICA	Thermometer/Station Temp: Fluke 4295 expires November 14, 2017	24	°C
Location/Station Name: Maskwa	Weather Conditions: Mainly sunny		
Start/End Time 24 hr. (mst): 9:28 / 16:18	Calibration Purpose: routine monthly		
G.P.T. to be used for Ozone? No	Performed By/Reviewer: Alex Yakupov	Tom Bourque	
Calibration Method: Gas Dilution & Gas Phase Titration	Cal Gas Expiry Date: July 18, 2019		

Analyzer:	Correction Factors:
ID# or Serial Number: 2051	Previous C.F.: As Found C.F.: New C.F.:
Last Calibration Date: July 6, 2017	NO = 1.000 0.954 1.000
Range ppb: 1000	NO ₂ = 1.004 1.000 1.000
	NOx = 1.000 0.954 1.000

Calibration Standards:			
Low Flow Meter ID/Expiry Date: Defender Low 152020 expires November 21, 2017	Standard Calibration Points for a Range of: 1000 ppb		
High Flow Meter ID/Expiry Date: Defender High 148943 expires November 21, 2017	Point	Target NO (ppb)	Target NO ₂ (ppb)
Calibrator ID/Expiry Date: API id# 627 expires January 27, 2018	High	780	500
Cal Gas Cylinder I.D. #: LL104222	Mid	380	275
Cal Gas Conc. (ppm): 50.7 50.9	Low	190	100
	Extra Point #1	n/a	n/a
	Extra Point #2	n/a	n/a
	Cc Ozone ?		
			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	5338	0.0	5338	0	0	0.0	0.0	n/a	n/a
as found high	5267	78.11	5345	740.9	740.9	777.0	777.0	0.954	0.954
adjusted zero	5338	0.00	5338	0.0	0.0	0.0	0.0	n/a	n/a
adjusted high	5267	78.11	5345	740.9	740.9	741.0	741.0	1.000	1.000
mid	5325	37.86	5363	357.9	357.9	354.0	354.0	1.011	1.011
low	5325	18.93	5344	179.6	179.6	174.0	174.0	1.032	1.032
calibrator zero	5338	0.00	5338	0	0	0.0	0.0	n/a	n/a
Average C.F. =								1.014	1.014

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	5267	78.11	5345	0.0	741.0	739.0	739.0	-2.0	0.0	-2.0
as found high NO2	5267	78.11	5345	510.0	257.0	739.0	482.0	484.0	484.0	1.000
adjusted high NO2	5267	78.11	5345	510.0	257.0	739.0	482.0	484.0	484.0	1.000
gpt mid	5267	78.11	5345	290.0	467.0	739.0	273.0	274.0	275.0	0.996
gpt low	5267	78.11	5345	110.0	640.0	739.0	99.0	101.0	101.0	1.000
Average NO ₂ C.F. =									0.999	

Linear Regression/Calibration Results:

	NO	NOx	NO ₂	LIMITS
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995
Slope =	0.998	0.998	0.996	0.95-1.05
b (Intercept as % of full scale) =	-0.31%	-0.31%	-0.10%	± 3% F.S.
% change in C.F. from last cal =	4.64%	4.64%	0.40%	± 10%
NO ₂ converter efficiency			1.00	0.96 to 1.04

As found:		As left:	
NOx SLOPE:	1.055	NOx SLOPE:	1.008
NOx OFFS:	-1.2	NOx OFFS:	-1.2
NO SLOPE:	1.056	NO SLOPE:	1.009
NO OFFS:	-3.0	NO OFFS:	-3.0
SAMP FLW:	503	SAMP FLW:	501
OZONE FL:	82	OZONE FL:	81
NORM PMT:	-1.5	NORM PMT:	-0.2
AZERO:	46.5	AZERO:	46.5
HVPS:	707	HVPS:	707
DCPS:	2570	DCPS:	2576
RCCELL:	50.0	RCCELL:	50.6
BOX TEMP:	29.9	BOX TEMP:	30.4
IZS TEMP:	50.1	IZS TEMP:	50.2
MOLY TEMP:	316.4	MOLY TEMP:	314.4
RCEL:	6.6	RCEL:	6.5
SAMP:	29.6	SAMP:	29.9
Expected Value NO:	12	Expected Value NO:	12
Expected Value NO ₂ :	596	Expected Value NO ₂ :	555
Expected Value NOx:	608	Expected Value NOx:	568

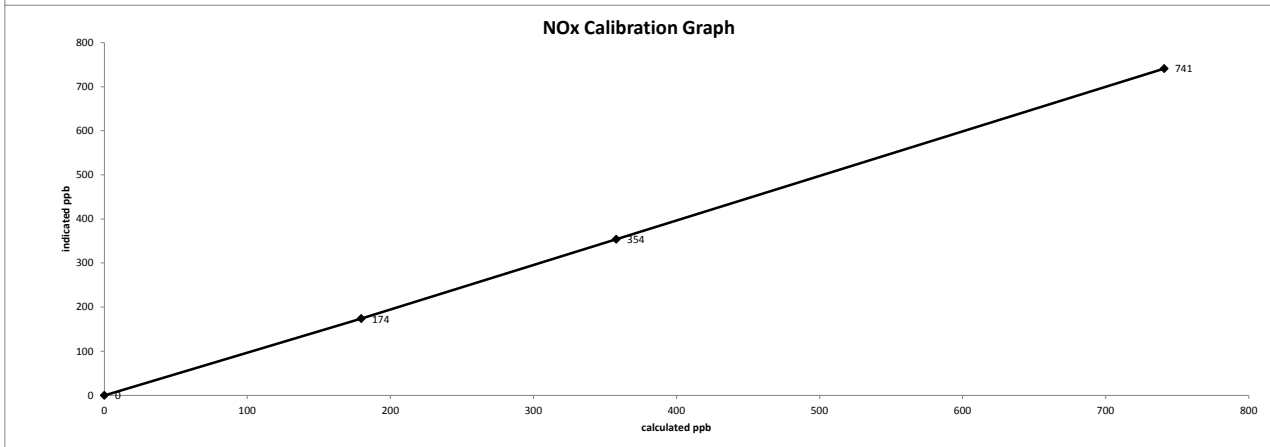
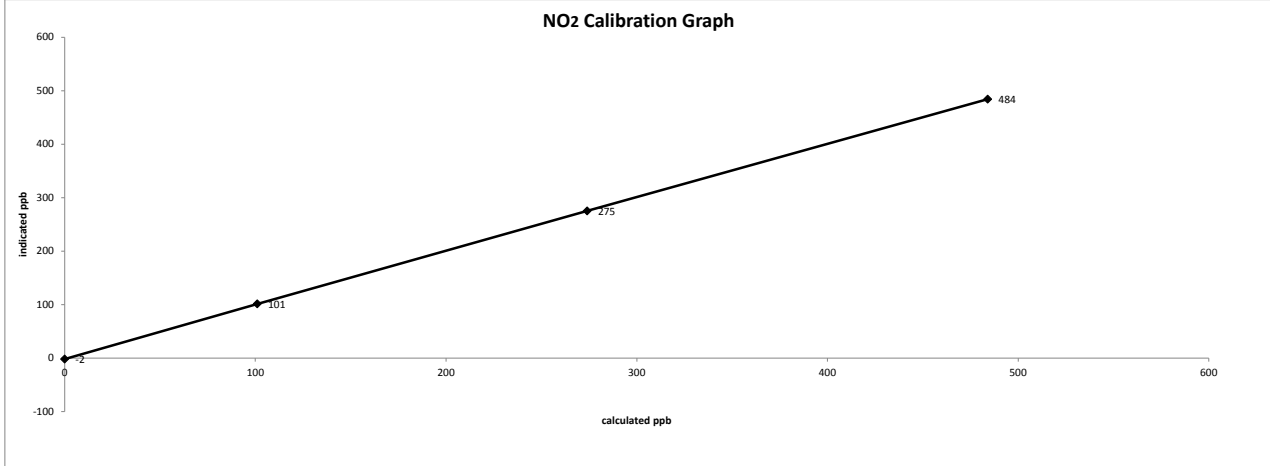
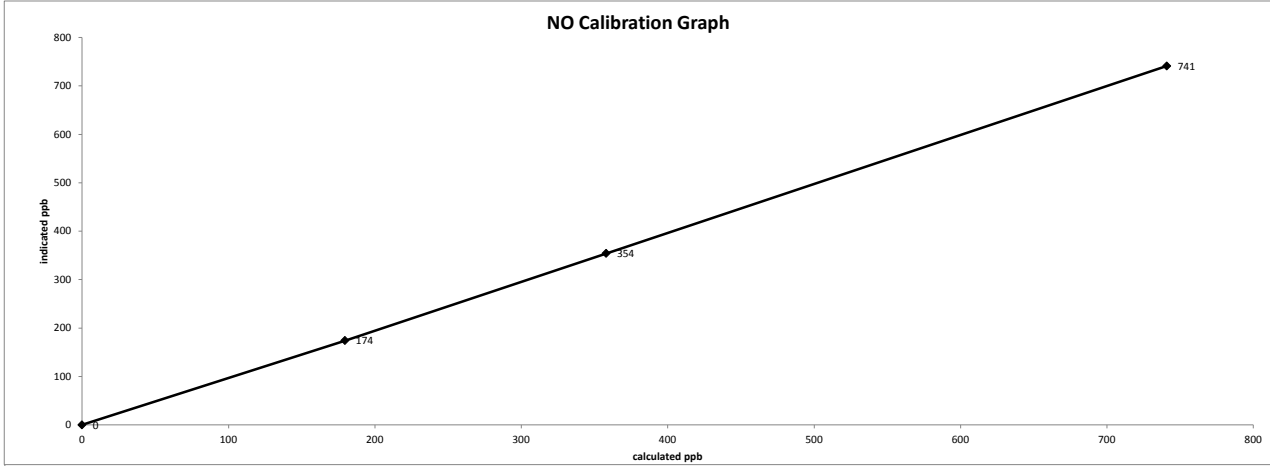
Comments:
 The analyzer sample inlet filter was changed.
 The manifold blower was found to be working normally.
 No zero adjustment was required/made.

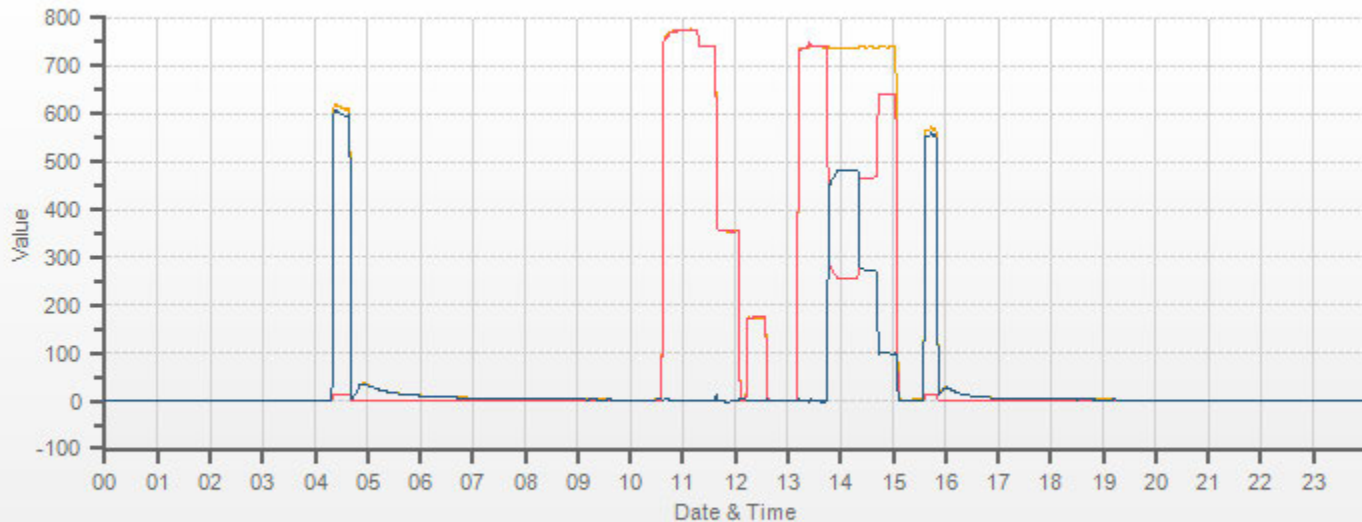
Flow measurements after mid-point.

Date: August 6, 2017
Company/Airshed: LICA
Location/Station Name: Maskwa

Start/End Time 24 hr. (mst): 9:28 / 16:18
Calibration Purpose: routine monthly
Calibration Method: Gas Dilution & Gas Phase Titration

API 200A NO-NO2-NOx Analyzer Calibration





— NOX[ppb] — NO[ppb] — NO2[ppb]

WIND SYSTEM

Sonic Wind Sensor Certificate of Calibration

Sensor Model No.:	50.5H	Sensor Serial No.:	H10703
Sensor Output Swing	0V - 1.0V	Sensor Output Range:	0 - 50.0 MPS
Customer:	<u>Maxxam Analytics</u>	Sales Order No.:	<u>115035</u>
Tested per PO:	<u>35-62828</u>	Calibration Date:	<u>03/30/2016</u>
Calibrated by:	<u>David Frith</u> DF	QC Inspection:	<u><i>Byron Dawson</i></u>

Instrument Condition Within Tolerance:	As Found	<input type="checkbox"/>	As Left	<input checked="" type="checkbox"/>
Corrective Action:	No Adjustment	<input type="checkbox"/>	Adjust	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	Repair	<input type="checkbox"/>
	Preventative Maintenance	<input type="checkbox"/>		

As Found Test Date: N/A As Left Test Date: 03/30/2016

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

Test Equipment Used for Calibration of Instruments

Description	Manufacturer	Model No.	Serial No.	Cal Date	Cal Due	Voltage Accuracy	Time Base Accuracy
Data Acquisition	Campbell Scientific	CR1000	6569	4/06/2015	4/06/2018	+/- 3mV	< 6 ppm
NIST Cupset	Met One Instruments	170-41	3309	4/24/2012	4/24/2017	Accuracy < 0.15 mph or 1% WS	

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

The standards used for calibration have accuracies equal to or greater than the instruments tested. These standards are on record and are traceable to NIST to the extent allowed by the institute's calibration facility. Unless otherwise stated heron, all instruments are calibrated to meet the manufacturer's published specifications. The calibration system complies with MIL-STD-45662A (8/1/88). Instrument's accuracy meets the requirements of Regulatory Guide 1.23 (2/72). Compliant with IS) 9001:2008 requirements

METEOROLOGICAL SYSTEM CHECK

Meteorological System Checklist

Performed by: Alex Yakupov
 Station: **Maskwa**
 Start: 11:12 End: 11:54

PRECIPITATION SENSOR CHECK

	YES	NO
Is the sensor Level?	YES	
Is the heater operating properly?	YES	
Are the bucket drain holes clean?	YES	
Is the inner screen on the housing? (screen should be on between July and September	YES	
Is the upper screen on the housing? (screen should be on between July and September)	YES	
Is the housing clean?	YES	
Is the area around the housing clean and free from obstacle?	YES	
Is the tipping sensor working properly?	YES	
Test with water (11:14 - 2.0 mm)	PASS	

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

Field Technician: Alex Yakupov August 11, 2017

CALIBRATORS

Company Maxxam/SIA Operator: Chris

Calibrator:		Flow Measurement Device:	
Make/Model	<u>API 700</u>	Make/Model	<u>Definer 530</u>
Serial Number	<u>627</u>	Serial Number	<u>H-148944, L-152019</u>
Last Verification Date	<u>February 3, 2016</u>	Temperature (°C)	<u>23.5</u>
NO Cylinder S/N	<u>EY0000597</u>	Barometric Pressure	<u>707.1 mmHg</u>
NO [PPM]	<u>49.0</u>	NOx [PPM]	<u>49.0</u>
Expiry Date	<u>December 8, 2019</u>		

Dilution Flow (sccm)		
Pt. #1	<u>4892</u>	Pt. #3 <u>4951</u>
Pt. #2	<u>4975</u>	
Gas Flow (sccm)		
Pt. #1	<u>79.7</u>	Pt. #3 <u>19.4</u>
Pt. #2	<u>38.8</u>	

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO ₂	NOx	NO	NOx
	0.0	0.0000	0.0000	0.0000	-0.0004	-0.0004	Limit ± 10%	
4972	79.7	0.7855	0.7855	0.7883	0.0004	0.7887	0.4%	0.5%
4936	38.8	0.3822	0.3822	0.3816	0.0005	0.3822	-0.2%	0.1%
4970	19.4	0.1913	0.1913	0.1902	0.0006	0.1913	-0.6%	0.2%
Absolute Average Percent Difference							0.1%	0.3%

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)= 1.0041	0.90-1.10	m (Slope)= 1.0046
b (Intercept % of FS)= -0.1118	± 3% F.S.	b (Intercept % of FS)= -0.0871

Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
4972	0	0.0000	0.7867	0.0014	0.7881	NO ₂	% Diff, Limit
4972	500	0.5127	0.2740	0.5104	0.7849	-0.7%	± 10%
4972	275	0.2863	0.5004	0.2860	0.7865	-0.6%	± 10%
4972	90	0.0940	0.6927	0.0954	0.7880	0.0%	± 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)= 0.9924	0.90-1.10
b (Intercept % of FS)= 0.1755	± 3% F.S.

AENV Standards	NO_x Analyzer
Audit Calibrator	Make/Model <u>Thermo 42i</u>
Make/Model <u>Thermo 146i</u>	Serial/AMU Number <u>AMU 1868</u>
Serial/AMU Number <u>AMU1809</u>	Last Calibration Date <u>January 25, 2017</u>
SRM Gas Cylinder No. <u>CAL018140</u>	Full Scale (ppm) <u>1.0</u>
Cylinder Conc. (ppm) <u>48.79</u>	Cylinder Gas Expiry Date <u>March 25, 2019</u>

COMMENTS:

Auditor: Shea Beaton
Operator Signature: 

Date: January 27, 2017
Location: McIntyre Center Edmonton

Company Maxxam Operator: Mike

Calibrator:			Flow Measurement Device:		
Make/Model	<u>Envionics 6100</u>		Make/Model	<u>Bios Defender 530</u>	
Serial Number	<u>5212</u>		Serial Number	<u>Hi148944 Lo 152019</u>	
Last Verification Date	<u>February 3, 2016</u>		Temperature (°C)	<u>24.6</u>	
NO Cylinder S/N	<u>EY0000597</u>		Barometric Pressure	<u>701.4mmHg</u>	
NO [PPM]	<u>49.0</u>	NOx [PPM]	<u>49.0</u>		
Expiry Date	<u>December 8, 2019</u>				

Dilution Flow (sccm)					
Pt. #1	<u>4919</u>	Pt. #2	<u>4934</u>	Pt. #3	<u>4960</u>
Gas Flow (sccm)					
Pt. #1	<u>79.2</u>	Pt. #2	<u>38.3</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
4987	0.0	0.0000	0.0000	0.0000	0.0002	0.0002	Limit ± 10%	
4998	79.2	0.7765	0.7765	0.7801	-0.0003	0.7798	0%	0%
4977	38.3	0.3775	0.3775	0.3790	0.0000	0.3790	0%	0%
4979	19.1	0.1880	0.1880	0.1888	-0.0001	0.1887	0%	0%
Absolute Average Percent Difference							0%	0%

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)=	1.0046	0.90-1.10		m (Slope)=	1.0041
b (Intercept % of FS)=	-0.0080	± 3% F.S.		b (Intercept % of FS)=	0.0057

Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOx	% Diff. Vs Audit gas	
4998	0.000	0.0000	0.7799	-0.0008	0.7790	NO ₂	% Diff. Limit
4998	0.500	0.4949	0.2850	0.4909	0.7776	-1%	± 10%
4998	0.275	0.2765	0.5034	0.2742	0.7776	-1%	± 10%
4998	0.100	0.1003	0.6796	0.0989	0.7786	-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)=	0.9936	0.90-1.10	
b (Intercept % of FS)=	-0.0733	± 3% F.S.	

AENV Standards		NO_x Analyzer	
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>February 13, 2017</u>
SRM Gas Cylinder No.	<u>CAL018140</u>	Full Scale (ppm)	<u>1.0</u>
Cylinder Conc. (ppm)	<u>48.79</u>	Cylinder Gas Expiry Date	<u>March 28, 2019</u>

COMMENTS: Gas has ~50ppm SO2

Auditor: Shea Beaton
Operator Signature: [Signature]

Date: February 14, 2017
Location: McIntyre Center Edmonton

CALIBRATION GASES



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2016-335CGA

Company: Maxxam **Operator's Name:** Russell Kirchner

Cylinder #: LL104222 Concentration PPM: 50.6 Tolerance(%) 1 Certified By: Praxair

Expiry Date: July 2019

Reference Calibrator and Gas:	Flow Measurement Device:
Make/Model: <u>R&R MFC 201</u>	Make/Model: <u>Bios DC2</u>
Serial Number: <u>AMU 1690</u>	Serial Number: <u>AMY 1659</u>
Last Verification Date: <u>October 19, 2016</u>	Temp. °C: <u>24.5 C</u>
Gas Type: <u>SO2</u> Conc. <u>98.07</u>	B.P. <u>706 mmhg</u>
Cylinder Number: <u>CA:016625</u>	
Expiry Date: <u>January 2019</u>	

Reference Analyzer:

Make/Model: Teco 43C Serial/AMU Number: 1623

Instrument Settings: Zero: 9.2 Span: 1.024 Range: 1.0

Last Calibration: Date: Oct 19/16 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	0.01662	60.183	50.0
4935	82.0	0.830	0.01662	60.183	50.0
4968	40.8	0.412	0.00821	121.765	50.2
4955	20.2	0.203	0.00408	245.297	49.8
Average Cylinder Concentration:					50.0

Previous Stated Concentration PPM: 50.6

Percent variance from Stated: 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: October 19, 2016

Location: McIntyre Center Edmonton



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2016-334CGA

Company: Maxxam **Operator's Name:** Russell Kirchner
Cylinder #: EY0000654 **Concentration PPM:** 10.2 **Tolerance(%)** 2 **Certified By:** Praxair
Expiry Date: June 2019

Reference Calibrator and Gas:

Make/Model: R&R MFC 201
Serial Number: AMU 1690
Last Verification Date: October 19, 2016
Gas Type: H2S **Conc.** 20.43
Cylinder Number: CAL015584
Expiry Date: January 2019

Flow Measurement Device:

Make/Model: Bios DC2
Serial Number: AMU 1659
Temp. °C: 24.0 C
B.P. 706 mmhg

Reference Analyzer:

Make/Model: Teco 450i **Serial/AMU Number:** 1980
Instrument Settings: **Zero:** 16.6 **Span:** 1.231 **Range:** 0.1
Last Calibration: **Date:** Oct 19/16 **C.F.** 1.000 **Done By:** Al Clark

Calibrator Flows (scm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	0.0000	0.0000	132.895	10.2
5050	38.0	0.0764	0.00752	132.895	10.2
5050	17.8	0.0355	0.00352	283.708	10.1
5023	9.1	0.0182	0.00181	551.978	10.0

Average Cylinder Concentration: 10.1

Previous Stated Concentration PPM: 10.2

Percent variance from Stated: 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: October 19, 2016
Location: McIntyre Center Edmonton



Calibration Gas Audit

CH4 / C3H8 Cylinder Gas

File No. 2015-092CGA

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

Reference Calibrator and Gas:

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

Flow Measurement Device:

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

Reference Analyzer:

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

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

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

Cylinder gas tolerances based on CH4 only

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

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



Calibration Gas Audit

NO Cylinder Gas

File No. 2016-336CGA

Company: Maxxam **Operators name:** Russell Kirchner

Cylinder #: LL104222 Conc (PPM) 50.7/50.9 Tolerance (%) 1 Certified By: Praxair

Expiry Date: July 2019

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>October 19, 2019</u>			Temp. °C	<u>24.5 C</u>
Gas Type	<u>NO</u>	Conc.	<u>48.79</u>	B.P.	<u>706 mmhg</u>
Cylinder Number	<u>CAL018188</u>				
Expiry Date	<u>March 2019</u>				

Reference Analyzer:

Make/Model Teco 42i Serial/AMU Number: 1868

Instrument Settings Zero: 4.4 Span: 1.080 Range: 1.0

Last Calibration: Date: Oct 18/16 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				
4935	82.0	0.838	0.837	0.017	60.183	50.4	50.4
4968	40.8	0.417	0.417	0.008	121.765	50.8	50.8
4955	20.2	0.207	0.207	0.004	245.297	50.8	50.8
Average Cylinder Concentration:						50.7	50.6

<u>NO</u>	<u>NOx</u>
Previous Stated Concentration PPM: <u>50.7</u>	<u>50.9</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 Contains 50.6 ppm SO2.

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

Auditor: Al Clark Date: October 19, 2016

Operator Signature: *Al Clark* Location: McIntyre Center Edmonton

***APPENDIX III
REPORT CERTIFICATION FORM***

Report Certification Form

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

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

Maram Ghaleb

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

September 28, 2017

Report Issued Date (dd-mm-yyyy)

APPENDIX IV
DATA VALIDATION CERTIFICATION FORM



Validation Certificate Form

Client: <u>Lakeland Industry & Community Association</u>	Project #: <u>2833-2017-08-30-C</u>
Site: <u>Maskwa Continuous Monitoring Station</u>	Contact: <u>Mike Bisaga</u>

Level 0 Preliminary Verification	<u>Maram Ghabeb</u>	Date <u>September 21, 2017</u>
Level 1 Primary Validation	<u>Maram Ghabeb</u>	Date <u>September 21, 2017</u>
Level 2 Final Validation	<u>Maram Ghabeb</u>	Date <u>September 27, 2017</u>
Level 3 Independent Data Review	<u>Chris Smith</u>	Date <u>September 28, 2017</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

October 4, 2017

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 August 2017.

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

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

All data collected in August 2017 was compliant with the requirements outlined in the Air Monitoring Directive (Alberta Environment and Parks, 2016), with the exception of PM2.5.

There were five 1-hour exceedances and one 24-hour exceedance reported to AEP this month. On August 14, between the hours of 02:00 and 06:00, concentrations of 88, 123, 105, 85, and 85 µg/m³ were recorded. A 24-hour concentration of 46 µg/m³ on August 14 was recorded. AEP reference number 328331.

As the LICA Environmental Program Manager and Data & Reporting Specialist, we certify that 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 certify 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 me.



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

Respectfully,

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

Michael Bisaga
Technical Program Managers
Lakeland Industry & Community Association
780-266-7068
mbisaga@otonabee.ca

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

Lily Lin
Data & Reporting Specialist
587-225-2248
rebbacaa@gmail.com



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 #: 2833-2017-08-31-C

August 2017

Prepared for:

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

Attention: MIKE BISAGA

DATE: **October 4, 2017**

Prepared by: *Maram Ghaleb*

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

Reviewed by: *Cheri Sinclair*

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

SUMMARY

In August 2017, 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, with the exception of $PM_{2.5}$, was compliant with the requirements outlined in the AMD, 2016.

There were five 1-hour exceedances reported to AEP this month. On August 14, between the hours of 02:00 and 06:00, concentrations of 88, 123, 105, 85, and 85 $\mu\text{g}/\text{m}^3$ were recorded. All five exceedances were reported under Alberta Environment and Sustainable Resource Development (ESRD) reference number 328331.

There was one 24-hour exceedance reported to AEP this month. A concentration of 46 $\mu\text{g}/\text{m}^3$ on August 14 was reported under Alberta Environment and Sustainable Resource Development (ESRD) reference number 328331.

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

All Parameters: Four hours of downtime were recorded due to power failures on August 18 and August 29.

H₂S: On August 3, eleven hours of data were invalidated as the analyzer began to record negative values and then spanned beyond the lower acceptance limit. This prompted an immediate site visit to assess the analyzer. Review of the instrument diagnostics did not identify a cause for the negative readings or the span failure. Therefore an as-found response check was performed immediately and the results met AMD requirements. While the functionality of the analyzer was verified, review of the minute data indicated the point of anomalous readings was on August 3, at hour 01:00. An additional two hours of downtime were incurred due to the as-found response check.

THC: Seven hours of downtime were incurred due to additional quality checks performed to address a failed span verification on August 15. Two additional span checks were conducted to assess another failed span verification on August 21. The analyzer was in recovery mode following the August 29 power failure.

NO_x, NO, NO₂: One hour of downtime was recorded on August 29 as the analyzer was in recovery mode following the August 29 power failure.

PM_{2.5}: Five 1-Hr exceedances and one 24-Hr exceedance were recorded on August 14. These events were reported to AEP under reference number 328331.

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 403-219-3678 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	4	16	11	9.6	WSW	1	13	99.5
H ₂ S (ppb)	10	3	0	0	0	2	6	5	6.5	SSW	1	18	97.7
THC (ppm)	-	-	-	-	2.23	2.87	4	3	6.7	NNE	2.49	1	98.1
NO ₂ (ppb)	159	-	0	-	1	8	4	4	7.4	NE	3	4	99.3
NO (ppb)	-	-	-	-	0	2	16	21	5.4	SW	0	1	99.3
NO _x (ppb)	-	-	-	-	1	8	4	4	7.4	NE	3	4	99.3
O ₃ (ppb)	82	-	0	-	25.2	48.6	11	17	7.6	SE	40.0	12	99.5
PM _{2.5} (µg/m ³)	80	30	5	1	10	123	14	3	11.0	WSW	46	14	99.5
RELATIVE HUMIDITY (%)	-	-	-	-	67	92	7	4	7.7	NNE	88	7	99.5
BAROMETRIC PRESSURE (millibar)	-	-	-	-	933	947	2	9	2.7	W	945	1	99.5
AMBIENT TEMPERATURE (°C)	-	-	-	-	15.9	26.1	27	14	5.2	WSW	19.5	27	99.5
PRECIPITATION (mm)	-	-	-	-	0.1	7.9	7	11	9.1	NNE	17.8	7	99.5
VECTOR WS (kph)	-	-	-	-	2.4	32.7	25	10	-	WSW	16.3	25	99.5
VECTOR WD (sec)	-	-	-	-	234 (SW)	-	-	-	-	-	-	-	99.5

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

DATE	TIME (MST)	READING (µg/m ³)	WS (kph)	WD (deg)	ESRD Reference #
August 14	2:00	88	10.6	244	328331
August 14	3:00	123	11.0	249	328331
August 14	4:00	105	12.0	275	328331
August 14	5:00	85	8.9	324	328331
August 14	6:00	85	5.6	268	328331

PM_{2.5} 24-Hour Exceedances

DATE	READING (µg/m ³)	WS (kph)	WD (deg)	ESRD Reference #
August 14	46	5.0	277	328331

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), Oxides of Nitrogen (NO_x), Nitric Oxides (NO), Nitrogen Dioxide (NO₂), Ozone (O₃), Particulate Matter 2.5 (PM_{2.5}), Relative Humidity (RH), Barometric Pressure (BP), Precipitation, Ambient Temperature (AmbTPX), Wind Speed (WS), Wind Direction (WD) and Standard Deviation Wind Direction (STDWD).

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

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

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

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

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

The AMD requires each instrument and accompanying data recording system to be operational 90% of the time, 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 99.5%, equivalent to four hours of downtime.
- The routine monthly calibration was performed on August 9.
- The O₃ and SO₂ span programs are designed to run concurrently. An additional quality check was recorded on the SO₂ channel on August 10, at hour 14:00 during the monthly calibration of the Ozone analyzer. The quality check extended into hour 13:00 on the maximum instantaneous channel.
- Four hours of downtime were recorded due to power failures on August 18, between the hours of 14:00 and 16:00 and on August 29, at hour 13:00.
- On August 18, at hour 18:00, one hour of maximum instantaneous data was invalidated as the analyzer yielded an off-scan error at 18:34.
- Nine instances of maximum instantaneous data were discarded due to brief power failures.

HYDROGEN SULPHIDE (H₂S)

- Operational time, for the monitoring period was 97.7%, equivalent to seventeen hours of downtime.
- On August 3, eleven hours of data were invalidated as the analyzer began to record negative values and then spanned beyond the lower acceptance limit. This prompted an immediate site visit to assess the analyzer. The technician noted that, upon arrival, the analyzer was functioning normally and not yielding any further negative values. Review of the instrument diagnostics did not identify a cause for the negative readings or the span failure. Therefore an as-found response check was performed immediately and the results met AMD requirements. While the functionality of the analyzer was verified, review of the minute data indicated the point of anomalous readings was on August 3, at hour 01:00. Data collected on August 3, between the hours of 01:00 to 11:00 were invalidated. An additional two hours of downtime were incurred due to the as-found response check.
- The routine monthly calibration was performed on August 9.
- Four hours of downtime were recorded due to power failures on August 18, between the hours of 14:00 and 16:00 and on August 29, at hour 13:00.
- Nine instances of maximum instantaneous data were discarded due to brief power failures.

TOTAL HYDROCARBONS (THC)

- Operational time, for the monitoring period was 98.1%, equivalent to fourteen hours of downtime.
- The routine monthly calibration was performed on August 10.
- The analyzer spanned beyond the lower acceptance limit on August 15. A repeat zero/span check was triggered at hour 07:00 and the response remained outside the lower acceptance limit. This prompted an immediate site visit to assess the analyzer. Review of the instrument diagnostics did not identify a cause for the span failure. Therefore a successful as-found response check was performed, followed by a repeat calibration. As the analyzer passed the as-found response check, data collected between August 10, post calibration and August 15, at hour 00:00 were deemed valid. Seven hours of downtime were recorded due to the additional calibration checks.
- Four hours of downtime were recorded due to power failures on August 18, between the hours of 14:00 and 16:00 and on August 29, at hour 13:00.
- On August 18, at hour 18:00, one hour of maximum instantaneous data was invalidated as the analyzer yielded an off-scan error at 18:34.
- The analyzer spanned towards the lower acceptance limit on August 21. A repeat span check was triggered on August 22, at hour 06:00 to assess the response. There was a slight improvement but the response was still biased low. The next scheduled span verification on August 22, at hour 16:00 was beyond the lower acceptance limit. An additional span check was initiated on August 23, at hour 06:00 confirming the span response was back in control. The next scheduled span verification on August 23, at hour 15:00 was also valid. Two hours of downtime were incurred due to the additional span verifications.
- One hour of downtime was recorded on August 29, at hour 14:00 as the analyzer was recovering from a power failure.
- One hour of maximum instantaneous data collected on August 29, at hour 11:00 was invalidated due to an anomalous spike. Review of the minute data, bracketing the spike, did not support the validity of the elevated concentration.
- Nine instances of maximum instantaneous data were discarded due to brief power failures.
- Unstable station temperature and elevated zero responses, observed during the July monitoring period, continued into August. The daily zero readings met AMD requirements and the analyzer was operating within manufacturer's specifications. However, if applied, the daily zero would result in a non-historical data trend. The calibrator zero obtained from the July 19 multi-point calibration was applied for baseline correction on data collected from August 1, at hour 00:00 to August 10, at hour 09:00. The calibrator zero obtained from the August 10 multi-point calibration was applied for baseline correction on data collected from August 10, at hour 15:00 to August 15, at hour 10:00. The calibrator zero obtained from the August 15 multi-point calibration was applied for baseline correction on data collected from August 15, at hour 17:00 to August 31, at hour 23:00. On August 29 an electrician was contracted to repair the HVAC and the technician noted an immediate improvement on the AC efficiency.

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

- Operational time, for the monitoring period was 99.3%, equivalent to five hours of downtime.
- The routine monthly calibration was performed on August 9.
- Four hours of downtime were recorded due to power failures on August 18, between the hours of 14:00 and 16:00 and on August 29, at hour 13:00.
- One hour of downtime was recorded on August 29, at hour 14:00 as the analyzer was recovering from a power failure.
- An elevated concentration for instantaneous maximum data was recorded on August 16, at hour 21:00. Review of the minute data indicates there were no isolated data spikes and supports the validity of this elevated concentration.
- Nine instances of maximum instantaneous data were discarded due to brief power failures.

OZONE (O₃)

- Operational time, for the monitoring period was 99.5%, equivalent to four hours of downtime.
- The ozone and SO₂ span programs are designed to run concurrently. An additional quality check was recorded on the O₃ channel, on August 9, at hour 14:00 during the monthly calibration of the SO₂ analyzer. The quality check extended into hour 15:00 on the maximum instantaneous channel.
- The routine monthly calibration was performed on August 10.
- Four hours of downtime were recorded due to power failures on August 18, between the hours of 14:00 and 16:00 and on August 29, at hour 13:00.
- Nine instances of maximum instantaneous data were discarded due to brief power failures.

PARTICULATE MATTER < 2.5 MICRONS (PM_{2.5})

- Operational time, for the monitoring period was 99.5%, equivalent to four hours of downtime.
- The routine monthly calibration was performed on August 24.
- Four hours of downtime were recorded due to power failures on August 18, between the hours of 14:00 and 16:00 and on August 29, at hour 13:00.
- There were five 1-hour exceedances reported to AEP this month. On August 14, between the hours of 02:00 and 06:00, concentrations of 88, 123, 105, 85, and 85 µg/m³ were recorded. All five exceedances were reported under Alberta Environment and Sustainable Resource Development (ESRD) reference number 328331.
- There was one 24-hour exceedance reported to AEP this month. A concentration of 46 µg/m³ on August 14 was reported under Alberta Environment and Sustainable Resource Development (ESRD) reference number 328331.
- 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. No hourly data was invalidated as all measurements were above -3 µg/m³ this month.

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

- Operational time for the monitoring period was 99.5%, equivalent to four hours of downtime.
- Four hours of downtime were recorded due to power failures on August 18, between the hours of 14:00 and 16:00 and on August 29, at hour 13:00.
- Nine instances of maximum instantaneous data were discarded due to brief power failures.
- 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 99.5%, equivalent to four hours of downtime.
- Four hours of downtime were recorded due to power failures on August 18, between the hours of 14:00 and 16:00 and on August 29, at hour 13:00.

BAROMETRIC PRESSURE (BP)

- Operational time for the monitoring period was 99.5%, equivalent to four hours of downtime.
- Four hours of downtime were recorded due to power failures on August 18, between the hours of 14:00 and 16:00 and on August 29, at hour 13:00.

PRECIPITATION (PRECIP)

- Operational time for the monitoring period was 99.5%, equivalent to four hours of downtime.
- A precipitation sensor audit was conducted on August 9. The results were satisfactory.
- Four hours of downtime were recorded due to power failures on August 18, between the hours of 14:00 and 16:00 and on August 29, at hour 13:00.

AMBIENT TEMPERATURE (AmbTPX)

- Operational time for the monitoring period was 99.5%, equivalent to four hours of downtime.
- Four hours of downtime were recorded due to power failures on August 18, between the hours of 14:00 and 16:00 and on August 29, at hour 13:00.

2.0 Project Personnel

Mike Bisaga was the contact 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, with the exception of PM_{2.5}, was compliant with the requirements outlined in the AMD, 2016.

There were five 1-hour exceedances reported to AEP this month. On August 14, between the hours of 02:00 and 06:00, concentrations of 88, 123, 105, 85, and 85 µg/m³ were recorded. All five exceedances were reported under Alberta Environment and Sustainable Resource Development (ESRD) reference number 328331.

There was one 24-hour exceedance reported to AEP this month. A concentration of 46 µg/m³ on August 14 was reported under Alberta Environment and Sustainable Resource Development (ESRD) reference number 328331.

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:

- MET One Instruments: Operation Manual Document No. 50.5-9800
- 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-00214: Ambient Hydrocarbon (THC) Monitoring
- Maxxam AIR SOP-00010: Thermo Model 5030i SHARP Monitor
- Maxxam AIR SOP-00242: Precipitation Collector Installation/Maintenance

There were no deviations from the prescribed methods.

The following instruments were used to perform the test program:

- Sulphur Dioxide - API 100E UV Fluorescent Analyzer
- Hydrogen Sulphide - API 101E UV Fluorescent Analyzer
- Total Hydrocarbons - Thermo 51C FID Analyzer
- Oxides of Nitrogen - API 200E Chemiluminescent Analyzer
- Ozone - Thermo 49i Photometric Analyzer
- Particulate Matter (PM_{2.5}) - Thermo 5030i SHARP Unit
- Wind System - Met One Unit
- Relative Humidity - Met One Unit
- Barometric Pressure - Met One Unit
- Ambient Temperature - Met One Unit
- Precipitation - Met One Unit
- Datalogger - ESC 8832

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

Level 0 Preliminary Verification

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

Level 1 Primary Validation

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

Level 2 Final Validation

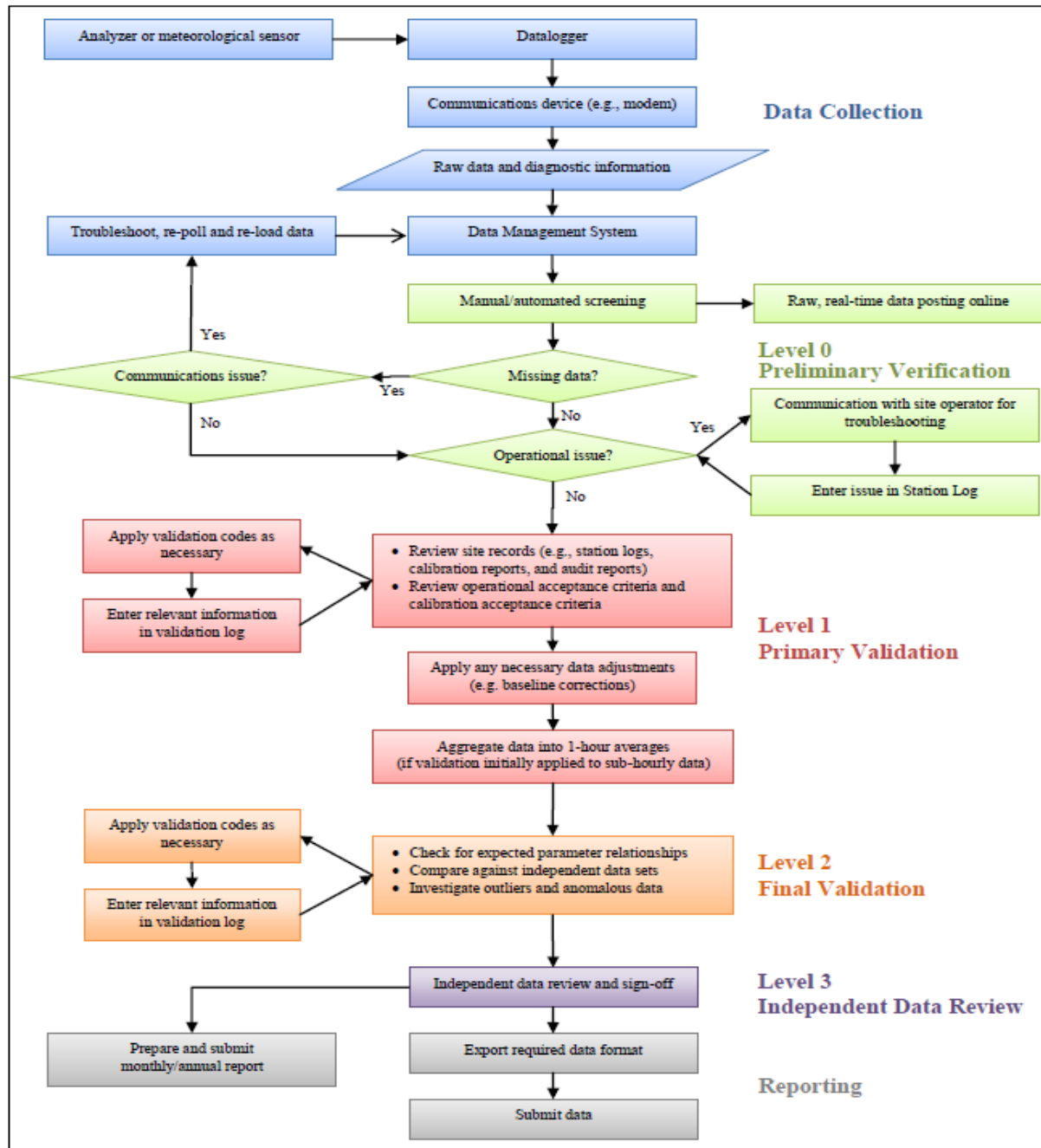
The purpose of Level 2 validation is to verify that there are no inconsistencies among related data, or among regional data measured at nearby sites.

