

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

April 17, 2018

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

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

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

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

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

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

THC: The scheduled zero-span check did not properly execute on February 28 hour 07. The subsequent zero-span check was within acceptance limits. As a valid zero-span check was not recorded for February 28, a contravention was initially reported to the AEP under reference number 335556 on March 12. On April 9, the contravention was attempted to be retracted based on the *Air Monitoring Directive FAQs - Chapter 7: Ambient Calibration*. However, the AEP advised that they no longer can access it. A seven-day letter would be prepared and submitted.

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



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

the airdata warehouse to set up codes for some VOC/PAH species that are missing in the parameter list. The results for these data will be submitted once all needed codes are available.

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

Respectfully,

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

Michael Bisaga
Technical Program Manager
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
COLD LAKE SOUTH CONTINUOUS MONITORING STATION

JOB #: 2833-2018-02-1-C

February 2018

Prepared for:

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

5107 50 ST.

BONNYVILLE, ALBERTA

T9N 2J7

Attention: MIKE BISAGA

DATE: **March 29, 2018**

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

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

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

TRS: Five hours of downtime were incurred due to a repeat calibration that was performed on February 22. It was suspected that the calibration equipment used during the routine calibration might have been faulty. The results of the repeat calibration confirmed the validity of the routine calibration.

THC: One hour of downtime was incurred on February 2 due to an additional zero-span check performed as a quality check, following a replacement of the span gas cylinder.

On February 28, hour 07:00 the scheduled zero-span check did not properly execute, rendering the hour invalid. The subsequent zero-span check was within acceptance limits. A technician was dispatched on March 1 to investigate. The data logger was checked and no issues were identified. A valid zero-span check was not recorded for February 28. As per Maxxam protocol, a contravention was initially reported to the AEP under reference number 335556 on March 12. On request of the client, Maxxam contacted AEP on April 9, in attempt to retract the contravention based on the *Air Monitoring Directive FAQs - Chapter 7: Ambient Calibration*. However, the AEP advised that they no longer can access it. A seven-day letter will be prepared and submitted by LICA.

The summary of results is presented on the following pages.

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

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

Monthly Continuous Data Summary

Lakeland Industry & Community Association						MAXIMUM VALUES							OPERATIONAL TIME (%)
Cold Lake South Continuous Monitoring Station						1-HOUR					24-HOUR		
PARAMETER	OBJECTIVES		EXCEEDANCES		MONTHLY AVERAGE	READING	DAY	HOUR	WIND SPEED (kph)	WIND DIRECTION (sector)	READING	DAY	
	1-hr	24-hr	1-hr	24-hr									
SO ₂ (ppb)	172	48	0	0	0	3	2	6	5.6	NE	2	2	100.0
TRS (ppb)	-	-	-	-	0	1	2	8	6.5	NE	0	1	99.3
THC (ppm)	-	-	-	-	2.15	3.02	21	8	0.9	NNE	2.49	1	99.7
NO ₂ (ppb)	159	-	0	-	6	32	28	22	1.4	NE	14	1	100.0
NO (ppb)	-	-	-	-	1	29	12	12	1.0	ESE	2	1	100.0
NO _x (ppb)	-	-	-	-	6	58	12	7	1.0	ESE	17	1	100.0
O ₃ (ppb)	82	-	0	-	32.2	43.8	14	4	17.4	NE	40.0	17	100.0
PM _{2.5} (µg/m ³)	80	30	0	0	3	27	12	7	1.0	ESE	4	15	100.0
RELATIVE HUMIDITY (%)	-	-	-	-	66	95	14	2	10.3	NNE	72	22	100.0
AMBIENT TEMPERATURE (°C)	-	-	-	-	-15.4	3.2	27	14	13.6	SW	-1.7	13	100.0
VECTOR WS (kph)	-	-	-	-	3.9	18.4	14	3	-	NNE	9.6	17	100.0
VECTOR WD (sec)	-	-	-	-	265 (W)	-	-	-	-	-	-	-	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

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

PM_{2.5} 24-Hour Exceedances

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

O₃ 1-Hour Exceedances

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

In accordance with EPEA and the Substance Release Regulation.

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

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1.0 Discussion

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

The sample inlet filter for all continuous air analyzers are replaced before the calibration begins. The sample manifold is cleaned during the site visit each month.

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

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

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

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

The AMD requires each instrument and accompanying data recording system to be operational 90% of the time, at a minimum, for each monthly monitoring period.

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

Data contained in this monthly report has undergone 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 February 6.

TOTAL REDUCED SULPHUR (TRS)

- Operational time for the monitoring period was 99.3%, equivalent to 5 hours of downtime.
- The routine monthly calibration was performed on February 6.
- Using an alternate calibration equipment, a repeat calibration was conducted on February 22 as a precautionary measure to confirm the results of the routine monthly calibration. It was suspected that the calibration equipment used during the routine calibration might have been faulty. The success of the repeat calibration confirmed the validity of the routine calibration; however, five hours of downtime were incurred as a result of this additional quality check.

TOTAL HYDROCARBONS (THC)

- Operational time for the monitoring period was 99.7%, equivalent to two hours of downtime.
- One hour of down time was incurred due to an additional zero-span check performed on February 2 as a quality check, following a replacement of the span gas cylinder.
- The routine monthly calibration was performed on February 7.
- On February 28, hour 07:00 the scheduled zero-span check did not properly execute, rendering the hour invalid. The subsequent zero-span check was within acceptance limits. A technician was dispatched on March 1 to investigate. The data logger was checked and no issues were identified. A valid zero-span check was not recorded for February 28. As per Maxxam protocol, a contravention was initially reported to the AEP under reference number 335556 on March 12. On request of the client, Maxxam contacted AEP on April 9, in attempt to retract the incident reference number. However, the AEP advised that they no longer can access it and it is upon the client to submit a seven-day letter to update the AEP. The client cited the *Air Monitoring Directive FAQs - Chapter 7: Ambient Calibration* as a basis for the request to retract the contravention.
- The daily zero response data of February 27 was applied for baseline correction on data collected from February 28 hours 00:00 to 23:00. As both span responses recorded on February 27 and March 1 met AMD requirements, and the analyzer was operating within optimal specifications, no data was discarded.
- One instance of maximum instantaneous data was discarded due to a brief power outage on February 6 at hour 10:00.
- On February 25, at hour 07:00, one hour of maximum instantaneous data was invalidated as the analyzer yielded an off-scan error at 07:21.

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 February 6. The calibration took an extended period of time to complete as the Mid-Point C.F. was close to tolerance limit. The GPT was stopped at Mid-point (15:58) to check the calibration equipment. The GPT was restarted at 16:37. These activities did not result in any downtime and the calibration met AMD requirements.

OZONE (O₃)

- Operational time for the monitoring period was 100%.
- The routine monthly calibration was performed on February 7.
- One instance of maximum instantaneous data was discarded due to a brief power outage on February 6 at hour 10:00.

PARTICULATE MATTER < 2.5 MICRONS (PM_{2.5})

- Operational time for the monitoring period was 100%.
- The routine quarterly audit was performed on February 22.

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

- Operational time for the monitoring period was 100%.
- 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 and Lily Lin were the contacts for Lakeland Industry & Community Association and the Maxxam field technician was Alexander Yakupov.

3.0 Plant Monthly Required AMD Summary

All data collected this month, with the exception of a missed daily zero-span data on the THC channel, 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-00014: Measurement of Particulate Concentration Using the THERMO SHARP
Maxxam AIR SOP-00209: Ambient Sulphur Monitoring
Maxxam AIR SOP-00212: Ambient O₃ Monitoring
Maxxam AIR SOP-00213: Ambient NO/NO₂/NO_x Monitoring
Maxxam AIR SOP-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 SHARP 5030 Unit
Wind System - Met One Unit
Relative Humidity - Met One Unit
Ambient Temperature - Met One Unit
Datalogger - ESC 8832

AMD, Chapter 7, Cal 4-A requires that a daily zero-span test (IZS) is executed within each 23-25 hour cycle. If this does not occur then Maxxam Analytics will report this as a contravention to AEP. On February 28, hour 07:00 the scheduled IZS did not properly execute on the THC analyzer. The previous valid IZS was on February 27, hour 08:00 and the subsequent valid IZS was on March 1, hour 06:00. As there was a period of >25 hours without a valid IZS, the event was reported to AEP on March 12 under reference number 335556. On request of the client, Maxxam contacted AEP on April 9, to retract the incident reference number.

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

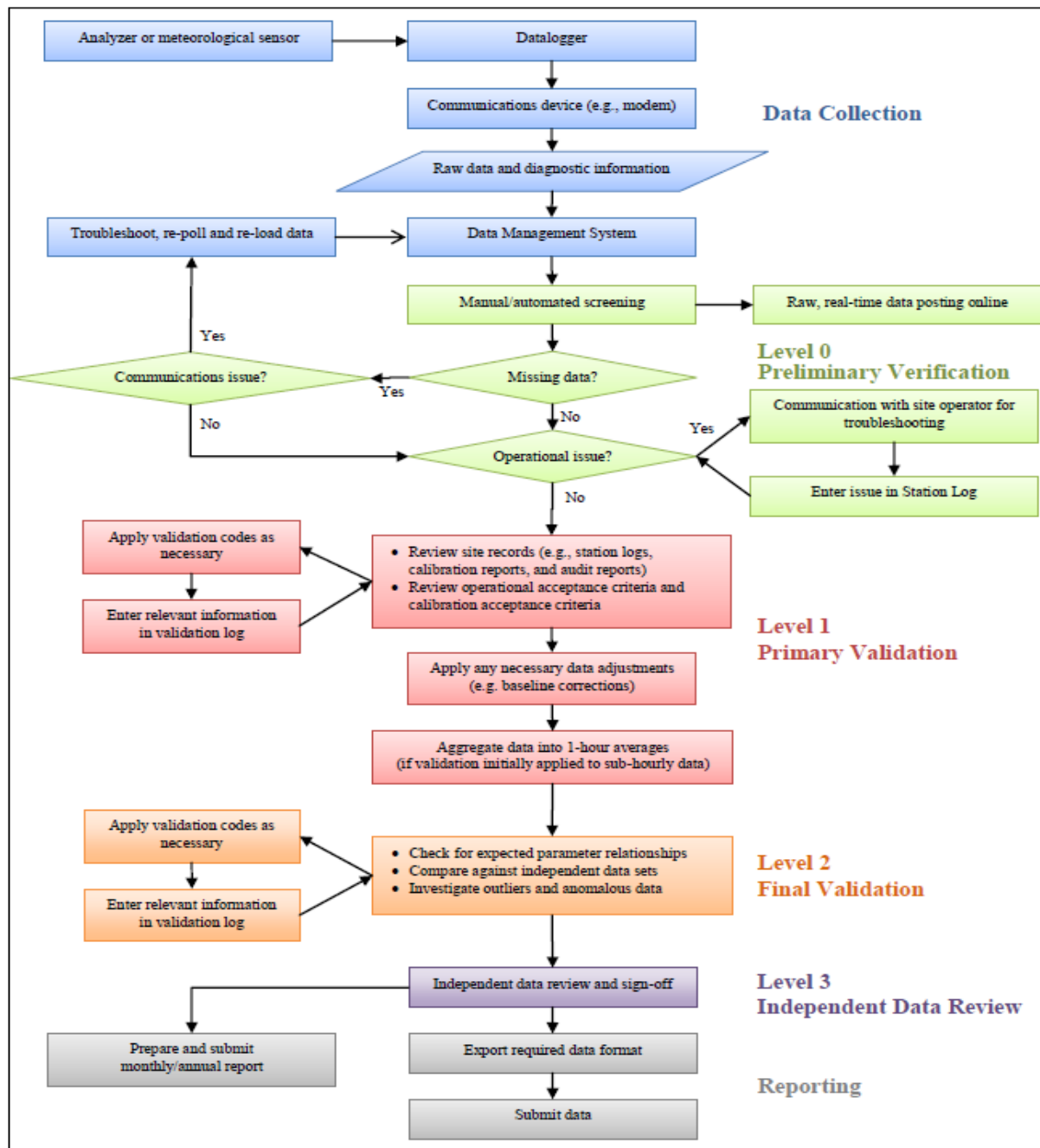
The purpose of Level 2 validation is to verify that there are no inconsistencies among related data, or among regional data measured at nearby sites.

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

STATUS FLAG CODES

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

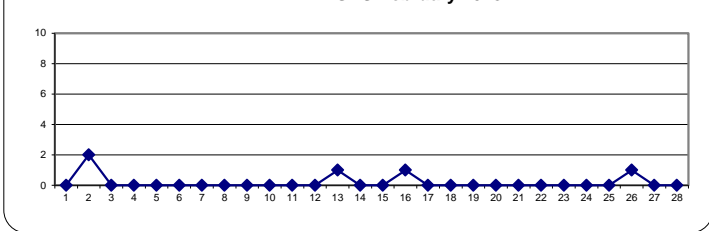
OBJECTIVE LIMIT:

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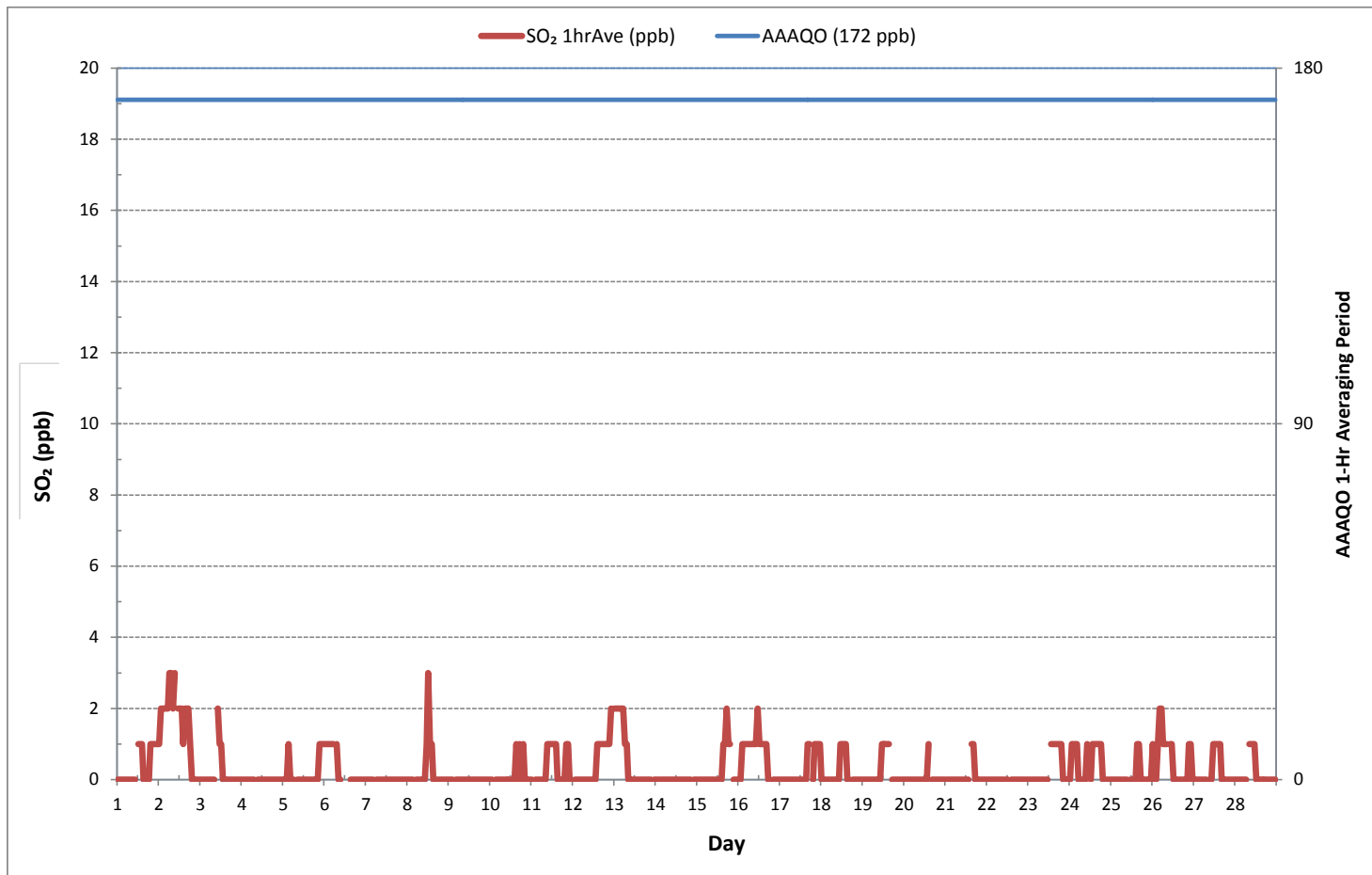
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0				
NUMBER OF 24-HR EXCEEDANCES:	0				
NUMBER OF NON-ZERO READINGS:	150				
MINIMUM 1-HR AVERAGE:	0 ppb @ HOUR	0	ON DAY	1	
MAXIMUM 1-HR AVERAGE:	3 ppb @ HOUR	6	ON DAY	2	
MAXIMUM 24-HR AVERAGE:	2 ppb		ON DAY	2	
IZS CALIBRATION TIME:	29	hrs	OPERATIONAL TIME:	672	hrs
MONTHLY CALIBRATION TIME:	5	hrs	AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	1		MONTHLY AVERAGE:	0	ppb

24 HR AVERAGES February 2018



SULPHUR DIOXIDE Hourly Averages (SO₂ ppb)



Wind: LICA COLD LAKE SOUTH
 Poll.: LICA COLD LAKE SOUTH-SO2[ppb]
 Monthly: 18/02
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

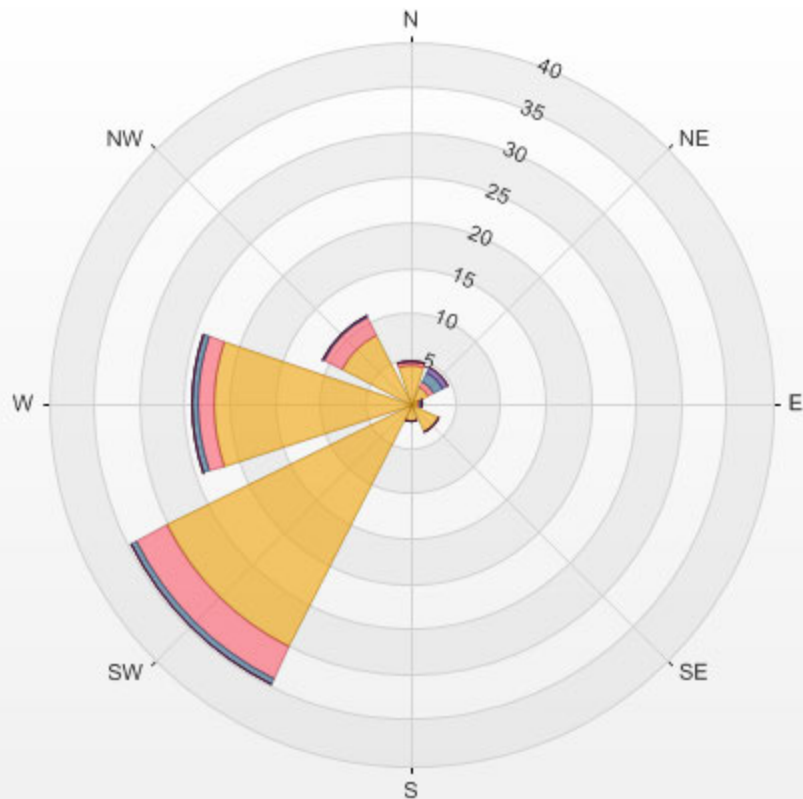
Calm: 13.79%

Calm Avg: 0.12 [ppb]

Direction	0.0-0.8	0.8-1.6	1.6-2.4	2.4-3.2	3.2-4.0	>4.0	Total
N	4.4	0.5	0.0	0.0	0.0	0.0	4.9
NE	2.2	0.6	1.1	0.6	0.0	0.0	4.6
E	0.9	0.2	0.3	0.0	0.0	0.0	1.4
SE	3.6	0.0	0.0	0.0	0.0	0.0	3.6
S	1.9	0.0	0.0	0.0	0.0	0.0	1.9
SW	30.1	3.9	0.6	0.0	0.0	0.0	34.6
W	21.8	1.7	0.6	0.2	0.0	0.0	24.3
NW	8.5	2.2	0.3	0.0	0.0	0.0	11.0
Summary	73.4	9.1	3.0	0.8	0.0	0.0	86.2

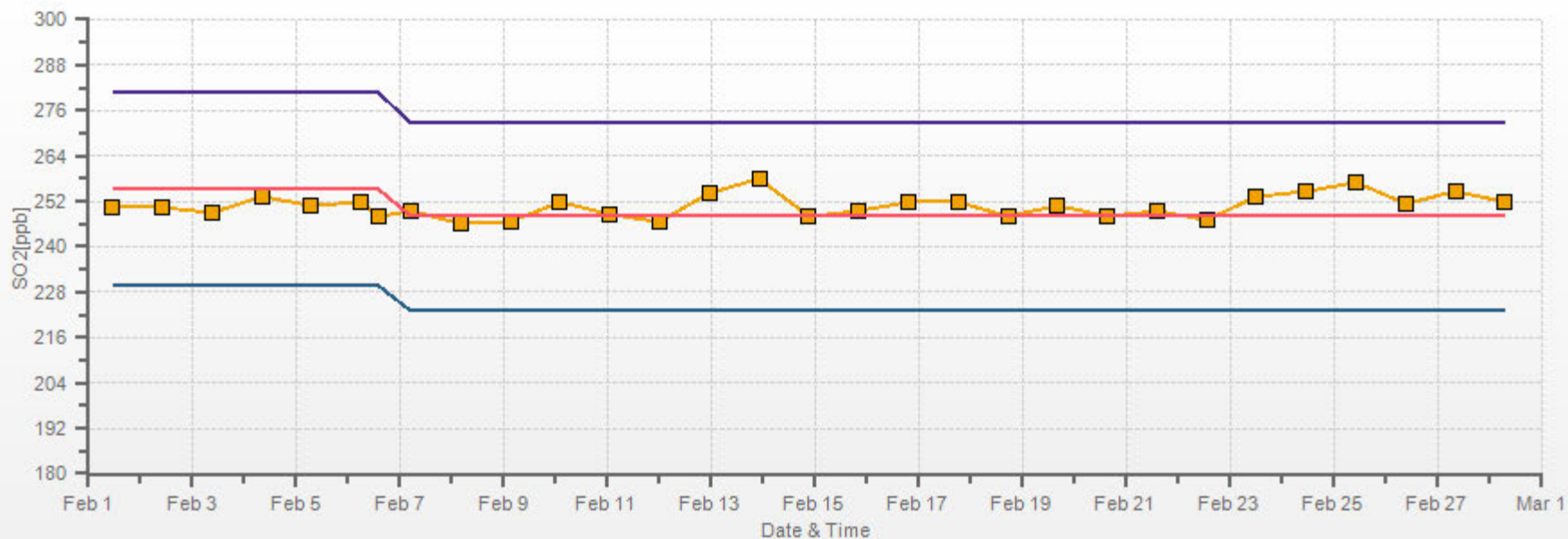
% Icon	Classes (ppb)	73	9	3	1	0	0
	0.0-0.8						
	0.8-1.6						
	1.6-2.4						
	2.4-3.2						
	3.2-4.0						
	>4.0						

LICA COLD LAKE SOUTH Poll.: LICA COLD LAKE SOUTH-SO2[ppb] 2018/02/01 00:00 - 2018/02/28 23:00 Calm: 13.79% Calm Poll Avg: 0.12[ppb]



SO2[ppb] Calibration: LICA COLD LAKE SOUTH Monthly: 18/02 Type: Span

Span Meas Span Ref Span Low Span High



TOTAL REDUCED SULPHUR



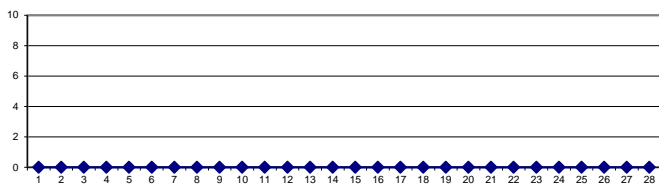
TOTAL REDUCED SULPHUR Hourly Averages (TRS ppb)

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	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	
2	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	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	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	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	0	0	24	
6	0	0	0	0	0	0	S	0	0	0	C	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	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	0	0	24	
9	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	
10	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	
11	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	
12	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	0	0	24	
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	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	0	0	24	
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	24	
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	24	
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	24	
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	24	
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	24	
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	
21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	
22	0	0	0	0	0	0	0	0	0	0	0	0	C1	C1	C1	C1	C1	0	0	0	0	0	0	0	0	0	0	0	0	0	19	
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	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	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	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	0	0	24	
27	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	24	
28	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	24	
HOURLY MAX	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	1	0					
HOURLY AVG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					

STATUS FLAG CODES

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

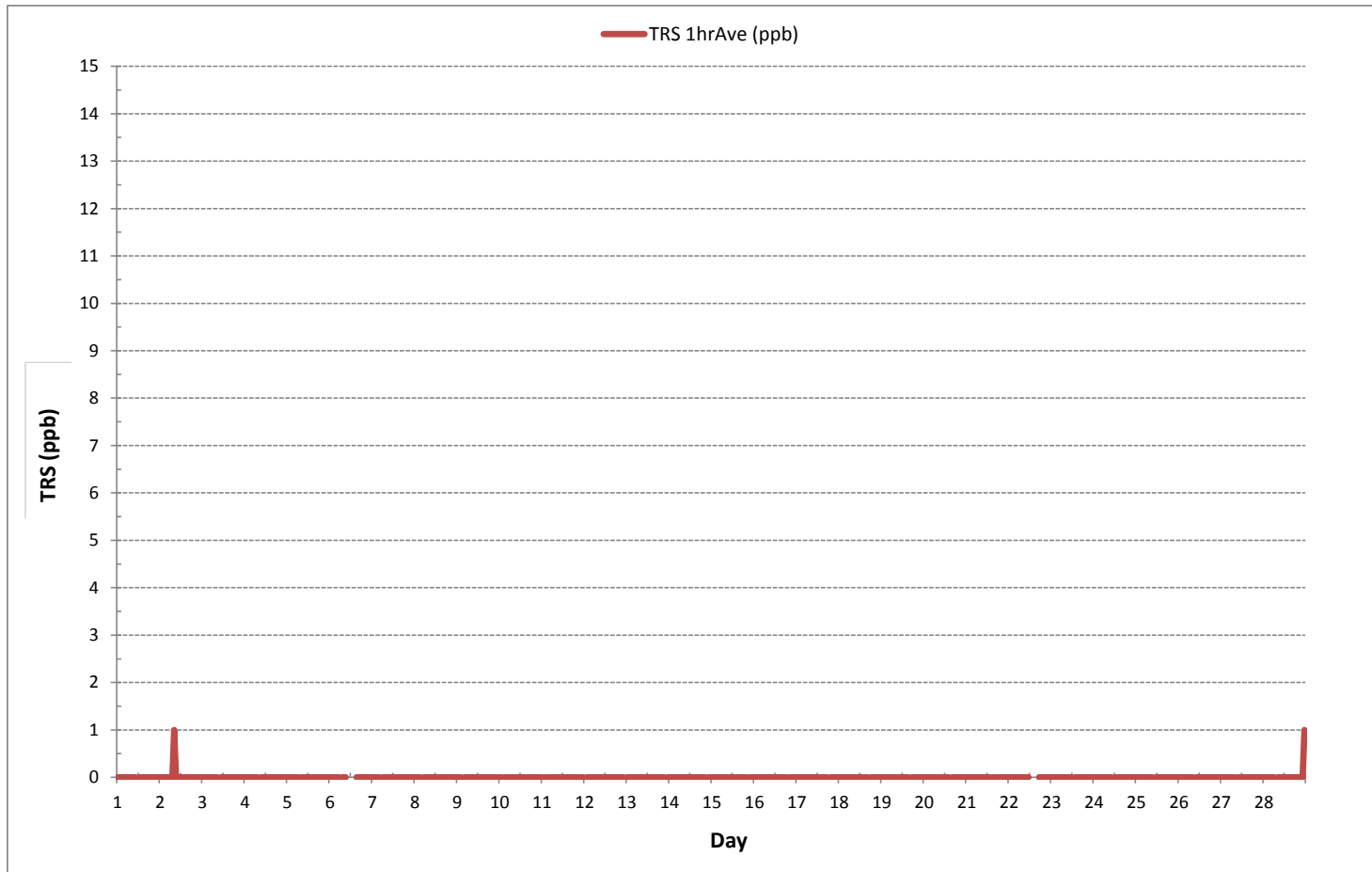
24 HR AVERAGES February 2018



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	2				
MINIMUM 1-HR AVERAGE:	0	ppb @ HOUR	0	ON DAY	1
MAXIMUM 1-HR AVERAGE:	1	ppb @ HOUR	8	ON DAY	2
MAXIMUM 24-HR AVERAGE:	0	ppb		ON DAY	1
IZS CALIBRATION TIME:	28	hrs	OPERATIONAL TIME:	667	hrs
MONTHLY CALIBRATION TIME:	5	hrs	AMD OPERATION UPTIME:	99.3	%
STANDARD DEVIATION:	0		MONTHLY AVERAGE:	0	ppb

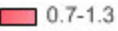
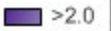
TOTAL REDUCED SULPHUR Hourly Averages (TRS ppb)



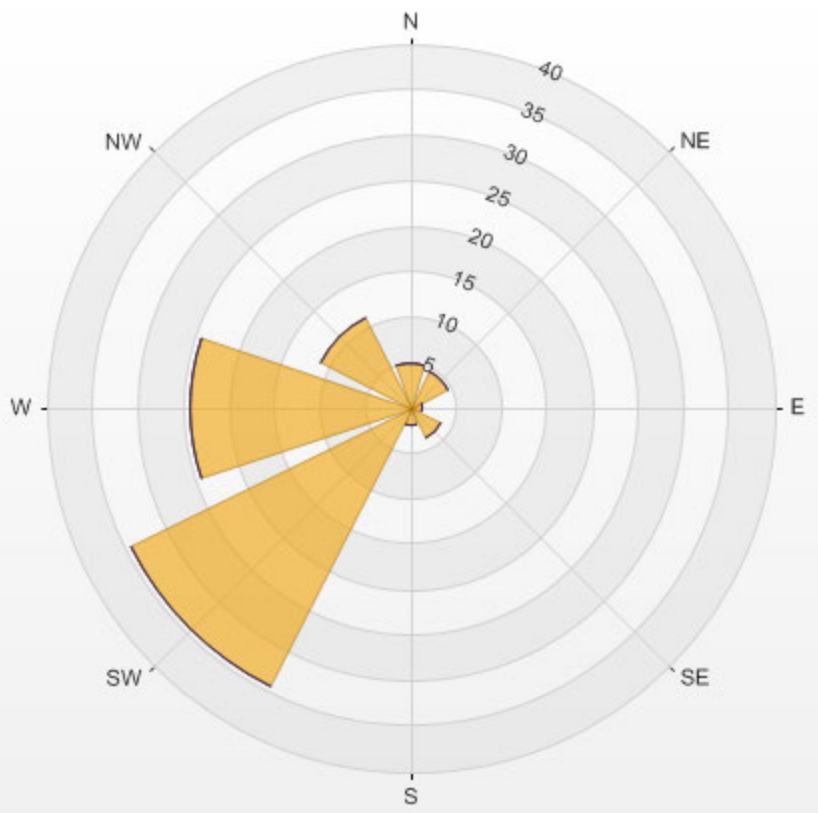
Wind: LICA COLD LAKE SOUTH
 Poll.: LICA COLD LAKE SOUTH-TRS[ppb]
 Monthly: 18/02
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 13.88% Calm Avg: 0.30 [ppb]

Direction	0.0-0.7	0.7-1.3	1.3-2.0	>2.0	Total
N	4.9	0.0	0.0	0.0	4.9
NE	4.6	0.0	0.0	0.0	4.6
E	1.4	0.0	0.0	0.0	1.4
SE	3.6	0.0	0.0	0.0	3.6
S	1.9	0.0	0.0	0.0	1.9
SW	34.4	0.0	0.0	0.0	34.4
W	24.3	0.0	0.0	0.0	24.3
NW	11.0	0.0	0.0	0.0	11.0
Summary	86.1	0.0	0.0	0.0	86.1

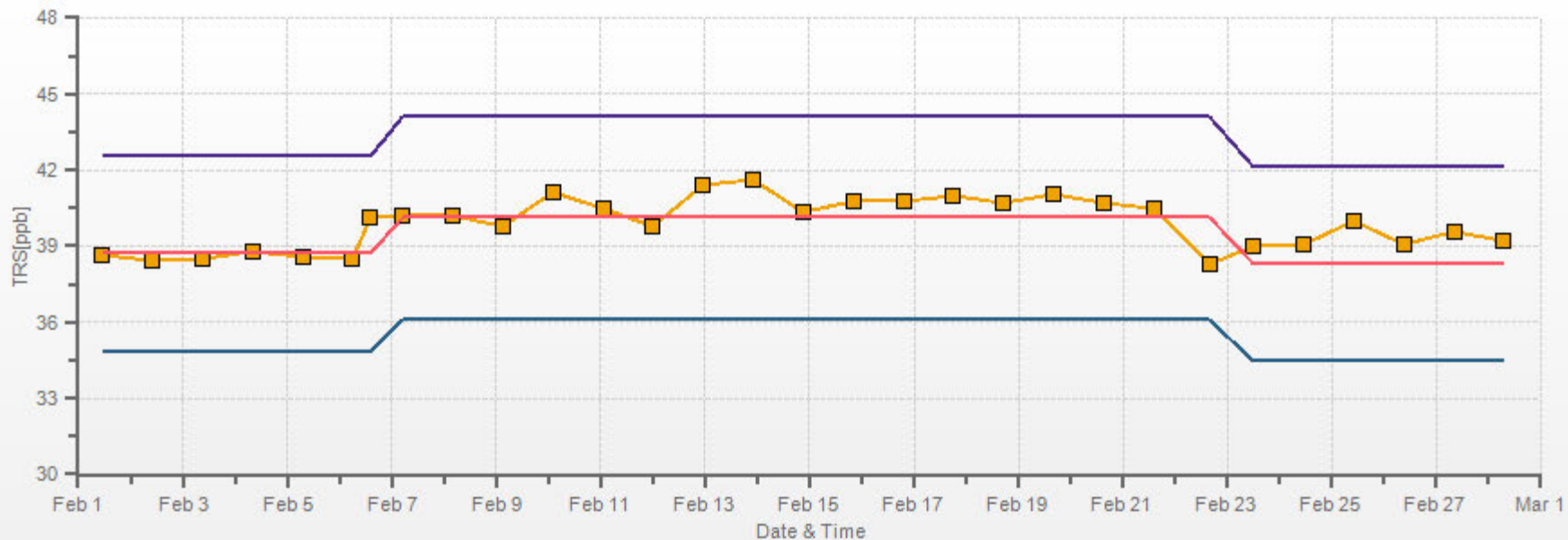
% Icon	Classes (ppb)	86	 0.0-0.7	0	 0.7-1.3	0	 1.3-2.0	0	 >2.0
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LICA COLD LAKE SOUTH Poll.: LICA COLD LAKE SOUTH-TRS[ppb] 2018/02/01 00:00 - 2018/02/28 23:00 Calm: 13.88% Calm Poll Avg: 0.30[ppb]



TRS[ppb] Calibration: LICA COLD LAKE SOUTH Monthly: 18/02 Type: Span

Span Meas Span Ref Span Low Span High



TOTAL HYDROCARBON



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

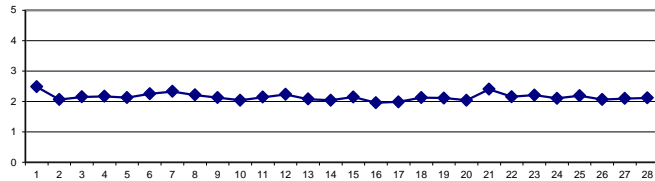
TOTAL HYDROCARBONS Hourly Averages (THC ppm)

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	2.40	2.42	2.46	2.50	2.57	2.75	2.88	2.89	3.01	2.59	2.52	S	2.51	2.43	2.41	2.31	2.25	2.25	2.26	2.31	2.33	2.38	2.45	2.31	2.25	3.01	2.49	24	
2	2.12	2.08	2.08	2.09	2.10	2.11	2.10	2.10	2.15	S1	S	2.11	2.07	2.05	2.05	2.04	2.04	2.04	2.03	2.02	2.01	2.04	2.03	2.03	2.01	2.15	2.07	23	
3	2.03	2.03	2.03	2.06	2.14	2.19	2.19	2.20	2.23	S	2.18	2.19	2.17	2.17	2.14	2.13	2.13	2.20	2.19	2.19	2.17	2.18	2.18	2.16	2.03	2.23	2.15	24	
4	2.18	2.16	2.14	2.13	2.16	2.18	2.20	2.22	S	2.20	2.22	2.21	2.13	2.11	2.14	2.14	2.15	2.16	2.20	2.21	2.18	2.14	2.14	2.18	2.11	2.22	2.17	24	
5	2.20	2.13	2.08	2.12	2.11	2.11	2.12	S	2.15	2.18	2.18	2.17	2.13	2.08	2.11	2.10	2.09	2.08	2.11	2.17	2.14	2.13	2.14	2.13	2.08	2.20	2.13	24	
6	2.12	2.16	2.20	2.28	2.35	2.49	S	2.48	2.41	2.39	2.24	2.18	2.16	2.15	2.12	2.13	2.13	2.17	2.26	2.24	2.28	2.29	2.25	2.34	2.12	2.49	2.25	24	
7	2.41	2.40	2.39	2.43	2.47	S	2.54	2.62	2.60	C	C	C	C	C	C	2.16	2.14	2.14	2.19	2.16	2.20	2.23	2.32	2.24	2.29	2.14	2.62	2.33	24
8	2.30	2.27	2.30	2.30	S	2.36	2.37	2.35	2.37	2.54	2.31	2.14	2.07	2.08	2.06	2.08	2.09	2.09	2.11	2.11	2.13	2.15	2.17	2.17	2.06	2.54	2.21	24	
9	2.15	2.11	2.12	S	2.14	2.15	2.10	2.13	2.14	2.14	2.10	2.10	2.10	2.09	2.11	2.12	2.10	2.12	2.17	2.14	2.17	2.15	2.12	2.15	2.09	2.17	2.13	24	
10	2.18	2.20	S	2.22	2.16	2.14	2.15	2.16	2.12	2.09	1.99	1.95	1.92	1.91	1.93	1.93	1.95	1.96	2.02	1.93	1.93	1.96	1.97	1.91	2.22	2.04	24		
11	2.00	S	2.03	2.05	2.08	2.10	2.10	2.11	2.15	2.11	2.09	2.10	2.11	2.15	2.16	2.16	2.20	2.21	2.17	2.18	2.24	2.24	2.24	2.24	2.00	2.24	2.14	24	
12	S	2.20	2.22	2.25	2.26	2.32	2.43	2.50	2.42	2.31	2.27	2.19	2.16	2.17	2.15	2.14	2.16	2.16	2.14	2.18	2.21	2.16	2.16	S	2.14	2.50	2.23	24	
13	2.23	2.22	2.22	2.17	2.17	2.17	2.13	2.13	2.09	2.07	2.06	2.03	2.03	2.02	2.00	2.05	2.04	2.02	2.00	1.98	2.00	1.99	S	1.97	1.97	2.23	2.08	24	
14	1.99	1.98	1.98	1.91	1.94	1.94	1.96	1.99	2.00	2.04	2.06	2.06	2.06	2.06	2.06	2.08	2.08	2.08	2.10	2.08	2.13	S	2.18	2.21	1.90	2.21	2.04	24	
15	2.30	2.38	2.32	2.29	2.26	2.21	2.16	2.15	2.14	2.16	2.08	2.06	2.05	2.03	2.03	2.05	2.06	2.05	2.12	2.12	S	2.12	2.09	2.11	2.03	2.38	2.15	24	
16	2.10	2.04	1.99	1.96	1.94	1.97	2.15	2.19	2.06	2.03	1.87	1.89	1.86	1.82	1.81	1.80	1.79	1.80	1.84	S	2.06	2.06	1.97	1.98	1.79	2.19	1.96	24	
17	2.00	1.98	1.98	1.99	1.99	1.99	1.98	1.99	1.99	1.98	1.99	1.97	1.97	1.97	1.97	1.96	1.98	S	1.99	1.99	2.00	1.99	2.01	1.96	2.01	1.96	2.01	24	
18	2.05	2.05	2.07	2.15	2.17	2.20	2.24	2.26	2.30	2.30	2.15	2.01	1.99	1.99	1.99	2.00	2.02	S	2.08	2.11	2.13	2.17	2.28	2.26	1.99	2.30	2.13	24	
19	2.22	2.17	2.18	2.18	2.14	2.16	2.16	2.13	2.20	2.14	2.12	2.11	2.08	2.07	2.07	2.08	S	2.05	2.08	2.06	2.05	2.06	2.06	2.02	2.02	2.22	2.11	24	
20	2.06	2.11	2.01	1.97	1.96	1.95	1.98	1.98	2.00	2.01	2.01	2.00	1.99	2.00	2.03	S	2.01	2.04	2.09	2.11	2.12	2.14	2.17	2.20	1.95	2.20	2.04	24	
21	2.26	2.28	2.34	2.30	2.31	2.35	2.43	2.66	3.02	2.57	2.32	2.32	2.31	2.30	S	2.39	2.41	2.40	2.39	2.36	2.37	2.39	2.42	2.41	2.26	3.02	2.40	24	
22	2.46	2.45	2.45	2.33	2.18	2.18	2.23	2.20	2.11	2.10	2.05	2.09	2.05	S	2.03	2.05	2.02	2.03	2.07	2.08	2.06	2.08	2.12	2.16	2.02	2.46	2.16	24	
23	2.16	2.21	2.34	2.49	2.44	2.33	2.29	2.30	2.28	2.24	2.22	2.15	S	2.09	2.09	2.10	2.10	2.11	2.09	2.11	2.12	2.14	2.16	2.18	2.09	2.49	2.21	24	
24	2.22	2.23	2.24	2.18	2.12	2.09	2.10	2.08	2.10	2.16	2.17	S	1.99	2.00	1.98	1.99	2.07	2.02	2.03	2.06	2.07	2.10	2.13	2.20	1.98	2.24	2.10	24	
25	2.22	2.09	2.10	2.05	2.10	2.09	2.05	2.08	2.19	2.21	S	2.25	2.23	2.28	2.30	2.23	2.23	2.25	2.26	2.24	2.32	2.29	2.30	2.03	2.03	2.32	2.19	24	
26	1.97	1.98	2.01	2.05	2.09	2.07	2.04	2.00	2.00	S	2.02	2.02	2.03	2.06	2.06	2.04	2.04	2.08	2.17	2.10	2.10	2.13	2.15	2.23	1.97	2.23	2.06	24	
27	2.21	2.17	2.17	2.22	2.26	2.27	2.25	2.22	S	2.21	2.22	2.19	2.05	1.97	1.98	1.97	1.97	1.96	1.95	1.94	1.95	1.99	2.05	2.08	1.94	2.27	2.10	24	
28	2.08	2.01	2.00	2.00	2.04	2.12	2.11	X	2.20	2.13	2.05	2.07	2.11	2.09	2.03	2.03	2.03	2.03	2.07	2.34	2.40	2.32	2.29	2.17	2.00	2.40	2.12	23	
HOURLY MAX	2.46	2.45	2.46	2.50	2.57	2.75	2.88	2.89	3.02	2.59	2.52	2.32	2.51	2.43	2.41	2.39	2.41	2.40	2.39	2.36	2.40	2.39	2.45	2.41					
HOURLY AVG	2.17	2.17	2.16	2.17	2.17	2.18	2.20	2.24	2.25	2.20	2.14	2.10	2.09	2.08	2.07	2.08	2.08	2.09	2.11	2.14	2.14	2.15	2.16	2.16					

STATUS FLAG CODES

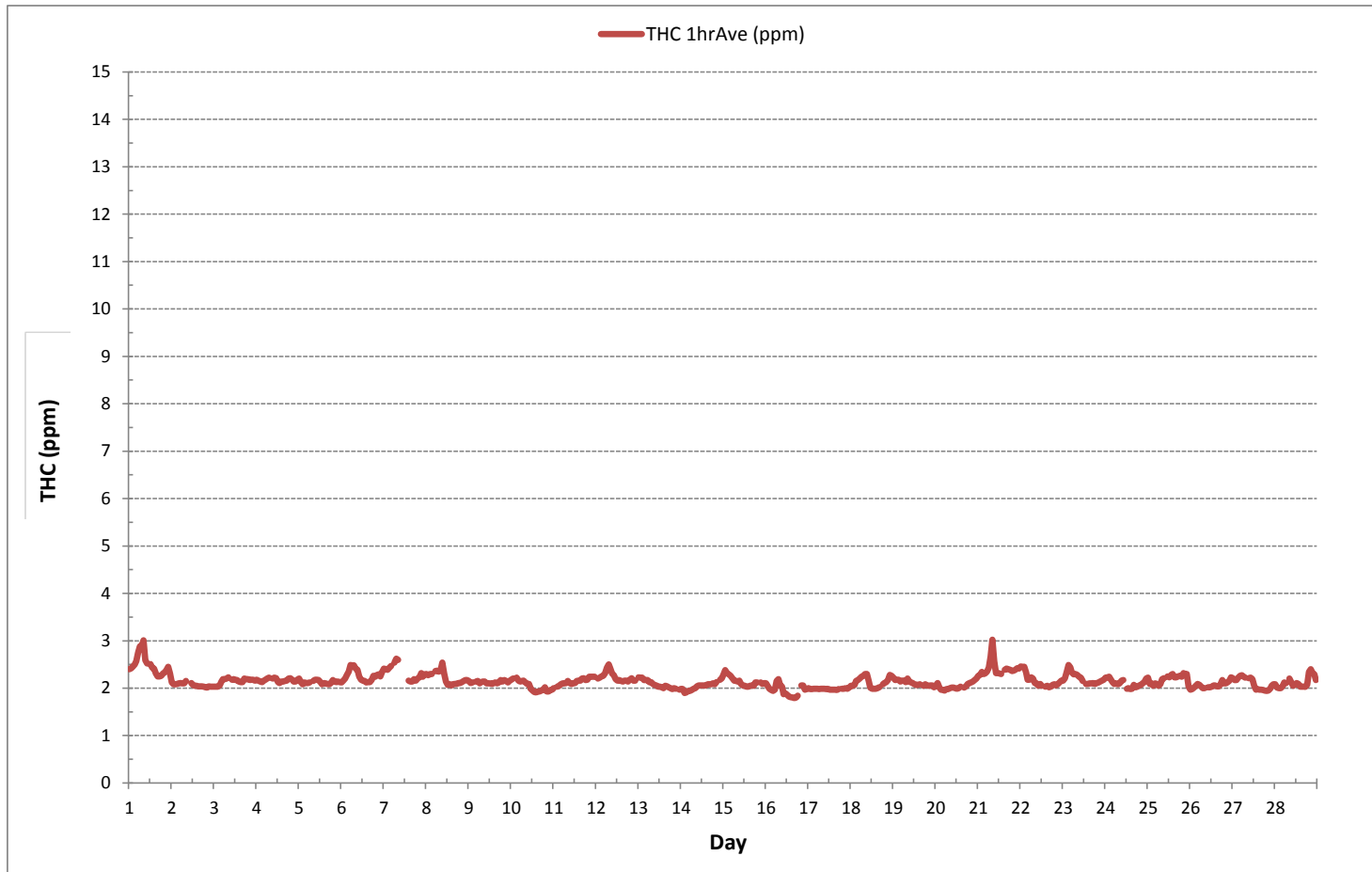
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

24 HR AVERAGES February 2018



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	637			
MINIMUM 1-HR AVERAGE:	1.79 ppm	@ HOUR	16	ON DAY 16
MAXIMUM 1-HR AVERAGE:	3.02 ppm	@ HOUR	8	ON DAY 21
MAXIMUM 24-HR AVERAGE:	2.49 ppm			ON DAY 1
IZS CALIBRATION TIME:	28 hrs	OPERATIONAL TIME:	670 hrs	
MONTHLY CALIBRATION TIME:	5 hrs	AMD OPERATION UPTIME:	99.7 %	
STANDARD DEVIATION:	0.15	MONTHLY AVERAGE:	2.15 ppm	



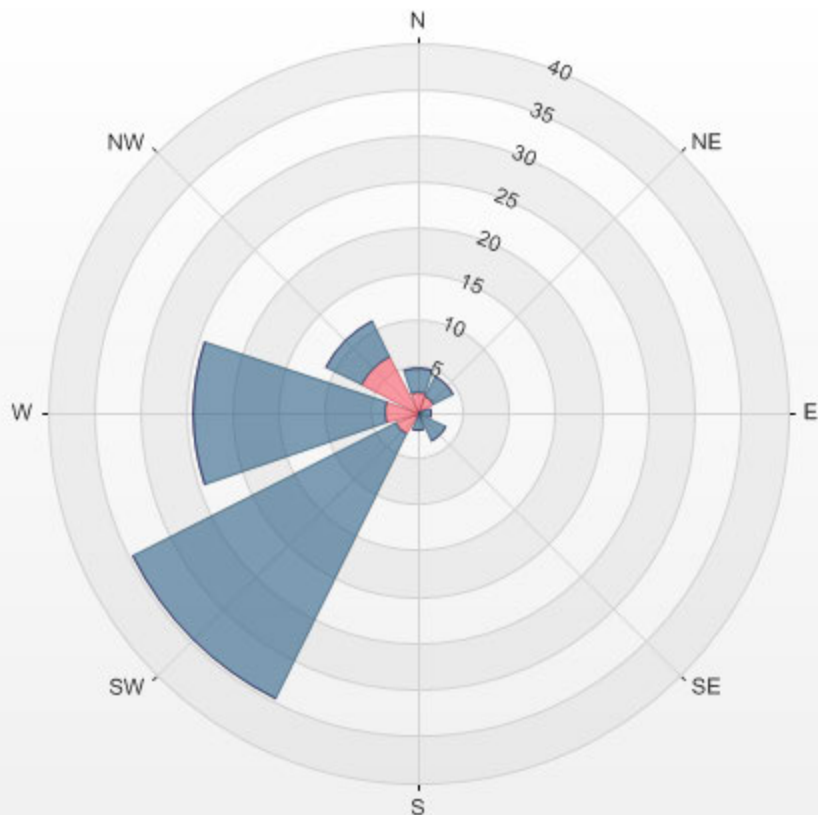
Wind: LICA COLD LAKE SOUTH
 Poll.: LICA COLD LAKE SOUTH-THC[ppm]
 Monthly: 18/02
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 13.86% Calm Avg: 2.30 [ppm]

Direction	0.0-1.0	1.0-2.0	2.0-3.0	>3.0	Total
N	0.0	2.4	2.5	0.0	4.9
NE	0.0	2.1	2.4	0.0	4.4
E	0.0	0.3	1.1	0.0	1.4
SE	0.0	0.0	3.5	0.0	3.5
S	0.0	0.0	1.9	0.0	1.9
SW	0.0	2.7	31.8	0.0	34.5
W	0.0	3.5	20.9	0.0	24.4
NW	0.0	6.8	4.4	0.0	11.2
Summary	0.0	17.6	68.5	0.0	86.1

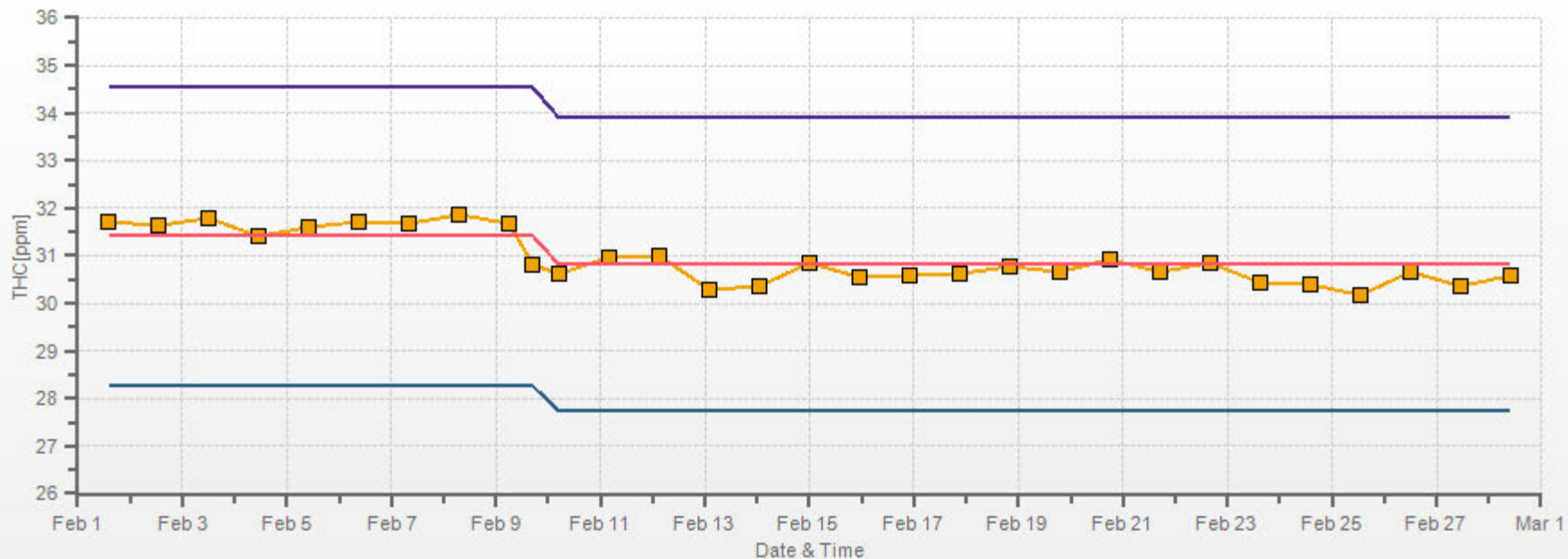
% Icon Classes (ppm) 0 0.0-1.0 18 1.0-2.0 68 2.0-3.0 0 >3.0

LICA COLD LAKE SOUTH Poll.: LICA COLD LAKE SOUTH-THC[ppm] 2018/02/01 00:00 - 2018/02/28 23:00 Calm: 13.86% Calm Poll Avg: 2.30[ppm]



THC[ppm] Calibration: LICA MASKWA Monthly: 18/02 Type: Span

Span Meas Span Ref Span Low Span High



OXIDES OF NITROGEN



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

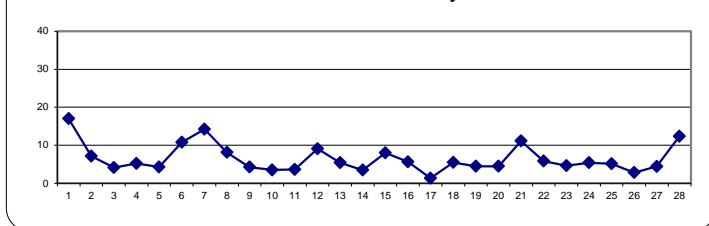
OXIDES OF NITROGEN Hourly Averages (NO_x ppb)

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	20	21	18	23	33	36	29	39	30	14	13	S	11	8	10	11	8	7	9	10	12	11	11	8	7	39	17	24	
2	6	5	6	7	6	5	8	9	23	12	S	13	10	6	6	6	5	7	5	5	4	4	3	3	3	23	7	24	
3	3	2	2	3	3	4	6	8	10	S	6	5	4	4	4	3	3	5	4	4	4	3	2	3	2	10	4	24	
4	3	3	3	3	3	4	5	5	S	7	6	6	4	4	4	5	6	6	11	10	7	5	5	5	3	11	5	24	
5	6	4	2	5	3	3	7	S	7	7	5	4	3	3	4	4	2	3	3	4	5	4	5	6	2	7	4	24	
6	5	6	8	10	12	15	S	19	19	19	C	C	C	C	C	C	C	C	C	C	9	7	5	6	5	19	11	24	
7	6	5	18	21	14	S	14	29	23	19	17	14	10	8	7	6	6	11	9	14	19	24	15	18	5	29	14	24	
8	16	13	11	9	S	11	16	16	19	12	12	8	8	5	3	2	2	2	4	3	4	4	4	3	2	19	8	24	
9	3	3	3	S	4	3	3	4	6	5	5	4	5	5	4	4	4	4	5	5	5	5	4	5	3	6	4	24	
10	5	5	S	7	6	5	6	7	6	5	5	3	2	2	2	2	1	2	1	4	2	1	1	1	1	7	4	24	
11	1	S	1	1	2	2	2	2	3	3	3	3	5	6	4	4	5	6	5	4	5	5	6	5	1	6	4	24	
12	S	3	5	4	5	11	9	58	30	5	5	4	4	4	4	5	6	5	5	7	8	7	6	S	3	58	9	24	
13	8	7	9	9	10	9	8	8	6	5	4	4	3	3	4	4	5	4	3	3	3	2	S	3	2	10	5	24	
14	4	3	2	1	1	1	1	1	1	1	1	1	1	1	1	2	2	4	5	6	12	12	S	8	8	1	12	3	24
15	11	11	10	9	9	6	7	6	7	9	6	5	4	5	4	5	6	9	11	13	S	13	11	7	4	13	8	24	
16	6	6	6	7	8	8	9	12	9	7	4	6	5	7	7	3	2	1	4	S	6	5	1	1	1	12	6	24	
17	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	S	2	2	2	2	3	1	3	1	24	
18	3	5	5	6	5	6	8	9	12	10	6	4	2	2	2	1	2	S	5	5	6	7	8	8	1	12	6	24	
19	6	5	4	4	3	4	4	5	7	6	5	5	6	6	6	S	3	3	3	3	3	3	3	3	4	3	7	4	24
20	5	5	2	1	1	1	1	2	2	1	2	2	2	2	4	S	3	6	12	11	12	10	10	6	1	12	4	24	
21	5	5	6	7	13	15	20	23	39	17	5	6	6	6	S	7	7	8	8	8	10	10	15	10	5	39	11	24	
22	7	8	12	11	9	7	9	9	8	7	6	6	4	S	2	2	2	2	2	2	3	4	5	4	5	2	12	6	24
23	3	3	6	7	6	5	6	4	4	4	4	4	S	3	3	3	4	4	4	6	5	5	6	7	3	7	5	24	
24	6	6	6	6	7	7	6	6	5	8	7	S	2	3	3	3	3	3	3	4	9	9	5	8	2	9	5	24	
25	5	3	3	2	2	2	3	3	3	3	S	4	4	4	6	6	6	7	7	7	14	12	9	3	2	14	5	24	
26	2	2	3	4	5	5	4	2	2	S	3	2	2	2	2	1	2	1	2	3	4	4	4	4	1	5	3	24	
27	4	4	4	4	4	4	4	5	S	5	5	6	6	5	5	5	4	4	3	3	4	4	5	5	3	6	4	24	
28	6	3	3	2	4	18	10	S	10	9	9	9	8	8	6	5	4	6	16	32	31	27	36	22	2	36	12	24	
HOURLY MAX	20	21	18	23	33	36	29	58	39	19	17	14	11	8	10	11	8	11	16	32	31	27	36	22					
HOURLY AVG	6	5	6	6	7	7	8	11	11	8	6	5	5	4	4	4	4	5	6	7	8	7	7	6					