Level 3 Independent Data Review

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

Post-Final Validation

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



Source: 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	S	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	1	0	0	S	0	0	0	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	S	0	1	1	0	0	1	1	1	0	0	0	0	1	0	24	
4	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	
5	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	
6	0	0	0	0	0	0	0	0	1	S	0	0	1	1	1	1	0	1	1	1	0	0	0	0	0	1	0	24	
7	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	
8	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	
9	0	0	0	0	0	0	S	0	1	2	C	C	C	C	C	1	0	0	0	0	0	0	0	0	0	2	0	24	
10	0	0	0	0	0	S	0	0	0	1	1	1	1	1	Q	1	1	0	0	0	0	0	0	0	0	1	0	24	
11	0	0	0	0	S	0	0	0	0	0	0	0	0	0	1	0	0	1	1	1	1	0	0	0	0	1	0	24	
12	0	0	0	S	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0	1	0	24	
13	0	0	S	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	24	
14	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	
15	S	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	S	0	1	0	24	
16	0	0	0	0	0	0	0	0	0	2	1	4	2	1	1	1	0	0	0	0	0	0	S	0	0	4	1	24	
17	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	
18	0	0	0	0	0	0	0	0	0	0	1	1	1	2	P	P	P	0	0	0	S	0	0	0	0	2	0	21	
19	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	
20	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	
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	S	1	1	1	1	1	1	0	1	0	24	
22	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	1	0	24	
23	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	S	0	0	0	0	0	0	0	0	0	1	0	24	
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	1	1	0	0	0	0	0	0	1	0	24	
25	0	0	0	0	0	0	0	1	1	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
26	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	1	1	2	2	1	1	1	0	0	0	2	0	24	
27	0	0	0	0	0	0	0	0	0	0	0	S	0	1	1	1	1	1	0	0	0	0	0	0	0	1	0	24	
28	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	
29	0	0	0	0	0	0	0	0	0	0	S	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	0	23	
30	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	1	1	1	1	0	0	0	0	1	1	0	1	24	
31	1	1	1	0	0	0	S	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	0	0	0	1	1	1	2	1	4	2	2	1	1	1	2	2	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					

STATUS FLAG CODES

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

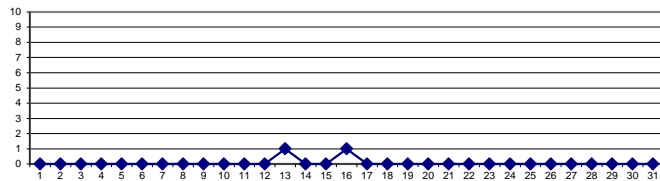
OBJECTIVE LIMIT:

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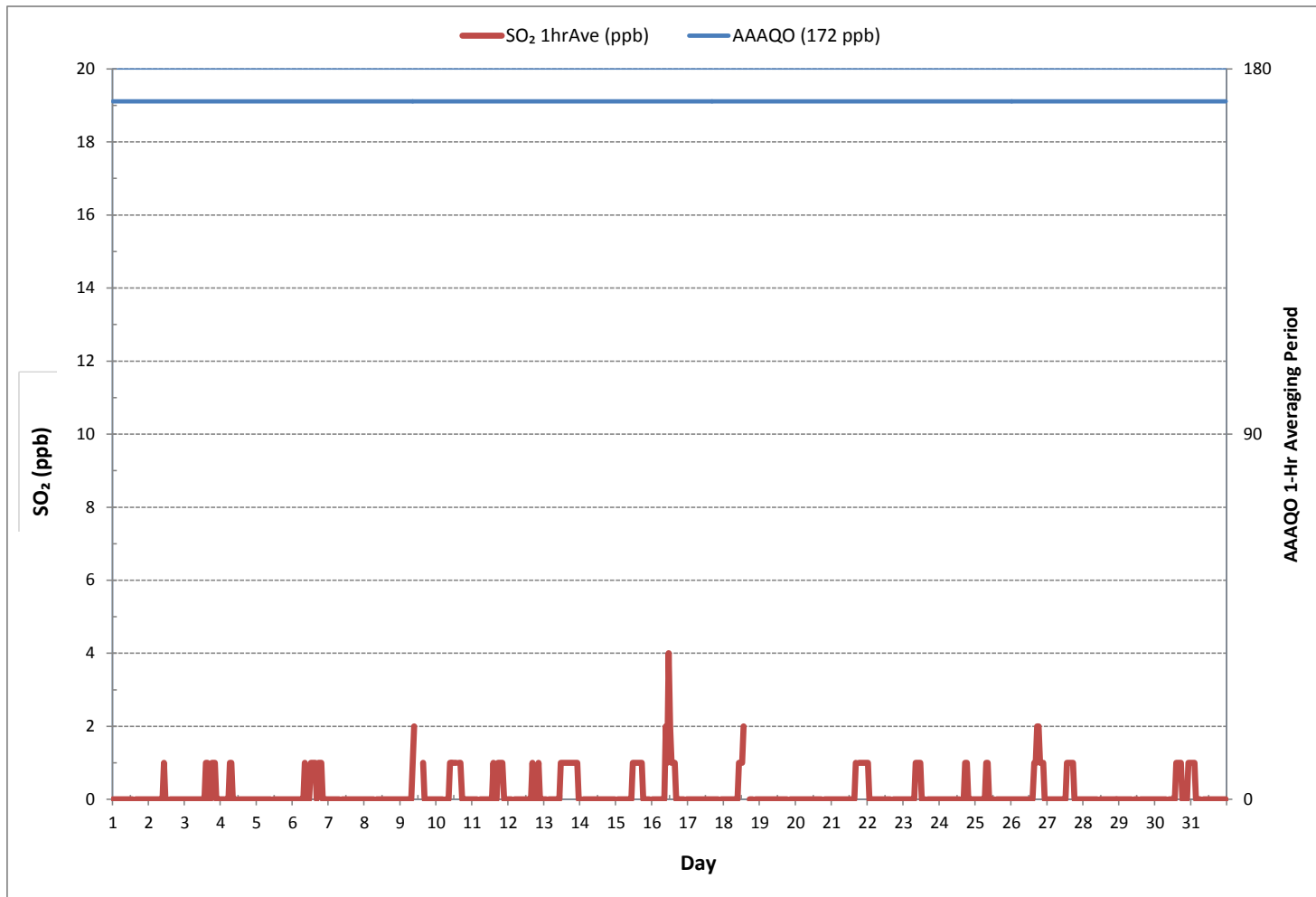
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0		
NUMBER OF 24-HR EXCEEDANCES:	0		
NUMBER OF NON-ZERO READINGS:	100		
MINIMUM 1-HR AVERAGE:	0 ppb @ HOUR ON DAY 1		
MAXIMUM 1-HR AVERAGE:	4 ppb @ HOUR ON DAY 16		
MAXIMUM 24-HR AVERAGE:	1 ppb ON DAY 13		
IZS CALIBRATION TIME:	32 hrs	OPERATIONAL TIME:	740 hrs
MONTHLY CALIBRATION TIME:	5 hrs	AMD OPERATION UPTIME:	99.5 %
STANDARD DEVIATION:	0	MONTHLY AVERAGE:	0 ppb

24 HR AVERAGES August 2017



SULPHUR DIOXIDE Hourly Averages (SO₂ ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
St. Lina Continuous Monitoring Station - August 2017

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	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	2	2	2	3	2	3	2	2	2	2	2	2	S	2	2	2	2	2	2	2	2	2	2	2	3	2	24	
2	2	2	2	2	2	2	2	2	3	3	3	3	3	S	2	3	3	3	3	3	3	3	3	3	3	2	3	3	24	
3	3	3	3	3	3	3	3	3	3	3	3	3	S	4	4	4	4	4	4	4	4	4	4	4	4	4	3	4	3	24
4	4	4	4	4	4	4	4	4	4	4	4	S	4	4	4	4	4	4	4	3	4	4	4	P	3	4	4	4	23	
5	4	3	3	3	4	3	P	3	3	3	S	3	3	4	4	3	3	3	4	4	4	4	4	4	4	3	4	3	23	
6	4	4	4	4	4	4	4	4	4	S	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	24
7	4	4	4	4	4	4	4	4	S	4	4	3	3	3	3	3	4	3	3	3	3	3	4	4	3	3	4	4	24	
8	3	3	3	3	3	3	S	4	4	4	4	3	4	4	4	3	4	4	4	4	4	4	4	4	4	3	4	4	24	
9	4	4	4	4	4	4	S	3	4	5	C	C	C	C	C	C	3	2	2	2	2	2	2	2	2	2	5	3	24	
10	1	1	1	1	1	S	1	1	1	2	2	2	2	Q	Q	2	2	1	2	1	1	1	1	1	1	1	2	1	24	
11	2	1	1	1	S	1	1	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	2	2	24	
12	2	2	1	1	S	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	24
13	2	2	S	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	3	3	24
14	3	S	2	2	2	3	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	2	3	2	24	
15	S	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	3	2	S	2	3	3	24	
16	2	3	2	2	2	2	2	2	3	5	4	7	5	4	3	3	3	3	2	2	3	2	S	2	2	2	7	3	24	
17	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	S	3	3	3	2	3	2	24	
18	3	3	3	3	3	3	3	3	3	3	3	3	4	5	P	P	P	4	X	3	S	3	3	3	3	3	5	3	20	
19	3	2	2	2	2	2	2	3	3	3	3	2	3	2	2	3	2	2	2	S	2	3	2	2	2	2	3	2	24	
20	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	S	2	2	2	2	2	2	2	2	2	2	24
21	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	S	3	3	3	3	3	3	2	3	2	24	
22	3	3	2	2	2	2	2	2	2	2	2	3	3	3	2	2	S	2	P	2	2	2	2	2	2	2	3	2	23	
23	2	2	2	3	3	2	3	2	3	3	3	3	3	3	S	3	3	3	3	3	3	3	3	3	3	2	3	3	24	
24	3	3	3	3	3	3	3	3	3	3	3	4	3	3	S	4	4	4	4	4	4	3	3	3	3	3	4	3	24	
25	3	3	3	3	3	3	3	3	3	3	3	3	3	S	3	3	3	3	3	3	3	3	3	3	3	3	3	3	24	
26	3	3	3	3	2	2	2	2	2	3	2	3	S	2	3	3	4	4	4	4	4	4	3	3	2	4	3	24		
27	3	2	2	2	2	4	2	3	3	2	3	S	3	3	3	3	4	3	3	3	3	3	3	3	2	4	3	24		
28	3	3	3	3	3	3	3	3	3	3	S	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	24	
29	3	3	3	3	3	P	3	2	3	S	3	3	P	P	3	3	3	3	3	3	3	3	3	3	2	3	3	21		
30	3	3	3	3	3	3	3	3	S	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3	4	4	24	
31	4	4	4	4	4	4	4	S	4	4	4	4	4	4	4	4	4	4	3	4	4	4	4	3	3	3	4	4	24	
HOURLY MAX	4	4	4	4	4	4	4	4	4	5	4	7	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	24	
HOURLY AVG	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	24	

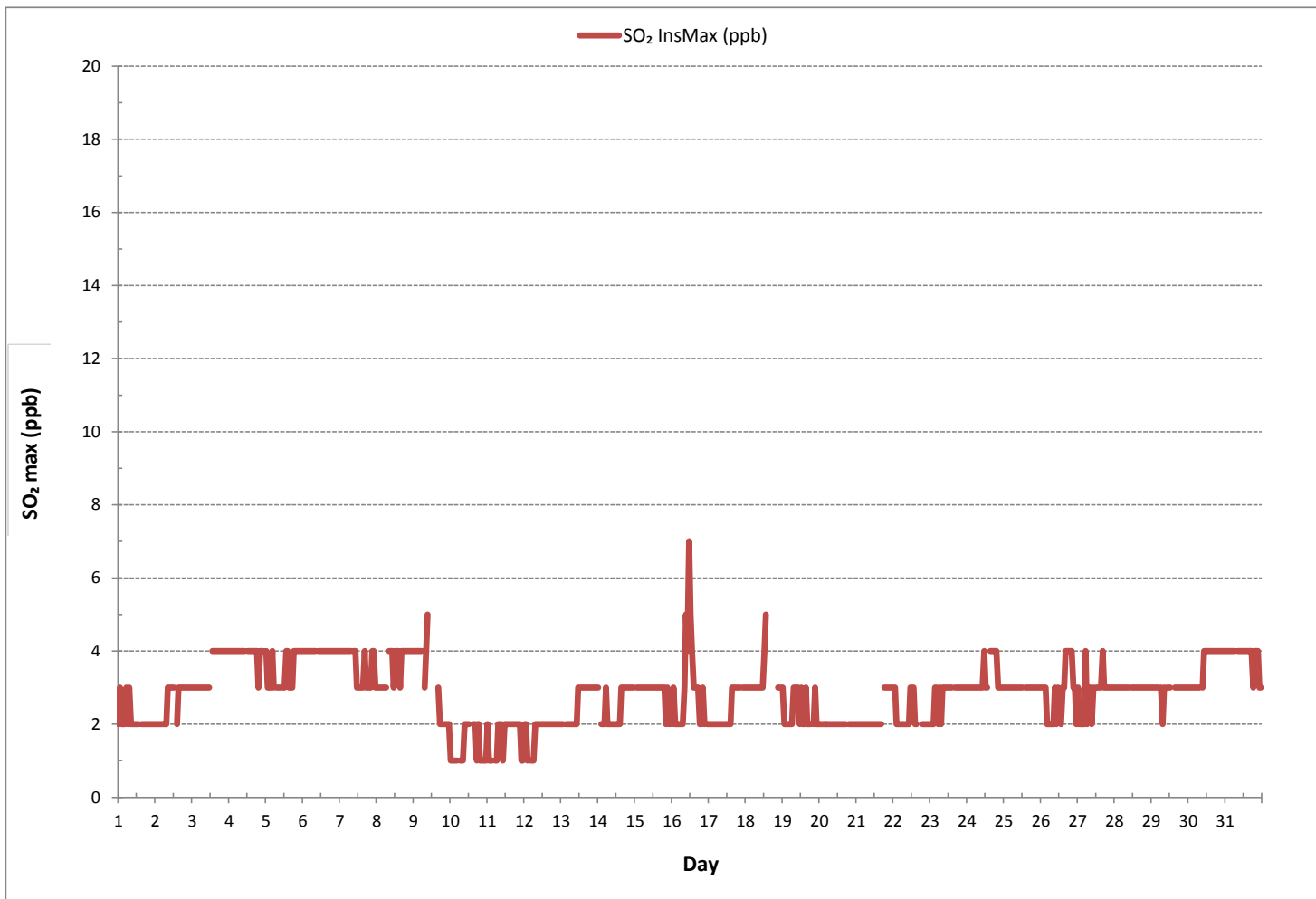
STATUS FLAG CODES

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:	694
MAXIMUM INSTANTANEOUS VALUE:	7 ppb @ HOUR 11 ON DAY 16
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	6 hrs
OPERATIONAL TIME:	734 hrs
STANDARD DEVIATION:	1

SULPHUR DIOXIDE Instantaneous Maximum (SO₂ ppb)



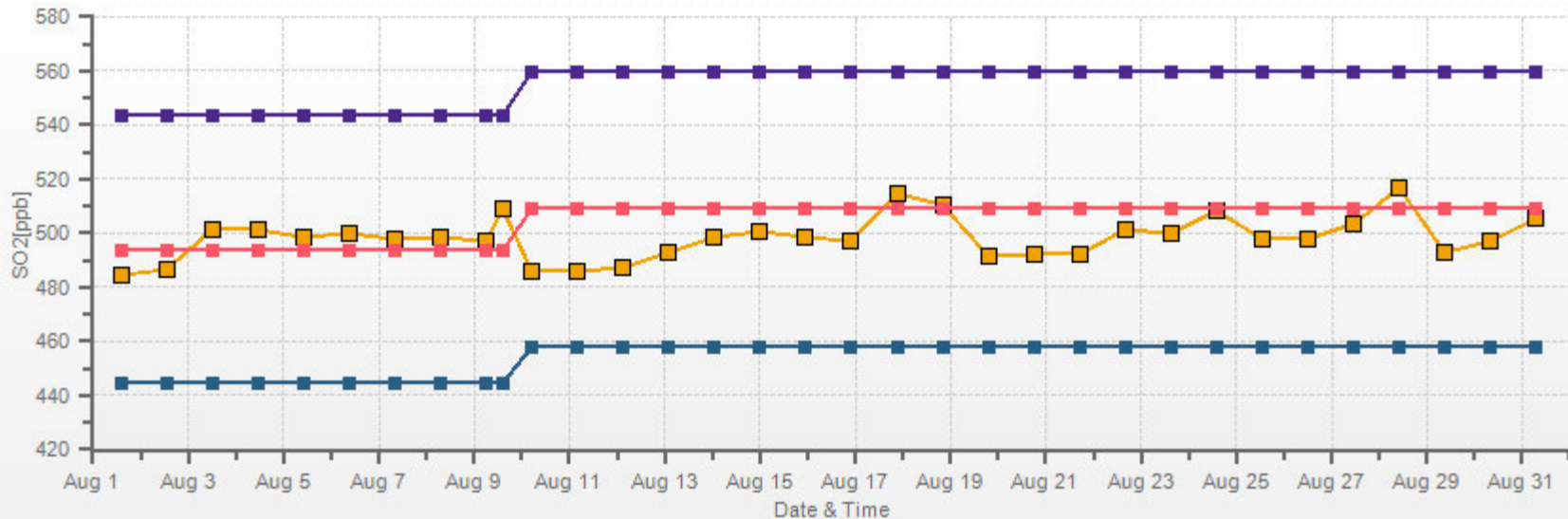
Wind: LICA ST. LINA
 Poll.: LICA ST. LINA-SO2[ppb]
 Monthly: 17/08
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 1.15%

Calm Avg: 0.31 [ppb]

Direction	0.0-1.0	1.0-2.0	2.0-3.0	3.0-4.0	4.0-5.0	>5.0	Total
N	5.2	0.0	0.0	0.0	0.0	0.0	5.2
NE	8.2	0.0	0.0	0.0	0.0	0.0	8.2
E	8.5	0.0	0.0	0.0	0.0	0.0	8.5
SE	15.6	0.0	0.0	0.0	0.0	0.0	15.6
S	9.7	0.7	0.0	0.0	0.0	0.0	10.4
SW	12.5	0.9	0.1	0.1	0.0	0.0	13.7
W	24.4	0.4	0.0	0.0	0.0	0.0	24.8
NW	12.5	0.0	0.0	0.0	0.0	0.0	12.5
Summary	96.5	2.0	0.1	0.1	0.0	0.0	98.8

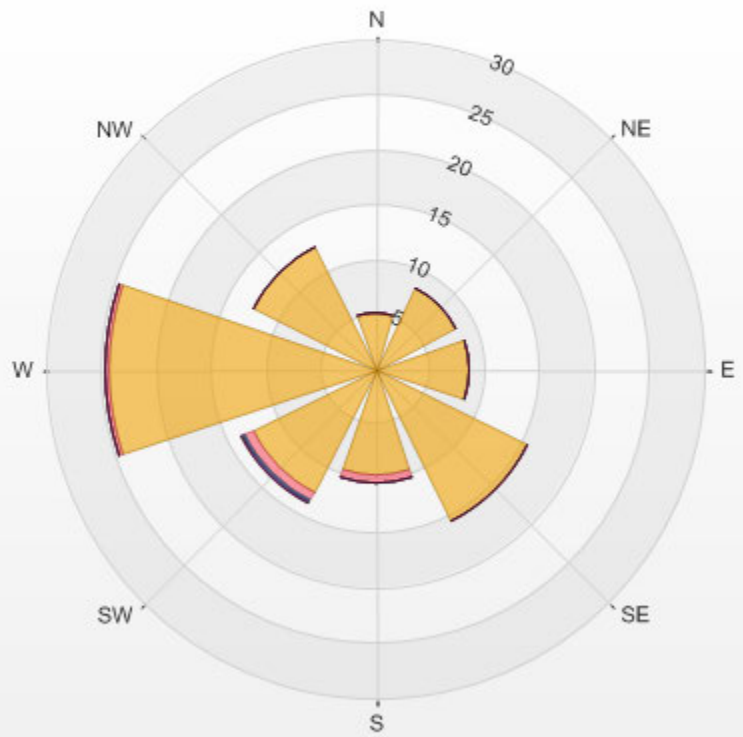
SO2[ppb] Calibration: LICA ST. LINA Monthly: 17/08 Type: Span



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

% Icon Classes (ppb) 97 0.0-1.0 2 1.0-2.0 0 2.0-3.0 0 3.0-4.0 0 4.0-5.0 0 >5.0

LICA ST. LINA Poll.: LICA ST. LINA-SO2[ppb] 2017/08/01 00:00 - 2017/08/31 23:00 Calm: 1.15% Calm Poll Avg: 0.31[ppb]



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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	
2	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	1	0	0	1	0	24
3	1	X	X	X	X	X	X	X	X	X	X	X	S	C1	C1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	11
4	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
5	0	0	0	0	0	1	1	1	1	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	24
6	0	1	1	1	1	2	2	1	1	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	24	
7	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
8	0	0	0	1	1	1	1	S	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	24
9	0	0	0	1	1	1	S	1	1	0	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	24	
10	0	0	0	0	1	S	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	24	
11	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
12	0	0	0	0	S	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	24	
13	0	0	0	S	0	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	24	
14	0	S	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	24	
15	S	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	1	0	0	1	0	24	
16	0	1	1	1	1	1	1	2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	2	0	0	2	0	24	
17	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	1	0	0	1	0	24	
18	0	0	1	1	1	1	1	1	1	1	1	1	0	0	P	P	P	0	0	0	0	S	0	0	0	0	1	1	0	1	0	21	
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	24
20	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	1	0	0	1	0	24	
21	0	0	0	0	0	1	2	1	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	2	0	0	2	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	0	0	0	24	
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
24	0	0	0	0	0	0	1	1	1	1	1	0	1	0	1	S	1	1	1	1	1	0	0	0	0	0	1	0	0	1	0	24	
25	0	0	0	0	1	1	1	1	1	1	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	24	
26	0	0	0	0	1	1	1	1	1	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	24	
27	0	0	0	0	1	1	1	1	1	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	24	
28	0	1	0	1	1	0	1	1	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	24	
29	0	0	0	0	0	0	1	0	0	S	0	0	0	0	P	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	23	
30	0	0	0	0	1	1	1	1	S	1	1	1	1	1	1	1	1	1	0	1	1	0	1	0	0	1	1	1	0	1	1	24	
31	0	0	1	1	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	0	1	0	24
HOURLY MAX	1	1	1	1	1	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0				
HOURLY AVG	0	0	0	0	1	1	1	1	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

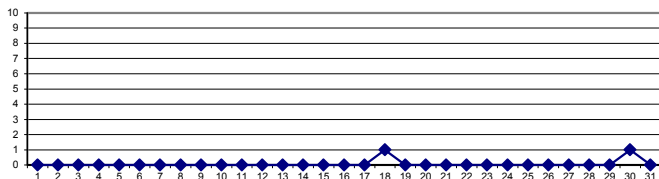
OBJECTIVE LIMIT:

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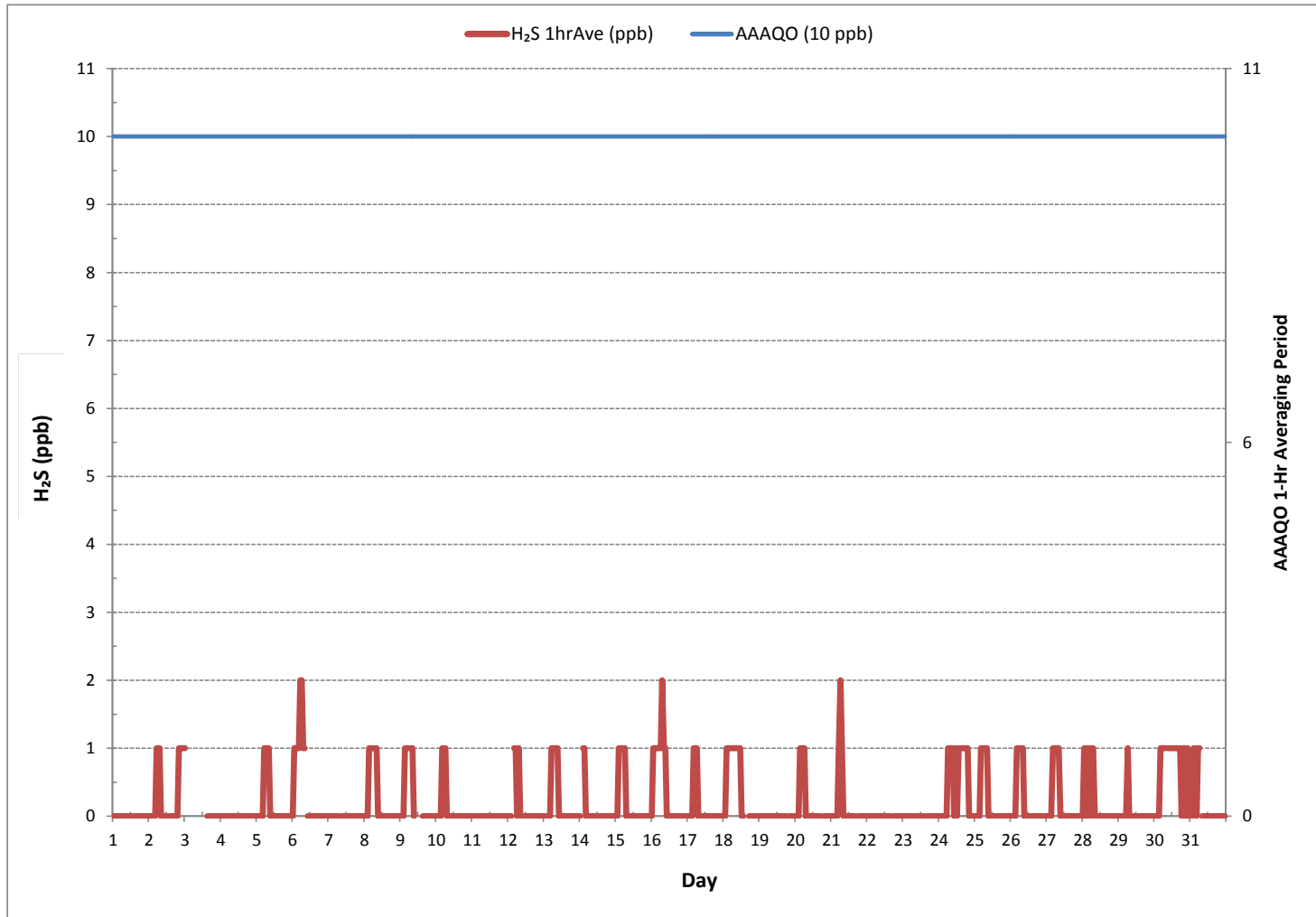
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0				
NUMBER OF 24-HR EXCEEDANCES:	0				
NUMBER OF NON-ZERO READINGS:	128				
MINIMUM 1-HR AVERAGE:	0 ppb @ HOUR	0	ON DAY	1	
MAXIMUM 1-HR AVERAGE:	2 ppb @ HOUR	5	ON DAY	6	
MAXIMUM 24-HR AVERAGE:	1 ppb		ON DAY	18	
IZS CALIBRATION TIME:	32	hrs	OPERATIONAL TIME:	727	hrs
MONTHLY CALIBRATION TIME:	5	hrs	AMD OPERATION UPTIME:	97.7	%
STANDARD DEVIATION:	0		MONTHLY AVERAGE:	0	ppb

24 HR AVERAGES August 2017



HYDROGEN SULPHIDE Hourly Averages (H₂S ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
St. Lina Continuous Monitoring Station - August 2017

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	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	1	1	1	1	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	1	0	0	0	0	1	0	24	
2	1	0	0	1	1	1	1	1	1	1	0	0	0	S	0	0	0	0	0	0	0	1	1	1	1	0	1	1	24	
3	0	X	X	X	X	X	X	X	X	X	X	X	S	C1	C1	1	1	1	1	1	1	1	1	1	1	0	1	1	11	
4	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	P	1	1	1	23	
5	1	1	1	1	1	1	P	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	23	
6	1	1	1	2	2	3	2	2	2	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1	24	
7	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	1	1	24	
8	1	1	1	2	2	2	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	24	
9	1	1	1	1	2	2	S	2	2	1	C	C	C	C	C	C	1	1	1	1	1	1	1	1	1	2	1	24		
10	1	1	1	1	1	S	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	24	
11	1	1	1	1	S	0	1	1	1	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	24	
12	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	1	24	
13	1	1	S	1	1	1	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	24	
14	1	S	2	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	24	
15	S	1	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	2	1	24	
16	1	2	3	3	2	2	5	5	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	5	2	24	
17	1	1	1	1	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	2	1	24	
18	1	1	2	2	2	3	3	3	2	2	2	2	2	2	P	P	P	1	1	1	1	S	1	1	1	1	3	2	21	
19	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	S	1	1	1	1	1	1	1	2	1	24	
20	1	1	1	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	2	1	24	
21	1	1	1	1	1	2	3	2	1	1	1	0	1	1	1	1	0	S	0	1	1	1	0	1	0	1	0	3	1	24
22	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	P	1	1	1	1	1	1	1	1	1	23	
23	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	
24	1	1	1	1	1	1	2	2	2	2	2	2	2	2	S	2	2	2	2	2	2	2	1	1	1	1	1	2	2	24
25	1	1	1	1	2	2	2	2	2	2	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	2	1	24	
26	1	1	1	1	2	2	2	2	2	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	24	
27	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	1	24	
28	1	1	2	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	24	
29	1	1	1	1	1	P	1	1	1	S	1	1	1	P	P	1	1	1	1	1	1	1	1	1	1	1	1	1	21	
30	1	1	1	1	1	2	2	2	S	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	24
31	2	2	2	2	2	2	S	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	24	
HOURLY MAX	2	2	3	3	2	3	5	5	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
HOURLY AVG	1	1	1	1	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	

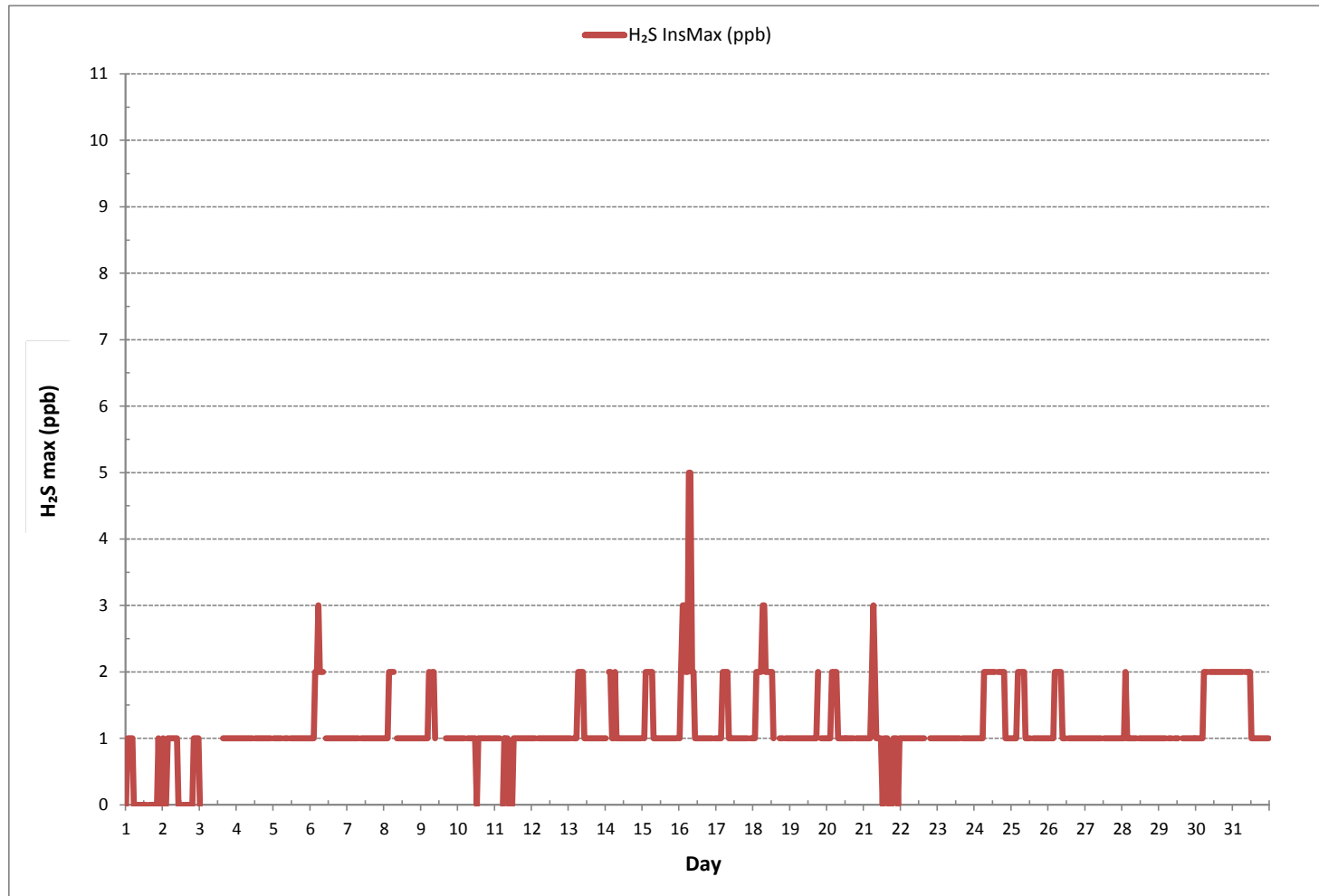
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	645
MAXIMUM INSTANTANEOUS VALUE:	5 ppb @ HOUR 6 ON DAY 16
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	6 hrs
OPERATIONAL TIME:	722 hrs
STANDARD DEVIATION:	1

HYDROGEN SULPHIDE Instantaneous Maximum (H₂S ppb)



Wind: LICA ST. LINA
 Poll.: LICA ST. LINA-H2S[ppb]
 Monthly: 17/08
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

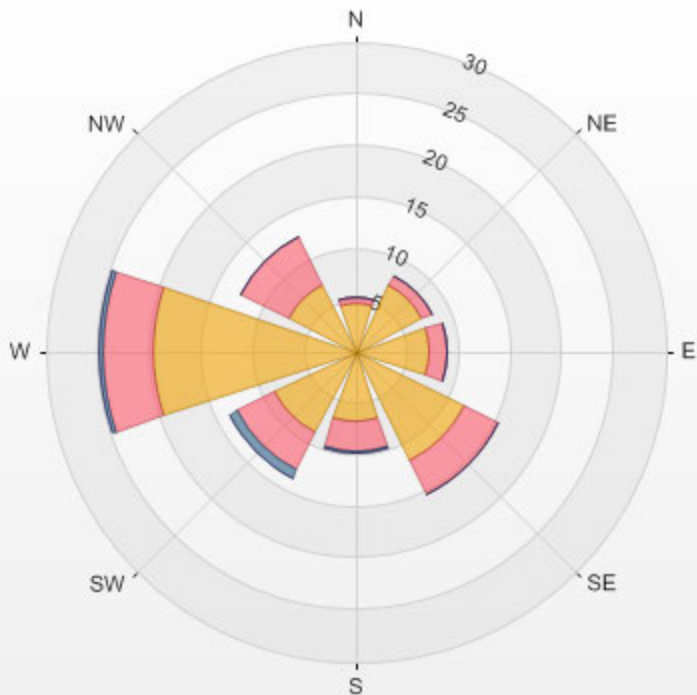
Calm: 1.15%

Calm Avg: 0.59 [ppb]

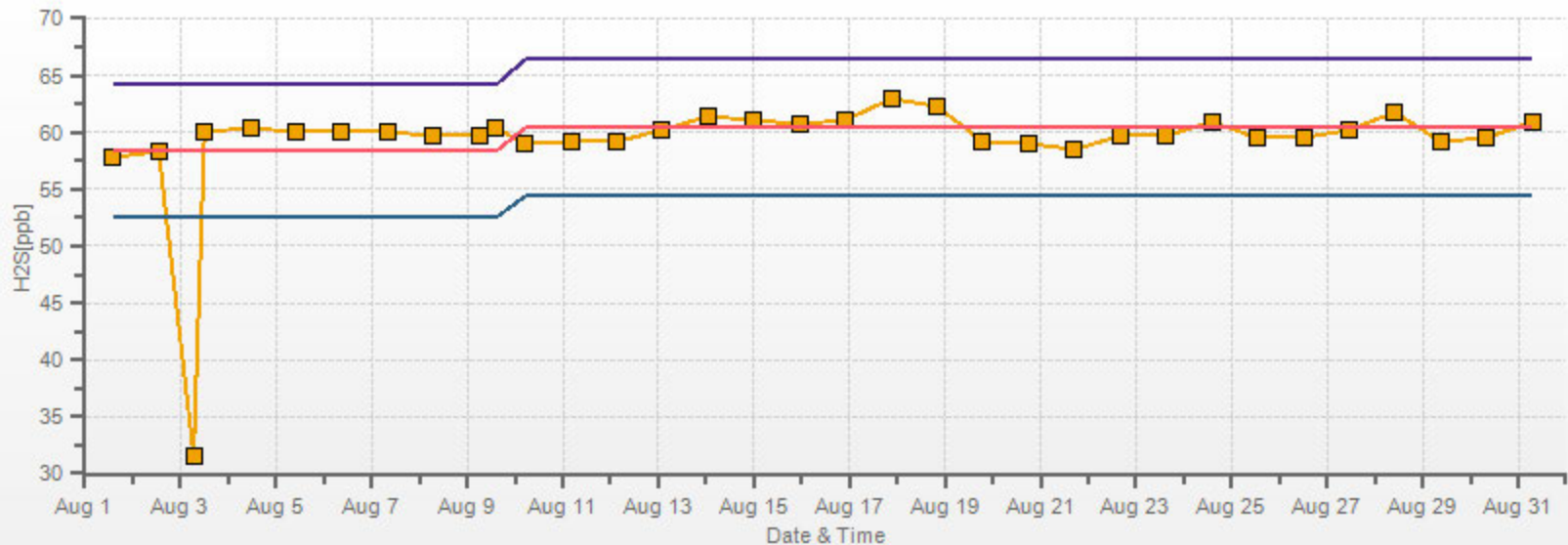
Direction	0.0-1.0	1.0-2.0	2.0-3.0	>3.0	Total
N	4.8	0.6	0.0	0.0	5.3
NE	7.2	1.0	0.0	0.0	8.2
E	7.2	1.6	0.0	0.0	8.8
SE	11.8	3.8	0.0	0.0	15.6
S	6.8	2.9	0.1	0.0	9.8
SW	8.8	4.0	0.9	0.0	13.7
W	19.6	4.9	0.3	0.0	24.8
NW	7.2	5.3	0.0	0.0	12.6
Summary	73.5	24.1	1.3	0.0	98.9

% Icon Classes (ppb) 73 0.0-1.0 24 1.0-2.0 1 2.0-3.0 0 >3.0

LICA ST. LINA Poll.: LICA ST. LINA-H2S[ppb] 2017/08/01 00:00 - 2017/08/31 23:00 Calm: 1.15% Calm Poll Avg: 0.59[ppb]



H2S[ppb] Calibration: LICA ST. LINA Monthly: 17/08 Type: Span



Span Meas Span Ref Span Low Span High

TOTAL HYDROCARBON

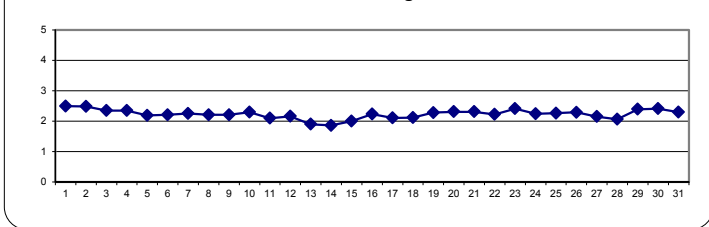
TOTAL HYDROCARBONS Hourly Averages (THC ppm)

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	2.51	2.56	2.53	2.56	2.51	2.48	2.51	2.53	2.50	2.51	2.49	2.43	2.43	2.42	S	2.37	2.46	2.50	2.49	2.44	2.46	2.53	2.52	2.55	2.37	2.56	2.49	24	
2	2.58	2.60	2.56	2.60	2.59	2.58	2.62	2.62	2.61	2.56	2.50	2.41	2.40	S	2.32	2.34	2.31	2.30	2.31	2.35	2.42	2.47	2.50	2.55	2.30	2.62	2.48	24	
3	2.52	2.55	2.56	2.71	2.70	2.62	2.59	2.68	2.57	2.46	2.46	2.24	S	2.01	1.99	1.97	1.99	1.99	2.01	2.17	2.25	2.31	2.29	2.39	1.97	2.71	2.35	24	
4	2.43	2.60	2.77	2.87	2.77	2.73	2.46	2.35	2.35	2.37	2.36	S	2.19	2.19	2.14	2.18	2.13	2.11	2.14	2.20	2.17	2.13	2.17	2.19	2.03	2.87	2.35	24	
5	2.22	2.20	2.21	2.26	2.29	2.24	2.27	2.27	2.19	2.12	S	2.03	2.05	2.04	2.07	2.11	2.10	2.10	2.13	2.16	2.18	2.26	2.38	2.41	2.03	2.41	2.19	24	
6	2.36	2.34	2.40	2.45	2.42	2.45	2.41	2.36	2.26	S	2.11	2.07	2.04	2.01	1.99	1.97	1.97	1.97	2.06	2.09	2.25	2.22	2.31	2.34	1.97	2.45	2.21	24	
7	2.28	2.29	2.43	2.53	2.38	2.44	2.58	2.35	S	2.14	2.20	2.19	2.17	2.14	2.16	2.14	2.13	2.12	2.14	2.15	2.20	2.21	2.22	2.24	2.12	2.58	2.25	24	
8	2.24	2.25	2.29	2.31	2.31	2.34	2.33	S	2.31	2.23	2.17	2.17	2.14	2.14	2.12	2.10	2.09	2.08	2.12	2.19	2.20	2.24	2.22	2.24	2.08	2.34	2.21	24	
9	2.22	2.25	2.46	2.56	2.43	2.58	S	2.56	2.31	2.22	2.20	2.08	2.04	1.99	1.96	1.96	1.94	1.95	2.01	2.12	2.15	2.24	2.26	2.36	1.94	2.58	2.21	24	
10	2.61	2.69	2.60	2.59	2.57	S	2.58	2.62	2.61	2.42	C	C	C	C	C	1.85	1.88	1.88	1.95	2.03	2.11	2.05	2.14	2.30	1.85	2.69	2.30	24	
11	2.15	2.09	2.10	2.18	S	2.13	2.19	2.21	2.27	2.22	2.14	2.14	2.06	2.05	2.01	1.94	1.94	1.96	1.98	2.05	2.10	2.14	2.14	2.21	1.94	2.27	2.10	24	
12	2.30	2.34	2.44	S	2.53	2.53	2.38	2.45	2.38	2.28	2.27	2.09	1.97	1.93	1.91	1.91	1.89	1.91	1.91	1.95	2.01	2.11	2.14	2.12	1.89	2.53	2.16	24	
13	2.12	2.11	S	2.06	2.16	2.19	2.16	2.19	2.04	2.00	1.88	1.78	1.73	1.74	1.69	1.71	1.72	1.73	1.73	1.70	1.74	1.82	1.83	1.86	1.69	2.19	1.90	24	
14	1.89	S	1.99	2.06	1.99	1.94	1.93	1.90	1.84	1.87	1.86	1.84	1.82	1.79	1.79	1.76	1.76	1.74	1.77	1.85	1.85	1.85	1.86	1.85	1.74	2.06	1.86	24	
15	S	1.97	1.96	2.00	1.98	1.89	1.88	S1	1.78	1.81	1.76	C1	C1	C1	C1	C1	C1	2.04	2.08	2.14	2.21	2.25	2.26	S	1.76	2.26	2.00	17	
16	2.24	2.28	2.31	2.29	2.30	2.25	2.38	2.40	2.39	2.30	2.22	2.19	2.14	2.10	2.09	2.07	2.06	2.08	2.15	2.17	2.22	2.30	S	2.35	2.06	2.40	2.23	24	
17	2.38	2.43	2.37	2.40	2.39	2.37	2.36	2.35	2.28	2.22	2.15	2.10	2.07	2.02	1.93	1.84	1.81	1.78	1.77	1.82	1.85	S	1.94	2.01	1.77	2.43	2.11	24	
18	2.03	2.07	2.10	2.16	2.18	2.20	2.19	2.24	2.17	2.06	1.95	1.88	1.81	1.75	P	P	P	2.24	2.24	2.23	S	2.25	2.29	2.30	1.75	2.30	2.12	21	
19	2.34	2.37	2.40	2.44	2.37	2.33	2.27	2.24	2.18	2.12	2.03	2.20	2.23	2.23	2.25	2.27	2.28	2.28	2.28	S	2.32	2.37	2.37	2.36	2.03	2.44	2.28	24	
20	2.35	2.33	2.27	2.30	2.32	2.30	2.30	2.30	2.37	2.35	2.33	2.30	2.30	2.28	2.25	2.25	2.20	2.18	S	2.31	2.37	2.36	2.39	2.42	2.18	2.42	2.31	24	
21	2.42	2.37	2.35	2.38	2.43	2.46	2.46	2.50	2.47	2.46	2.46	2.23	2.15	2.10	2.09	2.05	2.06	S	2.11	2.23	2.25	2.24	2.33	2.46	2.05	2.50	2.31	24	
22	2.49	2.51	2.46	2.43	2.41	2.41	S1	2.39	2.32	2.20	2.11	2.09	1.97	1.97	1.94	1.91	S	1.84	2.08	2.21	2.25	2.22	2.28	2.29	1.84	2.51	2.22	23	
23	2.38	2.43	2.53	2.45	2.55	2.80	S1	2.79	2.60	2.49	2.49	2.39	2.36	2.37	2.27	S	2.20	2.22	2.22	2.24	2.29	2.28	2.33	2.37	2.20	2.80	2.41	23	
24	2.36	2.41	2.42	2.42	2.43	2.39	2.34	2.31	2.29	2.17	2.14	2.13	2.20	2.22	S	2.16	2.13	2.12	2.10	2.14	2.09	2.11	2.17	2.19	2.09	2.43	2.24	24	
25	2.18	2.18	2.20	2.22	2.25	2.19	2.26	2.34	2.30	2.27	2.25	2.26	2.26	S	2.21	2.20	2.19	2.18	2.17	2.24	2.33	2.41	2.40	2.41	2.17	2.41	2.26	24	
26	2.43	2.43	2.45	2.42	2.43	2.42	2.51	2.44	2.21	2.23	2.25	2.25	S	2.16	2.13	2.12	2.10	2.10	2.13	2.22	2.25	2.30	2.36	2.42	2.10	2.51	2.29	24	
27	2.44	2.47	2.51	2.55	2.54	2.54	2.55	2.58	2.56	2.34	2.19	S	1.93	1.87	1.83	1.79	1.79	1.78	1.81	1.86	1.83	1.82	1.87	1.89	1.78	2.58	2.15	24	
28	1.93	2.07	2.04	2.11	2.07	2.06	2.07	2.07	2.05	1.98	S	1.83	1.98	2.06	2.01	2.00	1.99	2.00	2.03	2.09	2.13	2.21	2.24	2.30	1.83	2.30	2.06	24	
29	2.34	2.32	2.35	2.46	2.45	2.48	2.54	2.52	2.38	S	2.07	2.36	2.22	P	R	2.47	2.46	2.42	2.43	2.47	2.46	2.40	2.31	2.32	2.07	2.54	2.39	22	
30	2.33	2.33	2.36	2.52	2.57	2.48	2.49	2.49	S	2.47	2.44	2.42	2.39	2.39	2.35	2.36	2.36	2.33	2.39	2.41	2.48	2.41	2.30	2.27	2.27	2.57	2.41	24	
31	2.26	2.32	2.41	2.49	2.43	2.51	2.49	S	2.38	2.33	2.32	2.28	2.24	2.24	2.24	2.25	2.23	2.24	2.23	2.14	2.17	2.20	2.19	2.21	2.14	2.51	2.30	24	
HOURLY MAX	2.61	2.69	2.77	2.87	2.77	2.80	2.62	2.79	2.61	2.56	2.50	2.43	2.43	2.42	2.35	2.47	2.46	2.50	2.49	2.47	2.48	2.53	2.52	2.55					
HOURLY AVG	2.31	2.34	2.36	2.39	2.39	2.38	2.36	2.39	2.31	2.25	2.21	2.16	2.12	2.09	2.07	2.07	2.08	2.07	2.10	2.15	2.19	2.22	2.23	2.27					

STATUS FLAG CODES

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

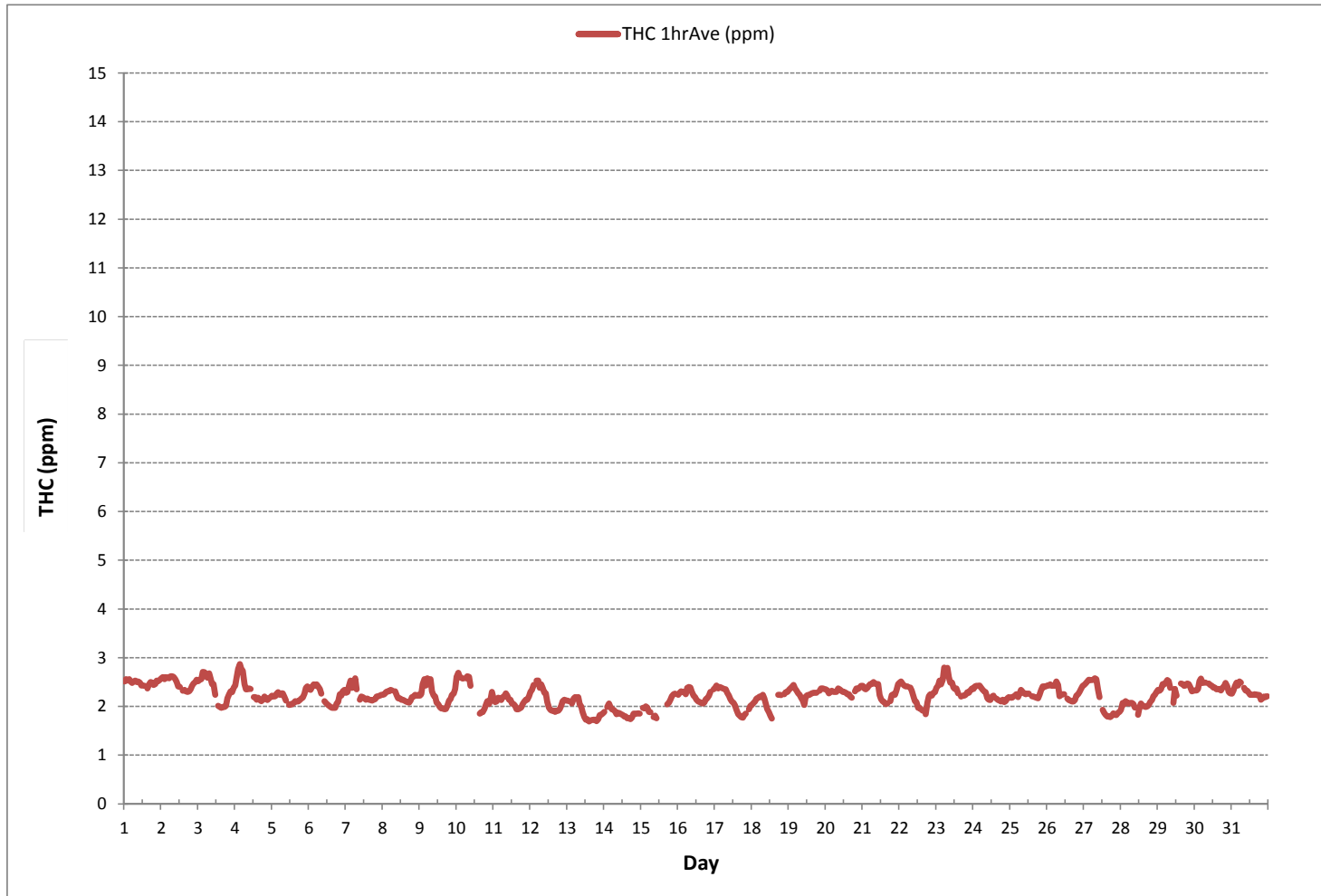
24 HR AVERAGES August 2017



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	693			
MINIMUM 1-HR AVERAGE:	1.69 ppm	@ HOUR	14	ON DAY 13
MAXIMUM 1-HR AVERAGE:	2.87 ppm	@ HOUR	3	ON DAY 4
MAXIMUM 24-HR AVERAGE:	2.49 ppm			ON DAY 1
IZS CALIBRATION TIME:	32 hrs	OPERATIONAL TIME:	730 hrs	
MONTHLY CALIBRATION TIME:	5 hrs	AMD OPERATION UPTIME:	98.1 %	
STANDARD DEVIATION:	0.22	MONTHLY AVERAGE:	2.23 ppm	

TOTAL HYDROCARBONS Hourly Averages (THC ppm)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
St. Lina Continuous Monitoring Station - August 2017

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	3.09	2.81	2.60	2.63	2.56	2.53	2.56	2.57	2.56	2.54	2.53	2.49	2.54	2.56	S	2.53	2.51	2.78	2.75	2.85	2.93	3.09	2.69	2.63	2.49	3.09	2.67	24
2	2.76	2.78	2.76	2.76	2.88	2.91	2.72	2.72	2.69	2.67	2.54	2.49	2.42	S	2.72	2.58	2.35	2.33	2.35	2.38	2.47	2.50	2.54	2.62	2.33	2.91	2.61	24
3	2.60	2.63	2.66	2.81	2.75	2.66	2.62	2.76	2.67	2.51	2.57	2.38	S	2.04	2.02	2.04	2.04	2.04	2.08	2.25	2.38	2.44	2.47	2.54	2.02	2.81	2.43	24
4	2.57	2.66	2.89	2.92	2.88	3.38	3.09	2.41	2.39	2.42	2.45	S	2.28	2.25	2.20	2.26	2.20	2.15	2.22	2.25	2.20	2.19	2.25	P	2.15	3.38	2.48	23
5	2.29	2.23	2.26	2.30	2.32	2.29	P	2.32	2.26	2.14	S	2.08	2.11	2.08	2.17	2.17	2.14	2.14	2.17	2.20	2.26	2.32	2.49	2.48	2.08	2.49	2.24	23
6	2.41	2.41	2.44	2.51	2.50	2.51	2.47	2.41	2.35	S	2.15	2.19	2.08	2.05	2.02	1.99	2.06	2.04	2.32	2.32	3.24	2.29	2.47	2.44	1.99	3.24	2.33	24
7	2.35	2.38	2.51	2.64	2.44	2.53	2.63	2.56	S	2.19	2.23	2.23	2.20	2.19	2.22	2.17	2.16	2.14	2.17	2.20	2.39	2.50	2.39	2.64	2.14	2.64	2.35	24
8	2.54	2.29	2.66	2.79	2.51	2.44	2.45	S	2.41	2.35	2.20	2.23	2.23	2.23	2.17	2.17	2.14	2.15	2.17	2.26	2.24	2.29	2.26	2.30	2.14	2.79	2.33	24
9	2.30	2.72	2.75	2.72	2.54	2.67	S	2.63	2.50	2.29	2.26	2.14	2.08	2.04	1.99	2.50	2.02	2.01	2.18	2.30	2.29	2.32	2.35	2.49	1.99	2.75	2.35	24
10	2.72	2.78	2.63	2.63	2.62	S	2.73	2.79	2.66	2.57	C	C	C	C	C	2.11	2.35	2.14	2.92	3.06	2.44	2.49	2.75	2.81	2.11	3.06	2.62	24
11	2.44	2.32	2.66	2.51	S	2.38	2.44	2.45	2.51	2.50	2.38	2.41	2.29	2.28	2.25	2.20	2.17	2.20	2.23	2.32	2.33	2.39	2.38	2.49	2.17	2.66	2.37	24
12	2.57	2.57	2.75	S	2.81	2.81	2.63	2.69	2.67	2.54	2.51	2.48	2.22	2.17	2.14	2.13	2.11	2.15	2.14	2.18	2.28	2.34	2.38	2.35	2.11	2.81	2.42	24
13	2.35	2.35	S	2.35	2.42	2.44	2.47	2.48	2.47	2.42	2.36	2.28	2.25	2.21	2.21	2.19	2.17	2.18	2.18	2.22	2.23	2.31	2.33	2.38	2.17	2.48	2.32	24
14	2.37	S	2.49	2.51	2.49	2.38	2.40	2.39	2.33	2.31	2.32	2.29	2.31	2.21	2.26	2.21	2.22	2.23	2.32	2.36	2.42	2.73	2.47	2.43	2.21	2.73	2.37	24
15	S	2.60	2.52	2.54	2.51	2.45	2.38	S1	2.32	2.33	2.31	C1	C1	C1	C1	C1	C1	2.20	2.22	2.29	2.35	2.44	2.41	S	2.20	2.60	2.39	17
16	2.39	2.41	2.47	2.44	2.45	2.41	2.54	2.54	2.54	2.44	2.39	2.32	2.29	2.23	2.22	2.22	2.19	2.29	2.41	2.51	2.38	2.45	S	2.49	2.19	2.54	2.39	24
17	2.53	2.56	2.54	2.53	2.53	2.51	2.51	2.51	2.44	2.38	2.29	2.25	2.25	2.17	2.14	1.99	1.95	1.93	1.90	2.00	2.01	S	2.12	2.14	1.90	2.56	2.27	24
18	2.20	2.22	2.29	2.30	2.32	2.32	2.33	2.38	2.33	2.23	2.12	2.02	1.98	1.89	P	P	P	2.46	X	2.38	S	2.42	2.45	2.49	1.89	2.49	2.27	20
19	2.49	2.52	2.54	2.60	2.52	2.49	2.41	2.38	2.35	2.29	2.46	2.38	2.36	2.38	2.39	2.41	2.41	2.41	2.41	S	2.49	2.52	2.51	2.50	2.29	2.60	2.44	24
20	2.50	2.56	2.41	2.47	2.49	2.44	2.45	2.47	2.51	2.49	2.47	2.45	2.44	2.42	2.41	2.45	2.49	2.48	S	2.58	2.53	2.52	2.57	2.59	2.41	2.59	2.49	24
21	2.56	2.54	2.49	2.54	2.59	2.59	2.60	2.66	2.60	2.62	2.60	2.66	2.53	2.52	2.45	2.38	2.39	S	2.54	2.69	2.55	2.52	2.66	2.82	2.38	2.82	2.57	24
22	2.80	2.80	2.83	2.77	2.73	2.74	S1	S1	2.83	2.57	2.53	2.48	2.39	2.37	2.42	2.38	S	2.36	P	2.67	2.47	2.42	2.57	2.51	2.36	2.83	2.58	21
23	2.54	2.60	2.70	2.64	2.84	3.00	S1	S1	2.85	2.67	2.63	2.54	2.53	2.55	2.50	S	2.35	2.35	2.35	2.39	2.44	2.42	2.49	2.51	2.35	3.00	2.57	22
24	2.50	3.09	2.62	2.57	2.57	2.52	2.50	2.47	2.44	2.42	2.33	2.31	2.36	2.36	S	2.29	2.33	2.30	2.28	2.30	2.27	2.29	2.35	2.33	2.27	3.09	2.43	24
25	2.32	2.35	2.34	2.35	2.39	2.33	2.47	2.49	2.45	2.42	2.39	2.41	2.39	S	2.35	2.33	2.32	2.32	2.29	2.42	2.49	2.54	2.54	2.62	2.29	2.62	2.41	24
26	2.66	2.57	2.59	2.57	2.57	2.57	2.69	2.60	2.42	2.38	2.39	2.41	S	2.29	2.26	2.26	2.23	2.23	2.67	2.61	2.39	2.44	2.51	2.67	2.23	2.69	2.48	24
27	2.60	2.60	2.75	2.75	2.69	2.69	2.70	2.75	2.73	2.57	2.41	S	2.11	2.02	2.01	1.92	1.92	1.90	2.00	2.11	1.98	2.02	2.06	2.22	1.90	2.75	2.33	24
28	2.54	3.25	2.37	2.58	2.82	2.29	2.40	2.29	2.27	2.20	S	1.99	2.29	2.25	2.18	2.21	2.24	2.22	2.20	2.26	2.30	2.40	2.69	2.69	1.99	3.25	2.39	24
29	2.69	2.57	2.50	2.63	2.64	P	2.84	2.73	2.53	S	2.45	X	2.62	P	P	2.61	2.60	2.57	2.60	2.61	2.60	2.60	2.46	2.45	2.45	2.84	2.59	20
30	2.48	2.47	2.58	2.72	2.75	2.63	2.64	2.63	S	2.64	2.60	2.56	2.54	2.53	2.51	2.50	2.50	2.47	2.53	2.57	2.87	2.66	2.51	2.58	2.47	2.87	2.59	24
31	2.45	2.60	2.81	2.69	2.75	2.88	2.69	S	2.63	2.47	2.49	2.45	2.38	2.38	2.38	2.44	2.41	2.44	2.41	2.30	2.35	2.38	2.38	2.38	2.30	2.88	2.50	24
HOURLY MAX	3.09	3.25	2.89	2.92	2.88	3.38	3.09	2.79	2.85	2.67	2.63	2.66	2.62	2.56	2.72	2.61	2.60	2.78	2.92	3.06	3.24	3.09	2.75	2.82				
HOURLY AVG	2.52	2.57	2.58	2.59	2.60	2.58	2.57	2.54	2.51	2.43	2.41	2.34	2.31	2.26	2.26	2.27	2.25	2.25	2.32	2.39	2.42	2.44	2.45	2.50				

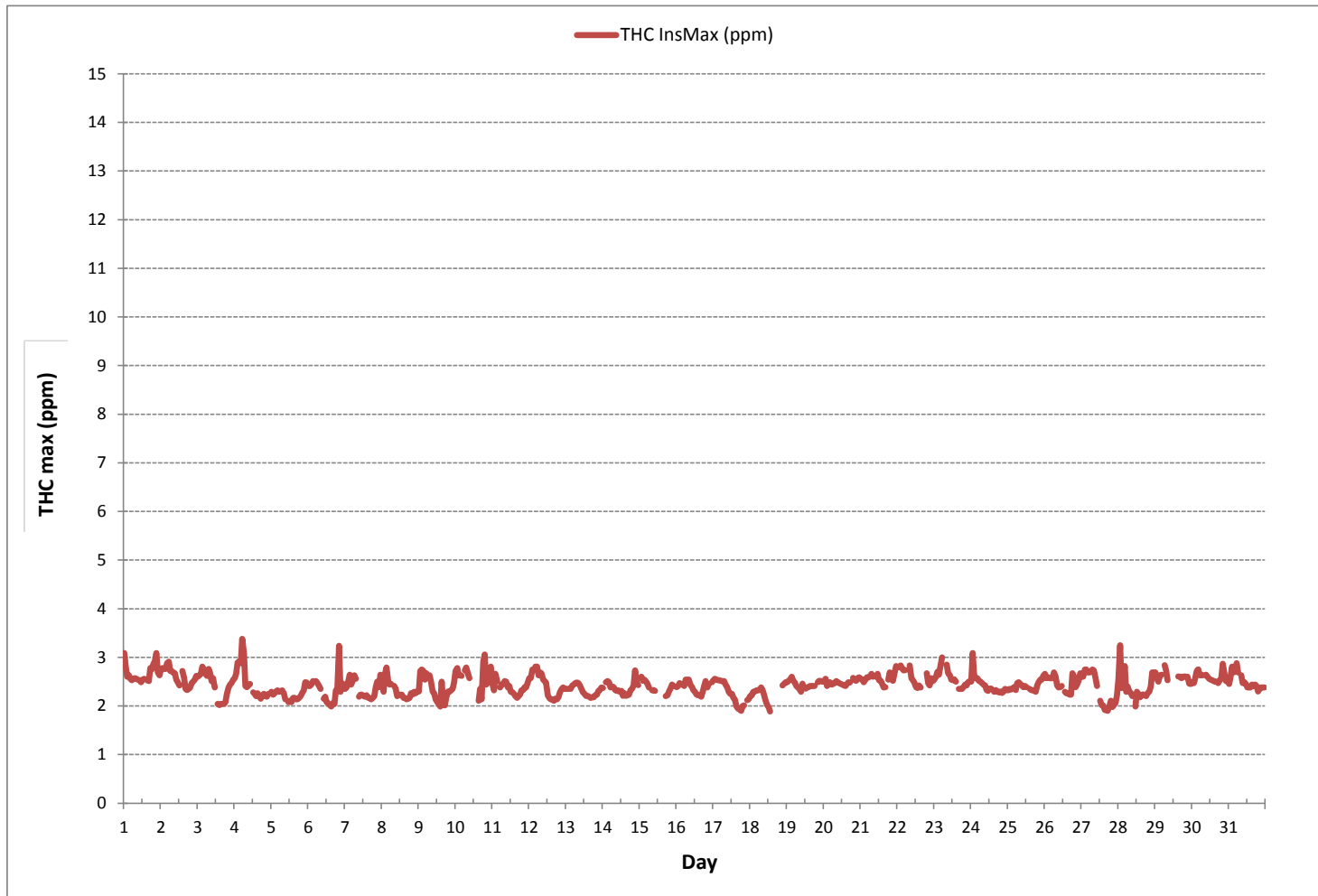
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	685
MAXIMUM INSTANTANEOUS VALUE:	3.38 ppm @ HOUR 5 ON DAY 4
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	5 hrs
OPERATIONAL TIME:	722 hrs
STANDARD DEVIATION:	0.22

TOTAL HYDROCARBONS Instantaneous Maximum (THC ppm)



Wind: LICA ST. LINA
 Poll.: LICA ST. LINA-THC[ppm]
 Monthly: 17/08
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

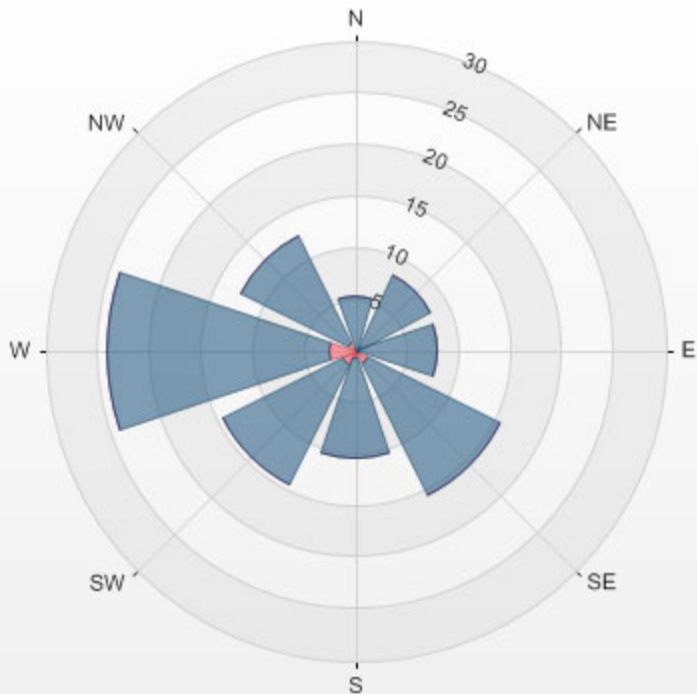
Calm: 1.17%

Calm Avg: 2.18 [ppm]

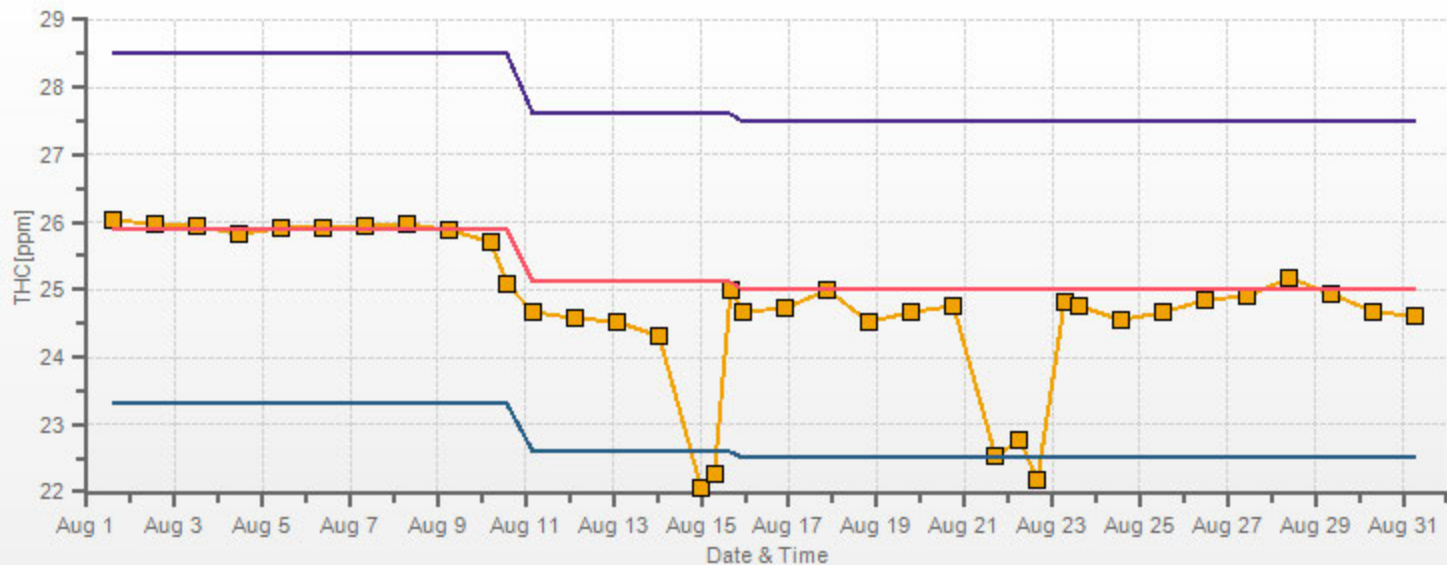
Direction	0.0-1.0	1.0-2.0	2.0-3.0	>3.0	Total
N	0.0	0.0	5.3	0.0	5.3
NE	0.0	0.0	8.2	0.0	8.2
E	0.0	0.4	7.6	0.0	8.0
SE	0.0	1.3	14.4	0.0	15.7
S	0.0	0.9	9.6	0.0	10.5
SW	0.0	1.5	13.0	0.0	14.4
W	0.0	2.6	21.6	0.0	24.2
NW	0.0	0.9	11.7	0.0	12.5
Summary	0.0	7.6	91.2	0.0	98.8

% Icon Classes (ppm) 0 0.0-1.0 8 1.0-2.0 91 2.0-3.0 0 >3.0

LICA ST. LINA Poll.: LICA ST. LINA-THC[ppm] 2017/08/01 00:00 - 2017/08/31 23:00 Calm: 1.17% Calm Poll Avg: 2.18[ppm]



THC[ppm] Calibration: LICA ST. LINA Monthly: 17/08 Type: Span



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

OXIDES OF NITROGEN



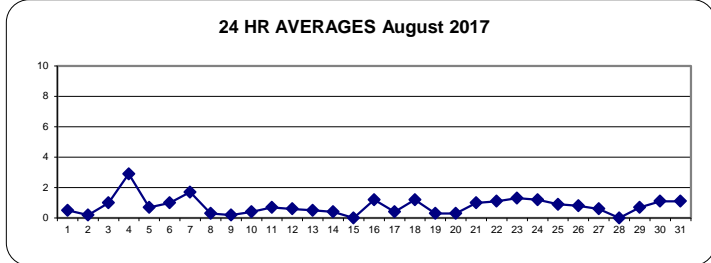
OXIDES OF NITROGEN Hourly Averages (NO_x ppb)

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	0	0	0	0	0	1	2	1	1	1	1	1	0	1	S	0	1	1	0	0	0	1	0	0	0	0	2	1	24
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	1	1	0	0	0	0	0	0	1	0	0	1	0	24
3	1	0	0	1	1	1	1	1	1	1	1	1	S	2	1	1	1	1	1	1	2	1	1	3	0	3	1	24	
4	4	5	5	7	8	7	4	2	3	4	3	S	2	1	1	1	1	1	1	1	1	1	1	1	1	8	3	24	
5	1	1	1	1	1	1	1	1	1	0	S	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	24
6	1	1	1	1	1	1	2	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	2	1	24	
7	1	2	3	7	4	4	6	3	S	1	2	1	1	1	1	0	0	0	0	0	0	0	0	1	0	7	2	24	
8	0	0	0	0	1	1	1	S	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	24
9	0	0	0	0	0	1	S	1	0	1	C	C	C	C	C	C	C	C	C	C	0	0	0	0	0	1	0	24	
10	1	1	1	1	1	S	1	0	1	1	0	0	0	0	0	0	0	0	1	1	1	1	0	1	0	1	0	24	
11	1	1	1	0	S	1	3	3	4	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	24	
12	1	1	1	S	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	0	1	1	24	
13	0	0	S	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1	0	1	1	24	
14	1	S	1	2	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	24	
15	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	24	
16	0	0	0	0	0	0	0	0	1	1	1	4	3	1	1	1	0	1	1	2	3	5	S	1	0	5	1	24	
17	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	2	1	0	2	0	24	
18	0	0	0	1	1	1	1	2	2	2	2	1	1	2	P	P	P	1	2	1	S	2	1	0	0	2	1	21	
19	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	S	1	1	1	1	0	1	0	24	
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	1	1	1	0	0	0	1	0	24	
21	0	0	0	0	0	0	0	1	2	2	2	2	1	0	0	0	0	S	2	1	2	1	2	2	0	2	1	24	
22	2	2	2	1	1	1	2	1	1	1	1	1	0	1	0	1	S	1	3	0	1	1	0	0	0	3	1	24	
23	1	1	2	2	2	3	3	2	1	2	1	1	0	1	S	1	1	1	1	1	1	1	1	1	0	3	1	24	
24	2	2	1	2	2	2	1	1	1	1	1	1	1	1	S	2	2	2	2	1	1	0	0	0	0	2	1	24	
25	0	1	0	0	0	1	2	3	2	2	0	0	0	S	1	0	0	0	0	0	1	2	3	2	0	3	1	24	
26	1	2	1	1	0	0	1	1	0	0	0	0	S	1	0	1	1	2	1	1	1	1	1	1	0	2	1	24	
27	1	1	1	1	1	2	1	2	1	1	0	S	1	1	0	0	0	0	0	0	0	0	0	0	0	2	1	24	
28	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	
29	0	0	0	0	0	0	0	0	0	S	1	0	0	P	R	0	0	0	0	0	1	0	0	0	0	1	1	22	
30	0	0	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	2	1	2	3	0	3	1	24	
31	3	4	4	4	2	2	S	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	24
HOURLY MAX	4	5	5	7	8	7	6	3	4	4	3	4	3	2	1	2	2	2	3	2	3	5	3	3					
HOURLY AVG	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	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

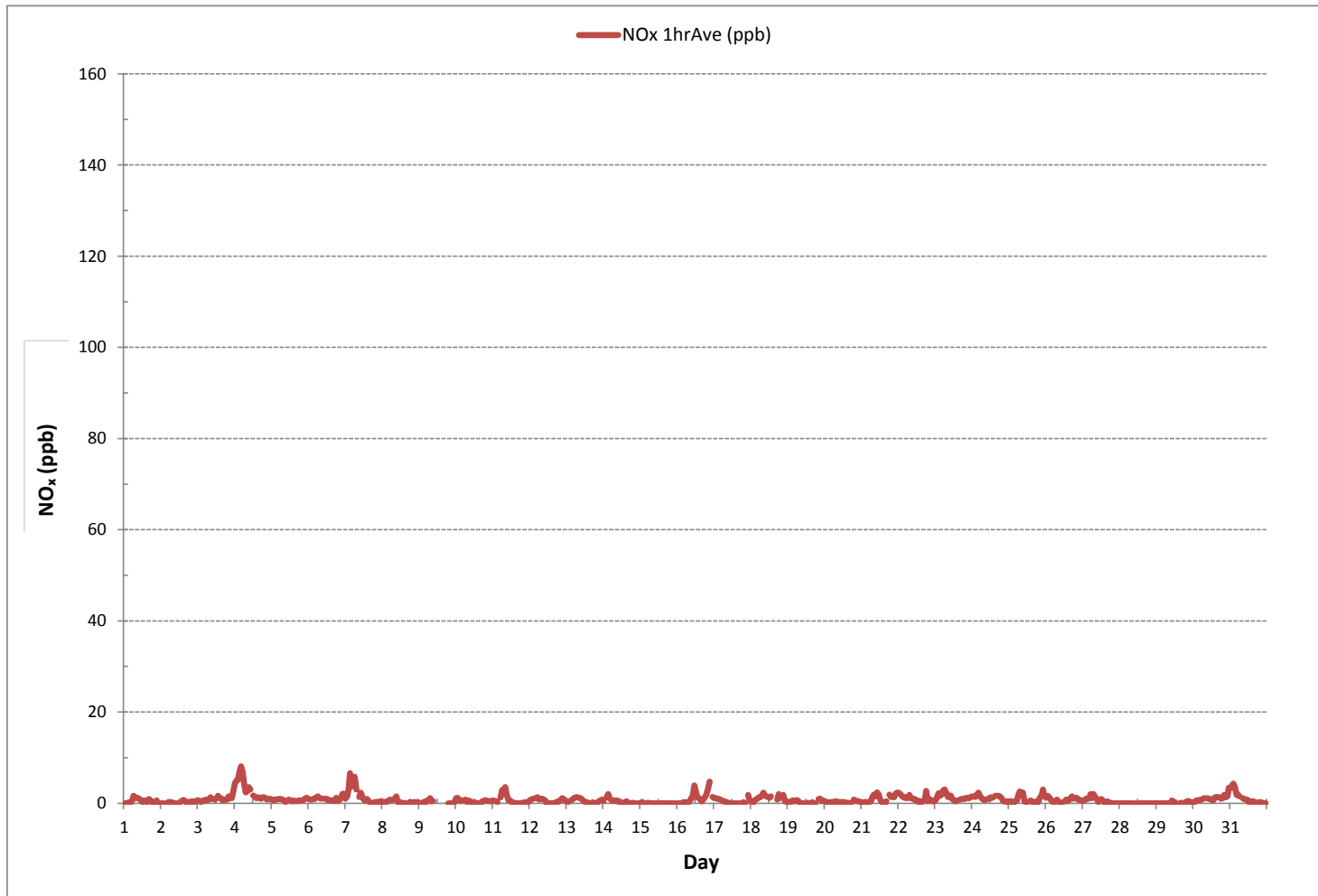
24 HR AVERAGES August 2017



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	543			
MINIMUM 1-HR AVERAGE:	0 ppb @ HOUR	0	ON DAY	1
MAXIMUM 1-HR AVERAGE:	8 ppb @ HOUR	4	ON DAY	4
MAXIMUM 24-HR AVERAGE:	3 ppb		ON DAY	4
IZS CALIBRATION TIME:	32 hrs	OPERATIONAL TIME:	739 hrs	
MONTHLY CALIBRATION TIME:	9 hrs	AMD OPERATION UPTIME:	99.3 %	
STANDARD DEVIATION:	1	MONTHLY AVERAGE:	1 ppb	

OXIDES OF NITROGEN Hourly Averages (NO_x ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
St. Lina Continuous Monitoring Station - August 2017

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	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	1	1	1	3	3	2	2	2	1	1	2	S	1	2	2	2	2	2	6	1	1	1	6	2	24	
2	1	1	1	1	1	3	2	2	1	2	1	1	2	S	3	2	2	1	3	2	2	1	1	1	1	3	2	24	
3	1	1	1	1	1	1	1	1	4	1	2	3	S	3	2	4	1	1	1	1	2	2	1	3	1	4	2	24	
4	5	6	6	8	8	8	5	3	3	4	4	S	2	2	1	1	1	1	2	1	2	1	1	P	1	8	3	23	
5	1	1	1	1	1	1	P	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	2	2	1	2	1	23	
6	1	1	1	1	2	2	3	2	2	S	2	3	3	1	1	1	2	2	5	3	1	2	3	3	1	5	2	24	
7	2	2	6	9	5	5	7	6	S	2	3	3	1	2	2	1	1	1	1	1	1	1	1	1	1	1	9	3	24
8	1	1	1	1	1	2	2	S	2	42	1	1	1	1	1	1	1	1	3	1	1	1	1	1	1	42	3	24	
9	1	1	1	1	1	2	S	3	2	4	C	C	C	C	C	C	C	C	C	C	2	2	2	1	2	1	4	2	24
10	2	3	2	2	2	S	2	2	5	5	1	1	2	1	1	2	2	1	1	3	3	2	2	2	1	5	2	24	
11	2	1	2	1	S	3	4	5	6	4	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	6	2	24	
12	2	2	2	S	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	2	2	2	2	1	1	2	2	24	
13	1	1	S	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	2	2	2	1	2	1	24
14	2	S	2	3	3	2	2	2	2	2	1	1	1	1	4	4	3	1	1	1	1	1	1	1	1	1	4	2	24
15	S	3	1	1	1	2	2	1	1	2	1	1	1	1	1	1	0	2	2	2	2	1	1	S	0	3	1	24	
16	1	1	1	1	1	2	2	1	2	4	3	7	5	2	2	2	1	5	8	9	12	72	S	2	1	72	6	24	
17	2	2	2	2	2	1	1	1	2	2	1	1	2	1	1	1	1	26	24	3	S	6	2	1	26	4	24		
18	4	1	2	2	2	5	4	4	7	3	3	2	3	P	P	P	2	4	2	S	5	1	1	1	7	3	21		
19	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	4	3	1	1	1	4	1	24		
20	1	1	1	1	1	1	1	1	2	1	1	1	1	1	3	2	1	S	3	1	1	1	1	1	3	1	24		
21	1	1	1	1	1	1	6	19	29	20	34	25	12	2	1	3	3	S	9	7	4	3	3	3	1	34	8	24	
22	3	3	3	3	2	2	2	9	8	2	4	2	2	1	4	2	S	1	P	2	2	2	1	1	1	9	3	23	
23	1	2	3	3	3	4	4	3	2	2	2	2	1	1	S	2	2	2	2	2	2	2	2	2	1	4	2	24	
24	2	2	2	3	3	2	2	1	1	1	1	1	2	2	S	2	2	2	3	2	1	1	1	1	1	3	2	24	
25	1	1	1	1	1	1	3	4	3	50	1	1	17	S	1	1	2	1	3	1	2	3	10	2	1	50	5	24	
26	2	2	2	2	1	1	1	1	1	1	1	1	S	2	1	1	2	2	2	3	2	2	1	2	1	3	2	24	
27	1	1	2	1	2	5	2	4	2	3	2	S	4	3	1	1	4	2	4	1	2	1	1	1	1	5	2	24	
28	1	1	1	1	1	1	1	1	2	1	S	4	1	0	1	1	0	0	2	0	0	1	0	1	0	4	1	24	
29	0	1	1	0	0	P	1	1	1	S	1	1	7	P	P	1	1	1	1	1	1	1	1	1	0	7	1	21	
30	1	1	2	2	2	2	2	2	S	3	2	2	2	2	2	2	2	2	2	2	3	2	3	5	1	5	2	24	
31	5	6	7	7	3	4	3	S	2	2	2	2	1	1	2	1	1	1	1	3	2	1	1	1	1	7	2	24	
HOURLY MAX	5	6	7	9	8	8	7	19	29	50	34	25	17	3	4	4	4	5	26	24	12	72	10	5					
HOURLY AVG	2	2	2	2	2	2	2	3	3	6	3	3	3	1	1	2	1	1	3	3	2	4	2	2					

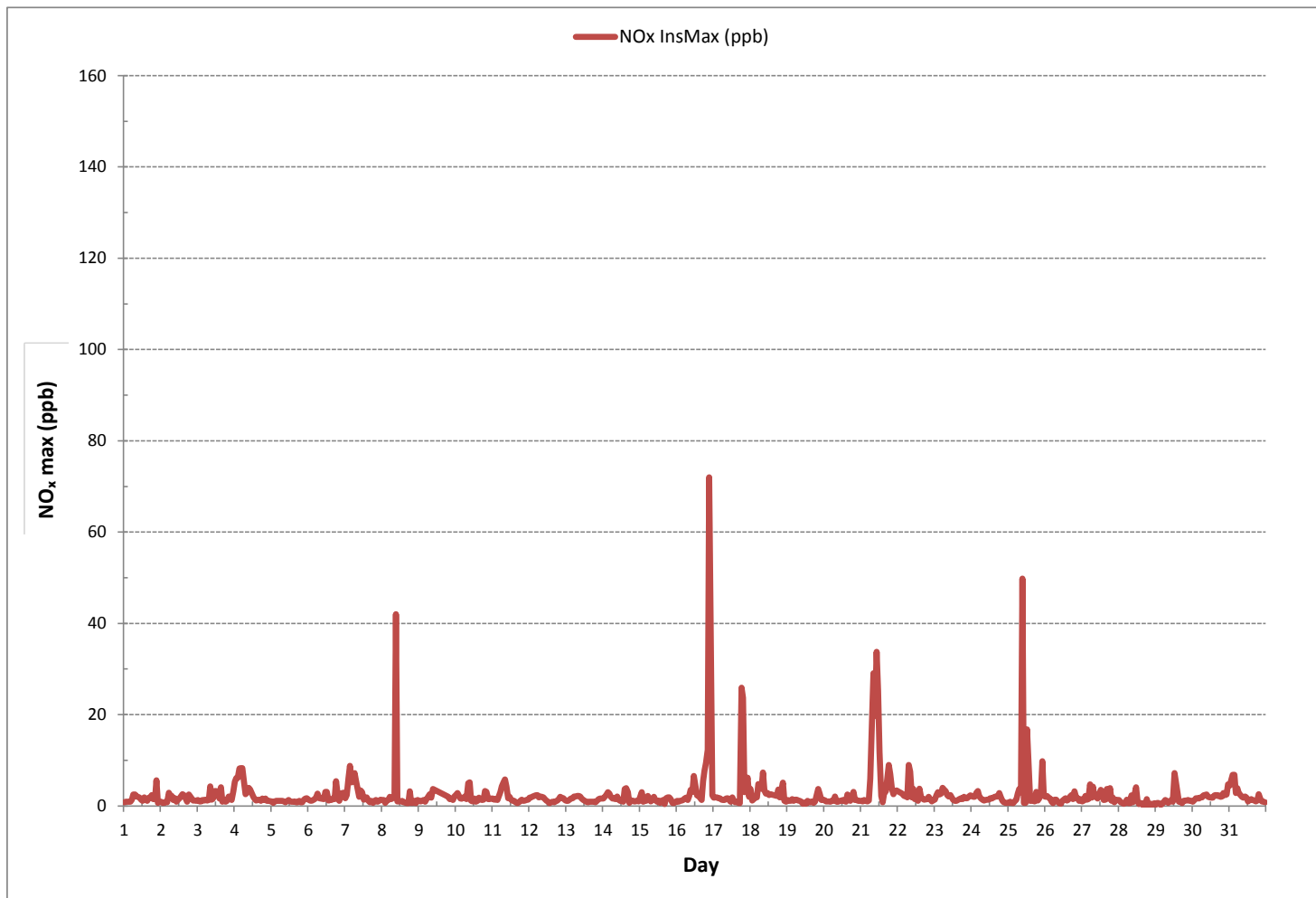
STATUS FLAG CODES

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

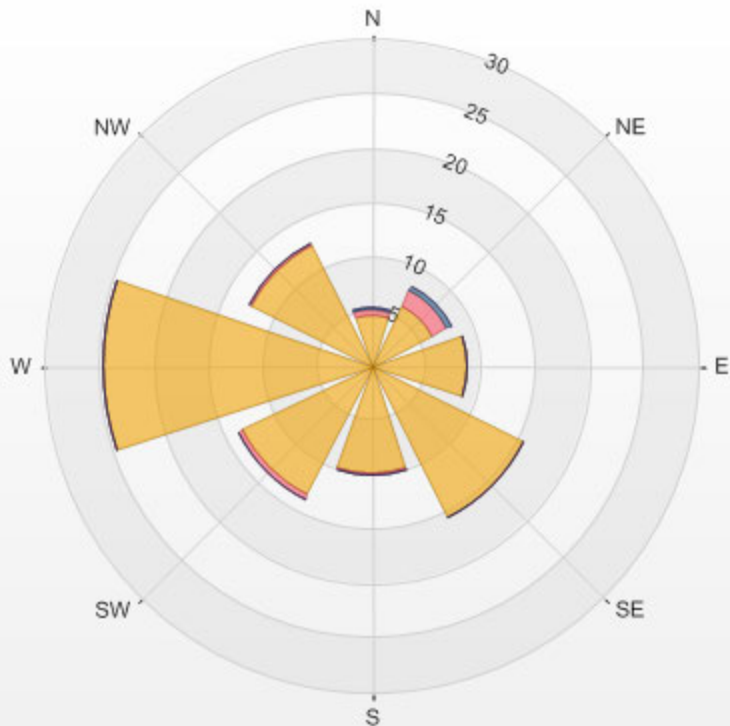
NUMBER OF NON-ZERO READINGS:	691
MAXIMUM INSTANTANEOUS VALUE:	72 ppb @ HOUR 21 ON DAY 16
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	9 hrs
STANDARD DEVIATION:	5
OPERATIONAL TIME:	735 hrs

OXIDES OF NITROGEN Instantaneous Maximum (NO_x ppb)

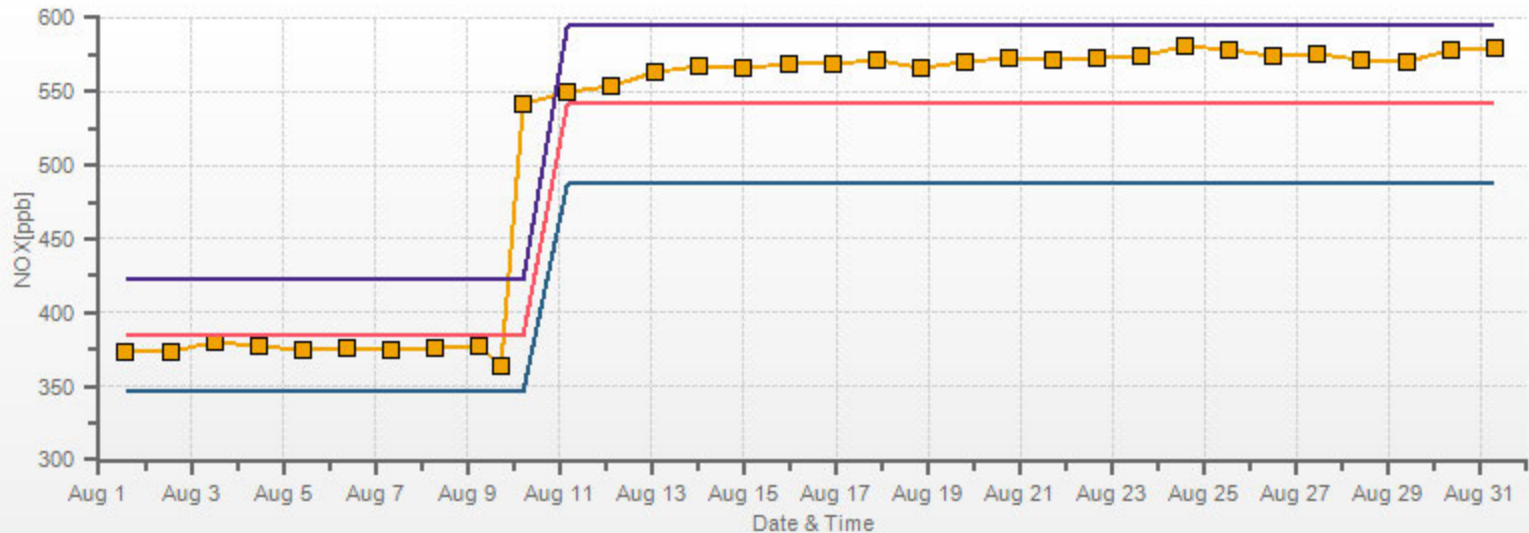


% Icon Classes (ppb) 96 0.0-3.0 3 3.0-6.0 1 6.0-9.0 0 >9.0

LICA ST. LINA Poll.: LICA ST. LINA-NOX[ppb] 2017/08/01 00:00 - 2017/08/31 23:00 Calm: 1.15% Calm Poll Avg: 0.43[ppb]



NOX[ppb] Calibration: LICA ST. LINA Monthly: 17/08 Type: Span



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

NITRIC OXIDES

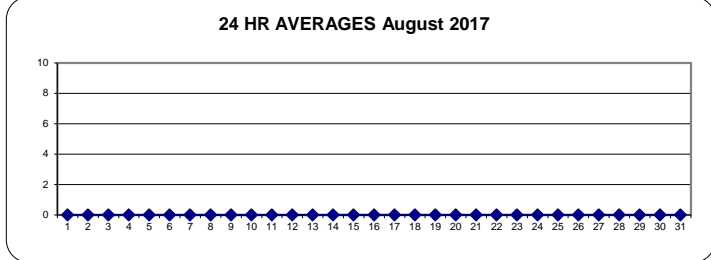
NITRIC OXIDE Hourly Averages (NO ppb)

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	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	S	0	0	0	0	0	0	0	0	0	0	0	0	0	24
3	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
4	0	0	0	0	0	0	0	0	0	1	0	S	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	0	S	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	S	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	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
8	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
9	0	0	0	0	0	0	S	0	0	0	C	C	C	C	C	C	C	C	C	0	0	0	0	0	0	0	0	0	24
10	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
11	0	0	0	0	S	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
12	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
13	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
14	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
15	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
16	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	S	0	0	2	0	24
17	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
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	P	P	P	0	0	0	0	S	0	0	0	0	0	0	21
19	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
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	0	24
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	24
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	S	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	S	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	S	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	S	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	S	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	S	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	S	0	0	0	P	R	0	0	0	0	0	0	0	0	0	0	0	0	0	22
30	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
31	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
HOURLY MAX	0	0	0	0	0	0	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	2	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