STATUS FLAG CODES

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

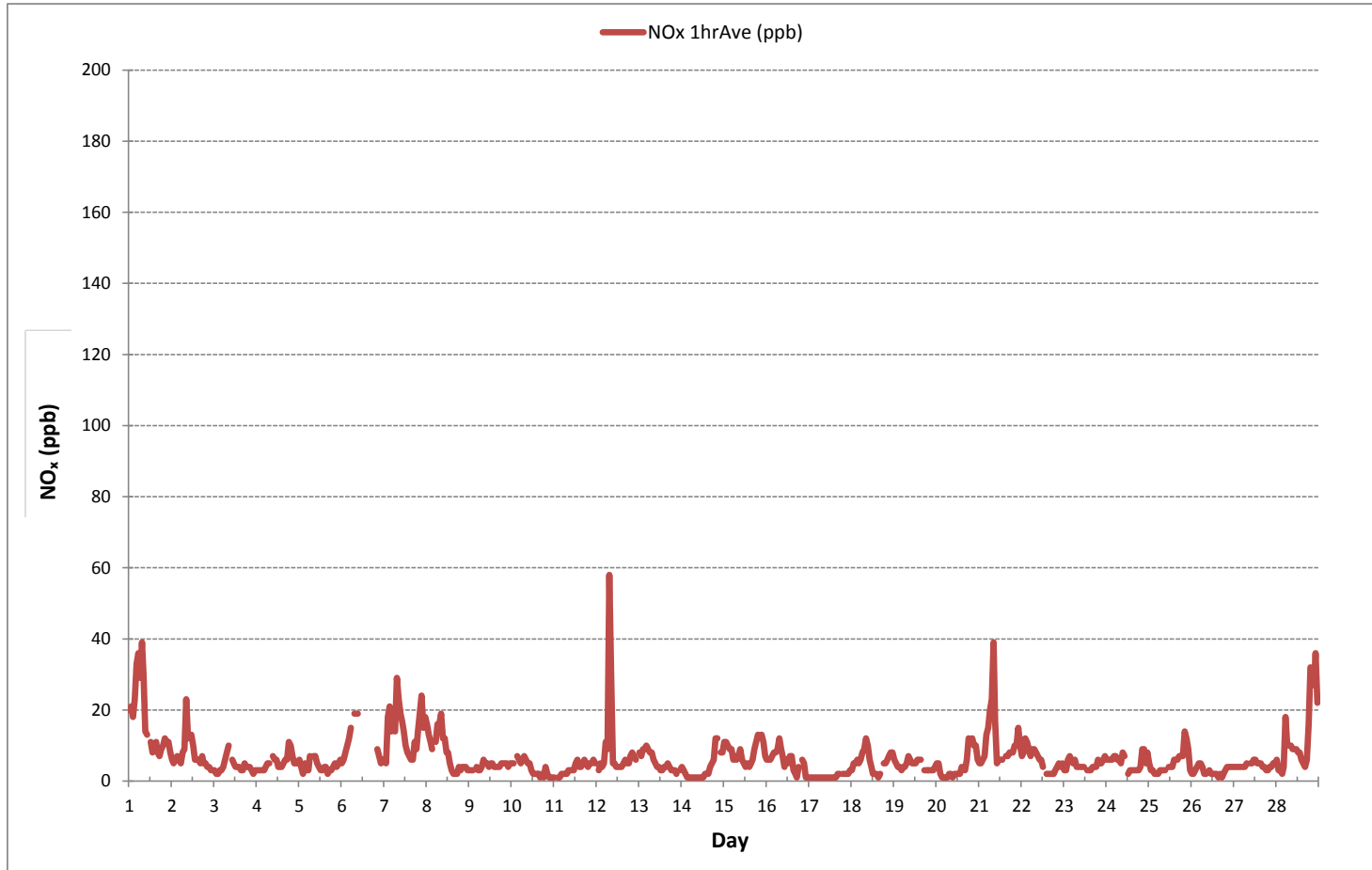
24 HR AVERAGES February 2018



MONTHLY SUMMARY

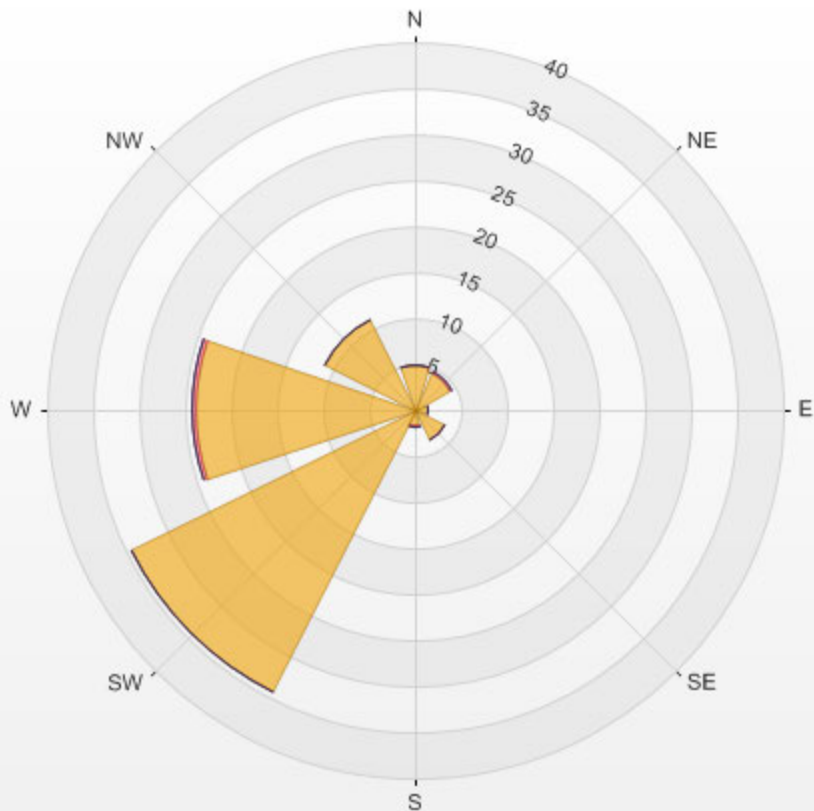
NUMBER OF NON-ZERO READINGS:	633			
MINIMUM 1-HR AVERAGE:	1 ppb	@ HOUR	16	ON DAY 10
MAXIMUM 1-HR AVERAGE:	58 ppb	@ HOUR	7	ON DAY 12
MAXIMUM 24-HR AVERAGE:	17 ppb			ON DAY 1
IZS CALIBRATION TIME:	29 hrs	OPERATIONAL TIME:	672 hrs	
MONTHLY CALIBRATION TIME:	10 hrs	AMD OPERATION UPTIME:	100.0 %	
STANDARD DEVIATION:	6	MONTHLY AVERAGE:	6	ppb

OXIDES OF NITROGEN Hourly Averages (NO_x ppb)



% Icon Classes (ppb) 85 0.0-19.7 1 19.7-39.3 0 39.3-59.0 0 >59.0

LICA COLD LAKE SOUTH Poll.: LICA COLD LAKE SOUTH-NOX[ppb] 2018/02/01 00:00 - 2018/02/28 23:00 Calm: 13.90% Calm Poll Avg: 13.19[ppb]



NOX[ppb] Calibration: LICA COLD LAKE SOUTH Monthly: 18/02 Type: Span

Span Meas Span Ref Span Low Span High



NITRIC OXIDES



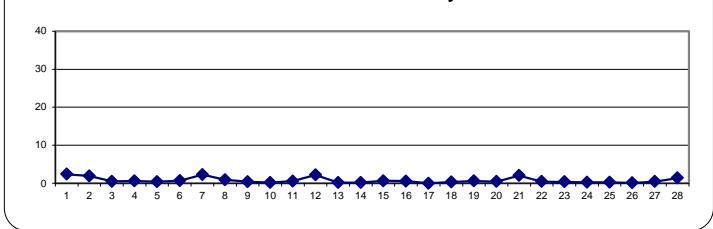
NITRIC OXIDE Hourly Averages (NO ppb)

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

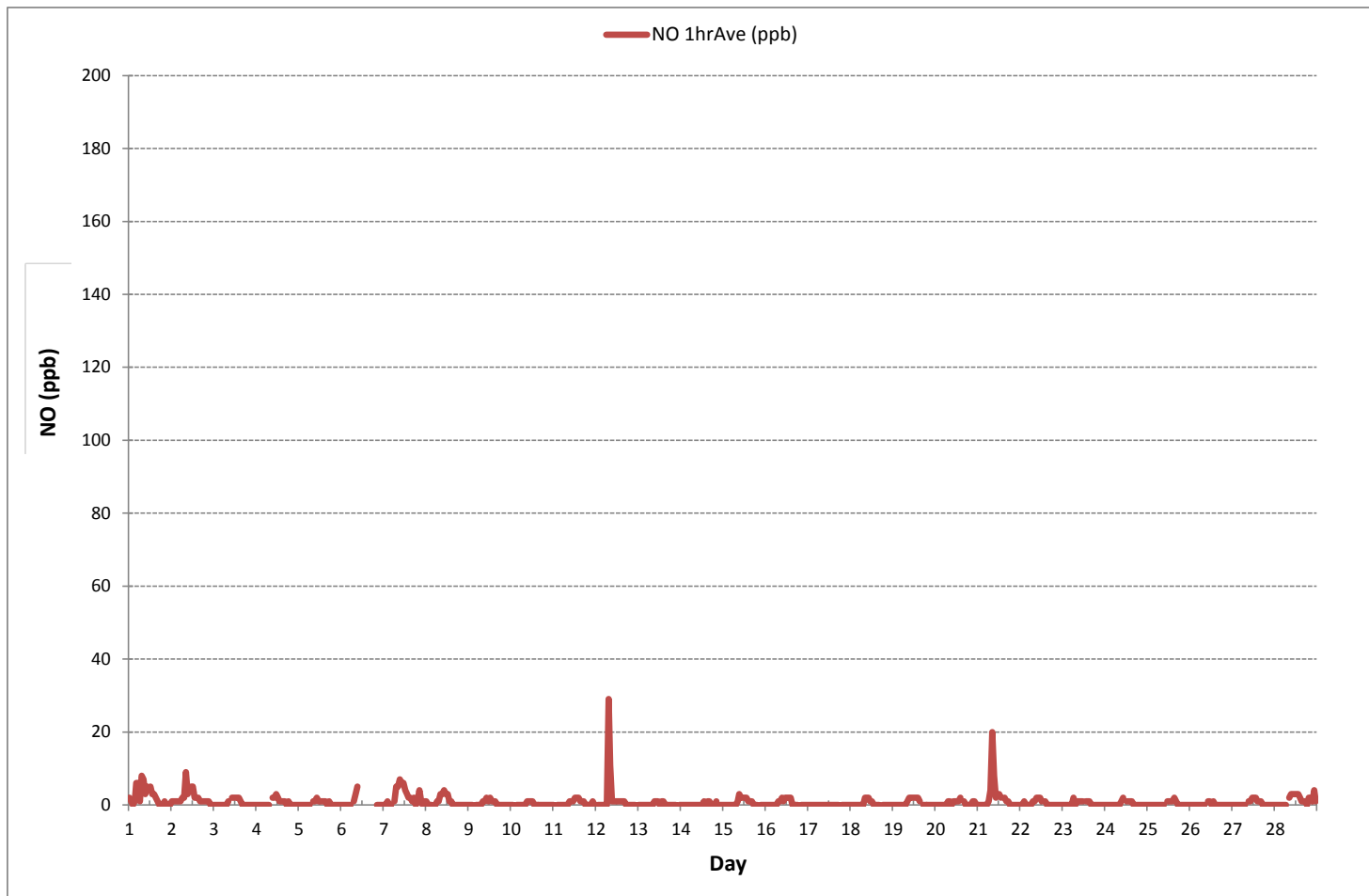
24 HR AVERAGES February 2018



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	238			
MINIMUM 1-HR AVERAGE:	0 ppb	@ HOUR	2	ON DAY 1
MAXIMUM 1-HR AVERAGE:	29 ppb	@ HOUR	12	ON DAY 12
MAXIMUM 24-HR AVERAGE:	2 ppb			ON DAY 1
IZS CALIBRATION TIME:	29 hrs	OPERATIONAL TIME:	672 hrs	
MONTHLY CALIBRATION TIME:	10 hrs	AMD OPERATION UPTIME:	100.0 %	
STANDARD DEVIATION:	2	MONTHLY AVERAGE:	1 ppb	

NITRIC OXIDE Hourly Averages (NO ppb)



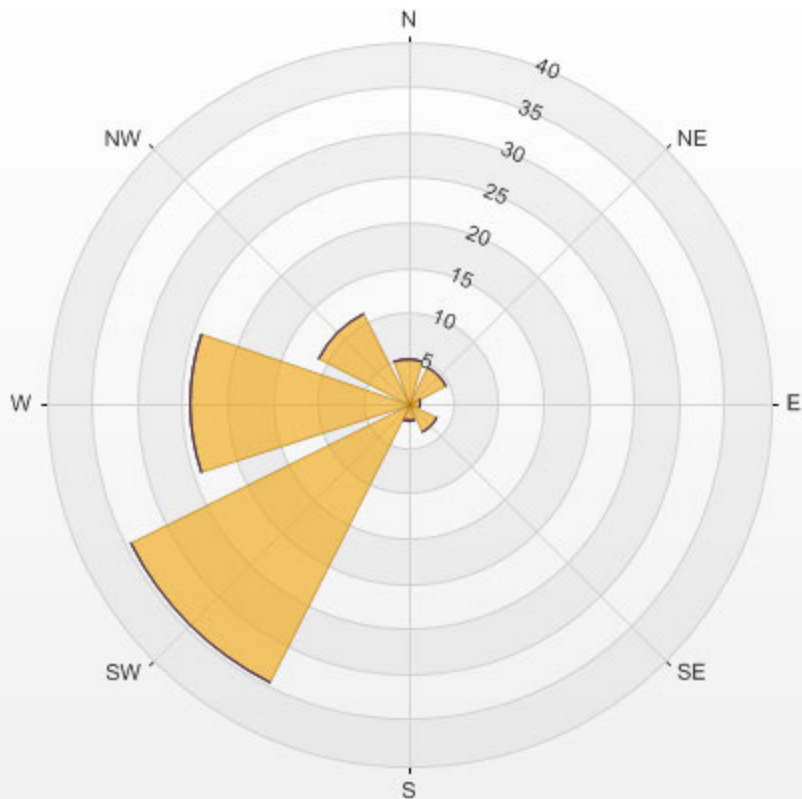
Wind: LICA COLD LAKE SOUTH
 Poll.: LICA COLD LAKE SOUTH-NO[ppb]
 Monthly: 18/02
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 13.90% Calm Avg: 1.39 [ppb]

Direction	0.0-10.0	10.0-20.0	20.0-30.0	>30.0	Total
N	4.9	0.0	0.0	0.0	4.9
NE	4.6	0.0	0.0	0.0	4.6
E	1.4	0.0	0.0	0.0	1.4
SE	3.6	0.0	0.0	0.0	3.6
S	1.7	0.2	0.0	0.0	1.9
SW	34.4	0.0	0.0	0.0	34.4
W	24.2	0.0	0.0	0.0	24.2
NW	11.1	0.0	0.0	0.0	11.1
Summary	85.9	0.2	0.0	0.0	86.1

% Icon Classes (ppb) 86 0.0-10.0 0 10.0-20.0 0 20.0-30.0 0 >30.0

LICA COLD LAKE SOUTH Poll.: LICA COLD LAKE SOUTH-NO[ppb] 2018/02/01 00:00 - 2018/02/28 23:00 Calm: 13.90% Calm Poll Avg: 1.39[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	18	20	18	21	27	29	27	31	23	11	8	S	6	5	6	8	7	7	9	10	12	10	11	8	5	31	14	24	
2	5	4	5	6	5	4	6	7	14	8	S	7	5	4	4	4	5	5	5	4	3	4	3	3	3	14	5	24	
3	3	2	2	3	3	4	6	7	9	S	4	3	2	3	3	2	2	5	4	4	4	3	2	3	2	9	4	24	
4	3	3	3	3	3	4	5	5	S	5	4	4	3	3	3	4	5	6	11	10	7	5	5	5	3	11	5	24	
5	5	3	2	4	3	3	7	S	7	5	4	3	2	2	3	3	2	2	3	4	4	4	5	6	2	7	4	24	
6	5	6	8	9	12	14	S	18	16	13	C	C	C	C	C	C	C	C	C	C	9	7	5	6	5	18	10	24	
7	6	5	17	20	14	S	13	24	18	13	10	8	6	5	4	4	5	9	9	14	16	23	15	17	4	24	12	24	
8	15	12	11	9	S	11	15	16	15	9	8	5	5	3	2	1	1	2	4	3	3	4	4	3	1	16	7	24	
9	3	3	3	S	3	3	3	4	5	4	3	3	3	3	3	3	3	4	5	5	5	5	4	5	3	5	4	24	
10	4	5	S	7	6	5	6	6	5	4	4	2	2	2	2	2	1	2	1	4	2	1	1	1	1	7	3	24	
11	1	S	1	1	2	2	2	2	2	2	2	3	3	3	3	4	5	4	5	5	5	5	5	1	5	3	24		
12	S	3	4	4	5	10	8	29	19	4	3	3	2	3	3	4	5	5	5	7	8	7	6	S	2	29	7	24	
13	8	7	8	9	10	9	8	8	6	4	4	3	2	3	3	4	4	4	3	3	3	2	S	3	2	10	5	24	
14	3	3	2	1	1	1	1	1	1	1	1	0	1	1	1	2	3	4	6	12	11	S	8	8	0	12	3	24	
15	10	11	10	9	9	6	7	6	6	6	4	3	3	3	3	4	5	9	11	13	S	13	11	7	3	13	7	24	
16	6	6	6	7	8	7	9	12	8	6	3	4	3	5	5	2	2	1	4	S	5	5	1	1	1	12	5	24	
17	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	S	2	2	2	2	3	1	3	1	24	
18	3	5	4	6	5	6	7	8	10	8	4	2	1	1	1	1	1	S	5	5	6	7	7	8	1	10	5	24	
19	6	5	4	4	3	4	3	5	5	4	3	3	4	4	4	S	3	3	3	3	3	3	3	3	4	3	6	4	24
20	4	5	2	1	1	1	1	2	2	1	1	1	1	1	2	S	3	6	11	11	12	10	9	6	1	12	4	24	
21	5	5	6	7	12	15	19	19	20	9	3	4	3	3	S	5	6	8	8	8	8	10	10	14	10	3	20	9	24
22	7	8	12	10	8	7	9	8	7	5	4	4	3	S	2	2	2	2	2	2	3	5	4	5	2	12	5	24	
23	3	3	6	7	6	5	5	4	4	3	3	S	2	3	3	4	4	4	6	5	5	6	7	2	7	4	24		
24	6	6	6	6	7	7	6	6	5	7	6	S	2	2	2	2	2	3	3	4	9	9	5	7	2	9	5	24	
25	5	3	3	2	2	3	3	2	2	S	3	3	3	3	4	4	5	6	7	7	14	12	9	3	2	14	5	24	
26	2	1	3	4	5	5	4	2	2	S	2	1	1	2	1	2	1	2	3	4	4	4	4	4	1	5	3	24	
27	4	4	4	4	4	4	4	4	4	S	4	4	4	4	4	4	3	3	3	3	4	4	5	5	3	5	4	24	
28	5	3	2	2	4	18	10	S	8	6	6	6	5	5	4	4	4	6	15	29	29	25	32	21	2	32	11	24	
HOURLY MAX	18	20	18	21	27	29	27	31	23	13	10	8	6	5	6	8	7	9	15	29	29	25	32	21					
HOURLY AVG	5	5	6	6	6	7	7	9	8	6	4	3	3	3	3	3	3	4	6	7	7	7	7	6					

STATUS FLAG CODES

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

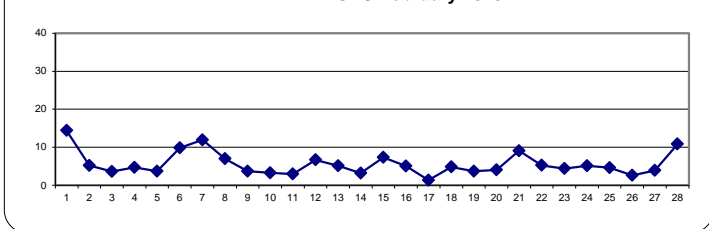
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR 159 ppb

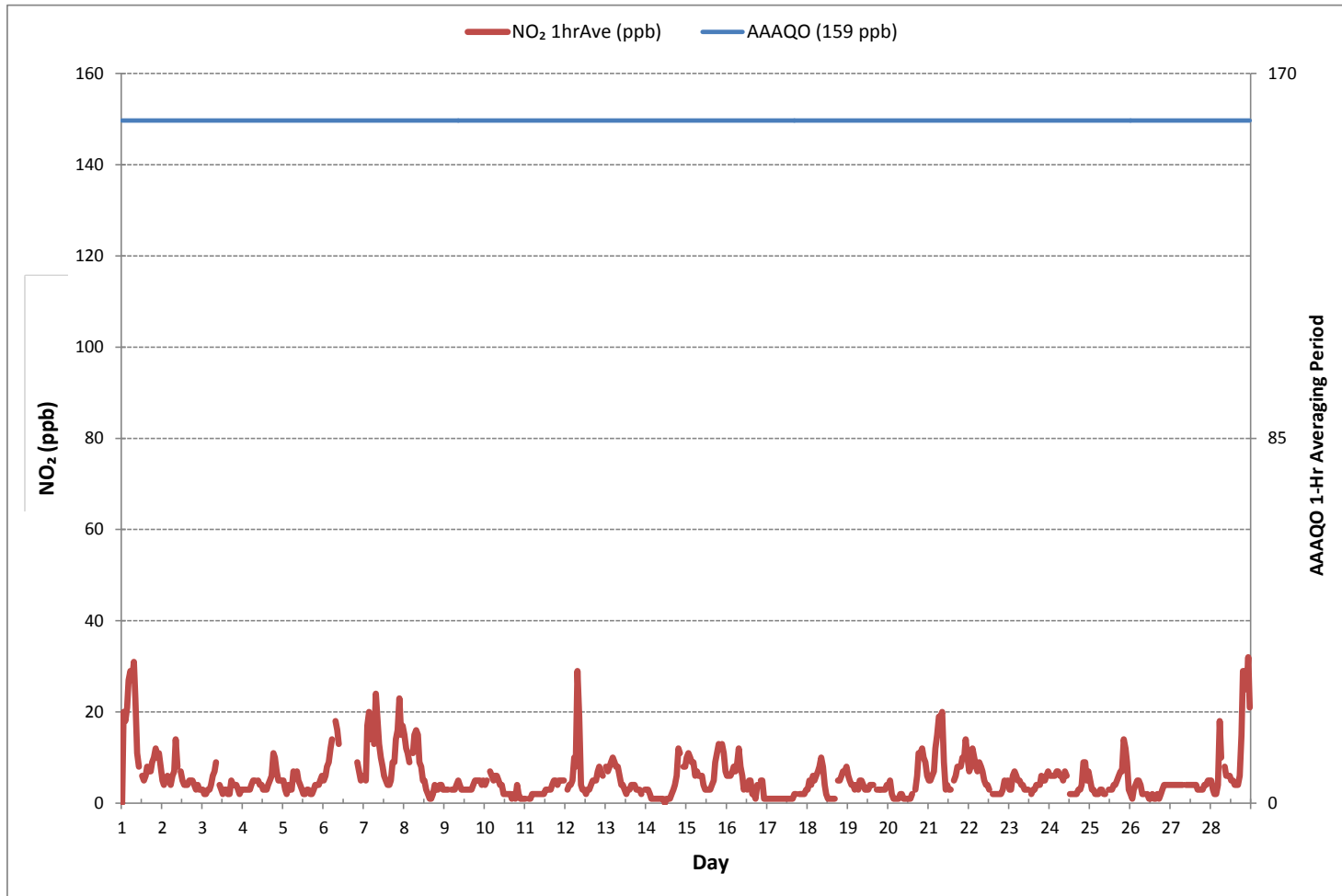
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0			
NUMBER OF NON-ZERO READINGS:	632			
MINIMUM 1-HR AVERAGE:	0 ppb	@ HOUR	11	ON DAY 14
MAXIMUM 1-HR AVERAGE:	32 ppb	@ HOUR	22	ON DAY 28
MAXIMUM 24-HR AVERAGE:	14 ppb			ON DAY 1
IZS CALIBRATION TIME:	29 hrs	OPERATIONAL TIME:	672 hrs	
MONTHLY CALIBRATION TIME:	10 hrs	AMD OPERATION UPTIME:	100.0 %	
STANDARD DEVIATION:	5	MONTHLY AVERAGE:	6 ppb	

24 HR AVERAGES February 2018



NITROGEN DIOXIDE Hourly Averages (NO₂ ppb)



Wind: LICA COLD LAKE SOUTH
 Poll.: LICA COLD LAKE SOUTH-NO2[ppb]
 Monthly: 18/02
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 13.90% Calm Avg: 11.80 [ppb]

Direction	0.0-11.0	11.0-22.0	22.0-33.0	>33.0	Total
N	4.9	0.0	0.0	0.0	4.9
NE	4.4	0.2	0.0	0.0	4.6
E	1.4	0.0	0.0	0.0	1.4
SE	3.6	0.0	0.0	0.0	3.6
S	1.7	0.2	0.0	0.0	1.9
SW	34.0	0.5	0.0	0.0	34.4
W	21.3	2.7	0.2	0.0	24.2
NW	10.9	0.2	0.0	0.0	11.1
Summary	82.3	3.6	0.2	0.0	86.1

% Icon Classes (ppb)

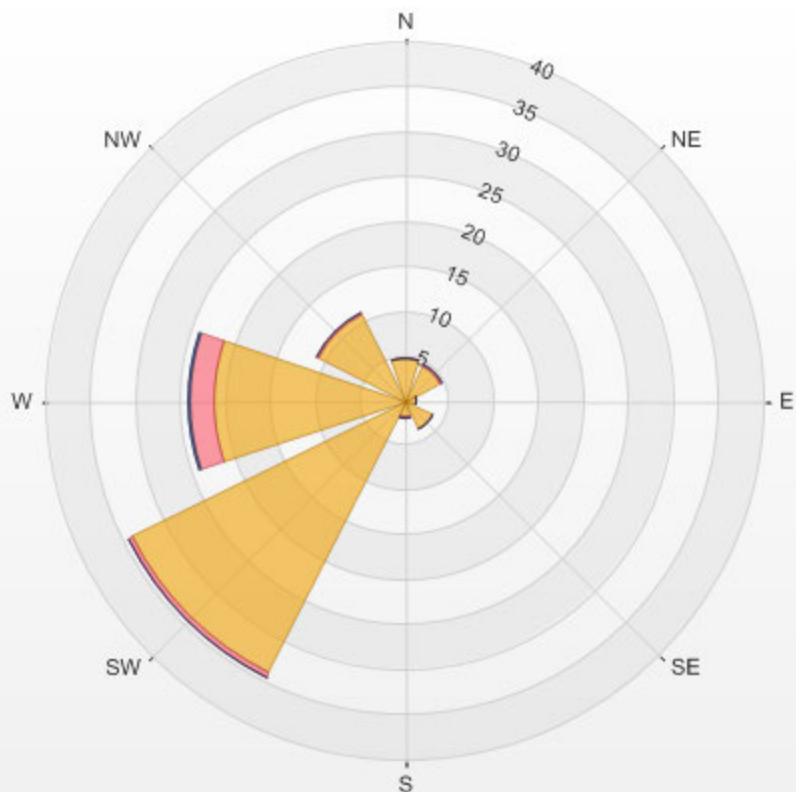
82 0.0-11.0

4 11.0-22.0

0 22.0-33.0

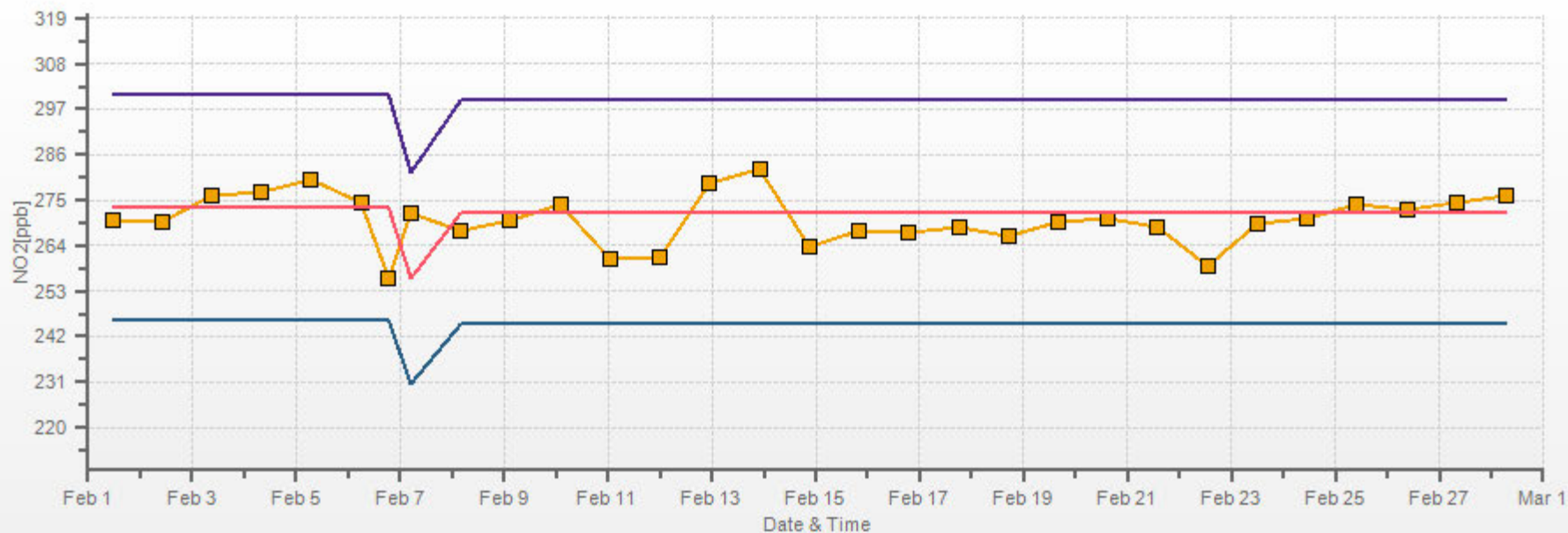
0 >33.0

LICA COLD LAKE SOUTH Poll.: LICA COLD LAKE SOUTH-NO2[ppb] 2018/02/01 00:00 - 2018/02/28 23:00 Calm: 13.90% Calm Poll Avg: 11.80[ppb]



NO2[ppb] Calibration: LICA COLD LAKE SOUTH Monthly: 18/02 Type: Span

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



OZONE



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

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	9.0	6.1	8.2	5.0	1.4	2.5	2.7	1.6	7.8	18.6	22.2	S	25.9	28.1	27.1	25.7	26.3	26.5	24.2	22.6	20.1	20.2	18.9	22.4	1.4	28.1	16.2	24	
2	25.6	28.5	29.0	27.6	27.3	27.8	25.3	24.3	19.9	22.7	S	25.7	27.4	29.9	30.9	30.9	30.0	29.3	32.1	34.3	36.1	34.2	34.4	35.8	19.9	36.1	29.1	24	
3	35.6	35.4	34.8	33.1	31.5	29.1	26.1	23.7	21.3	S	30.2	32.2	33.3	33.3	33.7	35.0	35.9	33.1	33.5	34.1	34.4	34.5	34.3	33.9	21.3	35.9	32.3	24	
4	32.9	32.8	34.2	34.5	33.0	32.2	30.0	29.4	S	29.6	31.6	32.3	34.7	35.1	34.2	33.9	32.9	30.6	26.5	27.2	30.1	32.3	32.8	32.7	26.5	35.1	32.0	24	
5	31.8	34.4	37.5	35.5	36.5	36.6	32.4	S	33.5	35.3	37.1	38.2	38.9	39.4	38.7	38.4	39.4	38.6	37.2	36.2	35.4	35.0	33.0	31.1	31.1	39.4	36.1	24	
6	31.1	29.6	27.5	25.3	22.1	19.0	S	15.9	18.3	22.4	32.5	35.5	35.8	37.1	37.4	36.9	35.6	34.1	31.8	29.2	27.3	28.6	29.9	26.8	15.9	37.4	29.1	24	
7	24.7	24.3	14.6	10.0	14.5	S	14.4	6.3	15.3	C	C	C	C	C	C	34.2	34.7	33.7	29.0	29.7	23.2	19.8	10.8	15.5	12.4	6.3	34.7	20.4	24
8	13.0	15.7	18.3	19.0	S	17.2	13.6	14.8	16.5	25.6	28.1	32.0	33.7	35.6	37.1	37.6	36.7	35.5	35.9	35.5	34.4	33.9	35.2	13.0	37.6	27.9	24		
9	35.5	35.7	35.7	S	35.2	35.4	35.3	34.5	33.5	35.4	36.1	37.2	37.3	37.6	37.4	37.1	37.8	37.0	34.4	34.5	34.9	35.2	36.1	34.7	33.5	37.8	35.8	24	
10	33.9	32.7	S	30.8	31.8	32.6	31.7	31.4	32.0	33.9	35.1	37.5	38.7	39.3	40.0	40.4	40.8	40.2	40.1	36.8	40.4	42.3	41.2	39.9	30.8	42.3	36.7	24	
11	38.8	S	37.9	37.4	36.4	35.1	35.4	34.6	34.1	34.4	35.1	35.3	34.8	33.7	34.2	34.5	33.3	31.9	31.2	33.4	32.9	32.3	31.7	29.3	29.3	38.8	34.2	24	
12	S	27.5	26.4	25.3	24.4	17.6	19.7	11.4	21.8	35.6	36.9	38.5	40.3	40.5	40.6	39.9	38.8	39.0	39.0	37.2	35.5	36.0	35.6	S	11.4	40.6	32.2	24	
13	33.2	32.9	31.4	30.3	29.6	31.0	32.5	32.5	34.8	37.7	38.4	39.0	40.0	39.7	39.5	39.1	37.9	37.8	36.7	35.3	34.5	34.2	S	32.9	29.6	40.0	35.3	24	
14	32.8	32.0	33.0	41.5	43.8	42.6	40.9	39.5	39.6	38.2	37.1	36.5	36.0	35.5	34.6	34.0	32.4	30.5	28.7	21.0	19.8	S	19.4	17.0	17.0	43.8	33.3	24	
15	15.7	18.0	21.9	23.8	23.8	27.7	28.1	29.3	30.0	31.1	33.7	34.9	35.5	35.8	36.4	36.1	35.4	32.2	29.6	26.4	S	21.1	20.6	21.6	15.7	36.4	28.2	24	
16	27.8	30.2	31.8	31.2	29.4	28.5	25.7	22.0	26.1	29.4	33.0	32.4	33.5	33.6	34.0	36.5	36.6	37.6	34.4	S	32.4	33.4	38.9	39.9	22.0	39.9	32.1	24	
17	40.2	40.0	40.3	40.6	40.3	40.5	40.4	40.5	40.5	40.9	40.8	40.8	40.8	40.6	40.6	40.3	39.7	39.2	S	39.2	38.9	38.9	39.2	37.7	37.7	40.9	40.0	24	
18	36.1	33.1	31.9	31.8	32.8	31.7	28.5	25.8	23.0	29.2	34.1	37.4	38.5	38.4	38.4	38.7	38.3	S	32.3	30.4	27.0	26.6	28.7	27.1	23.0	38.7	32.2	24	
19	28.6	33.1	34.0	33.8	35.3	34.7	35.5	33.6	32.9	34.8	36.5	37.4	38.3	38.3	38.2	38.2	S	39.7	39.7	39.0	38.5	38.5	38.6	37.8	28.6	39.7	36.3	24	
20	36.7	34.6	38.0	39.5	38.8	38.2	38.1	36.5	35.6	34.5	34.4	35.2	35.6	36.2	36.0	S	36.3	31.9	24.5	24.0	20.8	22.0	20.0	22.6	20.0	39.5	32.6	24	
21	22.1	21.6	20.6	19.0	14.0	10.8	8.2	7.8	9.3	25.4	31.9	32.3	33.0	34.2	S	34.3	33.6	33.1	32.7	31.3	27.7	23.9	17.6	21.5	7.8	34.3	23.7	24	
22	21.1	20.0	17.2	23.4	28.6	31.5	28.9	30.1	32.0	33.6	35.0	35.5	36.7	S	40.0	40.6	40.9	40.7	40.5	40.7	39.3	36.6	35.9	30.7	17.2	40.9	33.0	24	
23	27.5	27.8	28.7	29.6	30.8	32.3	33.9	35.1	36.1	37.5	38.7	39.8	S	42.0	42.2	42.6	42.1	41.2	40.3	36.8	37.3	36.3	32.6	29.5	27.5	42.6	35.7	24	
24	26.6	30.1	31.9	33.2	32.4	31.2	32.7	33.1	34.9	33.0	34.0	S	40.0	39.7	41.3	41.6	41.3	39.9	39.4	35.9	29.2	26.6	30.0	27.0	26.6	41.6	34.1	24	
25	30.9	36.2	36.9	38.0	37.8	36.3	35.8	35.5	36.4	36.6	S	36.6	37.0	37.4	38.0	38.4	37.7	36.1	34.6	32.7	25.8	25.6	28.0	32.6	25.6	38.4	34.8	24	
26	34.1	35.7	34.6	33.4	32.0	31.2	35.8	42.1	42.3	S	41.3	42.3	41.8	41.7	42.3	42.9	42.6	42.5	41.0	40.1	38.3	36.7	36.6	36.0	31.2	42.9	38.6	24	
27	36.6	38.0	38.4	37.7	37.4	37.1	36.1	35.7	S	36.9	37.1	37.6	39.4	41.2	42.4	42.7	43.7	42.5	40.5	40.0	38.3	37.5	35.6	35.2	35.2	43.7	38.6	24	
28	35.1	37.8	38.4	36.1	29.3	17.1	18.8	S	26.7	32.0	33.2	34.2	35.6	37.3	39.0	40.0	40.6	38.2	26.4	11.2	9.5	11.4	6.6	17.4	6.6	40.6	28.3	24	
HOURLY MAX	40.2	40.0	40.3	41.5	43.8	42.6	40.9	42.1	42.3	40.9	41.3	42.3	41.8	42.0	42.4	42.9	43.7	42.5	41.0	40.7	40.4	42.3	41.2	39.9					
HOURLY AVG	29.5	29.8	30.1	29.9	30.0	29.2	28.4	27.2	28.2	32.2	34.6	35.9	36.3	37.0	37.3	37.4	37.1	35.9	33.9	32.2	31.1	30.6	29.8	29.7					

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

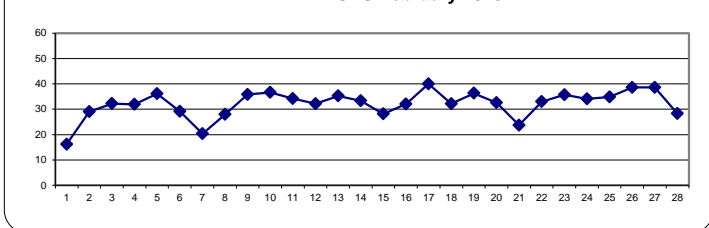
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR 82 ppb

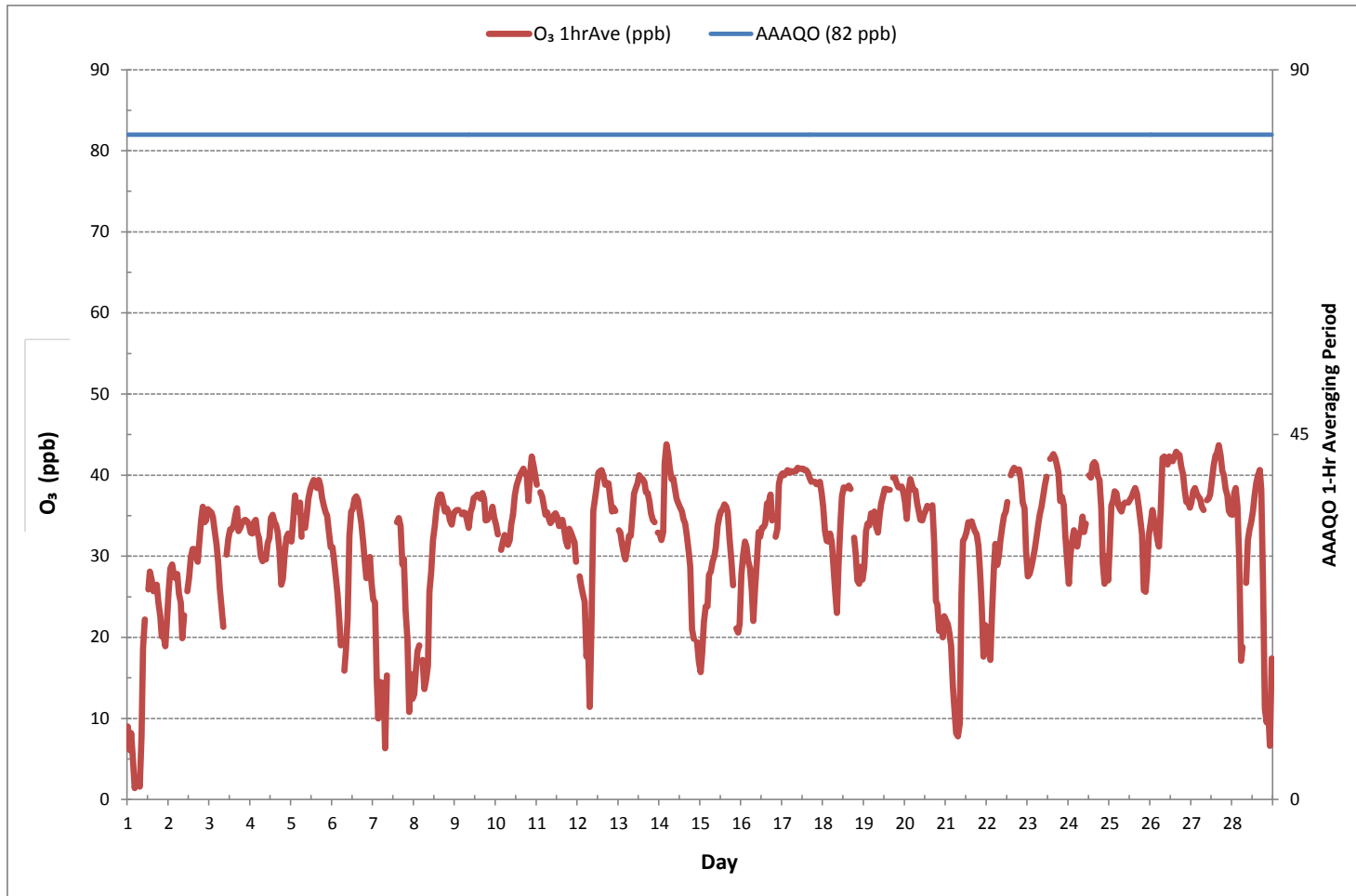
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0			
NUMBER OF NON-ZERO READINGS:	638			
MINIMUM 1-HR AVERAGE:	1.4	ppb	@ HOUR	4 ON DAY 1
MAXIMUM 1-HR AVERAGE:	43.8	ppb	@ HOUR	4 ON DAY 14
MAXIMUM 24-HR AVERAGE:	40.0	ppb		ON DAY 17
IZS CALIBRATION TIME:	29	hrs	OPERATIONAL TIME:	672 hrs
MONTHLY CALIBRATION TIME:	5	hrs	AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	7.8		MONTHLY AVERAGE:	32.2 ppb

24 HR AVERAGES February 2018



OZONE Hourly Averages (O₃ ppb)



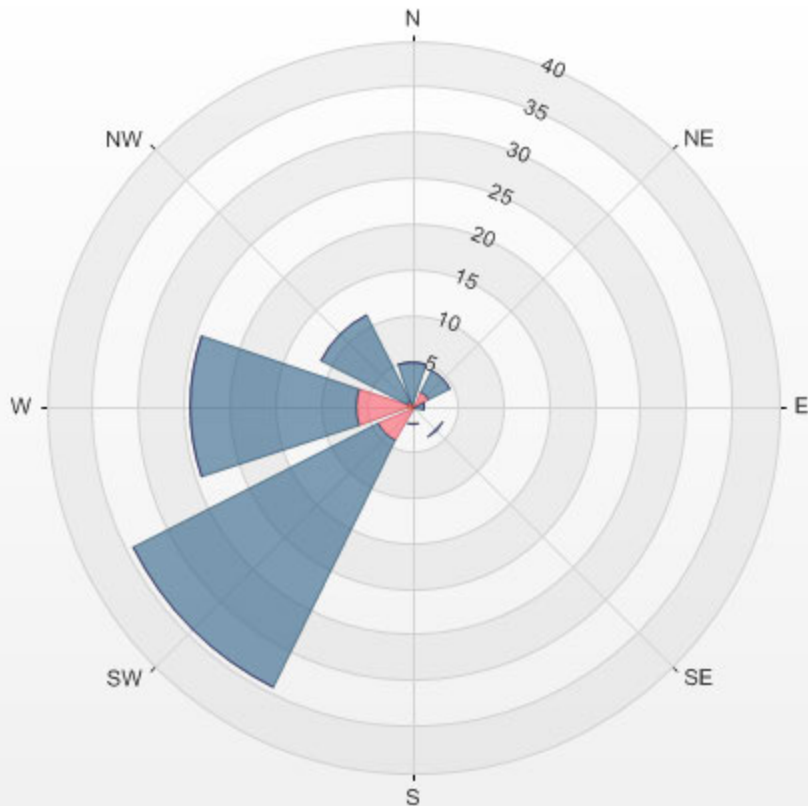
Wind: LICA COLD LAKE SOUTH
 Poll.: LICA COLD LAKE SOUTH-O3[ppb]
 Monthly: 18/02
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 13.84% Calm Avg: 20.69 [ppb]

Direction	0.0-14.6	14.6-29.3	29.3-43.9	>43.9	Total
N	0.0	0.3	4.6	0.0	4.9
NE	0.0	1.9	2.7	0.0	4.6
E	0.0	0.0	1.4	0.0	1.4
SE	0.0	0.2	3.5	0.0	3.6
S	0.0	0.2	1.7	0.0	1.9
SW	0.0	4.3	30.0	0.0	34.3
W	0.5	5.8	18.1	0.0	24.4
NW	0.0	0.8	10.4	0.0	11.2
Summary	0.5	13.4	72.3	0.0	86.2

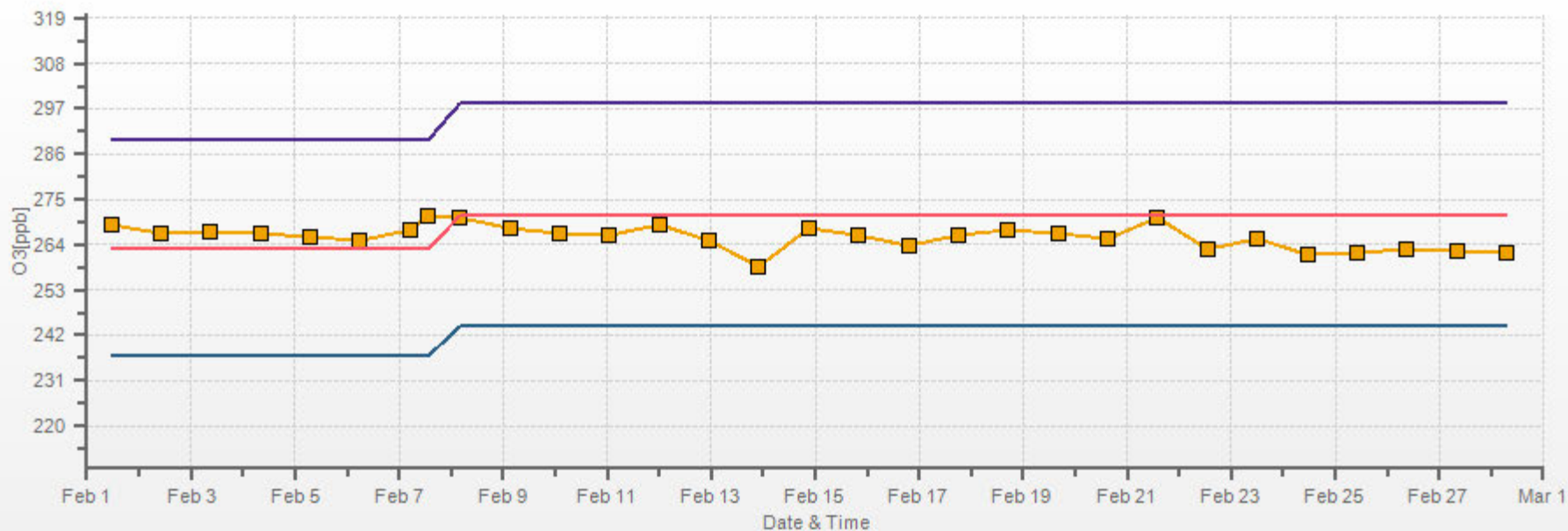
% Icon	Classes (ppb)	0	0.0-14.6	13	14.6-29.3	72	29.3-43.9	0	>43.9
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LICA COLD LAKE SOUTH Poll.: LICA COLD LAKE SOUTH-03[ppb] 2018/02/01 00:00 - 2018/02/28 23:00 Calm: 13.84% Calm Poll Avg: 20.69[ppb]



O3[ppb] Calibration: LICA COLD LAKE SOUTH Monthly: 18/02 Type: Span

Span Meas Span Ref Span Low Span High



PARTICULATE MATTER 2.5



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

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

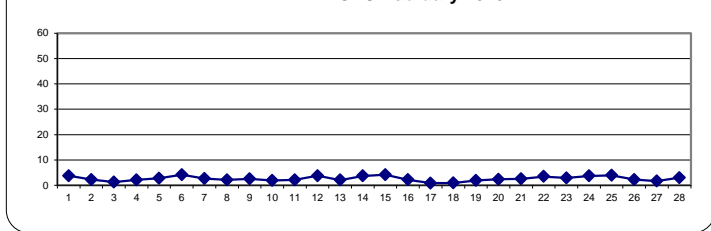
OBJECTIVE LIMIT:

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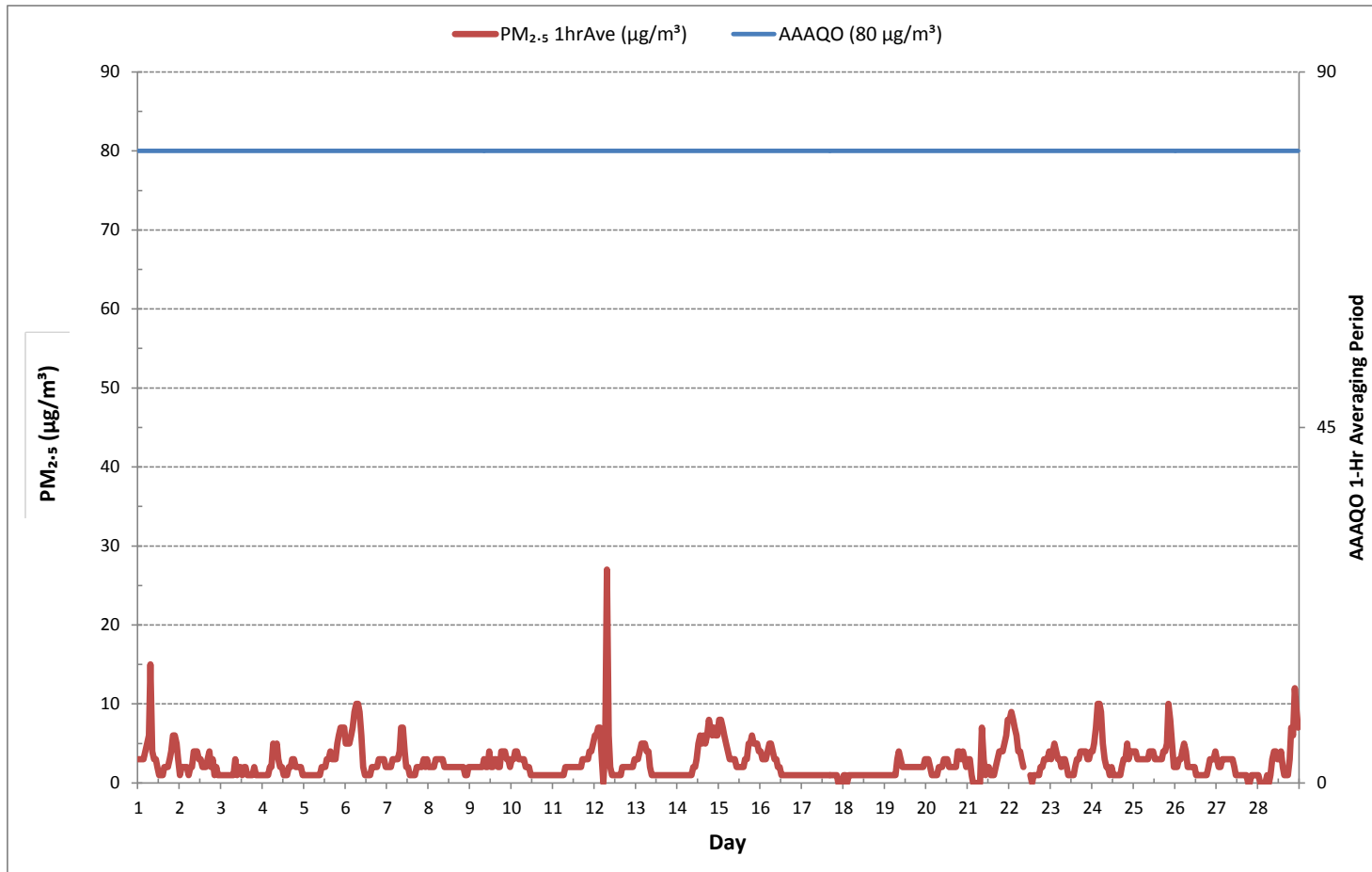
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0			
NUMBER OF 24-HR EXCEEDANCES:	0			
NUMBER OF NON-ZERO READINGS:	651			
MINIMUM 1-HR AVERAGE:	0 µg/m ³ @ HOUR	5	ON DAY	12
MAXIMUM 1-HR AVERAGE:	27 µg/m ³ @ HOUR	7	ON DAY	12
MAXIMUM 24-HR AVERAGE:	4 µg/m ³		ON DAY	15
MONTHLY CALIBRATION TIME:	3 hrs	OPERATIONAL TIME:	672 hrs	
STANDARD DEVIATION:	2	AMD OPERATION UPTIME:	100.0 %	
		MONTHLY AVERAGE:	3 µg/m ³	

24 HR AVERAGES February 2018



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



Wind: LICA COLD LAKE SOUTH
 Poll.: LICA COLD LAKE SOUTH-PM2.5_2[ug/m3(L)]
 Monthly: 18/02
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

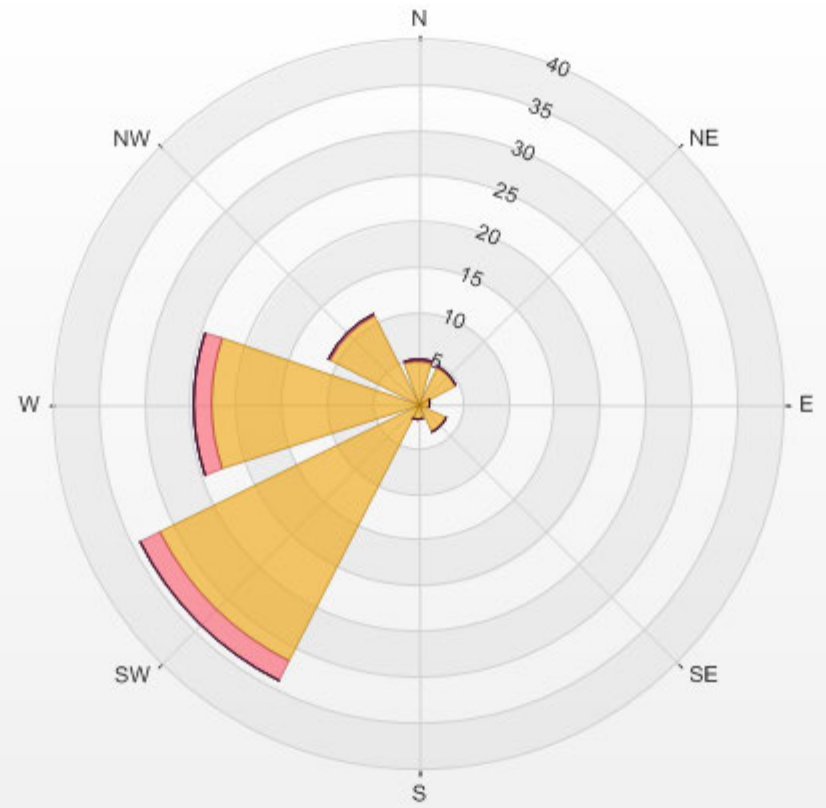
Calm: 13.79%

Calm Avg: 3.96 [ug/m3(L)]

Direction	0.0-5.6	5.6-11.2	11.2-16.8	16.8-22.4	22.4-28.0	>28.0	Total
N	4.7	0.3	0.0	0.0	0.0	0.0	5.0
NE	4.5	0.2	0.0	0.0	0.0	0.0	4.7
E	1.4	0.0	0.0	0.0	0.0	0.0	1.4
SE	3.6	0.0	0.0	0.0	0.0	0.0	3.6
S	1.7	0.2	0.0	0.0	0.0	0.0	1.8
SW	31.6	2.4	0.0	0.0	0.0	0.0	34.0
W	22.6	2.1	0.0	0.0	0.0	0.0	24.7
NW	10.9	0.2	0.0	0.0	0.0	0.0	11.1
Summary	81.0	5.3	0.0	0.0	0.0	0.0	86.2

% Icon	Classes (ug/m3(L))	81	0.0-5.6	5	5.6-11.2	0	11.2-16.8	0	16.8-22.4	0	22.4-28.0	0	>28.0
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LICA COLD LAKE SOUTH Poll.: LICA COLD LAKE SOUTH-PM2.5_2[ug/m3(L)] 2018/02/01 00:00 - 2018/02/28 23:00 Calm: 13.79% Calm Poll Avg: 3.96[ug/m3(L)]



WIND SPEED



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

WIND SPEED Hourly Averages (WS kph)