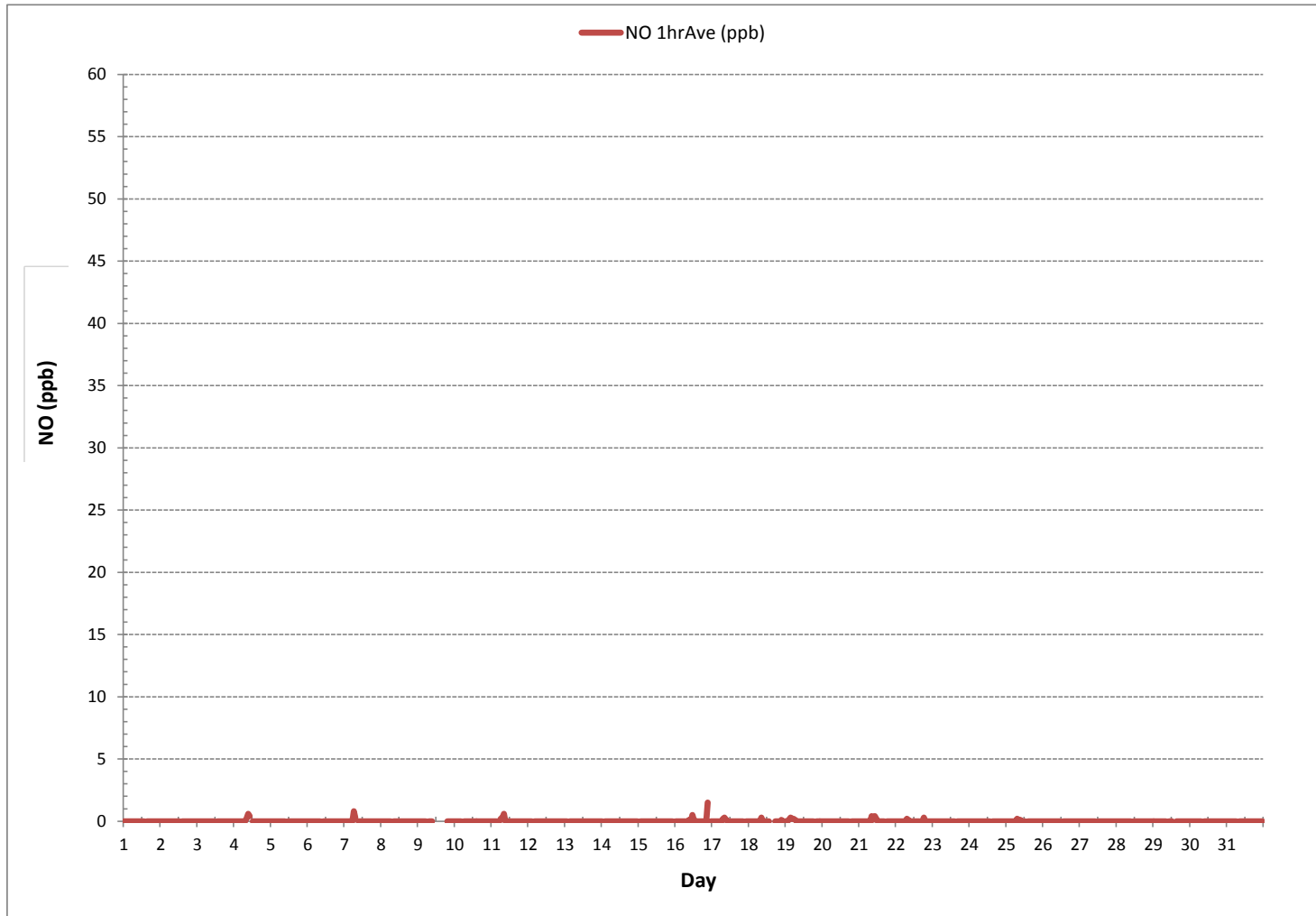
24 HR AVERAGES August 2017



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	32			
MINIMUM 1-HR AVERAGE:	0	ppb @ HOUR	0	ON DAY 1
MAXIMUM 1-HR AVERAGE:	2	ppb @ HOUR	21	ON DAY 16
MAXIMUM 24-HR AVERAGE:	0	ppb		ON DAY 1
IZS CALIBRATION TIME:	32	hrs	OPERATIONAL TIME:	739
MONTHLY CALIBRATION TIME:	9	hrs	AMD OPERATION UPTIME:	99.3
STANDARD DEVIATION:	0		MONTHLY AVERAGE:	0
				ppb

NITRIC OXIDE Hourly Averages (NO ppb)





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	2	2	2	2	2	2	2	2	2	2	2	2	2	2	S	2	2	2	3	2	2	5	2	2	2	2	5	2	24					
2	2	2	2	2	2	3	3	3	2	2	2	2	2	S	3	2	2	2	2	2	2	2	2	2	2	2	3	2	24					
3	2	2	2	2	2	2	2	2	3	2	2	2	S	2	2	3	2	2	2	2	2	2	2	2	2	2	3	2	24					
4	2	2	2	2	2	2	2	2	2	3	2	S	2	2	2	2	2	2	2	2	2	2	2	P	2	2	3	2	23					
5	2	2	2	2	2	2	P	2	2	2	S	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	23				
6	2	2	2	2	2	2	2	2	2	S	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	24				
7	2	2	2	2	2	2	3	3	S	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	24				
8	2	2	2	2	2	2	2	S	2	29	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	29	3	24				
9	2	2	2	2	2	2	S	2	2	3	C	C	C	C	C	C	C	C	C	1	1	1	1	1	1	1	3	2	24					
10	1	1	2	1	1	S	2	2	3	3	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	1	3	1	24					
11	2	2	2	2	S	2	2	3	3	3	2	2	1	1	1	1	1	1	1	1	1	1	2	2	2	1	3	2	24					
12	1	2	1	S	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	2	2	2	1	2	1	24					
13	2	2	S	2	2	2	2	2	2	2	2	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	2	1	24					
14	1	S	2	2	2	2	2	2	2	2	2	1	2	2	3	3	3	1	2	2	1	1	1	1	1	1	3	2	24					
15	S	3	2	2	1	2	2	2	2	2	2	2	2	1	1	1	1	2	2	2	2	2	1	1	S	1	3	2	24					
16	2	2	2	2	2	2	2	2	2	3	2	3	2	2	1	1	1	3	3	4	3	53	S	2	1	53	4	24						
17	2	2	2	2	2	1	2	2	2	2	2	2	2	2	1	2	1	1	12	16	1	S	2	1	1	16	3	24						
18	2	1	1	1	1	3	3	2	5	2	1	1	1	1	P	P	P	1	2	1	S	3	2	2	2	1	5	2	21					
19	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	S	3	2	2	2	2	1	3	2	24					
20	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	S	3	2	2	2	2	2	3	2	24					
21	2	2	2	2	1	2	5	13	21	14	16	21	7	2	1	2	2	S	4	3	2	2	2	2	2	1	21	6	24					
22	2	2	2	2	2	2	2	7	6	2	3	2	2	1	3	2	S	2	P	1	1	1	1	2	1	7	2	23						
23	1	2	2	2	2	2	3	2	2	2	2	1	1	1	1	S	1	2	2	2	1	1	2	2	1	3	2	24						
24	2	2	2	2	2	2	2	2	2	1	2	1	1	1	S	2	1	1	1	1	1	1	1	2	1	2	1	24						
25	2	2	2	1	2	1	2	3	2	20	2	2	17	S	2	2	2	1	3	1	1	1	5	1	1	20	3	24						
26	1	2	1	1	1	1	2	1	2	1	1	1	S	2	1	2	1	1	1	1	1	1	1	1	1	2	1	24						
27	1	1	1	1	1	1	2	2	2	2	1	S	2	3	1	1	2	1	1	1	1	0	0	0	0	3	1	24						
28	0	0	0	0	0	1	0	1	1	1	S	1	1	1	1	1	1	1	1	1	1	0	1	1	0	1	1	24						
29	1	1	1	1	1	P	1	1	1	S	1	1	3	P	P	1	1	1	1	1	1	1	1	1	1	3	1	21						
30	1	1	1	1	1	1	1	2	S	2	2	2	1	2	1	1	1	1	1	1	1	1	1	1	1	2	1	24						
31	1	1	1	1	1	2	2	S	2	2	2	2	2	2	1	1	1	1	2	2	1	1	1	1	1	1	2	1	24					
HOURLY MAX	2	3	2	2	2	3	5	13	21	29	16	21	17	3	3	3	3	3	12	16	3	53	5	2										
HOURLY AVG	2	2	2	2	2	2	2	3	3	4	2	2	2	2	2	2	2	1	2	2	1	3	2	1										

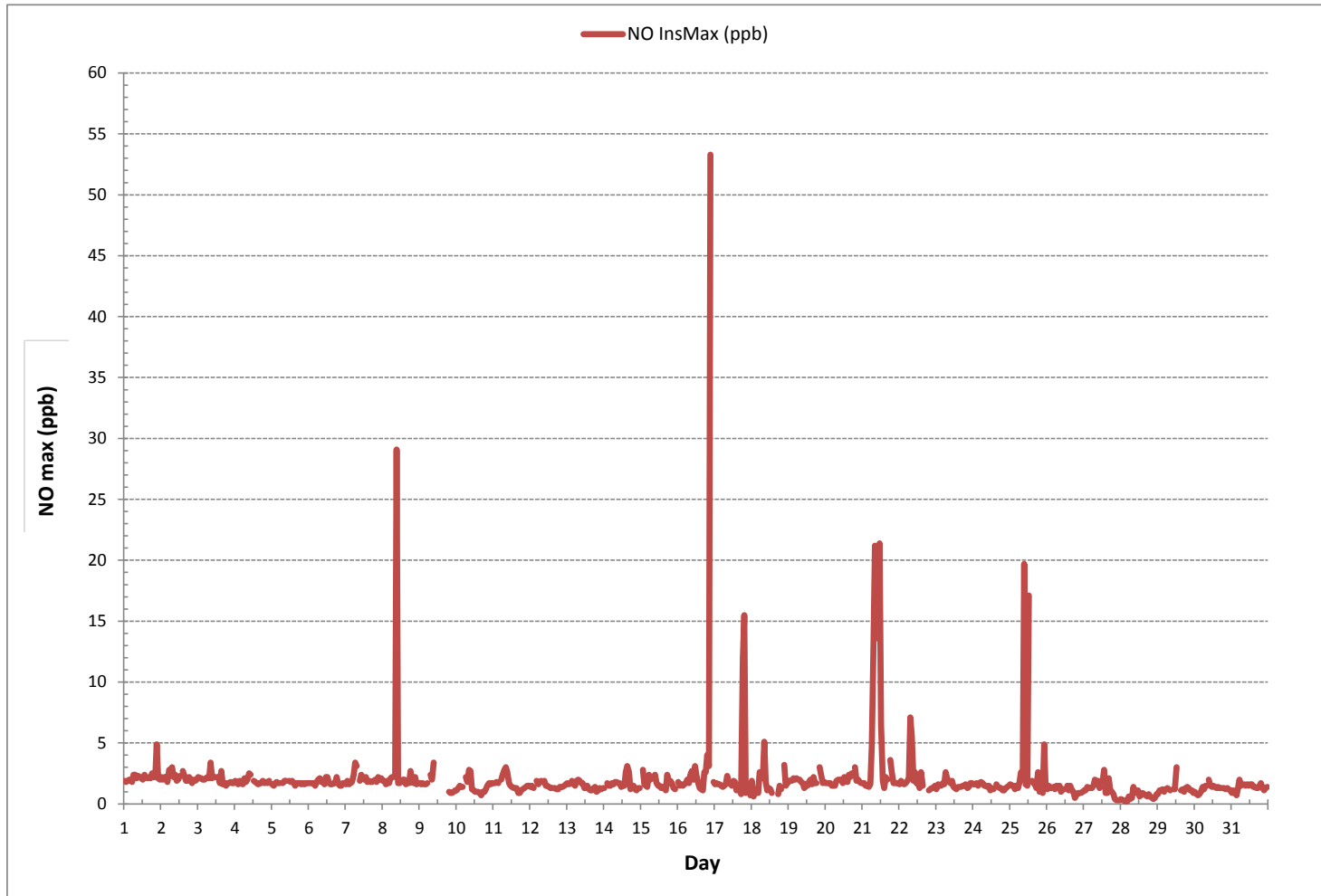
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	694
MAXIMUM INSTANTANEOUS VALUE:	53 ppb @ HOUR 21 ON DAY 16
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	9 hrs
STANDARD DEVIATION:	3
OPERATIONAL TIME:	735 hrs

NITRIC OXIDE Instantaneous Maximum (NO ppb)



% Icon Classes (ppb)

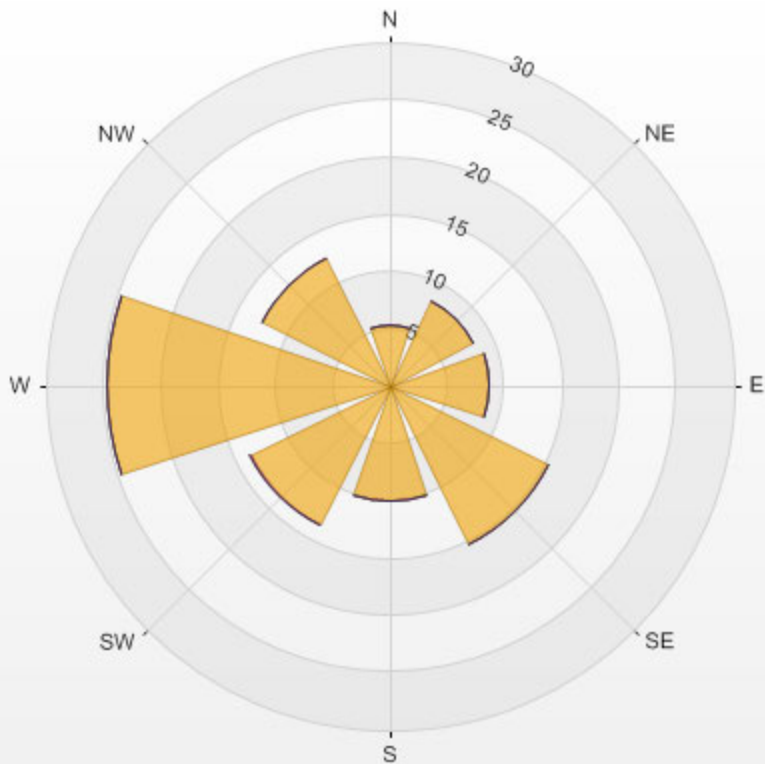
99 0.0-1.0

0 1.0-2.0

0 2.0-3.0

0 >3.0

LICA ST. LINA Poll.: LICA ST. LINA-NO[ppb] 2017/08/01 00:00 - 2017/08/31 23:00 Calm: 1.15% Calm Poll Avg: 0.00[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	0	0	0	0	0	1	2	1	1	1	1	1	0	1	S	0	1	1	0	0	0	1	0	0	0	0	2	1	24	
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	1	1	0	0	0	0	0	0	1	0	0	0	1	0	24
3	1	0	0	1	1	1	1	1	1	1	1	1	S	2	1	1	1	1	1	1	2	1	1	3	0	0	3	1	24	
4	4	5	5	7	8	7	4	2	2	3	3	S	2	1	1	1	1	1	1	1	1	1	1	1	1	0	8	3	24	
5	1	1	1	1	1	1	1	1	1	0	S	1	1	0	1	1	1	1	1	1	1	1	1	1	0	1	1	1	24	
6	1	1	1	1	1	1	2	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	0	2	1	24	
7	1	2	3	7	4	4	5	3	S	1	2	1	1	1	1	0	0	0	0	0	0	0	0	1	0	0	7	2	24	
8	0	0	0	0	1	1	1	S	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	24	
9	0	0	0	0	0	1	S	1	0	1	C	C	C	C	C	C	C	C	C	C	0	0	0	0	0	0	1	0	24	
10	1	1	1	1	1	S	1	0	1	1	0	0	0	0	0	0	0	0	1	1	1	1	0	1	0	0	1	0	24	
11	1	1	1	0	S	1	3	2	3	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	24	
12	1	1	1	S	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	1	1	24	
13	0	0	S	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1	0	0	1	1	24	
14	1	S	1	2	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	24	
15	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	
16	0	0	0	0	0	0	0	0	1	1	1	3	3	1	1	1	0	1	1	2	3	3	S	1	0	0	3	1	24	
17	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	2	1	0	0	2	0	24	
18	0	0	0	1	1	1	1	2	2	2	2	1	1	2	P	P	P	1	2	1	S	2	1	0	0	0	2	1	21	
19	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	S	1	1	1	1	0	0	1	0	24	
20	0	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	
21	0	0	0	0	0	0	0	1	2	2	2	2	2	1	0	0	0	0	S	2	1	2	1	2	2	0	0	2	1	24
22	2	2	2	1	1	1	1	2	1	1	1	1	1	0	1	0	S	1	2	0	1	1	0	0	0	0	2	1	24	
23	1	1	2	2	2	3	3	2	1	2	1	1	0	1	S	1	1	1	1	1	1	1	1	1	0	0	3	1	24	
24	2	2	1	2	2	2	1	1	1	1	1	1	1	1	S	2	2	2	2	2	1	1	0	0	0	0	2	1	24	
25	0	1	0	0	0	1	2	3	2	2	0	0	0	S	1	0	0	0	0	0	1	2	3	2	0	0	3	1	24	
26	1	2	1	1	0	0	1	1	0	0	0	0	S	1	0	1	1	2	1	1	1	1	1	1	0	0	2	1	24	
27	1	1	1	1	1	2	1	2	1	1	0	S	1	1	0	0	0	0	0	0	0	0	0	0	0	0	2	1	24	
28	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	
29	0	0	0	0	0	0	0	0	0	S	1	0	0	P	R	0	0	0	0	0	1	0	0	0	0	0	1	0	22	
30	0	0	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	2	1	2	3	0	0	3	1	24	
31	3	4	4	4	2	2	S	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	24	
HOURLY MAX	4	5	5	7	8	7	5	3	3	3	3	3	3	2	1	2	2	2	2	2	2	3	3	3	3					
HOURLY AVG	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	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

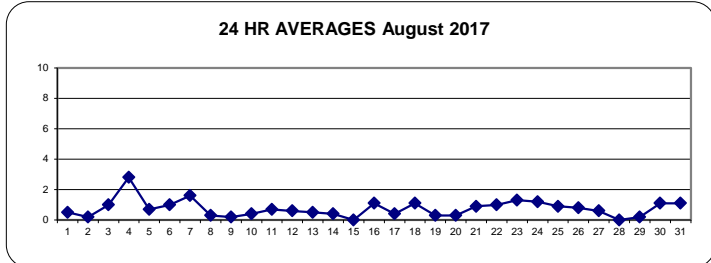
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR 159 ppb

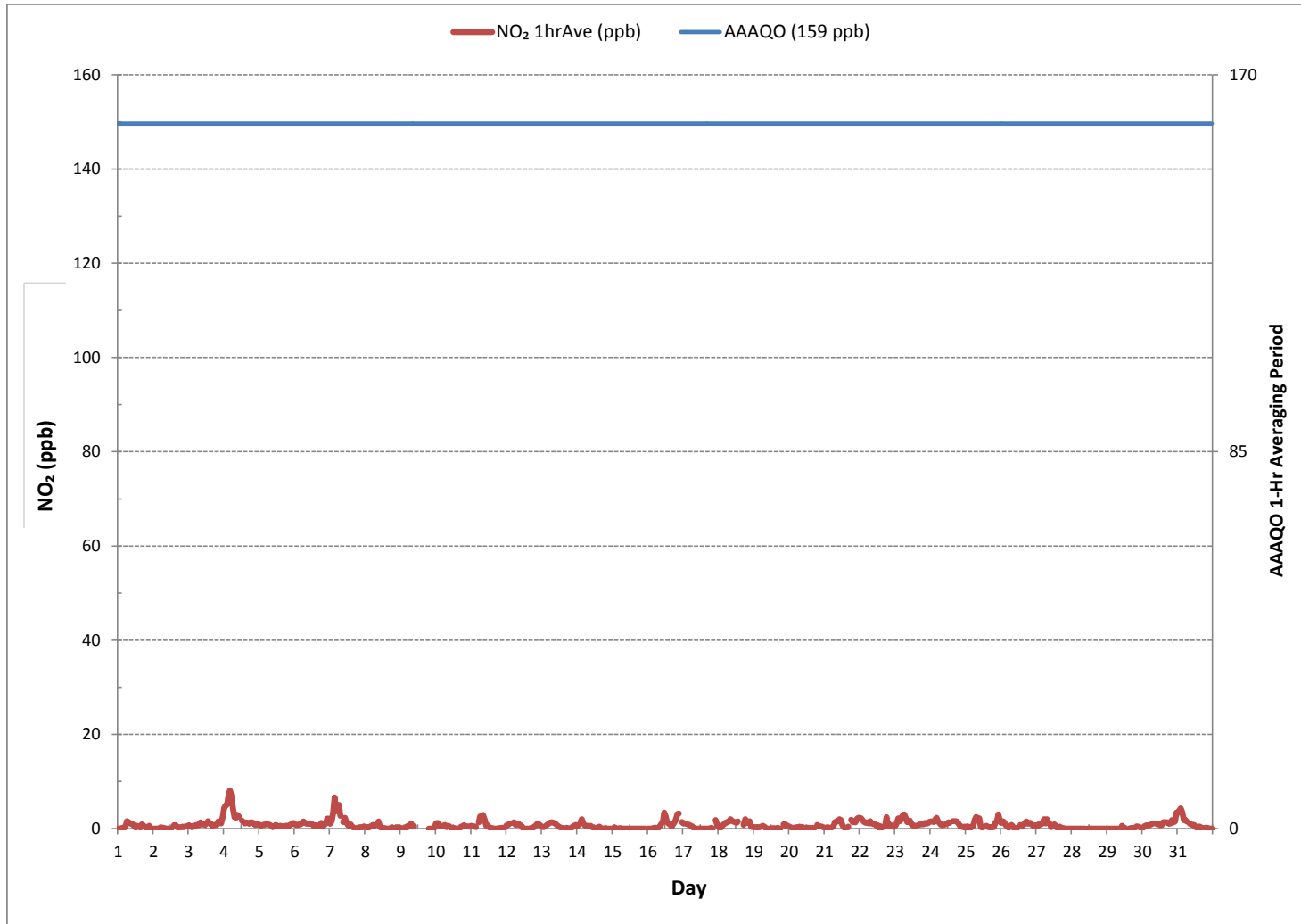
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0				
NUMBER OF NON-ZERO READINGS:	541				
MINIMUM 1-HR AVERAGE:	0 ppb	@ HOUR	0	ON DAY	1
MAXIMUM 1-HR AVERAGE:	8 ppb	@ HOUR	4	ON DAY	4
MAXIMUM 24-HR AVERAGE:	3 ppb			ON DAY	4
IZS CALIBRATION TIME:	32 hrs	OPERATIONAL TIME:	739 hrs		
MONTHLY CALIBRATION TIME:	9 hrs	AMD OPERATION UPTIME:	99.3 %		
STANDARD DEVIATION:	1	MONTHLY AVERAGE:	1 ppb		

24 HR AVERAGES August 2017



NITROGEN DIOXIDE Hourly Averages (NO₂ ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
St. Lina Continuous Monitoring Station - August 2017

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	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	1	1	2	2	2	2	2	2	1	1	1	S	1	2	2	2	1	2	3	1	1	1	1	3	1	24
2	1	1	1	1	1	2	1	1	1	1	1	1	1	S	2	2	1	1	2	2	2	1	1	1	1	1	2	1	24
3	1	1	1	2	1	1	1	1	3	2	1	2	S	3	2	3	1	1	1	1	2	2	2	3	1	3	2	24	
4	5	6	6	9	9	8	5	3	3	3	3	S	2	1	1	1	2	1	2	2	2	1	1	P	1	9	3	23	
5	1	1	1	1	1	1	P	1	1	1	S	1	1	1	1	1	1	1	1	1	1	2	2	2	1	2	1	23	
6	1	1	1	2	2	2	2	1	2	S	2	2	2	1	1	1	2	1	5	3	2	3	3	3	1	5	2	24	
7	2	3	6	9	5	5	6	4	S	2	3	2	1	1	2	1	1	1	1	1	1	1	1	1	1	1	9	3	24
8	1	1	1	1	2	2	1	S	1	17	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	17	2	24	
9	1	1	1	1	1	1	S	2	2	2	C	C	C	C	C	C	C	C	C	3	2	2	2	3	1	3	2	24	
10	3	3	3	2	3	S	2	2	4	4	2	2	2	2	2	2	3	2	2	4	4	2	2	3	2	4	3	24	
11	3	2	2	2	S	4	5	5	5	4	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	5	3	24	
12	3	3	3	S	3	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	3	3	2	2	3	2	24	
13	2	2	S	2	3	3	3	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	2	24	
14	2	S	3	4	3	2	2	2	2	2	2	2	2	2	3	3	2	2	2	2	2	2	2	2	2	4	2	24	
15	S	2	2	2	2	2	2	2	2	2	2	1	1	1	1	2	1	1	2	2	2	2	2	S	1	2	2	24	
16	2	2	2	2	2	2	2	2	2	3	3	6	4	3	3	2	2	4	7	7	11	24	S	3	2	24	4	24	
17	3	3	3	3	2	2	2	2	2	2	2	2	2	2	1	1	1	1	17	10	4	S	6	3	1	17	3	24	
18	3	2	2	3	3	4	3	3	4	3	3	3	3	P	P	P	4	4	3	S	4	2	2	2	2	4	3	21	
19	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	2	S	3	2	2	2	2	1	3	2	24	
20	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	S	2	2	2	2	2	1	2	2	24	
21	2	2	2	2	2	2	4	8	11	12	20	9	10	2	2	2	3	S	7	6	4	3	4	4	2	20	5	24	
22	4	4	3	3	3	3	3	4	4	2	3	2	2	2	3	2	S	2	P	2	3	2	2	2	2	4	3	23	
23	2	3	4	3	3	4	4	3	3	3	2	2	2	2	S	2	2	2	2	2	3	3	2	3	2	4	3	24	
24	3	3	3	3	4	3	2	2	2	2	2	2	2	S	2	3	3	3	2	2	2	2	2	2	2	4	2	24	
25	2	2	2	2	2	2	3	3	3	32	2	2	2	S	1	2	2	1	2	2	3	4	7	3	1	32	4	24	
26	3	3	3	2	2	2	2	1	1	1	2	S	2	2	2	2	3	3	2	4	2	2	2	2	1	4	2	24	
27	2	2	3	2	3	5	2	4	2	3	2	S	3	2	2	2	2	2	3	2	2	1	2	2	1	5	2	24	
28	2	2	2	1	2	2	1	1	2	1	S	4	2	1	1	1	1	1	2	1	1	1	1	1	1	4	1	24	
29	1	1	1	1	1	P	2	2	1	S	2	2	7	P	P	2	2	2	2	2	2	2	2	2	1	7	2	21	
30	2	2	3	3	2	3	3	3	S	3	3	3	3	3	3	3	3	3	3	3	4	3	3	5	2	5	3	24	
31	5	6	8	7	3	4	3	S	2	2	3	2	2	2	2	2	2	2	2	3	2	2	1	2	1	8	3	24	
HOURLY MAX	5	6	8	9	9	8	6	8	11	32	20	9	10	3	3	3	3	4	17	10	11	24	7	5					
HOURLY AVG	2	2	3	3	2	3	3	3	3	4	3	2	2	2	2	2	2	2	3	3	2	3	2	2					

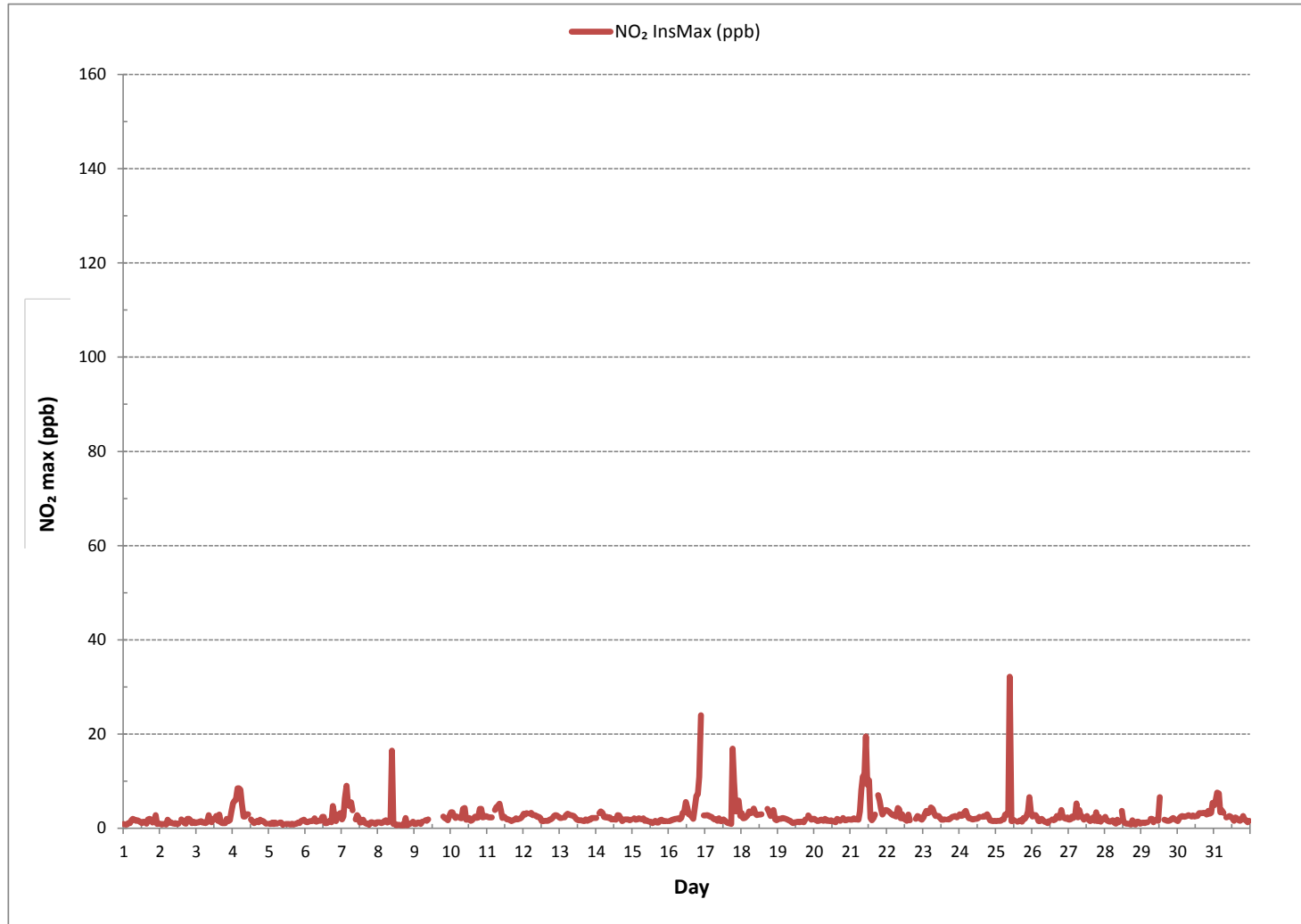
STATUS FLAG CODES





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

MONTHLY SUMMARY

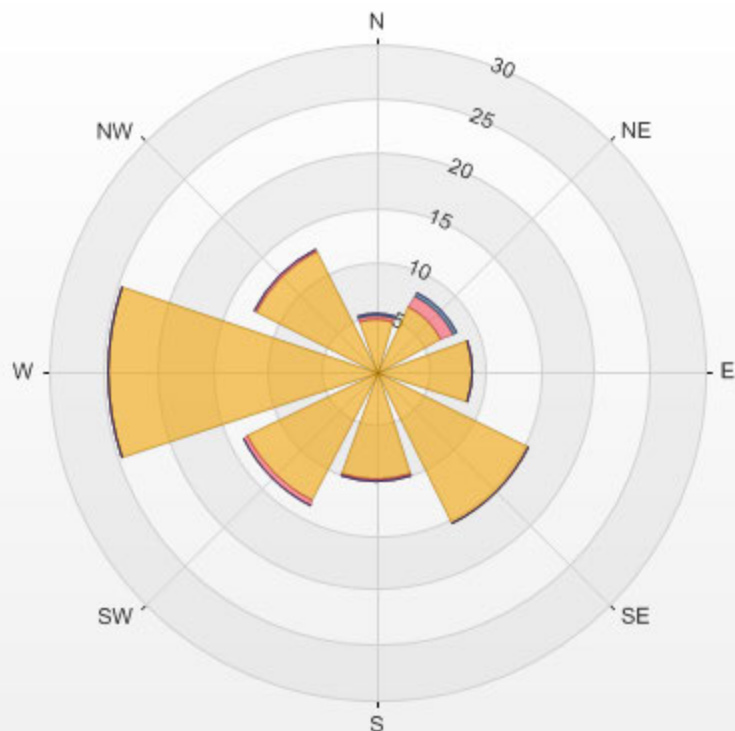
NUMBER OF NON-ZERO READINGS:	694
MAXIMUM INSTANTANEOUS VALUE:	32 ppb @ HOUR 9 ON DAY 25
VAR-VARIOUS	
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	9 hrs
OPERATIONAL TIME:	735 hrs
STANDARD DEVIATION:	2

NITROGEN DIOXIDE Instantaneous Maximum (NO₂ ppb)

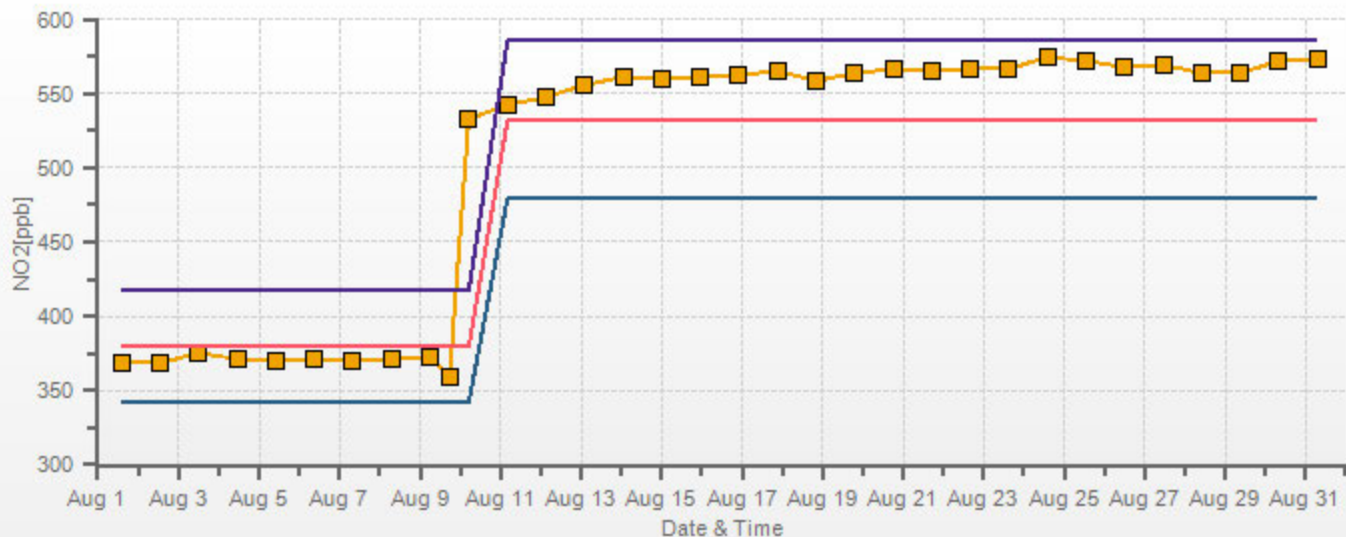


% Icon Classes (ppb)	96	0.0-3.0	2	3.0-6.0	1	6.0-9.0	0	>9.0
								

LICA ST. LINA Poll.: LICA ST. LINA-NO2[ppb] 2017/08/01 00:00 - 2017/08/31 23:00 Calm: 1.15% Calm Poll Avg: 0.43[ppb]



NO₂[ppb] Calibration: LICA ST. LINA Monthly: 17/08 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	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	15.8	17.3	16.1	15.1	15.8	15.8	17.3	20.4	21.4	24.1	26.2	27.7	28.7	S	23.1	19.3	19.1	21.5	21.0	18.9	19.2	19.6	15.1	15.1	28.7	19.8	24
2	13.1	14.3	14.2	13.9	14.0	14.2	13.0	12.7	15.7	22.1	27.3	30.9	31.6	S	32.7	32.6	31.5	28.8	27.1	24.7	25.7	25.6	24.7	24.9	12.7	32.7	22.4	24
3	25.6	26.3	26.6	22.1	21.8	23.5	23.3	22.3	26.7	32.4	34.5	37.8	S	41.6	43.2	43.0	42.6	41.6	39.0	37.8	37.1	36.3	36.3	31.2	21.8	43.2	32.7	24
4	24.8	21.9	18.6	15.2	14.4	14.0	17.2	17.8	17.7	20.4	26.4	S	29.9	31.3	35.1	35.0	32.2	27.3	28.8	31.1	29.2	30.0	30.8	30.7	14.0	35.1	25.2	24
5	27.6	26.6	23.1	21.0	21.9	21.6	20.5	19.1	25.8	30.7	S	34.6	36.9	38.9	35.7	35.5	36.5	35.2	33.0	31.5	29.7	28.9	26.4	25.9	19.1	38.9	29.0	24
6	25.1	23.8	21.7	20.6	18.9	15.9	17.5	20.2	25.4	S	37.5	38.0	38.5	38.8	40.1	40.3	40.5	41.3	37.9	35.0	29.5	22.1	21.1	21.5	15.9	41.3	29.2	24
7	23.3	20.1	14.4	9.3	9.0	7.9	7.0	10.9	S	15.0	7.8	7.1	8.0	9.9	10.7	11.9	12.9	12.7	12.8	12.9	11.9	11.5	10.9	9.2	7.0	23.3	11.6	24
8	7.7	7.5	7.7	5.5	5.0	5.6	6.3	S	10.5	18.9	23.3	22.8	22.2	21.9	23.1	24.2	25.3	24.7	23.7	23.6	24.2	21.5	21.1	21.3	5.0	25.3	17.3	24
9	22.3	22.3	17.0	14.6	18.4	14.7	S	16.7	23.1	27.4	31.3	36.9	42.9	42.4	Q	46.6	43.8	41.3	40.9	36.8	35.4	35.8	38.6	34.0	14.6	46.6	31.1	24
10	28.8	26.5	27.5	27.7	27.8	S	27.9	19.6	18.5	26.6	C	C	C	C	C	41.2	40.6	37.4	32.2	24.9	22.6	42.2	37.3	20.7	18.5	42.2	29.4	24
11	26.8	29.7	27.1	24.0	S	22.1	19.7	22.4	23.4	28.6	32.6	36.2	40.8	42.3	41.1	43.4	46.0	48.6	46.6	44.2	44.1	43.7	44.7	42.5	19.7	48.6	35.7	24
12	38.9	37.1	35.0	S	31.6	29.6	31.8	30.8	34.1	39.4	42.6	44.1	44.6	45.6	46.0	47.4	48.1	45.9	44.0	43.0	41.0	39.1	39.7	41.2	29.6	48.1	40.0	24
13	41.1	40.9	S	39.1	35.9	34.0	31.3	31.3	31.2	33.3	37.3	41.0	44.9	45.3	44.3	44.8	44.4	43.1	41.5	41.4	43.0	40.8	40.2	38.4	31.2	45.3	39.5	24
14	35.5	S	17.4	10.6	14.9	15.4	12.6	12.0	13.4	14.1	15.9	17.6	19.9	19.8	20.9	22.3	22.2	21.7	17.9	16.7	16.0	20.0	16.3	15.5	10.6	35.5	17.8	24
15	S	13.4	13.1	11.2	11.0	12.3	12.3	13.3	13.6	14.3	15.9	16.3	16.5	20.5	22.7	25.7	28.1	27.9	27.3	26.0	24.9	24.3	23.1	S	11.0	28.1	18.8	24
16	23.3	20.3	18.6	19.3	16.7	19.2	14.4	15.5	18.2	23.4	27.9	30.1	34.4	37.7	41.6	39.6	35.6	32.0	27.2	25.2	21.5	18.1	S	22.9	14.4	41.6	25.3	24
17	20.1	16.8	16.0	14.4	15.4	15.6	15.3	16.5	19.7	21.9	23.3	24.5	26.5	28.5	29.2	27.8	27.2	26.2	24.7	23.0	23.8	S	21.3	20.0	14.4	29.2	21.6	24
18	20.2	20.0	21.3	21.5	20.8	18.6	19.1	16.3	16.8	23.1	29.2	33.6	38.9	45.4	P	P	P	27.7	24.4	21.3	S	23.5	29.1	30.1	16.3	45.4	25.0	21
19	27.0	29.3	25.7	21.5	18.9	18.0	17.4	18.1	20.2	21.7	22.9	23.1	24.5	25.7	25.5	26.0	25.9	26.0	24.4	S	20.3	19.5	19.8	20.2	17.4	29.3	22.7	24
20	21.8	22.2	22.0	20.5	18.6	17.3	17.8	20.2	23.6	24.2	25.8	27.7	28.6	29.3	28.3	27.9	27.1	28.8	S	25.8	26.0	24.6	21.9	19.8	17.3	29.3	23.9	24
21	18.4	18.7	16.5	14.9	13.8	12.9	13.1	14.8	18.0	21.7	19.8	23.2	29.8	32.6	34.1	35.3	35.9	S	31.5	33.6	34.5	35.1	30.4	27.5	12.9	35.9	24.6	24
22	24.4	23.2	23.7	20.4	16.3	12.5	10.9	9.5	12.6	14.6	18.3	21.0	22.2	21.4	19.2	19.1	S	19.9	18.6	17.3	16.8	19.4	19.1	19.6	9.5	24.4	18.3	24
23	17.5	17.4	16.6	20.9	21.2	12.8	14.7	15.5	22.4	28.1	31.0	32.7	34.0	34.5	34.1	S	32.2	30.5	27.7	26.3	25.0	24.7	25.3	25.6	12.8	34.5	24.8	24
24	25.6	24.2	20.1	17.7	18.3	18.0	17.3	17.6	18.8	19.9	22.0	27.0	27.6	26.8	S	27.1	28.6	29.0	27.3	27.7	32.7	32.3	30.4	28.3	17.3	32.7	24.5	24
25	23.2	20.8	19.4	17.4	15.2	13.5	13.0	15.7	19.2	23.1	25.8	26.8	26.8	S	28.0	28.7	29.2	29.7	26.3	25.9	27.3	26.6	25.8	26.0	13.0	29.7	23.2	24
26	25.9	23.8	22.4	21.1	21.2	20.7	12.9	14.2	22.4	26.2	28.1	29.4	S	31.0	33.6	38.2	41.6	39.3	36.6	35.2	35.4	34.9	30.9	28.1	12.9	41.6	28.4	24
27	28.8	28.1	28.1	26.3	25.2	25.4	22.7	20.7	20.2	25.6	26.8	S	25.4	26.7	27.1	30.2	31.9	33.4	31.1	31.4	29.8	32.3	28.4	26.4	20.2	33.4	27.5	24
28	23.7	21.4	17.5	13.5	12.7	13.0	11.6	10.4	9.3	11.2	S	19.4	18.4	20.2	23.1	27.1	26.3	25.8	23.5	23.8	23.0	21.3	22.0	21.3	9.3	27.1	19.1	24
29	20.6	21.3	23.4	23.3	23.5	22.5	17.1	18.5	22.4	S	27.4	29.7	33.0	P	34.1	36.5	34.4	31.7	29.1	26.0	24.1	23.9	24.1	23.5	17.1	36.5	25.9	23
30	22.6	22.1	21.2	21.3	21.5	25.5	25.3	25.2	S	26.0	26.1	26.5	27.0	26.9	25.0	24.5	23.8	22.3	21.8	22.6	20.6	20.4	19.8	17.3	17.3	27.0	23.3	24
31	17.2	15.9	14.8	13.9	15.8	13.0	12.0	S	17.8	22.8	24.3	25.9	29.1	31.3	32.8	33.1	34.1	32.5	29.7	27.7	26.1	25.7	26.2	25.1	12.0	34.1	23.8	24
HOURLY MAX	41.1	40.9	35.0	39.1	35.9	34.0	31.8	31.3	34.1	39.4	42.6	44.1	44.9	45.6	46.0	47.4	48.1	48.6	46.6	44.2	44.1	43.7	44.7	42.5				
HOURLY AVG	24.0	22.4	20.3	18.6	18.5	17.5	17.0	17.8	20.0	23.4	26.3	28.2	29.7	31.3	31.2	32.3	32.7	31.0	29.3	28.1	27.3	27.4	26.8	25.1				

STATUS FLAG CODES

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

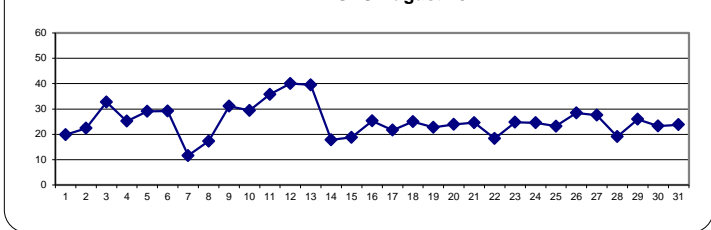
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR 82 ppb