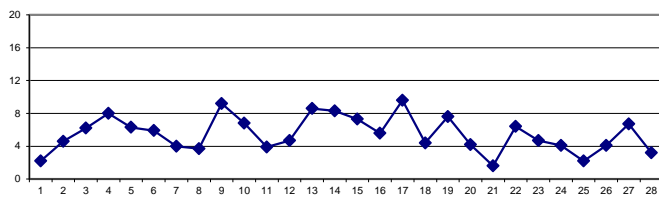
HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
DAY 1	0.6	0.9	0.5	0.6	0.3	1.0	1.2	0.3	1.7	0.9	1.1	2.8	6.0	6.3	6.2	5.9	4.7	4.6	3.8	3.7	3.6	2.2	2.8	2.3	0.3	6.3	2.2	24
2	4.1	5.7	3.5	3.1	3.6	5.3	5.6	6.5	6.5	5.6	3.5	5.4	7.1	5.2	5.7	5.7	3.6	4.3	5.0	6.0	5.3	5.1	4.9	4.3	3.1	7.1	4.6	24
3	2.8	1.0	1.7	2.0	2.7	2.5	2.1	2.6	3.6	5.8	6.8	7.4	8.2	8.8	10.3	10.9	11.7	10.5	8.8	8.5	11.2	9.9	9.6	8.8	1.0	11.7	6.2	24
4	11.6	10.7	10.8	9.3	11.2	10.4	9.2	10.1	9.1	8.6	9.9	10.3	10.9	7.7	8.5	8.5	6.8	4.7	4.9	4.8	4.3	5.6	4.4	4.7	4.3	11.6	8.0	24
5	5.1	5.8	9.3	5.8	4.6	4.7	3.9	4.8	4.1	5.7	8.6	10.1	9.4	8.9	10.3	8.4	9.3	6.7	6.1	6.5	6.1	6.2	6.5	4.9	3.9	10.3	6.3	24
6	4.5	4.9	5.6	4.5	6.9	5.5	6.1	5.6	5.5	3.6	6.5	10.7	10.6	12.3	9.7	10.7	9.3	5.3	5.4	3.8	3.6	5.4	4.4	0.9	0.9	12.3	5.9	24
7	0.6	1.5	4.1	0.2	1.0	0.4	1.5	2.7	5.9	7.2	6.2	6.4	7.2	7.6	9.2	9.4	5.7	4.7	5.2	4.4	3.7	0.4	3.2	0.4	0.2	9.4	4.0	24
8	0.9	0.1	0.8	2.2	0.7	2.5	2.3	1.2	2.1	4.6	4.7	5.1	6.2	5.0	7.6	8.3	6.3	5.2	5.3	6.1	5.7	5.5	6.9	7.0	0.1	8.3	3.7	24
9	8.0	8.7	9.0	9.4	8.0	10.1	9.2	9.0	9.9	11.3	13.4	11.9	13.5	12.4	9.5	9.6	9.4	7.4	7.0	7.4	8.3	7.8	7.4	9.0	7.0	13.5	9.2	24
10	7.9	7.8	6.2	6.9	5.8	5.8	9.6	8.8	7.0	11.1	10.6	10.6	13.1	16.4	14.5	11.5	9.8	12.0	7.9	9.5	10.8	12.3	8.3	10.7	5.8	16.4	6.8	24
11	6.5	7.2	5.8	8.1	6.0	6.8	6.7	6.3	6.5	5.0	6.2	3.3	5.8	8.1	9.1	8.9	7.6	5.4	4.4	6.5	6.0	6.4	5.2	2.7	2.7	9.1	3.9	24
12	1.1	0.3	0.2	0.4	0.5	0.5	1.0	1.0	2.3	4.7	4.2	6.7	11.8	11.9	10.4	9.9	6.3	7.3	8.0	6.0	7.2	6.2	8.0	5.8	0.2	11.9	4.7	24
13	4.8	6.2	6.8	6.9	9.0	10.9	9.8	10.2	10.4	11.1	10.2	9.9	11.9	9.7	8.9	9.1	6.3	7.5	6.7	7.5	9.0	10.8	8.9	6.6	4.8	11.9	8.6	24
14	7.8	5.5	10.3	18.4	17.4	15.2	14.4	13.7	14.1	16.2	13.9	12.8	13.2	13.3	13.4	12.0	8.3	4.7	2.9	0.9	0.8	0.3	1.9	4.1	0.3	18.4	8.3	24
15	3.1	5.7	6.6	5.7	4.9	6.2	6.8	7.0	6.6	10.0	11.3	12.5	12.5	12.6	13.9	10.5	8.5	7.0	4.7	4.8	0.6	0.5	1.5	0.5	0.5	13.9	7.3	24
16	3.3	4.2	3.9	5.0	4.8	4.3	6.7	4.4	4.8	4.4	6.5	6.0	5.8	4.5	5.3	10.2	10.7	8.6	6.9	6.0	5.4	7.0	9.2	12.1	3.3	12.1	5.6	24
17	13.8	9.0	8.2	10.3	10.8	11.3	12.6	13.2	6.6	8.8	8.6	9.4	12.4	13.3	10.9	11.0	9.8	7.4	7.9	8.0	8.3	10.3	9.0	5.8	5.8	13.8	9.6	24
18	4.3	3.8	3.1	5.2	4.5	4.4	3.8	4.5	3.6	4.8	7.7	11.5	11.9	9.3	5.5	8.4	8.1	4.8	1.3	1.2	0.7	4.6	4.7	4.1	0.7	11.9	4.4	24
19	4.1	4.8	4.4	3.6	4.3	5.2	5.7	5.2	5.8	8.9	10.6	11.5	13.1	12.6	11.8	11.0	8.7	9.4	9.1	7.9	6.1	7.2	6.5	5.7	3.6	13.1	7.6	24
20	5.5	4.1	9.3	8.6	9.3	9.9	10.0	9.9	9.1	9.9	8.5	6.6	4.6	0.5	2.0	5.0	5.9	1.6	0.8	0.6	0.5	1.4	0.3	0.8	0.3	10.0	4.2	24
21	0.2	0.3	0.1	0.5	0.6	1.3	0.3	0.5	0.9	2.7	3.5	3.9	5.3	6.3	4.9	6.1	3.8	3.6	3.4	4.1	0.9	0.5	0.3	0.5	0.1	6.3	1.6	24
22	0.5	2.3	3.3	7.0	6.2	7.7	6.2	8.4	7.1	6.7	6.9	8.2	7.7	10.2	11.2	11.2	10.7	8.7	6.9	7.3	4.7	4.6	4.0	0.2	0.2	11.2	6.4	24
23	1.5	1.6	0.6	1.8	2.4	2.9	5.8	6.9	5.3	8.3	8.5	8.4	12.0	7.6	8.2	8.1	11.0	7.6	3.8	1.1	1.5	1.4	0.8	0.1	0.1	12.0	4.7	24
24	1.2	2.5	4.3	5.7	3.8	3.2	4.9	4.1	5.1	5.0	7.6	11.2	11.9	12.3	13.9	11.8	12.2	12.5	5.5	1.8	1.4	1.5	1.1	1.8	1.1	13.9	4.1	24
25	1.3	3.6	5.1	7.1	8.1	4.1	4.5	3.6	4.4	4.5	3.7	7.2	3.7	2.0	7.6	7.3	6.0	4.5	3.2	2.7	2.0	2.9	2.2	9.3	1.3	9.3	2.2	24
26	12.3	11.8	8.9	4.9	6.1	8.6	9.5	8.9	8.8	9.3	6.1	5.7	7.6	9.1	9.2	6.2	5.0	4.9	4.7	1.8	3.5	3.2	3.2	3.6	1.8	12.3	4.1	24
27	4.6	3.4	3.4	6.0	5.1	4.7	4.5	5.2	3.6	4.7	6.5	7.5	10.8	12.1	13.6	14.8	12.4	7.9	8.0	6.5	4.8	5.1	6.0	6.0	3.4	14.8	6.7	24
28	6.4	6.2	6.3	2.9	1.1	1.1	1.3	2.4	5.4	5.9	5.5	6.0	7.4	7.9	7.2	7.9	5.0	1.4	0.8	0.7	1.2	1.8	1.4	1.8	0.7	7.9	3.2	24
HOURLY MAX	13.8	11.8	10.8	18.4	17.4	15.2	14.4	13.7	14.1	16.2	13.9	12.8	13.5	16.4	14.5	14.8	12.4	12.5	9.1	9.5	11.2	12.3	9.6	12.1				
HOURLY AVG	2.8	3.0	3.0	2.7	2.5	2.8	3.2	3.2	3.2	4.3	4.6	5.0	6.2	6.0	6.7	6.4	5.6	4.5	4.2	3.7	3.0	3.1	3.1	2.6				

STATUS FLAG CODES

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

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

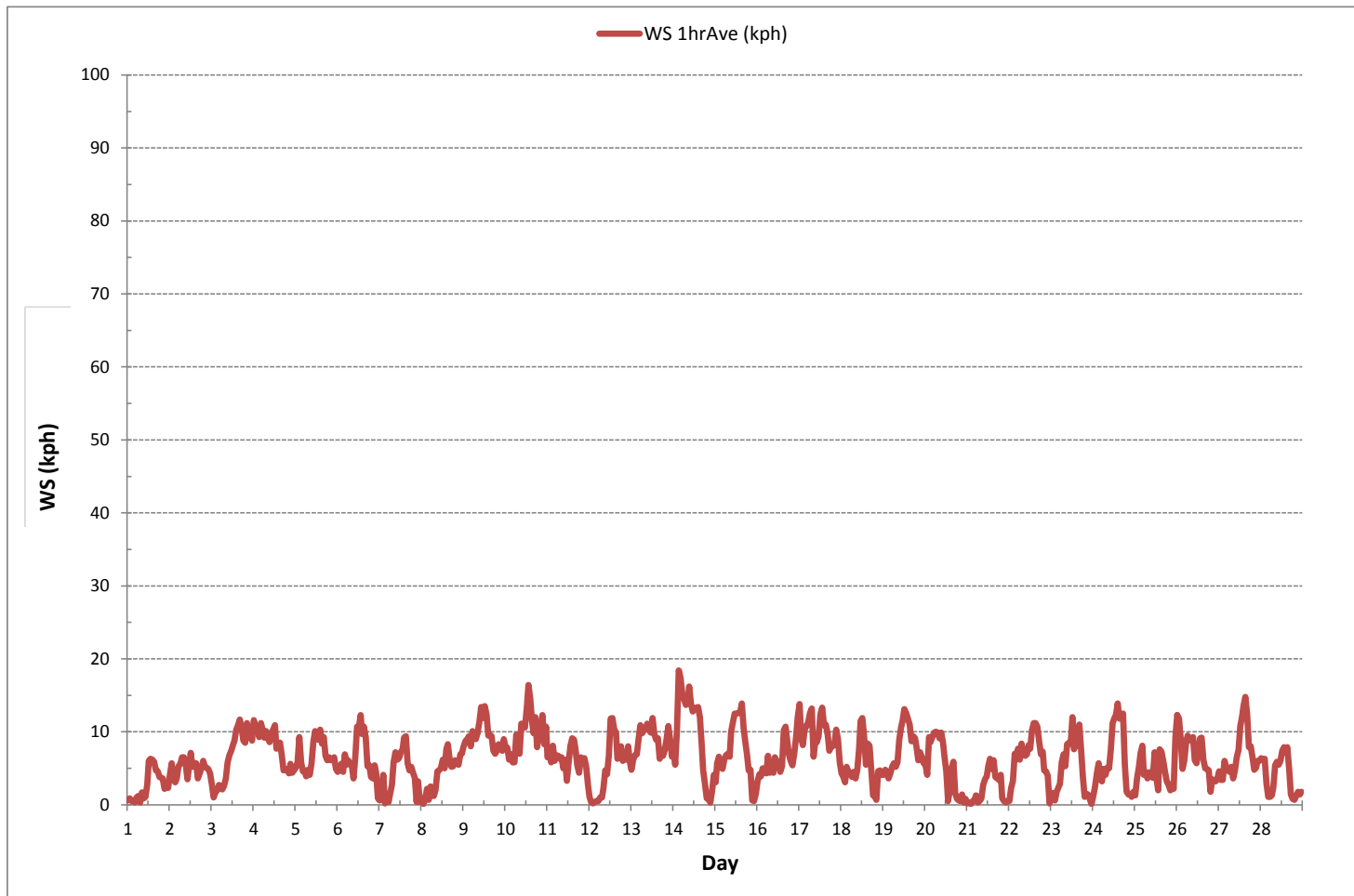
24 HR AVERAGES February 2018



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	672
MINIMUM 1-HR AVERAGE:	0.1 kph @ HOUR 1 ON DAY 8
MAXIMUM 1-HR AVERAGE:	18.4 kph @ HOUR 3 ON DAY 14
MAXIMUM 24-HR AVERAGE:	9.6 kph ON DAY 17
MONTHLY CALIBRATION TIME:	0 hrs
OPERATIONAL TIME:	672 hrs
AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	3.6
MONTHLY AVERAGE:	3.9 kph

WIND SPEED Hourly Averages (WS kph)



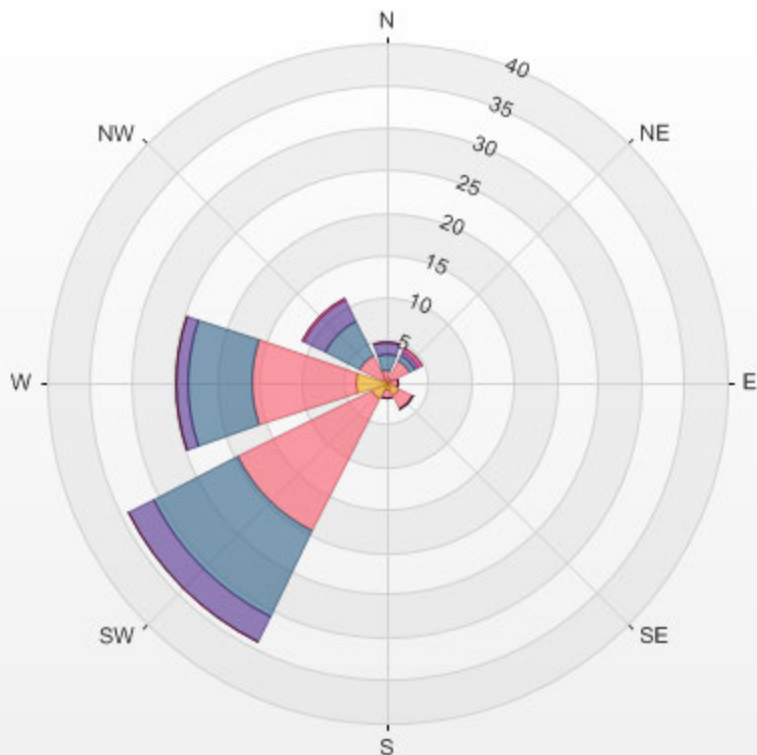
Wind: LICA COLD LAKE SOUTH
 Monitor: WSP [kph]
 Monthly: 18/02
 Type: WindRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 13.69%

Direction	1.8-3.7	3.7-7.4	7.4-11.1	11.1-14.8	14.8-18.5	>18.5	Total
N	0.3	1.2	1.9	1.3	0.2	0.0	4.9
NE	0.6	2.4	0.7	0.5	0.5	0.0	4.6
E	0.3	1.0	0.0	0.0	0.0	0.0	1.3
SE	1.6	1.8	0.2	0.0	0.0	0.0	3.6
S	0.9	0.9	0.0	0.0	0.0	0.0	1.8
SW	2.1	17.6	11.2	3.3	0.0	0.0	34.1
W	3.7	12.1	7.7	1.3	0.0	0.0	24.9
NW	0.6	3.1	4.3	3.0	0.2	0.0	11.2
Summary	10.1	40.0	26.0	9.4	0.8	0.0	86.3

% Icon	Classes (kph)	10	1.8-3.7	40	3.7-7.4	26	7.4-11.1	9	11.1-14.8	1	14.8-18.5	0	>18.5
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LICA COLD LAKE SOUTH 2018/02/01 00:00 - 2018/02/28 23:00 Calm: 13.69% Calm Wind Avg Speed: 0.87(kph)



WIND DIRECTION



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

WIND DIRECTION Hourly Averages (WD)

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

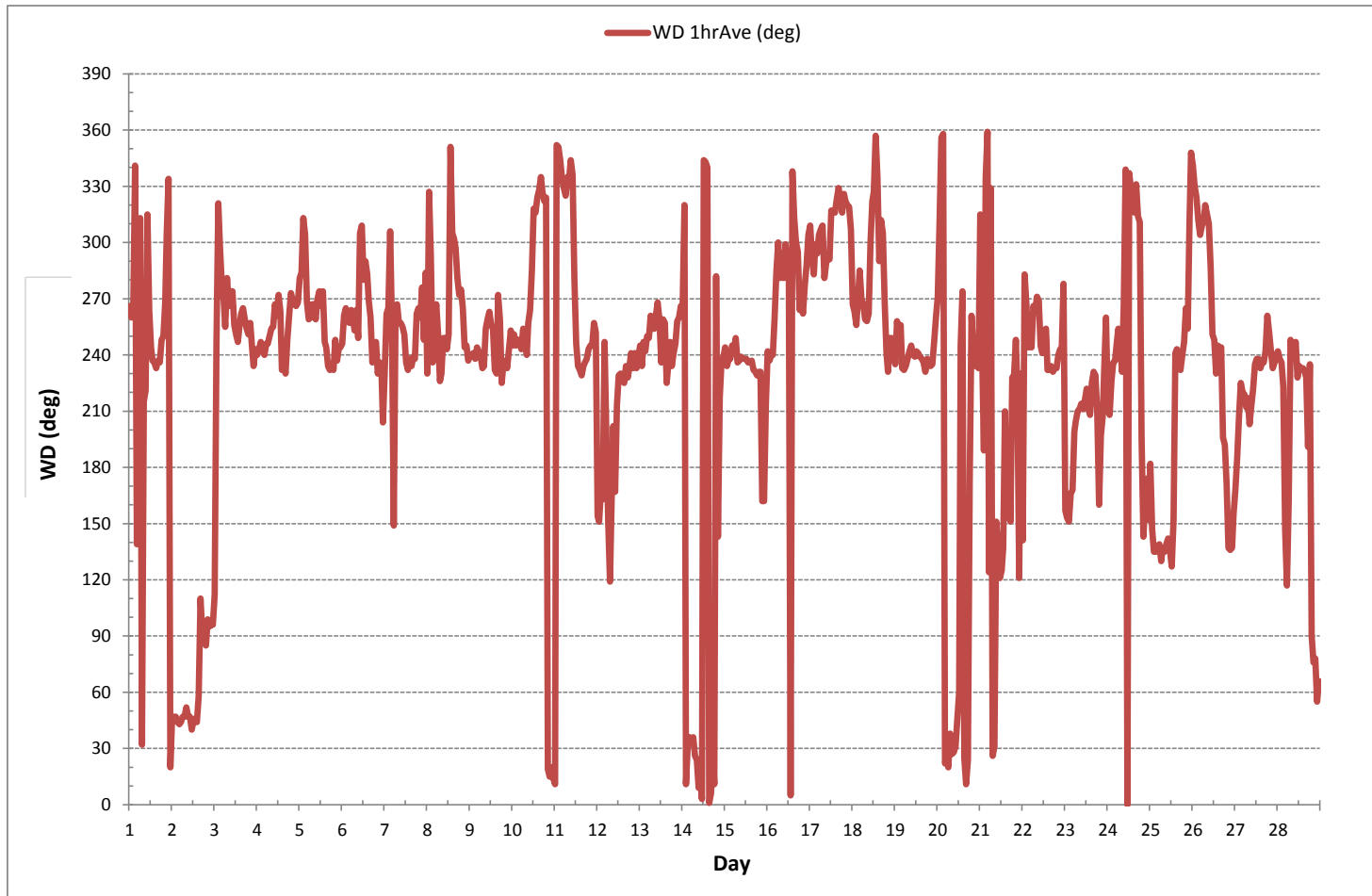
STATUS FLAG CODES

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

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

MONTHLY CALIBRATION TIME:	0	hrs	OPERATIONAL TIME:	672	hrs
STANDARD DEVIATION:	77		AMD OPERATION UPTIME:	100.0	%
			MONTHLY AVERAGE:	265	(W)

WIND DIRECTION Hourly Averages (WD)



STANDARD DEVIATION WIND DIRECTION



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

STANDARD DEVIATION WIND DIRECTION Hourly Averages (STDWD deg)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59		
DAY																										
1	72	61	64	69	60	44	52	59	36	46	54	32	23	24	21	16	20	18	21	22	27	25	21	26	24	
2	18	16	15	20	20	17	15	15	17	17	30	19	15	25	18	21	28	26	27	22	26	25	25	30	24	
3	27	31	23	33	39	44	45	38	36	24	23	20	19	19	18	19	18	17	17	17	18	16	17	19	24	
4	17	20	19	19	17	18	18	16	16	18	20	19	18	21	16	15	13	15	20	20	22	17	20	20	24	
5	19	19	12	17	19	19	20	20	22	17	19	20	20	21	18	18	16	15	14	16	17	17	16	17	24	
6	19	19	21	20	15	20	18	17	22	22	23	17	21	19	21	20	17	16	17	25	16	13	17	43	24	
7	57	56	46	65	73	58	68	51	27	20	20	17	17	16	15	14	13	18	25	31	49	31	40	24	24	
8	54	68	75	38	58	38	37	63	28	19	19	18	23	34	23	19	19	20	19	20	19	15	17	16	24	
9	17	16	16	16	17	17	17	15	16	17	18	19	17	18	16	16	20	24	14	16	16	13	16	17	24	
10	15	14	14	15	15	15	14	15	15	17	18	21	19	15	15	14	16	14	12	12	20	15	18	16	24	
11	20	19	17	14	13	12	13	10	13	23	19	38	25	19	20	17	18	20	24	20	21	21	30	39	24	
12	48	63	70	62	57	67	64	64	56	38	36	24	18	19	17	17	16	17	16	16	15	14	14	24	24	
13	16	14	15	16	16	16	16	16	17	17	19	17	15	18	19	15	16	17	17	19	17	17	17	17	24	
14	18	19	19	18	18	19	17	18	19	16	17	18	20	16	15	16	17	20	28	46	56	63	50	28	24	
15	39	18	19	20	23	20	19	19	20	17	17	17	15	16	17	16	16	13	11	14	12	39	60	43	24	
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17	14	19	21	19	19	17	15	15	20	20	23	23	18	16	21	18	16	14	13	14	13	15	13	14	24	
18	22	23	25	15	18	21	27	23	27	21	19	19	20	21	34	23	19	15	30	48	62	25	17	18	24	
19	19	23	18	26	18	18	14	15	17	18	16	15	17	17	17	17	14	16	16	16	15	17	17	17	24	
20	17	18	15	16	20	17	18	18	18	18	21	18	31	56	60	30	21	28	34	61	61	43	73	60	24	
21	60	56	57	69	57	58	65	66	47	51	30	27	22	24	36	32	36	23	24	19	38	45	46	50	24	
22	77	33	35	13	11	12	18	17	17	18	17	17	20	18	16	16	15	15	15	14	17	14	14	39	24	
23	35	37	80	61	50	51	34	32	38	29	29	33	24	32	33	23	17	17	29	54	38	28	47	69	24	
24	48	28	18	14	14	14	17	17	14	19	19	17	20	18	18	20	15	15	20	23	57	30	51	45	24	
25	59	32	18	14	14	32	21	27	20	29	35	19	34	60	20	18	15	12	13	22	19	15	21	16	24	
26	14	14	16	18	15	12	13	16	15	17	27	29	24	22	18	24	24	33	39	55	28	28	27	34	24	
27	38	49	39	14	24	23	32	26	35	34	25	18	17	17	18	16	16	15	20	14	19	11	11	12	24	
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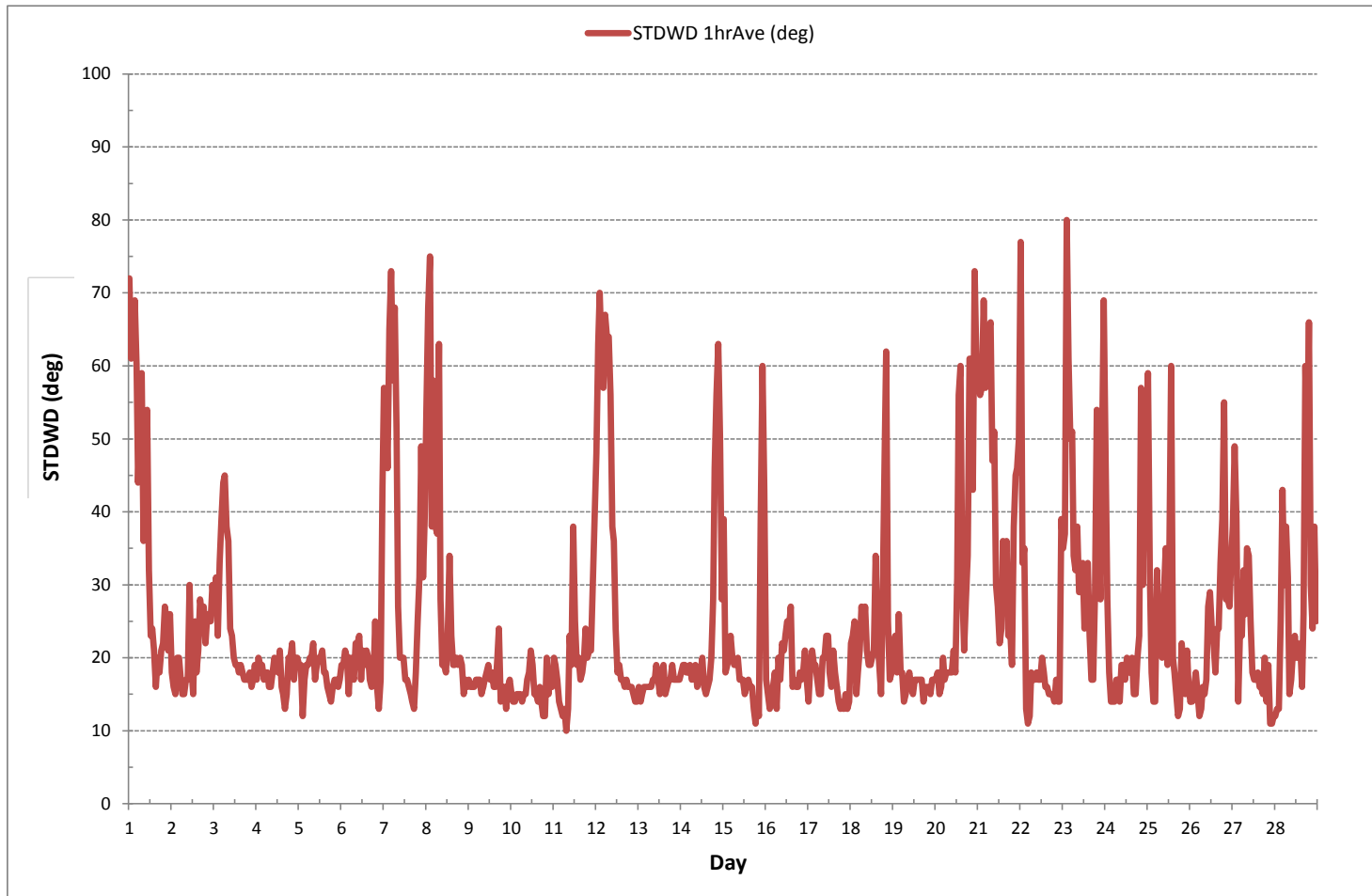
STATUS FLAG CODES

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

LAST CALIBRATION: November 9, 2017

CALIBRATION TIME: 0 hrs OPERATIONAL TIME: 672 hrs

STANDARD DEVIATION WIND DIRECTION Hourly Averages (STDWD deg)



RELATIVE HUMIDITY



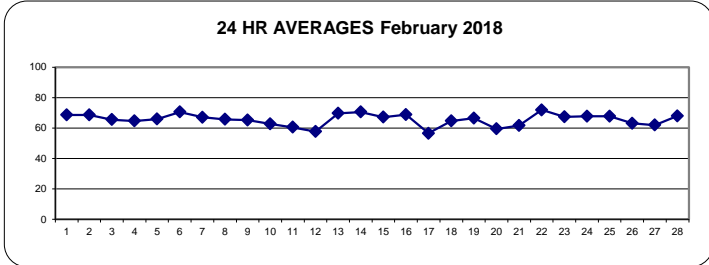
RELATIVE HUMIDITY Hourly Averages (RH %)

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 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	70	69	69	69	70	71	71	71	72	71	68	66	61	58	60	64	65	68	69	70	72	73	74	74	58	74	69	24
2	72	68	68	70	72	72	72	71	70	68	65	65	64	62	63	63	65	68	70	71	71	72	72	71	62	72	69	24
3	71	72	73	73	73	73	72	72	71	67	63	58	55	55	54	53	55	61	63	65	65	67	70	71	53	73	66	24
4	71	71	70	69	70	69	68	67	67	63	57	55	53	52	51	53	56	62	67	71	73	73	71	72	51	73	65	24
5	75	75	64	62	65	67	68	67	67	61	61	61	59	57	58	60	61	64	67	69	71	72	75	76	57	76	66	24
6	76	77	77	77	77	77	77	77	76	72	68	64	62	59	57	57	61	65	68	71	74	75	76	74	57	77	71	24
7	73	70	71	71	70	70	69	70	72	72	67	64	60	56	53	53	57	64	66	71	73	74	72	72	53	74	67	24
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10	65	66	67	66	65	65	66	67	68	65	61	58	59	60	60	59	63	58	53	58	68	61	64	62	53	68	63	24
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12	71	71	70	69	68	68	69	71	71	63	54	46	41	41	41	41	46	49	52	55	55	57	57	58	41	71	58	24
13	59	59	61	62	62	62	62	64	65	65	63	62	63	61	60	64	67	74	90	93	92	87	88	88	59	93	70	24
14	86	86	95	93	86	85	84	81	77	73	68	61	56	50	46	46	48	57	61	68	73	72	71	71	46	95	71	24
15	72	73	74	73	72	73	74	74	74	72	67	60	56	52	54	55	54	59	64	69	71	73	74	73	52	74	67	24
16	69	66	68	79	82	82	83	82	80	74	69	65	60	59	58	59	61	60	67	68	69	68	63	62	58	83	69	24
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18	60	64	67	72	75	77	76	75	74	74	72	55	51	55	49	47	48	50	58	65	70	72	72	73	47	77	65	24
19	73	74	74	74	75	77	75	74	73	69	63	59	57	54	53	54	56	64	66	67	68	66	66	65	53	77	67	24
20	66	68	65	62	62	65	63	66	62	61	56	51	45	40	42	47	58	64	68	71	72	70	72	70	40	72	59	24
21	69	69	68	68	68	67	67	68	68	64	61	56	51	47	42	44	45	51	57	63	69	72	72	73	42	73	62	24
22	73	73	74	79	82	83	83	84	83	76	67	65	63	57	56	56	57	60	66	70	74	80	81	83	56	84	72	24
23	81	81	83	84	82	81	76	74	69	59	51	46	40	40	42	42	59	80	77	76	71	70	74	77	40	84	67	24
24	77	74	74	77	76	75	72	70	69	68	70	66	57	54	53	52	56	59	60	63	69	77	79	80	52	80	68	24
25	79	82	85	85	83	83	84	84	82	76	70	65	57	53	46	44	45	51	55	58	60	62	63	74	44	85	68	24
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27	66	61	61	63	65	65	78	83	75	70	63	55	48	45	44	43	44	48	54	67	70	71	73	75	43	83	62	24
28	79	80	79	82	85	86	85	85	76	61	54	50	47	46	44	45	43	49	63	70	75	79	83	84	43	86	68	24
HOURLY MAX	86	86	95	93	86	86	85	85	83	76	72	66	64	62	63	64	67	80	90	93	92	87	88	88				
HOURLY AVG	71	71	72	73	73	73	73	73	71	67	63	58	55	53	51	52	54	59	63	67	69	71	71	72				

STATUS FLAG CODES

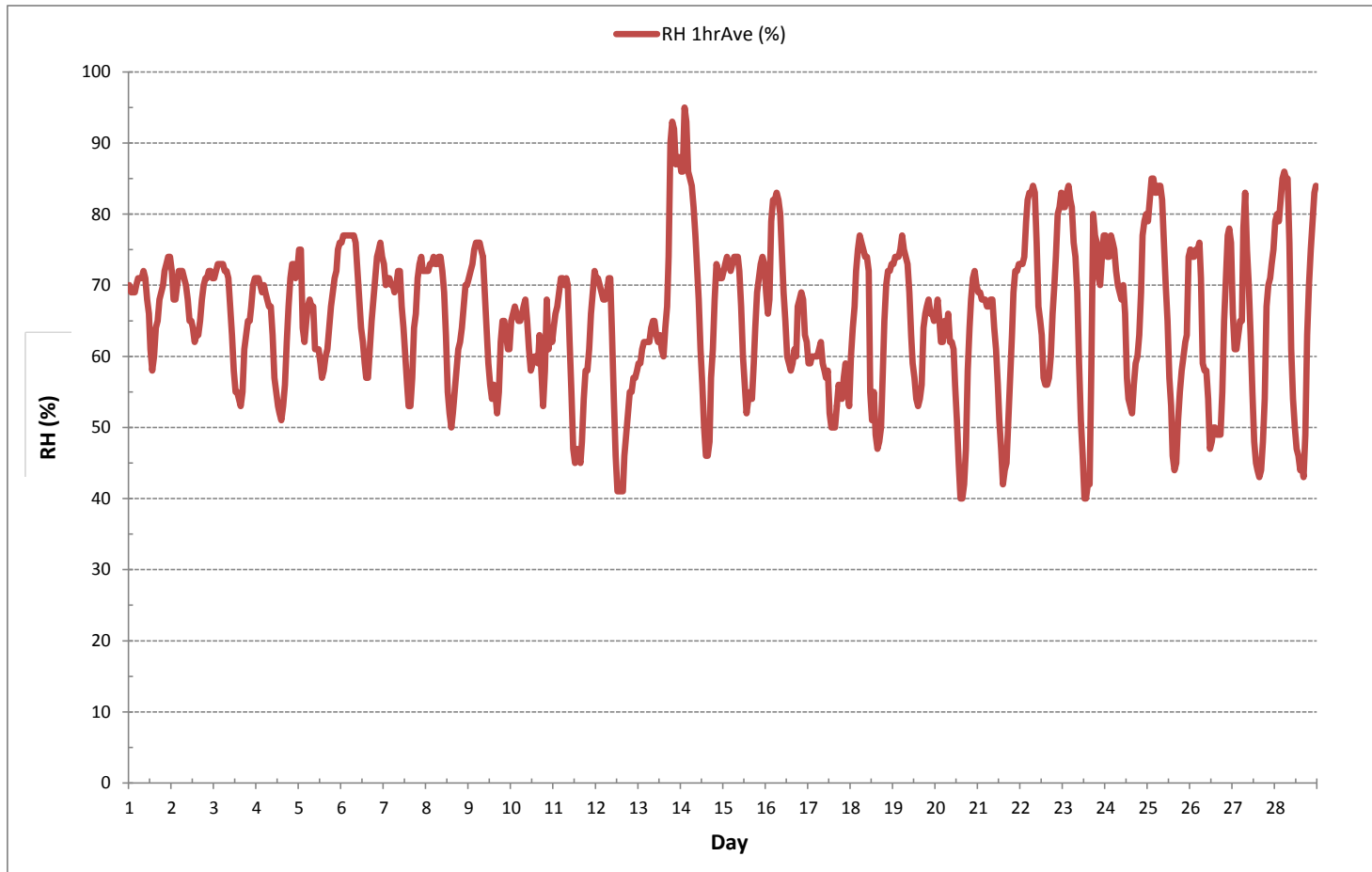
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY



MINIMUM 1-HR AVERAGE:	40	%	@ HOUR	14	ON DAY	20	
MAXIMUM 1-HR AVERAGE:	95	%	@ HOUR	2	ON DAY	14	
MAXIMUM 24-HR AVERAGE:	72	%			ON DAY	22	
OPERATIONAL TIME:						672 hrs	
AMD OPERATION UPTIME:						100.0 %	
STANDARD DEVIATION:	10					MONTHLY AVERAGE:	66 %

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION
Cold Lake South Continuous Monitoring Station - February 2018
RELATIVE HUMIDITY Hourly Averages (RH %)



AMBIENT TEMPERATURE



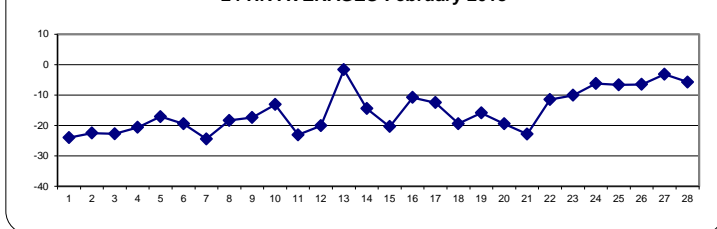
AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)

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	-31.5	-32.4	-32.5	-31.4	-29.7	-28.0	-27.5	-26.9	-26.2	-24.6	-22.6	-22.0	-20.5	-19.7	-19.9	-20.4	-20.3	-20.4	-20.3	-20.2	-19.8	-19.8	-19.8	-19.8	-32.5	-19.7	-24.0	24	
2	-20.2	-20.6	-21.1	-21.6	-22.2	-22.6	-23.1	-23.7	-24.3	-24.2	-23.5	-23.4	-23.2	-22.3	-22.0	-21.9	-21.9	-22.3	-22.5	-22.5	-22.7	-22.8	-22.9	-23.0	-24.3	-20.2	-22.5	24	
3	-23.1	-22.8	-22.7	-22.7	-23.3	-24.5	-26.0	-27.7	-28.5	-24.2	-22.5	-21.4	-20.3	-19.8	-18.9	-18.7	-19.5	-20.9	-21.7	-22.5	-22.2	-23.2	-24.5	-24.9	-28.5	-18.7	-22.8	24	
4	-25.0	-25.2	-25.2	-25.0	-25.3	-24.9	-24.2	-23.8	-24.1	-22.8	-20.9	-19.2	-17.4	-15.9	-15.7	-16.0	-17.2	-19.3	-19.9	-19.1	-18.1	-17.2	-16.8	-16.7	-25.3	-15.7	-20.6	24	
5	-17.1	-17.7	-17.2	-18.0	-18.4	-18.6	-18.3	-17.7	-17.3	-16.4	-15.4	-15.1	-15.1	-14.8	-14.6	-15.3	-16.2	-17.4	-18.1	-18.4	-18.4	-18.1	-18.1	-18.5	-18.6	-14.6	-17.1	24	
6	-18.5	-18.2	-18.3	-18.4	-18.4	-18.8	-20.3	-21.4	-21.7	-19.6	-17.4	-17.0	-16.6	-16.4	-15.9	-16.2	-17.5	-19.1	-20.2	-21.2	-22.9	-23.6	-23.9	-26.0	-26.0	-15.9	-19.5	24	
7	-27.2	-28.8	-29.4	-30.1	-30.9	-31.5	-32.2	-31.7	-29.4	-24.9	-22.2	-19.8	-18.5	-17.1	-15.8	-15.7	-17.0	-19.5	-19.7	-21.6	-24.0	-25.7	-27.3	-27.1	-32.2	-15.7	-24.5	24	
8	-25.5	-23.8	-22.8	-22.4	-22.0	-21.7	-21.5	-21.1	-20.4	-19.2	-17.8	-15.9	-13.6	-13.7	-13.6	-13.8	-14.2	-14.6	-15.1	-15.4	-16.5	-17.7	-18.9	-19.2	-25.5	-13.6	-18.4	24	
9	-19.5	-20.1	-20.5	-21.1	-21.5	-21.7	-22.0	-22.1	-21.9	-19.7	-17.8	-16.0	-14.6	-13.4	-13.9	-13.4	-12.2	-13.1	-15.2	-16.3	-16.4	-15.9	-14.9	-14.2	-22.1	-12.2	-17.4	24	
10	-14.5	-14.5	-14.5	-14.4	-14.2	-14.8	-15.1	-15.4	-15.3	-13.7	-12.4	-10.0	-9.0	-9.0	-8.9	-9.0	-9.7	-10.5	-12.2	-12.8	-13.7	-15.4	-17.2	-18.7	-18.7	-8.9	-13.1	24	
11	-20.1	-21.3	-22.1	-23.1	-23.9	-24.6	-25.2	-25.8	-26.6	-24.0	-22.8	-20.9	-20.3	-20.2	-20.0	-19.9	-20.6	-22.0	-23.6	-24.0	-24.5	-25.2	-26.1	-28.3	-28.3	-19.9	-23.1	24	
12	-29.5	-30.7	-31.7	-32.4	-33.1	-33.7	-32.7	-30.9	-27.5	-22.1	-19.8	-16.5	-14.1	-13.0	-12.1	-11.3	-11.9	-12.0	-11.7	-11.8	-11.3	-11.0	-10.5	-10.9	-33.7	-10.5	-20.1	24	
13	-11.2	-10.4	-9.4	-8.4	-7.5	-6.4	-4.4	-3.7	-2.8	-0.9	0.5	1.7	1.7	2.6	3.1	2.3	1.9	1.9	1.1	1.2	1.6	2.0	1.8	1.6	-11.2	3.1	-1.7	24	
14	1.7	1.4	0.0	-3.7	-6.2	-8.0	-9.5	-10.6	-11.8	-13.6	-15.4	-15.5	-15.4	-15.8	-15.7	-16.2	-16.9	-19.2	-20.9	-23.6	-25.7	-27.7	-29.2	-29.8	-29.8	1.7	-14.5	24	
15	-29.9	-29.2	-27.4	-26.8	-27.2	-26.6	-26.0	-25.6	-24.7	-22.2	-19.8	-17.7	-15.6	-14.0	-13.0	-12.5	-12.3	-13.9	-15.0	-16.7	-17.3	-18.6	-18.9	-18.1	-29.9	-12.3	-20.4	24	
16	-15.4	-13.7	-12.5	-11.7	-11.0	-11.0	-11.4	-12.0	-11.7	-10.4	-9.4	-8.4	-7.2	-7.2	-7.1	-7.1	-7.9	-9.5	-11.0	-11.9	-13.1	-13.5	-12.6	-12.8	-15.4	-7.1	-10.8	24	
17	-12.8	-12.8	-12.6	-12.5	-12.5	-12.5	-12.6	-13.1	-13.1	-12.4	-11.9	-11.6	-11.4	-11.3	-11.2	-11.4	-11.7	-12.1	-12.4	-12.6	-13.0	-13.6	-14.1	-15.4	-15.4	-11.2	-12.5	24	
18	-18.1	-19.5	-19.4	-19.1	-19.2	-20.0	-21.6	-22.8	-22.0	-18.8	-17.0	-15.1	-14.7	-15.3	-14.9	-15.0	-15.5	-16.8	-19.5	-22.2	-24.4	-24.9	-24.6	-25.5	-25.5	-14.7	-19.4	24	
19	-24.0	-22.2	-21.8	-21.5	-20.2	-20.6	-19.8	-20.6	-19.9	-17.4	-15.3	-13.8	-12.7	-11.8	-11.3	-11.5	-11.4	-12.3	-12.5	-12.4	-12.5	-12.3	-12.1	-12.1	-24.0	-11.3	-15.9	24	
20	-12.4	-12.3	-12.7	-13.3	-14.1	-16.0	-17.4	-19.4	-20.6	-21.4	-21.3	-20.4	-19.2	-17.4	-15.7	-16.1	-16.8	-18.3	-21.9	-24.6	-26.7	-28.4	-29.6	-31.0	-31.0	-12.3	-19.5	24	
21	-31.8	-32.4	-33.1	-33.8	-34.4	-34.9	-34.9	-34.4	-31.1	-23.6	-20.7	-17.9	-15.0	-12.2	-10.0	-11.0	-11.8	-13.4	-14.5	-15.9	-18.6	-20.5	-21.2	-22.1	-34.9	-10.0	-22.9	24	
22	-23.0	-24.1	-24.1	-19.6	-16.5	-15.3	-14.9	-12.9	-11.7	-9.9	-7.9	-6.9	-5.3	-3.8	-3.3	-3.5	-4.1	-5.3	-6.9	-8.0	-9.4	-11.8	-12.7	-15.0	-24.1	-3.3	-11.5	24	
23	-16.7	-17.1	-16.1	-14.3	-13.8	-14.1	-13.6	-13.6	-12.9	-11.0	-9.1	-7.0	-5.5	-4.8	-5.0	-4.7	-6.0	-7.3	-7.7	-8.7	-8.3	-7.9	-8.5	-8.9	-17.1	-4.7	-10.1	24	
24	-8.8	-7.1	-6.8	-6.5	-6.5	-6.4	-5.5	-5.1	-5.3	-4.5	-3.4	-3.4	-2.7	-2.6	-3.0	-3.2	-4.2	-5.6	-6.4	-6.7	-8.2	-11.2	-12.7	-12.9	-12.9	-2.6	-6.2	24	
25	-11.7	-10.6	-10.3	-9.9	-9.5	-10.0	-10.4	-10.5	-9.9	-8.6	-7.5	-6.5	-4.3	-3.4	-2.4	-2.0	-2.1	-3.7	-4.2	-4.2	-4.7	-5.1	-4.8	-4.1	-11.7	-2.0	-6.7	24	
26	-5.4	-6.7	-8.2	-8.3	-8.1	-8.2	-8.3	-8.3	-8.1	-7.7	-6.8	-5.5	-5.0	-4.6	-4.1	-3.2	-3.2	-4.3	-5.5	-6.9	-7.4	-8.0	-7.6	-7.4	-8.3	-3.2	-6.5	24	
27	-6.7	-6.4	-6.6	-7.3	-8.0	-7.8	-7.6	-7.2	-6.2	-4.4	-3.2	-1.2	1.0	2.8	3.2	3.1	2.4	0.9	-0.2	-1.0	-2.3	-3.4	-4.4	-5.0	-8.0	3.2	-3.1	24	
28	-5.9	-6.5	-6.9	-8.3	-10.3	-10.6	-11.4	-12.7	-8.7	-4.9	-3.3	-1.9	-0.9	0.0	1.4	1.2	1.7	-0.1	-3.7	-5.9	-8.2	-10.0	-10.9	-11.1	-12.7	1.7	-5.7	24	
HOURLY MAX	1.7	1.4	0.0	-3.7	-6.2	-6.4	-4.4	-3.7	-2.8	-0.9	0.5	1.7	1.7	2.8	3.2	3.1	2.4	1.9	1.1	1.2	1.6	2.0	1.8	1.6					
HOURLY AVG	-18.0	-18.1	-18.1	-18.1	-18.1	-18.4	-18.5	-18.6	-18.0	-16.0	-14.5	-13.2	-12.0	-11.2	-10.7	-10.8	-11.3	-12.5	-13.6	-14.5	-15.3	-16.1	-16.5	-17.0					

STATUS FLAG CODES

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

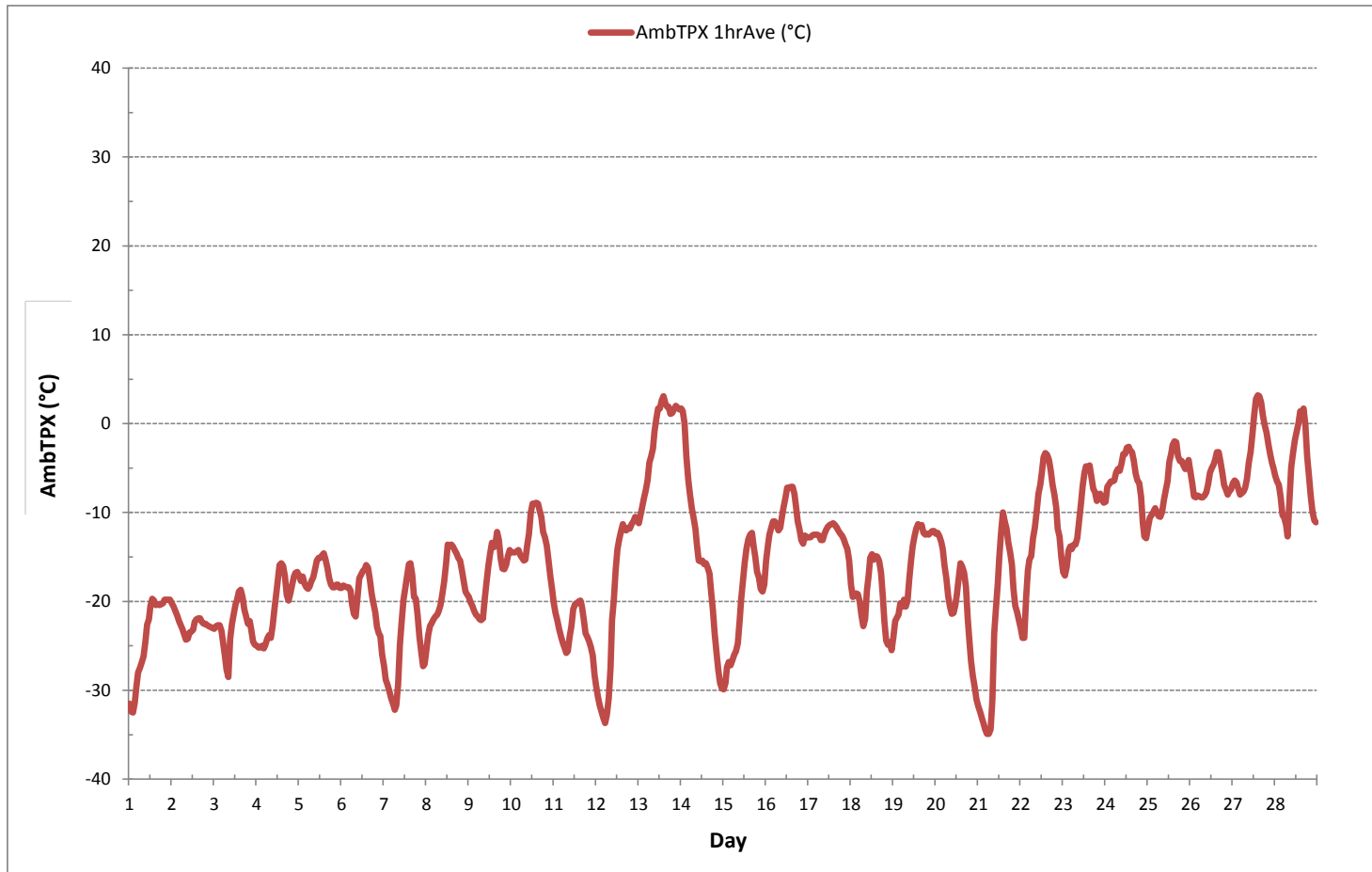
24 HR AVERAGES February 2018



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	-34.9	°C	@ HOUR	5	ON DAY	21	
MAXIMUM 1-HR AVERAGE:	3.2	°C	@ HOUR	14	ON DAY	27	
MAXIMUM 24-HR AVERAGE:	-1.7	°C			ON DAY	13	
OPERATIONAL TIME:						672	hrs
AMD OPERATION UPTIME:						100.0	%
STANDARD DEVIATION:	8.1						
MONTHLY AVERAGE:						-15.4	°C

AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)



APPENDIX II
EQUIPMENT CALIBRATION RESULTS

SULPHUR DIOXIDE



Thermo 43i Sulphur Dioxide Analyzer Calibration

Date: February 6, 2018	Barometer/B.P./units: F.S. 05544 expires January 5, 2019	957	millibars
Company/Airshed: LICA	Thermometer/Station Temp: F.S. 170286131 expires April 19, 2019	22	°C
Location/Station Name: Cold Lake South	Weather Conditions: Mainly sunny		
Parameter: Sulphur Dioxide	Calibration Purpose: routine monthly		
Start Time 24 hr. (mst): 10:05	Performed By/Reviewer: Alex Yakupov		Rob Fisher
End Time 24 hr. (mst): 14:57	Cal Gas Expiry Date: October 24, 2020		
Calibration Method: Gas Dilution	Converter Model & s/n (if applicable): n/a		

Analyzer ID# or Serial Number: 806528242	Range ppb: 500
Last Calibration Date: January 3, 2018	As Found C.F.: 0.995
Previous C.F.: 1.000	New C.F.: 1.001

Calibration Standards: Low Flow Meter ID/Expiry Date: Defender Low 152019 expires December 13, 2018 High Flow Meter ID/Expiry Date: Defender High 148944 expires December 13, 2018 Calibrator ID/Expiry Date: API id# 690 expires March 17, 2018 Cal Gas Cylinder I.D. #: LL104225 Cal Gas Conc. (ppm): 49.2	Standard Calibration Points for Ranges <table border="1" style="margin: auto;"> <tr><th>Point</th><th>ppb</th></tr> <tr><td>High</td><td>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								

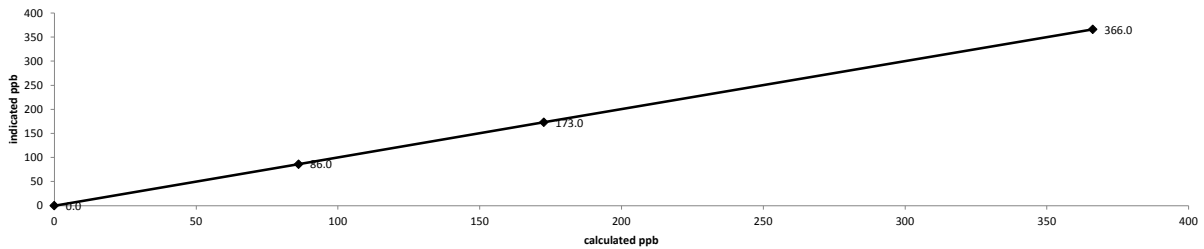
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated	Indicated Concentration (ppb):	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total	Concentration (ppb):		
as found zero	4833	0.00	4833	0.0	0.0	n/a
as found high	4928	36.96	4965	366.3	368.0	0.995
adjusted zero	4833	0.00	4833	0.0	0.0	n/a
adjusted high	4928	36.96	4965	366.3	366.0	1.001
mid	4945	17.41	4962	172.6	173.0	0.998
low	4964	8.71	4973	86.2	86.0	1.002
calibrator zero	4833	0.00	4833	0.0	0.0	n/a
Average C.F. =						1.000

Linear Regression/Calibration Results:

Correlation Coefficient =	<u>1.000</u>	LIMITS
		> or = 0.995
Slope =	<u>1.000</u>	0.95-1.05
b (Intercept as % of full scale) =	<u>-0.01%</u>	± 3% F.S.
% change in C.F. from last cal =	<u>0.48%</u>	± 10%

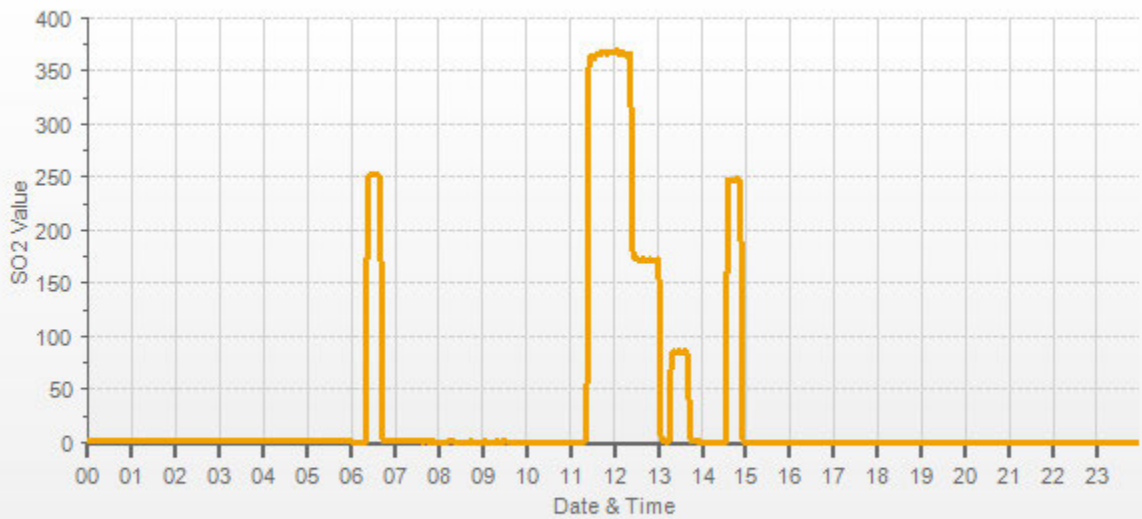
Thermo 43i Sulphur Dioxide Analyzer Calibration



As found: Bkg: 8.5 Coef: 0.989 Pmt: -623.5 Flash: 773 Internal: 29.7 Chamber: 45.3 Perm Oven Gas: 35.00 Perm Oven Heater: 34.24 Pressure: 685.5 Sample Flow: 0.478 Lamp Intensity: 97 Converter: n/a Converter Set: n/a Averaging Time: 120 Expected Value: 255.0	As left: Bkg: 8.4 Coef: 0.981 Pmt: -623.5 Flash: 771 Internal: 29.8 Chamber: 45.2 Perm Oven Gas: 35.00 Perm Oven Heater: 34.25 Pressure: 685.5 Sample Flow: 0.478 Lamp Intensity: 97 Converter: n/a Converter Set: n/a Averaging Time: 120 Expected Value: 248.0
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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.



— SO2[ppb]

TOTAL REDUCED SULPHUR



Thermo 450i Total Reduced Sulphur Analyzer Calibration

Date: February 6, 2018	Barometer/B.P./units: F.S. 05544 expires January 5, 2019	957	millibars
Company/Airshed: LICA	Thermometer/Station Temp: F.S. 170286131 expires April 19, 2019	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): 10:05	Performed By/Reviewer: Alex Yakupov		Rob Fisher
End Time 24 hr. (mst): 14:57	Cal Gas Expiry Date: July 14, 2019		
Calibration Method: Gas Dilution	Converter Model & s/n (if applicable): CDNOVA/Model CDN-101/#501		

Analyzer ID# or Serial Number: 812728560	Range ppb: 100
Last Calibration Date: January 12, 2018	As Found C.F.: 1.040
Previous C.F.: 1.000	New C.F.: 0.999

Calibration Standards: Low Flow Meter ID/Expiry Date: Defender Low 152019 expires December 13, 2018 High Flow Meter ID/Expiry Date: Defender High 148944 expires December 13, 2018 Calibrator ID/Expiry Date: Sabio id# 11900613 expires March 16, 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	SO2 Scrubber Check (10 minutes): Start/End Time 24 hr.: 11:12/11:22 SO2 Analyzer Range: 500 Target Concentration (ppb): 380 As Found Zero: 0.0 Analyzer Response (ppb): 0.0 Zero Corrected Result (ppb): 0.0
Point	ppb									
High	78									
Mid	38									
Low	19									

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

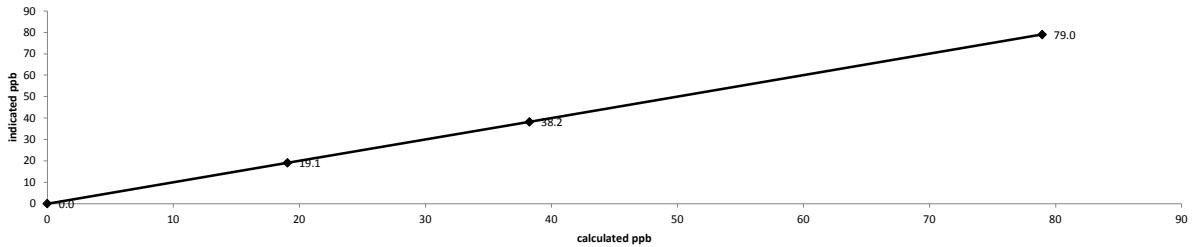
Calibrator Flow Rates (cc/min)				Calculated	Indicated Concentration (ppb):	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total	Concentration (ppb):		
as found zero	7227	0.00	7227	0.0	0.0	n/a
as found high	7160	55.85	7216	78.9	75.9	1.040
adjusted zero	7227	0.00	7227	0.0	0.0	n/a
adjusted high	7160	55.85	7216	78.9	79.0	0.999
mid	7221	27.19	7248	38.3	38.2	1.002
low	7213	13.50	7226	19.1	19.1	0.998
calibrator zero	7227	0.00	7227	0.0	0.0	n/a

Average C.F. = 1.000

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) = 0.01%	± 3% F.S.
% change in C.F. from last cal = -4.01%	± 10%

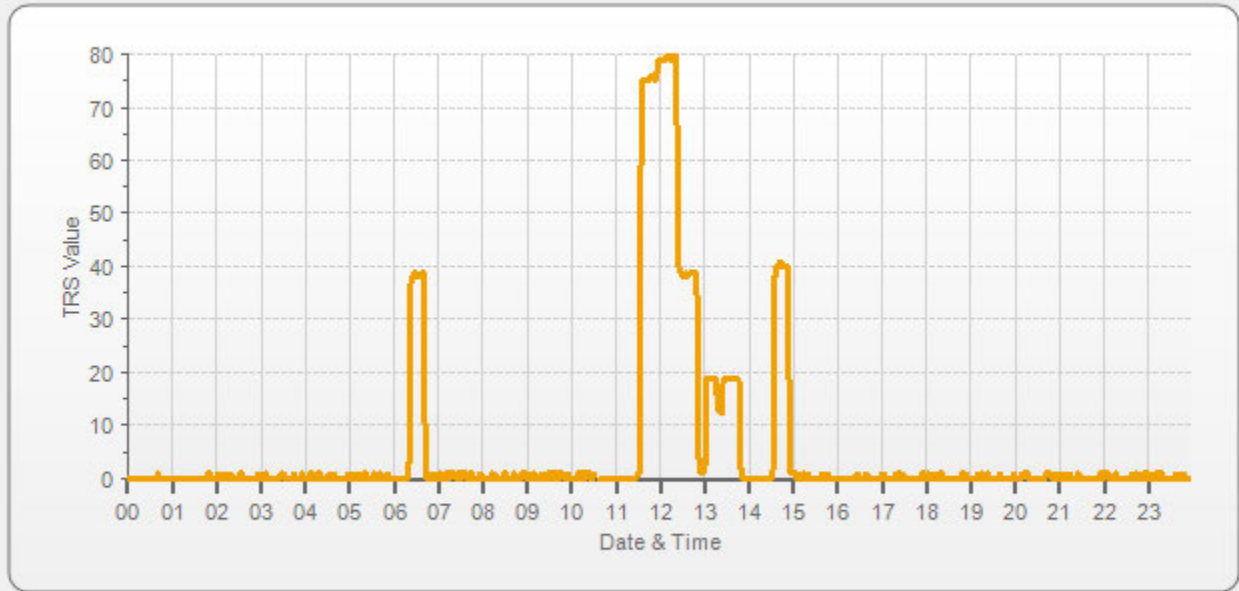
Thermo 450i Total Reduced Sulphur Analyzer Calibration



As found: Bkg: 14.9 Coef: 0.944 Pmt: -650.5 Flash: 743 Internal: 32.5 Chamber: 45.0 Converter Temp: 825 Converter Set: 825 Perm Oven Gas: 45.00 Perm Oven Htr: 44.37 Pressure: 637.3 Sample Flow: 0.499 Lamp Intensity: 92 Averaging Time: 120 Expected Value: 38.7	As left: Bkg: 15.6 Coef: 0.984 Pmt: -650.1 Flash: 742 Internal: 32.8 Chamber: 45.3 Converter Temp: 825 Converter Set: 825 Perm Oven Gas: 45.00 Perm Oven Htr: 44.37 Pressure: 639.4 Sample Flow: 0.499 Lamp Intensity: 92 Averaging Time: 120 Expected Value: 40.1
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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.



— TRS[ppb]



Thermo 450i Total Reduced Sulphur Analyzer Calibration

Date: February 22, 2018	Barometer/B.P./units: F.S. 05544 expires January 5, 2019	954	millibars
Company/Airshed: LICA	Thermometer/Station Temp: F.S. 170286131 expires April 19, 2019	22	°C
Location/Station Name: Cold Lake South	Weather Conditions: Mainly sunny		
Parameter: Total Reduced Sulphur	Calibration Purpose: repeat		
Start Time 24 hr. (mst): 12:39	Performed By/Reviewer: Alex Yakupov		Rob Fisher
End Time 24 hr. (mst): 16:30	Cal Gas Expiry Date: June 14, 2019		
Calibration Method: Gas Dilution	Converter Model & s/n (if applicable): CDNOVA / Model CDN-101 / #501		

Analyzer:	ID# or Serial Number: 812728560	Range ppb: 100	
	Last Calibration Date: February 6, 2018	As Found C.F.: 0.929	
	Previous C.F.: 0.999	New C.F.: 0.999	

Calibration Standards: Low Flow Meter ID/Expiry Date: Defender Low 152019 expires December 13, 2018 High Flow Meter ID/Expiry Date: Defender High 148944 expires December 13, 2018 Calibrator ID/Expiry Date: API id# 690 expires March 17, 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								

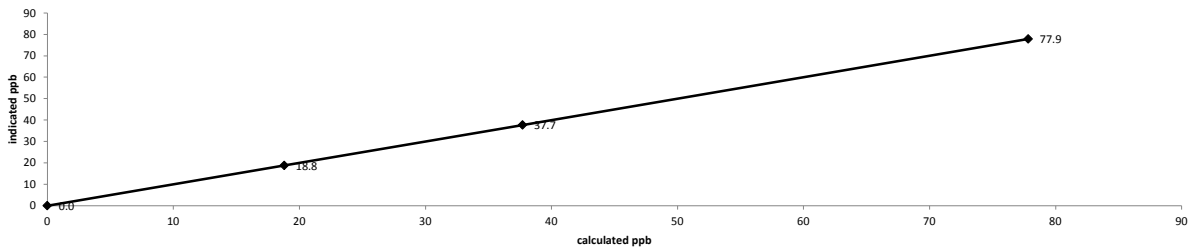
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated	Indicated Concentration (ppb):	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total	Concentration (ppb):		
as found zero	7232	0.00	7232	0.0	0.0	n/a
as found high	7410	56.98	7467	77.8	83.8	0.929
adjusted zero	7232	0.00	7232	0.0	0.0	n/a
adjusted high	7410	56.98	7467	77.8	77.9	0.999
mid	7475	27.74	7503	37.7	37.7	1.000
low	7485	13.82	7499	18.8	18.8	1.000
calibrator zero	7232	0.00	7232	0.0	0.0	n/a
Average C.F. =						1.000

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) =	0.01%		± 3% F.S.
% change in C.F. from last cal =	7.02%		± 10%

Thermo 450i Total Reduced Sulphur Analyzer Calibration



As found: Bkg: 15.6 Coef: 0.984 Pmt: -650.5 Flash: 743 Internal: 33.3 Chamber: 45.0 Converter Temp: 825 Converter Set: 825 Perm Oven Gas: 45.00 Perm Oven Htr: 44.37 Pressure: 635.5 Sample Flow: 0.494 Lamp Intensity: 91 Averaging Time: 120 Expected Value: 40.1	As left: Bkg: 14.7 Coef: 0.925 Pmt: -650.1 Flash: 743 Internal: 32.8 Chamber: 45.0 Converter Temp: 825 Converter Set: 825 Perm Oven Gas: 45.00 Perm Oven Htr: 44.37 Pressure: 636.1 Sample Flow: 0.495 Lamp Intensity: 91 Averaging Time: 120 Expected Value: 38.3
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Comments: The SO2 scrubber check was not performed, see comments below. The manifold blower was found to be working normally.

A repeat calibration was completed to confirm the performance of calibrator Sabio ID# 11900613 used for the previous calibration with calibrator API ID #690.

— TRS[ppb]



TOTAL HYDROCARBON



Thermo 51C Total Hydrocarbon Analyzer Calibration

Date:	February 7, 2018	Barometer/B.P./units:	F.S. 05544 expires January 5, 2019	957	millibars
Company/Airshed:	LICA	Thermometer/Station Temp:	F.S. 170286131 expires April 19, 2019	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):	9:44 / 14:03	Performed By/Reviewer:	Alex Yakupov	Rob Fisher	
Calibration Method:	Gas Dilution	Cal Gas Expiry Date:	November 24, 2022		

Analyzer: ID# or Serial Number: 51CLT-77021-384 Last Calibration Date: January 19, 2018 Previous Cal High Point C.F.: 1.000	Range ppm: 50 As Found C.F.: 0.983 New C.F.: 0.998
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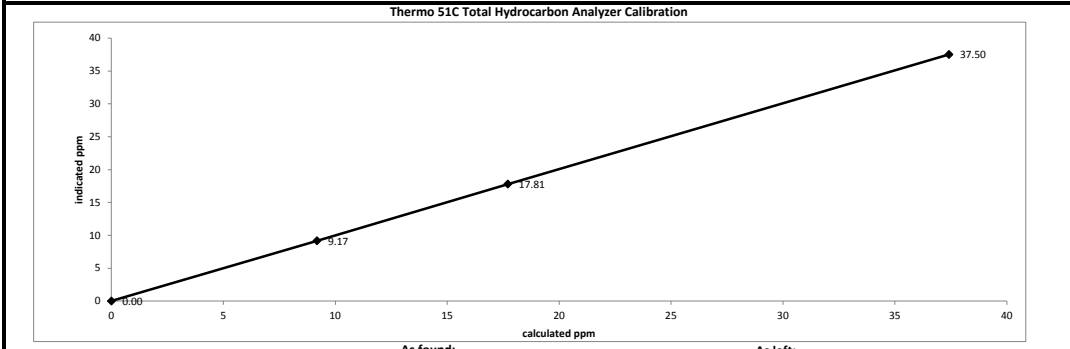
Calibration Standards: Low Flow Meter ID/Expiry Date: Defender Low 152019 expires December 13, 2018 High Flow Meter ID/Expiry Date: Defender High 148944 expires December 13, 2018 Calibrator ID/Expiry Date: API id# 690 expires March 17, 2018 Cal Gas Cylinder I.D. #: LL 165367 CH ₄ /C ₂ H ₆ Cylinder Conc. (ppm): 590.0 207.0 CH ₄ as propane/total CH ₄ equivalents (ppm): 569.3 1159.3		Standard Calibration Points for a Range of: 50 ppm <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th>Point</th><th>Target ppm</th></tr> <tr><td>High</td><td>38</td></tr> <tr><td>Mid</td><td>18</td></tr> <tr><td>Low</td><td>9</td></tr> </table>	Point	Target ppm	High	38	Mid	18	Low	9
Point	Target ppm									
High	38									
Mid	18									
Low	9									

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	2480	0.00	2480	0.0	0.20	n/a
as found high	2482	82.79	2565	37.42	38.25	0.983
adjusted zero	2480	0.00	2480	0.00	0.00	n/a
adjusted high	2482	82.79	2565	37.42	37.50	0.998
mid	2482	38.52	2521	17.71	17.81	0.995
low	2485	19.85	2505	9.19	9.17	1.002
calibrator zero	2480	0.00	2480	0.0	0.00	n/a
Average C.F.=						0.998

Linear Regression/Calibration Results:

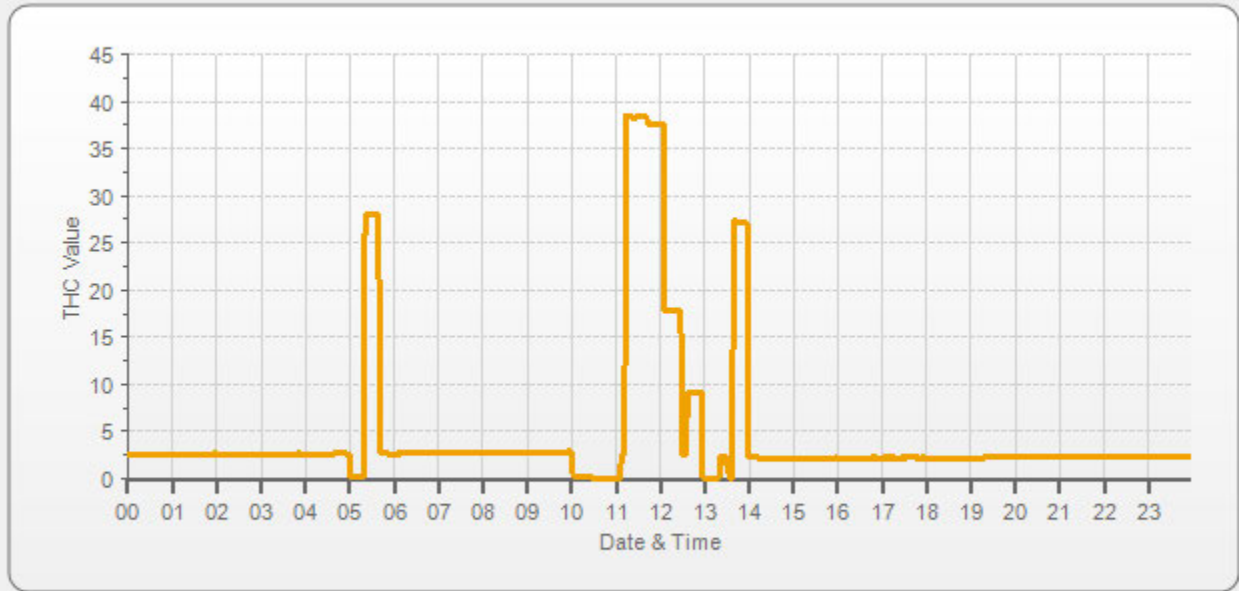
Correlation Coefficient = 1.000 Slope = 0.997 b (Intercept as % of full scale) = 0.00% % change in C.F. from last cal = 1.66%	LIMITS > or = 0.995 0.95-1.05 ± 3% F.S. ± 10%
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As found: H2 cylinder (psi): 1100 H2 cylinder reg set (psi): 22 Span Cylinder (psi): 1900 Span Cylinder Reg Set (psi): 22 Zero Air Gen Pressure: 40 measurement alarms: None service alarms: None cnt: 1419 rng: 1 try: 4 flm: 184.5 det: 125.5 Flame: 184 Filter: 125 Base: 125 Sample psi: 06.21 Internal Air Pressure: 20 Internal Fuel Pressure: 12 Measured Flow: 0.9953 Expected Value: 28.02	As left: H2 cylinder (psi): 1100 H2 cylinder reg set (psi): 22 Span Cylinder (psi): 1900 Span Cylinder Reg Set (psi): 22 Zero Air Gen Pressure: 40 measurement alarms: None service alarms: None cnt: 1439 rng: 1 try: 4 flm: 184.6 det: 125.5 Flame: 184 Filter: 125 Base: 125 Sample psi: 06.21 Internal Air Pressure: 20 Internal Fuel Pressure: 12 Measured Flow: n/a Expected Value: 27.24
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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.



— THC[ppm]

NITROGEN DIOXIDE



Thermo 42i NO-NO2-NOx Analyzer Calibration

Date: February 6, 2018	Barometer/B.P./units: F.S. 05544 expires January 5, 2019	957	millibars
Company/Airshed: LICA	Thermometer/Station Temp: F.S. 170286131 expires April 19, 2019	22	°C
Location/Station Name: Cold Lake South	Weather Conditions: Mainly sunny		
Start/End Time 24 hr. (mst): 10:05 / 19:32	Calibration Purpose: routine monthly		
G.P.T. to be used for Ozone? No	Performed By/Reviewer: Alex Yakupov Rob Fisher		
Calibration Method: Gas Dilution & Gas Phase Titration	Cal Gas Expiry Date: October 24, 2020		

Analyzer:	Correction Factors:
ID# or Serial Number: 1505664393	Previous C.F.: As Found C.F.: New C.F.:
Last Calibration Date: January 3, 2018	NO = 1.000 0.973 1.001
Range ppb: 500	NO ₂ = 1.000 1.000 1.000
	NOx = 1.001 0.977 1.000

Calibration Standards: Low Flow Meter ID/Expiry Date: Defender Low 152019 expires December 13, 2018 High Flow Meter ID/Expiry Date: Defender High 148944 expires December 13, 2018 Calibrator ID/Expiry Date: API id# 690 expires March 17, 2018 Cal Gas Cylinder I.D. #: LL 104225 Cal Gas Conc. (ppm): 51.5 51.6	Standard Calibration Points for a Range of: 500 ppb																								
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Point</th> <th>Target NO (ppb)</th> <th>Target NO₂ (ppb)</th> <th>Cc Ozone ?</th> </tr> </thead> <tbody> <tr> <td>High</td> <td>380</td> <td>250</td> <td>n/a</td> </tr> <tr> <td>Mid</td> <td>180</td> <td>145</td> <td>n/a</td> </tr> <tr> <td>Low</td> <td>90</td> <td>50</td> <td>n/a</td> </tr> <tr> <td>Extra Point #1</td> <td>n/a</td> <td>n/a</td> <td>n/a</td> </tr> <tr> <td>Extra Point #2</td> <td>n/a</td> <td>n/a</td> <td>n/a</td> </tr> </tbody> </table>	Point	Target NO (ppb)	Target NO ₂ (ppb)	Cc Ozone ?	High	380	250	n/a	Mid	180	145	n/a	Low	90	50	n/a	Extra Point #1	n/a	n/a	n/a	Extra Point #2	n/a	n/a	n/a
Point	Target NO (ppb)	Target NO ₂ (ppb)	Cc Ozone ?																						
High	380	250	n/a																						
Mid	180	145	n/a																						
Low	90	50	n/a																						
Extra Point #1	n/a	n/a	n/a																						
Extra Point #2	n/a	n/a	n/a																						

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

Calibrator Flow Rates (cc/min)				Calculated NO	Calculated NOx	Indicated NO	Indicated NOx	NO C.F.	NOx C.F.
Point	Diluent	Cal Gas	Total Flow	(ppb)	(ppb)	(ppb)	(ppb)		
as found zero	4833	0.0	4833	0	0	0.0	0.0	n/a	n/a
as found high	4928	37.0	4965	383.4	384.1	394.0	393.0	0.973	0.977
adjusted zero	4833	0.00	4833	0.0	0.0	0.0	0.0	n/a	n/a
adjusted high	4928	36.96	4965	383.4	384.1	383.0	384.0	1.001	1.000
mid	4945	17.41	4962	180.7	181.0	181.0	181.0	0.998	1.000
low	4964	8.71	4973	90.2	90.4	90.0	90.0	1.002	1.004
calibrator zero	4833	0.00	4833	0	0	0.0	0.0	n/a	n/a
Average C.F.=								1.001	1.002

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	4928	36.96	4965	0.0	376.0	377.0	1.0	0.0	1.0	
as found high NO2	4928	36.96	4965	225.0	118.0	378.0	259.0	258.0	258.0	1.000
adjusted high NO2	4928	36.96	4965	225.0	118.0	378.0	259.0	258.0	258.0	1.000
gpt mid	4928	36.96	4965	120.0	237.0	377.0	140.0	139.0	139.0	1.000
gpt low	4928	36.96	4965	40.0	323.0	377.0	54.0	53.0	53.0	1.000
Average NO ₂ C.F.=									1.000	

Linear Regression/Calibration Results:

	NO	NOx	NO ₂	LIMITS
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995
Slope =	1.001	1.000	1.003	0.95-1.05
b (Intercept as % of full scale)=	0.01%	-0.03%	0.12%	± 3% F.S.
% change in C.F. from last cal=	2.70%	2.36%	0.00%	± 10%
NO ₂ converter efficiency			0.99	0.96 to 1.04

As found:	As left:
NO Bkg: 4.1	NO Bkg: 4.0
NOx Bkg: 4.3	NOx Bkg: 4.2
NO Coef: 1.031	NO Coef: 1.005
NO ₂ Coef: 0.990	NO ₂ Coef: 0.990
NOx Coef: 0.999	NOx Coef: 1.000
PMT: -854.3	PMT: -854.7
Internal: 27.9	Internal: 28.0
Chamber: 50.6	Chamber: 50.4
Cooler: -2.8	Cooler: -3.0
NO ₂ Converter: 326.8	NO ₂ Converter: 324.2
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: 34.24	Perm Oven Heater: 34.25
Pressure: 179.3	Pressure: 179.6
Flow: 0.786	Flow: 0.786
Ozonator Flow: OK	Ozonator Flow: OK
Expected Value NO: 2	Expected Value NO: 2
Expected Value NO ₂ : 273	Expected Value NO ₂ : 272
Expected Value NOx: 275	Expected Value NOx: 274

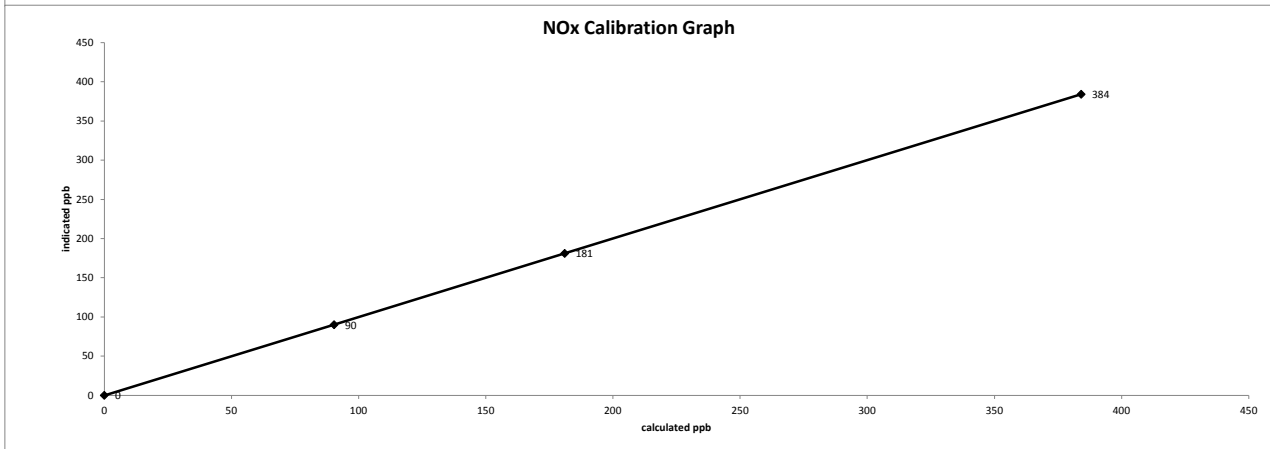
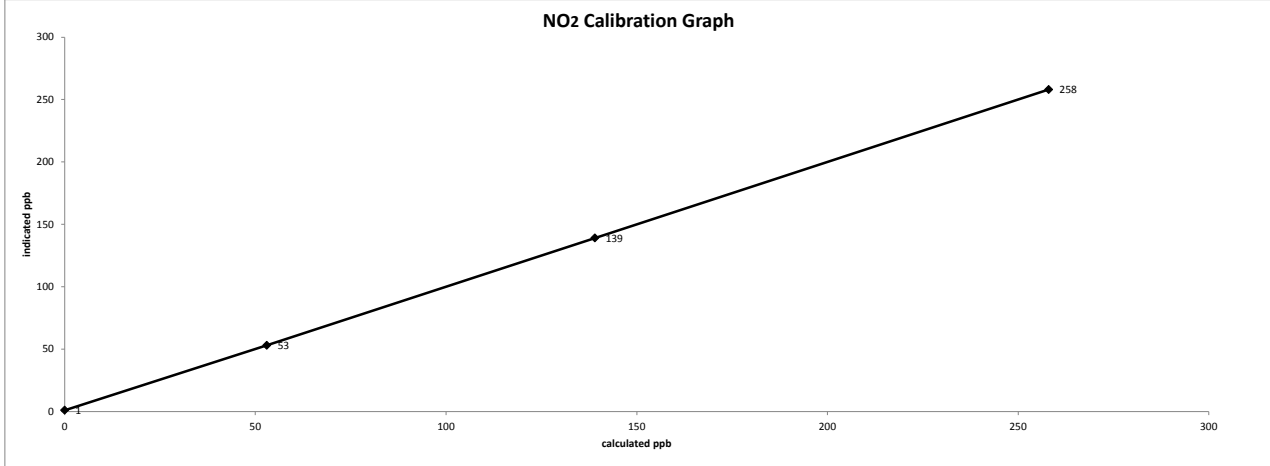
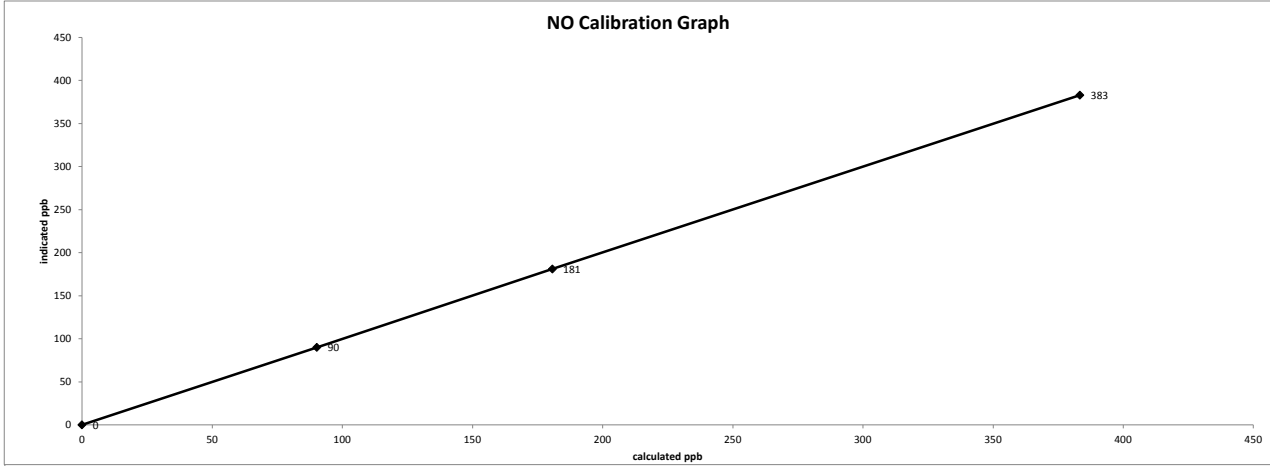
Comments:
 The analyzer sample inlet filter was changed.
 The manifold blower was found to be working normally.
 The analyzer cooling fan filter(s) were cleaned.

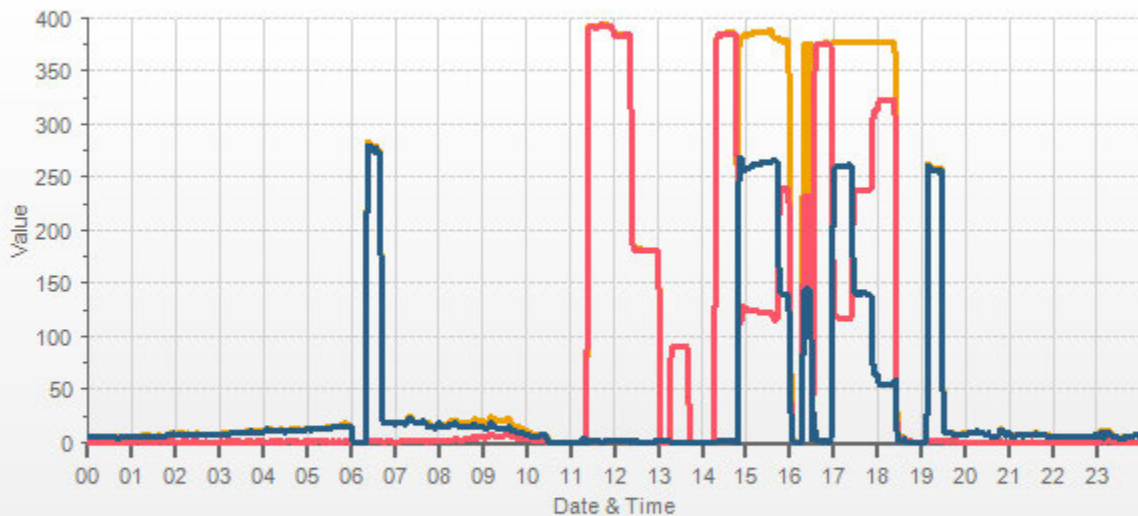
The Mid-Point C.F. was close to tolerance limit. The GPT was stopped at Mid-point (15:58) to check the calibration equipment. The GPT was restarted at 16:37.

Date: February 6, 2018
Company/Airshed: LICA
Location/Station Name: Cold Lake South

Start/End Time 24 hr. (mst): 10:05 / 19:32
Calibration Purpose: routine monthly
Calibration Method: Gas Dilution & Gas Phase Titration

Thermo 42i NO-NO2-NOx Analyzer Calibration





— NO_x[ppb] — NO[ppb] — NO₂[ppb]

OZONE



Thermo 49i Ozone Analyzer Calibration

Date: February 7, 2018 Company/Airshed: LICA Location/Station Name: Cold Lake South Start/End Time 24 hr. (mst): 9:44 / 14:03 Ozone Calibration Method: Varying UV Lamp Power G.P.T. Date: n/a-done by Varying UV Lamp Power	Barometer/B.P./units: F.S. 05544 expires January 5, 2019 957 millibars Thermometer/Station Temp: F.S. 170286131 expires April 19, 2019 22 °C Weather Conditions: Mainly sunny Calibration Purpose: routine monthly Performed By/Reviewer: Alex Yakupov Tom Bourque Cal Gas Expiry Date: n/a-done by Varying UV Lamp Power
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Analyzer: ID# or Serial Number: 700419951 Last Calibration Date: January 2, 2018 Previous Cal High Point C.F.: 1.000	Ozone Range ppb: 500 As Found C.F.: 1.005 New C.F.: 1.000
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Calibration Standards:									
Low Flow Meter ID/Expiry Date: Defender Low 152019 expires December 13, 2018 High Flow Meter ID/Expiry Date: Defender High 148944 expires December 13, 2018 Calibrator ID/Expiry Date: Sabio id# 11900613 expires March 16, 2018 Cal Gas Cylinder I.D. #: n/a	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Point</th> <th>AMD Required Range of Ozone Calibration Points</th> </tr> <tr> <td>High</td> <td>300-400 ppb</td> </tr> <tr> <td>Mid</td> <td>150-200 ppb</td> </tr> <tr> <td>Low</td> <td>50-75 ppb</td> </tr> </table>	Point	AMD Required Range of Ozone Calibration Points	High	300-400 ppb	Mid	150-200 ppb	Low	50-75 ppb
Point	AMD Required Range of Ozone Calibration Points								
High	300-400 ppb								
Mid	150-200 ppb								
Low	50-75 ppb								

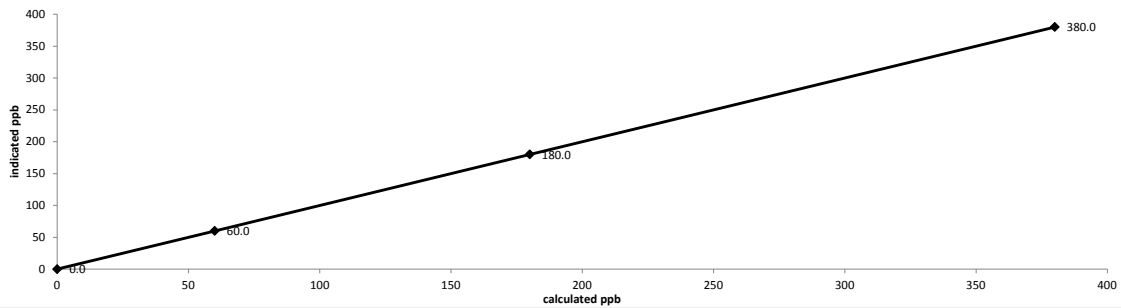
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Point	Calibrator Flow Rate (cc/min)		Calculated Concentration:	Corrected Calculated Concentration:	Indicated Concentration:	Correction Factors:
	Total Flow @ Point Start	Total Flow @ Point Finish	(ppb)	(ppb)	(ppb)	
as found zero	5000	5000	0.0	n/a	0.0	n/a
as found high	5000	5000	380.0	380.0	378.0	1.005
adjusted zero	5000	5000	0.0	0.0	0.0	n/a
adjusted high	5000	5000	380.0	380.0	380.0	1.000
mid	5000	5000	180.0	180.0	180.0	1.000
low	5000	5000	60.0	60.0	60.0	1.000
calibrator zero	5000	5000	0.0	n/a	0.0	n/a
Average C.F.=						1.000

Linear Regression/Calibration Results:

Correlation Coefficient = 1.000	LIMITS
Slope = 1.000	> or = 0.995
b (Intercept as % of full scale)= 0.00%	0.95-1.05
% change in C.F. from last cal= -0.53%	± 3% F.S.
	± 10%

Thermo 49i Ozone Analyzer Calibration

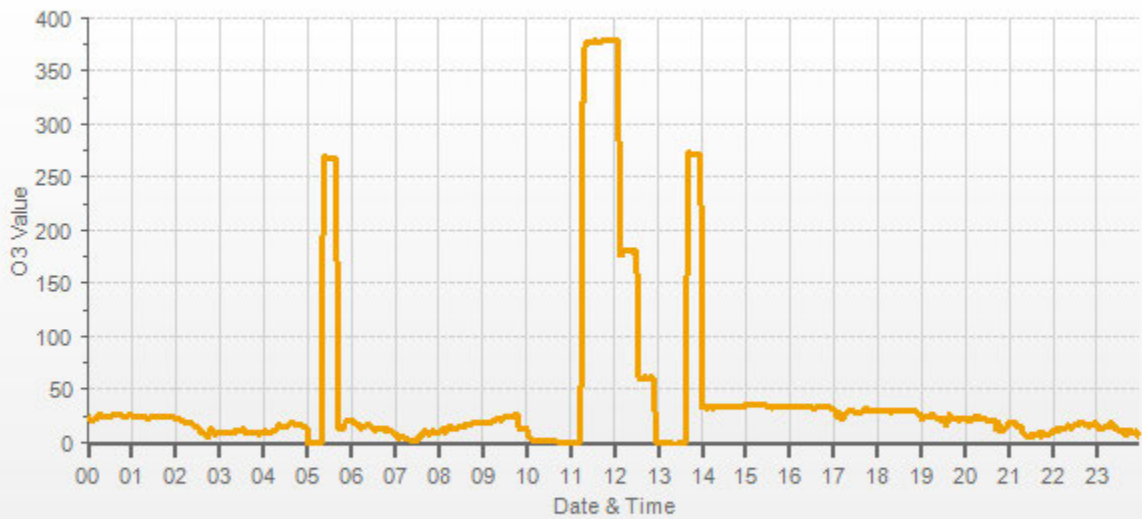


As found:	As left:
O3 Bkg: 0.1	O3 Bkg: 0.1
O3 Coef: 0.990	O3 Coef: 0.997
Photo Lamp: 9.6	Photo Lamp: 9.6
O3 Lamp: 9.0	O3 Lamp: 9.0
Bench: 30.1	Bench: 30.1
Bench Lamp: 53.5	Bench Lamp: 53.5
O3 Lamp: 67.4	O3 Lamp: 67.4
Pressure: 715.0	Pressure: 715.6
Cell A lpm: 0.721	Cell A lpm: 0.721
Cell B lpm: 0.762	Cell B lpm: 0.762
O3 ppb: 2.0	O3 ppb: 0.0
Cell A ppb: 1.1	Cell A ppb: 2.3
Cell B ppb: 3.0	Cell B ppb: -2.2
Cell A int: 83531	Cell A int: 83491
Cell B int: 84511.0	Cell B int: 84470.0
Expected Value: 263.0	Expected Value: 271.0

Comments:

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

O3[ppb] Station: LICA COLD LAKE SOUTH Daily: 18/02/07 Type: AVG 1 Min. [1 Min.]



— O3[ppb]

PARTICULATE MATTER 2.5



Thermo 5030 SHARP Monitor Audit

Date: February 22, 2018
 Company: LICA
 Station Name/Location: Cold Lake South
 Previous Audit Date: November 20, 2017
 Parameter: PM 2.5

Performed By/Reviewer: Alex Yakupov | Rob Fisher
 Start Time (mst): 9:01
 End Time (mst): 12:12
 Calibration Purpose: quarterly
 Weather Conditions: Mainly sunny

SHARP Information and Status:

Serial Number: CM - 2209 Status Code: 0
 Approx. % Tape Reaming: 70% Error Code: 0

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

High Flow: Airmetrics/Chinook High Maxxam ID #1 expires February 14, 2019
 Digital Manometer: Dwyer 475 Mark III id# 1 expires April 24, 2018
 Temperature: F.S. 170286131 expires April 19, 2019
 Pressure: F.S. 05544 expires January 5, 2019

As Found Temperatures, Pressure, Humidity:

	T1 (°C)	T2 (°C)	T3 (°C)	T4 (°C)	P3 (hPa)	RH (%)
SHARP:	-6	23	24	23	954	9
Reference:	-7.3	24.4	24.4	24.4	954.0	9.0
Difference:	1.3	1.4	0.4	1.4	0.0	0.0

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

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

	T1 (°C)	T2 (°C)	T3 (°C)	T4 (°C)	P3 (hPa)	RH (%)
SHARP:	-7	24	24	24	954	9
Reference:	-7.0	24.0	24.0	24.0	954.0	9.0
Difference:	0.0	0.0	0.0	0.0	0.0	0.0%

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

Mass Foil Calibration:

	Mass Foil:	ZERO:	Span Sensitivity
Mass Foil ID:	9015	QLF:	7022
Spanfoil Value (µg):	1294	CONFID:	6968

Nephelometer Zero:

	As Found	As Left
Analog	158.00	159.00
NEPH	0.90	-0.70
C14	19.00	19.80
Conc	0.50	-0.50

Flow rate:

	As Found	As Left
SHARP AirFlow l/hr	1000	1000
Reference AirFlow (l/min)	16.99	16.68
Reference AirFlow (l/hr)	1019	1001
% Difference:	-1.9%	-0.1%

$$%D = 100 \times \frac{Q_m - Q_i}{Q_i}$$

Tolerance +/- 5%

Inlet Assembly:

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

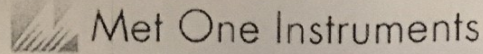
Pump Assembly:

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

Comments:

The Leak check passed and the results are: Reference Flow = 16.68; Adapter flow = 16.63; the difference is 0.05 (0.05 lpm < 0.8 lpm).

WIND SYSTEM



Sonic Wind Sensor Certificate of Calibration

Sensor Model No.: 50.5H Sensor Serial No.: F1644
Sensor Output Swing: 0V - 1.0V Sensor Output Range: 0 - 50.0 MPS
Customer: Maxxam Analytics Sales Order No.: 125713
Tested per PO: P00000003392 Calibration Date: 11/09/2017
Calibrated by: David Frith *DF* QC Inspection: Dyson Paulson

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

As Found Test Date: N/A As Left Test Date: 11/09/2017

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

CALIBRATORS

Company Maxxam **Operator:** Mike

Calibrator:		Flow Measurement Device:	
Make/Model	<u>API 700</u>	Make/Model	<u>Bios Defender 530</u>
Serial Number	<u>690</u>	Serial Number	<u>HI148944 Lo 152019</u>
Last Verification Date	<u>March 30, 2016\</u>	Temperature (°C)	<u>23.3</u>
NO Cylinder S/N	<u>EY0000597</u>	Barometric Pressure	<u>704.3mmHg</u>
NO [PPM]	<u>49.0 NOx [PPM]</u>		<u>49.0</u>
Expiry Date	<u>December 8, 2019</u>		

Dilution Flow (sccm)			
Pt. #1	<u>4898</u>	Pt. #2	<u>4942</u>
		Pt. #3	<u>4953</u>
Gas Flow (sccm)			
Pt. #1	<u>79.2</u>	Pt. #2	<u>38.6</u>
		Pt. #3	<u>19.3</u>

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO ₂	NOx	NO	NOx
4977	0.0	0.0000	0.0000	0.0000	0.0000	0.0000	Limit ± 10%	
4977	79.2	0.7792	0.7792	0.7841	0.0012	0.7854	1%	1%
4981	38.6	0.3797	0.3797	0.3813	0.0006	0.3819	0%	1%
492	19.3	0.1902	0.1902	0.1927	0.0002	0.1929	1%	1%
Absolute Average Percent Difference							1%	1%

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

NO		LIMITS		NOx	
Correlation=	1.0000	≥ 0.990		Correlation=	1.0000
m (Slope)=	1.0056	0.90-1.10		m (Slope)=	1.0073
b (Intercept % of FS)=	0.0357	± 3% F.S.		b (Intercept % of FS)=	0.0304

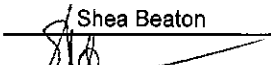
Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
4977	0.000	0.0000	0.7928	0.0014	0.7941	NO ₂	% Diff. Limit
4977	0.500	0.5448	0.2480	0.5391	0.7871	-1%	± 10%
4977	0.250	0.2862	0.5066	0.2861	0.7926	-1%	± 10%
4977	0.100	0.1221	0.6707	0.1193	0.7914	-3%	± 10%
Absolute Average Percent Difference						2%	± 10%

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

NO₂		LIMITS
Correlation=	1.0000	≥ 0.995
m (Slope)=	0.9894	0.90-1.10
b (Intercept % of FS)=	0.0719	± 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>March 15, 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: 

Date: March 17, 2017
Location: McIntyre Center Edmonton

Company <u>Maxxam</u>		Operator: <u>Mike</u>	
Calibrator:		Flow Measurement Device:	
Make/Model	<u>Sabio 2010D</u>	Make/Model	<u>Bios Defender 530</u>
Serial Number	<u>11900613</u>	Serial Number	<u>HI148944 Lo 152019</u>
Last Verification Date	<u>March 31, 2016</u>	Temperature (°C)	<u>23.9</u>
NO Cylinder S/N	<u>EY0000769</u>	Barometric Pressure	<u>698mmHg</u>
NO [PPM]	<u>51.1</u> NOx [PPM]		<u>51.2</u>
Expiry Date	<u>December 8, 2019</u>		

Dilution Flow (sccm)		
Pt. #1 <u>4879</u>	Pt. #2 <u>4932</u>	Pt. #3 <u>4950</u>
Gas Flow (sccm)		
Pt. #1 <u>74.5</u>	Pt. #2 <u>36.4</u>	Pt. #3 <u>18.2</u>

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO ₂	NOx	NO	NOx
4965	0.0	0.0000	0.0000	0.0001	0.0000	0.0001	Limit ± 10%	
4954	74.5	0.7685	0.7700	0.7915	0.0008	0.7923	3%	3%
4968	36.4	0.3744	0.3751	0.3832	0.0006	0.3838	2%	2%
4968	18.2	0.1872	0.1876	0.1916	0.0002	0.1918	2%	2%
Absolute Average Percent Difference							3%	2%

LINEAR REGRESSION ANALYSIS			<i>y=mx+b (where x=calculated concentration, y=indicated concentration)</i>		
NO		LIMITS		NOx	
Correlation=	1.0000	≥ 0.990		Correlation=	1.0000
m (Slope)=	1.0301	0.90-1.10		m (Slope)=	1.0291
b (Intercept % of FS)=	-0.0919	± 3% F.S.		b (Intercept % of FS)=	-0.0881

Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
4954	0.000	0.0000	0.7949	0.0005	0.7954	NO ₂	% Diff. Limit
4954	0.510	0.5104	0.2845	0.5072	0.7917	-1%	± 10%
4954	0.250	0.2516	0.5433	0.2514	0.7944	0%	± 10%
4954	0.100	0.1085	0.6864	0.1087	0.7951	0%	± 10%
Absolute Average Percent Difference						0%	± 10%

LINEAR REGRESSION ANALYSIS			<i>y=mx+b (where x=calculated concentration, y=indicated concentration)</i>		
NO₂		LIMITS			
Correlation=	1.0000	≥ 0.995			
m (Slope)=	0.9926	0.90-1.10			
b (Intercept % of FS)=	0.0925	± 3% F.S.			

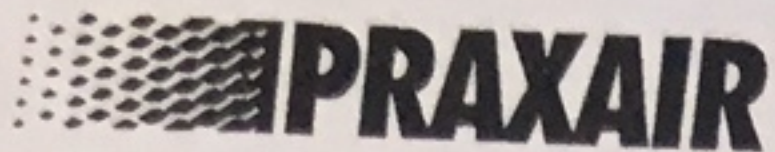
AENV Standards		NO_x Analyzer	
Audit Calibrator		Make/Model <u>Thermo 42i</u>	
Make/Model	<u>Thermo 146i</u>	Serial/AMU Number	<u>1868</u>
Serial/AMU Number	<u>1809</u>	Last Calibration Date	<u>March 15, 2017</u>
SRM Gas Cylinder No.	<u>CAL018140</u>	Full Scale (ppm)	<u>1.0</u>
Cylinder Conc. (ppm)	<u>48.79</u>	Cylinder Gas Expiry Date	<u>March 28, 2019</u>

COMMENTS: Gas has ~50ppm SO2

Auditor: Shea Beaton
Operator Signature:

Date: March 16, 2017
Location: McIntyre Center Edmonton

CALIBRATION GASES



Praxair
 5700 South Alameda Street
 Los Angeles, CA 90058
 Tel: (323) 585-2154 Fax: (714) 542-6689
 PGVPID: F22017

DocNumber: 000116115

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

PRAXAIR PKG EDMONTON PLT 8
 9501 34TH ST
 EDMONTON AB T6B 2X

Praxair Order Number: 45314542
 Customer P. O. Number: 582-277
 Customer Reference Number:

Fill Date: 10/12/2017
 Part Number: NI NO50MS2E-AQ
 Lot Number: 70086728507
 Cylinder Style & Outlet: AQ CGA 660
 Cylinder Pressure & Volume: 2000 psig 82 cu. ft.

Certified Concentration:

Expiration Date:	10/24/2020	NIST Traceable
Cylinder Number:	LL104225	Analytical Uncertainty:
51.5 ppm	NITRIC OXIDE	± 0.7 %
49.2 ppm	SULFUR DIOXIDE	± 1 %
Balance	NITROGEN	

NOx = 51.6 ppm

NOx for Reference Only

Certification Information: Certification Date: 10/24/2017 Term: 36 Months Expiration Date: 10/24/2020

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data:

(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. Component: NITRIC OXIDE

Requested Concentration: 50 ppm
 Certified Concentration: 51.5 ppm
 Instrument Used: Thermo Electron 42i-LS S/N 1030645077
 Analytical Method: Chemiluminescence
 Last Multipoint Calibration: 10/14/2017

Reference Standard Type: GMIS
 Ref. Std. Cylinder #: CC363145
 Ref. Std. Conc: 50.79 ppm
 Ref. Std. Traceable to SRM #: vs. 1683b
 SRM Sample #: 45.-V-42
 SRM Cylinder #: CAL017897

First Analysis Data:				Date: 10/17/2017
Z: 0	R: 50.8	C: 51.5	Conc: 51.49	
R: 50.8	Z: 0	C: 51.6	Conc: 51.59	
Z: 0	C: 51.6	R: 50.8	Conc: 51.59	
UOM: ppm				Mean Test Assay: 51.557 ppm

Second Analysis Data:				Date: 10/24/2017
Z: 0	R: 50.8	C: 51.4	Conc: 51.39	
R: 50.8	Z: 0	C: 51.5	Conc: 51.49	
Z: 0	C: 51.4	R: 50.8	Conc: 51.39	
UOM: ppm				Mean Test Assay: 51.423 ppm

2. Component: SULFUR DIOXIDE

Requested Concentration: 50 ppm
 Certified Concentration: 49.2 ppm
 Instrument Used: Ametek 921CE S/N AW-921-S321
 Analytical Method: Ultraviolet Absorption
 Last Multipoint Calibration: 10/13/2017

Reference Standard Type: NTRM
 Ref. Std. Cylinder #: CC72593
 Ref. Std. Conc: 48.58 ppm
 Ref. Std. Traceable to SRM #: n/a
 SRM Sample #: 12070103
 SRM Cylinder #: N/A

First Analysis Data:				Date: 10/17/2017
Z: 0	R: 48.2	C: 48.8	Conc: 49.151	
R: 48.2	Z: 0	C: 48.8	Conc: 49.151	
Z: 0	C: 48.9	R: 48.3	Conc: 49.251	
UOM: ppm				Mean Test Assay: 49.184 ppm

Second Analysis Data:				Date: 10/24/2017
Z: 0	R: 48.2	C: 48.7	Conc: 49.084	
R: 48.2	Z: 0	C: 48.8	Conc: 49.185	
Z: 0	C: 48.8	R: 48.2	Conc: 49.185	
UOM: ppm				Mean Test Assay: 49.151 ppm

Analyzed by:

Henry Koung

Certified by:

Amalia Real

Information contained herein has been prepared at your request by qualified experts within Praxair Distribution, Inc. While we believe that the information is accurate within the limits of the analytical methods employed and is complete to the extent of the specific analyses performed, we make no warranty or representation as to the suitability of the use of the information for any purpose. The information is offered with the understanding that any use of the information is at the sole discretion and risk of the user. In no event shall the liability of Praxair Distribution, Inc., arising out of the use of the information contained herein exceed the fee established for providing such information.



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 (scm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
5000	0.0	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. 2015-029CGA

Company: Maxxam **Operators name:** Limin Li
Cylinder #: LL165367 **Conc CH₄ (PPM)** 590/207 **Tolerance (%)** 2 **Certified By:** Praxair

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 1691</u>			Serial Number	<u>AMU 1650</u>
Last Verification Date	<u>May 21, 2015</u>			Temp. °C	<u>24.0 C</u>
Gas Type	<u>CH₄</u>	Conc.	<u>999.2</u>	B.P.	<u>703 mmhg</u>
Cylinder Number	<u>D751932</u>				
Gas Type	<u>C₃H₈</u>	Conc.	<u>246.5</u>		
Cylinder Number	<u>XF0037998</u>				

Reference Analyzer:

Make/Model Teco 55C Serial/AMU Number: 1643
Instrument Settings Zero: N/A Span: N/A Range: 20
Last Calibration: Date: May 21/15 C.F. 1.000 Done By: Al Clark

Calibrator Flows (sccm)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
		CH ₄	C ₃ H ₈			CH ₄	C ₃ H ₈
Dilution	Gas						
2600	0.0	0.00	0.00	0.02005	49.883	602	206
2569	51.5	12.06	11.37	0.02005	49.883	602	206
3549	22.3	3.77	3.57	0.00628	159.148	600	207
3523	10.4	1.77	1.70	0.00295	338.750	600	209
Average Cylinder Concentration:						600	207

<u>CH₄</u>	<u>C₃H₈</u>
Previous Stated Concentration PPM: <u>590</u>	<u>207</u>
Percent variance from Stated: <u>1.8</u>	<u>0.2</u>

Cylinder gas tolerances based on CH₄ only

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

Auditor: Al Clark Date: May 21, 2015
Operator Signature: _____ Location: McIntyre Center Edmonton

***APPENDIX III
MAXIMUM INSTANTANEOUS DATA***



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

SULPHUR DIOXIDE Instantaneous Maximum (SO₂ ppb)

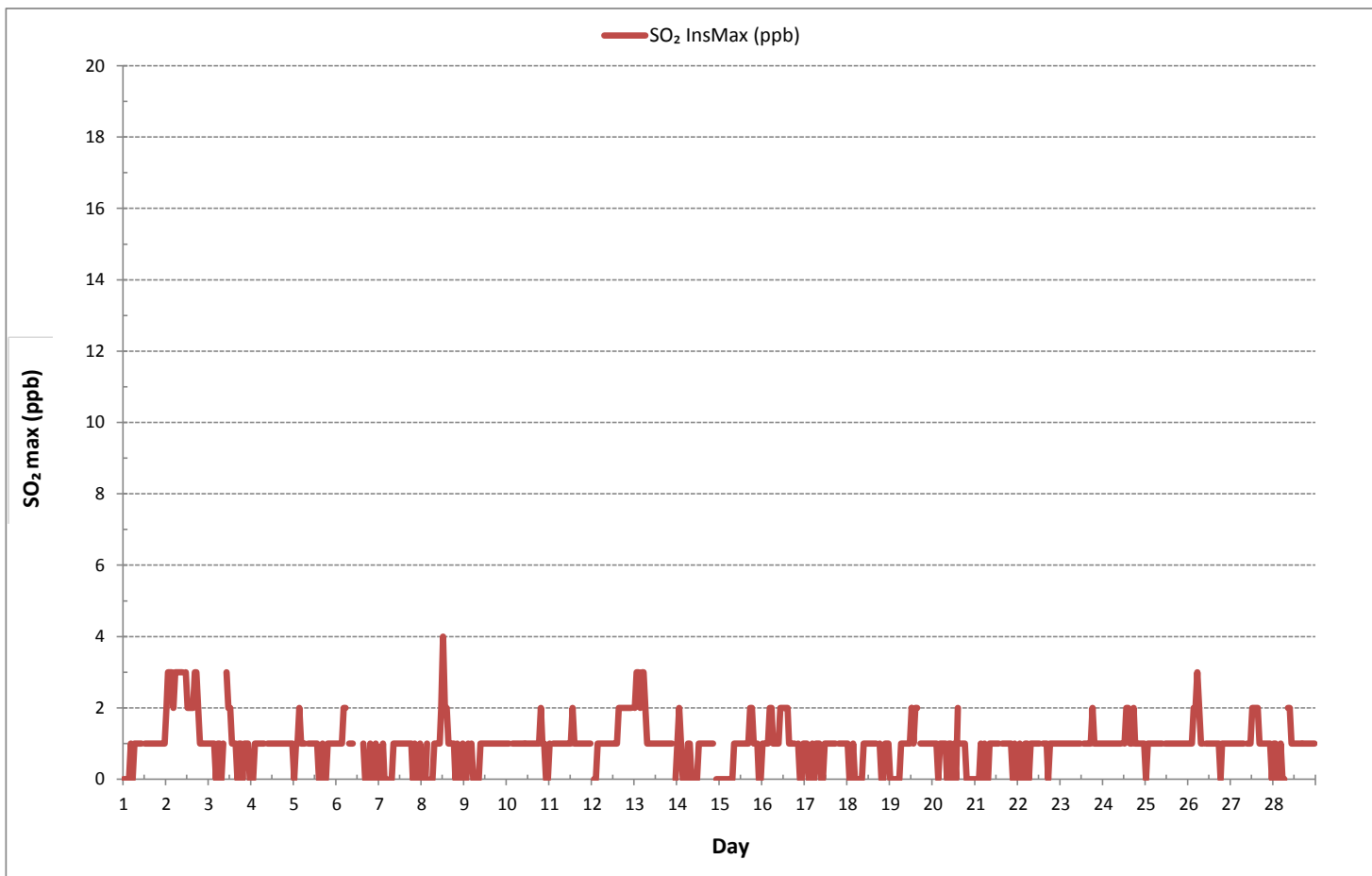
HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59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

STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	517
MAXIMUM INSTANTANEOUS VALUE:	4 ppb @ HOUR 12 ON DAY 8
IZS CALIBRATION TIME:	29 hrs
MONTHLY CALIBRATION TIME:	5 hrs
OPERATIONAL TIME:	672 hrs
STANDARD DEVIATION:	1





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

TOTAL REDUCED SULPHUR Instantaneous Maximum (TRS ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
DAY 1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
2	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
3	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
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	
5	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	
6	1	1	1	1	1	1	S	1	1	1	C	C	C	C	C	1	1	1	1	1	1	1	1	1	1	1	1	
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	
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11	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	
12	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	
13	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	
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16	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	
17	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	
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19	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	
20	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	
21	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	
22	1	1	1	1	1	1	1	1	1	1	1	1	C1	C1	C1	C1	C1	1	1	1	1	1	1	1	1	1	1	
23	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	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	
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26	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	
27	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	
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	
HOURLY MAX	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
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	

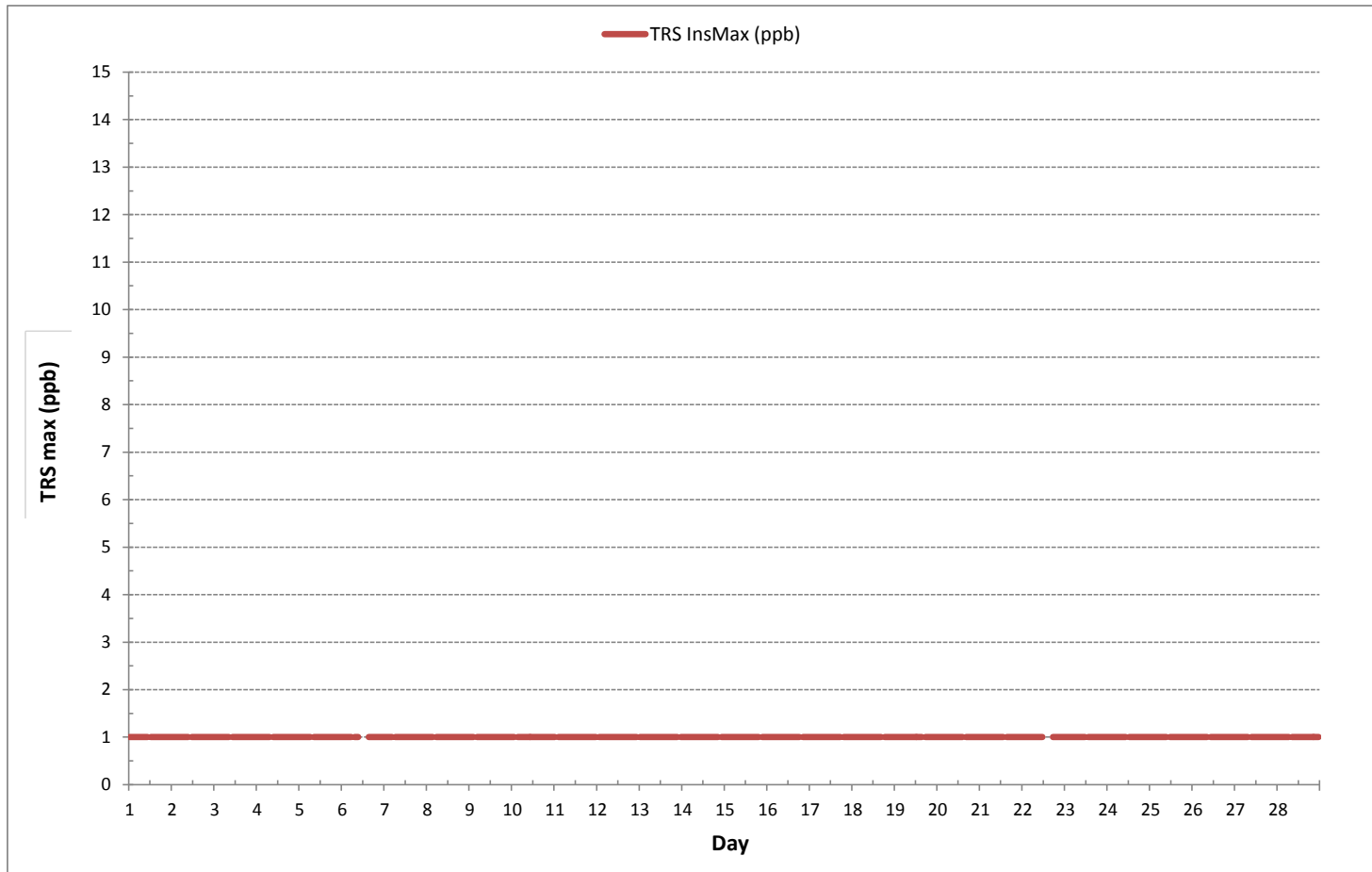
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	634
MAXIMUM INSTANTANEOUS VALUE:	1 ppb @ HOUR 0 ON DAY 1
IZS CALIBRATION TIME:	28 hrs
MONTHLY CALIBRATION TIME:	5 hrs
OPERATIONAL TIME:	667 hrs
STANDARD DEVIATION:	0

TOTAL REDUCED SULPHUR Instantaneous Maximum (TRS ppb)