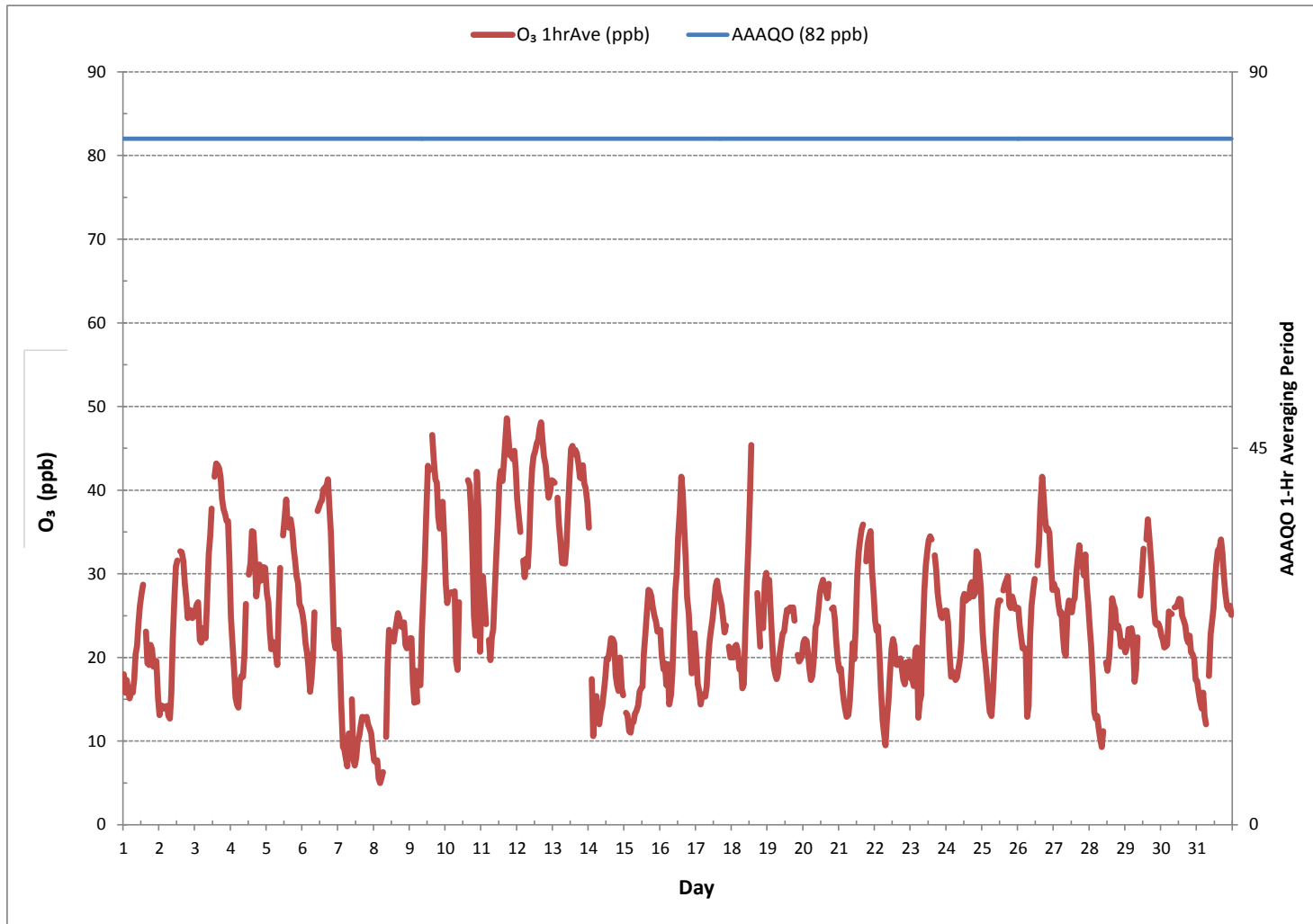
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0			
NUMBER OF NON-ZERO READINGS:	702			
MINIMUM 1-HR AVERAGE:	5.0 ppb	@ HOUR	4	ON DAY 8
MAXIMUM 1-HR AVERAGE:	48.6 ppb	@ HOUR	17	ON DAY 11
MAXIMUM 24-HR AVERAGE:	40.0 ppb			ON DAY 12
IZS CALIBRATION TIME:	32 hrs	OPERATIONAL TIME:	740 hrs	
MONTHLY CALIBRATION TIME:	5 hrs	AMD OPERATION UPTIME:	99.5 %	
STANDARD DEVIATION:	8.9	MONTHLY AVERAGE:	25.2 ppb	

24 HR AVERAGES August 2017



OZONE Hourly Averages (O₃ ppb)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
St. Lina Continuous Monitoring Station - August 2017

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	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	18.5	17.3	18.1	17.4	16.1	16.4	16.7	19.4	21.5	23.1	25.4	28.5	29.2	30.9	S	26.5	25.5	21.9	22.9	22.9	21.5	23.1	22.7	17.3	16.1	30.9	21.9	24
2	14.5	14.8	16.0	16.0	15.3	15.2	14.0	15.0	19.2	28.2	31.2	33.0	33.1	S	34.3	34.3	32.9	30.0	30.4	26.4	26.7	26.4	25.5	25.6	14.0	34.3	24.3	24
3	26.9	26.9	27.3	24.2	23.0	24.1	23.7	24.3	31.5	33.9	37.9	39.3	S	43.4	46.0	44.2	43.9	42.8	41.1	38.7	38.1	37.3	38.0	33.4	23.0	46.0	34.3	24
4	28.3	24.2	22.1	17.3	15.0	15.9	18.8	19.5	19.4	22.9	30.3	S	31.8	33.9	37.2	36.5	35.9	30.1	36.4	36.8	30.6	31.4	33.1	P	15.0	37.2	27.6	23
5	30.8	28.1	25.0	22.1	22.7	22.7	P	22.2	28.6	33.2	S	37.5	39.8	40.0	38.5	37.2	37.9	36.2	34.8	32.9	30.8	29.5	27.7	26.1	22.1	40.0	31.1	23
6	26.0	25.6	22.3	21.4	21.0	17.0	19.2	21.7	30.4	S	38.8	40.2	41.1	40.3	41.9	41.8	41.9	43.4	40.4	36.8	35.6	23.5	21.8	22.5	17.0	43.4	31.1	24
7	23.8	23.3	16.9	10.9	10.7	8.8	7.9	14.1	S	17.0	10.7	7.5	8.9	11.2	12.0	12.9	13.8	14.1	14.4	14.1	12.8	12.6	12.2	11.0	7.5	23.8	13.1	24
8	8.6	8.9	8.4	7.0	6.4	6.6	8.9	S	12.7	24.2	24.2	24.4	23.4	23.5	23.9	25.6	26.5	26.2	24.9	25.0	25.2	23.4	22.3	22.3	6.4	26.5	18.8	24
9	24.4	25.0	25.1	19.7	20.8	16.3	S	19.2	25.9	30.1	33.4	41.8	44.6	44.9	Q	Q	47.3	43.6	43.4	39.2	36.6	37.3	39.8	36.9	16.3	47.3	33.1	24
10	31.4	28.1	28.1	28.4	28.7	S	29.9	22.9	21.5	34.2	C	C	C	C	C	43.9	43.4	43.2	38.0	39.8	42.9	47.6	47.2	24.7	21.5	47.6	34.7	24
11	30.3	31.5	30.3	33.4	S	23.9	21.8	24.7	25.5	32.2	34.5	38.9	43.7	43.9	42.5	46.7	47.9	49.8	49.2	45.2	44.5	45.3	45.3	44.4	21.8	49.8	38.1	24
12	40.2	37.4	37.1	S	32.7	31.8	32.6	32.5	38.3	42.9	44.0	45.4	45.8	46.8	47.0	48.4	49.2	49.2	45.9	43.7	42.5	39.4	40.8	41.7	31.8	49.2	41.5	24
13	41.4	41.6	S	40.2	37.5	35.5	32.7	32.1	32.6	35.0	40.0	43.8	47.2	47.1	45.7	45.9	45.9	44.9	42.2	42.0	43.7	42.9	41.1	39.4	32.1	47.2	40.9	24
14	37.0	S	22.7	13.2	17.5	17.0	13.4	12.6	14.4	15.2	17.7	19.7	21.7	21.4	22.5	23.3	23.0	23.3	21.0	17.7	20.5	21.7	20.6	16.0	12.6	37.0	19.7	24
15	S	14.1	13.6	12.0	12.1	12.8	12.3	13.7	14.0	14.8	16.5	16.8	19.1	21.1	23.8	27.8	28.8	28.8	28.8	26.9	25.9	24.9	23.9	S	12.0	28.8	19.7	24
16	23.7	22.0	20.8	20.8	20.7	21.7	21.8	17.8	22.6	25.4	31.5	31.3	37.5	40.9	43.0	42.6	37.1	35.1	30.1	28.8	26.0	23.4	S	23.9	17.8	43.0	28.2	24
17	22.6	17.7	17.2	16.1	16.3	16.6	16.0	18.5	21.1	22.9	24.1	26.0	27.8	29.2	30.0	29.3	27.9	26.9	25.8	24.0	24.3	S	22.7	20.7	16.0	30.0	22.8	24
18	21.1	21.3	22.1	22.2	22.5	20.1	20.1	19.1	19.0	26.9	33.0	35.9	44.4	47.3	P	P	P	29.1	27.0	21.8	S	32.9	34.0	34.2	19.0	47.3	27.7	21
19	29.1	30.5	27.4	23.8	20.0	18.4	17.8	19.2	21.4	22.5	23.7	23.6	25.8	26.5	25.9	26.5	26.4	26.6	25.8	S	21.0	20.1	20.7	20.9	17.8	30.5	23.6	24
20	23.2	23.4	23.3	23.7	19.9	17.9	18.5	23.5	24.7	25.1	27.2	29.1	29.6	30.3	29.7	28.9	28.7	30.4	S	27.1	26.8	25.9	23.4	21.5	17.9	30.4	25.3	24
21	19.4	19.9	18.1	16.5	14.7	13.6	14.5	16.8	22.7	24.7	21.7	28.0	32.5	34.8	35.6	37.2	39.7	S	35.3	35.5	35.9	35.7	35.1	29.7	13.6	39.7	26.9	24
22	25.6	24.1	25.9	24.2	18.9	14.6	14.3	10.3	14.3	16.6	19.7	23.5	23.0	21.7	20.6	19.8	S	20.4	P	18.9	17.8	20.1	20.5	20.2	10.3	25.9	19.8	23
23	17.4	17.6	18.1	21.7	22.5	16.6	16.3	17.4	26.2	30.0	32.1	33.3	34.8	35.3	34.7	S	32.5	31.9	28.5	27.1	25.3	25.1	25.5	25.8	16.3	35.3	25.9	24
24	25.8	25.0	21.4	19.4	18.8	18.6	17.5	18.6	19.7	21.4	23.8	28.5	29.1	28.5	S	28.8	30.5	31.2	32.5	31.4	35.9	35.1	31.6	30.4	17.5	35.9	26.2	24
25	25.9	22.1	20.5	18.7	17.2	14.3	14.5	17.3	21.3	25.5	26.8	27.3	27.6	S	28.9	29.5	30.4	30.9	28.8	27.2	28.8	28.2	27.4	27.3	14.3	30.9	24.6	24
26	27.2	25.1	23.3	21.7	22.1	22.0	20.7	17.2	25.5	27.9	29.6	31.2	S	32.4	36.2	41.8	43.1	41.8	38.9	36.8	37.3	37.6	32.5	30.4	17.2	43.1	30.5	24
27	30.3	29.3	29.3	28.7	26.7	29.1	24.7	22.6	23.5	27.4	27.7	S	26.2	28.5	29.5	32.2	33.9	35.3	34.4	31.9	31.4	33.1	31.5	30.3	22.6	35.3	29.5	24
28	30.2	26.2	19.7	17.3	14.2	13.7	12.8	11.9	10.4	12.8	S	21.1	19.9	23.2	26.0	27.7	27.0	26.6	24.7	24.5	23.1	23.2	23.9	22.6	10.4	30.2	21.0	24
29	23.1	23.4	25.4	25.1	24.2	P	21.0	23.9	24.1	S	29.6	32.2	34.4	P	P	38.7	37.9	34.3	31.2	27.6	24.4	24.3	24.6	24.0	21.0	38.7	27.7	21
30	23.7	22.7	21.7	21.8	22.9	27.3	26.1	25.6	S	26.8	26.9	27.1	28.0	28.0	25.8	25.5	25.1	23.0	22.6	23.4	21.8	21.0	20.9	18.7	18.7	28.0	24.2	24
31	17.8	17.4	16.5	15.5	16.9	15.7	13.7	S	23.0	24.6	25.5	27.2	32.1	32.7	33.9	35.2	35.1	34.8	30.8	29.2	28.4	26.4	27.6	26.0	13.7	35.2	25.5	24
HOURLY MAX	41.4	41.6	37.1	40.2	37.5	35.5	32.7	32.5	38.3	42.9	44.0	45.4	47.2	47.3	47.0	48.4	49.2	49.8	49.2	45.2	44.5	47.6	47.2	44.4				
HOURLY AVG	25.6	23.8	22.1	20.7	19.9	18.8	18.7	19.8	22.6	25.8	28.1	30.1	31.5	32.9	32.6	33.5	34.5	32.9	32.1	30.1	29.5	29.3	28.8	26.5				

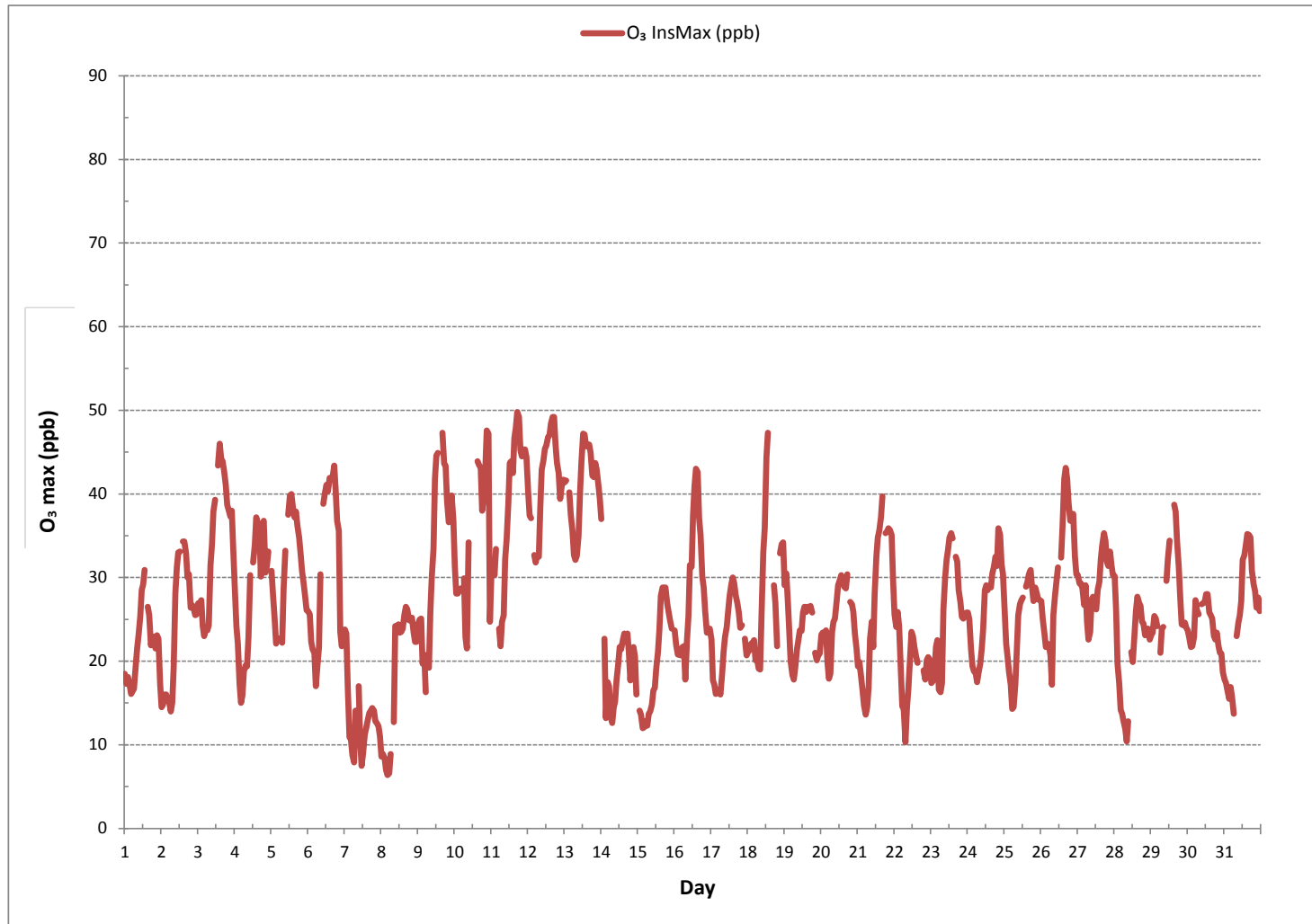
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	696
MAXIMUM INSTANTANEOUS VALUE:	49.8 ppb @ HOUR 17 ON DAY 11
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	5 hrs
OPERATIONAL TIME:	735 hrs
STANDARD DEVIATION:	9.1

OZONE Instantaneous Maximum (O₃ ppb)



% Icon Classes (ppb)

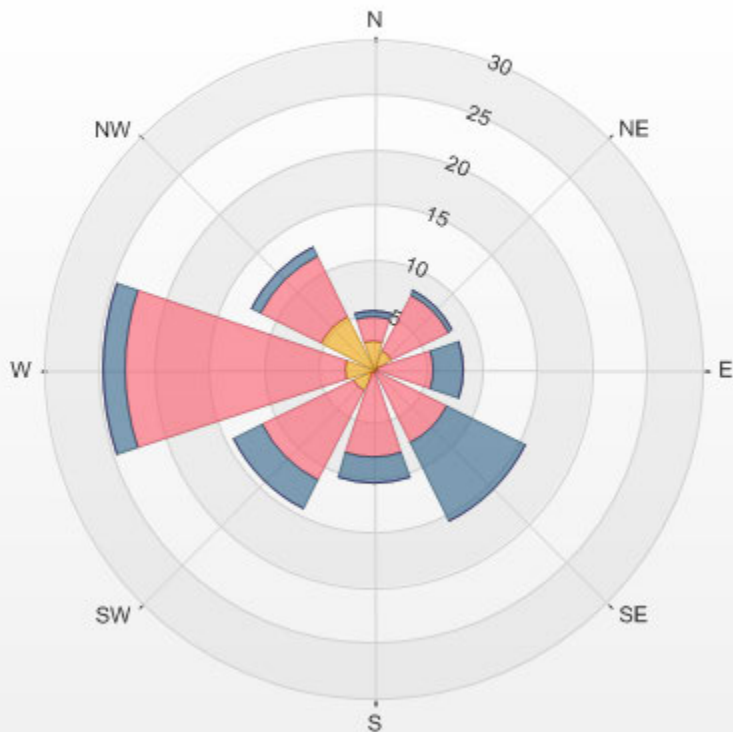
16 0.0-16.2

64 16.2-32.5

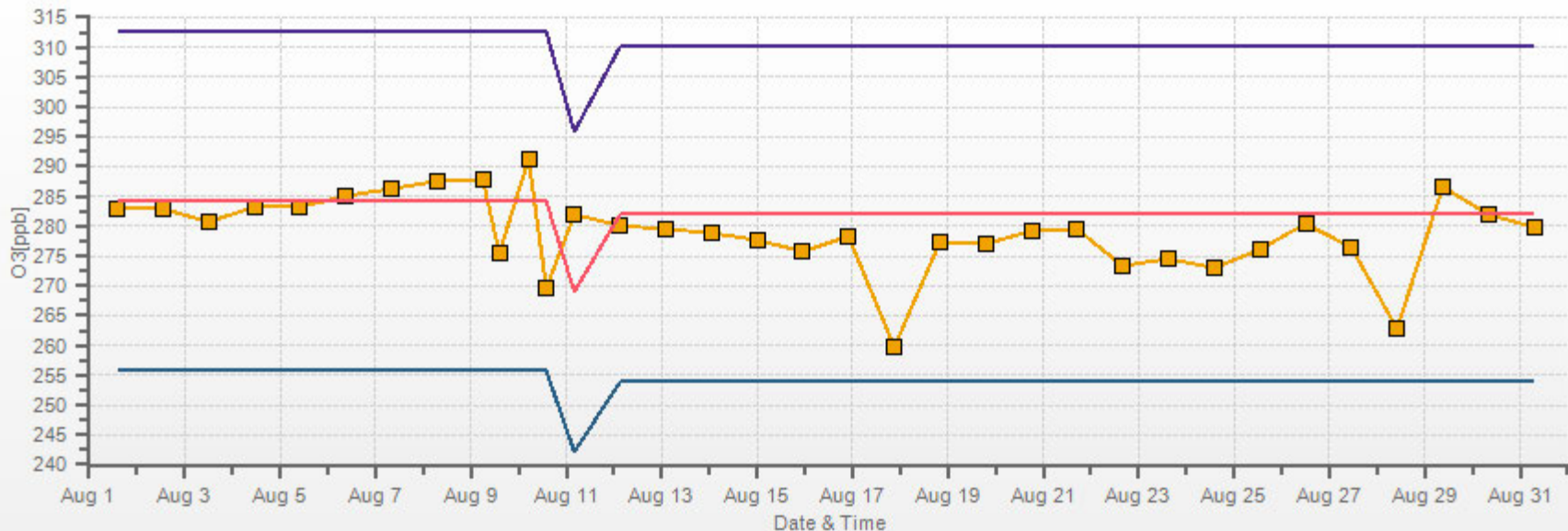
20 32.5-48.7

0 >48.7

LICA ST. LINA Poll.: LICA ST. LINA-O3[ppb] 2017/08/01 00:00 - 2017/08/31 23:00 Calm: 1.15% Calm Poll Avg: 25.72[ppb]



O3[ppb] Calibration: LICA ST. LINA Monthly: 17/08 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	2	2	2	2	2	4	4	4	3	4	4	4	4	4	4	5	4	4	4	4	4	4	4	4	4	2	5	4	24
2	4	5	5	5	5	6	7	7	6	8	9	9	9	9	9	8	7	7	6	6	7	7	6	4	9	7	24		
3	6	6	5	5	5	5	7	7	8	9	9	10	12	15	15	12	11	11	12	12	13	12	12	12	5	15	10	24	
4	12	12	12	11	11	10	10	10	10	10	8	8	7	7	6	7	6	7	7	5	4	3	3	3	3	3	12	8	24
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8	4	5	6	5	4	7	8	10	10	9	8	8	7	5	3	2	3	4	5	4	6	6	6	3	10	6	24		
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10	5	4	4	4	4	5	4	4	3	3	3	5	7	9	9	10	7	4	4	4	4	3	3	4	3	10	5	24	
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12	8	8	8	8	8	8	7	7	7	6	5	5	5	5	5	5	5	5	5	5	6	6	5	5	5	8	6	24	
13	5	5	5	5	5	5	5	6	6	7	7	7	6	6	6	6	6	7	8	8	8	8	8	8	5	9	7	24	
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15	7	5	5	5	5	4	3	2	2	2	2	1	1	2	2	2	2	2	2	2	2	2	2	2	1	7	3	24	
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17	39	42	45	45	42	36	33	28	21	15	12	9	7	5	3	2	2	2	4	3	4	4	4	5	2	45	17	24	
18	5	5	9	18	23	27	31	32	35	38	33	32	34	36	P	P	P	44	41	37	33	27	12	4	4	44	26	21	
19	3	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	1	24	
20	1	1	1	1	1	1	1	2	2	2	2	1	1	1	1	2	2	2	2	2	2	2	2	2	1	2	2	24	
21	2	2	2	2	2	2	3	6	7	7	7	9	9	7	7	7	7	8	9	10	9	10	11	12	2	12	7	24	
22	13	14	14	14	13	12	11	11	8	8	9	10	9	7	7	7	6	6	5	5	9	6	6	6	5	14	9	24	
23	6	7	7	7	8	9	10	11	11	10	9	7	6	6	6	6	6	6	6	6	6	6	6	6	6	11	7	24	
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27	6	7	7	8	9	10	10	10	9	8	8	9	9	8	7	7	8	8	8	8	9	9	9	9	6	10	8	24	
28	9	9	7	8	8	7	6	5	5	4	3	2	2	2	1	2	2	2	2	2	2	2	2	2	1	9	4	24	
29	2	2	2	2	2	2	2	2	2	3	3	6	4	P	3	4	4	4	5	5	5	6	6	2	6	4	23		
30	7	8	6	7	7	18	20	21	23	22	21	21	20	19	21	20	20	19	19	20	21	21	21	22	6	23	18	24	
31	23	23	23	23	23	22	21	21	23	25	26	16	10	10	38	31	21	17	15	13	11	9	7	4	4	38	19	24	
HOURLY MAX	39	42	88	123	105	85	85	79	59	53	45	39	34	36	41	47	44	44	41	37	38	38	37						
HOURLY AVG	7	8	10	12	11	11	12	11	11	10	10	9	9	9	10	9	8	9	9	9	9	9	8	7					

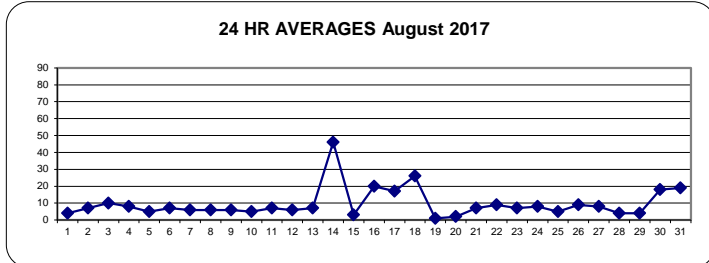
STATUS FLAG CODES

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

OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT:	1-HR	80 µg/m ³	24-HR	30 µg/m ³
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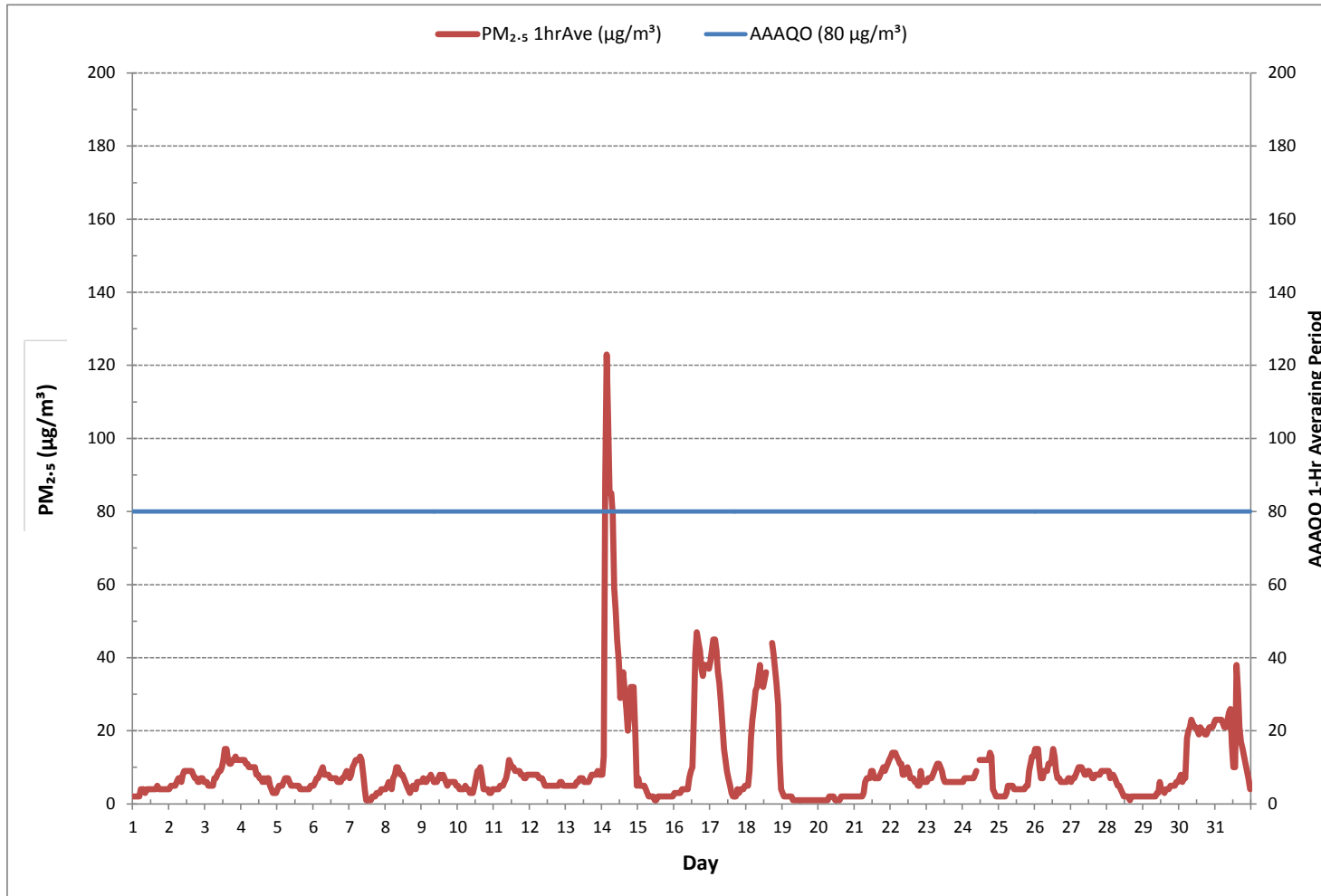
24 HR AVERAGES August 2017



MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	5			
NUMBER OF 24-HR EXCEEDANCES:	1			
NUMBER OF NON-ZERO READINGS:	739			
MINIMUM 1-HR AVERAGE	1 µg/m ³ @ HOUR	11	ON DAY	7
MAXIMUM 1-HR AVERAGE:	123 µg/m ³ @ HOUR	3	ON DAY	14
MAXIMUM 24-HR AVERAGE:	46 µg/m ³		ON DAY	14
MONTHLY CALIBRATION TIME:	1 hrs	OPERATIONAL TIME:	740 hrs	
STANDARD DEVIATION:	12	AMD OPERATION UPTIME:	99.5 %	
		MONTHLY AVERAGE:	10 µg/m ³	

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




Wind: LICA ST. LINA
 Poll.: LICA ST. LINA-PM25[ug/m3(L)]
 Monthly: 17/08
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

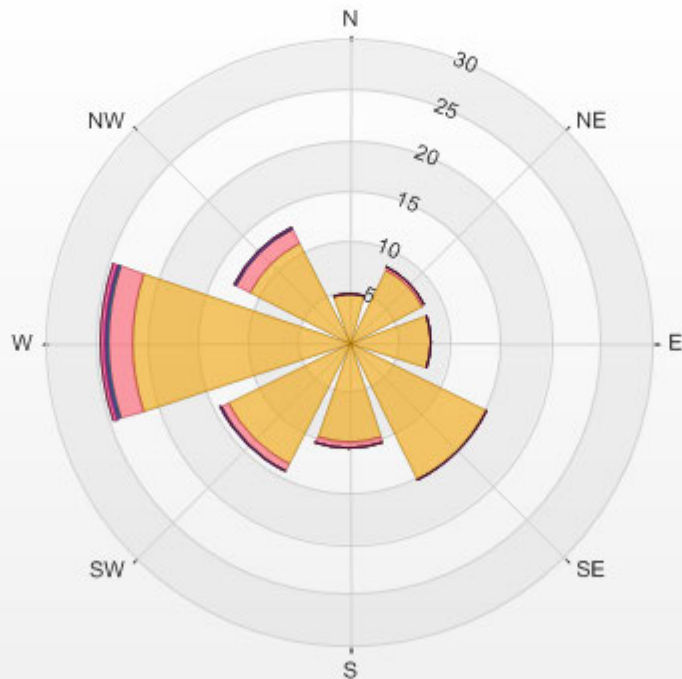
Calm: 1.09%

Calm Avg: 14.20 [ug/m3(L)]

Direction	0.0-24.8	24.8-49.6	49.6-74.4	74.4-99.2	99.2-124.0	>124.0	Total
N	4.8	0.1	0.0	0.0	0.0	0.0	4.9
NE	8.1	0.3	0.0	0.0	0.0	0.0	8.3
E	8.2	0.0	0.0	0.0	0.0	0.0	8.2
SE	15.3	0.0	0.0	0.0	0.0	0.0	15.3
S	9.8	0.7	0.0	0.0	0.0	0.0	10.5
SW	13.4	0.8	0.0	0.1	0.0	0.0	14.4
W	21.6	2.2	0.3	0.3	0.3	0.0	24.6
NW	10.9	1.6	0.0	0.1	0.0	0.0	12.7
Summary	92.1	5.7	0.3	0.6	0.3	0.0	98.9

% Icon	Classes (ug/m3(L))	92		0.0-24.8	6		24.8-49.6	0		49.6-74.4	1		74.4-99.2	0		99.2-124.0	0		>124.0
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LICA ST. LINA Poll.: LICA ST. LINA-PM25[ug/m3(L)] 2017/08/01 00:00 - 2017/08/31 23:00 Calm: 1.09% Calm Poll Avg: 14.20[ug/m3(L)]



WIND SPEED



WIND SPEED Hourly Averages (WS kph)

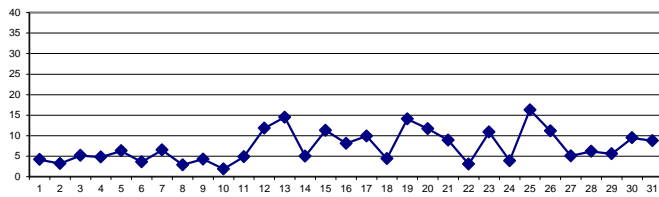
HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
DAY 1	6.6	7.3	6.7	6.8	6.2	6.3	6.7	6.2	4.1	5.8	5.2	3.4	3.7	4.1	6.6	7.5	5.4	5.3	6.1	4.5	5.1	6.4	9.5	8.1	3.4	9.5	4.2	24
2	6.7	7.9	8.8	7.0	7.0	6.9	7.0	3.8	2.6	2.7	3.6	4.6	3.2	2.8	4.2	4.7	5.9	6.0	3.8	2.6	3.2	3.4	2.5	4.7	2.5	8.8	3.2	24
3	7.3	8.1	7.6	8.2	8.3	8.3	7.8	7.3	5.3	5.3	6.2	7.8	9.0	8.8	6.9	5.0	7.8	6.2	5.7	5.6	7.3	7.5	7.1	6.8	5.0	9.0	5.2	24
4	6.2	7.1	6.6	6.7	7.4	4.3	6.2	6.0	8.2	7.6	8.3	8.0	7.9	6.9	7.4	6.9	5.9	2.9	4.1	5.9	6.8	4.5	3.7	4.5	2.9	8.3	4.8	24
5	5.0	5.8	6.2	5.1	5.0	5.9	4.9	5.4	6.7	7.1	4.7	5.3	8.0	8.4	9.6	10.4	7.5	6.4	5.3	5.6	7.8	7.5	7.5	7.1	4.7	10.4	6.3	24
6	7.2	6.4	5.3	6.2	7.4	6.5	6.0	5.8	5.9	6.4	7.8	8.2	7.4	8.7	9.6	8.1	7.2	6.6	4.0	4.9	6.6	9.7	8.2	7.2	4.0	9.7	3.6	24
7	9.0	5.7	7.6	6.9	7.7	7.8	8.1	8.7	8.9	7.8	6.6	9.1	8.6	9.1	6.4	6.1	7.6	7.0	7.6	5.7	5.4	6.2	5.6	6.6	5.4	9.1	6.5	24
8	6.6	5.1	5.7	6.0	6.6	6.3	6.3	3.8	5.2	3.9	3.8	5.5	4.9	3.5	2.7	4.0	3.4	2.9	0.8	2.4	4.9	4.2	3.6	3.6	0.8	6.6	2.9	24
9	2.5	3.3	4.9	6.2	6.6	6.4	4.8	6.2	6.5	5.6	5.1	6.2	5.0	5.2	3.8	5.1	3.6	3.6	1.9	3.9	7.3	8.7	9.6	9.0	1.9	9.6	4.3	24
10	9.3	9.3	8.8	8.8	7.3	7.4	3.5	3.6	2.4	1.1	3.2	4.5	4.6	4.8	3.2	3.2	15.2	10.4	4.6	1.4	2.3	1.6	6.1	4.5	1.1	15.2	1.9	24
11	6.5	6.2	4.5	4.6	6.1	5.9	5.4	5.9	6.7	6.0	5.4	6.0	7.4	6.4	6.2	6.6	7.2	7.6	6.0	8.5	9.4	10.3	10.4	10.3	4.5	10.4	4.9	24
12	10.1	11.3	9.9	9.8	9.1	9.0	7.7	7.7	9.3	11.1	12.1	13.4	14.8	14.6	15.4	15.3	13.8	13.4	13.9	13.8	13.8	14.3	15.4	13.8	7.7	15.4	11.8	24
13	11.9	13.0	12.4	13.0	14.5	14.4	12.5	11.8	12.5	15.1	17.0	17.6	21.2	20.5	22.2	22.1	20.1	18.0	15.2	14.3	14.1	10.5	7.0	8.8	7.0	22.2	14.5	24
14	7.8	7.4	10.6	11.0	12.0	8.9	5.6	6.5	7.9	8.5	7.1	5.9	6.8	7.3	6.0	7.1	5.2	5.8	1.0	2.7	0.7	0.4	4.1	6.1	0.4	12.0	5.0	24
15	5.3	6.1	6.0	5.3	7.9	9.4	11.2	13.5	14.5	13.0	15.0	15.7	11.6	14.4	16.7	17.0	17.7	15.1	11.3	10.7	11.5	11.2	8.7	9.0	5.3	17.7	11.3	24
16	8.7	10.2	10.5	10.0	10.9	8.4	6.6	6.1	5.7	8.0	11.0	9.6	11.0	14.3	15.5	13.0	10.9	5.8	4.8	3.2	3.7	5.4	8.3	8.1	3.2	15.5	8.1	24
17	8.8	8.6	8.9	10.0	10.8	11.9	12.4	12.9	14.0	11.3	10.7	11.7	12.4	13.7	12.8	11.6	13.6	9.7	9.4	8.9	6.4	6.1	6.8	6.9	6.1	14.0	9.9	24
18	6.8	7.1	8.2	7.8	7.9	7.4	7.6	6.1	6.4	8.4	10.4	10.1	12.5	12.8	P	P	P	11.7	8.2	5.6	11.0	10.8	14.9	5.5	5.5	14.9	4.4	21
19	13.6	12.7	10.9	9.1	11.1	13.4	13.3	15.0	14.9	17.6	17.8	18.6	19.3	16.8	16.5	22.3	21.5	20.3	14.7	10.0	9.1	8.9	9.1	10.3	8.9	22.3	14.1	24
20	9.5	10.1	9.0	8.1	8.8	10.3	10.2	11.6	15.2	16.5	17.3	16.8	21.0	16.3	15.2	13.8	12.3	11.2	11.3	12.7	10.7	8.7	9.3	6.5	6.5	21.0	11.7	24
21	10.1	10.5	11.5	12.2	12.0	12.4	12.3	9.3	9.2	8.1	9.0	11.9	16.1	15.4	11.0	14.3	8.8	7.4	4.8	2.9	0.7	4.7	6.0	6.2	0.7	16.1	8.9	24
22	5.8	5.4	6.2	5.9	6.6	7.5	4.5	4.6	5.8	5.5	8.9	11.4	11.4	11.7	6.4	5.4	5.2	3.3	2.2	4.6	6.1	7.4	8.5	8.2	2.2	11.7	3.1	24
23	9.6	9.5	9.0	9.7	6.1	7.6	6.5	6.2	11.2	14.5	14.6	15.4	13.1	12.8	14.8	13.0	15.8	12.8	11.1	10.3	11.9	12.0	11.7	12.8	6.1	15.8	10.9	24
24	11.5	4.2	8.3	8.9	12.9	17.5	17.2	15.2	11.9	11.7	9.9	10.4	9.3	8.6	9.8	6.5	8.0	5.4	5.6	13.7	19.1	15.2	10.0	7.8	4.2	19.1	3.9	24
25	12.1	11.8	11.5	14.7	11.7	13.5	14.6	16.9	23.4	30.7	32.7	30.8	28.1	26.6	26.5	22.8	21.7	14.6	6.1	6.3	7.8	8.5	8.3	8.6	6.1	32.7	16.3	24
26	9.2	8.4	6.6	8.6	7.9	7.4	7.3	7.1	13.0	16.1	19.6	18.4	20.6	19.0	19.5	18.0	17.0	14.1	8.8	5.3	6.9	8.9	7.4	7.1	5.3	20.6	11.2	24
27	6.9	7.1	6.8	6.7	5.6	4.1	4.8	4.4	4.1	2.8	5.4	6.9	6.6	6.4	5.2	8.3	8.9	7.1	4.0	5.2	4.9	5.5	5.5	5.1	2.8	8.9	5.1	24
28	4.7	6.1	6.0	4.9	5.1	6.0	5.2	4.3	4.3	4.8	5.0	8.7	10.5	12.4	10.4	11.0	10.7	7.6	4.1	5.0	4.5	3.4	6.3	7.0	3.4	12.4	6.2	24
29	5.2	7.9	8.7	8.5	6.5	4.8	4.5	2.3	5.3	6.0	7.0	5.9	5.5	P	8.3	9.5	9.6	8.7	8.6	8.9	11.5	12.9	14.3	12.6	2.3	14.3	5.6	23
30	12.4	11.4	10.2	10.9	9.2	8.7	12.0	12.9	12.7	14.1	12.8	11.1	10.9	12.2	12.9	9.8	10.5	9.0	8.6	10.2	10.6	9.3	8.8	9.3	8.6	14.1	9.5	24
31	8.4	7.6	7.5	7.1	6.3	6.6	8.1	10.1	11.1	11.4	10.7	14.4	15.2	17.1	14.2	13.0	13.8	8.4	7.6	7.0	8.8	8.0	7.1	9.6	6.3	17.1	8.8	24
HOURLY MAX	13.6	13.0	12.4	14.7	14.5	17.5	17.2	16.9	23.4	30.7	32.7	30.8	28.1	26.6	26.5	22.8	21.7	14.6	6.1	6.3	7.8	8.5	8.3	8.6	6.1	32.7	16.3	24
HOURLY AVG	2.1	2.7	2.4	2.6	2.2	2.1	2.0	2.1	2.6	3.0	3.7	4.6	4.9	5.1	3.8	3.9	2.9	1.8	0.9	0.5	1.2	1.5	1.4	1.9				

STATUS FLAG CODES

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

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

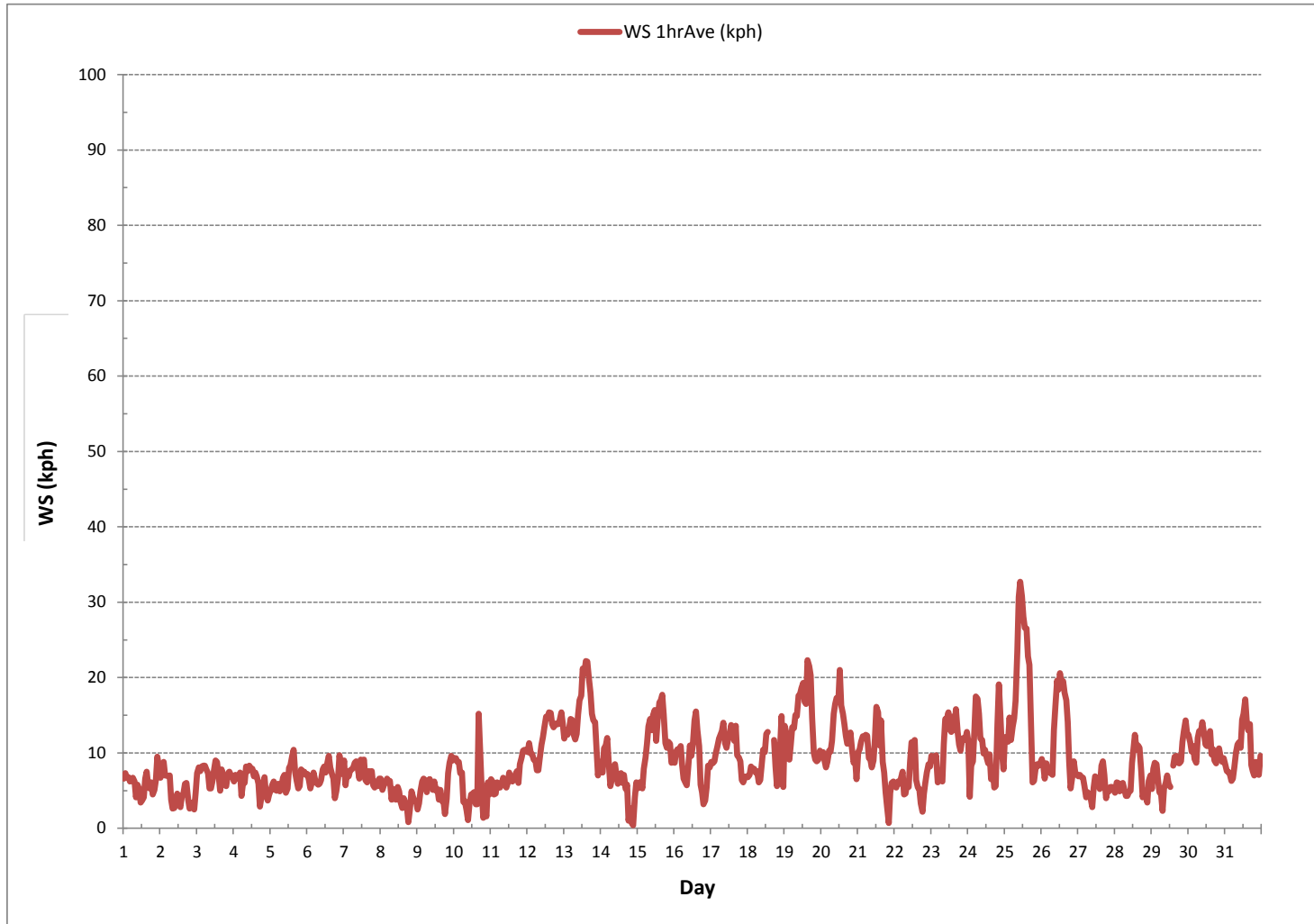
24 HR AVERAGES August 2017



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	740
MINIMUM 1-HR AVERAGE:	0.4 kph @ HOUR 21 ON DAY 14
MAXIMUM 1-HR AVERAGE:	32.7 kph @ HOUR 10 ON DAY 25
MAXIMUM 24-HR AVERAGE:	16.3 kph ON DAY 25
MONTHLY CALIBRATION TIME:	0 hrs
OPERATIONAL TIME:	740 hrs
AMD OPERATION UPTIME:	99.5 %
STANDARD DEVIATION:	4.4
MONTHLY AVERAGE:	2.4 kph