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

TOTAL HYDROCARBONS Instantaneous Maximum (THC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY 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	2.67	2.72	2.72	2.78	2.96	3.55	3.56	3.21	3.43	3.14	3.08	S	3.12	2.94	2.79	2.62	2.85	2.54	2.53	2.69	2.64	2.67	2.75	2.66	2.53	3.56	2.90	24	
2	2.75	2.35	2.35	2.41	2.36	2.60	2.38	2.37	2.87	S1	S	2.50	2.36	2.34	2.32	2.32	2.35	2.46	2.32	2.29	2.54	2.35	2.34	2.33	2.29	2.87	2.42	23	
3	2.32	2.31	2.30	2.38	2.44	2.49	2.50	2.54	2.54	S	2.63	2.63	2.44	2.47	2.41	2.46	2.41	2.60	2.41	2.41	2.38	2.38	2.38	2.35	2.30	2.63	2.44	24	
4	2.38	2.35	2.32	2.29	2.33	2.32	2.35	2.36	S	2.40	2.38	2.50	2.29	2.33	2.31	2.32	2.66	2.35	2.38	2.54	2.40	2.34	2.32	2.38	2.29	2.66	2.37	24	
5	2.41	2.34	2.29	2.33	2.32	2.32	2.35	S	2.35	2.44	2.47	2.64	2.60	2.38	2.38	2.35	2.32	2.47	2.35	2.38	2.38	2.35	2.35	2.34	2.29	2.64	2.39	24	
6	2.32	2.38	2.44	2.51	2.60	2.75	S	2.72	2.62	2.60	P	2.41	2.47	2.36	2.41	2.35	2.84	2.46	2.50	2.50	2.51	2.53	2.50	2.60	2.32	2.84	2.52	23	
7	2.63	2.69	2.66	2.69	2.76	S	2.78	2.84	2.82	C	C	C	C	C	C	2.57	2.44	2.87	2.26	2.41	2.34	2.50	2.36	2.41	2.26	2.87	2.59	24	
8	2.47	2.38	2.40	2.41	S	2.47	2.47	2.46	2.52	2.86	2.60	2.54	2.17	2.17	2.17	2.16	2.17	2.17	2.19	2.20	2.20	2.23	2.29	2.25	2.16	2.86	2.35	24	
9	2.23	2.19	2.20	S	2.19	2.20	2.16	2.17	2.17	2.22	2.17	2.17	2.20	2.17	2.10	2.10	2.07	2.08	2.22	2.10	2.11	2.10	2.04	2.07	2.04	2.23	2.15	24	
10	2.08	2.08	S	2.13	2.11	2.05	2.07	2.07	2.05	2.08	2.10	2.01	1.95	1.88	1.88	1.89	1.92	1.95	1.98	2.04	1.92	1.95	1.98	1.98	1.88	2.13	2.01	24	
11	2.05	S	2.05	2.08	2.11	2.14	2.14	2.19	2.22	2.38	2.14	2.14	2.14	2.26	2.20	2.22	2.37	2.44	2.23	2.25	2.32	2.32	2.32	2.36	2.05	2.44	2.22	24	
12	S	2.26	2.31	2.32	2.32	2.38	2.46	2.67	2.50	2.28	2.26	2.17	2.07	2.11	2.07	2.26	2.07	2.10	2.01	2.02	2.04	1.98	1.95	S	1.95	2.67	2.21	24	
13	2.03	2.04	2.01	1.96	1.97	1.95	1.89	1.89	1.86	1.89	1.84	1.81	1.78	1.79	1.75	1.81	1.89	1.84	1.75	1.72	1.72	1.72	S	1.72	1.72	2.04	1.85	24	
14	1.78	1.78	1.70	1.72	1.75	1.84	1.82	1.84	1.89	1.92	1.97	1.97	1.98	2.00	2.01	2.05	2.07	2.08	2.62	2.11	2.26	S	2.26	2.34	1.70	2.62	1.99	24	
15	2.41	2.44	2.35	2.32	2.29	2.26	2.19	2.17	2.17	4.42	2.16	2.17	2.08	2.11	2.04	2.20	2.11	2.64	2.14	2.14	S	2.38	2.25	2.17	2.04	4.42	2.33	24	
16	2.20	2.14	2.04	2.03	2.01	2.05	2.26	2.26	2.16	2.56	2.01	2.03	1.98	1.98	1.92	1.89	1.89	2.05	S	2.28	2.20	2.10	2.11	1.89	2.56	2.09	2.4	24	
17	2.11	2.10	2.10	2.10	2.11	2.10	2.10	2.11	2.11	2.14	2.11	2.11	2.08	2.10	2.08	2.10	2.08	2.10	S	2.11	2.11	2.11	2.14	2.17	2.08	2.17	2.11	24	
18	2.20	2.20	2.23	2.35	2.34	2.38	2.43	2.44	2.53	2.57	2.40	2.23	2.17	2.17	2.17	2.20	2.23	S	2.29	2.34	2.33	2.46	2.49	2.47	2.17	2.57	2.33	24	
19	2.47	2.41	2.35	2.38	2.32	2.34	2.33	2.29	2.38	2.31	2.28	2.26	2.23	2.22	2.20	2.29	S	2.20	2.23	2.22	2.20	2.23	2.23	2.23	2.19	2.19	2.47	2.29	24
20	2.26	2.32	2.32	2.14	2.14	2.25	2.17	2.17	2.22	2.26	2.32	2.44	2.23	2.26	2.37	S	2.23	2.26	2.35	2.33	2.54	2.35	2.38	2.41	2.14	2.54	2.29	24	
21	2.49	2.52	2.54	2.52	2.47	2.56	2.84	3.43	3.32	3.32	2.47	2.49	2.47	2.44	S	2.54	2.57	2.56	2.56	2.56	2.67	2.66	2.66	2.66	2.44	3.43	2.67	24	
22	2.73	2.66	2.69	2.72	2.49	2.41	2.47	2.44	2.37	2.56	2.32	2.44	2.34	S	2.35	2.62	2.94	2.23	2.28	2.28	2.23	2.26	2.28	2.56	2.23	2.94	2.46	24	
23	2.34	2.38	2.60	2.62	2.56	2.47	2.38	2.37	2.38	2.31	2.35	2.28	S	2.14	2.14	2.13	2.14	2.17	2.11	2.17	2.14	2.17	2.17	2.25	2.11	2.62	2.29	24	
24	2.35	2.29	2.26	2.22	2.14	2.11	2.11	2.10	2.23	2.28	S	1.98	1.98	1.95	1.97	2.53	2.00	2.01	2.03	2.07	2.17	2.20	2.22	1.95	2.53	2.14	24		
25	2.25	2.10	2.22	2.11	2.07	2.35	2.04	X	2.30	2.23	S	2.23	2.25	2.25	2.30	2.23	2.23	2.26	2.30	2.28	2.32	2.29	2.32	2.23	2.04	2.35	2.23	23	
26	1.98	1.98	2.03	2.10	2.11	2.08	2.08	2.03	2.05	S	2.07	2.32	2.16	2.08	2.08	2.23	2.35	2.07	2.23	2.11	2.14	2.15	2.17	2.22	1.98	2.35	2.12	24	
27	2.20	2.16	2.15	2.20	2.23	2.23	2.22	2.19	S	2.20	2.20	2.17	2.17	1.95	1.98	1.97	2.03	2.01	1.98	1.98	1.97	2.04	2.11	2.15	1.95	2.23	2.11	24	
28	2.14	2.07	2.07	2.10	2.17	2.41	2.28	X	2.81	2.50	2.17	2.23	2.43	2.28	2.23	2.17	2.48	2.23	2.35	2.75	2.82	2.54	2.54	2.46	2.07	2.82	2.36	23	
HOURLY MAX	2.75	2.72	2.72	2.78	2.96	3.55	3.56	3.43	3.43	4.42	3.08	2.64	3.12	2.94	2.79	2.62	2.94	2.87	2.62	2.75	2.82	2.67	2.75	2.66					
HOURLY AVG	2.31	2.28	2.29	2.29	2.28	2.34	2.33	2.37	2.41	2.49	2.28	2.28	2.24	2.20	2.18	2.22	2.31	2.26	2.25	2.26	2.28	2.28	2.29	2.30					

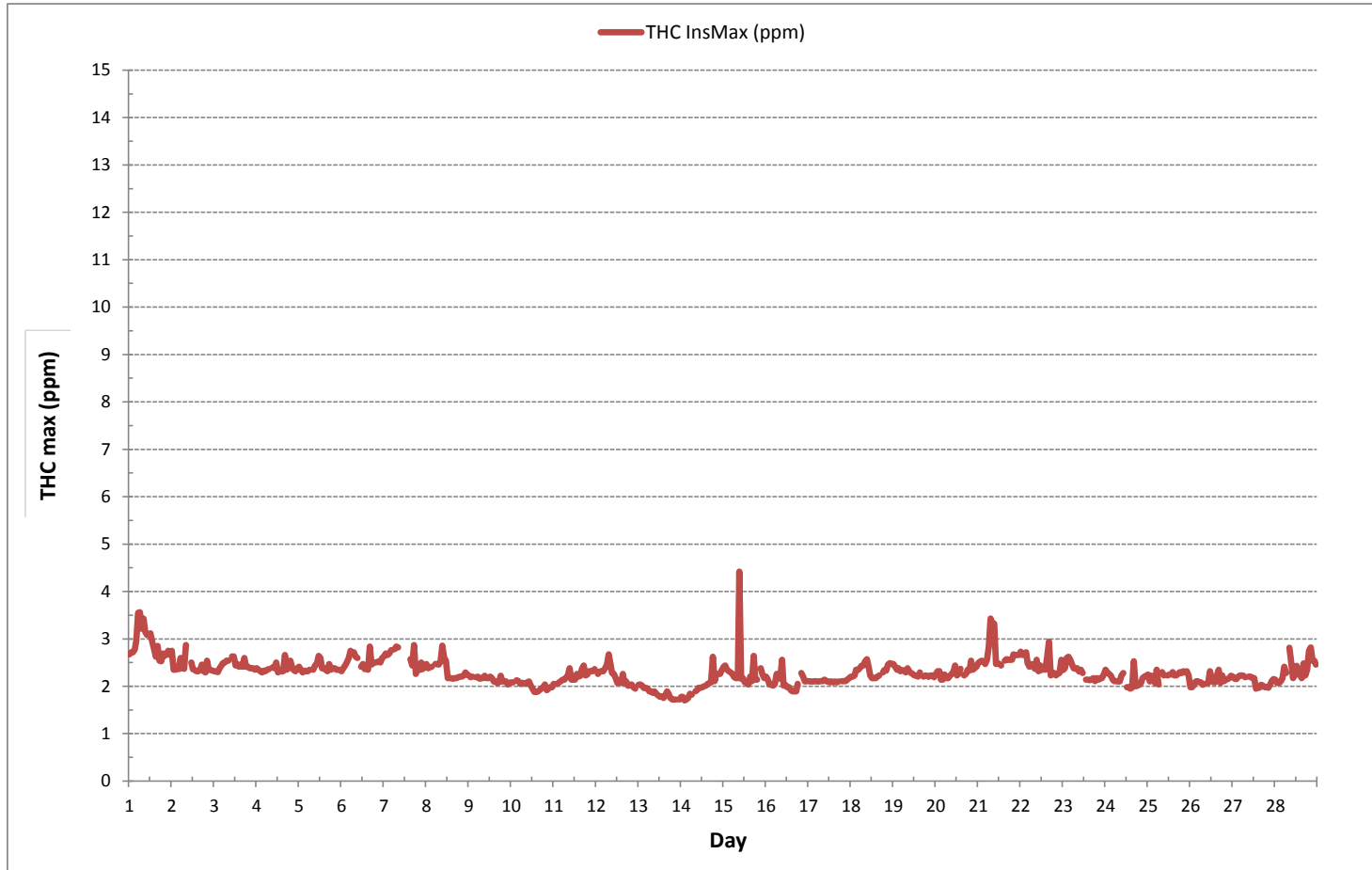
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	634				
MAXIMUM INSTANTANEOUS VALUE:	4.42	ppm	@ HOUR	9	ON DAY 15
IZS CALIBRATION TIME:	28	hrs	OPERATIONAL TIME:	668	hrs
MONTHLY CALIBRATION TIME:	6	hrs			
STANDARD DEVIATION:	0.28				

TOTAL HYDROCARBONS Instantaneous Maximum (THC ppm)





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

OXIDES OF NITROGEN Instantaneous Maximum (NO_x ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	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	48	36	23	30	55	68	33	63	51	18	18	S	33	11	11	12	10	9	12	12	15	13	13	11	9	68	26	24	
2	11	9	14	13	14	10	19	21	53	20	S	18	21	8	9	23	9	11	8	9	9	7	6	5	5	53	14	24	
3	6	3	3	4	6	6	8	12	15	S	10	17	5	7	6	5	5	9	6	5	7	5	3	4	3	17	7	24	
4	4	4	6	5	5	5	6	7	S	8	7	9	6	7	5	6	25	19	19	21	10	7	7	8	4	25	9	24	
5	7	6	4	7	5	4	11	S	10	10	15	6	5	4	7	9	5	23	5	6	6	6	7	8	4	23	8	24	
6	6	9	9	12	14	18	S	26	22	26	C	C	C	C	C	C	C	C	C	C	C	15	11	7	13	6	26	14	24
7	15	7	30	26	25	S	26	49	30	29	25	18	13	12	9	13	15	55	17	22	106	35	25	35	7	106	28	24	
8	35	18	13	13	S	15	23	25	42	17	14	20	10	6	4	2	3	5	6	5	6	6	7	4	2	42	13	24	
9	4	6	4	S	5	5	4	6	8	7	7	6	7	6	6	8	6	5	6	7	6	6	6	6	4	8	6	24	
10	6	7	S	9	9	7	8	8	8	7	6	6	3	3	3	3	3	3	3	6	4	2	2	2	2	9	5	24	
11	4	S	3	3	3	3	3	3	3	3	3	4	6	8	8	5	17	30	7	6	7	7	12	8	3	30	7	24	
12	S	7	9	5	10	22	11	178	122	9	6	5	4	4	4	7	12	17	7	10	11	9	7	S	4	178	22	24	
13	11	8	12	11	11	10	10	10	8	6	6	6	5	5	5	6	9	9	4	5	6	3	S	5	3	12	7	24	
14	6	5	4	1	1	2	2	2	2	1	2	2	3	2	3	3	7	8	9	25	26	S	14	12	1	26	6	24	
15	16	15	13	11	13	11	11	8	9	14	8	7	9	8	6	7	8	11	14	18	S	21	18	9	6	21	12	24	
16	9	10	8	12	10	10	12	15	11	10	7	8	8	24	12	4	3	3	5	S	8	9	3	1	1	24	9	24	
17	1	2	2	2	2	1	1	1	2	2	2	2	1	2	1	2	3	2	S	3	3	3	3	7	1	7	2	24	
18	5	7	7	8	8	10	10	12	19	14	8	5	3	2	3	2	3	S	9	8	11	11	13	13	2	19	8	24	
19	8	9	8	8	3	7	5	7	9	8	6	6	6	9	9	7	S	5	4	5	4	4	5	6	3	9	6	24	
20	7	7	7	2	2	2	2	6	9	2	6	5	6	3	32	S	7	11	21	20	25	25	21	13	2	32	10	24	
21	7	6	7	11	18	22	28	27	54	54	6	12	8	11	S	10	11	11	10	11	17	16	26	13	6	54	17	24	
22	9	12	20	17	11	9	13	11	12	11	9	9	6	S	3	5	7	3	3	4	7	9	7	15	3	20	9	24	
23	6	5	9	8	7	6	53	5	5	5	5	5	S	5	4	4	6	5	6	11	8	9	8	11	4	53	9	24	
24	15	7	7	7	8	8	9	9	7	10	11	S	3	4	4	3	3	3	5	7	16	17	10	15	3	17	8	24	
25	10	4	4	3	3	5	9	5	4	5	S	5	11	4	19	7	6	14	8	9	25	20	13	8	3	25	9	24	
26	3	2	4	6	6	6	5	3	2	S	14	5	5	3	3	3	4	2	3	5	7	6	5	5	2	14	5	24	
27	5	5	5	4	4	5	5	6	S	6	7	8	8	7	6	8	7	7	4	6	9	5	6	6	4	9	6	24	
28	7	5	3	8	18	31	20	S	22	11	11	13	14	10	8	5	6	29	32	53	42	42	48	34	3	53	21	24	
HOURLY MAX	48	36	30	30	55	68	53	178	122	54	25	20	33	24	32	23	25	55	32	53	106	42	48	35					
HOURLY AVG	10	8	9	9	10	11	13	20	21	12	9	8	8	7	7	7	8	12	9	12	15	12	11	10					

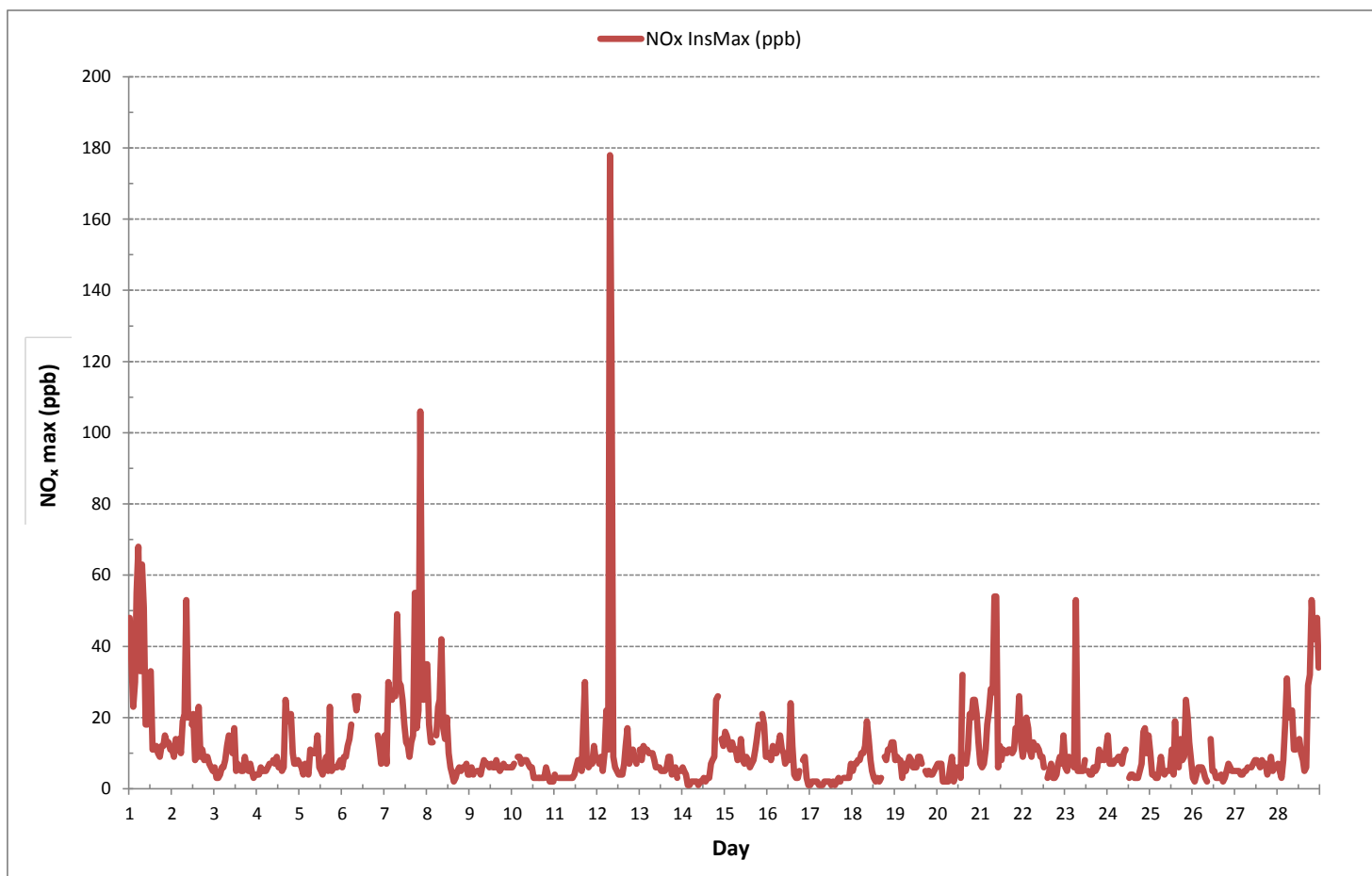
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	633
MAXIMUM INSTANTANEOUS VALUE:	178 ppb @ HOUR 7 ON DAY 12
IZS CALIBRATION TIME:	29 hrs
MONTHLY CALIBRATION TIME:	10 hrs
STANDARD DEVIATION:	13
OPERATIONAL TIME:	672 hrs

OXIDES OF NITROGEN Instantaneous Maximum (NO_x ppb)





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

NITRIC OXIDE Instantaneous Maximum (NO ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY																													
1	27	11	2	4	20	31	4	30	17	5	6	S	26	5	10	4	3	1	1	1	2	1	1	2	1	1	31	9	24
2	4	2	5	4	5	3	7	9	33	7	S	9	27	3	4	14	2	9	2	2	12	2	2	1	1	33	7	24	
3	1	0	0	1	1	1	1	4	3	S	3	11	2	3	2	2	3	2	1	1	1	1	1	1	1	0	11	2	24
4	1	2	2	1	1	1	1	1	S	3	3	6	2	2	2	3	14	2	4	3	2	2	2	2	2	1	14	3	24
5	2	1	0	1	1	1	2	S	2	3	9	2	2	2	2	2	3	9	1	1	1	1	1	1	1	0	9	2	24
6	1	1	1	1	2	2	S	2	5	9	C	C	C	C	C	C	C	C	C	C	1	1	1	2	1	9	2	24	
7	1	2	3	4	2	S	5	15	10	10	10	8	5	5	3	8	5	30	1	2	73	6	3	6	1	73	9	24	
8	6	1	1	1	S	1	2	5	15	5	5	12	4	2	2	1	1	1	1	2	1	1	2	1	1	15	3	24	
9	1	2	2	S	1	1	2	1	1	2	3	2	3	2	3	4	1	1	0	1	1	0	1	1	0	4	2	24	
10	1	1	S	1	1	1	1	1	2	2	2	2	1	1	1	1	0	0	0	1	1	0	1	0	1	0	2	1	24
11	1	S	1	1	1	0	0	1	1	1	1	2	3	3	3	1	6	14	1	1	2	3	3	1	0	14	2	24	
12	S	2	2	0	2	3	1	121	74	2	2	4	1	5	1	3	3	6	1	2	1	1	0	S	0	121	11	24	
13	2	1	2	1	1	1	1	1	1	1	2	2	1	1	1	1	5	5	1	1	1	1	S	1	1	5	2	24	
14	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	6	S	1	1	0	6	1	24	
15	3	1	1	1	2	1	1	1	2	5	4	4	4	3	2	2	2	2	1	2	S	2	2	0	0	5	2	24	
16	2	2	1	1	2	1	1	2	2	3	2	3	7	7	1	1	1	1	S	2	2	2	1	0	0	7	2	24	
17	0	1	1	1	1	0	0	1	1	1	1	0	0	0	1	1	0	S	0	0	0	0	2	0	2	0	2	1	24
18	1	0	1	1	2	2	1	3	10	4	2	2	1	1	1	1	S	1	2	1	2	4	3	0	10	2	24		
19	1	1	3	2	0	2	1	1	2	2	2	2	4	3	2	S	1	1	1	1	1	0	1	1	0	4	2	24	
20	1	1	1	1	1	2	1	2	3	1	3	2	3	1	24	S	2	1	3	3	5	6	3	1	1	24	3	24	
21	1	0	1	1	2	2	4	8	32	32	3	7	4	6	S	3	3	3	1	1	2	0	4	1	0	32	5	24	
22	1	1	5	2	1	1	2	1	3	3	3	4	2	S	1	1	2	1	1	1	1	2	2	1	1	5	2	24	
23	1	0	1	1	0	0	49	0	1	1	2	2	S	2	1	1	1	1	1	1	0	0	0	1	0	49	3	24	
24	1	1	1	1	0	1	1	1	1	2	2	S	1	2	1	1	1	0	1	0	1	2	1	1	0	2	1	24	
25	0	0	1	1	0	1	2	1	1	1	S	2	4	1	4	2	1	4	1	1	2	1	2	1	0	4	1	24	
26	1	0	0	1	0	0	0	0	S	6	4	2	1	1	4	2	1	0	1	1	1	0	0	0	0	6	1	24	
27	0	0	0	0	0	0	0	1	S	2	2	2	2	2	2	2	6	4	1	1	1	1	1	1	0	6	1	24	
28	1	1	1	1	3	3	8	S	7	4	5	5	4	2	1	2	7	3	20	8	5	10	5	1	20	5	24		
HOURLY MAX	27	11	5	4	20	31	49	121	74	32	10	12	27	7	24	14	14	30	4	20	73	6	10	6					
HOURLY AVG	2	1	1	1	2	2	4	8	9	4	3	4	4	3	3	3	3	4	1	2	5	2	2	1					

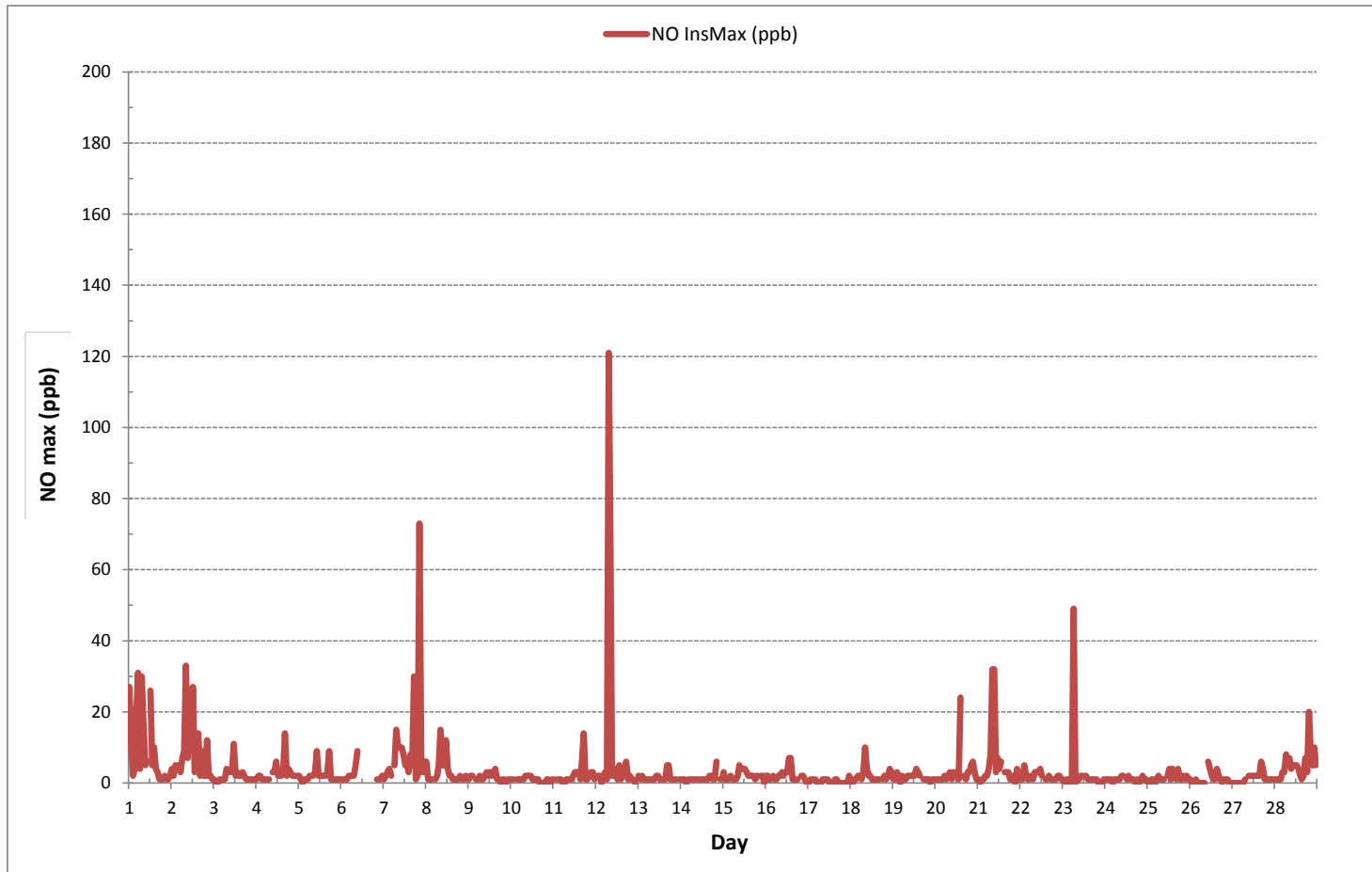
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	569
MAXIMUM INSTANTANEOUS VALUE:	121 ppb @ HOUR 7 ON DAY 12
IZS CALIBRATION TIME:	29 hrs
MONTHLY CALIBRATION TIME:	10 hrs
STANDARD DEVIATION:	8
OPERATIONAL TIME:	672 hrs

NITRIC OXIDE Instantaneous Maximum (NO ppb)





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

NITROGEN DIOXIDE Instantaneous Maximum (NO₂ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	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	25	25	20	26	34	37	29	34	34	14	11	S	8	6	8	9	8	8	12	11	13	12	13	9	6	37	18	24	
2	8	7	8	9	9	6	13	15	26	13	S	13	10	5	5	11	7	8	7	6	7	5	5	4	4	26	9	24	
3	5	3	3	4	5	6	8	10	12	S	7	6	3	4	4	4	4	7	6	5	6	5	3	4	3	12	5	24	
4	3	3	5	4	4	4	6	6	S	7	5	4	3	4	4	5	14	17	17	18	9	6	6	7	3	18	7	24	
5	7	5	4	6	4	4	9	S	9	7	8	4	3	3	5	7	3	14	4	5	6	6	6	7	3	14	6	24	
6	6	9	9	12	14	17	S	24	18	18	C	C	C	C	C	C	C	C	C	C	C	14	11	7	12	6	24	13	24
7	14	6	28	25	23	S	22	33	21	19	15	11	7	7	6	8	11	25	15	20	35	30	24	28	6	35	19	24	
8	28	18	13	12	S	14	20	20	27	13	10	8	6	5	2	2	2	4	5	4	5	5	5	4	2	28	10	24	
9	3	4	3	S	4	4	4	5	7	5	5	4	5	4	4	5	5	6	6	6	6	5	6	3	7	5	24	24	
10	6	6	S	8	8	6	8	8	8	6	5	4	2	2	2	2	2	3	3	6	4	1	2	1	1	8	4	24	
11	3	S	2	2	2	2	2	3	3	2	2	2	3	5	6	3	11	15	6	5	6	6	9	8	2	15	5	24	
12	S	6	8	4	8	20	11	65	55	7	4	3	3	3	3	5	9	11	7	9	10	8	7	S	3	65	12	24	
13	10	8	10	10	11	9	9	9	8	5	4	5	4	3	4	5	6	5	3	4	5	3	S	5	3	11	6	24	
14	5	4	3	1	1	2	2	2	2	1	1	1	2	2	2	2	5	6	8	24	20	S	13	11	1	24	5	24	
15	13	13	12	10	10	10	10	8	7	9	5	4	5	5	4	5	7	10	14	16	S	20	18	9	4	20	10	24	
16	8	9	7	11	10	9	11	14	10	8	5	5	5	19	8	3	2	2	5	S	7	8	2	1	1	19	7	24	
17	1	2	1	1	1	1	1	1	2	1	2	1	1	1	1	2	2	2	S	3	3	3	3	5	1	5	2	24	
18	5	7	6	7	7	8	9	10	17	11	6	3	2	2	2	2	2	S	9	7	11	10	9	11	2	17	7	24	
19	7	7	6	6	3	7	4	6	8	5	4	4	3	6	6	5	S	4	4	4	4	4	4	4	5	3	8	5	24
20	6	6	6	1	2	1	2	4	7	1	3	3	2	9	S	5	11	19	18	21	20	18	13	1	21	8	24		
21	6	6	7	10	17	20	23	22	22	22	4	7	5	6	S	7	8	10	9	11	15	16	23	12	4	23	13	24	
22	9	11	16	16	11	8	11	10	9	8	6	6	5	S	2	4	6	2	3	3	6	7	6	14	2	16	8	24	
23	5	5	8	8	7	6	17	4	4	4	3	6	S	3	3	3	5	5	6	11	8	9	8	10	3	17	6	24	
24	14	7	7	7	8	8	8	8	6	8	8	S	2	3	2	2	3	3	4	7	15	15	10	14	2	15	7	24	
25	9	4	3	2	3	5	7	5	3	3	S	4	7	3	15	6	6	10	7	9	24	19	12	7	2	24	8	24	
26	3	2	4	6	6	5	5	3	2	S	9	2	3	2	2	2	3	2	3	4	6	5	5	4	2	9	4	24	
27	4	4	4	4	4	4	5	5	S	4	5	6	6	5	5	6	4	4	4	5	9	4	6	6	4	9	5	24	
28	7	4	3	8	15	28	18	S	15	7	7	9	9	6	5	4	4	22	30	35	36	37	39	29	3	39	16	24	
HOURLY MAX	28	25	28	26	34	37	29	65	55	22	15	13	10	19	15	11	14	25	30	35	36	37	39	29					
HOURLY AVG	8	7	8	8	9	9	10	13	13	8	6	5	4	4	5	5	6	8	8	10	12	10	10	9					

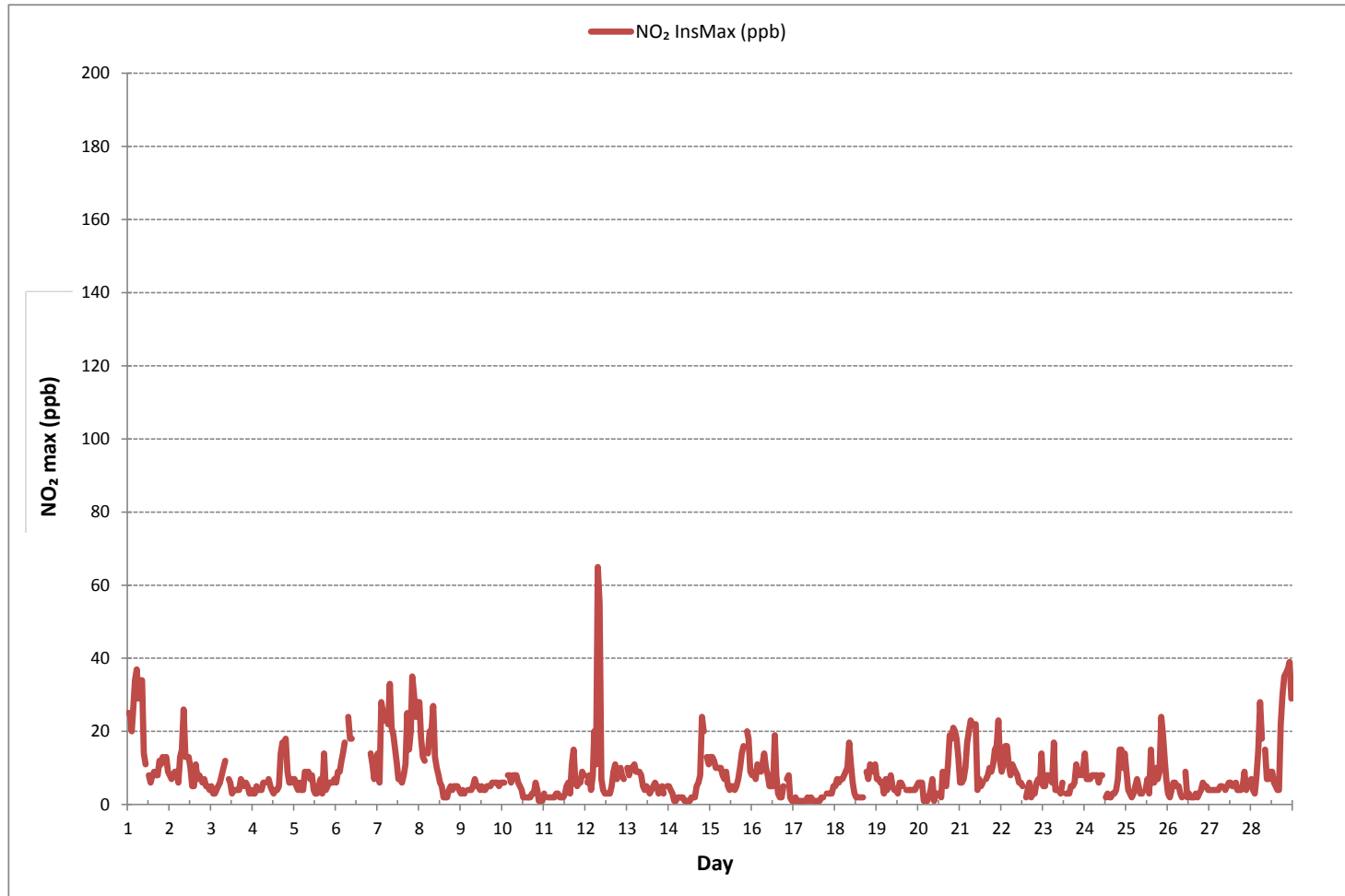
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	633
MAXIMUM INSTANTANEOUS VALUE:	65 ppb @ HOUR 7 ON DAY 12
	VAR-VARIOUS
IZS CALIBRATION TIME:	29 hrs
MONTHLY CALIBRATION TIME:	10 hrs
OPERATIONAL TIME:	672 hrs
STANDARD DEVIATION:	7

NITROGEN DIOXIDE Instantaneous Maximum (NO₂ ppb)





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

OZONE Instantaneous Maximum (O₃ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	12.5	9.8	10.3	8.2	3.9	5.5	5.1	2.5	15.3	20.9	24.6	S	27.4	28.8	28.9	26.5	26.8	27.3	26.4	24.1	21.4	20.8	21.5	25.2	2.5	28.9	18.4	24	
2	26.8	30.7	30.2	29.4	29.2	28.9	27.3	25.8	24.1	24.8	S	26.7	28.9	30.7	31.9	32.3	30.8	31.5	35.3	35.6	37.4	35.6	36.1	36.4	24.1	37.4	30.7	24	
3	36.7	35.7	35.7	34.1	32.9	30.1	28.6	25.8	22.7	S	32.0	33.2	33.8	33.8	34.8	35.9	36.7	36.1	34.8	35.0	35.7	35.9	34.5	34.4	22.7	36.7	33.4	24	
4	34.1	33.5	34.8	34.8	33.9	32.9	30.8	29.9	S	31.0	31.9	34.2	35.0	35.4	34.5	34.4	33.9	32.6	28.2	28.6	31.9	33.2	33.5	33.6	28.2	35.4	32.9	24	
5	32.9	37.4	38.2	37.0	37.3	37.7	36.1	S	34.8	36.4	38.4	38.7	39.5	39.9	39.8	39.6	40.1	39.4	38.1	37.4	36.6	35.4	34.5	31.9	31.9	40.1	37.3	24	
6	31.6	31.5	28.5	27.7	23.8	20.9	S	18.6	19.6	27.4	P	35.9	36.7	37.6	38.0	37.6	36.8	35.3	33.6	30.5	31.3	31.5	31.2	29.7	18.6	38.0	30.7	23	
7	26.5	25.5	23.5	13.2	19.3	S	20.4	10.9	19.8	C	C	C	C	C	C	C	36.1	34.7	31.7	31.0	27.4	25.9	19.9	19.8	19.1	10.9	36.1	23.8	24
8	20.2	20.2	19.9	20.3	S	18.5	18.2	21.7	22.0	26.9	30.7	32.9	35.6	36.5	37.5	38.0	38.1	37.7	36.7	36.7	36.7	35.3	35.6	35.7	18.2	38.1	30.1	24	
9	36.2	36.2	36.1	S	35.4	36.2	36.1	35.1	34.8	37.4	36.8	37.4	38.2	38.4	38.0	37.7	38.2	37.8	34.8	35.0	35.3	36.1	36.8	35.3	34.8	38.4	36.5	24	
10	34.7	33.0	S	31.6	32.9	32.9	32.3	32.0	33.3	34.8	35.6	38.5	39.1	39.9	41.1	41.0	41.3	40.8	41.1	38.1	42.5	42.7	42.1	40.7	31.6	42.7	37.5	24	
11	39.3	S	38.5	37.7	37.1	36.1	35.9	35.1	34.5	34.7	35.9	35.7	35.7	34.8	34.8	34.8	34.4	32.7	32.3	33.9	33.6	32.7	32.9	31.6	31.6	39.3	35.0	24	
12	S	29.8	28.9	26.7	26.4	24.7	23.2	21.2	34.2	36.8	37.4	39.9	40.7	40.9	40.7	40.5	39.8	39.4	39.4	38.0	36.8	36.8	35.9	S	21.2	40.9	34.5	24	
13	34.1	33.2	32.7	30.8	30.7	31.6	33.3	33.5	37.3	38.0	39.1	39.5	40.7	40.1	40.2	40.2	38.4	38.4	37.8	36.2	35.0	34.5	S	33.5	30.7	40.7	36.0	24	
14	33.6	33.5	36.8	43.8	44.2	43.5	42.0	40.1	40.5	38.9	37.6	37.1	36.8	36.1	35.1	34.4	33.8	31.4	30.7	29.8	24.4	S	21.2	19.9	19.9	44.2	35.0	24	
15	19.5	21.8	23.0	26.1	25.0	28.9	29.7	30.4	30.5	33.2	34.4	35.6	36.1	36.4	36.7	36.4	36.2	33.9	31.0	28.6	S	25.5	23.2	24.9	19.5	36.7	29.9	24	
16	32.2	32.0	32.9	32.6	30.8	29.4	28.5	23.3	29.5	30.5	34.2	33.0	35.3	35.4	36.9	37.1	37.4	38.1	37.8	S	35.0	38.7	40.0	40.5	23.3	40.5	34.0	24	
17	40.5	40.5	40.8	41.0	40.9	40.8	40.7	40.8	40.8	41.3	41.1	41.1	41.0	40.9	40.8	40.2	40.0	S	39.9	39.9	39.9	39.9	40.3	38.8	38.8	41.3	40.6	24	
18	37.4	35.7	34.2	33.2	34.1	33.8	30.4	28.6	25.8	31.5	35.7	38.0	39.0	38.7	38.7	39.1	39.3	S	36.2	32.9	30.4	29.5	29.9	28.3	25.8	39.3	33.9	24	
19	32.9	34.5	34.5	35.0	36.1	36.1	36.4	34.5	34.1	36.0	36.8	38.1	38.5	38.7	38.4	38.5	S	40.2	40.0	39.3	38.8	38.7	39.3	39.3	32.9	40.2	37.2	24	
20	37.9	35.9	39.9	39.8	39.5	38.7	38.4	37.9	36.5	35.6	35.1	36.1	36.1	37.1	36.8	S	37.0	35.9	28.8	27.6	25.0	25.3	25.2	24.9	24.9	39.9	34.4	24	
21	23.5	23.3	22.9	21.7	17.4	15.2	13.1	10.1	10.9	31.4	32.4	33.0	33.6	37.0	S	35.3	34.2	33.8	33.5	33.0	30.4	26.5	20.2	24.3	10.1	37.0	25.9	24	
22	23.0	22.0	19.3	32.2	32.2	32.3	30.8	31.3	33.0	35.3	36.2	36.7	38.0	S	40.5	41.2	41.4	41.1	40.8	41.0	40.6	38.0	37.3	36.2	19.3	41.4	34.8	24	
23	30.5	29.8	29.9	30.8	31.3	33.3	35.0	35.3	36.8	38.2	39.3	40.8	S	42.4	42.5	43.0	43.0	41.5	41.3	39.6	38.4	38.2	35.6	33.6	29.8	43.0	37.0	24	
24	29.9	32.6	33.3	33.6	33.2	31.7	33.3	34.7	35.3	35.0	38.4	S	40.5	40.5	42.1	42.3	42.0	40.5	40.2	38.7	35.1	29.7	32.9	35.0	29.7	42.3	36.1	24	
25	35.3	37.0	37.7	38.2	38.2	37.2	36.7	36.7	37.0	37.0	S	36.8	37.6	37.7	38.4	38.7	38.2	37.0	36.1	34.2	31.2	29.7	29.5	33.6	29.5	38.7	36.1	24	
26	35.4	36.2	35.6	35.1	32.9	32.3	42.1	43.0	42.9	S	42.5	42.9	42.3	42.5	42.9	43.3	43.3	42.9	42.4	40.7	39.8	37.7	37.3	36.4	32.3	43.3	39.7	24	
27	37.3	38.7	38.8	38.0	37.7	37.4	36.7	36.2	S	37.6	37.7	38.1	40.7	42.1	43.2	43.6	44.2	44.2	41.6	41.6	40.5	38.4	37.1	36.1	36.1	44.2	39.5	24	
28	37.6	38.5	39.0	38.7	35.4	22.0	23.5	S	31.6	32.6	33.9	35.0	38.5	38.5	40.3	40.5	41.6	41.6	36.1	20.1	14.9	17.9	12.1	24.9	12.1	41.6	31.9	24	
HOURLY MAX	40.5	40.5	40.8	43.8	44.2	43.5	42.1	43.0	42.9	41.3	42.5	42.9	42.3	42.5	43.2	43.6	44.2	44.2	42.4	41.6	42.5	42.7	42.1	40.7					
HOURLY AVG	31.6	31.4	31.7	31.5	31.5	30.7	30.5	29.0	30.7	33.7	35.7	36.6	37.1	37.7	38.2	38.1	37.8	37.1	35.8	34.2	33.5	32.7	31.7	32.0					

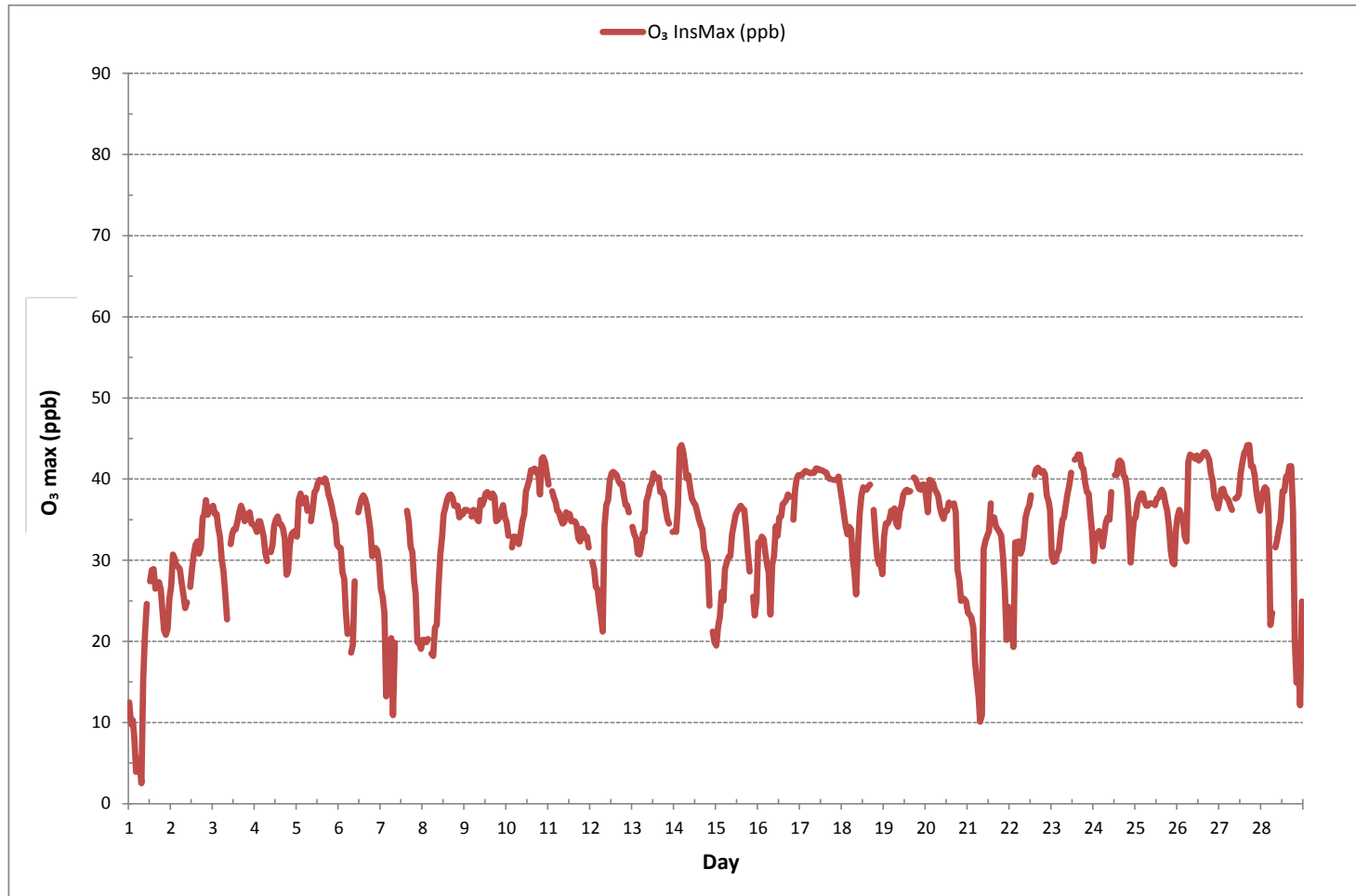
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	636
MAXIMUM INSTANTANEOUS VALUE:	44.2 ppb @ HOUR 4 ON DAY 14
IZS CALIBRATION TIME:	29 hrs
MONTHLY CALIBRATION TIME:	6 hrs
OPERATIONAL TIME:	671 hrs
STANDARD DEVIATION:	6.9

OZONE Instantaneous Maximum (O₃ ppb)





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

WIND SPEED Instantaneous Maximum (WS kph)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
DAY																												
1	5.6	4.3	5.0	4.3	6.6	3.5	3.1	2.2	5.5	4.2	3.5	6.8	12.0	9.6	10.5	8.1	8.0	8.5	6.9	6.4	6.1	5.3	5.3	8.3	2.2	12.0	6.2	24
2	6.7	9.8	6.5	5.6	6.5	7.7	8.3	10.2	10.1	10.2	7.1	7.4	10.6	9.8	9.4	11.1	7.0	7.0	10.4	8.9	9.8	9.6	10.0	8.3	5.6	11.1	8.7	24
3	7.5	2.5	2.7	3.4	4.5	5.7	4.7	5.0	7.0	9.4	10.6	10.4	13.4	13.3	14.0	16.7	16.8	13.8	13.1	12.6	15.7	16.5	14.2	13.2	2.5	16.8	10.3	24
4	17.0	16.7	14.0	12.3	15.9	14.3	13.7	14.5	12.6	12.6	15.4	15.2	17.4	13.6	13.8	12.1	10.5	7.6	6.9	6.5	6.2	8.0	7.5	7.3	6.2	17.4	12.2	24
5	7.9	11.3	14.1	12.5	6.6	6.7	6.9	7.3	7.5	8.9	12.9	17.7	15.7	16.2	15.5	14.5	16.0	9.5	10.1	10.8	9.6	10.0	10.0	8.3	6.6	17.7	11.1	24
6	6.8	7.4	9.3	7.8	11.6	8.3	8.0	8.6	9.1	6.5	P	17.3	18.3	18.9	18.8	16.1	14.0	8.1	8.7	6.8	5.9	7.4	7.0	3.2	3.2	18.9	10.2	23
7	11.2	5.8	8.2	4.5	5.1	3.1	4.7	7.9	7.9	9.6	8.3	9.8	10.2	11.9	13.0	12.6	10.2	7.0	7.7	7.5	6.9	3.6	6.8	4.9	3.1	13.0	7.9	24
8	3.0	5.7	4.0	4.5	2.8	4.8	4.9	3.7	4.1	6.7	7.2	7.2	10.2	12.6	14.1	13.7	12.1	11.0	7.7	10.8	8.1	8.1	10.0	10.2	2.8	14.1	7.8	24
9	11.6	11.8	14.0	13.4	11.9	15.2	11.9	13.3	13.1	16.9	19.5	20.7	20.0	19.9	14.5	14.1	13.8	13.1	11.4	11.1	11.7	11.2	12.8	13.3	11.1	20.7	14.2	24
10	10.8	11.0	9.1	9.7	9.4	8.3	12.9	12.2	9.6	16.9	15.8	18.7	21.9	21.9	21.5	19.9	16.2	19.7	13.6	15.8	21.5	19.8	14.6	14.7	8.3	21.9	15.2	24
11	12.8	11.5	10.1	12.2	9.2	10.4	10.7	8.7	9.5	8.6	10.5	7.9	11.2	13.4	13.5	13.8	11.9	8.8	7.5	9.3	8.6	9.1	7.5	5.3	5.3	13.8	10.1	24
12	3.3	5.6	3.3	3.1	3.7	3.2	3.0	3.5	7.2	9.2	8.1	22.4	19.4	20.0	15.2	16.9	13.1	12.3	12.6	8.2	11.0	8.9	11.5	9.7	3.0	22.4	9.8	24
13	6.6	11.0	11.0	11.3	13.7	14.1	13.4	14.4	13.7	14.7	15.8	13.2	16.8	15.2	13.0	13.9	10.4	11.1	12.0	12.3	13.9	16.9	12.1	9.8	6.6	16.9	12.9	24
14	11.1	11.9	19.6	26.0	26.9	21.4	20.4	19.3	21.8	22.2	22.1	17.8	20.0	19.3	17.9	18.7	13.7	7.1	5.7	5.8	2.9	6.4	4.9	5.7	2.9	26.9	15.4	24
15	6.0	7.7	8.7	8.0	8.2	9.2	10.2	11.1	9.0	15.5	16.9	17.1	16.3	17.5	17.6	19.6	16.7	13.3	11.2	6.1	7.0	3.0	2.9	5.0	2.9	19.6	11.0	24
16	5.3	6.7	5.6	7.4	6.7	7.3	9.7	6.3	7.4	7.9	10.6	10.4	12.2	10.8	16.8	15.1	21.0	14.8	9.0	9.2	8.2	11.5	17.8	22.0	5.3	22.0	10.8	24
17	19.5	17.0	13.8	21.9	22.7	17.2	19.6	22.3	10.1	15.1	19.9	15.4	19.4	17.7	18.0	16.1	15.7	13.4	12.6	12.9	13.6	16.4	18.1	12.0	10.1	22.7	16.7	24
18	5.6	6.7	5.6	8.0	6.2	6.4	6.5	7.3	6.4	8.0	12.2	17.7	19.3	15.9	12.6	14.1	14.9	11.1	6.4	3.0	3.3	7.0	6.9	5.8	3.0	19.3	9.0	24
19	6.0	8.4	7.4	5.8	8.7	7.8	9.6	8.3	10.5	13.8	14.9	18.0	17.6	18.3	17.4	16.1	14.5	15.6	12.6	12.3	11.9	10.4	9.7	8.8	5.8	18.3	11.9	24
20	7.0	8.1	16.0	14.2	14.3	16.0	14.9	14.8	15.6	15.2	13.4	10.3	9.8	7.0	7.5	10.5	11.8	6.6	2.4	6.1	4.0	7.6	3.8	4.7	2.4	16.0	10.1	24
21	1.8	4.2	2.9	4.8	2.3	38.9	3.6	1.7	2.1	7.8	6.2	7.5	9.1	11.6	10.0	11.6	7.0	5.8	5.9	8.7	2.8	3.5	2.1	2.4	1.7	38.9	6.8	24
22	2.9	5.0	7.8	10.4	8.3	10.3	10.8	13.9	10.3	8.9	10.8	12.6	12.0	14.5	16.6	15.7	15.6	12.4	10.3	11.5	10.1	6.1	7.1	3.3	2.9	16.6	10.3	24
23	3.1	3.1	4.4	4.8	6.0	6.5	11.0	11.0	10.6	13.6	14.3	14.9	20.0	17.8	13.7	14.0	20.0	12.4	9.6	3.3	3.3	3.9	2.8	1.8	1.8	20.0	9.4	24
24	3.6	4.9	7.8	8.2	6.6	5.1	7.6	7.2	8.0	7.6	14.6	17.7	21.5	19.2	21.1	19.1	17.9	18.9	12.6	3.4	3.9	3.3	4.1	4.7	3.3	21.5	10.4	24
25	3.9	6.4	8.6	11.0	13.8	8.4	8.2	6.1	7.7	10.8	8.1	12.2	8.2	6.7	12.3	11.6	8.3	6.2	4.8	4.9	3.8	6.5	4.9	14.9	3.8	14.9	8.3	24
26	17.3	17.2	14.0	8.4	12.2	12.7	18.9	14.3	13.1	15.9	12.0	10.6	13.0	15.3	15.1	10.7	9.4	9.7	9.6	6.0	6.0	5.7	7.1	5.7	5.7	18.9	11.7	24
27	8.3	7.8	7.2	9.9	10.0	8.3	8.5	10.2	9.0	10.5	12.6	12.9	17.2	19.1	20.3	22.4	16.9	12.8	16.8	8.8	9.8	6.9	8.5	7.3	6.9	22.4	11.8	24
28	9.7	8.5	8.7	6.7	2.9	3.8	3.5	5.6	9.5	8.0	9.4	12.0	12.0	13.6	13.5	9.0	4.4	2.9	3.8	3.2	4.0	3.6	4.4	2.9	2.9	13.6	7.2	24
HOURLY MAX	19.5	17.2	19.6	26.0	26.9	38.9	20.4	22.3	21.8	22.2	22.1	22.4	21.9	21.9	21.5	22.4	21.0	19.7	16.8	15.8	21.5	19.8	18.1	22.0				
HOURLY AVG	7.9	8.5	8.9	9.3	9.4	10.2	9.6	9.7	9.6	11.3	12.3	13.5	15.2	15.0	14.9	14.7	13.3	10.8	9.3	8.3	8.2	8.5	8.3	8.1				

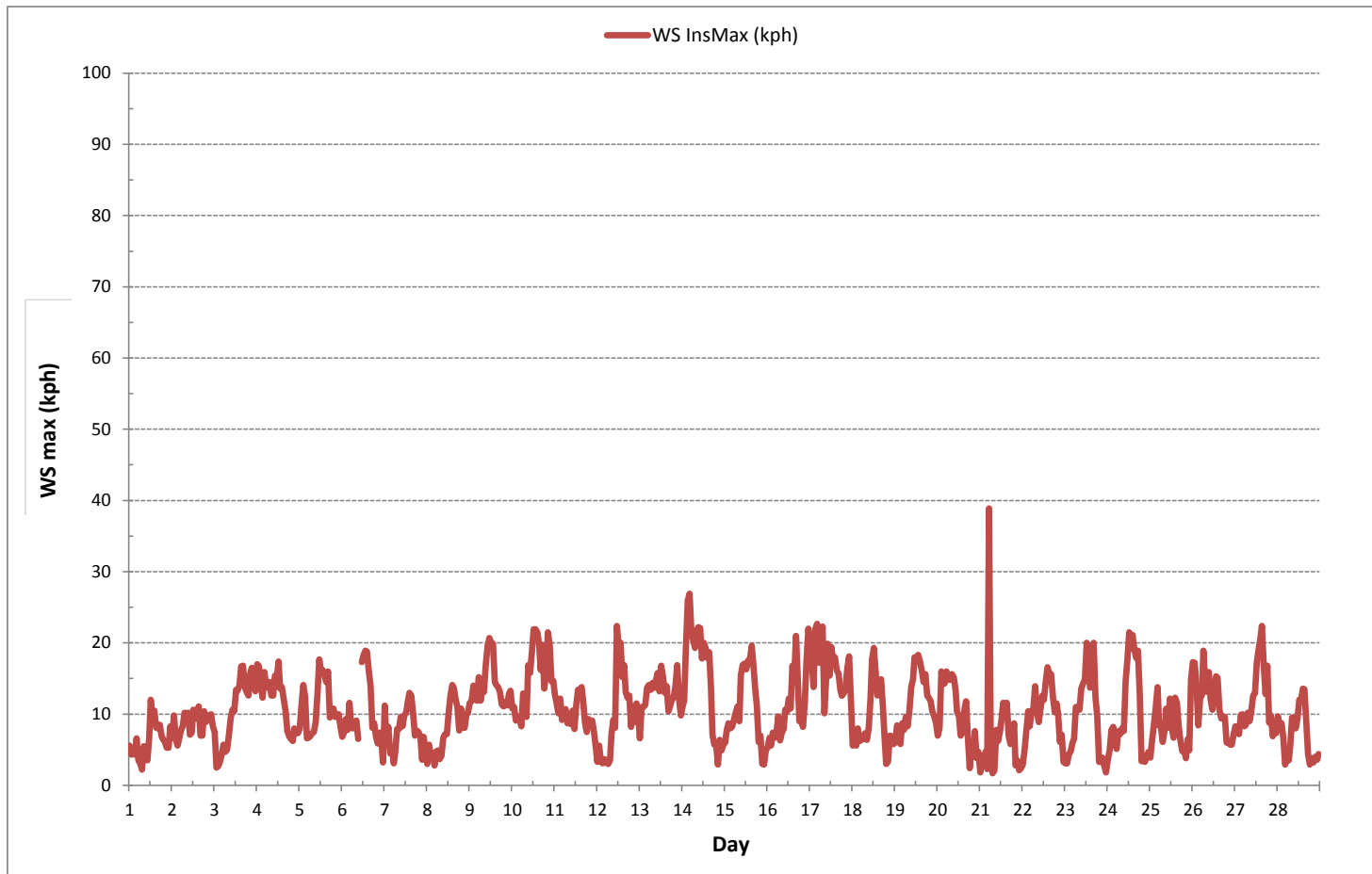
STATUS FLAG CODES

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

MONTHLY SUMMARY

MAXIMUM INSTANTANEOUS VALUE:	38.9	kph	@ HOUR	5	ON DAY	21
OPERATIONAL TIME:				671 hrs		

WIND SPEED Instantaneous Maximum (WS kph)



***APPENDIX IV
REPORT CERTIFICATION FORM***

Report Certification Form

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

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



Signature of the External Person Certifying the Report

29-Mar-2018

Report Issued Date (dd-mon-yyyy)

APPENDIX V
DATA VALIDATION CERTIFICATION FORM



Validation Certificate Form

Client: <u>Lakeland Industry & Community Association</u>	Project #: <u>2833-2018-02-1-C</u>
Site: <u>Cold Lake South Continuous Monitoring Station</u>	Contact: <u>Mike Bisaga</u>

Level 0 Preliminary Verification	<u>Maram Ghaleb</u>	Date <u>March 12, 2017</u>
Level 1 Primary Validation	<u>Maram Ghaleb</u>	Date <u>March 12, 2017</u>
Level 2 Final Validation	<u>Maram Ghaleb</u>	Date <u>March 28, 2017</u>
Level 3 Independent Data Review	<u>CSA/mba</u>	Date <u>March 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.

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

April 10, 2018

Subject: Monthly Report Submission for the LICA Maskwa station

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

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

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

All data collected this month, with the exception of H₂S, was compliant with the requirements outlined in the AMD, 2016.

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

Non-Conformance: A one-hour exceedance was recorded for H₂S this month: concentration of 11 ppb, on February 1 at hour 01:00. This was reported to AEP under reference number 334285.

A scheduled internal station audit was conducted by a contractor on February 18. Audit report can be found in this monthly report.

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

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

Respectfully,



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

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

Michael Bisaga
Technical Program Manager
Lakeland Industry & Community Association
780-266-7068
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
MASKWA CONTINUOUS MONITORING STATION

JOB #: 2833-2018-02-30-C

February 2018

Prepared for:

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

Attention: MIKE BISAGA

DATE: **March 29, 2018**

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

All data collected this month, with the exception of H₂S, was compliant with the requirements outlined in the AMD, 2016.

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

Non-Conformance: A one-hour exceedance was recorded for H₂S this month: concentration of 11 ppb, on February 1 at hour 01:00. This was reported to AEP under reference number 334285.

H₂S: A total of 8 hours of downtime were incurred this month.

- The routine monthly calibration was performed on February 8 but was rejected as the as-found high point did not meet the 20 minutes response time requirement. The calibration was successfully repeated on February 9 using an alternate calibration equipment set-up. Seven hours of downtime were incurred due to the additional quality check.
- One hour of downtime was recorded due to an additional zero-span check performed on February 26 at 07:00 to address a biased high drift in span response.

The summary of results is presented on the following pages.

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

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

Monthly Continuous Data Summary

Lakeland Industry & Community Association Maskwa Continuous Monitoring Station						MAXIMUM VALUES							OPERATIONAL TIME (%)
PARAMETER	OBJECTIVES		EXCEEDANCES		MONTHLY AVERAGE	1-HOUR					24-HOUR		
	1-hr	24-hr	1-hr	24-hr		READING	DAY	HOUR	WIND SPEED (kph)	WIND DIRECTION (sector)	READING	DAY	
SO ₂ (ppb)	172	48	0	0	1	14	17	0	7.6	NW	4	17	100.0
H ₂ S (ppb)	10	3	1	0	0	11	1	1	0.4	SW	2	1	98.8
THC (ppm)	-	-	-	-	2.14	2.97	1	4	0.6	ENE	2.48	1	100.0
NO ₂ (ppb)	159	-	0	-	4	19	1	17	4.3	SW	8	6	100.0
NO (ppb)	-	-	-	-	1	7	22	22	5.6	WNW	2	17	100.0
NO _x (ppb)	-	-	-	-	5	24	7	7	2.8	WNW	9	6	100.0
RELATIVE HUMIDITY (%)	-	-	-	-	64	90	13	20	3.0	WSW	71	13	100.0
BAROMETRIC PRESSURE (millibar)	-	-	-	-	939	956	8	12	5.3	NNW	954	8	100.0
AMBIENT TEMPERATURE (°C)	-	-	-	-	-14.8	6.7	27	13	7.5	W	-2.7	13	100.0
PRECIPITATION (mm)	-	-	-	-	0.0	0.4	14	0	3.9	NW	0.1	14	100.0
VECTOR WS (kph)	-	-	-	-	2.6	20.0	14	4	-	NE	9.1	23	100.0
VECTOR WD (sec)	-	-	-	-	268 (W)	-	-	-	-	-	-	-	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

DATE	TIME (MST)	READING (ppb)	WS (kph)	WD (deg)	AEP Reference #
February	1	11	0.4	234	334285

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).

The sample inlet filter for all continuous air analyzers are replaced before the calibration begins. The sample manifold is cleaned during the site visit each month.

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

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

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

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

The AMD requires each instrument and accompanying data recording system to be operational 90% of the time, at a minimum, for each monthly monitoring period.

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

Data contained in this monthly report has undergone the verification and validation based on the requirements of the AMD Chapter 6: Ambient Data Quality (December, 2016). The descriptions of the data verification and validation process can be found in Section 5 of this report. Instantaneous data, where applicable, is provided for reference purposes and has not undergone zero correction. The minimum and maximum statistics are highlighted in the data table and are for reference only. The highlighted cells are based on the software's interpretation of the exact position of the minimum or maximum value. The visual presentation of these statistics may not be the obvious choice in a data range due to rounding, truncating or analyzer specifications.

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

SULPHUR DIOXIDE (SO₂)

- Operational time for the monitoring period was 100%.
- The routine monthly calibration was performed on February 8.

HYDROGEN SULPHIDE (H₂S)

- Operational time for the monitoring period was 98.8%, equivalent to 8 hours of downtime.
- A one-hour exceedance was recorded for H₂S this month: concentration of 11 ppb, on February 1 at hour 01:00. This was reported to AEP under reference number 334285.
- The routine monthly calibration was performed on February 8. The calibration was, however, rejected as the as-found high point did not meet the 20 minutes response time requirement. It was suspected that the slow response was an artifact of the calibrator and not analyzer function. The calibration was, therefore, repeated on February 9 using an alternate calibration equipment set-up. The success of the repeat calibration confirmed analyzer performance. Data between the two calibrations are, therefore, deemed valid. Seven hours of downtime were incurred due to the additional quality check.
- A repeat zero-span check was performed on February 26 at 07:00 to assess span response as the analyzer had spanned towards the upper acceptance limit on February 25. The result was closer to the mean and showed no trending drift. No further action was taken. One hour of downtime was recorded due to the additional zero-span check.

TOTAL HYDROCARBONS (THC)

- Operational time for the monitoring period was 100%.
- The routine monthly calibration was performed on February 9.
- On February 25, at hour 07:00, one hour of maximum instantaneous data was invalidated as the analyzer yielded an off-scan error at 07:20.

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 February 8.

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

- Operational time for the monitoring period was 100%.
- 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%.
- The precipitation sensor was audited on February 9. The results were satisfactory.

AMBIENT TEMPERATURE (AmbTPX)

- Operational time for the monitoring period was 100%.

2.0 Project Personnel

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

3.0 Plant Monthly Required AMD Summary

All data collected this month, with the exception of H₂S, was compliant with the requirements outlined in the AMD, 2016.

A one-hour exceedance was recorded for H₂S this month: concentration of 11 ppb, on February 1 at hour 01:00. This was reported to AEP under reference number 334285.

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-00013: RM Young Wind Monitor Calibration
- Maxxam AIR SOP-00209: Ambient Sulphur Monitoring
- Maxxam AIR SOP-00213: Ambient NO/NO₂/NO_x Monitoring
- Maxxam AIR SOP-00214: Ambient Hydrocarbon (THC) Monitoring
- Maxxam AIR SOP-00242: Precipitation Collector Installation/Maintenance

There were no deviations from the prescribed methods.

The following instruments were used to perform the test program:

- Sulphur Dioxide - API 100E UV Fluorescent Analyzer
- Hydrogen Sulphide - API 101E UV Fluorescent Analyzer
- Total Hydrocarbons - Thermo 51C FID Analyzer
- Oxides of Nitrogen - API 200A Chemiluminescent Analyzer
- Wind System - RM Young 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

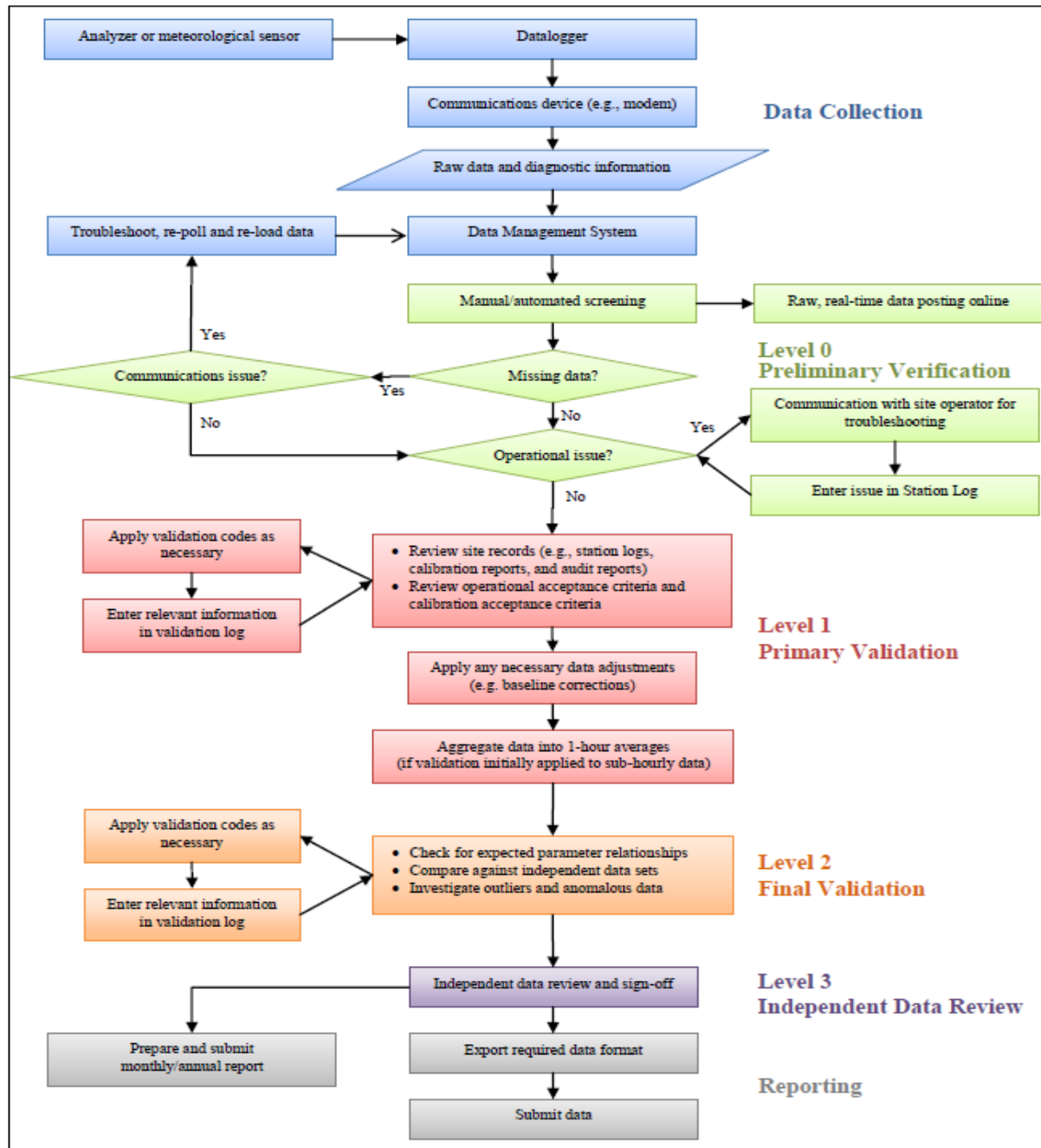
The purpose of Level 2 validation is to verify that there are no inconsistencies among related data, or among regional data measured at nearby sites.

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

STATUS FLAG CODES

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

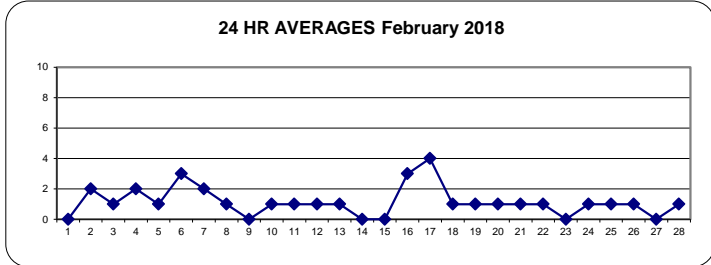
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR 172 ppb | 24-HR 48 ppb

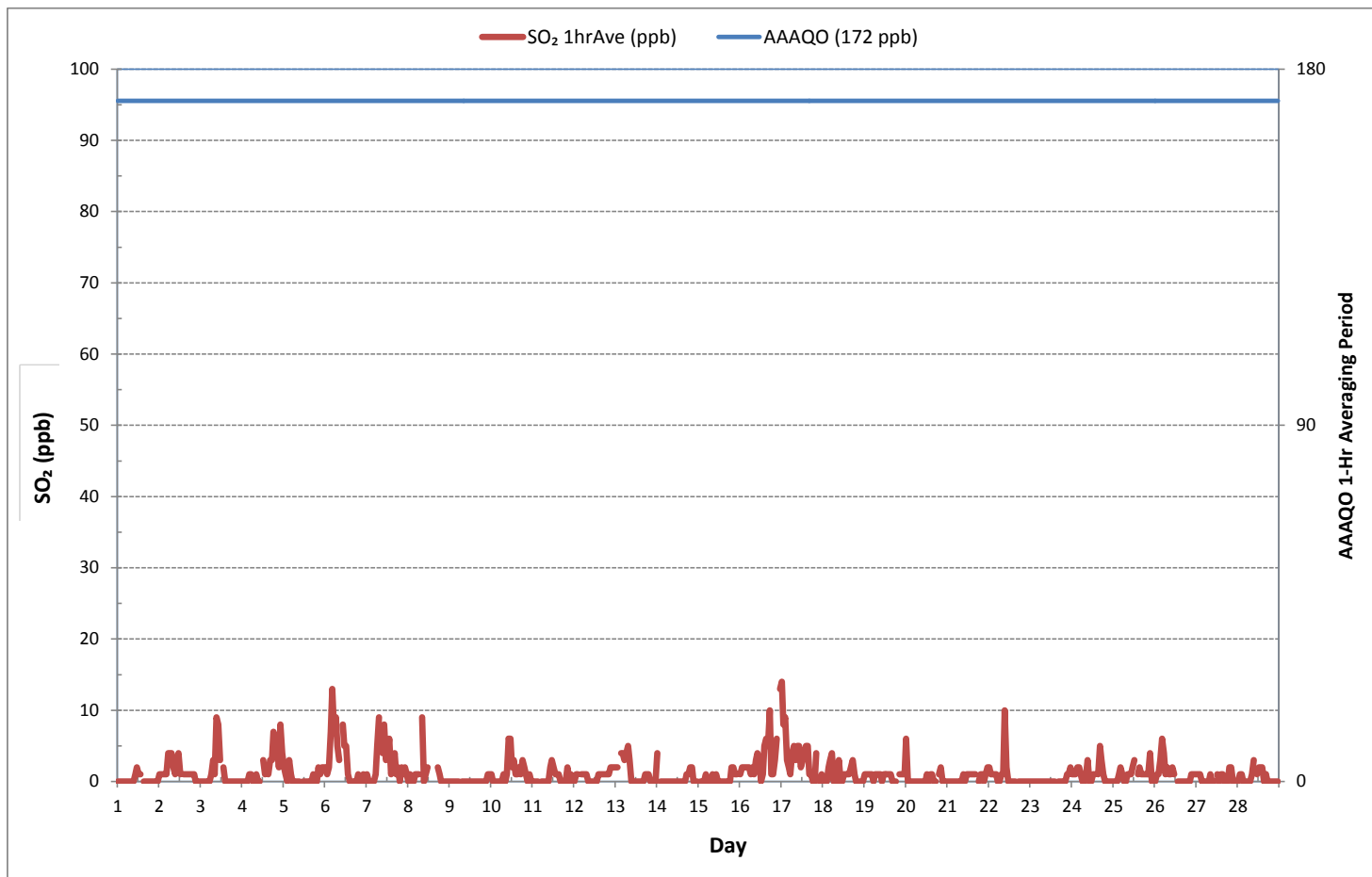
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0
NUMBER OF 24-HR EXCEEDANCES:	0
NUMBER OF NON-ZERO READINGS:	324
MINIMUM 1-HR AVERAGE:	0 ppb @ HOUR ON DAY 1
MAXIMUM 1-HR AVERAGE:	14 ppb @ HOUR ON DAY 17
MAXIMUM 24-HR AVERAGE:	4 ppb ON DAY 17
IZS CALIBRATION TIME:	29 hrs
MONTHLY CALIBRATION TIME:	5 hrs
OPERATIONAL TIME:	672 hrs
AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	2
MONTHLY AVERAGE:	1 ppb

24 HR AVERAGES February 2018



SULPHUR DIOXIDE Hourly Averages (SO₂ ppb)









Wind: LICA MASKWA
 Poll.: LICA MASKWA-SO2[ppb]
 Monthly: 18/02
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

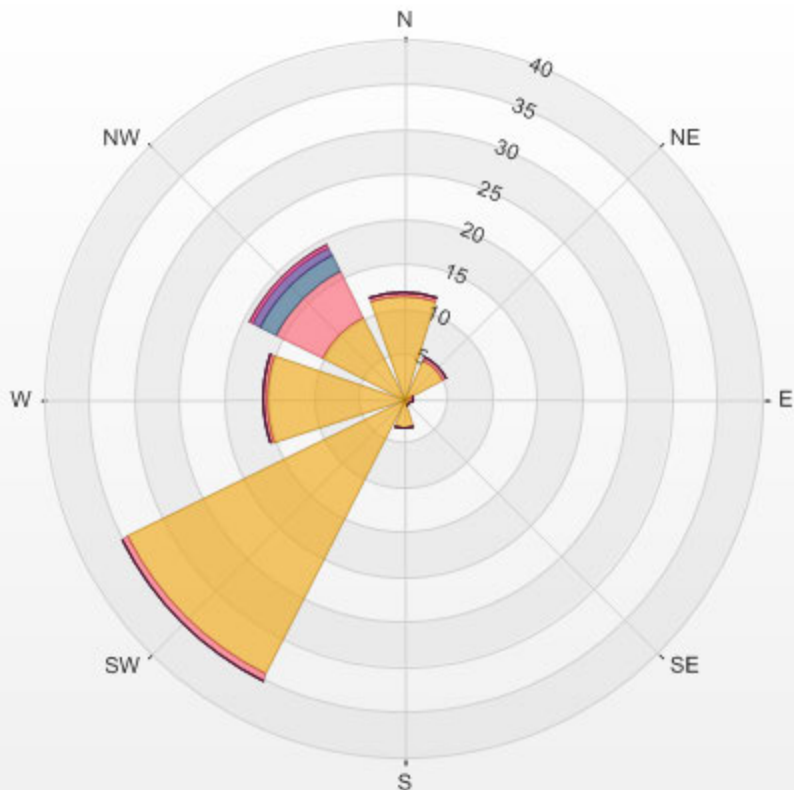
Calm: 7.37%

Calm Avg: 0.50 [ppb]

Direction	0.0-3.0	3.0-6.0	6.0-9.0	9.0-12.0	12.0-15.0	>15.0	Total
N	11.4	0.5	0.0	0.0	0.0	0.0	11.9
NE	4.9	0.5	0.0	0.0	0.0	0.0	5.3
E	0.8	0.3	0.0	0.0	0.0	0.0	1.1
SE	0.9	0.0	0.0	0.0	0.0	0.0	0.9
S	3.3	0.0	0.0	0.0	0.0	0.0	3.3
SW	34.3	0.8	0.0	0.0	0.0	0.0	35.1
W	15.4	0.3	0.0	0.0	0.0	0.0	15.7
NW	10.0	6.0	2.0	0.8	0.5	0.0	19.3
Summary	81.0	8.3	2.0	0.8	0.5	0.0	92.6

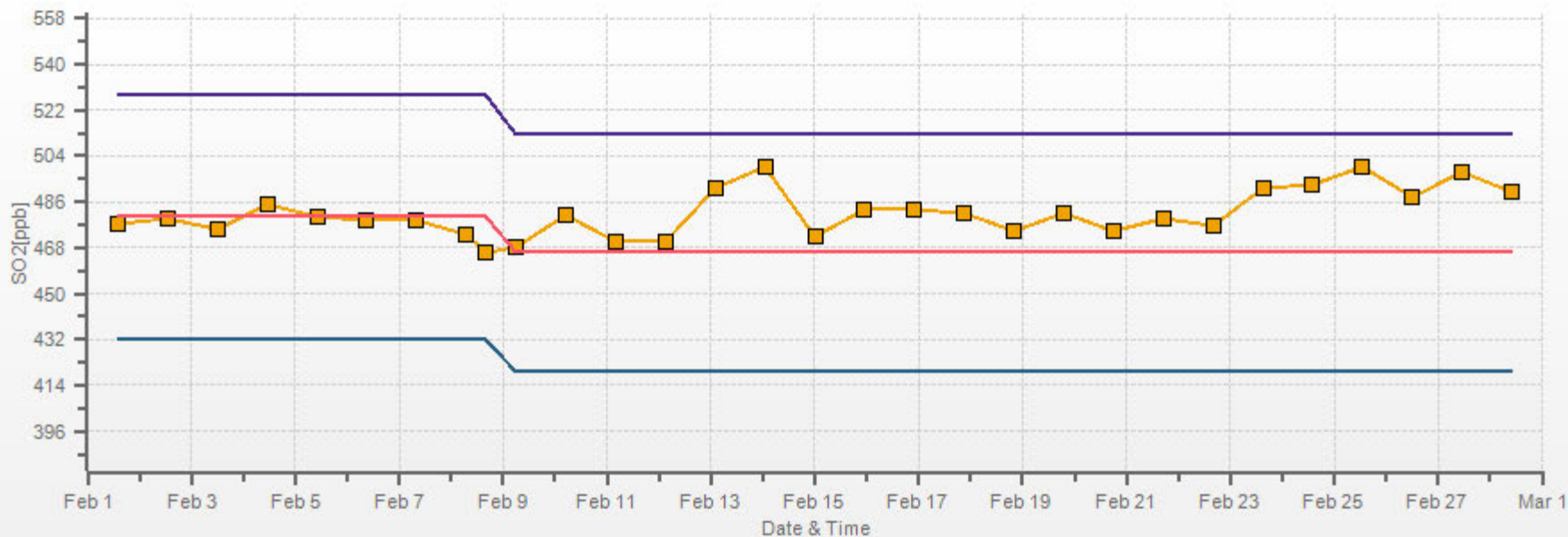
% Icon	Classes (ppb)	81	 0.0-3.0	8	 3.0-6.0	2	 6.0-9.0	1	 9.0-12.0	0	 12.0-15.0	0	 >15.0
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LICA MASKWA Poll.: LICA MASKWA-SO2[ppb] 2018/02/01 00:00 - 2018/02/28 23:00 Calm: 7.37% Calm Poll Avg: 0.50[ppb]



SO2[ppb] Calibration: LICA MASKWA Monthly: 18/02 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	8	11	8	7	8	7	2	1	2	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	11	2	24
2	0	0	0	0	0	0	0	0	1	0	0	1	1	S	0	0	0	0	0	1	0	1	0	0	0	1	0	24
3	0	0	0	0	0	0	0	1	0	1	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
4	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	1	1	0	0	1	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	24
6	0	0	0	1	2	1	1	1	1	S	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	0	24
7	0	0	0	0	0	1	2	1	S	0	1	0	1	1	0	0	0	0	1	0	1	0	1	1	0	2	0	24
8	1	0	0	0	1	0	0	S	0	0	0	0	0	0	Y	Y	Y	Y	Y	Y	0	0	0	0	0	1	0	17
9	0	0	0	0	1	0	S	0	0	0	0	C	C	C	C	C	0	0	0	0	0	0	0	0	0	1	0	24
10	0	0	0	0	0	S	0	0	0	1	1	1	0	0	0	0	1	1	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	0	0	0	0	0	0	0	0	0	0	0	0	0	24
12	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	24
13	1	0	S	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	24
14	0	S	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	1	1	0	0	1	0	24
15	S	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	1	0	S	0	1	0	24
16	0	0	0	1	0	1	0	1	0	0	1	0	0	1	2	1	3	0	0	1	2	S	3	0	0	3	1	24
17	3	2	1	1	1	0	1	1	0	1	1	0	0	1	1	2	0	0	0	0	0	S	0	1	0	3	1	24
18	0	0	0	0	1	1	0	1	0	0	0	0	0	0	0	1	1	1	0	0	S	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	24
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	1	1	0	0	0	0	1	0	24
21	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	1	0	24
22	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	1	0	24
23	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	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	24
26	0	0	0	0	0	0	0	S1	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	23
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	24
28	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
HOURLY MAX	8	11	8	7	8	7	2	1	2	1	1	1	1	1	1	2	1	3	1	1	1	2	1	3				
HOURLY AVG	0	0	0	0	1	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

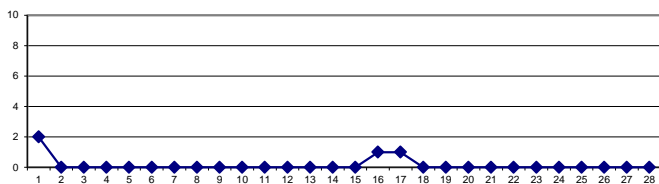
OBJECTIVE LIMIT:

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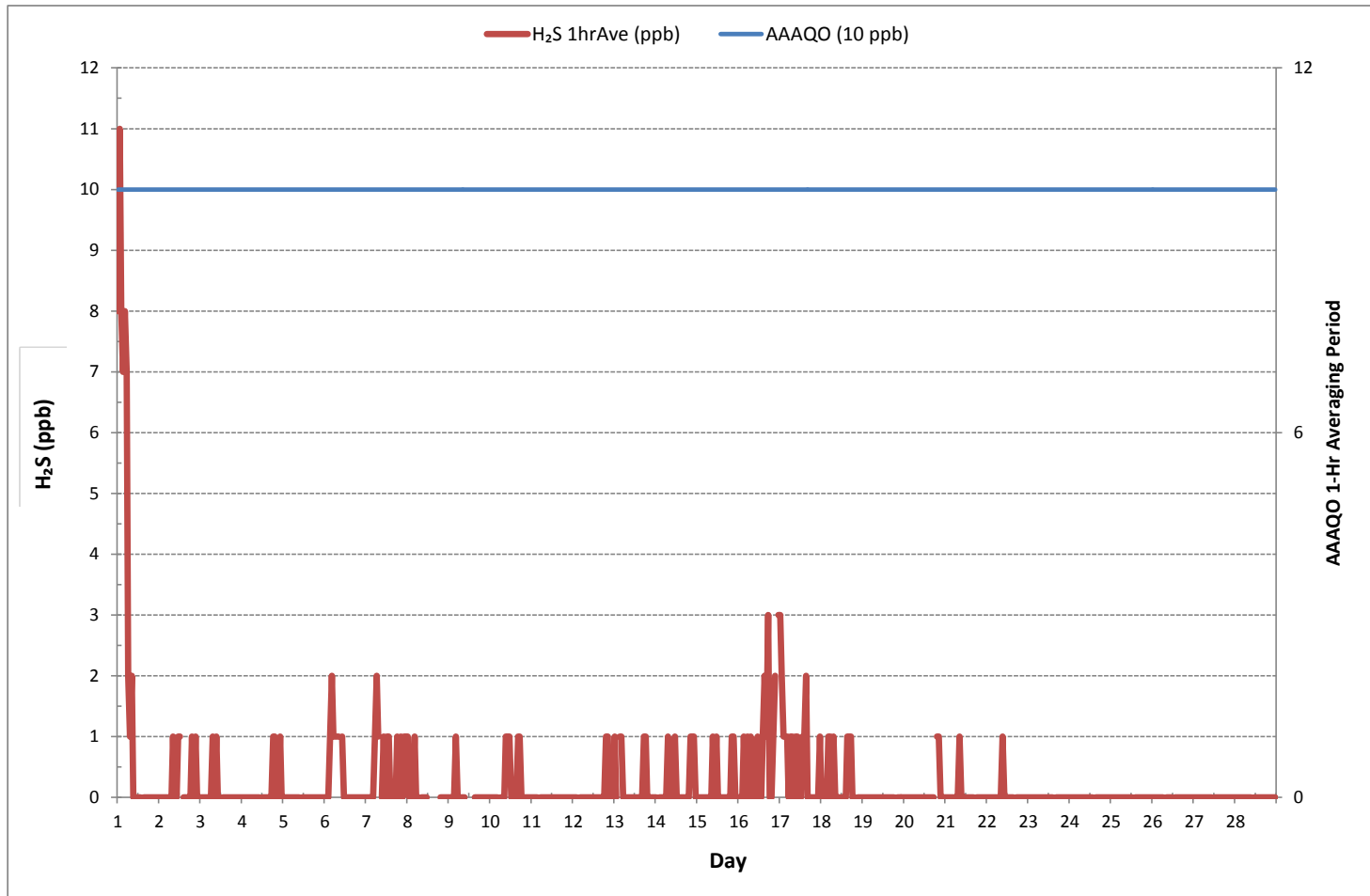
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	1				
NUMBER OF 24-HR EXCEEDANCES:	0				
NUMBER OF NON-ZERO READINGS:	94				
MINIMUM 1-HR AVERAGE:	0 ppb @ HOUR	9	ON DAY	1	
MAXIMUM 1-HR AVERAGE:	11 ppb @ HOUR	1	ON DAY	1	
MAXIMUM 24-HR AVERAGE:	2 ppb		ON DAY	1	
IZS CALIBRATION TIME:	29	hrs	OPERATIONAL TIME:	664	hrs
MONTHLY CALIBRATION TIME:	5	hrs	AMD OPERATION UPTIME:	98.8	%
STANDARD DEVIATION:	1		MONTHLY AVERAGE:	0	ppb

24 HR AVERAGES February 2018



HYDROGEN SULPHIDE Hourly Averages (H₂S ppb)



Wind: LICA MASKWA
Poll.: LICA MASKWA-H2S[ppb]
Monthly: 18/02
Type: PollutionRose
Direction: Blowing From (Wind Frequency)
Based On 1 Hr.

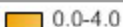
Calm: 7.47%

Calm Avg: 1.39 [ppb]

Direction	0.0-4.0	4.0-8.0	8.0-12.0	>12.0	Total
N	12.1	0.0	0.0	0.0	12.1
NE	5.4	0.0	0.0	0.0	5.4
E	1.1	0.0	0.0	0.0	1.1
SE	1.0	0.0	0.0	0.0	1.0
S	3.3	0.0	0.0	0.0	3.3
SW	35.6	0.0	0.0	0.0	35.6
W	15.3	0.0	0.0	0.0	15.3
NW	18.8	0.0	0.0	0.0	18.8
Summary	92.5	0.0	0.0	0.0	92.5

% Icon Classes (ppb)

93



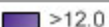
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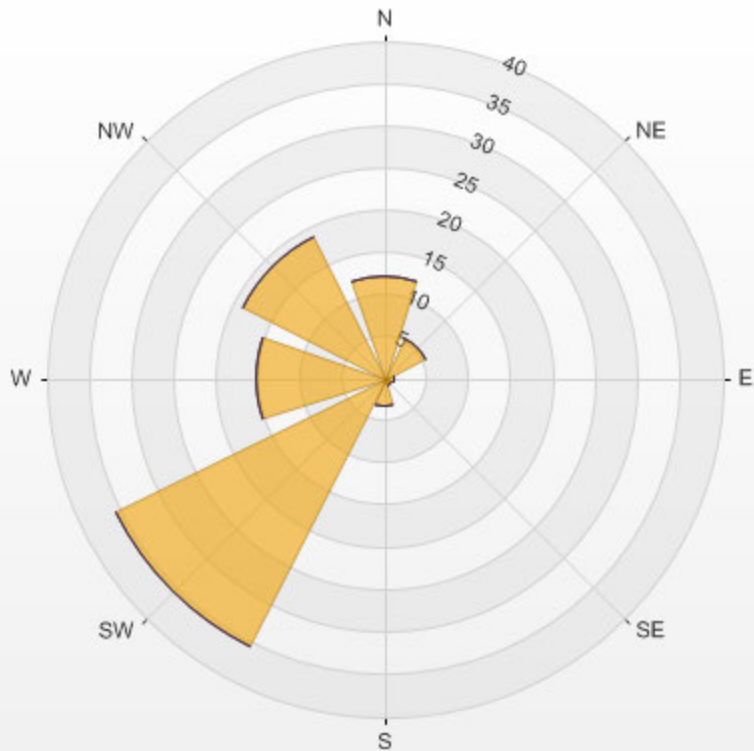
0



0

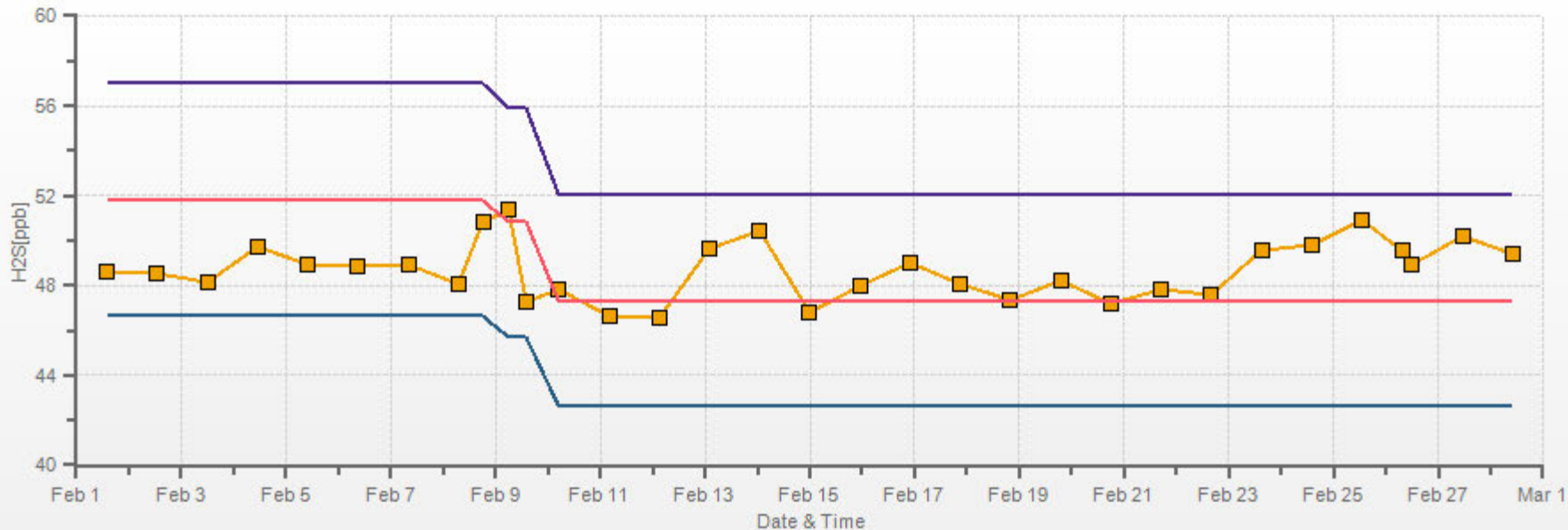


LICA MASKWA Poll.: LICA MASKWA-H2S[ppb] 2018/02/01 00:00 - 2018/02/28 23:00 Calm: 7.47% Calm Poll Avg: 1.39[ppb]



H2S[ppb] Calibration: LICA MASKWA Monthly: 18/02 Type: Span

Span Meas Span Ref Span Low Span High



TOTAL HYDROCARBON



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

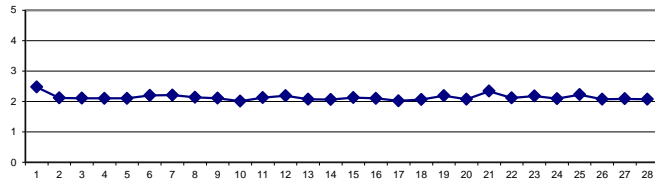
TOTAL HYDROCARBONS Hourly Averages (THC ppm)

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	2.71	2.90	2.83	2.88	2.97	2.85	2.45	2.31	2.45	2.29	2.25	2.23	2.22	2.23	S	2.44	2.69	2.81	2.71	2.20	2.13	2.13	2.15	2.16	2.13	2.13	2.97	2.48	24			
2	2.15	2.13	2.13	2.14	2.15	2.15	2.14	2.16	2.15	2.14	2.17	2.17	2.11	S	2.08	2.08	2.08	2.09	2.09	2.10	2.08	2.08	2.07	2.07	2.07	2.07	2.17	2.12	24			
3	2.08	2.09	2.10	2.10	2.10	2.11	2.12	2.16	2.14	2.18	2.15	2.13	S	2.11	2.08	2.08	2.10	2.11	2.11	2.10	2.08	2.08	2.09	2.08	2.08	2.08	2.18	2.11	24			
4	2.08	2.07	2.10	2.11	2.10	2.16	2.11	2.12	2.21	2.25	2.18	S	2.08	2.05	2.04	2.06	2.05	2.06	2.11	2.10	2.06	2.05	2.09	2.07	2.04	2.04	2.25	2.10	24			
5	2.07	2.06	2.07	2.10	2.09	2.09	2.11	2.11	2.14	2.13	S	2.08	2.08	2.06	2.06	2.06	2.08	2.11	2.09	2.09	2.14	2.15	2.18	2.22	2.06	2.06	2.22	2.10	24			
6	2.28	2.30	2.29	2.21	2.20	2.18	2.30	2.28	2.33	S	2.18	2.11	2.20	2.12	2.08	2.09	2.09	2.11	2.13	2.16	2.19	2.21	2.29	2.30	2.08	2.08	2.33	2.20	24			
7	2.43	2.49	2.42	2.32	2.24	2.28	2.32	2.25	S	2.13	2.14	2.11	2.11	2.11	2.09	2.13	2.11	2.13	2.14	2.11	2.16	2.14	2.20	2.19	2.09	2.09	2.49	2.21	24			
8	2.18	2.12	2.12	2.12	2.16	2.15	2.13	S	2.13	2.12	2.18	2.13	2.12	2.10	2.10	2.10	2.11	2.13	2.14	2.13	2.14	2.16	2.18	2.19	2.10	2.10	2.19	2.14	24			
9	2.20	2.22	2.18	2.18	2.13	2.15	S	2.13	2.10	2.10	2.10	2.07	2.06	2.05	C	C	C	C	2.05	2.05	2.06	2.07	2.09	2.08	2.05	2.05	2.22	2.11	24			
10	2.08	2.07	2.06	2.07	2.08	S	2.07	2.08	2.05	2.05	2.05	2.01	1.99	1.97	1.95	1.95	1.96	1.96	1.97	1.96	1.96	1.97	1.98	2.00	1.95	1.95	2.08	2.01	24			
11	2.01	2.02	2.03	2.05	S	2.06	2.07	2.08	2.10	2.10	2.11	2.12	2.10	2.09	2.09	2.08	2.12	2.20	2.24	2.20	2.21	2.23	2.26	2.23	2.01	2.01	2.26	2.12	24			
12	2.23	2.22	2.20	S	2.19	2.22	2.21	2.29	2.35	2.32	2.28	2.22	2.16	2.14	2.12	2.10	2.11	2.11	2.11	2.12	2.14	2.15	2.18	2.18	2.10	2.10	2.35	2.19	24			
13	2.20	2.26	S	2.37	2.36	2.44	2.36	2.32	2.15	2.00	1.96	1.95	1.94	1.95	2.00	1.96	1.94	1.93	1.93	1.97	1.99	1.94	1.91	1.92	1.91	1.91	2.44	2.08	24			
14	1.95	S	1.93	1.95	1.97	2.00	2.02	2.03	2.04	2.06	2.07	2.07	2.07	2.08	2.08	2.08	2.09	2.12	2.13	2.16	2.17	2.17	2.19	1.93	1.93	1.93	2.19	2.07	24			
15	S	2.12	2.11	2.11	2.14	2.15	2.12	2.10	2.15	2.20	2.17	2.15	2.08	2.08	2.08	2.09	2.08	2.10	2.11	2.13	2.15	2.15	2.15	S	2.08	2.08	2.20	2.12	24			
16	2.19	2.21	2.25	2.33	2.36	2.32	2.12	2.09	2.06	2.03	2.03	2.01	1.96	1.98	2.00	2.06	2.03	2.11	2.01	2.01	2.05	2.09	S	2.07	1.96	1.96	2.36	2.10	24			
17	2.10	2.05	2.05	2.02	2.01	1.99	2.02	2.04	2.02	2.04	2.01	1.99	2.00	2.00	2.02	2.05	1.99	1.99	2.00	2.00	2.01	S	2.00	2.03	1.99	1.99	2.10	2.02	24			
18	2.05	2.09	2.06	2.07	2.08	2.08	2.05	2.16	2.05	2.05	2.03	2.02	2.02	2.01	2.03	2.05	2.06	2.07	2.06	2.09	S	2.15	2.09	2.09	2.01	2.01	2.16	2.07	24			
19	2.14	2.34	2.23	2.22	2.38	2.45	2.41	2.35	2.23	2.21	2.17	2.11	2.09	2.09	2.08	2.08	2.08	2.06	2.05	S	2.10	2.11	2.14	2.12	2.05	2.05	2.45	2.18	24			
20	2.06	2.02	2.02	2.02	2.02	2.03	2.03	2.04	2.04	2.04	2.04	2.04	2.02	2.03	2.03	2.03	2.05	2.05	S	2.13	2.41	2.14	2.14	2.23	2.02	2.02	2.41	2.07	24			
21	2.50	2.35	2.39	2.33	2.20	2.17	2.14	2.33	2.31	2.27	2.26	2.32	2.35	2.34	2.35	2.41	2.46	S	2.47	2.46	2.44	2.37	2.30	2.31	2.14	2.14	2.50	2.34	24			
22	2.37	2.40	2.29	2.14	2.10	2.08	2.06	2.05	2.06	2.19	2.05	2.03	2.04	2.02	2.02	2.02	S	2.04	2.04	2.05	2.09	2.14	2.14	2.16	2.17	2.02	2.40	2.12	24			
23	2.16	2.21	2.19	2.20	2.26	2.39	2.44	2.38	2.35	2.30	2.21	2.12	2.06	2.05	2.05	S	2.04	2.05	2.07	2.09	2.09	2.12	2.14	2.14	2.04	2.04	2.44	2.18	24			
24	2.14	2.20	2.25	2.33	2.33	2.24	2.14	2.07	2.04	2.00	2.01	2.00	2.00	1.99	S	1.99	2.02	2.02	2.01	2.02	2.04	2.05	2.08	2.13	1.99	1.99	2.33	2.09	24			
25	2.17	2.17	2.12	2.12	2.15	2.14	2.15	2.14	2.19	2.29	2.33	2.31	2.30	S	2.32	2.37	2.31	2.31	2.35	2.36	2.33	2.11	2.06	2.04	2.04	2.04	2.37	2.22	24			
26	2.04	2.04	2.05	2.08	2.09	2.06	2.02	2.01	2.01	2.01	2.01	2.01	S	2.03	2.05	2.02	2.02	2.04	2.08	2.14	2.18	2.18	2.20	2.25	2.01	2.01	2.25	2.07	24			
27	2.27	2.27	2.28	2.27	2.24	2.20	2.19	2.16	2.12	2.12	2.10	S	2.03	1.97	1.98	1.98	1.96	1.96	1.96	2.00	1.99	1.99	2.00	2.01	1.96	1.96	2.28	2.09	24			
28	2.05	2.06	2.14	2.24	2.16	2.12	2.16	2.20	2.29	2.24	S	2.00	2.00	2.00	2.00	1.98	1.99	2.00	2.01	2.01	2.02	2.02	2.02	2.02	1.98	1.98	2.29	2.08	24			
HOURLY MAX	2.71	2.90	2.83	2.88	2.97	2.85	2.45	2.38	2.45	2.32	2.33	2.32	2.35	2.34	2.35	2.44	2.69	2.81	2.71	2.46	2.44	2.37	2.30	2.31								
HOURLY AVG	2.18	2.20	2.18	2.19	2.19	2.19	2.17	2.16	2.16	2.14	2.12	2.10	2.08	2.06	2.07	2.09	2.10	2.10	2.12	2.11	2.13	2.12	2.12	2.13								

STATUS FLAG CODES

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

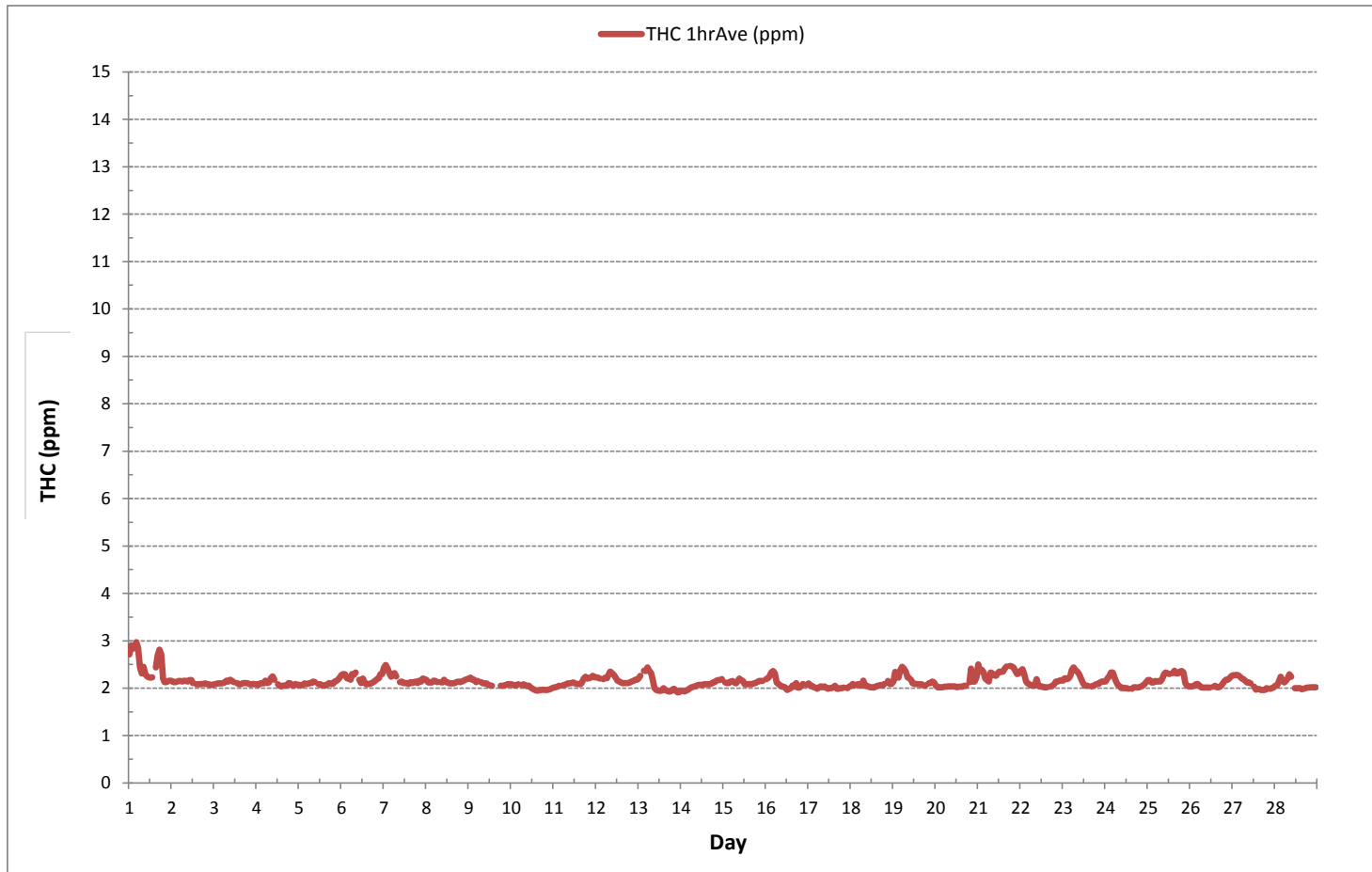
24 HR AVERAGES February 2018



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	639			
MINIMUM 1-HR AVERAGE:	1.91 ppm	@ HOUR	22	ON DAY
MAXIMUM 1-HR AVERAGE:	2.97 ppm	@ HOUR	4	ON DAY
MAXIMUM 24-HR AVERAGE:	2.48 ppm			ON DAY
IZS CALIBRATION TIME:	29 hrs	OPERATIONAL TIME:	672	hrs
MONTHLY CALIBRATION TIME:	4 hrs	AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	0.14	MONTHLY AVERAGE:	2.14	ppm

TOTAL HYDROCARBONS Hourly Averages (THC ppm)



Wind: LICA MASKWA
 Poll.: LICA MASKWA-THC[ppm]
 Monthly: 18/02
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 7.37%

Calm Avg: 2.27 [ppm]

Direction	0.0-1.0	1.0-2.0	2.0-3.0	>3.0	Total
N	0.0	1.9	10.2	0.0	12.1
NE	0.0	0.8	4.6	0.0	5.3
E	0.0	0.0	1.1	0.0	1.1
SE	0.0	0.0	0.8	0.0	0.8
S	0.0	0.0	3.3	0.0	3.3
SW	0.0	0.5	34.6	0.0	35.1
W	0.0	2.0	13.0	0.0	15.1
NW	0.0	0.8	19.1	0.0	19.9
Summary	0.0	6.0	86.7	0.0	92.6

% Icon Classes (ppm)

0

0.0-1.0

6

1.0-2.0

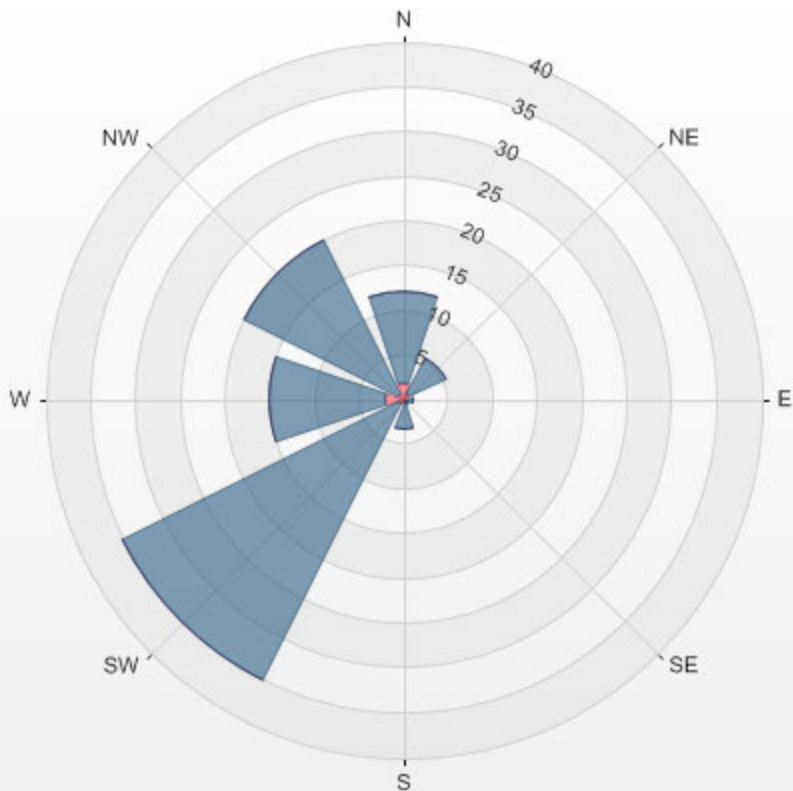
87

2.0-3.0

0

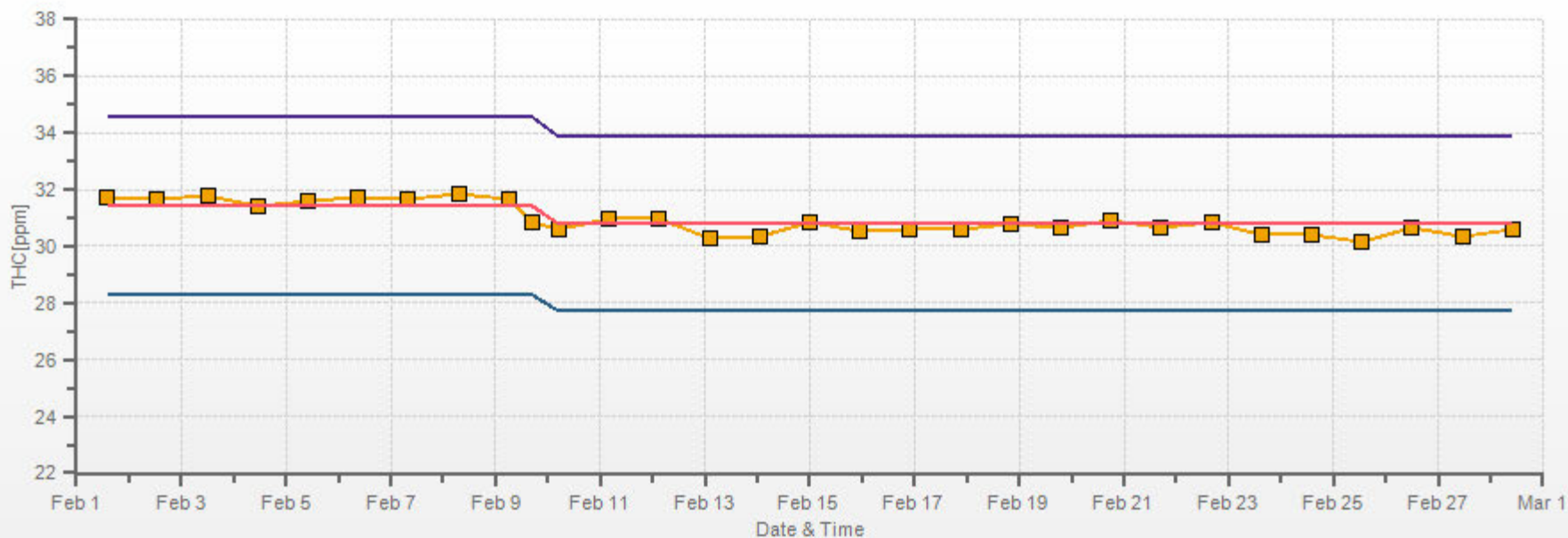
>3.0

LICA MASKWA Poll.: LICA MASKWA-THC[ppm] 2018/02/01 00:00 - 2018/02/28 23:00 Calm: 7.37% Calm Poll Avg: 2.27[ppm]



THC[ppm] Calibration: LICA MASKWA Monthly: 18/02 Type: Span

Span Meas Span Ref Span Low Span High



OXIDES OF NITROGEN



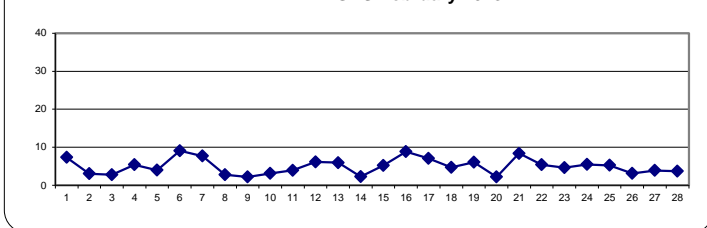
OXIDES OF NITROGEN Hourly Averages (NO_x ppb)

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

STATUS FLAG CODES

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

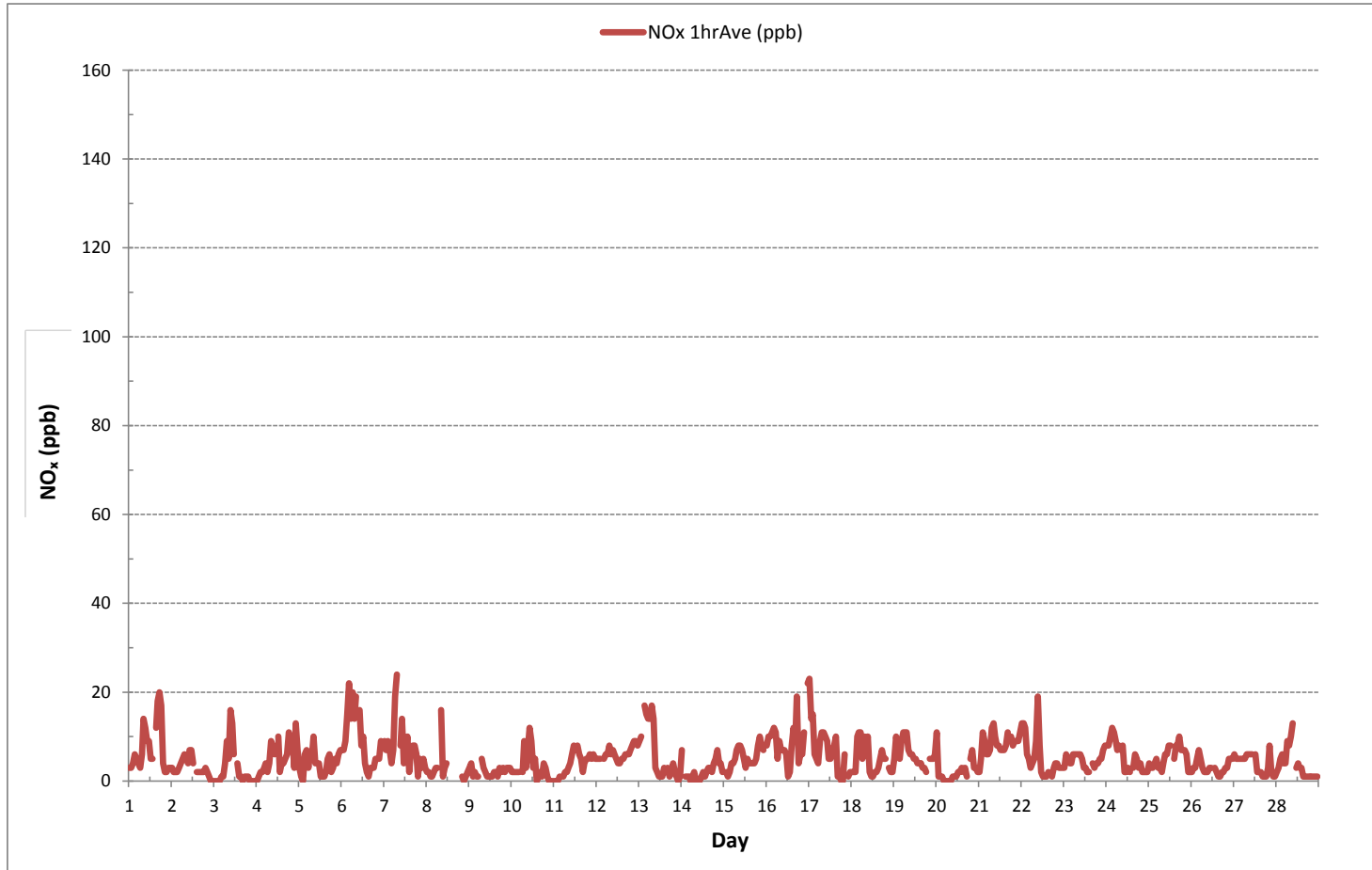
24 HR AVERAGES February 2018



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	602			
MINIMUM 1-HR AVERAGE:	0	ppb @ HOUR	22	ON DAY 2
MAXIMUM 1-HR AVERAGE:	24	ppb @ HOUR	7	ON DAY 7
MAXIMUM 24-HR AVERAGE:	9	ppb		ON DAY 6
IZS CALIBRATION TIME:	29	hrs	OPERATIONAL TIME:	672 hrs
MONTHLY CALIBRATION TIME:	8	hrs	AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	4		MONTHLY AVERAGE:	5 ppb

OXIDES OF NITROGEN Hourly Averages (NO_x ppb)







Wind: LICA MASKWA
Poll.: LICA MASKWA-NOX[ppb]
Monthly: 18/02
Type: PollutionRose
Direction: Blowing From (Wind Frequency)
Based On 1 Hr.