WIND SPEED Hourly Averages (WS kph)





LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
St. Lina Continuous Monitoring Station - August 2017

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	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	15.1	14.2	12.3	12.7	15.2	14.3	16.5	18.5	13.4	20.4	15.6	15.7	15.4	17.4	17.3	40.9	25.3	14.4	13.1	9.6	9.4	12.7	18.6	19.3	9.4	40.9	16.6	24
2	13.8	14.9	18.6	13.1	13.8	16.8	16.2	12.1	12.1	9.8	12.2	14.6	14.6	21.6	21.3	18.5	16.9	13.4	13.0	8.4	5.9	5.9	4.3	8.1	4.3	21.6	13.3	24
3	10.6	11.6	10.6	12.8	13.2	14.3	21.1	16.1	12.8	15.7	17.2	27.5	29.0	30.3	25.5	17.8	20.5	17.6	18.3	11.9	15.4	13.0	12.8	12.4	10.6	30.3	17.0	24
4	11.7	17.6	15.0	15.2	16.7	14.9	15.7	16.4	23.7	23.3	21.6	22.4	22.2	19.4	23.1	26.1	22.5	10.8	22.6	15.6	16.4	10.5	10.5	P	10.5	26.1	18.0	23
5	8.9	11.4	13.7	11.0	10.6	12.7	P	13.4	15.5	16.7	12.9	17.4	25.0	26.5	29.5	30.5	21.3	19.3	14.7	12.3	13.2	14.0	14.1	10.3	8.9	30.5	16.3	23
6	12.3	12.1	9.0	12.1	14.5	14.0	17.1	17.8	14.3	16.5	20.7	20.5	19.8	22.4	24.8	21.6	23.0	21.9	9.5	8.1	28.3	21.1	16.0	15.6	8.1	28.3	17.2	24
7	18.0	15.4	21.7	18.2	19.9	20.1	21.9	23.9	20.6	25.7	21.6	24.7	25.8	28.9	20.1	16.8	20.1	23.2	26.3	17.1	13.1	16.6	15.3	14.6	13.1	28.9	20.4	24
8	17.1	14.5	13.2	12.9	13.5	14.0	16.6	9.2	18.0	20.0	16.6	18.1	18.6	19.5	23.3	18.7	12.3	13.2	11.0	6.2	8.1	6.8	5.3	5.5	5.3	23.3	13.8	24
9	4.0	6.9	7.0	9.4	12.5	12.2	11.0	15.9	17.2	13.5	15.8	21.7	23.2	16.7	17.8	20.7	14.8	15.5	11.7	8.1	10.8	14.3	16.5	15.4	4.0	23.2	13.9	24
10	14.3	14.5	15.4	15.6	11.0	10.8	10.4	9.3	6.9	5.6	13.7	14.4	17.3	16.4	13.2	14.1	71.2	30.9	18.8	12.5	7.7	7.0	12.5	10.1	5.6	71.2	15.6	24
11	12.5	10.5	11.0	11.2	12.0	11.6	13.0	15.8	16.3	17.2	17.9	18.1	24.6	27.9	20.0	20.0	25.7	20.3	12.6	15.2	15.4	19.8	18.9	19.8	10.5	27.9	17.0	24
12	19.3	27.0	24.1	19.8	16.0	18.0	15.7	17.4	28.0	32.1	31.5	34.5	38.9	38.9	40.5	36.2	33.8	31.4	31.2	29.9	28.3	32.0	38.6	38.0	15.7	40.5	29.2	24
13	32.2	36.4	31.2	37.1	34.6	34.7	30.1	29.4	31.6	36.0	39.5	47.8	54.2	53.5	51.3	56.1	49.5	46.9	35.8	33.6	31.1	24.4	24.6	22.8	22.8	56.1	37.7	24
14	16.0	16.2	18.9	25.2	30.7	25.8	16.7	23.8	24.3	22.7	17.3	16.0	16.4	19.9	18.7	20.4	14.9	19.1	7.7	6.0	8.1	2.0	9.9	11.4	2.0	30.7	17.0	24
15	9.9	13.0	16.9	15.4	20.8	21.0	26.2	34.5	31.8	42.3	40.1	51.9	28.5	46.2	51.9	42.7	46.8	43.2	27.4	18.6	19.5	21.9	19.7	17.1	9.9	51.9	29.5	24
16	16.2	15.3	13.8	15.1	18.2	14.2	15.5	11.7	17.2	24.0	26.9	22.6	28.8	35.8	35.1	34.4	30.7	16.2	9.7	6.8	6.3	8.4	15.1	14.5	6.3	35.8	18.9	24
17	15.8	11.4	14.7	14.3	14.7	18.2	21.1	23.3	28.1	25.7	24.4	29.9	32.1	39.9	45.4	33.5	35.5	23.3	18.0	15.4	11.8	10.8	11.6	12.3	10.8	45.4	22.1	24
18	13.4	14.5	13.4	14.7	18.0	12.3	16.9	16.7	14.7	22.6	29.4	32.3	36.5	35.3	P	P	P	37.9	33.1	12.6	37.0	60.1	46.3	24.4	12.3	60.1	25.8	21
19	33.9	26.4	28.2	20.1	26.8	27.9	29.9	49.2	37.2	51.3	52.9	46.8	50.3	48.7	52.2	57.1	56.8	55.5	35.9	15.8	14.6	13.3	15.5	18.8	13.3	57.1	36.0	24
20	33.6	23.1	18.3	20.7	13.7	17.2	17.7	27.3	44.0	34.8	44.4	49.4	54.2	56.4	44.4	45.2	31.7	36.0	36.5	30.6	19.8	17.4	19.4	11.1	11.1	56.4	31.1	24
21	14.6	16.7	15.9	17.0	16.0	16.3	17.2	15.9	17.0	18.2	19.4	29.3	31.9	43.1	33.9	44.8	20.2	19.8	10.7	7.6	9.4	8.5	8.8	9.8	7.6	44.8	19.3	24
22	10.9	12.4	10.0	9.1	12.2	10.2	8.0	8.0	14.4	14.0	23.1	28.1	30.2	37.0	30.4	21.6	22.7	13.1	P	8.1	11.0	13.0	13.6	14.5	8.0	37.0	16.3	23
23	18.2	16.9	16.3	17.6	13.9	18.0	18.2	17.8	27.7	38.6	32.9	37.8	34.1	32.7	39.7	34.9	38.6	31.8	25.5	21.9	27.5	26.3	27.4	27.0	13.9	39.7	26.7	24
24	27.7	34.2	32.1	31.4	32.4	53.2	50.1	55.4	42.9	41.4	28.1	30.5	31.2	25.4	27.2	19.1	21.1	16.1	25.2	42.5	51.4	56.4	38.1	30.0	16.1	56.4	35.1	24
25	24.7	36.3	28.7	33.3	23.4	26.2	31.7	36.3	51.5	71.6	72.7	63.5	66.6	55.2	56.7	54.3	53.7	48.9	12.9	12.9	16.4	16.9	16.9	16.6	12.9	72.7	38.7	24
26	20.6	14.0	9.9	15.3	14.9	11.0	12.7	13.2	25.0	38.4	48.7	42.1	51.1	51.9	48.2	44.9	37.9	32.7	21.3	9.9	13.1	17.3	17.1	18.4	9.9	51.9	26.2	24
27	18.0	16.4	15.8	12.1	11.0	12.3	11.0	8.6	8.9	14.8	18.7	28.2	21.8	23.3	20.0	18.5	19.5	14.3	7.7	9.7	7.2	8.6	8.3	8.8	7.2	28.2	14.3	24
28	12.1	13.6	18.4	13.0	14.5	12.3	12.2	12.5	16.6	18.4	18.3	18.7	23.2	32.9	32.5	30.4	30.0	21.3	9.2	7.3	5.9	5.1	11.4	12.7	5.1	32.9	16.8	24
29	9.2	14.5	15.1	16.2	14.4	P	10.8	9.7	12.1	18.3	17.1	20.7	19.8	P	P	31.2	23.9	22.4	20.0	17.3	27.4	30.5	43.4	40.5	9.2	43.4	20.7	21
30	29.4	27.4	21.7	28.5	17.3	22.8	30.5	28.9	32.4	35.1	33.3	31.0	25.7	29.9	32.3	25.0	25.7	17.8	18.7	20.4	20.6	18.0	14.5	15.8	14.5	35.1	25.1	24
31	13.4	13.3	18.2	16.8	16.0	14.9	19.0	26.0	35.7	42.9	34.0	42.8	45.2	45.0	45.6	40.3	35.3	23.7	17.8	14.2	18.8	19.1	15.1	23.6	13.3	45.6	26.5	24
HOURLY MAX	33.9	36.4	32.1	37.1	34.6	53.2	50.1	55.4	51.5	71.6	72.7	63.5	66.6	56.4	56.7	57.1	71.2	55.5	36.5	42.5	51.4	60.1	46.3	40.5				
HOURLY AVG	17.0	17.5	17.1	17.3	17.2	18.1	19.0	20.5	23.0	26.7	27.0	29.6	30.8	33.3	32.5	31.2	30.1	24.9	19.2	15.0	17.1	17.8	18.1	17.3				

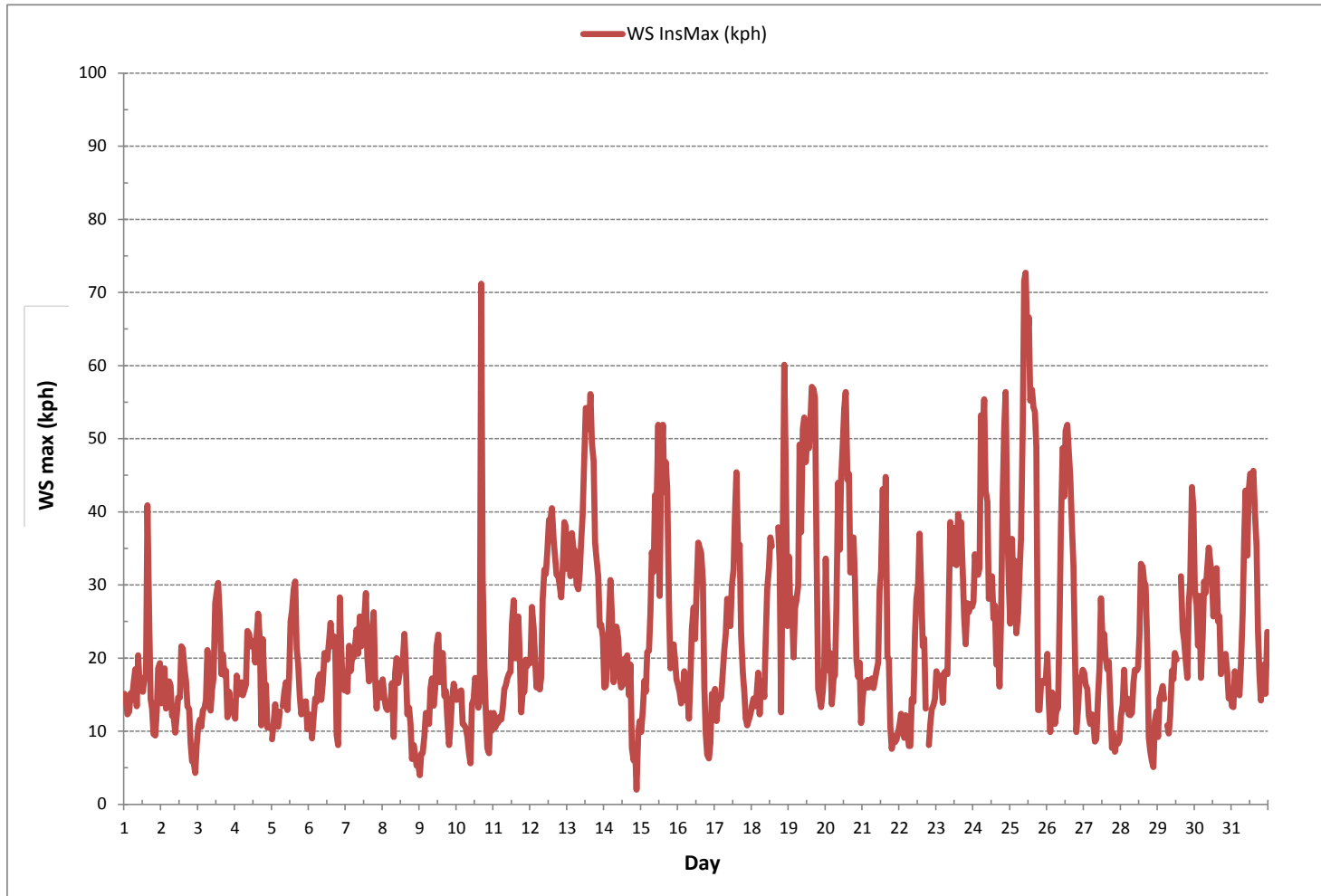
STATUS FLAG CODES

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:	72.7	kph	@ HOUR	10	ON DAY	25	
OPERATIONAL TIME:						735	hrs

WIND SPEED Instantaneous Maximum (WS kph)



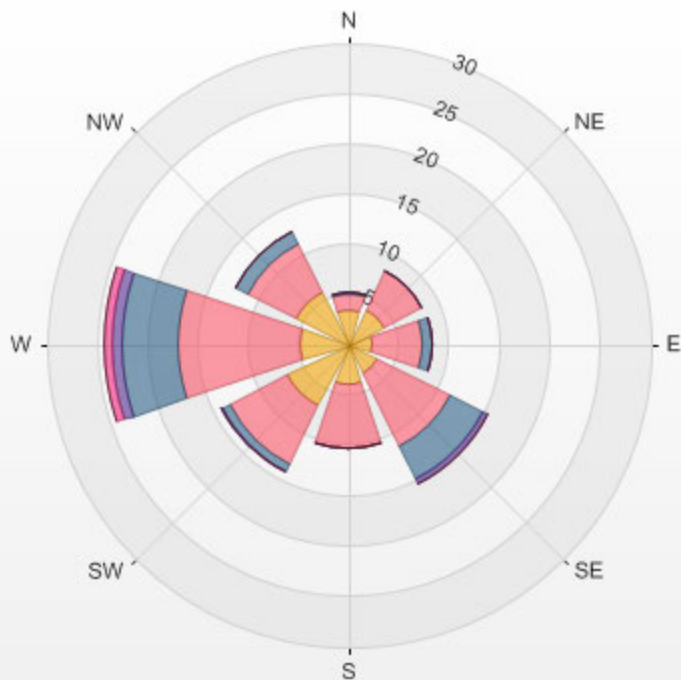
Wind: LICA ST. LINA
 Monitor: WSP [kph]
 Monthly: 17/08
 Type: WindRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 1.08%

Direction	1.8-6.6	6.6-13.1	13.1-19.7	19.7-26.2	26.2-32.8	>32.8	Total
N	3.4	1.8	0.1	0.0	0.0	0.0	5.3
NE	3.9	4.3	0.0	0.0	0.0	0.0	8.2
E	2.4	5.0	1.0	0.0	0.0	0.0	8.4
SE	3.1	8.2	3.5	0.7	0.0	0.0	15.5
S	4.1	6.4	0.0	0.0	0.0	0.0	10.4
SW	6.8	6.5	0.8	0.1	0.0	0.0	14.2
W	4.9	12.0	5.7	1.0	0.8	0.0	24.3
NW	5.8	5.4	1.4	0.0	0.0	0.0	12.6
Summary	34.3	49.6	12.4	1.8	0.8	0.0	98.9

% Icon	Classes (kph)	34		1.8-6.6	50		6.6-13.1	12		13.1-19.7	2		19.7-26.2	1		26.2-32.8	0		>32.8
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LICA ST. LINA 2017/08/01 00:00 - 2017/08/31 23:00 Calm: 1.08% Calm Wind Avg Speed: 0.95(kph)



WIND DIRECTION



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
St. Lina Continuous Monitoring Station - August 2017

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

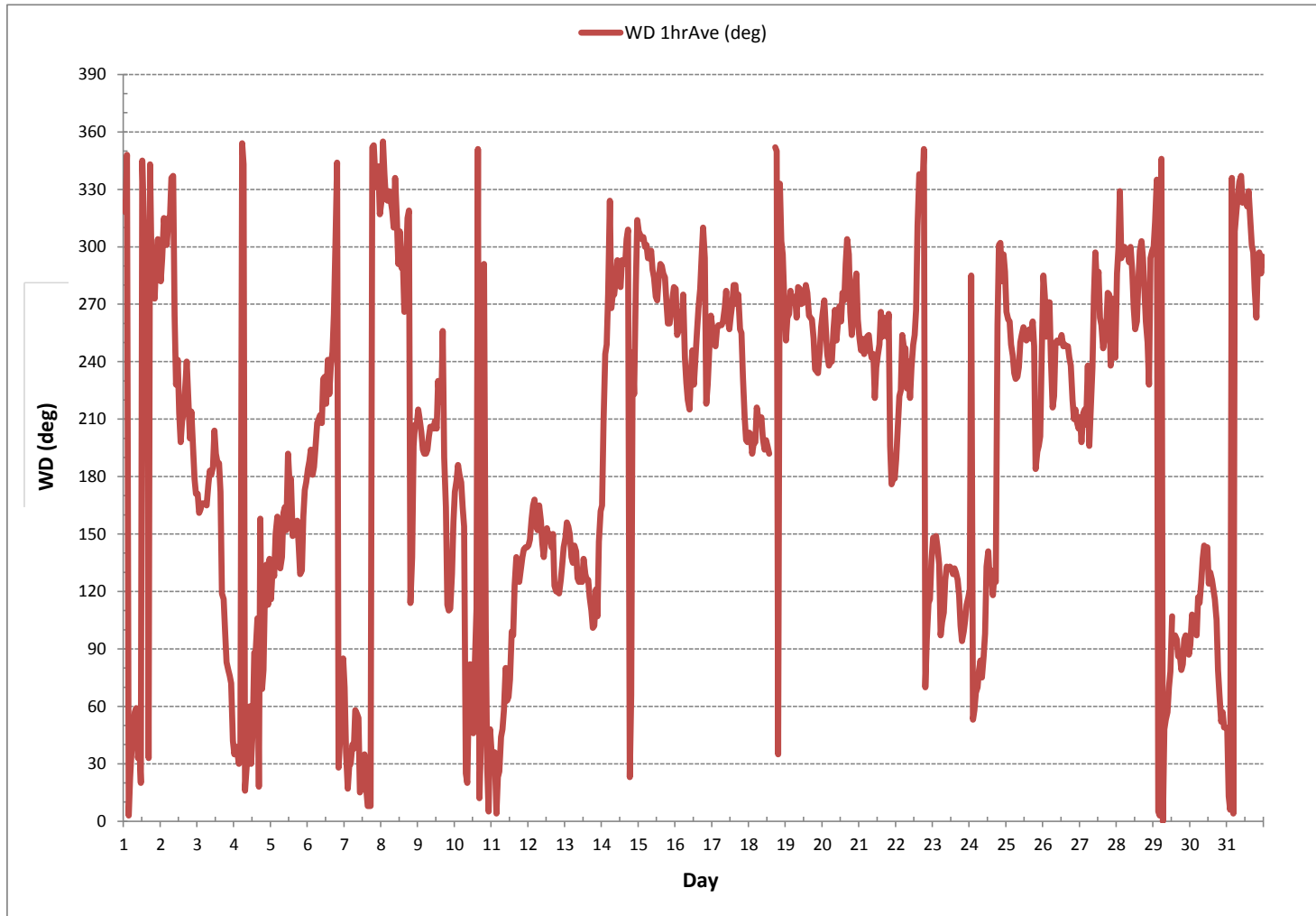
STATUS FLAG CODES

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:	740	hrs
STANDARD DEVIATION:	91		AMD OPERATION UPTIME:	99.5	%
			MONTHLY AVERAGE:	234	(SW)

WIND DIRECTION Hourly Averages (WD)



STANDARD DEVIATION WIND DIRECTION



LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
St. Lina Continuous Monitoring Station - August 2017

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	12	11	19	10	13	14	15	20	25	25	30	47	37	40	25	21	22	22	12	11	10	8	12	13	24		
2	11	13	11	12	11	12	13	20	41	37	32	37	51	58	46	34	24	18	25	12	8	6	5	2	24		
3	4	5	5	8	7	9	12	17	23	24	26	26	24	24	25	28	19	23	16	11	11	10	9	9	24		
4	10	13	12	13	14	19	19	16	18	23	21	22	19	26	26	33	22	19	39	17	13	17	15	8	24		
5	11	12	12	11	11	13	14	16	18	17	21	22	21	23	25	20	20	23	20	13	10	11	7	5	24		
6	7	9	8	8	11	10	13	18	22	23	25	23	25	27	20	25	22	18	12	8	12	12	12	13	24		
7	13	14	13	14	14	15	17	19	18	19	19	17	20	18	21	20	18	19	19	20	17	18	21	15	24		
8	16	18	24	15	12	11	13	17	20	34	44	31	39	49	53	48	37	40	45	12	10	8	10	8	24		
9	7	7	6	4	8	9	15	16	20	26	26	29	37	35	52	35	45	27	25	8	5	5	9	8	24		
10	7	7	7	8	6	5	30	14	25	41	40	30	44	37	41	34	21	16	27	49	54	56	17	10	24		
11	9	11	28	37	10	13	14	16	17	26	29	26	24	29	28	26	23	17	12	10	9	10	10	12	24		
12	12	13	13	11	8	10	12	15	17	19	22	21	19	23	21	18	19	18	15	13	13	15	15	17	24		
13	18	16	17	18	17	17	19	19	18	18	18	18	19	18	17	16	16	16	16	16	16	15	14	18	16	24	
14	13	13	8	13	17	21	23	32	17	17	19	18	22	25	26	26	21	17	20	12	19	28	12	10	24		
15	10	12	13	15	14	15	16	16	16	18	19	17	19	20	19	18	17	18	15	9	8	11	11	11	24		
16	10	8	4	7	11	8	9	10	17	20	17	17	19	16	16	18	17	15	10	7	10	5	6	7	24		
17	6	4	6	5	4	5	7	11	14	20	19	20	20	21	24	25	19	16	10	7	7	8	9	8	24		
18	9	10	8	11	13	9	10	15	15	17	17	21	19	19	P	P	P	18	19	17	21	28	17	43	21		
19	10	13	15	14	14	14	14	14	19	19	20	19	20	18	16	16	14	11	7	7	5	6	8	24			
20	11	14	10	15	6	7	9	14	16	16	17	18	18	21	18	22	21	18	14	9	10	12	13	9	24		
21	5	4	4	4	3	3	5	10	13	14	15	18	15	18	21	17	17	13	8	21	40	5	7	6	24		
22	9	9	6	7	5	5	11	10	17	19	19	17	24	21	26	29	27	24	19	7	8	7	8	10	24		
23	9	10	10	11	12	12	14	18	17	18	18	19	21	20	19	21	16	15	14	12	13	14	13	13	24		
24	14	64	16	14	16	15	17	17	18	19	22	23	24	20	20	21	21	24	40	16	17	22	22	18	24		
25	15	16	12	9	9	10	11	13	12	12	13	14	15	15	14	15	14	14	10	7	10	11	12	12	24		
26	12	7	4	8	8	6	6	11	13	14	14	16	15	15	15	14	15	10	9	9	10	9	11	12	24		
27	11	11	12	12	11	24	16	11	14	31	27	31	33	35	31	21	15	14	10	8	9	9	7	11	24		
28	35	15	14	24	29	11	14	33	49	24	21	18	15	15	24	22	19	18	11	4	3	8	13	9	24		
29	10	9	10	18	12	9	28	27	15	16	19	26	30	P	25	23	19	16	14	11	12	13	13	13	23		
30	14	13	13	13	11	15	15	16	18	18	19	20	19	18	17	16	15	13	13	12	10	10	9	8	24		
31	12	10	17	16	22	13	15	14	17	19	19	17	19	19	20	19	18	16	15	9	14	12	14	14	24		

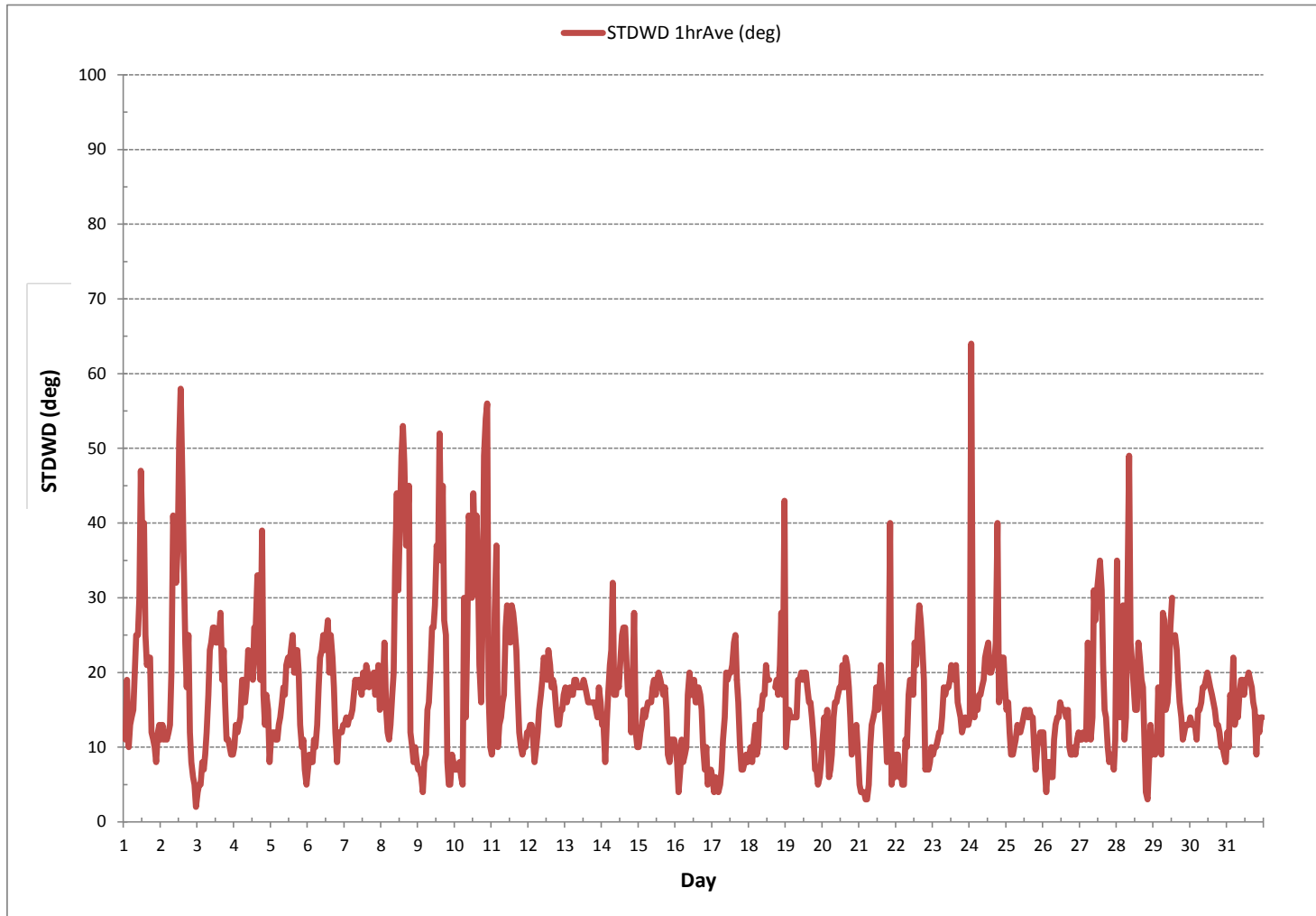
STATUS FLAG CODES

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

LAST CALIBRATION: May 25, 2017

CALIBRATION TIME: 0 hrs OPERATIONAL TIME: 740 hrs

STANDARD DEVIATION WIND DIRECTION Hourly Averages (STDWD deg)



RELATIVE HUMIDITY



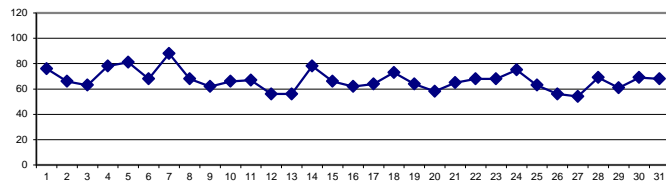
RELATIVE HUMIDITY Hourly Averages (RH %)

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	76	80	80	83	86	84	78	73	72	69	63	59	56	55	57	59	87	87	84	85	87	88	86	89	55	89	76	24
2	91	91	91	91	91	90	81	76	69	60	56	48	45	42	42	46	44	49	52	59	63	67	71	72	42	91	66	24
3	74	75	75	80	77	73	70	66	60	56	55	50	49	48	46	46	46	50	57	65	69	71	72	76	46	80	63	24
4	79	82	84	85	83	83	81	79	76	68	65	66	67	64	60	63	76	85	85	88	89	87	88	89	60	89	78	24
5	90	90	91	91	91	91	91	90	85	81	79	75	70	66	66	69	66	67	70	76	81	84	86	87	66	91	81	24
6	87	88	90	91	91	91	79	73	67	62	56	52	48	45	44	46	45	47	54	63	71	79	82	84	44	91	68	24
7	84	87	90	91	92	91	87	84	84	88	91	90	89	89	88	86	86	88	89	89	89	89	89	89	84	92	88	24
8	90	90	91	91	91	92	81	75	73	63	56	55	53	51	47	43	38	47	53	58	61	69	76	76	38	92	68	24
9	76	77	85	87	84	87	77	71	64	57	53	49	46	41	42	42	41	46	49	59	66	66	62	64	41	87	62	24
10	70	73	71	71	73	73	68	70	69	56	46	41	40	39	38	42	59	83	87	86	89	75	78	91	38	91	66	24
11	91	90	91	91	92	91	82	76	73	66	62	60	55	53	52	46	45	47	53	57	58	59	57	61	45	92	67	24
12	63	64	66	71	73	75	64	62	58	52	50	47	46	43	44	43	42	50	53	55	58	62	59	54	42	75	56	24
13	55	56	56	59	63	65	64	61	60	59	56	52	47	46	46	44	45	48	54	58	55	61	62	64	44	65	56	24
14	69	77	86	87	86	90	91	90	89	85	83	79	70	65	58	58	57	69	79	82	78	79	78	78	57	91	78	24
15	80	82	82	84	83	82	81	76	73	68	62	62	62	53	47	44	42	43	49	57	63	66	69	72	42	84	66	24
16	73	80	82	81	82	79	71	63	56	52	48	46	43	42	39	40	41	49	58	61	67	75	72	77	39	82	62	24
17	80	84	84	86	83	81	72	66	60	56	52	50	49	44	42	42	43	47	57	66	69	73	77	81	42	86	64	24
18	81	81	81	82	82	83	79	79	73	64	59	56	50	47	P	P	P	71	73	74	73	80	83	86	47	86	73	21
19	88	86	86	85	84	81	73	65	60	56	52	51	48	46	46	46	45	46	52	61	66	69	70	69	45	88	64	24
20	67	67	70	72	75	76	72	62	53	50	47	43	40	39	41	40	41	41	49	61	67	69	73	78	39	78	58	24
21	82	80	84	86	87	88	77	67	59	51	60	57	48	45	46	45	49	53	61	64	65	63	68	70	45	88	65	24
22	74	74	77	79	80	82	81	78	71	68	62	59	50	48	53	54	52	53	61	75	79	76	77	77	48	82	68	24
23	79	78	81	79	80	86	81	75	71	66	63	56	52	51	51	53	55	61	67	73	74	72	70	68	51	86	68	24
24	67	70	78	83	82	83	84	81	77	74	69	65	66	67	67	69	67	72	72	69	85	88	89	65	89	75	24	
25	89	88	87	86	87	88	78	67	60	54	49	46	45	44	42	40	39	40	50	59	62	65	67	69	39	89	63	24
26	67	71	76	74	71	73	72	63	54	48	44	43	42	40	38	37	40	48	58	63	63	65	67	37	76	56	24	
27	63	64	64	67	69	66	64	54	52	45	41	39	41	41	41	42	41	43	51	54	62	57	66	68	39	69	54	24
28	71	74	75	81	86	84	85	85	86	80	77	69	64	57	50	43	44	47	55	62	69	69	70	71	43	86	69	24
29	74	73	70	71	73	77	70	59	60	63	52	45	42	P	39	41	45	49	58	66	67	68	68	70	39	77	61	23
30	73	72	72	73	73	67	65	62	61	59	58	58	58	59	61	64	67	71	74	77	80	82	84	86	58	86	69	24
31	87	88	89	89	88	88	86	86	75	65	59	56	48	43	41	43	42	48	57	65	67	71	71	70	41	89	68	24
HOURLY MAX	91	91	91	91	92	92	91	91	90	89	88	91	90	89	89	89	88	87	87	88	89	89	89	91				
HOURLY AVG	77	78	80	82	82	82	77	72	68	63	59	56	53	51	49	49	51	55	61	67	70	72	74	76				

STATUS FLAG CODES

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

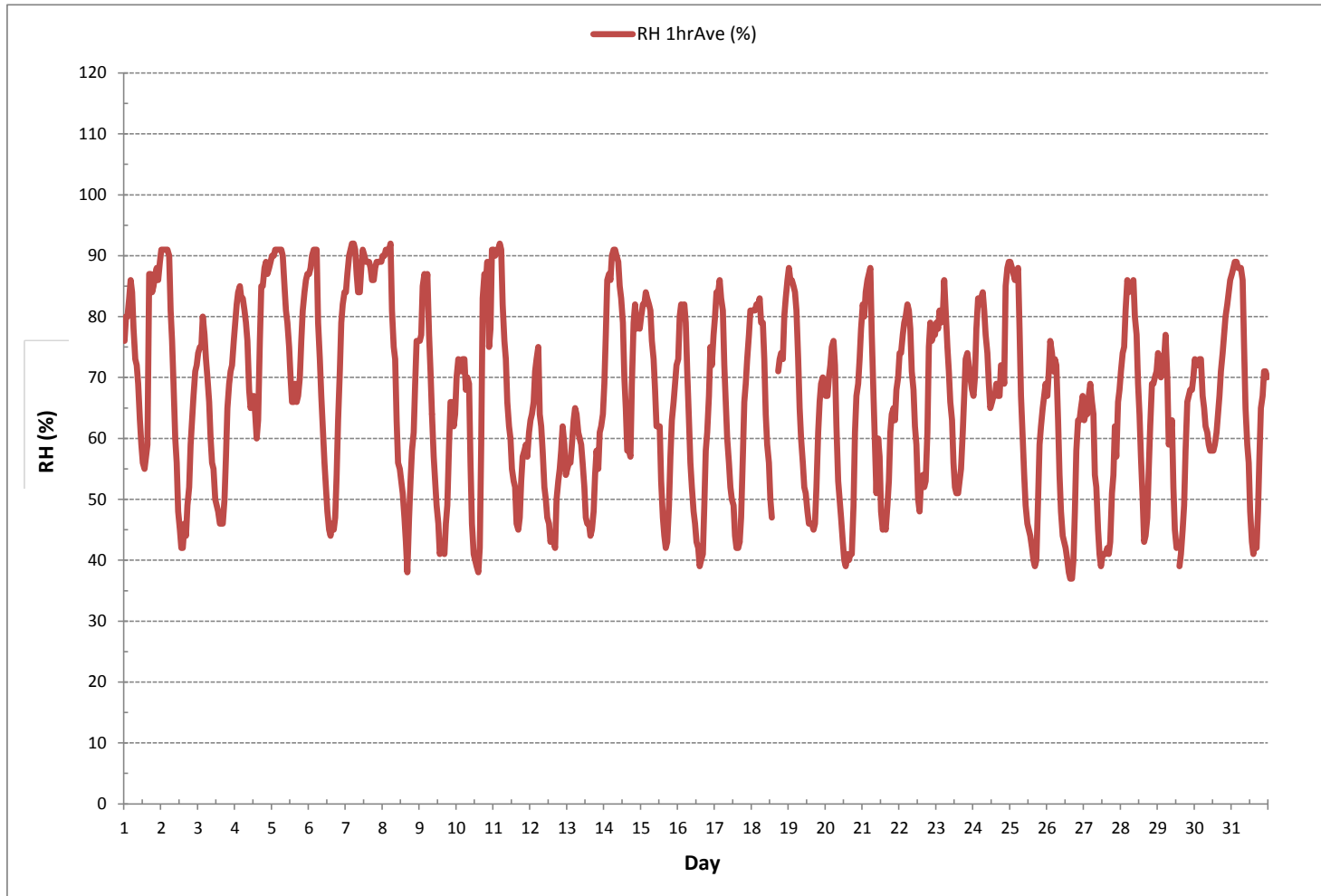
24 HR AVERAGES August 2017



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	37	%	@ HOUR	15	ON DAY	26
MAXIMUM 1-HR AVERAGE:	92	%	@ HOUR	4	ON DAY	7
MAXIMUM 24-HR AVERAGE:	88	%			ON DAY	7
OPERATIONAL TIME:						740 hrs
AMD OPERATION UPTIME:						99.5 %
STANDARD DEVIATION:	15					MONTHLY AVERAGE: 67 %

RELATIVE HUMIDITY Hourly Averages (RH %)



BAROMETRIC PRESSURE



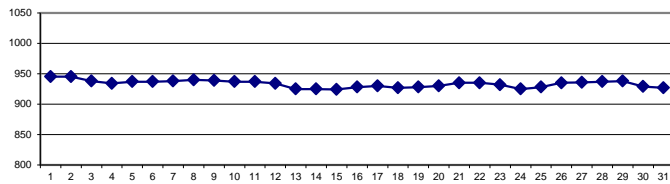
BAROMETRIC PRESSURE Hourly Averages (BP mbar)

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	942	943	943	943	943	943	944	945	945	946	946	946	946	946	946	945	945	945	945	945	945	945	945	945	945	942	946	945	24					
2	945	945	945	945	945	945	945	946	946	947	947	947	947	947	946	946	946	945	944	944	943	942	942	942	942	942	947	945	24					
3	941	941	940	940	940	940	939	940	940	940	940	940	939	939	939	938	938	937	937	936	935	934	934	934	934	934	934	941	938	24				
4	934	933	933	932	932	932	933	933	934	934	935	935	935	935	936	936	935	935	935	935	935	935	935	935	935	932	936	934	24					
5	935	935	935	935	935	936	936	936	937	937	937	937	938	938	938	938	938	938	938	938	937	936	936	936	936	935	936	937	24					
6	936	936	935	935	935	935	936	936	937	938	938	938	938	938	938	938	938	938	938	937	937	937	936	936	935	938	937	24						
7	936	936	936	936	936	937	937	938	938	938	938	938	938	938	939	939	939	939	939	939	939	939	939	939	939	936	939	938	24					
8	939	939	938	938	938	938	939	939	940	941	941	941	941	941	941	941	941	941	941	940	939	938	938	938	938	938	941	940	24					
9	938	937	937	937	937	937	938	939	939	940	940	940	941	941	941	941	941	940	940	940	939	938	938	937	937	937	941	939	24					
10	937	937	937	937	937	937	937	937	938	938	939	939	939	939	939	939	939	939	937	936	936	936	936	935	935	935	939	937	24					
11	935	935	936	936	936	936	936	937	938	938	939	939	939	939	939	939	939	939	938	938	936	936	936	936	935	935	939	937	24					
12	935	935	935	935	934	934	935	935	935	936	936	936	935	935	935	934	934	933	932	931	930	930	929	929	929	929	936	934	24					
13	929	928	928	927	926	926	926	926	926	926	926	926	926	926	926	925	925	924	924	923	923	923	923	923	923	923	929	925	24					
14	923	923	922	923	923	923	923	923	924	924	924	925	926	926	926	927	927	927	927	926	925	925	925	924	922	927	925	24						
15	924	924	923	923	923	922	923	923	923	923	924	924	924	925	925	926	926	926	926	927	926	925	926	926	926	922	927	924	24					
16	926	926	926	926	927	927	927	928	929	930	930	930	930	930	930	929	929	928	928	928	928	928	928	928	928	926	930	928	24					
17	928	928	928	928	928	928	928	929	930	931	931	932	932	932	932	932	932	932	932	931	930	930	929	929	928	928	932	930	24					
18	929	929	928	928	928	928	928	928	928	928	928	927	927	927	P	P	P	926	925	924	924	925	926	925	924	929	927	21						
19	925	925	925	925	925	925	925	926	927	928	928	928	929	929	929	929	930	930	930	930	929	928	928	928	925	930	928	24						
20	928	928	928	928	928	928	928	929	930	930	931	931	931	931	931	931	932	931	931	931	931	932	932	932	928	932	930	24						
21	932	932	932	932	932	933	933	935	936	937	937	937	937	938	937	937	937	937	936	936	935	935	935	935	932	938	935	24						
22	935	935	935	935	934	935	935	935	936	936	937	936	937	937	936	936	936	936	936	935	934	933	933	933	933	937	935	24						
23	933	933	932	932	932	932	933	933	934	933	933	933	934	933	933	933	932	932	931	930	930	929	929	929	929	929	934	932	24					
24	928	929	928	928	927	926	925	924	925	924	924	924	924	923	923	922	923	923	923	923	923	923	923	923	922	929	925	24						
25	924	924	925	925	925	925	925	926	927	927	928	929	929	930	930	931	931	931	932	931	930	930	930	930	924	932	928	24						
26	931	932	932	932	933	933	933	934	935	936	937	937	937	937	937	937	937	937	937	937	935	935	935	935	931	937	935	24						
27	935	935	935	935	935	935	935	936	937	938	938	938	937	938	937	937	937	937	936	935	935	935	935	935	935	935	938	936	24					
28	935	935	935	936	935	935	936	936	936	937	937	937	937	937	937	938	938	938	937	936	936	936	936	937	935	938	937	24						
29	937	937	937	937	937	937	937	938	939	940	940	940	940	940	940	P	940	940	939	939	938	937	936	935	935	935	940	938	23					
30	934	934	933	932	932	931	931	931	931	930	930	930	930	930	929	929	928	927	927	926	925	924	924	923	923	934	929	24						
31	923	923	923	923	924	924	924	925	926	927	927	928	928	929	929	929	929	929	929	928	929	929	929	929	923	929	927	24						
HOURLY MAX	945	945	945	945	945	945	945	946	946	947	947	947	947	947	947	946	946	946	945	945	945	945	945	945	945	945	945	945	24					
HOURLY AVG	933	933	932	932	932	932	933	933	934	934	934	934	935	934	935	935	935	934	934	933	933	932	932	932	932	932	932	932	24					

STATUS FLAG CODES

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

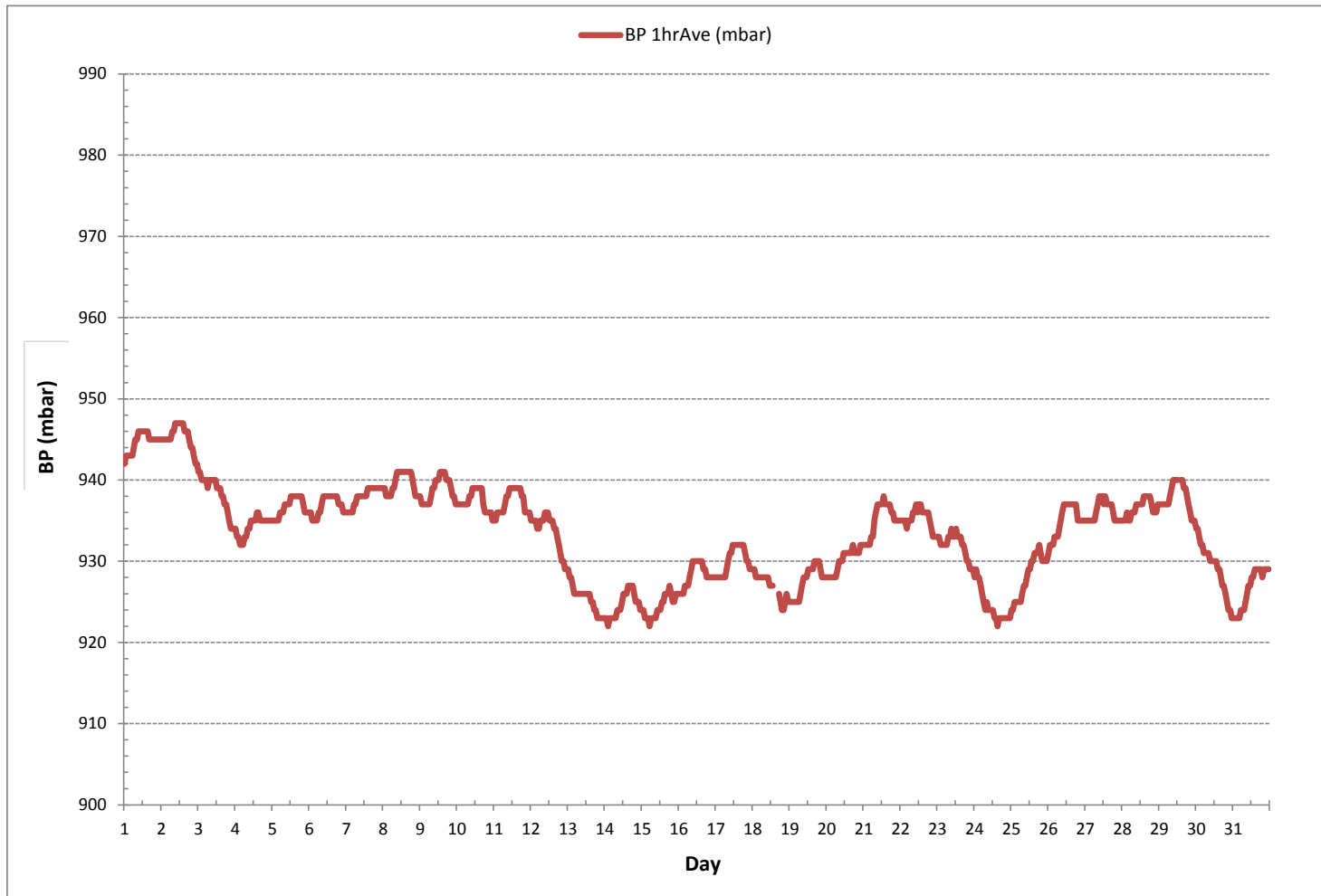
24 HR AVERAGES August 2017



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	922	mbar	@ HOUR	2	ON DAY	14
MAXIMUM 1-HR AVERAGE:	947	mbar	@ HOUR	9	ON DAY	2
MAXIMUM 24-HR AVERAGE:	945	mbar			ON DAY	1
OPERATIONAL TIME:						740 hrs
AMD OPERATION UPTIME:						99.5 %
STANDARD DEVIATION:	6					MONTHLY AVERAGE: 933 mbar