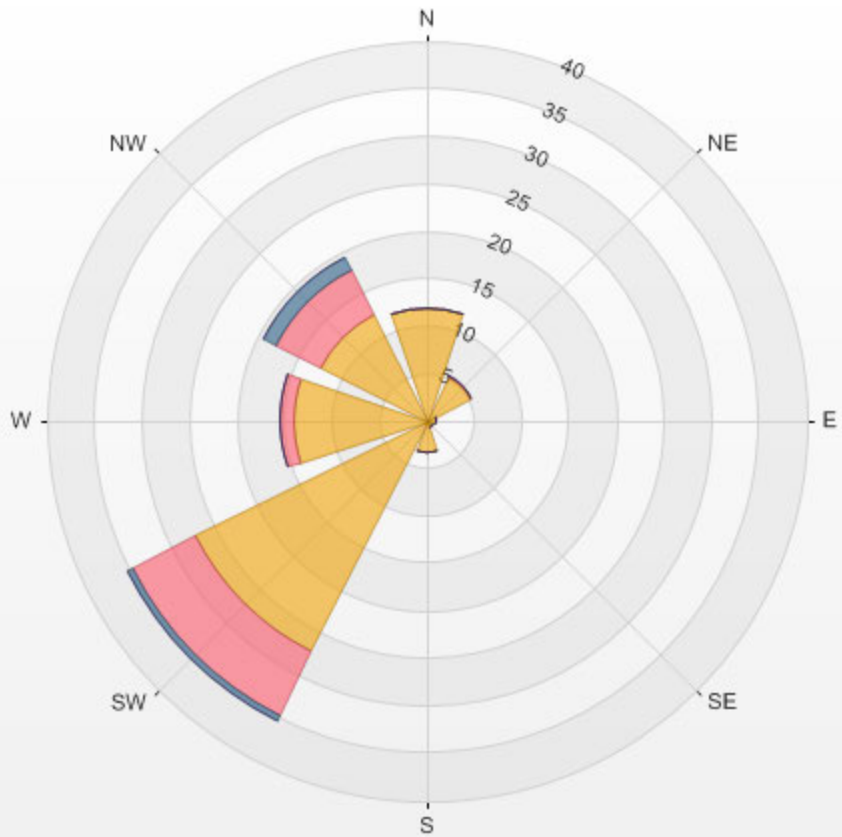
Calm: 7.40%

Calm Avg: 4.22 [ppb]

Direction	0.0-8.3	8.3-16.7	16.7-25.0	>25.0	Total
N	12.0	0.0	0.0	0.0	12.0
NE	5.2	0.2	0.0	0.0	5.4
E	1.1	0.0	0.0	0.0	1.1
SE	0.9	0.0	0.0	0.0	0.9
S	3.3	0.0	0.0	0.0	3.3
SW	27.2	7.4	0.6	0.0	35.3
W	14.0	1.4	0.0	0.0	15.4
NW	12.6	5.2	1.4	0.0	19.2
Summary	76.4	14.2	2.1	0.0	92.6

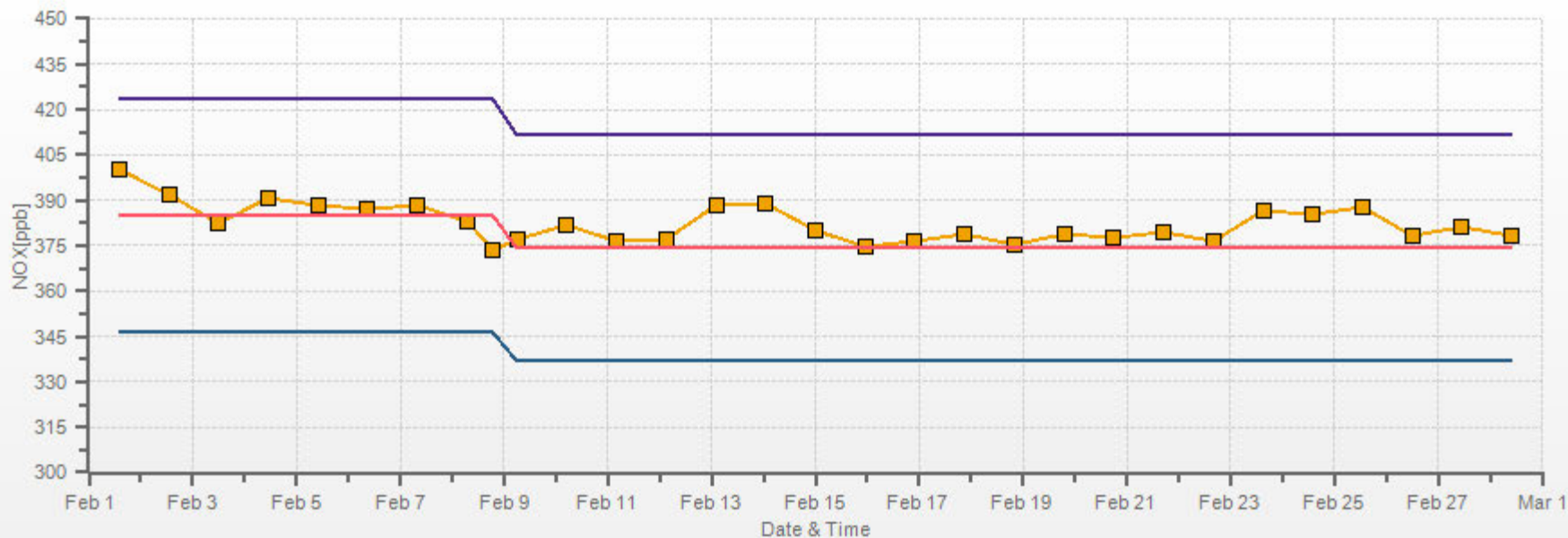
% Icon	Classes (ppb)	76	 0.0-8.3	14	 8.3-16.7	2	 16.7-25.0	0	 >25.0
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LICA MASKWA Poll.: LICA MASKWA-NOX[ppb] 2018/02/01 00:00 - 2018/02/28 23:00 Calm: 7.40% Calm Poll Avg: 4.22[ppb]



NOX[ppb] Calibration: LICA MASKWA Monthly: 18/02 Type: Span

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



NITRIC OXIDES



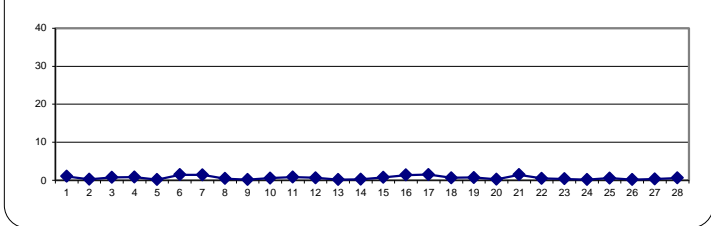
NITRIC OXIDE Hourly Averages (NO ppb)

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

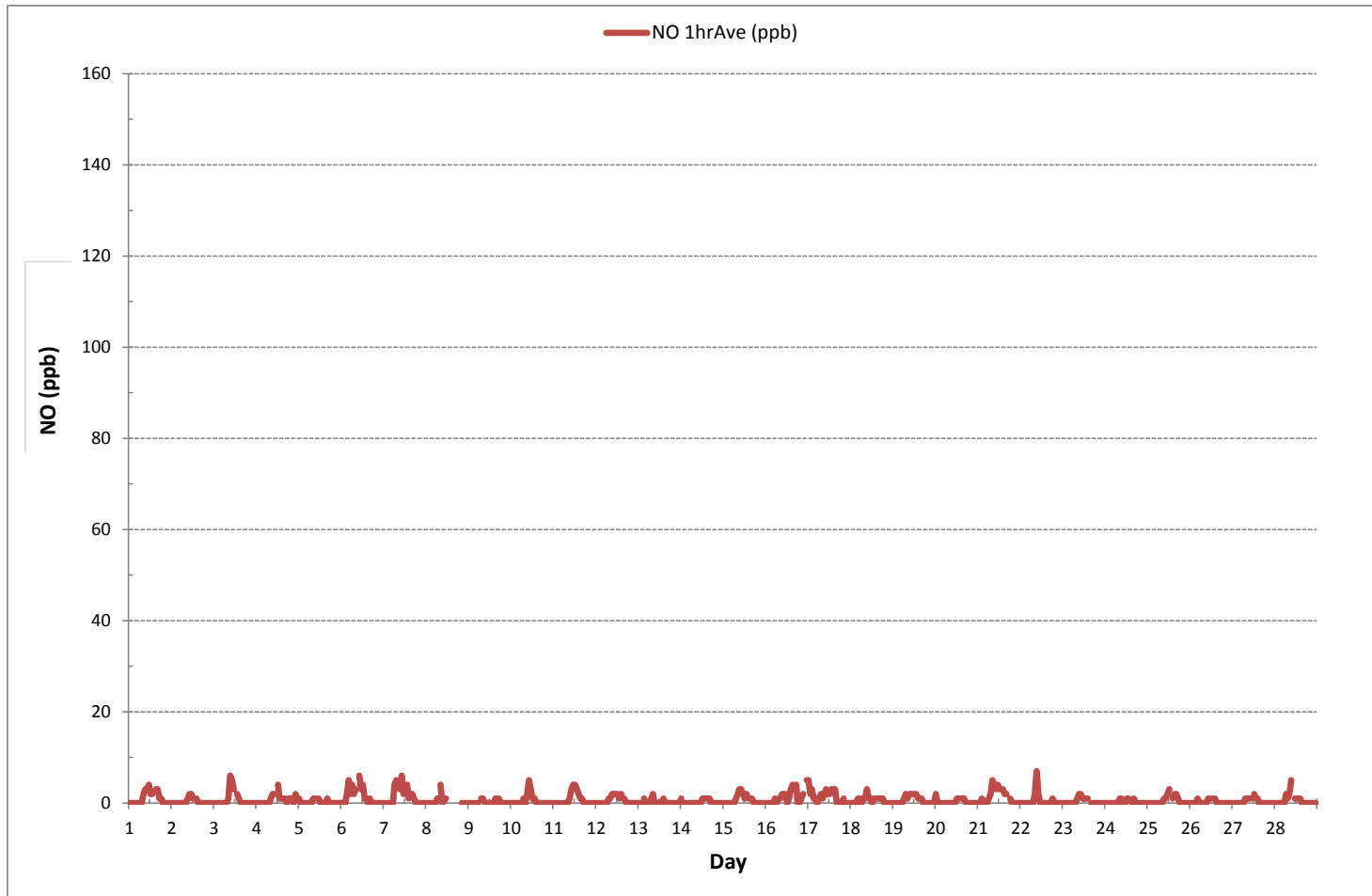
24 HR AVERAGES February 2018



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	231				
MINIMUM 1-HR AVERAGE:	0 ppb	@ HOUR	0	ON DAY	1
MAXIMUM 1-HR AVERAGE:	7 ppb	@ HOUR	22	ON DAY	22
MAXIMUM 24-HR AVERAGE:	2 ppb			ON DAY	17
IZS CALIBRATION TIME:	29 hrs	OPERATIONAL TIME:	672 hrs		
MONTHLY CALIBRATION TIME:	8 hrs	AMD OPERATION UPTIME:	100.0 %		
STANDARD DEVIATION:	1	MONTHLY AVERAGE:	1 ppb		

NITRIC OXIDE Hourly Averages (NO ppb)



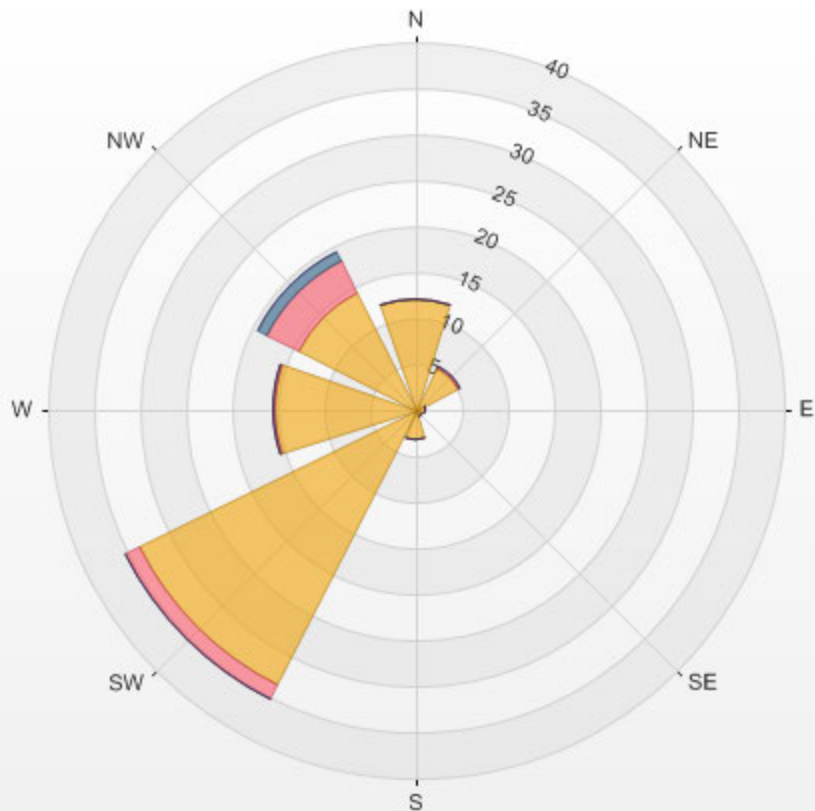
Wind: LICA MASKWA
 Poll.: LICA MASKWA-NO[ppb]
 Monthly: 18/02
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 7.40% Calm Avg: 0.27 [ppb]

Direction	0.0-2.7	2.7-5.3	5.3-8.0	>8.0	Total
N	12.0	0.0	0.0	0.0	12.0
NE	5.2	0.2	0.0	0.0	5.4
E	1.1	0.0	0.0	0.0	1.1
SE	0.9	0.0	0.0	0.0	0.9
S	3.3	0.0	0.0	0.0	3.3
SW	33.5	1.7	0.0	0.0	35.3
W	15.3	0.2	0.0	0.0	15.4
NW	14.2	4.1	0.9	0.0	19.2
Summary	85.5	6.1	0.9	0.0	92.6

% Icon Classes (ppb) 86 0.0-2.7 6 2.7-5.3 1 5.3-8.0 0 >8.0

LICA MASKWA Poll.: LICA MASKWA-NO[ppb] 2018/02/01 00:00 - 2018/02/28 23:00 Calm: 7.40% Calm Poll Avg: 0.27[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	3	3	4	6	5	4	3	5	12	10	6	5	3	3	S	9	15	19	17	4	1	2	3	3	1	19	6	24																						
2	2	2	2	2	3	4	5	6	5	4	5	5	3	S	2	1	2	2	2	3	2	1	0	0	0	0	6	3	24																					
3	0	0	0	0	1	1	4	8	5	10	7	3	S	2	1	1	0	1	1	1	0	0	0	0	0	10	2	24																						
4	0	1	2	2	3	4	2	3	8	6	3	S	5	2	2	3	4	5	10	8	8	2	11	6	0	11	4	24																						
5	2	1	0	6	7	3	5	5	9	3	S	3	1	1	1	2	4	6	2	3	5	4	6	7	0	9	4	24																						
6	7	7	9	14	17	12	16	12	15	S	10	5	6	3	1	1	2	3	3	5	5	5	9	8	1	17	8	24																						
7	9	7	9	7	4	7	15	19	S	5	8	3	4	6	1	4	7	7	6	1	5	3	5	3	1	19	6	24																						
8	2	2	1	1	2	2	3	S	12	1	2	2	C	C	C	C	C	C	C	C	1	0	1	2	0	12	2	24																						
9	3	4	1	2	1	1	S	4	3	1	1	1	1	1	1	2	1	2	2	3	2	3	3	3	1	4	2	24																						
10	2	2	2	2	2	S	2	8	2	5	8	5	2	3	0	1	2	1	4	3	1	0	0	0	0	8	2	24																						
11	0	0	0	0	S	1	2	2	2	3	3	4	4	4	3	3	2	4	5	5	6	5	6	5	0	6	3	24																						
12	4	5	5	S	5	6	6	7	5	5	4	3	2	3	3	4	5	6	6	7	8	9	9	8	2	9	5	24																						
13	9	10	S	16	15	14	14	16	12	3	2	1	1	1	2	2	3	1	2	4	2	1	0	1	0	16	6	24																						
14	6	S	1	1	1	0	1	1	0	0	0	1	1	1	1	2	2	2	3	5	7	4	3	2	0	7	2	24																						
15	S	1	1	2	4	4	4	6	6	5	4	3	2	2	2	3	3	3	5	8	10	8	7	S	1	10	4	24																						
16	8	10	10	11	11	11	5	7	6	5	4	1	2	5	8	7	15	4	5	5	9	S	17	1	1	17	7	24																						
17	18	11	12	5	4	3	8	9	10	8	6	3	3	4	5	7	1	1	0	0	5	S	1	2	0	18	5	24																						
18	2	2	2	10	10	10	5	9	5	6	1	1	1	1	1	2	4	7	4	5	S	3	2	2	1	10	4	24																						
19	4	10	7	5	9	10	11	9	6	4	3	3	3	3	3	3	2	2	S	5	5	5	6	2	11	5	24																							
20	9	1	1	1	0	0	0	0	0	0	0	1	1	2	2	2	2	1	S	5	7	3	3	2	0	9	2	24																						
21	2	5	11	9	5	5	6	10	8	6	4	4	4	4	4	5	8	S	9	8	9	9	9	10	2	11	7	24																						
22	12	13	12	6	5	3	4	5	7	12	6	1	1	1	1	S	1	3	3	3	3	3	3	3	1	13	5	24																						
23	3	6	5	4	4	6	6	5	5	4	4	2	2	1	2	S	3	3	4	4	5	5	7	8	1	8	4	24																						
24	8	8	10	12	11	9	7	7	6	7	1	1	2	1	S	2	5	4	3	4	2	2	2	2	1	12	5	24																						
25	4	3	3	4	5	3	3	2	4	5	4	6	5	S	4	6	6	9	7	7	7	6	2	2	2	9	5	24																						
26	2	3	3	5	7	5	3	2	2	1	2	1	S	2	2	1	1	2	2	3	3	5	5	5	1	7	3	24																						
27	5	5	5	5	5	5	5	6	5	5	4	S	4	2	2	2	1	1	0	3	8	2	1	1	0	8	4	24																						
28	1	3	5	6	4	4	7	7	8	9	S	2	2	2	2	1	1	1	1	1	0	1	0	0	0	9	3	24																						
HOURLY MAX	18	13	12	16	17	14	16	19	15	12	10	6	6	6	5	9	15	19	17	8	10	9	11	17																										
HOURLY AVG	5	5	5	5	6	5	6	7	6	5	4	3	3	2	2	3	4	4	4	4	4	5	4	4																										

STATUS FLAG CODES

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

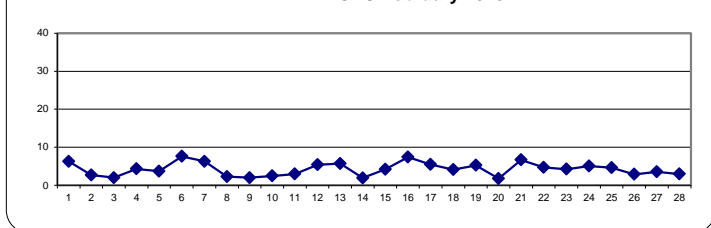
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR 159 ppb

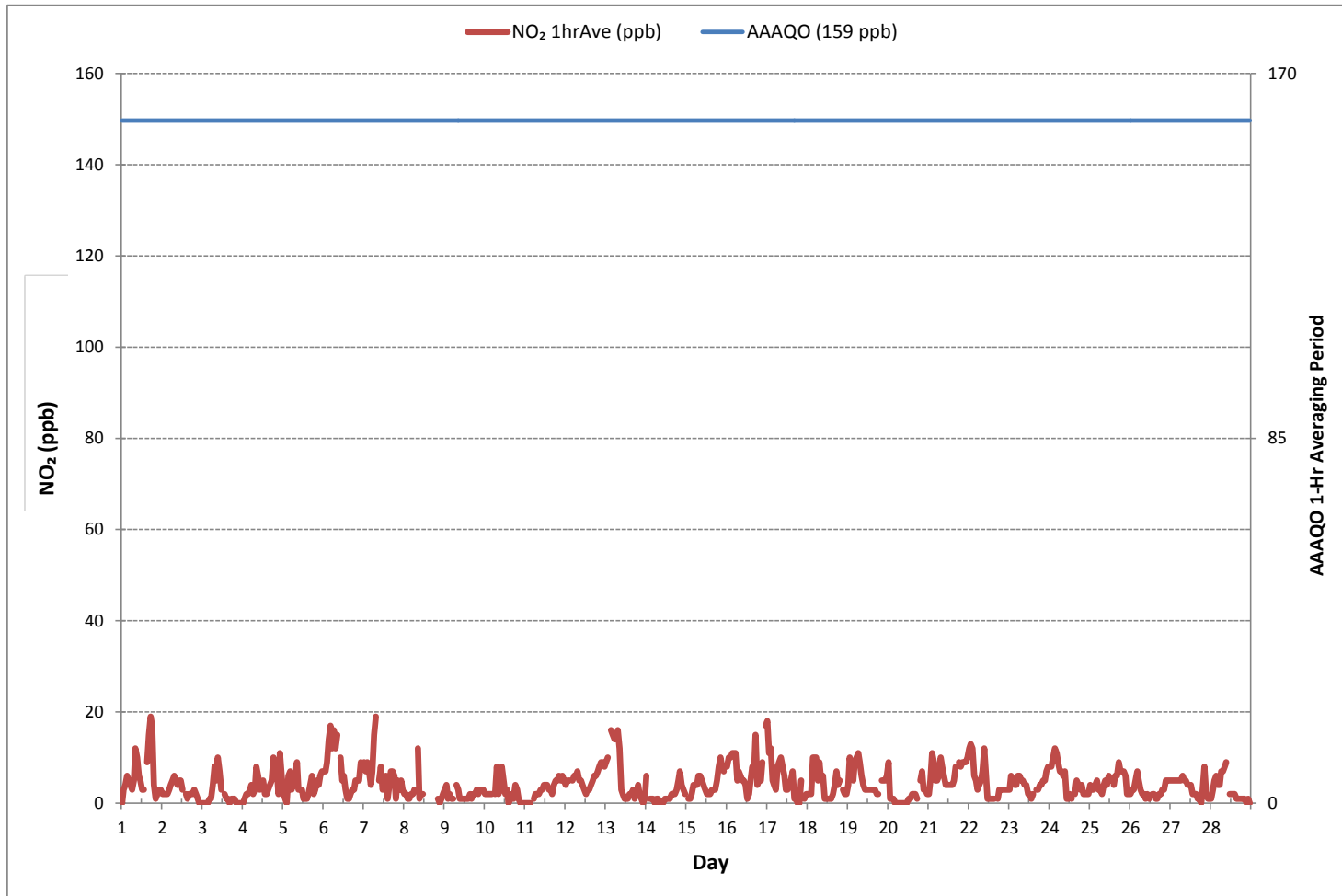
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0					
NUMBER OF NON-ZERO READINGS:	595					
MINIMUM 1-HR AVERAGE:	0	ppb	@ HOUR	22	ON DAY	2
MAXIMUM 1-HR AVERAGE:	19	ppb	@ HOUR	17	ON DAY	1
MAXIMUM 24-HR AVERAGE:	8	ppb			ON DAY	6
IZS CALIBRATION TIME:	29	hrs	OPERATIONAL TIME:	672	hrs	
MONTHLY CALIBRATION TIME:	8	hrs	AMD OPERATION UPTIME:	100.0	%	
STANDARD DEVIATION:	3		MONTHLY AVERAGE:	4	ppb	

24 HR AVERAGES February 2018



NITROGEN DIOXIDE Hourly Averages (NO₂ ppb)



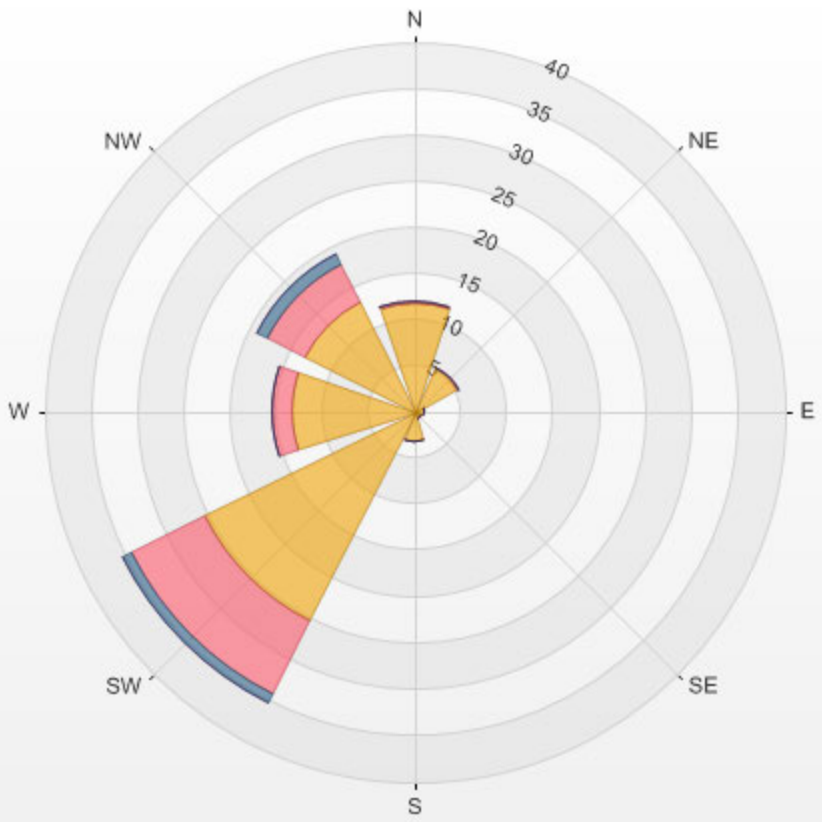
Wind: LICA MASKWA
 Poll.: LICA MASKWA-NO2[ppb]
 Monthly: 18/02
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 7.40% Calm Avg: 3.95 [ppb]

Direction	0.0-6.7	6.7-13.3	13.3-20.0	>20.0	Total
N	11.8	0.2	0.0	0.0	12.0
NE	5.2	0.2	0.0	0.0	5.4
E	1.1	0.0	0.0	0.0	1.1
SE	0.9	0.0	0.0	0.0	0.9
S	3.3	0.0	0.0	0.0	3.3
SW	25.4	8.8	1.1	0.0	35.3
W	13.2	2.2	0.0	0.0	15.4
NW	13.4	4.4	1.4	0.0	19.2
Summary	74.3	15.8	2.5	0.0	92.6

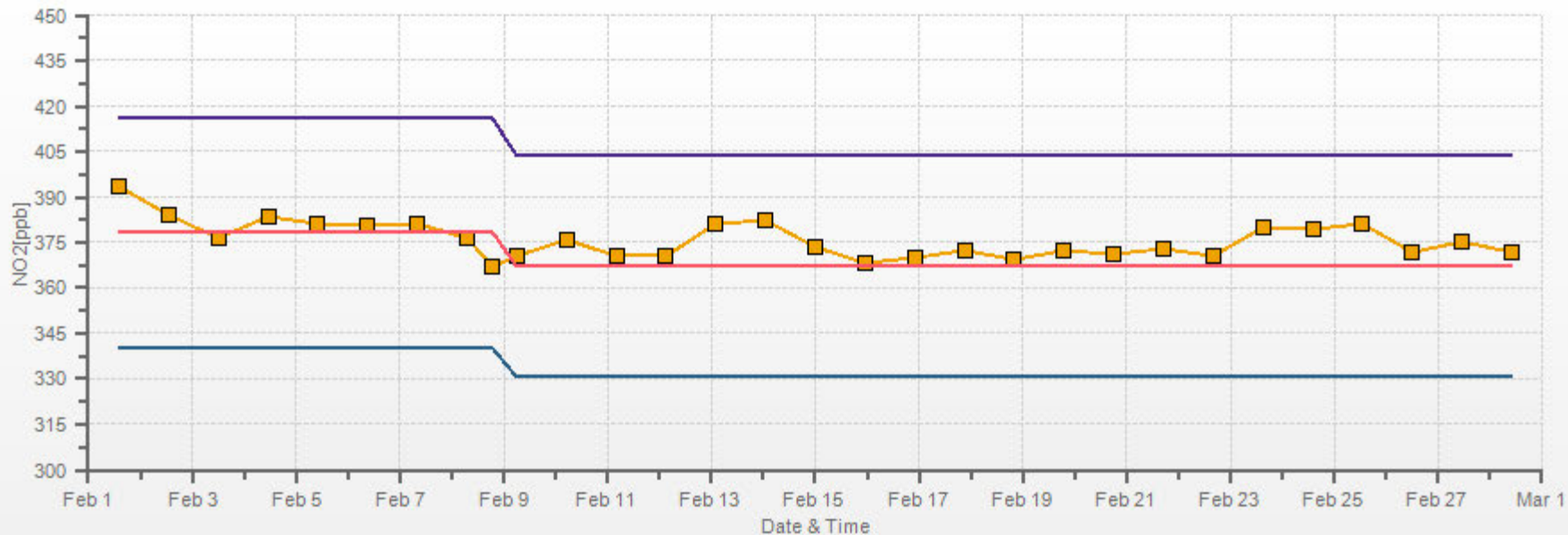
% Icon	Classes (ppb)	74	16	3	0
	0.0-6.7				
	6.7-13.3				
	13.3-20.0				
	>20.0				

LICA MASKWA Poll.: LICA MASKWA-NO2[ppb] 2018/02/01 00:00 - 2018/02/28 23:00 Calm: 7.40% Calm Poll Avg: 3.95[ppb]



NO2[ppb] Calibration: LICA MASKWA Monthly: 18/02 Type: Span

Span Meas Span Ref Span Low Span High



WIND SPEED



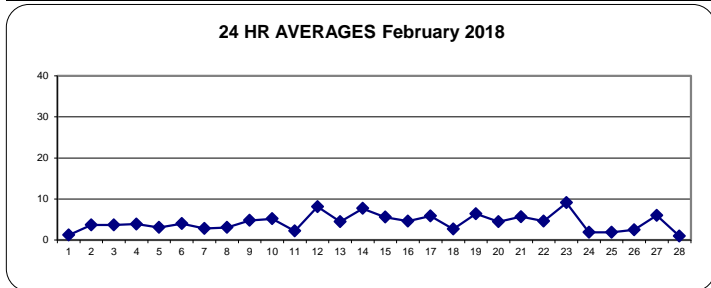
WIND SPEED Hourly Averages (WS kph)

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	0.3	0.4	1.0	0.5	0.6	1.0	0.9	0.6	2.2	1.8	2.4	4.8	4.7	4.8	5.2	5.6	4.8	4.3	1.6	2.4	2.2	3.5	4.3	2.5	0.3	5.6	1.2	24
2	2.2	3.9	3.3	4.5	5.2	6.2	5.2	3.5	4.2	5.1	2.5	3.0	5.6	4.4	5.2	4.9	3.1	1.5	3.6	4.3	4.0	4.3	3.5	3.6	1.5	6.2	3.7	24
3	3.2	1.3	2.4	0.9	1.3	1.7	2.4	1.5	2.4	4.4	4.6	5.3	5.0	6.7	6.8	7.3	7.4	4.8	3.8	4.2	7.0	5.8	5.5	6.0	0.9	7.4	3.7	24
4	5.4	5.6	6.8	5.9	7.1	6.1	5.1	4.8	5.7	6.1	4.5	6.4	5.2	5.5	3.7	5.2	4.2	2.5	4.1	4.3	3.8	3.8	4.1	4.2	2.5	7.1	3.9	24
5	4.9	5.3	4.4	3.6	2.4	1.2	2.7	2.3	2.6	2.9	3.7	6.7	6.7	4.2	4.3	4.9	2.4	4.1	3.9	5.2	4.3	5.2	3.6	2.5	1.2	6.7	3.1	24
6	3.2	3.4	2.0	2.8	4.2	4.0	4.4	3.9	4.2	6.4	6.9	7.6	7.1	6.8	7.5	7.8	4.8	2.9	4.0	4.1	2.9	4.4	2.7	2.6	2.0	7.8	4.0	24
7	3.7	2.4	2.7	1.8	2.6	2.4	2.5	2.8	3.4	3.7	5.7	4.2	5.8	5.3	5.8	5.6	3.8	2.9	2.8	1.7	1.6	1.9	1.5	1.4	1.4	5.8	2.8	24
8	2.2	2.5	2.8	0.7	0.7	1.9	3.4	4.0	3.9	2.7	4.2	4.5	5.3	4.8	5.1	5.0	4.9	5.8	4.5	4.4	4.9	2.9	4.6	4.2	0.7	5.8	3.1	24
9	4.5	4.2	3.5	3.5	4.3	3.8	3.9	4.5	6.2	7.3	8.4	7.8	7.0	8.0	7.7	7.2	6.6	4.5	2.6	3.1	3.0	3.7	4.0	3.2	2.6	8.4	4.8	24
10	3.3	3.8	4.8	4.2	5.3	4.6	4.7	5.2	6.1	8.5	8.2	8.4	8.1	7.8	7.7	6.1	8.1	6.7	3.6	5.7	11.3	11.8	9.5	8.3	3.3	11.8	5.2	24
11	4.9	5.0	3.6	3.6	4.4	3.0	2.8	2.6	2.2	3.8	3.4	3.3	3.1	5.6	5.0	4.2	5.7	6.8	6.6	5.9	5.6	7.1	5.1	7.7	2.2	7.7	2.2	24
12	6.5	7.3	6.6	8.3	5.2	7.4	6.8	6.0	8.4	9.9	10.2	12.9	12.9	9.4	9.2	7.9	8.6	11.1	6.8	6.4	7.2	7.2	6.5	6.7	5.2	12.9	8.1	24
13	4.9	6.4	7.1	5.1	7.4	6.6	6.5	6.4	5.9	5.2	4.0	5.8	6.2	5.2	6.3	4.8	2.4	3.6	3.2	4.1	3.0	3.8	5.2	3.7	2.4	7.4	4.5	24
14	3.9	3.4	12.3	18.3	20.0	18.9	16.9	13.3	15.2	11.7	10.0	8.4	9.8	9.4	7.3	7.4	5.8	2.1	1.7	1.8	1.1	1.4	2.3	3.5	1.1	20.0	7.7	24
15	2.9	3.5	3.7	3.9	4.5	5.0	3.3	3.5	5.2	6.4	7.4	7.5	7.5	6.5	8.4	9.5	9.4	8.2	7.6	6.9	5.6	3.5	4.3	4.0	2.9	9.5	5.6	24
16	4.6	4.3	4.7	3.5	2.6	2.1	2.5	2.5	2.6	4.5	3.6	4.7	5.0	5.2	7.0	8.0	7.5	6.5	6.1	7.8	9.8	9.7	10.3	7.6	2.1	10.3	4.6	24
17	7.6	6.6	9.0	7.3	7.3	7.0	6.7	6.3	7.1	6.7	7.2	7.4	6.4	7.1	7.1	6.2	4.1	4.8	4.3	4.5	5.8	4.9	3.5	1.5	1.5	9.0	5.9	24
18	0.9	1.1	2.2	4.5	3.7	2.5	2.0	2.2	2.4	5.2	5.1	6.3	5.5	5.7	7.1	6.0	5.1	3.1	1.3	0.9	3.1	2.5	2.3	4.0	0.9	7.1	2.7	24
19	6.8	5.8	2.9	5.4	6.4	5.1	6.1	6.6	4.8	7.9	9.6	7.9	7.7	10.1	9.2	9.2	9.4	5.5	4.5	5.0	5.9	5.3	4.8	3.6	2.9	10.1	6.4	24
20	4.3	8.3	7.3	7.6	11.4	9.1	10.1	8.2	6.1	6.1	8.0	5.9	4.0	4.1	5.5	4.7	4.0	2.5	1.0	1.4	1.3	1.2	0.9	1.5	0.9	11.4	4.5	24
21	1.0	3.7	5.4	4.9	6.4	5.6	5.0	0.5	2.0	2.8	5.8	8.0	9.0	10.7	10.5	9.7	7.1	5.6	4.7	7.5	8.2	6.2	5.3	5.8	0.5	10.7	5.7	24
22	5.3	3.7	4.2	3.3	4.4	4.6	3.0	5.3	5.1	5.6	5.7	7.6	6.4	7.6	6.8	6.5	4.9	3.1	3.8	5.9	7.0	7.9	7.1	7.5	3.0	7.9	4.6	24
23	7.6	7.9	7.3	7.1	7.8	8.3	9.7	9.9	9.9	12.5	14.8	15.1	16.2	13.6	14.1	11.5	8.8	7.3	6.5	6.2	5.4	3.9	4.8	3.7	3.7	16.2	9.1	24
24	6.1	4.5	4.0	3.5	3.5	2.6	2.3	2.4	3.2	6.7	8.9	7.8	7.3	6.8	6.3	5.8	5.6	4.2	0.4	2.0	1.8	1.1	2.4	3.8	0.4	8.9	1.9	24
25	4.9	6.0	5.7	5.6	3.6	2.6	1.7	1.8	2.6	2.8	3.3	2.6	4.9	7.2	5.1	4.4	3.1	1.9	3.3	0.9	1.3	3.8	8.0	6.6	0.9	8.0	1.9	24
26	6.5	7.0	4.0	4.4	4.6	4.5	4.0	4.2	4.5	4.9	2.9	3.3	3.9	7.3	10.5	10.4	9.0	6.7	8.2	8.8	5.6	4.4	5.7	5.5	2.9	10.5	2.5	24
27	6.5	8.9	9.9	7.8	7.2	9.4	9.2	10.4	9.1	7.3	6.5	7.6	7.5	7.5	9.4	7.0	7.9	6.0	5.4	4.7	2.7	3.8	3.4	2.8	2.7	10.4	6.0	24
28	2.9	3.9	4.4	3.9	6.1	5.6	3.4	6.9	4.8	2.4	4.4	4.4	4.0	4.5	3.9	4.5	4.6	3.9	1.2	2.4	1.5	2.4	3.4	3.4	1.2	6.9	1.0	24
HOURLY MAX	7.6	8.9	12.3	18.3	20.0	18.9	16.9	13.3	15.2	12.5	14.8	15.1	16.2	13.6	14.1	11.5	9.4	11.1	8.2	8.8	11.3	11.8	10.3	8.3				
HOURLY AVG	2.3	2.2	2.0	2.0	2.0	1.9	1.9	2.1	2.3	2.7	2.8	3.4	3.5	3.7	3.9	4.0	3.6	2.9	2.7	2.7	2.5	2.2	2.1	2.0				

STATUS FLAG CODES

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

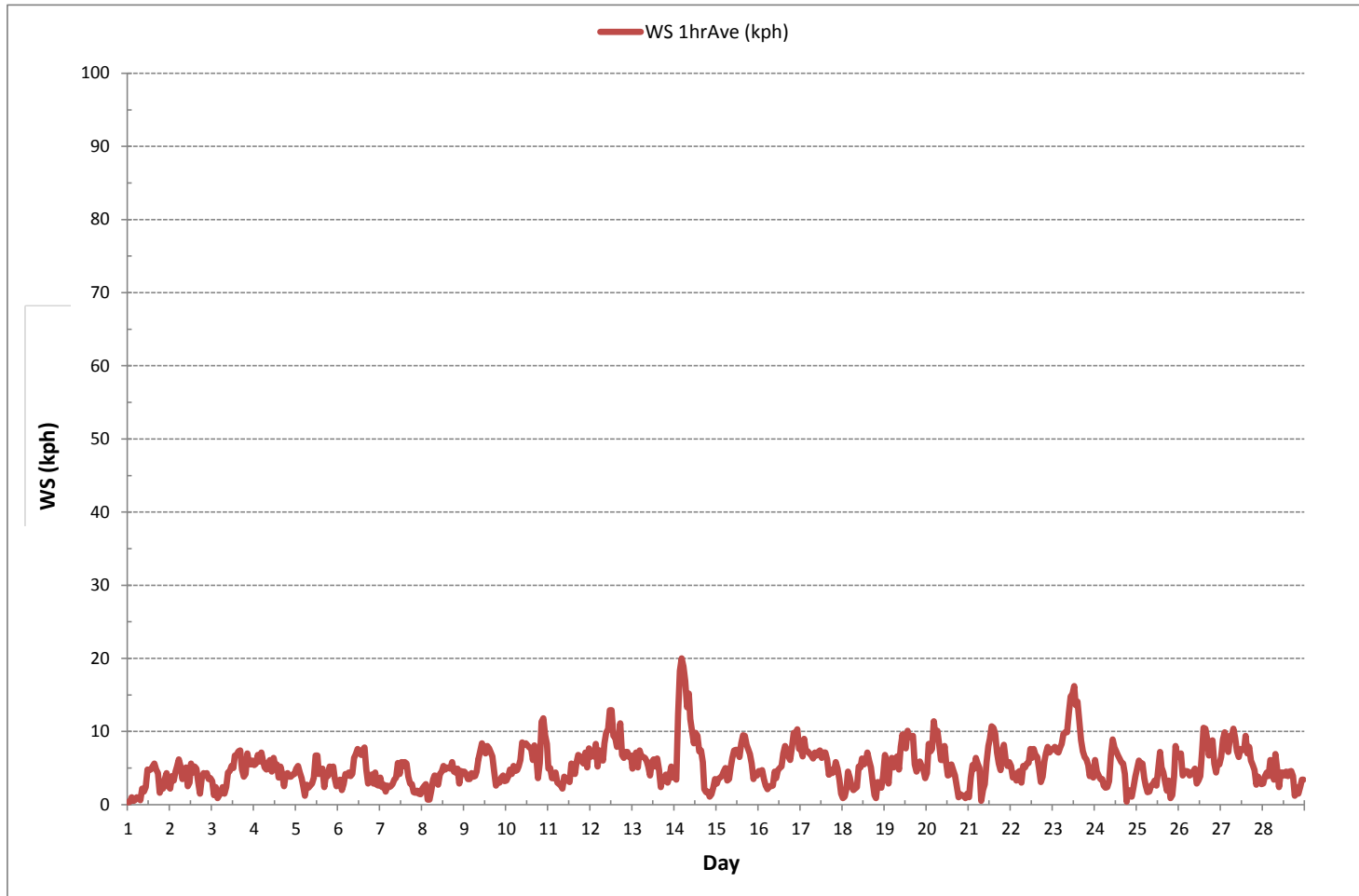
LAST CALIBRATION:	December 28, 2017
DECLINATION :	MAGNETIC DECLINATION 19 DEGREE EAST



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	672
MINIMUM 1-HR AVERAGE	0.3 kph @ HOUR 0 ON DAY 1
MAXIMUM 1-HR AVERAGE:	20.0 kph @ HOUR 4 ON DAY 14
MAXIMUM 24-HR AVERAGE:	9.1 kph ON DAY 23
MONTHLY CALIBRATION TIME:	0 hrs
OPERATIONAL TIME:	672 hrs
AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	2.7
MONTHLY AVERAGE:	2.6 kph

WIND SPEED Hourly Averages (WS kph)



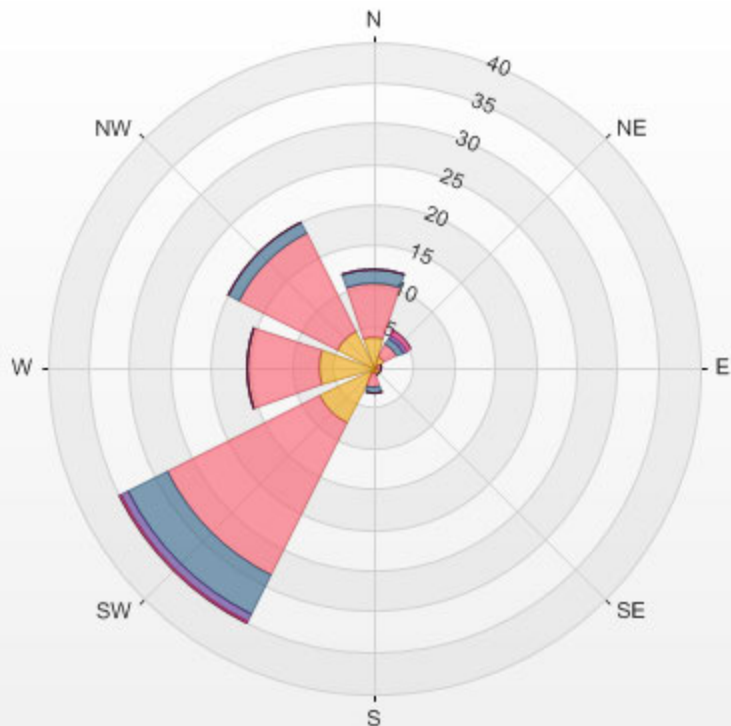
Wind: LICA MASKWA
 Monitor: WSP [kph]
 Monthly: 18/02
 Type: WindRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 7.14%

Direction	1.8-4.0	4.0-8.0	8.0-12.1	12.1-16.1	16.1-20.1	>20.1	Total
N	3.7	6.7	1.6	0.0	0.0	0.0	12.1
NE	1.5	1.8	0.9	0.5	0.6	0.0	5.2
E	0.6	0.5	0.0	0.0	0.0	0.0	1.1
SE	0.9	0.0	0.0	0.0	0.0	0.0	0.9
S	0.7	1.8	0.6	0.0	0.0	0.0	3.1
SW	7.6	20.8	5.4	1.0	0.2	0.0	35.0
W	6.7	8.9	0.0	0.0	0.0	0.0	15.6
NW	5.1	13.5	1.3	0.0	0.0	0.0	19.9
Summary	26.8	54.0	9.8	1.5	0.8	0.0	92.9

% Icon	Classes (kph)	27	 1.8-4.0	54	 4.0-8.0	10	 8.0-12.1	1	 12.1-16.1	1	 16.1-20.1	0	 >20.1
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LICA MASKWA 2018/02/01 00:00 - 2018/02/28 23:00 Calm: 7.14% Calm Wind Avg Speed: 1.17(kph)



WIND DIRECTION



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

WIND DIRECTION Hourly Averages (WD)

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

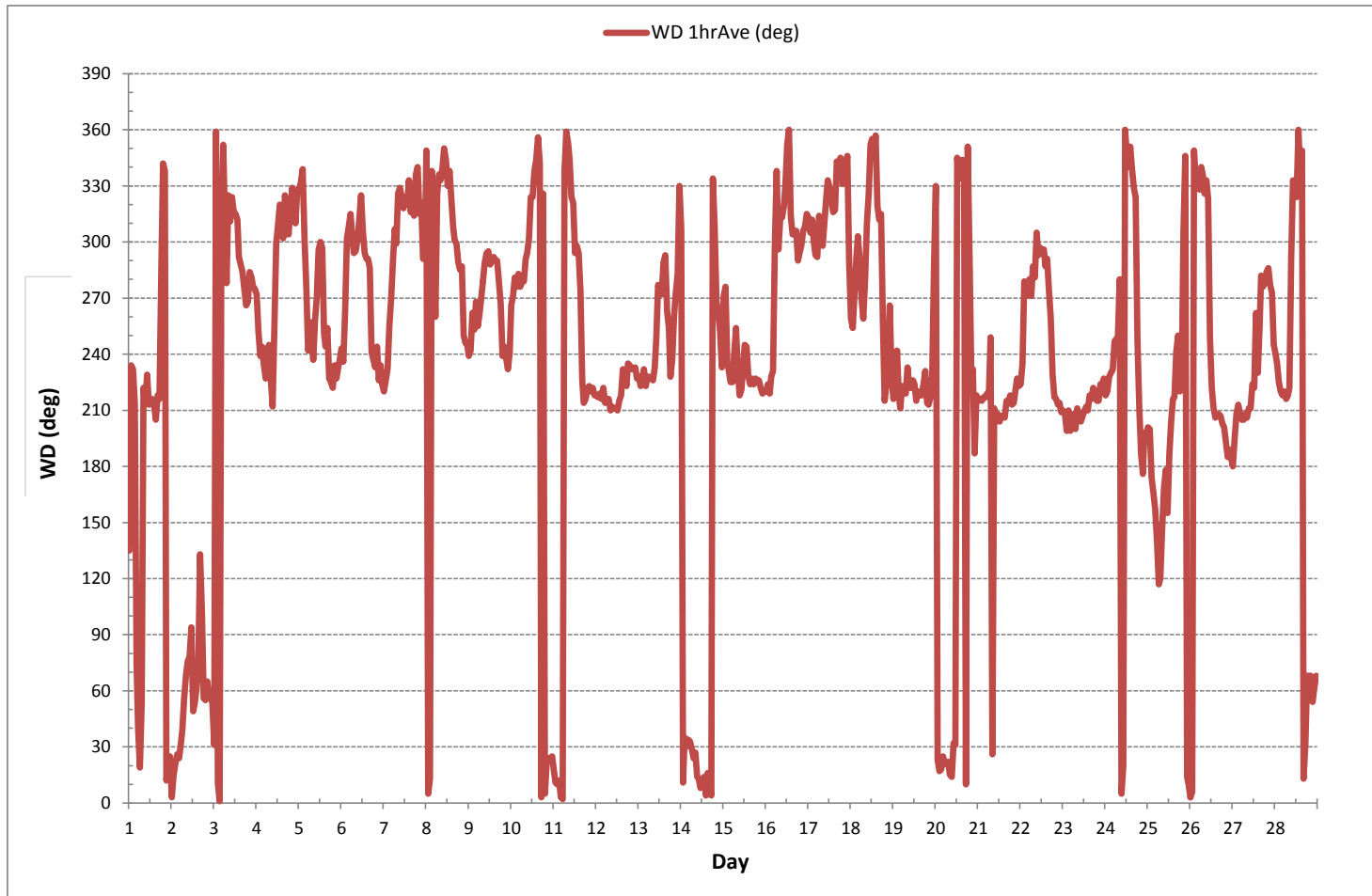
STATUS FLAG CODES

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:	December 28, 2017
DECLINATION :	MAGNETIC DECLINATION 19 DEGREE EAST

MONTHLY CALIBRATION TIME:	0	hrs	OPERATIONAL TIME:	672	hrs
STANDARD DEVIATION:	92		AMD OPERATION UPTIME:	100.0	%
			MONTHLY AVERAGE:	268	(W)

WIND DIRECTION Hourly Averages (WD)



STANDARD DEVIATION WIND DIRECTION



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

STANDARD DEVIATION WIND DIRECTION Hourly Averages (STDWD deg)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	
DAY																									
1	48	59	23	35	60	51	54	28	28	33	33	18	25	21	22	15	16	14	38	32	31	25	19	24	24
2	25	20	14	14	15	13	12	20	25	26	37	44	25	37	28	24	29	36	24	23	24	22	22	21	24
3	18	25	20	24	22	27	20	27	41	31	36	31	38	35	30	31	28	31	36	37	30	37	36	32	24
4	35	30	23	25	19	19	27	28	17	15	25	30	31	34	36	28	36	36	24	30	33	31	34	38	24
5	33	35	36	32	32	29	22	28	22	35	37	32	28	34	39	36	36	20	17	20	28	24	23	22	24
6	19	13	35	36	33	29	31	31	25	26	29	36	35	35	30	28	29	23	23	20	22	17	23	21	24
7	9	20	14	25	24	23	27	30	36	35	32	33	31	36	37	34	38	23	28	32	24	27	22	24	24
8	30	23	21	36	32	34	38	37	37	37	38	36	34	37	34	39	30	28	26	25	26	28	27	29	24
9	25	23	30	29	30	29	28	28	28	27	26	26	33	30	28	31	26	30	20	19	24	21	17	20	24
10	24	30	29	31	29	27	27	27	29	26	31	36	37	39	37	36	35	27	30	30	19	19	20	19	24
11	21	21	31	21	28	25	31	27	29	30	36	34	42	29	30	31	22	15	13	15	15	14	17	16	24
12	16	16	17	14	18	15	17	21	19	19	20	18	20	23	23	28	28	20	30	25	27	24	24	20	24
13	22	19	18	20	16	18	16	16	19	23	29	34	32	35	34	28	31	36	27	27	32	32	32	32	24
14	29	31	17	16	16	17	17	19	18	24	26	27	27	27	33	27	28	32	29	36	23	34	26	21	24
15	23	24	23	23	15	14	21	25	17	16	20	27	31	32	28	22	23	19	20	21	20	19	18	24	24
16	17	17	14	16	18	28	36	31	37	29	37	31	33	34	30	31	31	27	21	24	25	29	29	33	24
17	31	35	35	32	29	29	35	30	27	34	36	37	38	37	36	37	41	37	36	38	34	38	33	24	24
18	34	43	29	23	24	23	24	26	30	32	35	35	38	34	31	39	36	34	23	51	14	23	26	18	24
19	14	18	27	15	12	18	15	15	21	18	20	23	23	19	23	20	19	18	24	14	15	16	20	24	24
20	31	22	21	22	18	20	20	19	23	25	19	29	39	43	34	39	35	22	26	21	23	26	30	19	24
21	35	14	16	17	15	16	18	38	29	33	19	21	20	19	19	21	19	20	19	14	13	16	18	14	24
22	15	16	24	29	27	25	29	26	24	26	31	28	34	28	30	30	37	34	20	13	16	13	12	14	24
23	14	15	18	16	18	19	17	20	18	18	18	19	19	20	18	21	19	24	22	16	17	24	22	29	24
24	14	25	20	18	19	21	20	25	29	28	22	33	35	39	36	36	41	38	51	12	14	24	29	16	24
25	19	22	26	26	30	30	33	21	29	43	36	45	31	24	28	23	27	31	23	46	29	32	24	28	24
26	31	27	34	33	30	35	36	40	31	34	47	40	51	29	21	21	19	19	19	20	24	23	23	22	24
27	24	20	17	20	21	17	17	16	16	18	21	25	26	39	31	34	34	35	29	28	31	23	24	24	24
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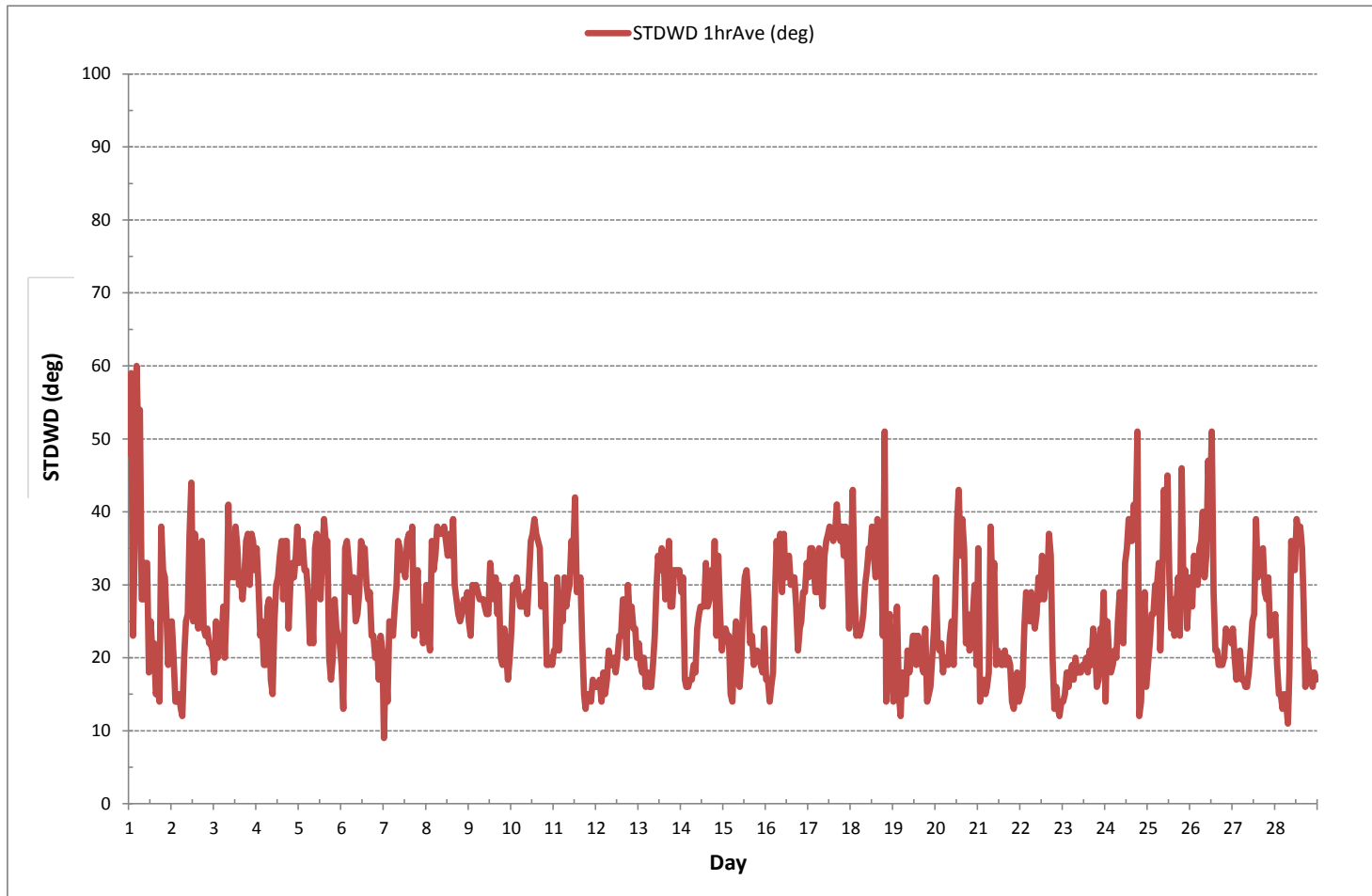
STATUS FLAG CODES