BAROMETRIC PRESSURE Hourly Averages (BP mbar)



AMBIENT TEMPERATURE



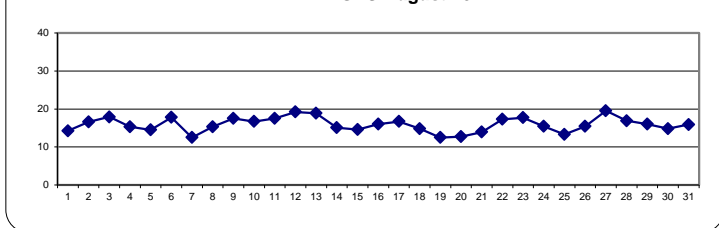
AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)

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	12.5	11.9	11.7	11.1	10.5	11.5	13.7	15.7	16.1	16.8	18.3	19.1	19.5	19.5	19.5	18.9	12.6	12.4	12.1	12.3	11.8	11.5	11.4	10.9	10.5	19.5	14.2	24	
2	10.1	10.3	10.1	9.5	9.0	9.7	12.4	15.2	18.0	19.7	20.5	21.8	21.5	22.5	22.1	21.2	22.1	21.6	20.3	18.4	16.8	16.0	15.3	14.6	9.0	22.5	16.6	24	
3	13.6	13.2	12.9	12.7	12.6	13.2	14.2	16.6	19.0	20.1	21.4	22.4	22.0	22.1	22.6	22.8	23.0	22.0	20.5	18.6	16.7	16.1	15.6	14.5	12.6	23.0	17.9	24	
4	14.1	13.6	13.3	12.9	13.0	13.0	13.8	14.8	15.8	18.6	19.4	19.4	18.6	19.9	20.9	19.6	15.7	15.3	15.1	13.1	12.7	12.1	11.5	11.6	11.5	20.9	15.3	24	
5	11.8	12.1	12.1	12.2	12.3	12.3	12.5	13.1	14.0	14.2	15.1	16.0	16.3	17.5	18.4	17.4	17.9	17.7	17.1	15.5	14.1	13.5	12.9	12.7	11.8	18.4	14.5	24	
6	12.5	12.0	11.5	11.0	10.5	10.5	14.1	16.6	19.1	20.2	22.1	22.8	23.7	24.5	24.7	24.3	24.5	23.5	21.3	19.2	17.3	14.4	13.4	13.1	10.5	24.7	17.8	24	
7	12.9	12.1	11.3	11.4	11.5	12.0	13.0	14.8	15.4	15.0	13.3	12.3	12.4	12.7	12.6	12.7	12.9	13.2	12.9	11.9	11.4	11.2	11.1	10.9	10.9	15.4	12.5	24	
8	10.8	10.3	9.9	9.1	8.3	8.0	11.3	14.2	16.0	18.1	19.1	18.9	19.1	20.0	20.7	20.8	21.3	20.0	18.3	16.8	14.5	14.1	13.7	13.4	8.0	21.3	15.3	24	
9	12.9	12.6	11.2	10.6	10.4	9.6	12.2	14.9	17.3	19.4	21.0	22.0	22.7	24.5	24.1	23.9	24.2	22.2	21.0	19.1	16.8	15.9	15.9	15.4	9.6	24.5	17.5	24	
10	14.4	13.9	14.0	13.7	13.2	13.4	14.7	16.2	17.2	21.2	23.3	23.7	24.5	24.2	24.4	24.4	18.9	13.0	12.5	12.9	12.1	13.1	12.1	10.1	10.1	24.5	16.7	24	
11	10.2	10.6	10.2	9.7	9.6	9.6	12.9	15.4	17.5	19.3	20.8	21.8	22.6	23.1	23.9	24.2	23.7	22.9	21.5	19.7	18.2	17.5	17.2	16.7	9.6	24.2	17.5	24	
12	16.0	15.5	15.0	14.0	13.5	13.1	16.2	17.6	19.7	21.1	22.2	23.0	23.5	24.1	24.1	24.2	24.3	23.3	21.6	19.8	18.1	17.3	17.2	17.1	13.1	24.3	19.2	24	
13	16.3	15.9	15.4	15.2	14.4	14.1	15.2	16.9	18.7	19.9	21.4	22.9	23.8	24.0	23.7	23.5	22.9	21.8	20.1	19.0	18.7	17.4	16.7	16.4	14.1	24.0	18.9	24	
14	15.4	14.3	13.7	13.9	13.5	12.6	12.5	12.5	12.5	13.8	14.4	15.4	17.7	18.3	19.8	19.3	19.2	17.1	15.6	14.8	15.1	14.2	16.2	13.5	12.5	19.8	15.1	24	
15	13.4	12.9	12.8	12.2	12.0	11.9	12.1	12.0	12.7	14.7	16.1	16.3	16.8	18.5	19.7	19.5	19.2	18.7	17.3	14.9	12.9	12.2	11.5	10.8	10.8	19.7	14.6	24	
16	10.5	9.1	8.5	8.4	7.8	8.8	11.5	15.1	18.5	19.8	20.8	21.2	22.1	22.8	22.9	22.0	21.4	19.7	17.6	16.7	16.1	15.0	14.1	13.0	7.8	22.9	16.0	24	
17	12.4	11.4	10.9	10.3	10.8	10.8	13.3	15.8	17.4	19.1	20.9	21.6	21.9	22.6	23.2	23.1	22.4	21.4	19.5	16.9	15.3	14.3	13.6	12.7	10.3	23.2	16.7	24	
18	12.3	11.8	11.9	11.2	11.0	10.6	11.7	12.6	14.9	17.9	19.3	20.9	22.5	22.9	P	P	P	17.9	17.0	15.3	14.6	12.9	11.5	10.3	10.3	22.9	14.8	21	
19	10.0	9.7	9.3	8.6	7.7	7.4	9.1	11.4	12.7	13.7	15.1	16.0	16.8	17.4	16.9	16.4	16.8	16.5	15.5	13.1	11.0	10.0	9.5	9.7	7.4	17.4	12.5	24	
20	9.3	8.7	7.5	6.9	6.5	6.8	8.4	11.7	14.2	16.1	17.0	17.4	17.8	17.5	18.0	18.1	18.4	17.3	15.2	12.6	10.9	10.4	9.7	8.5	6.5	18.4	12.7	24	
21	7.6	7.3	6.4	5.5	5.0	4.9	8.3	12.3	15.7	18.4	16.8	18.2	19.9	20.3	19.5	20.5	19.2	18.8	17.2	15.3	14.6	15.0	14.2	13.7	4.9	20.5	13.9	24	
22	13.5	13.8	13.0	12.7	12.6	12.4	13.1	14.7	17.4	18.6	19.9	21.4	23.5	23.5	22.0	22.3	22.7	22.0	19.8	16.9	15.7	15.3	14.7	14.7	12.4	23.5	17.3	24	
23	13.9	13.8	13.3	13.6	13.3	11.7	13.5	16.2	18.2	19.4	20.1	21.6	22.7	23.3	23.3	23.3	22.1	21.0	19.4	17.7	16.7	16.0	15.5	15.6	11.7	23.3	17.7	24	
24	15.6	15.3	14.0	12.9	12.7	12.2	12.1	13.3	14.8	15.7	17.7	18.4	18.0	18.1	18.5	18.9	20.1	20.6	18.7	17.2	14.0	11.1	10.3	10.1	10.1	20.6	15.4	24	
25	9.7	9.5	9.2	8.8	7.7	7.0	9.1	11.9	13.4	14.6	15.5	16.4	17.4	18.1	18.6	18.8	18.7	18.0	16.7	14.1	12.9	11.7	10.9	10.2	7.0	18.8	13.3	24	
26	10.1	9.6	8.5	8.7	8.8	8.2	9.3	13.1	16.3	18.1	18.9	19.8	20.4	21.3	21.8	22.1	22.0	21.3	19.1	16.1	14.9	14.4	13.7	13.1	8.2	22.1	15.4	24	
27	13.6	13.2	12.7	12.1	11.6	12.4	13.5	18.2	21.2	23.5	24.2	24.8	24.7	25.7	26.1	25.8	25.8	24.6	21.9	20.3	18.5	18.9	17.8	17.7	11.6	26.1	19.5	24	
28	16.9	16.4	16.0	15.3	14.5	14.1	13.7	13.9	13.9	16.0	16.4	17.6	19.3	20.2	21.8	22.0	21.8	20.7	19.0	16.3	14.7	15.3	14.5	14.3	13.7	22.0	16.9	24	
29	13.3	12.9	12.1	11.2	10.4	10.0	12.6	17.0	17.0	16.4	16.9	20.0	21.5	22.0	P	22.4	21.9	21.2	19.9	17.7	15.7	14.6	13.8	13.0	12.1	10.0	22.4	16.0	23
30	11.4	11.4	11.0	10.7	10.2	11.1	12.1	13.6	14.9	15.9	17.0	18.0	19.0	19.0	18.6	18.9	18.6	17.8	17.0	15.8	14.6	13.9	13.3	12.5	10.2	19.0	14.8	24	
31	12.1	11.8	11.3	11.1	11.7	11.4	11.6	12.5	16.2	18.7	20.9	20.9	22.3	22.4	22.7	21.7	20.2	18.9	16.6	14.4	14.0	13.0	12.6	11.5	11.1	22.7	15.9	24	
HOURLY MAX	16.9	16.4	16.0	15.3	14.5	14.1	16.2	18.2	21.2	23.5	24.2	24.8	24.7	25.7	26.1	25.8	25.8	24.6	21.9	20.3	18.7	18.9	17.8	17.7					
HOURLY AVG	12.6	12.2	11.6	11.2	10.9	10.8	12.4	14.5	16.3	17.8	19.0	19.8	20.4	21.0	21.2	21.1	20.5	19.5	18.0	16.2	14.8	14.1	13.5	12.9					

STATUS FLAG CODES

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

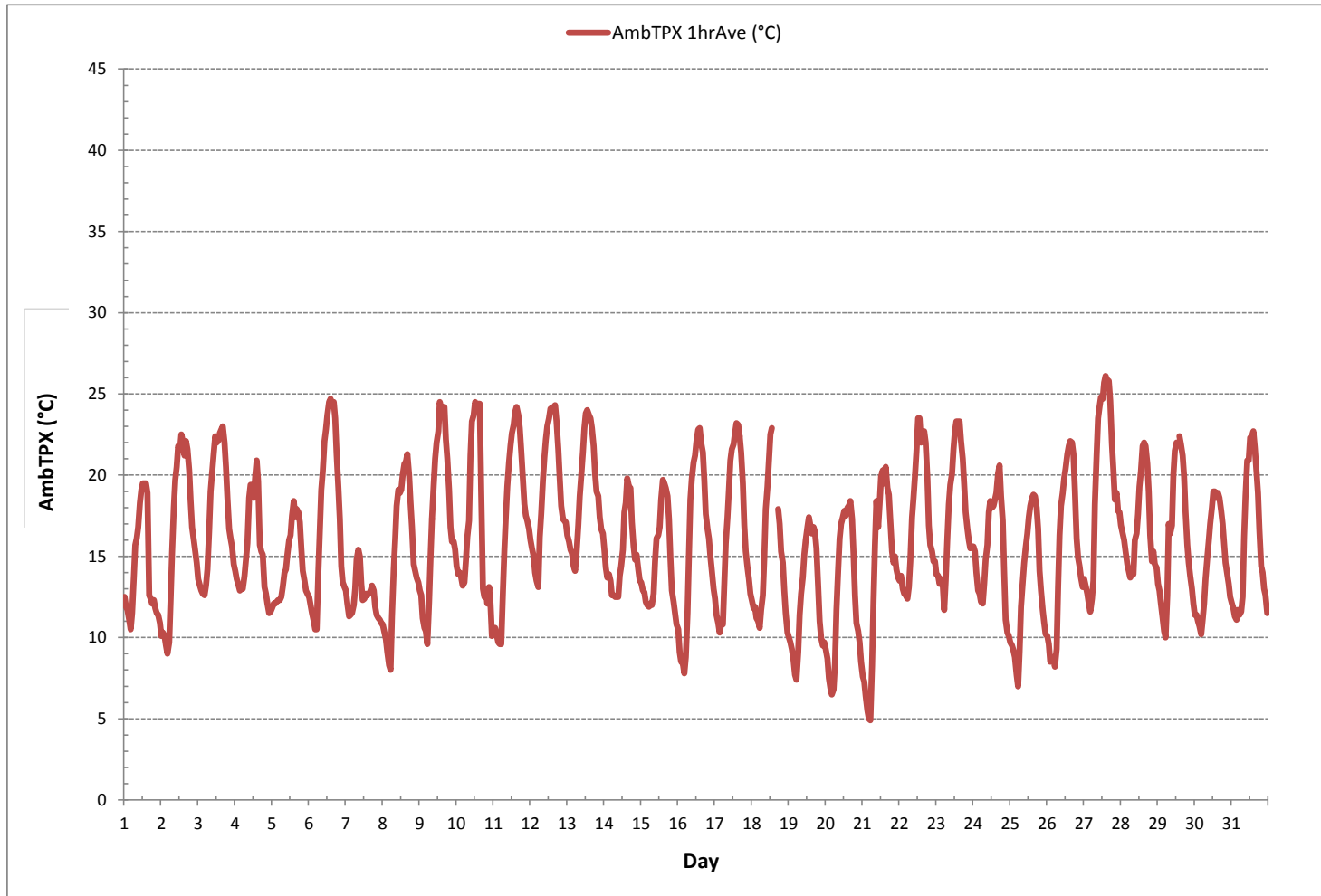
24 HR AVERAGES August 2017



MONTHLY SUMMARY

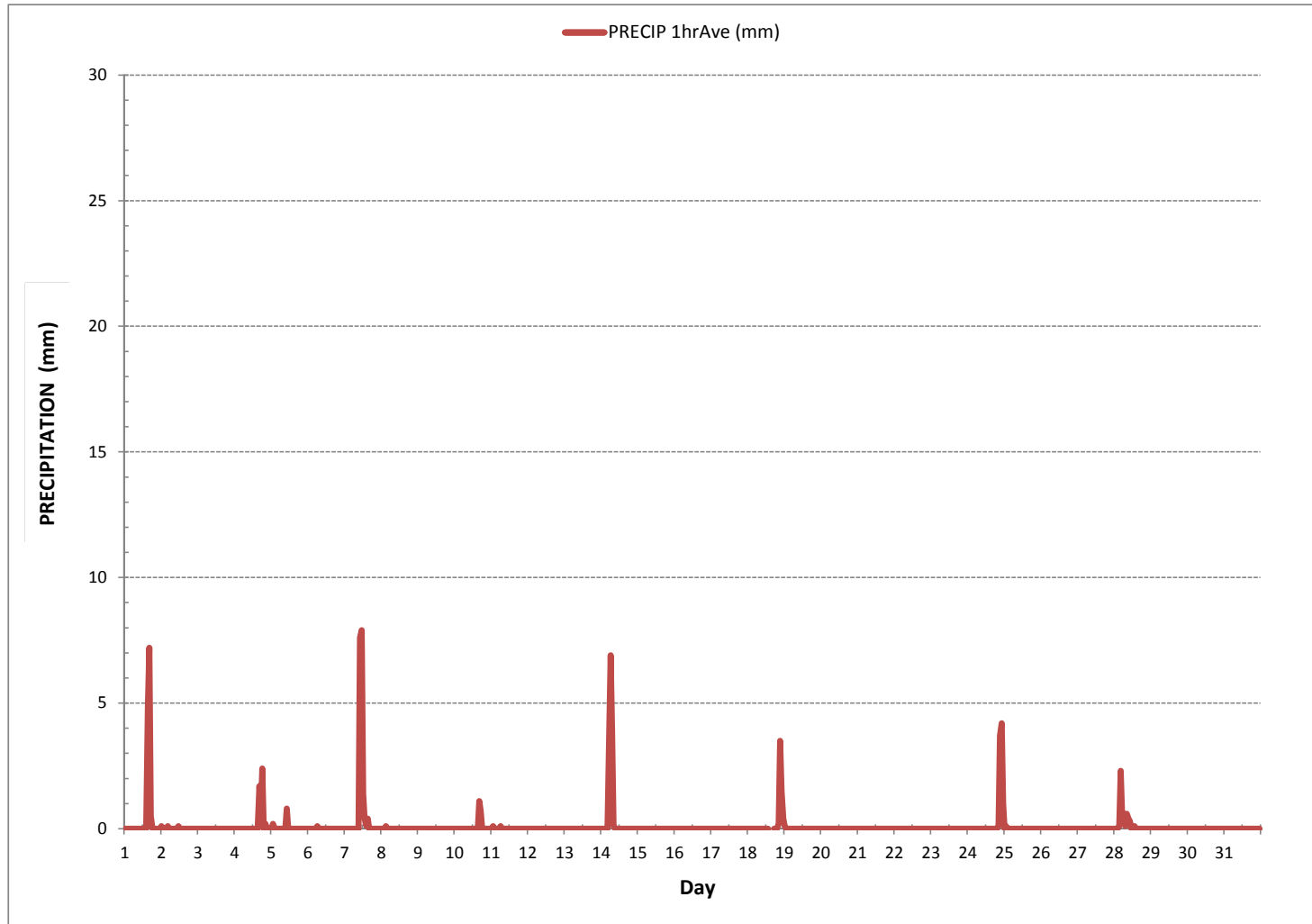
MINIMUM 1-HR AVERAGE:	4.9 °C	@ HOUR	5	ON DAY	21
MAXIMUM 1-HR AVERAGE:	26.1 °C	@ HOUR	14	ON DAY	27
MAXIMUM 24-HR AVERAGE:	19.5 °C			ON DAY	27
OPERATIONAL TIME:				740	hrs
AMD OPERATION UPTIME:				99.5	%
STANDARD DEVIATION:	4.4			MONTHLY AVERAGE:	15.9 °C

AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)



PRECIPITATION

PRECIPITATION Hourly Averages (mm)



APPENDIX II
EQUIPMENT CALIBRATION RESULTS

SULPHUR DIOXIDE



API 100E Sulphur Dioxide Analyzer Calibration

Date:	August 9, 2017	Barometer/B.P./units:	F.S. 05544 expires December 5, 2018	940	millibars
Company/Airshed:	LICA	Thermometer/Station Temp:	Fluke 4295 expires November 14, 2017	23	°C
Location/Station Name:	St. Lina	Weather Conditions:	Mainly sunny		
Parameter:	Sulphur Dioxide	Calibration Purpose:	routine monthly		
Start Time 24 hr. (mst):	10:30	Performed By/Reviewer:	Alex Yakupov	Tom Bourque	
End Time 24 hr. (mst):	15:03	Cal Gas Expiry Date:	July 18, 2019		
Calibration Method:	Gas Dilution	Converter Model & s/n (if applicable):	n/a		

Analyzer:	Range ppb:
ID# or Serial Number:	468
Last Calibration Date:	July 18, 2017
Previous C.F.:	1.000
	As Found C.F.:
	1.003
	New C.F.:
	0.999

Calibration Standards:	Standard Calibration Points for Ranges
Low Flow Meter ID/Expiry Date:	Defender Low 152020 expires November 21, 2017
High Flow Meter ID/Expiry Date:	Defender High 148943 expires November 21, 2017
Calibrator ID/Expiry Date:	API id# 627 expires January 27, 2018
Cal Gas Cylinder I.D. # :	LL 104222
Cal Gas Conc. (ppm):	50.6

Point	ppb
High	780
Mid	380
Low	190

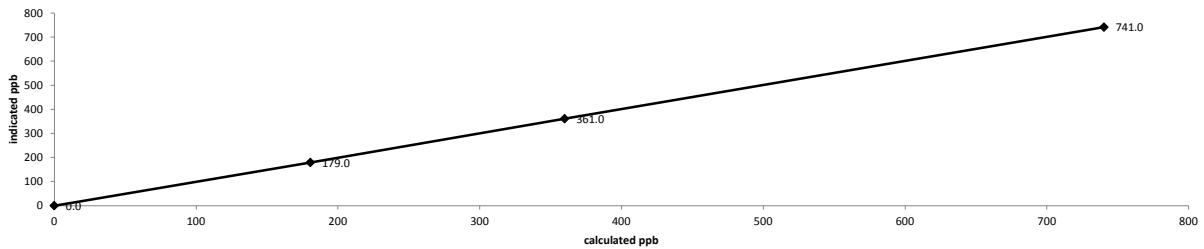
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Point	Calibrator Flow Rates (cc/min)			Total	Calculated Concentration (ppb):	Indicated Concentration (ppb):	Correction Factors (C.F.):
	Diluent	Cal Gas					
as found zero	5207	0.00		5207	0.0	2.0	n/a
as found high	5257	78.06		5335	740.4	740.0	1.003
adjusted zero	5207	0.00		5207	0.0	0.0	n/a
adjusted high	5257	78.06		5335	740.4	741.0	0.999
mid	5302	37.99		5340	360.0	361.0	0.997
low	5307	19.01		5326	180.6	179.0	1.009
calibrator zero	5207	0.00		5207	0.0	0.0	n/a
Average C.F. =							1.002

Linear Regression/Calibration Results:

	LIMITS
Correlation Coefficient =	1.000 > or = 0.995
Slope =	0.998 0.95-1.05
b (Intercept as % of full scale) =	0.06% ± 3% F.S.
% change in C.F. from last cal =	-0.32% ± 10%

API 100E Sulphur Dioxide Analyzer Calibration

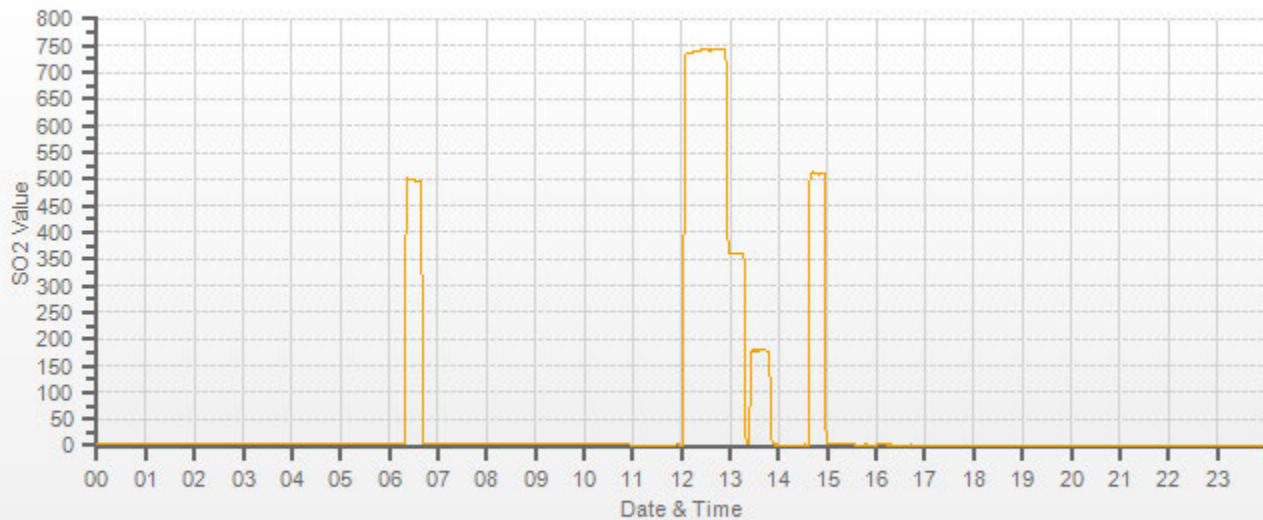


	As found:		As left:
Slope:	0.945	Slope:	0.946
Offset:	127.8	Offset:	132.8
Hvps:	651	Hvps:	651
Rcell Temp:	50.0	Rcell Temp:	50.0
Box Temp:	31.8	Box Temp:	36.5
Pmt Temp:	7.9	Pmt Temp:	7.9
Izs Temp:	45.0	Izs Temp:	45.0
Pres:	24.1	Pres:	24.1
Samp Fl:	610	Samp Fl:	602
Norm Pmt:	129.8	Norm Pmt:	131.3
Uv Lamp:	3011.0	Uv Lamp:	3003.8
Lamp Ratio:	95.7	Lamp Ratio:	95.5
Str Lgt:	60.4	Str Lgt:	62.8
Drk Pmt:	5.7	Drk Pmt:	6.7
Expected Value:	494.0	Expected Value:	509.0

Comments:

The analyzer sample inlet filter was changed.
 The manifold blower was found to be working normally.
 Flow measurements after mid-point.

SO2[ppb] Station: LICA ST. LINA Daily: 2017/08/09 Type: AVG 1 Min. [1 Min.]



— SO2[ppb]

HYDROGEN SULPHIDE



API 101E Hydrogen Sulphide Analyzer Calibration

Date: August 3, 2017	Barometer Data/B.P.: Fisher Scientific / ID# 05544 / Dec 05, 2016	933 mb
Company/Airshed: LICA	Thermometer Data/Station Temp °C: FLUKE 1551A / ID # 4295 / Nov 15, 2016	23* C
Location/Station Name: St. Lina	Weather Conditions: Mainly sunny	
Parameter: Hydrogen Sulphide	Calibration Purpose: as found	
Start Time 24 hr. (mst): 12:48	Performed By/Reviewer: Alex Yakupov	Tom Bourque
End Time 24 hr. (mst): 14:15	Cal Gas Expiry Date: June 14, 2019	
Calibration Method: Gas Dilution	Converter Model & s/n (if applicable):	n/a

Analyzer:		
ID# or Serial Number: 509	Range ppb: 100	
Last Calibration Date: July 18, 2017	As Found C.F.: 1.016	
Previous C.F.: 1.000	New C.F.: n/a	

Calibration Standards: Low Flow Meter ID/Cert. Date: Defender 530 /s.n. 152020 / Nov 21, 2016 High Flow Meter ID/Cert. Date: Defender 530 /s.n. 148943 / Nov 21, 2016 Calibrator ID/Cert. Date: Envionics 6100, #5212 / Feb 14, 2017 Cal Gas Cylinder I.D. #: EY 0000654 Cal Gas Conc. (ppm): 10.2	Standard Calibration Points for Ranges <table border="1" style="margin: auto;"> <tr><td>Point</td><td>ppb</td></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
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:	Indicated Concentration:	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total	(ppb)	(ppb)	
as found zero	8056	0.00	8056	0.0	0.0	n/a
as found high	8000	59.03	8059	74.7	73.5	1.016
Average C.F.=						n/a

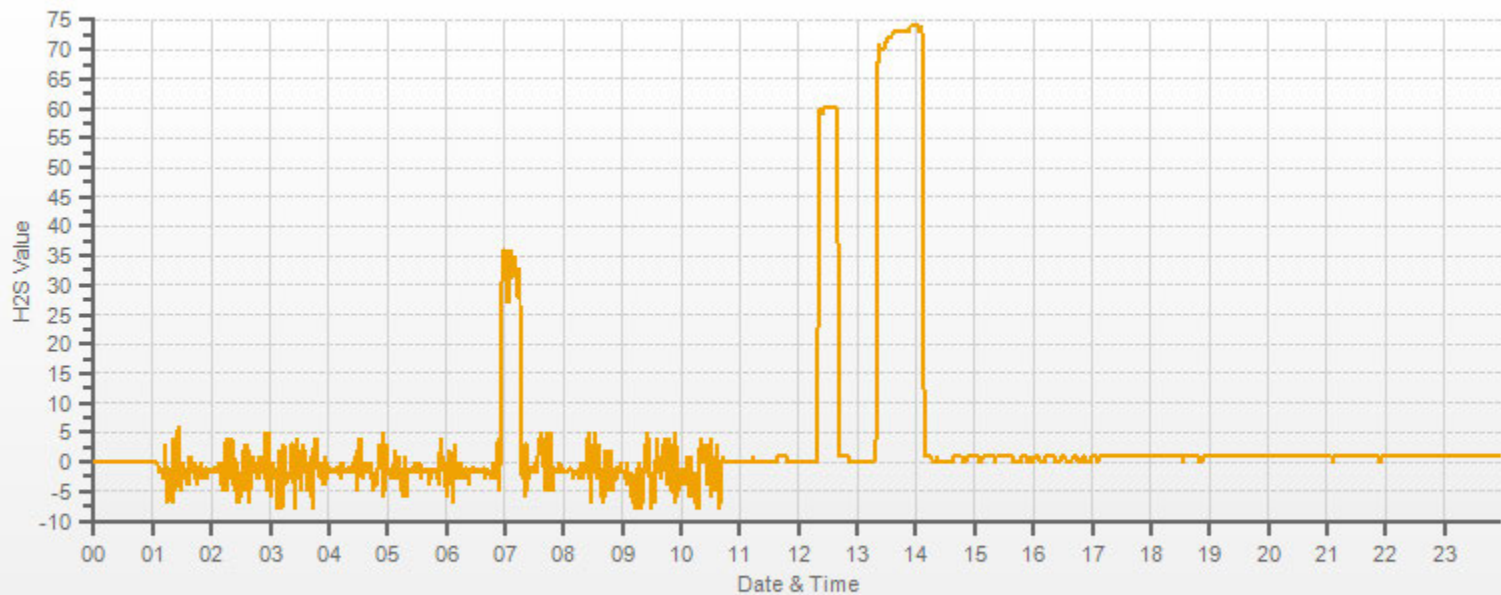
Linear Regression/Calibration Results: Correlation Coefficient = <u>n/a</u> Slope = <u>n/a</u> b (Intercept as % of full scale) = <u>n/a</u> % change in C.F. from last cal = <u>-1.65%</u>	LIMITS > or = 0.995 .95-1.05 ± 3% F.S. ± 10%
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As found: Slope: 0.873 Offset: 62.6 Hvps: 671 Rcell Temp: 50.0 Box Temp: 33.9 Pmt Temp: 7.9 Izs Temp: 48.0 Converter Temp: 315.7 Pres: 20.7 Samp Fl: 531 Uv Lamp: 3360.9 Lamp Ratio: 100.2 Str Lgt: 27.3 Drk Pmt: 0.6 Drk Lmp: 0.6 Expected Value: 58.3	As left: Slope: 0.873 Offset: 62.6 Hvps: 671 Rcell Temp: 50.0 Box Temp: 34.4 Pmt Temp: 8.0 Izs Temp: 48.0 Converter Temp: 314.4 Pres: 20.6 Samp Fl: 529 Uv Lamp: 3361.7 Lamp Ratio: 100.2 Str Lgt: 27.3 Drk Pmt: 0.6 Drk Lmp: 0.4 Expected Value: 58.3
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Comments: The SO2 scrubber check was not performed, see comments below.

No high point adjustment was required/made.
 No zero adjustment was required/made.

As Found calibration was completed because the analyzer started producing negative data. SO2 scrubber will be tested during a monthly calibration.



— H2S[ppb]



API 101E Hydrogen Sulphide Analyzer Calibration

Date: August 9, 2017	Barometer/B.P./units: F.S. 05544 expires December 5, 2018	940	millibars
Company/Airshed: LICA	Thermometer/Station Temp: Fluke 4295 expires November 14, 2017	23	°C
Location/Station Name: St. Lina	Weather Conditions: Mainly sunny		
Parameter: Hydrogen Sulphide	Calibration Purpose: routine monthly		
Start Time 24 hr. (mst): 10:30	Performed By/Reviewer: Alex Yakupov	Tom Bourque	
End Time 24 hr. (mst): 15:02	Cal Gas Expiry Date: June 14, 2019		
Calibration Method: Gas Dilution	Converter Model & s/n (if applicable):	n/a	

Analyzer:	Range ppb: 100
ID# or Serial Number: 509	As Found C.F.: 1.001
Last Calibration Date: July 18, 2017	New C.F.: 1.000
Previous C.F.: 1.000	

Calibration Standards:	Standard Calibration Points for Ranges																		
Low Flow Meter ID/Expiry Date: Defender Low 152020 expires November 21, 2017	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th>Point</th><th>ppb</th><th>11:25 / 11:35</th></tr> <tr><td>High</td><td>78</td><td>1000</td></tr> <tr><td>Mid</td><td>38</td><td>780</td></tr> <tr><td>Low</td><td>19</td><td>0.0</td></tr> <tr><td></td><td></td><td>0.0</td></tr> <tr><td></td><td></td><td>0.0</td></tr> </table>	Point	ppb	11:25 / 11:35	High	78	1000	Mid	38	780	Low	19	0.0			0.0			0.0
Point		ppb	11:25 / 11:35																
High		78	1000																
Mid		38	780																
Low		19	0.0																
		0.0																	
		0.0																	
High Flow Meter ID/Expiry Date: Defender High 148943 expires November 21, 2017																			
Calibrator ID/Expiry Date: Envionics id# 5212 expires February 14, 2018																			
Cal Gas Cylinder I.D. #: EY 0000654																			
Cal Gas Conc. (ppm): 10.2																			

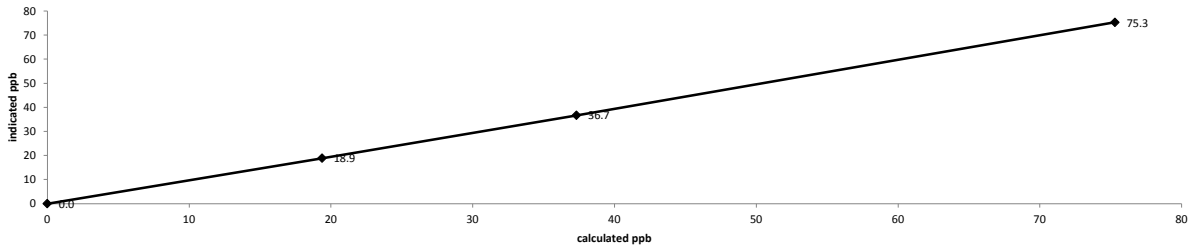
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated	Indicated Concentration (ppb):	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total	Concentration (ppb):		
as found zero	8063	0.00	8063	0.0	0.0	n/a
as found high	7985	59.39	8044	75.3	75.2	1.001
adjusted zero	8063	0.00	8063	0.0	0.0	n/a
adjusted high	7985	59.39	8044	75.3	75.3	1.000
mid	8013	29.43	8042	37.3	36.7	1.017
low	8018	15.26	8033	19.4	18.9	1.025
calibrator zero	8063	0.00	8063	0.0	0.0	n/a
Average C.F. =						1.014

Linear Regression/Calibration Results:

Correlation Coefficient =	1.000	> or = 0.995
Slope =	0.999	0.95-1.05
b (Intercept as % of full scale) =	0.32%	± 3% F.S.
% change in C.F. from last cal =	-0.14%	± 10%

API 101E Hydrogen Sulphide Analyzer Calibration



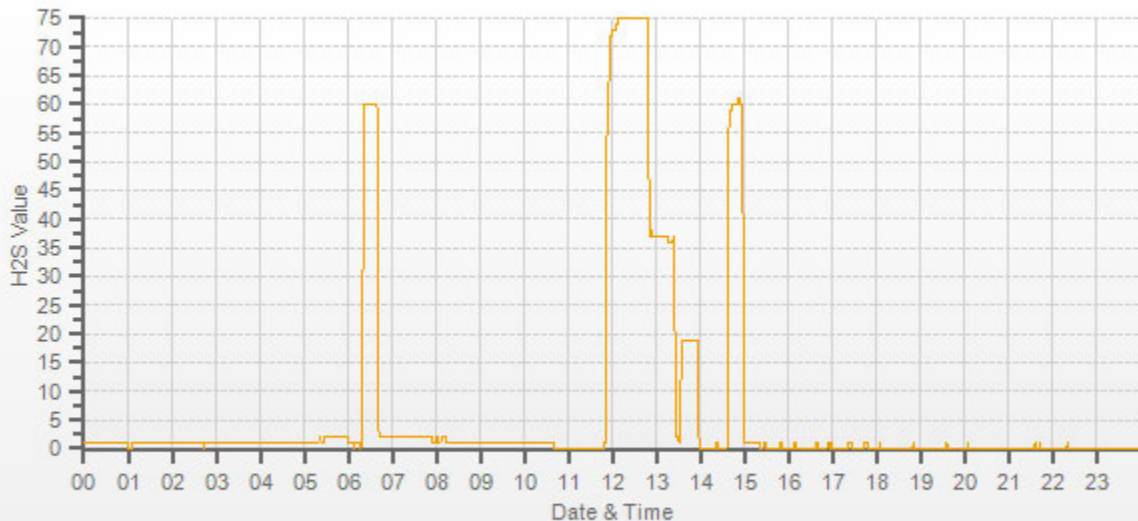
<p style="text-align: center;">As found:</p> Slope: 0.873 Offset: 62.2 Hvps: 671 Rcell Temp: 50.0 Box Temp: 33.1 Pmt Temp: 7.9 Izs Temp: 48.0 Converter Temp: 315.8 Pres: 20.7 Samp Fl: 532 Uv Lamp: 3369.6 Lamp Ratio: 100.5 Str Lgt: 27.3 Drk Pmt: 0.6 Expected Value: 58.3	<p style="text-align: center;">As left:</p> Slope: 0.875 Offset: 63.5 Hvps: 671 Rcell Temp: 50.0 Box Temp: 37.4 Pmt Temp: 8.0 Izs Temp: 48.0 Converter Temp: 314.9 Pres: 20.6 Samp Fl: 527 Uv Lamp: 3354.0 Lamp Ratio: 100 Str Lgt: 27.8 Drk Pmt: 0.7 Expected Value: 60.4
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Comments:

The analyzer sample inlet filter was changed.

The manifold blower was found to be working normally.

Flow measurements after mid-point.



— H2S[ppb]

TOTAL HYDROCARBON



Thermo 51C Total Hydrocarbon THC Analyzer Calibration

Date:	August 10, 2017	Barometer/B.P./units:	F.S. 05544 expires December 5, 2018	939	millibars
Company/Airshed:	LCA	Thermometer/Station Temp:	Fluke 4295 expires November 14, 2017	23	°C
Location/Station Name:	St. Lina	Weather Conditions:	Mainly sunny		
Parameter:	Total Hydrocarbon	Calibration Purpose:	routine monthly		
Start/End Time 24 hr. (mst):	10:27 / 14:31	Performed By/Reviewer:	Alex Yakupov	Tom Bourque	
Calibration Method:	Gas Dilution	Cal Gas Expiry Date:	November 25, 2023		

Analyzer:	ID# or Serial Number:	51CLT-77021-384	Range ppm:	50
	Last Calibration Date:	July 19, 2017	As Found C.F.:	0.966
	Previous Cal High Point C.F.:	0.999	New C.F.:	0.999

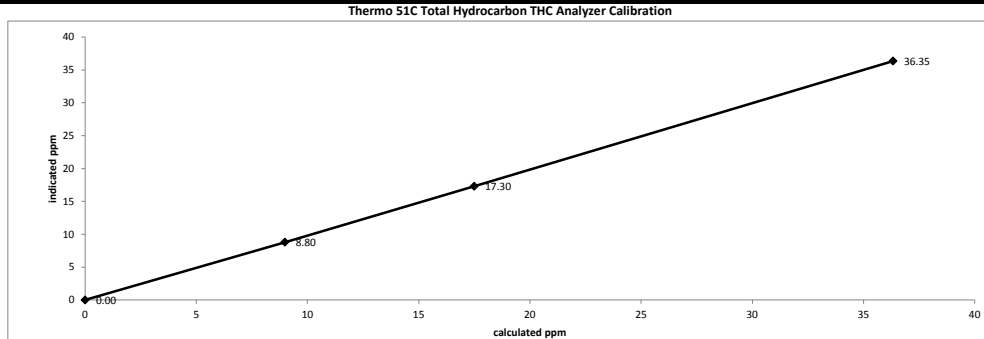
Calibration Standards:		Standard Calibration Points for a Range of:	50 ppm							
Low Flow Meter ID/Expiry Date:	Defender Low 152020 expires November 21, 2017	<table border="1"> <thead> <tr> <th>Point</th> <th>Target ppm</th> </tr> </thead> <tbody> <tr> <td>High</td> <td>38</td> </tr> <tr> <td>Mid</td> <td>18</td> </tr> <tr> <td>Low</td> <td>9</td> </tr> </tbody> </table>	Point	Target ppm	High	38	Mid	18	Low	9
Point	Target ppm									
High	38									
Mid	18									
Low	9									
High Flow Meter ID/Expiry Date:	Defender High 148943 expires November 21, 2017									
Calibrator ID/Expiry Date:	Environics id# 5212 expires February 14, 2018									
Cal Gas Cylinder I.D. #:	LL165372									
CH ₄ /C ₂ H ₆ Cylinder Conc. (ppm):	606.0 212.0									
CH ₄ as propane/total CH ₄ equivalents (ppm):	583.0 1189.0									

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

Point	Calibrator Flow Rates (cc/min)			Calculated Concentration: (ppm)	Indicated Concentration: (ppm)	Correction Factors:
	Diluent	Cal Gas	Total			
as found zero	2689	0.00	2689	0.0	0.20	n/a
as found high	2607	82.16	2689	36.33	37.80	0.966
adjusted zero	2689	0.00	2689	0.00	0.00	n/a
adjusted high	2607	82.16	2689	36.33	36.35	0.999
mid	2649	39.56	2689	17.49	17.30	1.011
low	2664	20.28	2684	8.98	8.80	1.021
calibrator zero	2689	0.00	2689	0.0	0.00	n/a
Average C.F. =						1.010

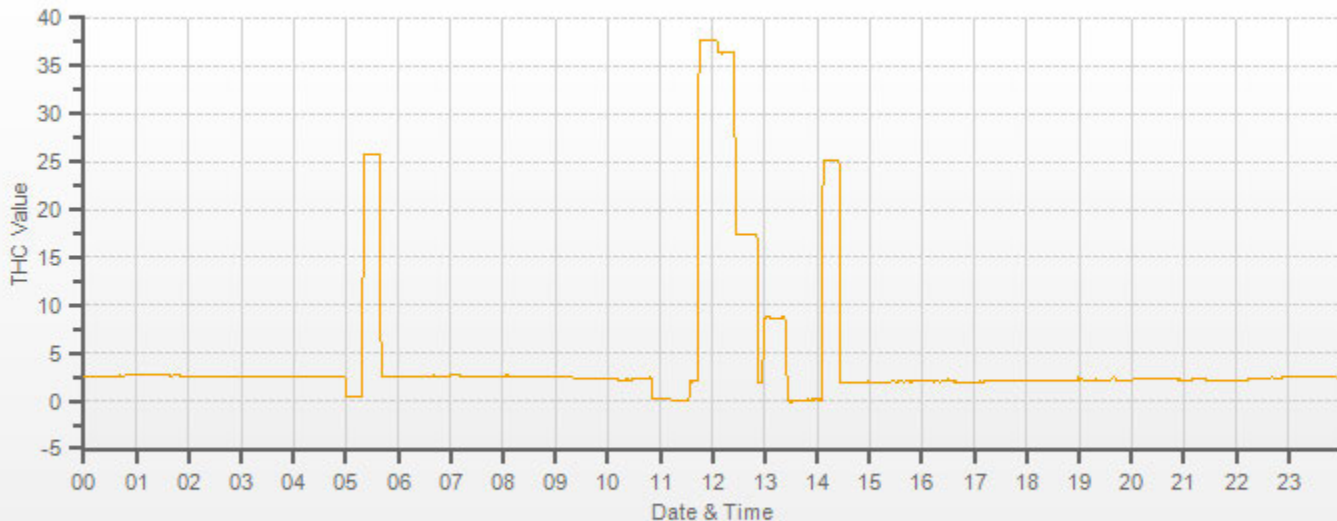
Linear Regression/Calibration Results:

Correlation Coefficient =	1.000	LIMITS	> or = 0.995
Slope =	0.998		0.95-1.05
b (Intercept as % of full scale) =	0.24%		± 3% F.S.
% change in C.F. from last cal =	3.28%		± 10%



As found:		As left:	
H2 cylinder (psi):	50	H2 cylinder (psi):	2000
H2 cylinder reg set (psi):	22	H2 cylinder reg set (psi):	22
Span Cylinder (psi):	600	Span Cylinder (psi):	600
Span Cylinder Reg Set (psi):	22	Span Cylinder Reg Set (psi):	22
Zero Air Gen Pressure:	45	Zero Air Gen Pressure:	45
measurement alarms:	None	measurement alarms:	None
service alarms:	None	service alarms:	None
cnt:	1925	cnt:	1818
rng:	1	rng:	1
try:	1	try:	1
flm:	192.1	flm:	189.7
det:	125.5	det:	125.3
Flame:	192	Flame:	189
Filter:	125	Filter:	125
Base:	125	Base:	125
Sample psi:	06.91	Sample psi:	06.91
Internal Air Pressure:	20	Internal Air Pressure:	20
Internal Fuel Pressure:	13	Internal Fuel Pressure:	13
Measured Flow:	1.052	Measured Flow:	n/a
Expected Value:	25.90	Expected Value:	25.10

Comments:
 The analyzer sample inlet filter was changed.
 A new hydrogen cylinder was installed.
 The analyzer cooling fan filter(s) were cleaned.
 The manifold blower was found to be working normally.
 Flow measurements after mid-point.



— THC[ppm]



Thermo 51C Total Hydrocarbon THC Analyzer Calibration

Date:	August 15, 2017	Barometer/B.P./units:	F.S. 05544 expires December 5, 2018	924	millibars
Company/Airshed:	LICA	Thermometer/Station Temp:	Fluke 4295 expires November 14, 2017	22	°C
Location/Station Name:	St. Lina	Weather Conditions:	A few clouds		
Parameter:	Total Hydrocarbon	Calibration Purpose:	as found		
Start/End Time 24 hr. (mst):	11:25 / 13:15	Performed By/Reviewer:	Alex Yakupov	Tom Bourque	
Calibration Method:	Gas Dilution	Cal Gas Expiry Date:	November 25, 2023		

Analyzer:	
ID# or Serial Number:	51CLT-77021-384
Range ppm:	50
Last Calibration Date:	August 10, 2017
As Found C.F.:	1.018
Previous Cal High Point C.F.:	0.999
New C.F.:	n/a

Calibration Standards:	
Low Flow Meter ID/Expiry Date:	Defender Low 152020 expires November 21, 2017
High Flow Meter ID/Expiry Date:	Defender High 148943 expires November 21, 2017
Calibrator ID/Expiry Date:	Envionics id# 5212 expires February 14, 2018
Cal Gas Cylinder I.D. #:	LL165372
CH ₄ /C ₃ H ₈ Cylinder Conc. (ppm):	606.0 212.0
CH ₄ as propane/total CH ₄ equivalents (ppm):	583.0 1189.0

Standard Calibration Points for a Range of: 50 ppm	
Point	Target ppm
High	38
Mid	18
Low	9

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

Calibrator Flow Rates (cc/min)				Calculated Concentration:	Indicated Concentration:	Correction Factors:
Point	Diluent	Cal Gas	Total	(ppm)	(ppm)	
as found zero	2692	0.00	2692	0.0	0.10	n/a
as found high	2610	82.26	2692	36.33	35.80	1.018
Average C.F. =						n/a

Linear Regression/Calibration Results:

<p>Correlation Coefficient = <u> n/a </u></p> <p>Slope = <u> n/a </u></p> <p>b (Intercept as % of full scale) = <u> n/a </u></p> <p>% change in C.F. from last cal = <u> n/a </u></p>	<p style="text-align: center;">LIMITS</p> <p>n/a</p> <p>n/a</p> <p>n/a</p> <p>n/a</p>
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<p style="text-align: center;">As found:</p> <p>H2 cylinder (psi): <u> 1900 </u></p> <p>H2 cylinder reg set (psi): <u> 24 </u></p> <p>Span Cylinder (psi): <u> 1600 </u></p> <p>Span Cylinder Reg Set (psi): <u> 22 </u></p> <p>Zero Air Gen Pressure: <u> 45 </u></p> <p>measurement alarms: <u> None </u></p> <p>service alarms: <u> None </u></p> <p>cnt: <u> 3081 </u></p> <p>rng: <u> 1 </u></p> <p>try: <u> 1 </u></p> <p>flm: <u> 192.0 </u></p> <p>det: <u> 125.8 </u></p> <p>Flame: <u> 190 </u></p> <p>Filter: <u> 125 </u></p> <p>Base: <u> 125 </u></p> <p>Sample psi: <u> 06.91 </u></p> <p>Internal Air Pressure: <u> 20 </u></p> <p>Internal Fuel Pressure: <u> 13 </u></p> <p>Measured Flow: <u> 1.035 </u></p> <p>Expected Value: <u> 25.10 </u></p>	<p style="text-align: center;">As left:</p> <p>H2 cylinder (psi): <u> n/a </u></p> <p>H2 cylinder reg set (psi): <u> n/a </u></p> <p>Span Cylinder (psi): <u> n/a </u></p> <p>Span Cylinder Reg Set (psi): <u> n/a </u></p> <p>Zero Air Gen Pressure: <u> n/a </u></p> <p>measurement alarms: <u> n/a </u></p> <p>service alarms: <u> n/a </u></p> <p>cnt: <u> n/a </u></p> <p>rng: <u> n/a </u></p> <p>try: <u> n/a </u></p> <p>flm: <u> n/a </u></p> <p>det: <u> n/a </u></p> <p>Flame: <u> n/a </u></p> <p>Filter: <u> n/a </u></p> <p>Base: <u> n/a </u></p> <p>Sample psi: <u> n/a </u></p> <p>Internal Air Pressure: <u> n/a </u></p> <p>Internal Fuel Pressure: <u> n/a </u></p> <p>Measured Flow: <u> n/a </u></p> <p>Expected Value: <u> n/a </u></p>
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Comments:

No zero adjustment was required/made.

No high point adjustment was required/made.

The manifold blower was found to be working normally.

The As Found calibration was completed because the 2nd span was 22.7/25.1 = -11.3%.



Thermo 51C Total Hydrocarbon THC Analyzer Calibration

Date:	August 15, 2017	Barometer/B.P./units:	F.S. 05544 expires December 5, 2018	924	millibars
Company/Airshed:	LCA	Thermometer/Station Temp:	Fluke 4295 expires November 14, 2017	23	°C
Location/Station Name:	St. Lina	Weather Conditions:	A few clouds		
Parameter:	Total Hydrocarbon	Calibration Purpose:	repeat		
Start/End Time 24 hr. (mst):	13:16 / 16:52	Performed By/Reviewer:	Alex Yakupov	Tom Bourque	
Calibration Method:	Gas Dilution	Cal Gas Expiry Date:	November 25, 2023		

Analyzer:	ID# or Serial Number:	51CLT-77021-384	Range ppm:	50
	Last Calibration Date:	August 10, 2017	As Found C.F.:	1.016
	Previous Cal High Point C.F.:	0.999	New C.F.:	0.999

Calibration Standards:	Low Flow Meter ID/Expiry Date:	Defender Low 152020 expires November 21, 2017	High Flow Meter ID/Expiry Date:	Defender High 148943 expires November 21, 2017
	Calibrator ID/Expiry Date:	Environics id# 5212 expires February 14, 2018	Cal Gas Cylinder I.D. #:	LL165372
	CH ₄ /C ₃ H ₈ Cylinder Conc. (ppm):	606.0	212.0	
	CH ₄ as propane/total CH ₄ equivalents (ppm):	583.0	1189.0	

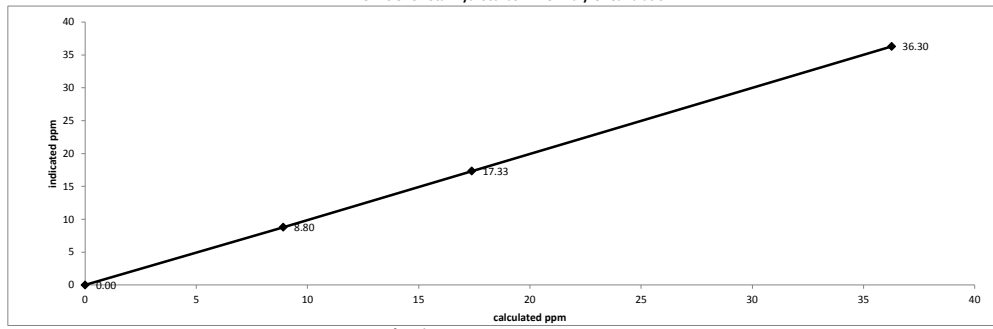
Standard Calibration Points for a Range of:		50 ppm
Point	Target ppm	
High	38	
Mid	18	
Low	9	

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

Point	Calibrator Flow Rates (cc/min)			Calculated Concentration: (ppm)	Indicated Concentration: (ppm)	Correction Factors:
	Diluent	Cal Gas	Total			
as found zero	2692	0.00	2692	0.0	0.10	n/a
as found high	2612	82.17	2694	36.27	35.80	1.016
adjusted zero	2692	0.00	2692	0.00	0.00	n/a
adjusted high	2612	82.17	2694	36.27	36.30	0.999
mid	2655	39.39	2694	17.38	17.33	1.003
low	2670	20.16	2690	8.91	8.80	1.013
calibrator zero	2692	0.00	2692	0.0	0.00	n/a
Average C.F. =						1.005

Linear Regression/Calibration Results:

Correlation Coefficient =	1.000	LIMITS	> or = 0.995
Slope =	0.998		0.95-1.05
b (Intercept as % of full scale) =	0.12%		± 3% F.S.
% change in C.F. from last cal =	-1.69%		± 10%

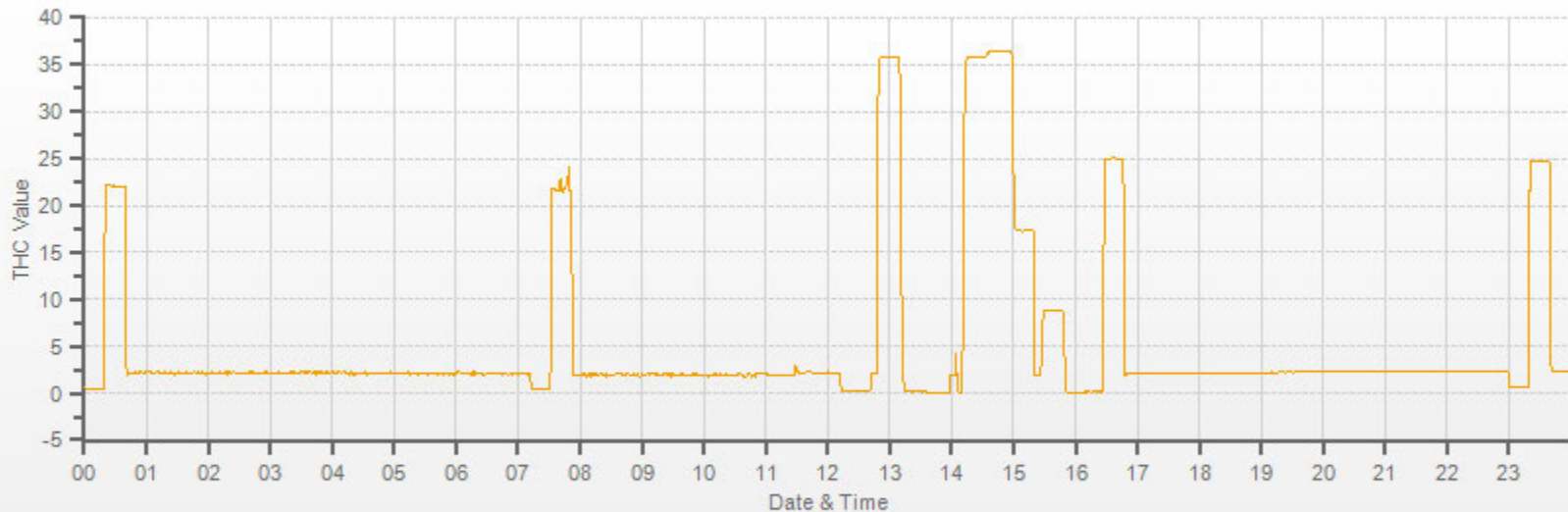


H2 cylinder (psi):	n/a	H2 cylinder (psi):	500
H2 cylinder reg set (psi):	n/a	H2 cylinder reg set (psi):	24
Span Cylinder (psi):	n/a	Span Cylinder (psi):	1600
Span Cylinder Reg Set (psi):	n/a	Span Cylinder Reg Set (psi):	25
Zero Air Gen Pressure:	n/a	Zero Air Gen Pressure:	45
measurement alarms:	n/a	measurement alarms:	None
service alarms:	n/a	service alarms:	None
cnt:	n/a	cnt:	1861
rng:	n/a	rng:	1
try:	n/a	try:	1
flm:	n/a	flm:	190.8
det:	n/a	det:	125.6
Flame:	n/a	Flame:	190
Filter:	n/a	Filter:	125
Base:	n/a	Base:	125
Sample psi:	n/a	Sample psi:	06.91
Internal Air Pressure:	n/a	Internal Air Pressure:	20
Internal Fuel Pressure:	n/a	Internal Fuel Pressure:	13
Measured Flow:	n/a	Measured Flow:	n/a
Expected Value:	n/a	Expected Value:	25.00

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

Flow measurements after mid-point.

The REPEAT calibration was completed to correct the EV. For As Found Diagnostic information consult the As found calibration.



— THC[ppm]

NITROGEN DIOXIDE



API 200E NO-NO2-NOx Analyzer Calibration

Date: August 9, 2017	Barometer/B.P./units: F.S. 05544 expires December 5, 2018	940	millibars
Company/Airshed: LICA	Thermometer/Station Temp: Fluke 4295 expires November 14, 2017	23	°C
Location/Station Name: St. Lina	Weather Conditions: Mainly sunny		
Start/End Time 24 hr. (mst): 10:30 / 18:15	Calibration Purpose: routine monthly		
G.P.T. to be used for Ozone? Yes with 1000 ppb NOx full scale	Performed By/Reviewer: Alex Yakupov	Tom Bourque	
Calibration Method: Gas Dilution & Gas Phase Titration	Cal Gas Expiry Date: July 18, 2019		

Analyzer:	Correction Factors:												
ID# or Serial Number: 594	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Previous C.F.:</td> <td style="width: 33%;">As Found C.F.:</td> <td style="width: 33%;">New C.F.:</td> </tr> <tr> <td>NO = 0.998</td> <td>1.004</td> <td>0.998</td> </tr> <tr> <td>NO₂ = 0.978</td> <td>0.976</td> <td>0.976</td> </tr> <tr> <td>NOx = 0.999</td> <td>0.998</td> <td>0.998</td> </tr> </table>	Previous C.F.:	As Found C.F.:	New C.F.:	NO = 0.998	1.004	0.998	NO ₂ = 0.978	0.976	0.976	NOx = 0.999	0.998	0.998
Previous C.F.:	As Found C.F.:	New C.F.:											
NO = 0.998	1.004	0.998											
NO ₂ = 0.978	0.976	0.976											
NOx = 0.999	0.998	0.998											
Last Calibration Date: July 18, 2017													
Range ppb: 1000													

Calibration Standards: Low Flow Meter ID/Expiry Date: Defender Low 152020 expires November 21, 2017 High Flow Meter ID/Expiry Date: Defender High 148943 expires November 21, 2017 Calibrator ID/Expiry Date: API id# 627 expires January 27, 2018 Cal Gas Cylinder I.D. #: LL 104222 Cal Gas Conc. (ppm): 50.7 50.7	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="4" style="text-align: center;">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> <tr> <td>High</td> <td>610</td> <td>375</td> <td><--high ozone</td> </tr> <tr> <td>Mid</td> <td>380</td> <td>190</td> <td><--mid ozone</td> </tr> <tr> <td>Low</td> <td>190</td> <td>70</td> <td><--low ozone</td> </tr> <tr> <td>Extra Point #1</td> <td>n/a</td> <td>n/a</td> <td>n/a</td> </tr> <tr> <td>Extra Point #2</td> <td>n/a</td> <td>n/a</td> <td>n/a</td> </tr> </table>	Standard Calibration Points for a Range of: 1000 ppb				Point	Target NO (ppb)	Target NO ₂ (ppb)	Cc Ozone ?	High	610	375	<--high ozone	Mid	380	190	<--mid ozone	Low	190	70	<--low ozone	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	610	375	<--high ozone																										
Mid	380	190	<--mid ozone																										
Low	190	70	<--low ozone																										
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	5207	0.0	5207	0	0	1.0	1.0	n/a	n/a
as found high	5257	78.1	5335	741.8	741.8	740.0	744.0	1.004	0.998
adjusted zero	5207	0.00	5207	0.0	0.0	0.0	0.0	n/a	n/a
adjusted high	5257	78.06	5335	741.8	741.8	743.0	743.0	0.998	0.998
mid	5302	37.99	5340	360.7	360.7	362.0	361.0	0.996	0.999
low	5310	19.01	5329	180.9	180.9	180.0	180.0	1.005	1.005
calibrator zero	5207	0.00	5207	0	0	0.0	0.0	n/a	n/a
Average C.F.=								1.000	1.001

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

Calibrator Flow Rates (cc/min)				Calibrator Setting	Indicated NO	Indicated NOx	Indicated NO 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	5257	78.06	5335	0.0	746.0	745.0	0.0	0.0	0.0	
as found high NO2	5257	78.06	5335	530.0	260.0	758.0	498.0	486.0	498.0	0.976
adjusted high NO2	5257	78.06	5335	530.0	260.0	758.0	498.0	486.0	498.0	0.976
gpt mid	5257	78.06	5335	280.0	488.0	751.0	264.0	258.0	264.0	0.977
gpt low	5257	78.06	5335	100.0	660.0	747.0	88.0	86.0	88.0	0.977
Average NO ₂ C.F.=										0.977

Linear Regression/Calibration Results:				
	NO	NOx	NO ₂	
Correlation Coefficient =	1.000	1.000	1.000	LIMITS
Slope =	0.998	0.998	0.976	> or = 0.995
b (Intercept as % of full scale)=	-0.03%	-0.05%	-0.01%	0.95-1.05
% change in C.F. from last cal=	-0.58%	0.06%	0.21%	± 3% F.S.
NO2 converter efficiency	0.97			± 10%
				0.96 to 1.04

	As found:	As left:
NOx SLOPE:	0.937	0.933
NOx OFFS:	3.7	3.6
NO SLOPE:	0.934	0.936
NO OFFS:	0.2	1.6
SAMP FLW:	484	485
OZONE FL:	78	78
PMT:	15.8	20.0
NORM PMT:	13.3	0.4
AZERO:	16.7	18.4
HVPS:	767	767
RCCELL TEMP:	50.0	50.0
BOX TEMP:	32.9	38.1
PMT TEMP:	6.7	6.9
IZS TEMP:	40.0	45.0
MOLY TEMP:	314.9	316.1
RCEL:	5.6	5.6
SAMP:	26.8	26.8
Expected Value NO:	7	9
Expected Value NO2:	379	532
Expected Value NOx:	384	541

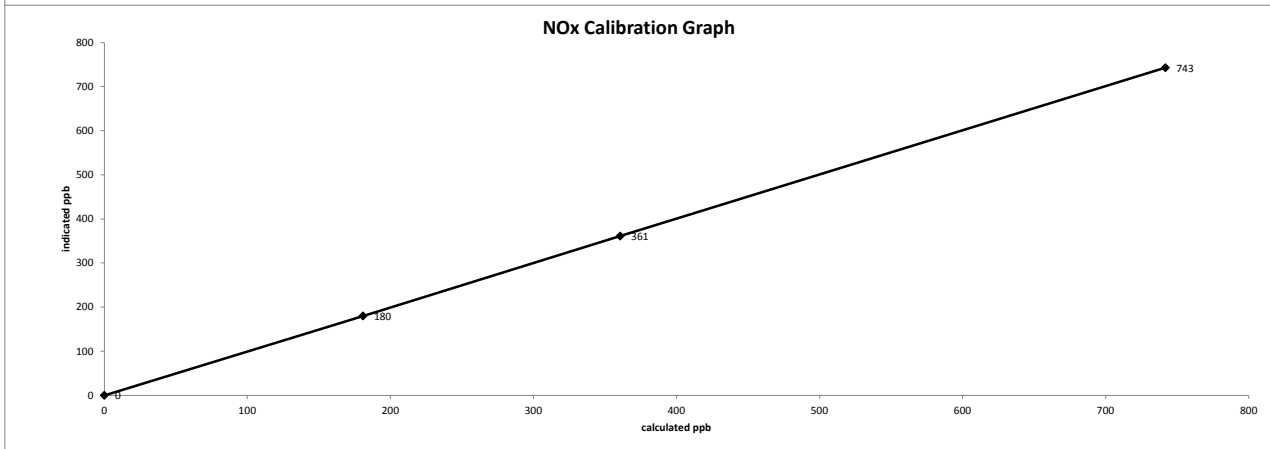
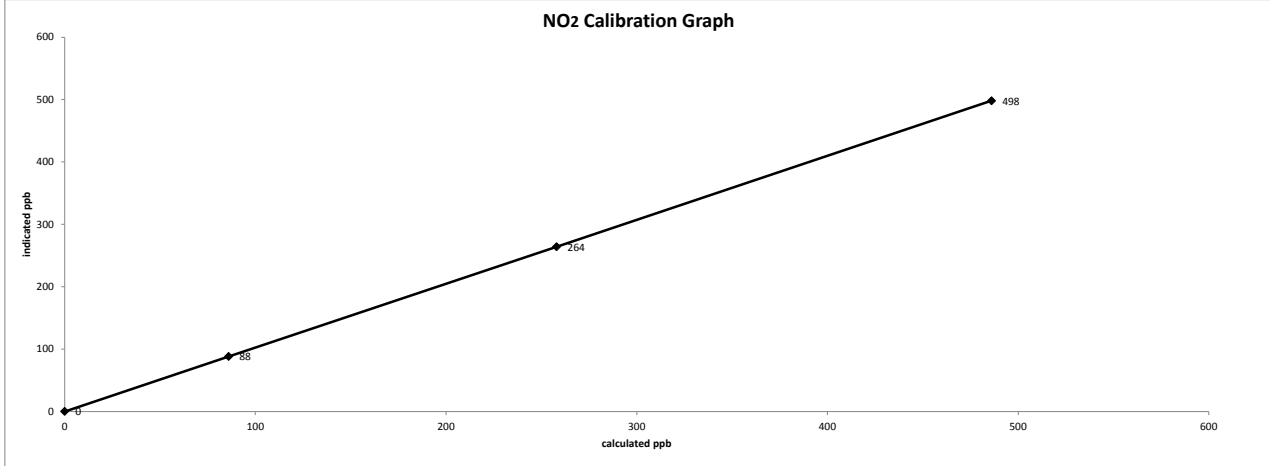
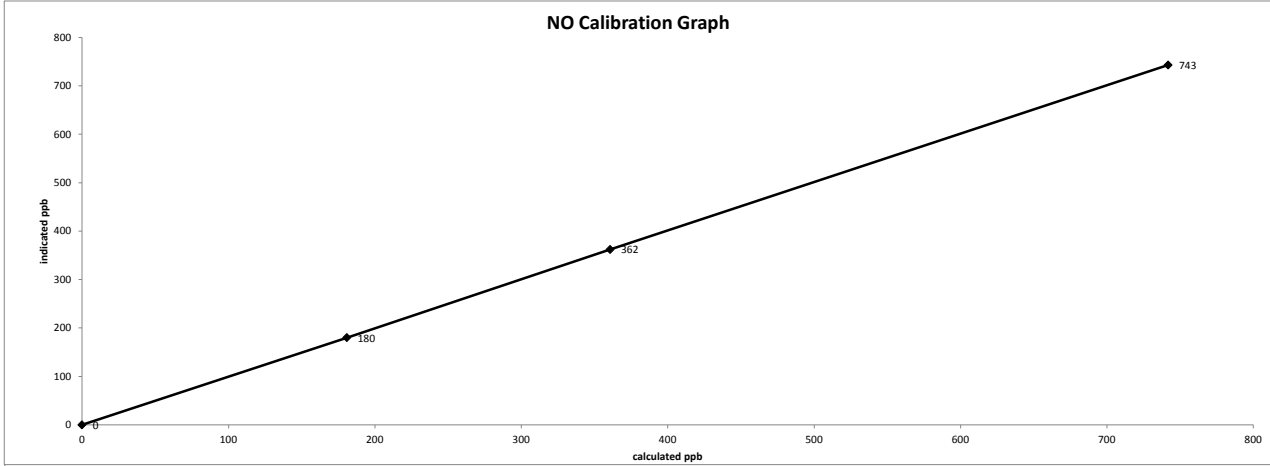
Comments:
 The analyzer sample inlet filter was changed.
 The manifold blower was found to be working normally.
 No high point NO2 adjustment was required/made.

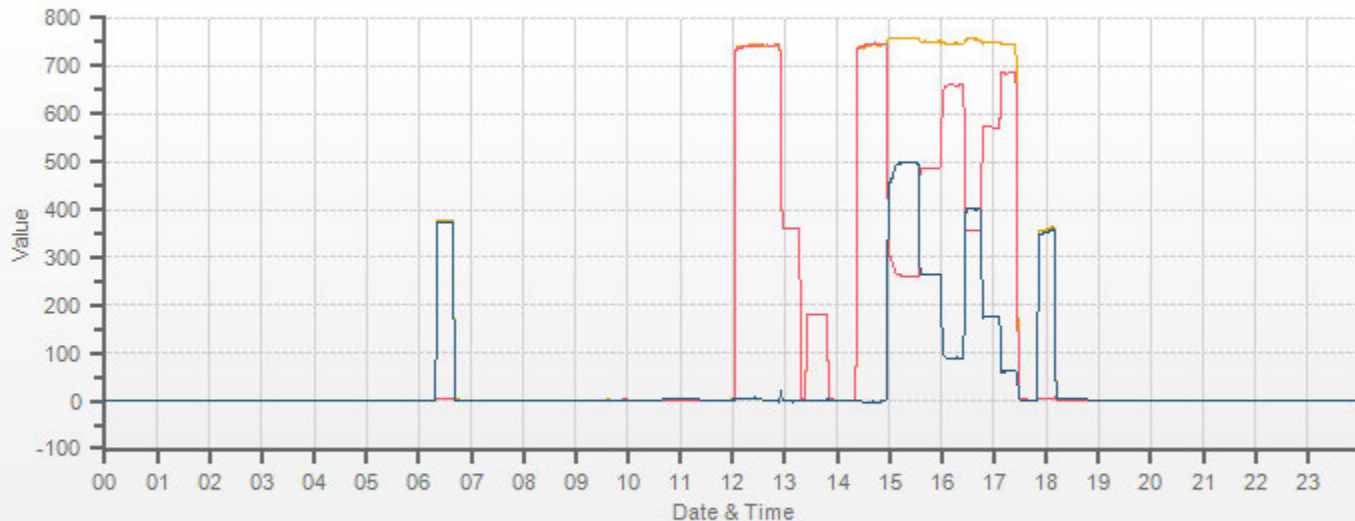
GPT for O3 three points: High O3= 418 , High NO drop= 390 ; Mid O3= 190, Mid NO drop= 175; Low O3=70 , Low NO drop= 61. IZS TEPM increased to 45 degrees.
 Flow measurements after mid-point.

Date: August 9, 2017
Company/Airshed: LICA
Location/Station Name: St. Lina

Start/End Time 24 hr. (mst): 10:30 / 18:15
Calibration Purpose: routine monthly
Calibration Method: Gas Dilution & Gas Phase Titration

API 200E NO-NO2-NOx Analyzer Calibration





— NOx[ppb] — NO[ppb] — NO2[ppb]

OZONE



Thermo 49i Ozone Analyzer Calibration

Date: August 10, 2017 Company/Airshed: LICA Location/Station Name: St. Lina Start/End Time 24 hr. (mst): 10:27 / 14:41 Ozone Calibration Method: Direct G.P.T. G.P.T. Date: August 9, 2017	Barometer/B.P./units: F.S. 05544 expires December 5, 2018 939 millibars Thermometer/Station Temp: Fluke 4295 expires November 14, 2017 23 °C Weather Conditions: Mainly sunny Calibration Purpose: routine monthly Performed By/Reviewer: Alex Yakupov Tom Bourque Cal Gas Expiry Date: July 18, 2019
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Analyzer: ID# or Serial Number: 1002240371 Last Calibration Date: July 19, 2017 Previous Cal High Point C.F.: 1.000	Ozone Range ppb: 500 As Found C.F.: 0.987 New C.F.: 1.000
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Calibration Standards: Low Flow Meter ID/Expiry Date: Defender Low 152020 expires November 21, 2017 High Flow Meter ID/Expiry Date: Defender High 148943 expires November 21, 2017 Calibrator ID/Expiry Date: API id# 627 expires January 27, 2018 Cal Gas Cylinder I.D. #: n/a	<table border="1" style="margin: auto;"> <thead> <tr> <th>Point</th> <th>AMD Required Range of Ozone Calibration Points</th> </tr> </thead> <tbody> <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>50-100 ppb</td> </tr> </tbody> </table>	Point	AMD Required Range of Ozone Calibration Points	High	300-400 ppb	Mid	150-200 ppb	Low	50-100 ppb
Point	AMD Required Range of Ozone Calibration Points								
High	300-400 ppb								
Mid	150-200 ppb								
Low	50-100 ppb								

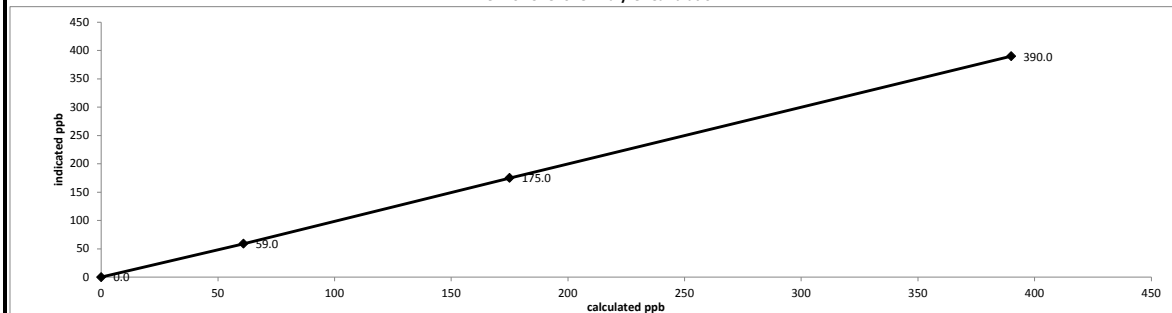
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

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	390.0	390.0	395.0	0.987
adjusted zero	5000	5000	0.0	0.0	0.0	n/a
adjusted high	5000	5000	390.0	390.0	390.0	1.000
mid	5000	5000	175.0	175.0	175.0	1.000
low	5000	5000	61.0	61.0	59.0	1.034
calibrator zero	5000	5000	0.0	n/a	0.0	n/a
Average C.F.=						1.011

Linear Regression/Calibration Results:

Correlation Coefficient = 1.000 Slope = 0.998 b (Intercept as % of full scale)= 0.17% % change in C.F. from last cal= 1.27%	LIMITS > or = 0.995 0.95-1.05 ± 3% F.S. ± 10%
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Thermo 49i Ozone Analyzer Calibration

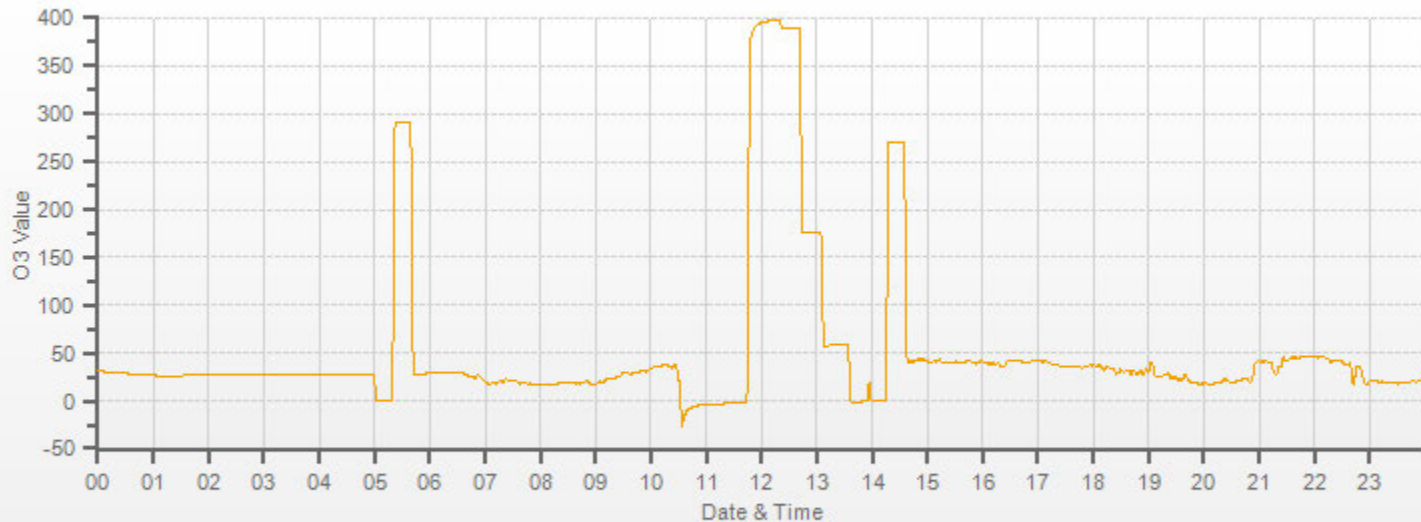


As found: O3 Bkg: -0.1 O3 Coef: 0.952 Photo Lamp: 10.7 O3 Lamp: 8.2 Bench: 30.0 Bench Lamp: 53.7 O3 Lamp: 67.8 Pressure: 684.1 Cell A lpm: 0.733 Cell B lpm: 0.784 O3 ppb: -4.3 Cell A ppb: -4.3 Cell B ppb: -4.3 Cell A int: 82549 Cell B int: 103396.0 Expected Value: 284.0	As left: O3 Bkg: -0.1 O3 Coef: 0.934 Photo Lamp: 10.7 O3 Lamp: 8.2 Bench: 34.4 Bench Lamp: 53.8 O3 Lamp: 67.9 Pressure: 683.5 Cell A lpm: 0.733 Cell B lpm: 0.785 O3 ppb: -0.5 Cell A ppb: -0.3 Cell B ppb: -0.6 Cell A int: 82400 Cell B int: 103243.0 Expected Value: 269.0
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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.

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 5030i SHARP Monitor Monthly Audit

Date: August 24, 2017
Company: LICA
Station Name/Location: St Lina
Previous Audit Date: July 26, 2017
Parameter: PM 2.5

Performed By/Reviewer: Alex Yakupov | Tom Bourque
Start Time (mst): 10:10
End Time (mst): 11:14
Calibration Purpose: monthly
Weather Conditions: A few clouds

SHARP 5030i Information and Status:

Serial Number: CM17091001 **Filter Tape Counter:** 2/5

Reference Standards:

Air Flow

	Manometer	Orifice	Pressure:	Temp / RH:
Make:	Dwyer	Chinook	Brunton	Fisher Scientific
Model:	475 Mk.III	CHN0901	ADC Pro	11-661-7A, 11745843
Serial Number:	#3	#2	05535	160459244
Calibration Date:	January 1, 2017	March 24, 2017	December 5, 2016	May 18, 2016

Ambient Temperature (°C)

	Reference	SHARP	Difference	Range
#1	17.70	16.8	0.9	< ± 2°C 2-3 °C > 3°C

Ambient Relative Humidity (%RH)

	Reference	SHARP	Difference	Range
As Found:				< ± 2 %RH 2-5 %RH > 5 %RH
#1	72.50	73.0	-0.5	

Barometric Pressure (mmHg)

	Reference	SHARP	Difference	Range
As Found:				< ± 10 mmHg 10-12 mmHg > 12 %RH
#1	693.9	693.5	0.4	

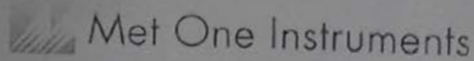
Flow Audit (L/min)

	Reference	SHARP	% Difference	Range
As Found:				< ± 4% 4-5% >5%
#1	16.85	16.76		
#2	16.87	16.63		
#3	16.81	16.35	-1.6	
Average	16.84	16.58		

Leak Check (L/min)

	Without Leak Check Adapter			With leak Check Adapter			
	Reference	SHARP	Difference	Reference	SHARP	Difference	
#1	16.84	16.73	0.11	16.82	16.83	-0.01	<i>Leak Limit: 0.8 L/min</i>
				LEAK RATE:		-0.12	

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

Performed by: Alex Yakupov
 Station: **St. Lina**
 Start: 10:58 End: 11:19

PRECIPITATION SENSOR CHECK

	YES	NO
Is the sensor Level?	YES	
Is the heater operating properly?	YES	
Are the bucket drain holes clean?	YES	
Is the inner screen on the housing? (screen should be on between July and September	YES	
Is the upper screen on the housing? (screen should be on between July and September)	YES	
Is the housing clean?	YES	
Is the area around the housing clean and free from obstacle?	YES	
Is the tipping sensor working properly? (test quantity 2.1 mm at 11:16-11:17)	YES	
	PASS	

Comments: Rain gauge was tested with water.
 Responce is timely and accurate. No issues.

Field Technician: Alex Yakupov August 09, 2017

CALIBRATORS

Company Maxxam/SIA Operator: Chris

Calibrator:		Flow Measurement Device:	
Make/Model	<u>API 700</u>	Make/Model	<u>Definer 530</u>
Serial Number	<u>627</u>	Serial Number	<u>H-148944, L-152019</u>
Last Verification Date	<u>February 3, 2016</u>	Temperature (°C)	<u>23.5</u>
NO Cylinder S/N	<u>EY0000597</u>	Barometric Pressure	<u>707.1 mmHg</u>
NO [PPM]	<u>49.0</u>	NOx [PPM]	<u>49.0</u>
Expiry Date	<u>December 8, 2019</u>		

Dilution Flow (sccm)		
Pt. #1	<u>4892</u>	Pt. #3 <u>4951</u>
Pt. #2	<u>4975</u>	
Gas Flow (sccm)		
Pt. #1	<u>79.7</u>	Pt. #3 <u>19.4</u>
Pt. #2	<u>38.8</u>	

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO ₂	NOx	NO	NOx
	0.0	0.0000	0.0000	0.0000	-0.0004	-0.0004	Limit ± 10%	
4972	79.7	0.7855	0.7855	0.7883	0.0004	0.7887	0.4%	0.5%
4936	38.8	0.3822	0.3822	0.3816	0.0005	0.3822	-0.2%	0.1%
4970	19.4	0.1913	0.1913	0.1902	0.0006	0.1913	-0.6%	0.2%
Absolute Average Percent Difference							0.1%	0.3%

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)= 1.0041	0.90-1.10	m (Slope)= 1.0046
b (Intercept % of FS)= -0.1118	± 3% F.S.	b (Intercept % of FS)= -0.0871

Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
4972	0	0.0000	0.7867	0.0014	0.7881	NO ₂	% Diff, Limit
4972	500	0.5127	0.2740	0.5104	0.7849	-0.7%	± 10%
4972	275	0.2863	0.5004	0.2860	0.7865	-0.6%	± 10%
4972	90	0.0940	0.6927	0.0954	0.7880	0.0%	± 10%
Absolute Average Percent Difference						0%	± 10%

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

NO ₂	LIMITS
Correlation= 1.0000	≥ 0.995
m (Slope)= 0.9924	0.90-1.10
b (Intercept % of FS)= 0.1755	± 3% F.S.

AENV Standards	NO _x Analyzer
Audit Calibrator	
Make/Model <u>Thermo 146i</u>	Make/Model <u>Thermo 42i</u>
Serial/AMU Number <u>AMU1809</u>	Serial/AMU Number <u>AMU 1868</u>
SRM Gas Cylinder No. <u>CAL018140</u>	Last Calibration Date <u>January 25, 2017</u>
Cylinder Conc. (ppm) <u>48.79</u>	Full Scale (ppm) <u>1.0</u>
	Cylinder Gas Expiry Date <u>March 25, 2019</u>

COMMENTS:

Auditor: Shea Beaton
Operator Signature: 

Date: January 27, 2017
Location: McIntyre Center Edmonton

Company Maxxam Operator: Mike

Calibrator:			Flow Measurement Device:		
Make/Model	<u>Envionics 6100</u>		Make/Model	<u>Bios Defender 530</u>	
Serial Number	<u>5212</u>		Serial Number	<u>Hi148944 Lo 152019</u>	
Last Verification Date	<u>February 3, 2016</u>		Temperature (°C)	<u>24.6</u>	
NO Cylinder S/N	<u>EY0000597</u>		Barometric Pressure	<u>701.4mmHg</u>	
NO [PPM]	<u>49.0</u>	NOx [PPM]	<u>49.0</u>		
Expiry Date	<u>December 8, 2019</u>				

Dilution Flow (sccm)					
Pt. #1	<u>4919</u>	Pt. #2	<u>4934</u>	Pt. #3	<u>4960</u>
Gas Flow (sccm)					
Pt. #1	<u>79.2</u>	Pt. #2	<u>38.3</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
4987	0.0	0.0000	0.0000	0.0000	0.0002	0.0002	Limit ± 10%	
4998	79.2	0.7765	0.7765	0.7801	-0.0003	0.7798	0%	0%
4977	38.3	0.3775	0.3775	0.3790	0.0000	0.3790	0%	0%
4979	19.1	0.1880	0.1880	0.1888	-0.0001	0.1887	0%	0%
Absolute Average Percent Difference							0%	0%

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)=	1.0046	0.90-1.10		m (Slope)=	1.0041
b (Intercept % of FS)=	-0.0080	± 3% F.S.		b (Intercept % of FS)=	0.0057

Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOx	% Diff. Vs Audit gas	
4998	0.000	0.0000	0.7799	-0.0008	0.7790	NO ₂	% Diff. Limit
4998	0.500	0.4949	0.2850	0.4909	0.7776	-1%	± 10%
4998	0.275	0.2765	0.5034	0.2742	0.7776	-1%	± 10%
4998	0.100	0.1003	0.6796	0.0989	0.7786	-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)=	0.9936	0.90-1.10	
b (Intercept % of FS)=	-0.0733	± 3% F.S.	

AENV Standards		NO_x Analyzer	
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>February 13, 2017</u>
SRM Gas Cylinder No.	<u>CAL018140</u>	Full Scale (ppm)	<u>1.0</u>
Cylinder Conc. (ppm)	<u>48.79</u>	Cylinder Gas Expiry Date	<u>March 28, 2019</u>

COMMENTS: Gas has ~50ppm SO2

Auditor: Shea Beaton
Operator Signature: [Signature]

Date: February 14, 2017
Location: McIntyre Center Edmonton

CALIBRATION GASES



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2016-335CGA

Company: Maxxam **Operator's Name:** Russell Kirchner

Cylinder #: LL104222 Concentration PPM: 50.6 Tolerance(%) 1 Certified By: Praxair

Expiry Date: July 2019

Reference Calibrator and Gas:	Flow Measurement Device:
Make/Model: <u>R&R MFC 201</u>	Make/Model: <u>Bios DC2</u>
Serial Number: <u>AMU 1690</u>	Serial Number: <u>AMY 1659</u>
Last Verification Date: <u>October 19, 2016</u>	Temp. °C: <u>24.5 C</u>
Gas Type: <u>SO2</u> Conc. <u>98.07</u>	B.P. <u>706 mmhg</u>
Cylinder Number: <u>CA:016625</u>	
Expiry Date: <u>January 2019</u>	

Reference Analyzer:

Make/Model: Teco 43C Serial/AMU Number: 1623

Instrument Settings: Zero: 9.2 Span: 1.024 Range: 1.0

Last Calibration: Date: Oct 19/16 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	0.01662	60.183	50.0
4935	82.0	0.830	0.01662	60.183	50.0
4968	40.8	0.412	0.00821	121.765	50.2
4955	20.2	0.203	0.00408	245.297	49.8
Average Cylinder Concentration:					50.0

Previous Stated Concentration PPM: 50.6

Percent variance from Stated: 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: October 19, 2016

Location: McIntyre Center Edmonton



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2016-334CGA

Company: Maxxam **Operator's Name:** Russell Kirchner
Cylinder #: EY0000654 **Concentration PPM:** 10.2 **Tolerance(%)** 2 **Certified By:** Praxair
Expiry Date: June 2019

Reference Calibrator and Gas:	Flow Measurement Device:
Make/Model: <u>R&R MFC 201</u>	Make/Model: <u>Bios DC2</u>
Serial Number: <u>AMU 1690</u>	Serial Number: <u>AMU 1659</u>
Last Verification Date: <u>October 19, 2016</u>	Temp. °C: <u>24.0 C</u>
Gas Type: <u>H2S</u> Conc. <u>20.43</u>	B.P. <u>706 mmhg</u>
Cylinder Number: <u>CAL015584</u>	
Expiry Date: <u>January 2019</u>	

Reference Analyzer:
 Make/Model: Teco 450i Serial/AMU Number: 1980
 Instrument Settings: Zero: 16.6 Span: 1.231 Range: 0.1
 Last Calibration: Date: Oct 19/16 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	0.0000	0.00752	132.895	10.2
5050	38.0	0.0764	0.00752	132.895	10.2
5050	17.8	0.0355	0.00352	283.708	10.1
5023	9.1	0.0182	0.00181	551.978	10.0
Average Cylinder Concentration:					10.1

Previous Stated Concentration PPM: 10.2
 Percent variance from Stated: 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 Date: October 19, 2016
 Operator Signature: *Al Clark* Location: McIntyre Center Edmonton



Calibration Gas Audit

CH4 / C3H8 Cylinder Gas

File No. 2015-092CGA

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

Reference Calibrator and Gas:

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

Flow Measurement Device:

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

Reference Analyzer:

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

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

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

Cylinder gas tolerances based on CH4 only

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

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



Calibration Gas Audit

NO Cylinder Gas

File No. 2016-336CGA

Company: Maxxam **Operators name:** Russell Kirchner

Cylinder #: LL104222 Conc (PPM) 50.7/50.9 Tolerance (%) 1 Certified By: Praxair

Expiry Date: July 2019

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>October 19, 2019</u>			Temp. °C	<u>24.5 C</u>
Gas Type	<u>NO</u>	Conc.	<u>48.79</u>	B.P.	<u>706 mmhg</u>
Cylinder Number	<u>CAL018188</u>				
Expiry Date	<u>March 2019</u>				

Reference Analyzer:

Make/Model Teco 42i Serial/AMU Number: 1868

Instrument Settings Zero: 4.4 Span: 1.080 Range: 1.0

Last Calibration: Date: Oct 18/16 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				
4935	82.0	0.838	0.837	0.017	60.183	50.4	50.4
4968	40.8	0.417	0.417	0.008	121.765	50.8	50.8
4955	20.2	0.207	0.207	0.004	245.297	50.8	50.8
Average Cylinder Concentration:						50.7	50.6

<u>NO</u>	<u>NOx</u>
Previous Stated Concentration PPM: <u>50.7</u>	<u>50.9</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 Contains 50.6 ppm SO2.

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

Auditor: Al Clark Date: October 19, 2016

Operator Signature: *Al Clark* Location: McIntyre Center Edmonton

***APPENDIX III
REPORT CERTIFICATION FORM***

Report Certification Form

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

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

Maram ghaleb

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

04-10-2017

Report Issued Date (dd-mm-yyyy)

APPENDIX IV
DATA VALIDATION CERTIFICATION FORM



Validation Certificate Form

Client: <u>Lakeland Industry & Community Association</u>	Project #: <u>2833-2017-08-31-C</u>
Site: <u>St. Lina Continuous Monitoring Station</u>	Contact: <u>Mike Bisaga</u>

Level 0 Preliminary Verification	<u>Maram ghabeb</u>	Date <u>September 15,2017</u>
Level 1 Primary Validation	<u>Maram ghabeb</u>	Date <u>September 15,2017</u>
Level 2 Final Validation	<u>Maram ghabeb</u>	Date <u>September 28,2017</u>
Level 3 Independent Data Review	<u>Chui Smclair</u>	Date <u>September 29,2017</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.