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: December 28, 2017

CALIBRATION TIME: 0 hrs OPERATIONAL TIME: 672 hrs

STANDARD DEVIATION WIND DIRECTION Hourly Averages (STDWD deg)



RELATIVE HUMIDITY



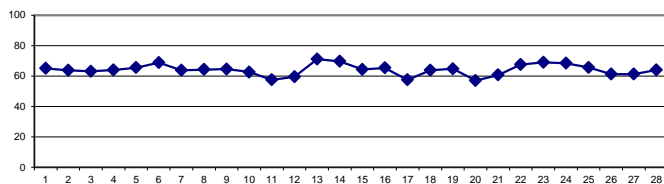
RELATIVE HUMIDITY Hourly Averages (RH %)

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

STATUS FLAG CODES

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

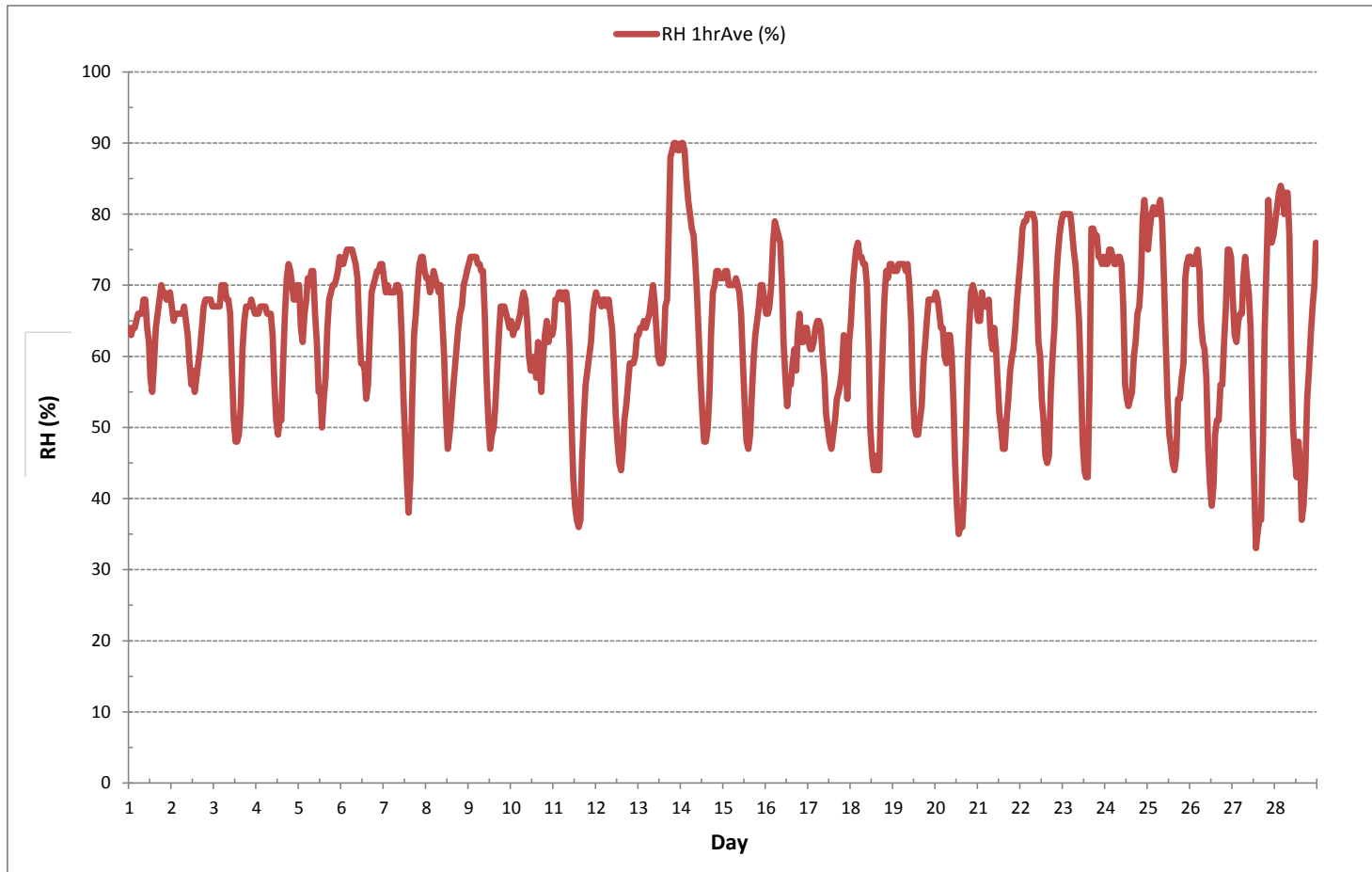
24 HR AVERAGES February 2018



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	33	%	@ HOUR	13	ON DAY	27
MAXIMUM 1-HR AVERAGE:	90	%	@ HOUR	20	ON DAY	13
MAXIMUM 24-HR AVERAGE:	71	%			ON DAY	13
OPERATIONAL TIME:						672 hrs
AMD OPERATION UPTIME:						100.0 %
STANDARD DEVIATION:	10					MONTHLY AVERAGE: 64 %

RELATIVE HUMIDITY Hourly Averages (RH %)



BAROMETRIC PRESSURE



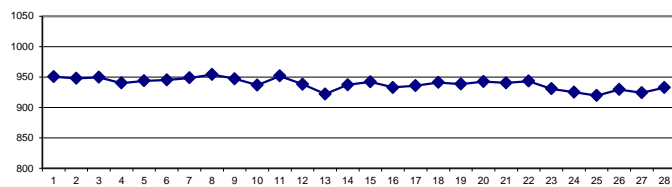
BAROMETRIC PRESSURE Hourly Averages (BP mbar)

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	954	954	954	953	953	952	952	951	951	951	951	950	949	949	949	949	949	949	949	949	949	949	949	949	949	949	949	949	949	954	951	24
2	950	950	949	949	950	950	949	949	949	949	949	949	948	947	947	946	947	947	946	946	946	946	946	946	947	946	946	950	948	24		
3	947	948	948	948	949	949	950	951	952	952	952	952	952	951	950	950	950	950	950	949	949	948	947	946	946	946	952	950	24			
4	945	944	943	942	941	941	941	940	940	939	939	939	938	938	938	938	937	938	938	939	940	941	942	942	942	937	945	940	24			
5	943	944	945	945	946	946	946	946	946	946	946	946	945	944	944	943	943	942	942	941	941	941	941	940	940	940	946	944	24			
6	941	941	941	941	942	943	944	945	946	947	947	948	948	948	947	947	947	947	947	947	946	946	945	945	945	941	948	945	24			
7	945	945	946	946	946	946	947	947	948	948	949	949	949	949	949	950	950	950	951	951	951	951	952	952	945	952	949	24				
8	952	952	952	952	953	953	953	954	954	955	955	955	956	956	956	956	956	956	956	956	955	955	954	954	952	956	954	24				
9	953	953	952	951	951	950	950	949	949	948	948	948	947	947	946	946	945	945	944	943	943	942	941	940	940	940	953	947	24			
10	939	938	937	936	936	935	935	935	934	934	935	935	935	935	936	936	937	937	937	937	939	940	941	943	934	943	937	24				
11	944	946	947	948	949	950	951	952	953	954	954	954	954	954	953	953	953	953	953	954	953	953	953	952	944	954	952	24				
12	952	951	951	949	948	947	945	944	943	941	940	938	936	936	934	933	932	931	930	929	928	927	926	925	925	925	952	938	24			
13	925	923	923	922	922	921	921	921	922	922	923	923	923	923	923	922	922	921	921	921	921	921	921	921	921	921	925	922	24			
14	921	922	923	925	927	929	930	933	935	937	939	940	941	942	942	943	943	944	945	946	947	947	947	947	947	921	947	937	24			
15	947	947	947	946	946	946	946	945	945	945	944	943	942	941	941	940	939	938	938	937	937	936	935	934	934	947	942	24				
16	933	932	932	931	931	931	931	931	931	932	932	933	933	933	933	934	934	934	934	934	935	935	935	936	931	936	933	24				
17	936	936	936	936	936	936	936	936	936	936	936	936	936	936	936	935	935	935	935	936	936	937	937	937	935	937	936	24				
18	938	938	938	938	939	939	939	940	940	941	941	942	942	942	942	942	942	943	943	944	944	943	943	943	938	944	941	24				
19	942	942	942	941	941	941	940	940	940	939	939	938	938	937	937	936	936	936	936	936	936	936	936	936	936	936	942	938	24			
20	936	937	937	938	939	940	941	942	943	943	943	943	943	943	944	944	944	945	946	946	946	946	946	946	936	946	942	24				
21	946	946	944	943	942	942	941	941	941	940	939	939	939	938	938	939	938	938	939	938	939	939	939	939	938	946	940	24				
22	940	940	940	940	941	941	942	943	944	945	945	946	946	945	945	945	945	944	944	943	943	943	942	940	946	943	24					
23	941	941	940	938	937	936	935	933	933	932	931	930	929	928	927	926	926	925	925	925	924	924	924	923	923	941	931	24				
24	923	923	923	923	923	923	923	923	924	925	925	926	927	927	927	927	928	928	927	927	926	926	925	924	923	928	925	24				
25	924	923	922	921	920	919	918	918	918	918	918	917	917	917	918	918	919	919	920	920	921	922	923	917	924	920	24					
26	924	926	926	927	928	929	929	930	931	932	932	933	933	933	932	931	931	930	930	929	928	927	927	924	933	930	24					
27	926	925	924	924	924	924	923	923	923	923	923	923	923	923	923	923	924	924	925	925	926	926	927	923	927	924	24					
28	927	927	928	928	928	928	928	929	929	931	932	932	933	933	934	935	935	935	936	937	937	938	939	940	927	940	932	24				
HOURLY MAX	954	954	954	953	953	953	953	953	954	954	955	955	956	956	956	956	956	956	956	956	956	955	955	954	954							
HOURLY AVG	939	939	939	939	939	939	939	939	939	939	940	940	939	939	939	939	939	939	939	939	939	939	939	939	939							

STATUS FLAG CODES

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

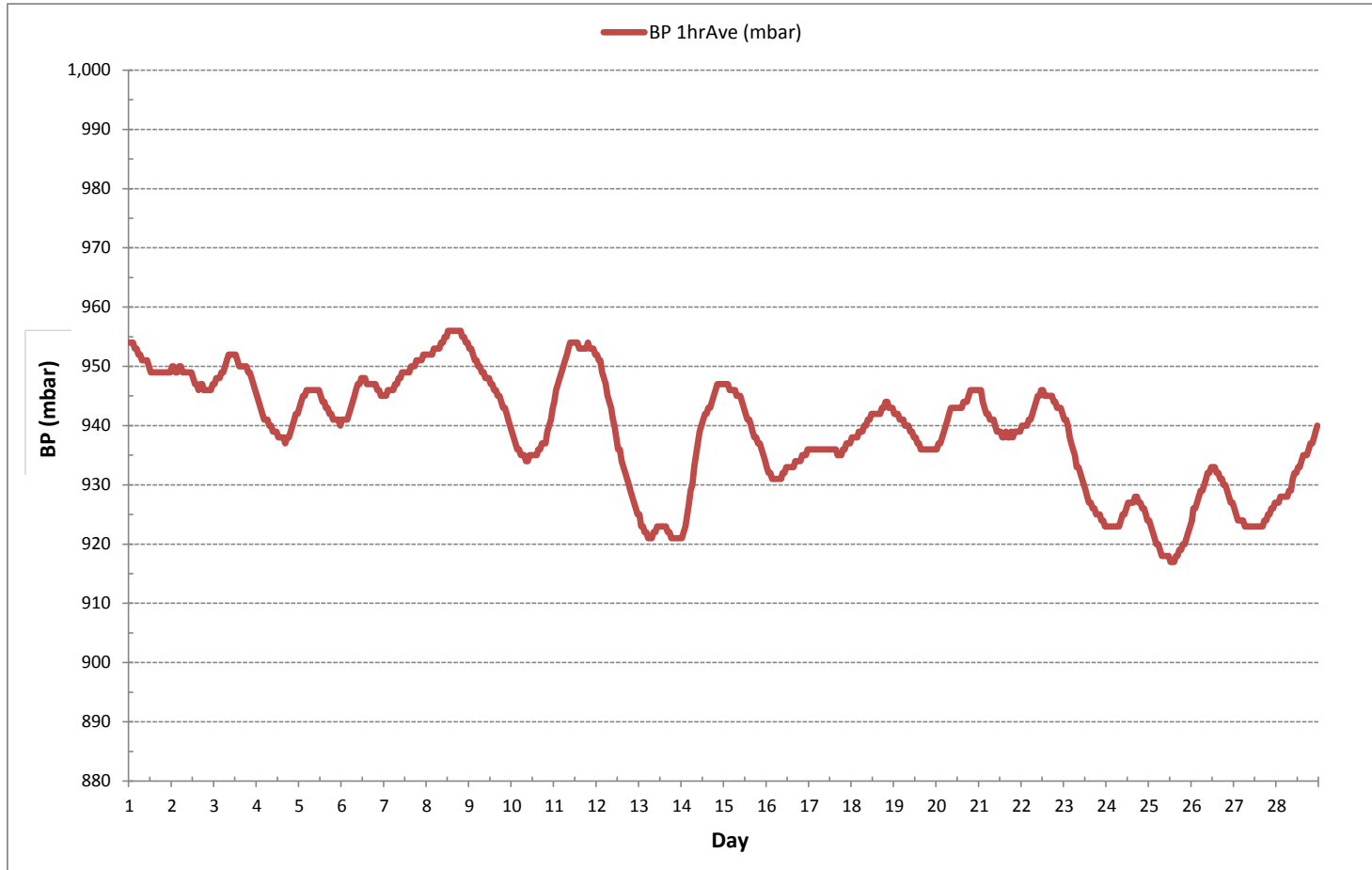
24 HR AVERAGES February 2018



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	917	mbar	@ HOUR	12	ON DAY	25
MAXIMUM 1-HR AVERAGE:	956	mbar	@ HOUR	12	ON DAY	8
MAXIMUM 24-HR AVERAGE:	954	mbar			ON DAY	8
OPERATIONAL TIME:						672 hrs
AMD OPERATION UPTIME:						100.0 %
STANDARD DEVIATION:	10					MONTHLY AVERAGE: 939 mbar

BAROMETRIC PRESSURE Hourly Averages (BP mbar)



AMBIENT TEMPERATURE



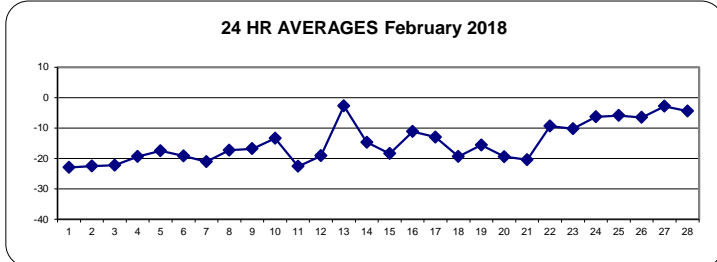
AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)

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	-31.3	-32.2	-31.1	-29.5	-27.4	-26.5	-26.1	-26.1	-25.2	-23.0	-21.0	-20.2	-18.4	-17.5	-18.3	-19.8	-19.9	-20.1	-20.0	-19.3	-19.2	-19.3	-19.7	-20.2	-32.2	-17.5	-23.0	24				
2	-20.5	-20.9	-21.5	-21.9	-22.6	-23.2	-23.7	-24.4	-24.8	-24.5	-22.9	-21.7	-22.1	-21.0	-21.1	-21.7	-22.0	-22.2	-22.3	-22.7	-23.0	-23.1	-22.9	-22.9	-24.8	-20.5	-22.5	24				
3	-22.6	-22.3	-22.3	-23.2	-24.8	-25.2	-26.2	-27.4	-27.6	-24.8	-21.7	-19.2	-17.0	-16.4	-16.0	-17.3	-20.2	-21.7	-22.6	-22.8	-22.7	-23.1	-23.5	-23.2	-27.6	-16.0	-22.2	24				
4	-23.3	-23.6	-24.8	-25.4	-25.4	-25.8	-24.5	-24.4	-25.0	-23.5	-19.6	-16.1	-13.8	-12.7	-11.7	-14.0	-15.8	-17.8	-17.2	-16.6	-16.2	-16.2	-16.0	-16.2	-25.8	-11.7	-19.4	24				
5	-16.9	-17.2	-18.4	-18.7	-19.3	-19.9	-19.3	-19.5	-20.2	-17.8	-15.6	-13.8	-14.5	-12.4	-13.3	-14.3	-16.6	-17.9	-18.8	-19.0	-18.5	-18.7	-19.1	-19.6	-20.2	-12.4	-17.5	24				
6	-19.1	-18.8	-18.5	-18.1	-18.1	-19.7	-20.2	-20.5	-21.4	-19.1	-16.8	-15.8	-15.3	-14.9	-15.6	-18.3	-20.2	-20.6	-21.0	-22.1	-22.3	-23.9	-24.7	-24.7	-14.9	-19.2	24					
7	-24.8	-26.9	-26.8	-27.9	-27.1	-27.1	-26.4	-23.8	-21.3	-18.1	-15.0	-13.2	-11.8	-11.6	-12.5	-15.8	-18.5	-19.0	-20.8	-21.9	-23.1	-23.2	-21.9	-27.9	-11.6	-21.1	24					
8	-20.9	-19.8	-19.4	-19.8	-20.4	-19.9	-19.3	-19.3	-18.9	-17.4	-15.4	-12.8	-11.7	-12.9	-13.1	-13.7	-14.5	-15.9	-17.0	-17.3	-17.5	-18.8	-19.1	-19.6	-20.9	-11.7	-17.3	24				
9	-20.0	-20.9	-21.2	-21.6	-21.4	-21.7	-22.4	-21.9	-20.6	-17.5	-14.8	-12.9	-10.8	-10.9	-10.9	-11.6	-12.9	-14.4	-15.7	-16.3	-16.3	-15.8	-15.5	-15.2	-22.4	-10.8	-16.8	24				
10	-15.0	-14.5	-14.4	-14.5	-14.9	-15.5	-16.1	-15.9	-14.5	-12.6	-10.5	-8.8	-8.3	-8.8	-9.4	-10.2	-12.1	-13.9	-13.3	-14.6	-16.5	-18.0	-19.6	-19.6	-8.3	-13.4	24					
11	-21.5	-22.6	-23.6	-24.8	-24.9	-25.8	-26.7	-27.6	-27.4	-24.2	-20.9	-18.8	-16.7	-15.7	-15.0	-15.4	-18.8	-21.3	-23.2	-24.1	-24.7	-25.4	-26.3	-26.5	-27.6	-15.0	-22.6	24				
12	-27.1	-27.3	-27.2	-26.8	-27.4	-26.8	-26.7	-26.5	-24.6	-23.1	-20.7	-18.0	-15.6	-13.5	-12.1	-12.8	-13.9	-13.6	-13.2	-12.8	-12.5	-12.0	-12.1	-12.7	-27.4	-12.0	-19.1	24				
13	-12.5	-12.5	-11.9	-11.1	-9.9	-9.1	-7.5	-6.7	-4.9	-2.2	0.4	2.7	3.3	3.8	3.6	2.5	1.8	1.2	0.4	0.5	0.6	0.7	0.5	0.5	-12.5	3.8	-2.7	24				
14	0.2	0.1	-0.9	-4.1	-6.7	-9.0	-10.5	-12.0	-13.9	-15.7	-16.1	-15.6	-15.4	-15.0	-15.0	-15.6	-17.3	-19.8	-22.7	-23.7	-25.4	-26.2	-26.4	-25.6	-26.4	0.2	-14.7	24				
15	-26.0	-24.9	-23.9	-24.0	-25.5	-25.9	-26.0	-25.0	-24.5	-21.9	-17.9	-14.5	-11.8	-10.0	-9.8	-10.1	-12.2	-14.0	-15.1	-15.0	-15.7	-16.4	-15.9	-15.4	-26.0	-9.8	-18.4	24				
16	-14.7	-14.2	-14.2	-13.4	-13.0	-12.8	-12.4	-13.1	-12.2	-10.5	-8.4	-6.9	-6.2	-6.5	-6.3	-7.2	-8.8	-10.5	-12.3	-12.5	-12.3	-12.8	-13.5	-14.7	-6.2	-11.1	24					
17	-13.4	-13.1	-12.8	-13.1	-13.4	-13.5	-13.5	-13.9	-13.3	-12.1	-11.3	-10.8	-10.1	-10.2	-10.7	-11.3	-12.0	-12.8	-13.2	-13.6	-14.1	-14.7	-16.0	-19.1	-19.1	-10.1	-13.0	24				
18	-20.2	-20.7	-20.3	-20.3	-20.6	-20.7	-21.2	-21.9	-19.9	-17.2	-15.3	-14.1	-13.7	-13.7	-13.2	-14.6	-15.6	-18.9	-21.6	-24.0	-24.9	-24.8	-24.5	-22.9	-24.9	-13.2	-19.4	24				
19	-21.3	-21.1	-20.2	-19.8	-21.3	-21.6	-21.4	-21.7	-20.5	-18.1	-16.0	-12.9	-10.7	-10.1	-9.6	-9.6	-10.5	-11.7	-11.7	-12.5	-12.8	-12.9	-12.9	-12.9	-21.7	-9.6	-15.6	24				
20	-11.9	-12.5	-13.5	-14.2	-15.7	-17.4	-18.9	-21.5	-22.4	-22.0	-20.1	-17.8	-15.0	-13.9	-14.5	-14.7	-16.6	-20.0	-23.0	-25.0	-26.7	-28.0	-29.6	-31.1	-31.1	-11.9	-19.4	24				
21	-32.6	-32.4	-29.0	-27.8	-27.2	-27.1	-26.8	-29.6	-29.2	-22.6	-18.5	-16.2	-13.6	-11.9	-11.0	-11.5	-12.8	-13.8	-15.2	-15.7	-15.7	-16.3	-17.0	-17.1	-32.6	-11.0	-20.4	24				
22	-17.7	-17.9	-17.3	-15.1	-14.3	-14.5	-13.1	-11.5	-11.3	-8.5	-6.0	-4.5	-2.1	-2.8	-1.9	-1.5	-1.9	-5.0	-6.9	-8.1	-9.1	-10.3	-11.5	-12.1	-17.9	-1.5	-9.4	24				
23	-12.6	-12.6	-13.1	-13.4	-13.9	-14.2	-14.7	-14.9	-13.9	-12.3	-10.4	-7.9	-6.7	-6.2	-5.6	-6.3	-7.8	-8.0	-8.1	-8.7	-8.6	-8.6	-8.5	-8.4	-14.9	-5.6	-10.2	24				
24	-7.7	-7.5	-7.9	-7.2	-6.5	-5.9	-5.5	-5.1	-4.4	-3.6	-3.7	-2.0	-2.1	-2.6	-3.4	-4.0	-5.5	-6.6	-7.3	-7.6	-8.6	-12.2	-12.7	-11.1	-12.7	-2.0	-6.3	24				
25	-9.8	-9.9	-9.4	-9.2	-9.5	-9.8	-10.5	-11.1	-9.2	-7.4	-5.6	-3.7	-2.2	-2.3	-1.9	-1.0	-1.1	-2.6	-3.3	-3.7	-4.0	-3.4	-4.6	-6.1	-11.1	-1.0	-5.9	24				
26	-7.3	-8.2	-8.4	-8.6	-8.7	-8.9	-9.0	-9.0	-8.5	-7.5	-5.0	-3.1	-1.6	-2.1	-3.5	-3.6	-4.5	-5.3	-5.7	-6.6	-7.1	-8.4	-7.8	-7.7	-9.0	-1.6	-6.5	24				
27	-7.4	-7.3	-7.7	-8.6	-8.4	-8.3	-8.1	-7.5	-6.4	-4.9	-2.7	1.4	4.4	6.7	5.7	4.2	4.2	1.2	-0.5	-2.1	-2.6	-3.8	-4.6	-5.2	-8.6	6.7	-2.8	24				
28	-6.1	-6.5	-7.1	-8.3	-8.4	-7.8	-9.5	-9.2	-7.4	-2.7	0.7	3.2	5.0	3.1	2.3	3.0	1.4	-1.5	-5.1	-6.5	-8.4	-9.9	-10.2	-10.7	-10.7	5.0	-4.4	24				
HOURLY MAX	0.2	0.1	-0.9	-4.1	-6.5	-5.9	-5.5	-5.1	-4.4	-2.2	0.7	3.2	5.0	6.7	5.7	4.2	4.2	1.2	0.4	0.5	0.6	0.7	0.7	0.5								
HOURLY AVG	-17.3	-17.4	-17.4	-17.5	-17.7	-18.0	-18.1	-18.3	-17.7	-15.6	-13.4	-11.3	-9.9	-9.4	-9.3	-10.0	-11.4	-13.0	-14.1	-14.7	-15.2	-15.8	-16.2	-16.5								

STATUS FLAG CODES

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

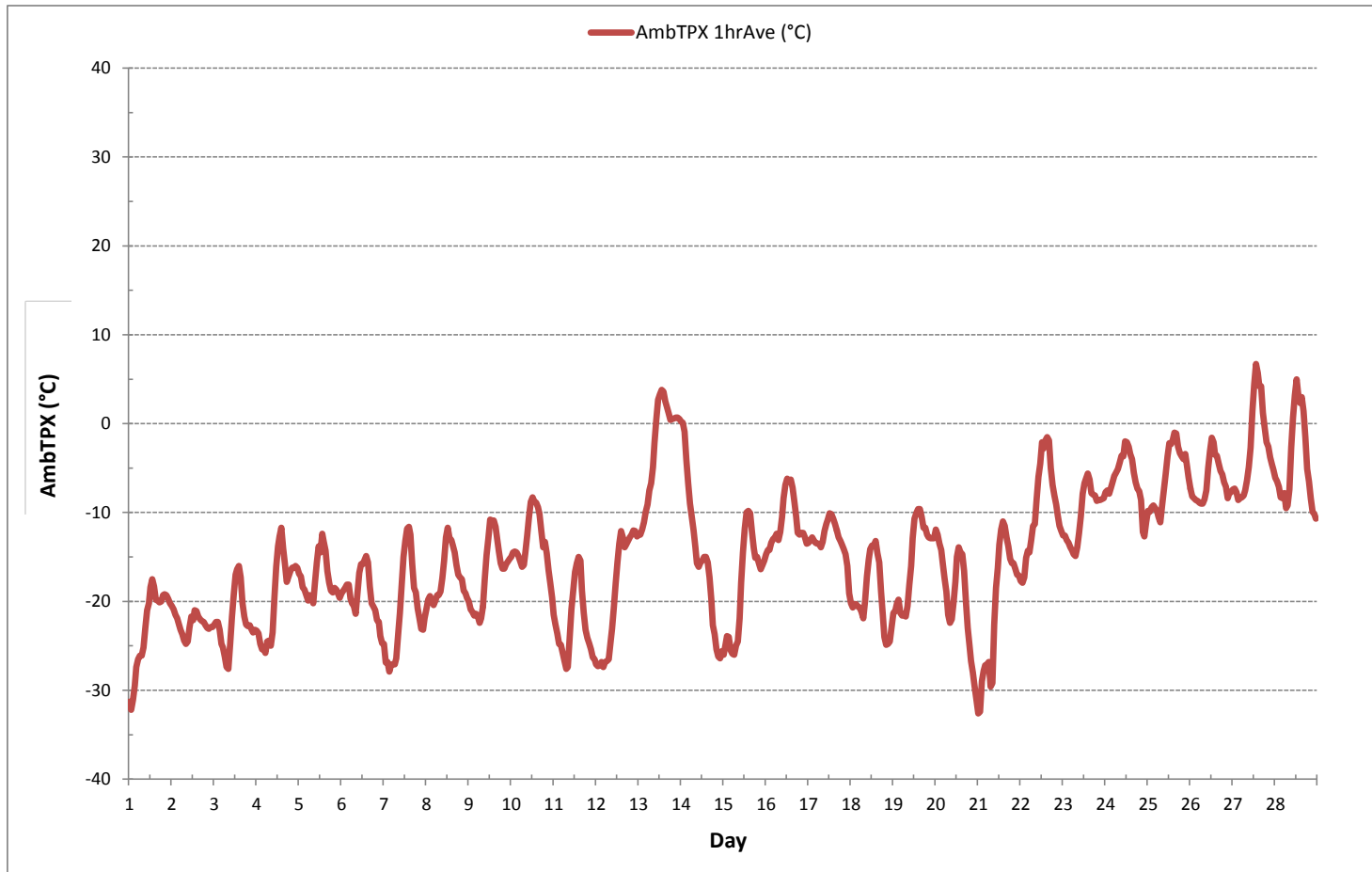
24 HR AVERAGES February 2018



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	-32.6 °C	@ HOUR	0	ON DAY	21
MAXIMUM 1-HR AVERAGE:	6.7 °C	@ HOUR	13	ON DAY	27
MAXIMUM 24-HR AVERAGE:	-2.7 °C			ON DAY	13
OPERATIONAL TIME:					672 hrs
AMD OPERATION UPTIME:					100.0 %
STANDARD DEVIATION:	7.8	MONTHLY AVERAGE:			-14.8 °C

AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)



PRECIPITATION

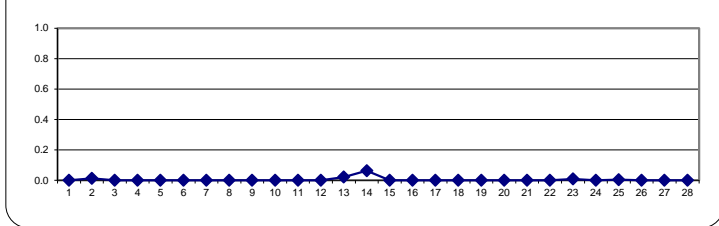
PRECIPITATION Hourly Averages (mm)

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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.1	0.0	24
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
9	0.0	0.0	0.0	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	0.0	24
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.1	0.1	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.2	0.0	24
14	0.4	0.1	0.4	0.4	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.1	24
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	24
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
25	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	24
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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
HOURLY MAX	0.4	0.1	0.4	0.4	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.1	0.0	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	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

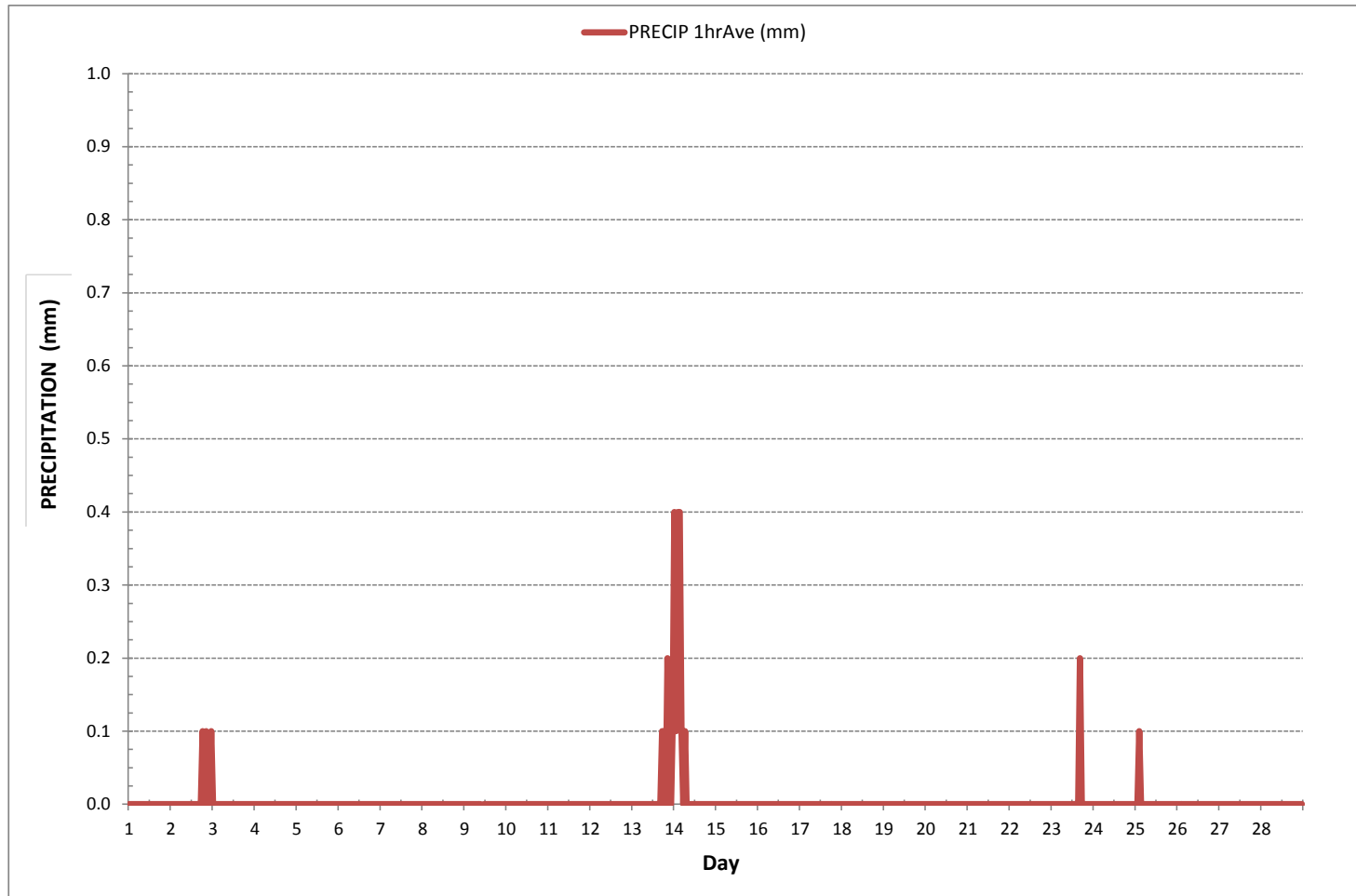
24 HR AVERAGES February 2018



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	0.0	mm	@ HOUR	0	ON DAY	1
MAXIMUM 1-HR AVERAGE:	0.4	mm	@ HOUR	0	ON DAY	14
MAXIMUM 24-HR AVERAGE:	0.1	mm			ON DAY	14
MONTHLY TOTAL	2.6	mm				
OPERATIONAL TIME:						672 hrs
AMD OPERATION UPTIME:						100.0 %
STANDARD DEVIATION:	0.0					
MONTHLY AVERAGE:						0.0 mm

PRECIPITATION Hourly Averages (mm)



APPENDIX II
EQUIPMENT CALIBRATION RESULTS

SULPHUR DIOXIDE



API 100E Sulphur Dioxide Analyzer Calibration

Date: February 8, 2018	Barometer/B.P./units: F.S. 05544 expires January 5, 2019	955	millibars
Company/Airshed: LICA	Thermometer/Station Temp: F.S. 170286131 expires April 19, 2019	22	°C
Location/Station Name: Maskwa	Weather Conditions: Mainly sunny		
Parameter: Sulphur Dioxide	Calibration Purpose: routine monthly		
Start Time 24 hr. (mst): 12:19	Performed By/Reviewer: Alex Yakupov		Rob Fisher
End Time 24 hr. (mst): 16:48	Cal Gas Expiry Date: October 24, 2020		
Calibration Method: Gas Dilution	Converter Model & s/n (if applicable): n/a		

Analyzer: ID# or Serial Number: 508	Range ppb: 1000
Last Calibration Date: January 19, 2018	As Found C.F.: 0.989
Previous C.F.: 1.000	New C.F.: 0.999

Calibration Standards: Low Flow Meter ID/Expiry Date: Defender Low 152019 expires December 13, 2018 High Flow Meter ID/Expiry Date: Defender High 148944 expires December 13, 2018 Calibrator ID/Expiry Date: API id# 690 expires March 17, 2018 Cal Gas Cylinder I.D. #: LL 104225 Cal Gas Conc. (ppm): 49.2	Standard Calibration Points for Ranges <table border="1" style="margin: auto;"> <tr><th>Point</th><th>ppb</th></tr> <tr><td>High</td><td>780</td></tr> <tr><td>Mid</td><td>380</td></tr> <tr><td>Low</td><td>190</td></tr> </table>	Point	ppb	High	780	Mid	380	Low	190
Point	ppb								
High	780								
Mid	380								
Low	190								

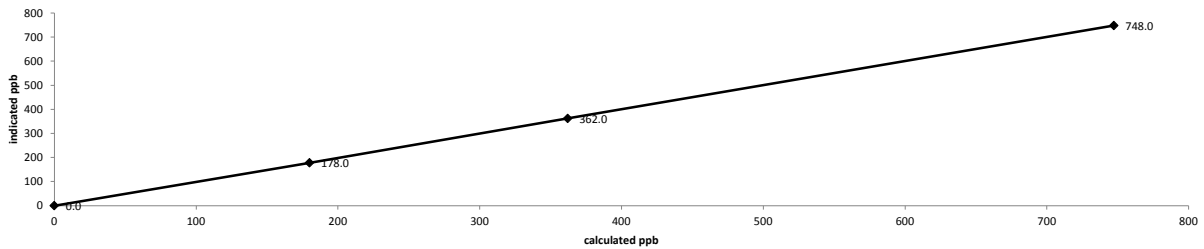
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated	Indicated Concentration (ppb):	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total	Concentration (ppb):		
as found zero	4787	0.00	4787	0.0	0.0	n/a
as found high	4888	75.39	4963	747.4	756.0	0.989
adjusted zero	4787	0.00	4787	0.0	0.0	n/a
adjusted high	4888	75.39	4963	747.4	748.0	0.999
mid	4929	36.55	4966	362.1	362.0	1.000
low	4956	18.20	4974	180.0	178.0	1.011
calibrator zero	4787	0.00	4787	0.0	0.0	n/a
Average C.F. =						1.004

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) = 0.10%	± 3% F.S.
% change in C.F. from last cal = 1.14%	± 10%

API 100E Sulphur Dioxide Analyzer Calibration



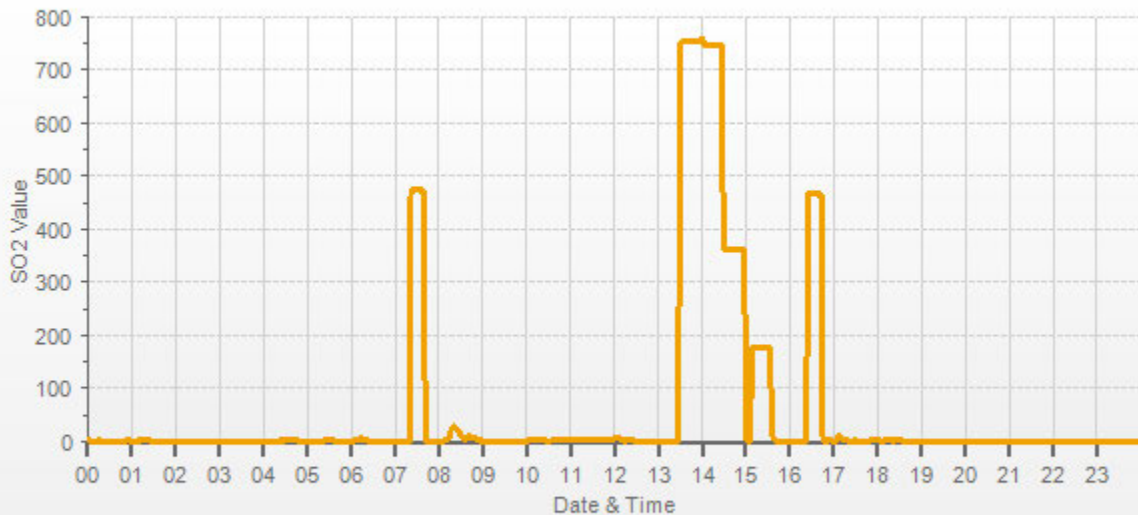
	As found:		As left:
Slope:	0.964	Slope:	0.953
Offset:	164.2	Offset:	164.2
Hvps:	483	Hvps:	483
Rcell Temp:	50.0	Rcell Temp:	50.0
Box Temp:	30.0	Box Temp:	30.4
Pmt Temp:	7.6	Pmt Temp:	7.6
Izs Temp:	50.0	Izs Temp:	50.0
Pres:	25.2	Pres:	25.2
Samp Fl:	589	Samp Fl:	589
Norm Pmt:	163.1	Norm Pmt:	164.5
Uv Lamp:	2366.5	Uv Lamp:	2366.1
Lamp Ratio:	86.4	Lamp Ratio:	86.4
Str Lgt:	79.2	Str Lgt:	78.3
Drk Pmt:	10.3	Drk Pmt:	10.5
Expected Value:	480.0	Expected Value:	466.0

Comments:

The analyzer sample inlet filter was changed.

The manifold blower was found to be working normally.

SO2[ppb] Station: LICA MASKWA Daily: 18/02/08 Type: AVG 1 Min. [1 Min.]



— SO2[ppb]

HYDROGEN SULPHIDE



API 101E Hydrogen Sulphide Analyzer Calibration

Date: February 9, 2018	Barometer/B.P./units: F.S. 05544 expires January 5, 2019	948	millibars
Company/Airshed: LICA	Thermometer/Station Temp: F.S. 170286131 expires April 19, 2019	22	°C
Location/Station Name: Maskwa	Weather Conditions: Mainly sunny		
Parameter: Hydrogen Sulphide	Calibration Purpose: repeat		
Start Time 24 hr. (mst): 10:31	Performed By/Reviewer: Alex Yakupov	Rob Fisher	
End Time 24 hr. (mst): 14:47	Cal Gas Expiry Date: June 14, 2019		
Calibration Method: Gas Dilution	Converter Model & s/n (if applicable): n/a		

Analyzer ID# or Serial Number: 510	Range ppb: 100
Last Calibration Date: February 8, 2018	As Found C.F.: 0.910
Previous C.F.: 1.000	New C.F.: 1.000

Calibration Standards: Low Flow Meter ID/Expiry Date: Defender Low 152019 expires December 13, 2018 High Flow Meter ID/Expiry Date: Defender High 148944 expires December 13, 2018 Calibrator ID/Expiry Date: API id# 690 expires March 17, 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	SO2 Scrubber Check (10 minutes): Start/End Time 24 hr.: 14:38 / 14:48 Feb 8th SO2 Analyzer Range: 1000 Target Concentration (ppb): 780 As Found Zero: 0.0 Analyzer Response (ppb): 0.0 Zero Corrected Result (ppb): 0.0
Point	ppb									
High	78									
Mid	38									
Low	19									

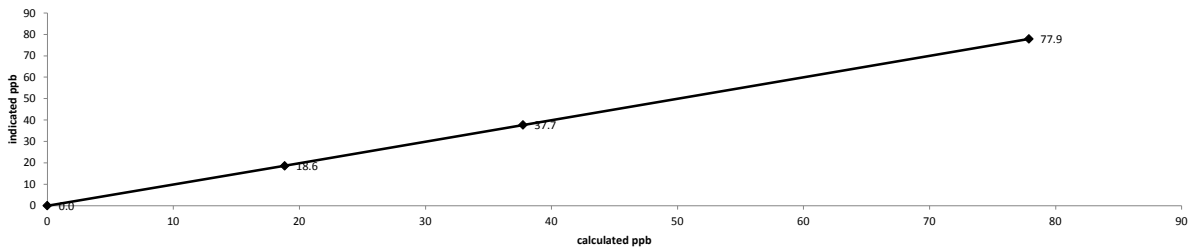
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated	Indicated Concentration (ppb):	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total	Concentration (ppb):		
as found zero	7466	0.00	7466	0.0	0.3	n/a
as found high	7397	56.92	7454	77.9	85.9	0.910
adjusted zero	7466	0.00	7466	0.0	0.0	n/a
adjusted high	7397	56.92	7454	77.9	77.9	1.000
mid	7433	27.61	7461	37.7	37.7	1.001
low	7428	13.74	7442	18.8	18.6	1.012
calibrator zero	7466	0.00	7466	0.0	0.0	n/a
Average C.F. =						1.005

Linear Regression/Calibration Results:

Correlation Coefficient =	1.000	LIMITS	> or = 0.995
Slope =	0.999	0.95-1.05	
b (Intercept as % of full scale) =	0.10%	± 3% F.S.	
% change in C.F. from last cal =	9.01%	± 10%	

API 101E Hydrogen Sulphide Analyzer Calibration

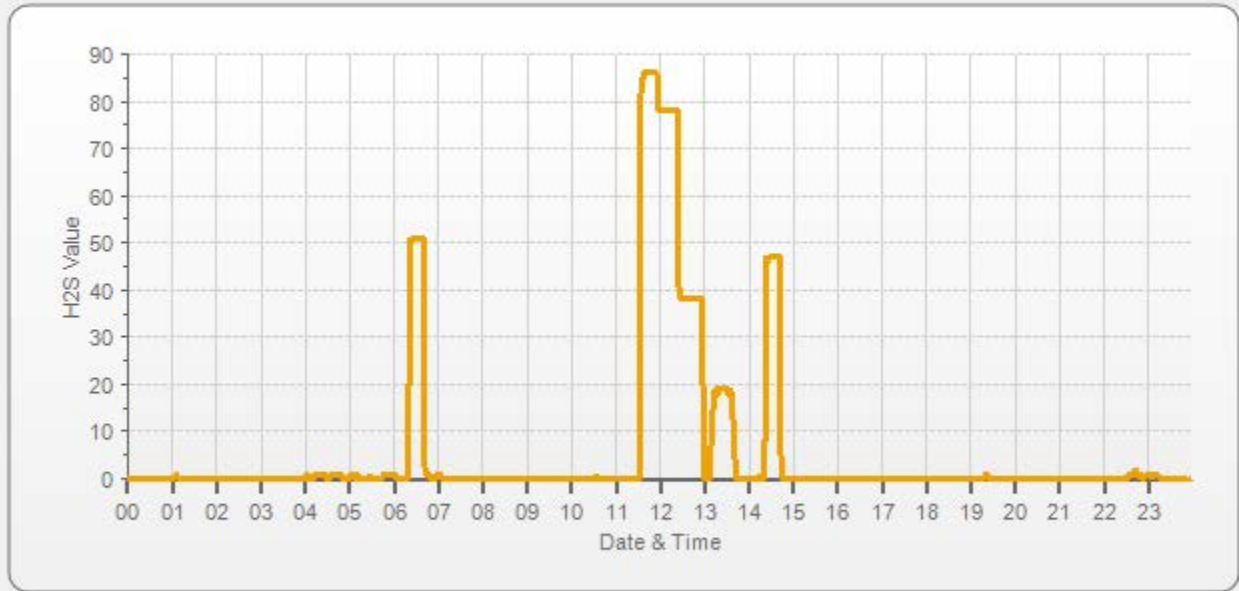


As found: Slope: 1.066 Offset: 33.0 Hvps: 530 Rcell Temp: 50.0 Box Temp: 34.4 Pmt Temp: 8.4 Izs Temp: 45.0 Converter Temp: 314.5 Pres: 20.4 Samp Fl: 532 Uv Lamp: 2871.2 Lamp Ratio: 85.5 Str Lgt: 17.6 Drk Pmt: 32.9 Expected Value: 50.8	As left: Slope: 0.970 Offset: 33.6 Hvps: 530 Rcell Temp: 50.0 Box Temp: 34.6 Pmt Temp: 8.4 Izs Temp: 45.0 Converter Temp: 314.8 Pres: 20.4 Samp Fl: 531 Uv Lamp: 2870.9 Lamp Ratio: 85.5 Str Lgt: 16.3 Drk Pmt: 33.0 Expected Value: 47.3
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Comments: The SO2 scrubber check was not performed, see comments below. The manifold blower was found to be working normally.

The original monthly calibration was attempted on February 8th using a Sabio calibrator, id# 11900613. The February 8th calibration attempt was abandoned due to a slow response caused by Sabio calibrator, id# 11900613. This February 9th calibration used an API 700 calibrator, s/n 690, which confirmed that the February 8th slow analyzer response was an artifact of Sabio calibrator id# 11900613, not the analyzer. The scrubber check above was performed on February 8th.

H2S[ppb] Station: LICA MASKWA Daily: 18/02/09 Type: AVG 1 Min. [1 Min.]



— H2S[ppb]

TOTAL HYDROCARBON



Thermo 51C Total Hydrocarbon Analyzer Calibration

Date:	February 9, 2018	Barometer/B.P./units:	F.S. 05544 expires January 5, 2019	948	millibars
Company/Airshed:	LICA	Thermometer/Station Temp:	F.S. 170286131 expires April 19, 2019	22	°C
Location/Station Name:	Maskwa	Weather Conditions:	Mainly sunny		
Parameter:	Total Hydrocarbon	Calibration Purpose:	routine monthly		
Start/End Time 24 hr. (mst):	14:02 / 17:46	Performed By/Reviewer:	Alex Yakupov	Rob Fisher	
Calibration Method:	Gas Dilution	Cal Gas Expiry Date:	November 24, 2022		

Analyzer:	ID# or Serial Number:	436609738	Range ppm:	50
	Last Calibration Date:	January 5, 2018	As Found C.F.:	0.978
	Previous Cal High Point C.F.:	1.000	New C.F.:	1.000

Calibration Standards:	Low Flow Meter ID/Expiry Date:	Defender Low 152019 expires December 13, 2018	High Flow Meter ID/Expiry Date:	Defender High 148944 expires December 13, 2018
	Calibrator ID/Expiry Date:	API id# 690 expires March 17, 2018	Cal Gas Cylinder I.D. #:	LL 165367
	CH ₄ /C ₃ H ₈ Cylinder Conc. (ppm):	590.0	207.0	
	CH ₄ as propane/total CH ₄ equivalents (ppm):	569.3	1159.3	

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

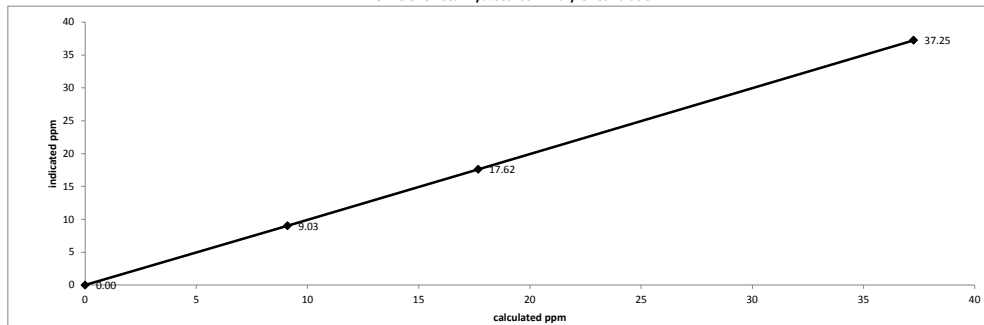
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Point	Calibrator Flow Rates (cc/min)			Calculated Concentration: (ppm)	Indicated Concentration: (ppm)	Correction Factors:
	Diluent	Cal Gas	Total			
as found zero	2395	0.00	2395	0.0	0.02	n/a
as found high	2485	82.52	2568	37.25	38.10	0.978
adjusted zero	2395	0.00	2395	0.00	0.00	n/a
adjusted high	2485	82.52	2568	37.25	37.25	1.000
mid	2487	38.51	2526	17.67	17.62	1.003
low	2490	19.71	2510	9.10	9.03	1.008
calibrator zero	2395	0.00	2395	0.0	0.00	n/a
Average C.F.=						1.004

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) =	0.08%		± 3% F.S.
% change in C.F. from last cal =	2.18%		± 10%

Thermo 51C Total Hydrocarbon Analyzer Calibration

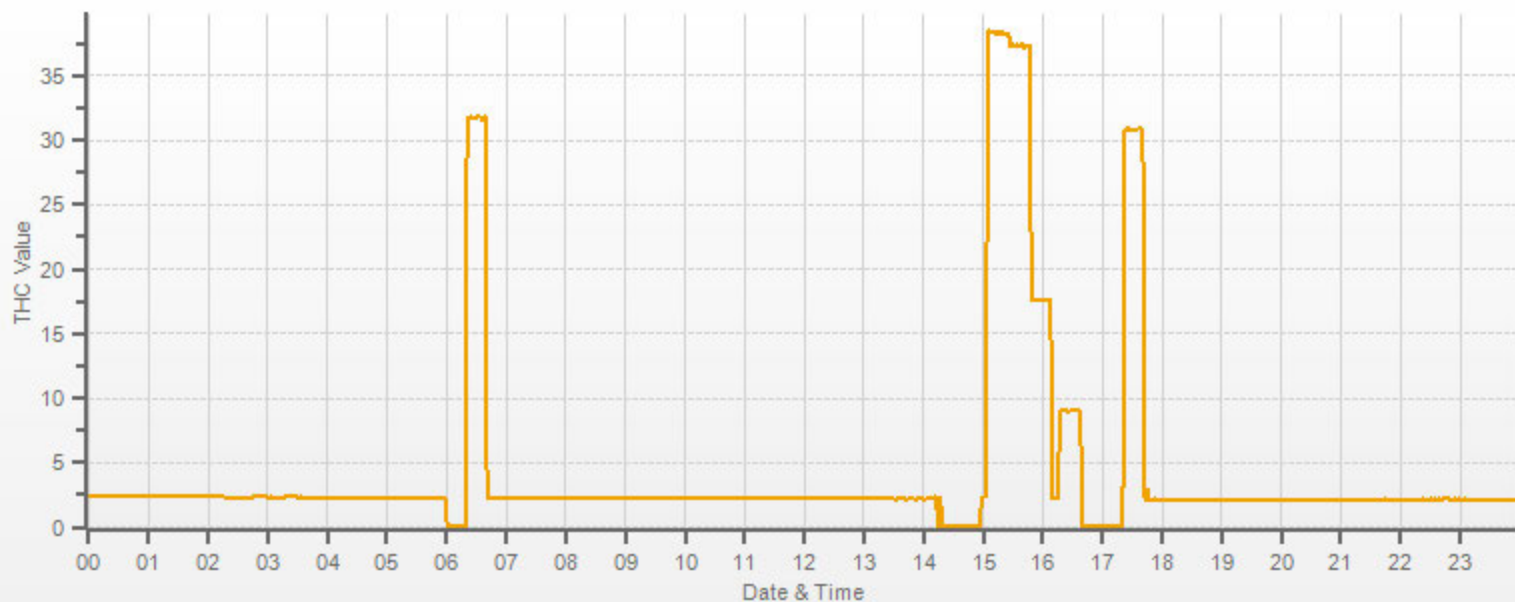


<p>As found:</p> <p>H2 cylinder (psi): 1600</p> <p>H2 cylinder reg set (psi): 22</p> <p>Span Cylinder (psi): 1000</p> <p>Span Cylinder Reg Set (psi): 22</p> <p>Zero Air Gen Pressure: 40</p> <p>measurement alarms: None</p> <p>service alarms: None</p> <p>cnt: 1435</p> <p>rng: 1</p> <p>try: 2</p> <p>flm: 194.4</p> <p>det: 125.1</p> <p>Flame: 194</p> <p>Filter: 125</p> <p>Base: 125</p> <p>Sample psi: 07.50</p> <p>Internal Air Pressure: 20</p> <p>Internal Fuel Pressure: 13</p> <p>Measured Flow: 0.980</p> <p>Expected Value: 31.40</p>	<p>As left:</p> <p>H2 cylinder (psi): 1600</p> <p>H2 cylinder reg set (psi): 22</p> <p>Span Cylinder (psi): 1000</p> <p>Span Cylinder Reg Set (psi): 22</p> <p>Zero Air Gen Pressure: 40</p> <p>measurement alarms: None</p> <p>service alarms: None</p> <p>cnt: 1418</p> <p>rng: 1</p> <p>try: 2</p> <p>flm: 194.0</p> <p>det: 125.5</p> <p>Flame: 194</p> <p>Filter: 125</p> <p>Base: 125</p> <p>Sample psi: 07.50</p> <p>Internal Air Pressure: 20</p> <p>Internal Fuel Pressure: 13</p> <p>Measured Flow: n/a</p> <p>Expected Value: 30.80</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.

— THC[ppm]



NITROGEN DIOXIDE



API 200A NO-NO2-NOx Analyzer Calibration

Date: February 8, 2018	Barometer/B.P./units: F.S. 05544 expires January 5, 2019	955	millibars
Company/Airshed: LICA	Thermometer/Station Temp: F.S. 170286131 expires April 19, 2019	22	°C
Location/Station Name: Maskwa	Weather Conditions: Mainly sunny		
Start/End Time 24 hr. (mst): 12:19 / 19:42	Calibration Purpose: routine monthly		
G.P.T. to be used for Ozone? No	Performed By/Reviewer: Alex Yakupov		Rob Fisher
Calibration Method: Gas Dilution & Gas Phase Titration	Cal Gas Expiry Date: October 24, 2020		

Analyzer:		Correction Factors:		
ID# or Serial Number: 2051	NO =	Previous C.F.: 1.000	As Found C.F.: 0.988	New C.F.: 0.999
Last Calibration Date: January 4, 2018	NO ₂ =	1.000	0.994	1.000
Range ppb: 1000	NOx =	1.000	0.988	1.000

Calibration Standards:				
Low Flow Meter ID/Expiry Date: Defender Low 152019 expires December 13, 2018	Standard Calibration Points for a Range of: 1000 ppb			
High Flow Meter ID/Expiry Date: Defender High 148944 expires December 13, 2018	Point	Target NO (ppb)	Target NO ₂ (ppb)	Cc Ozone ?
Calibrator ID/Expiry Date: API id# 690 expires March 17, 2018	High	780	500	n/a
Cal Gas Cylinder I.D. #: LL 104225	Mid	380	275	n/a
Cal Gas Conc. (ppm): 51.5 51.6	Low	190	100	n/a
	Extra Point #1	n/a	n/a	n/a
	Extra Point #2	n/a	n/a	n/a

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

Calibrator Flow Rates (cc/min)				Calculated NO	Calculated NOx	Indicated NO	Indicated NOx	NO C.F.	NOx C.F.
Point	Diluent	Cal Gas	Total Flow	(ppb)	(ppb)	(ppb)	(ppb)		
as found zero	4787	0.0	4787	0	0	0.0	0.0	n/a	n/a
as found high	4888	75.4	4963	782.3	783.8	792.0	793.0	0.988	0.988
adjusted zero	4787	0.00	4787	0.0	0.0	0.0	0.0	n/a	n/a
adjusted high	4888	75.39	4963	782.3	783.8	783.0	784.0	0.999	1.000
mid	4929	36.55	4966	379.0	379.8	374.0	375.0	1.013	1.013
low	4956	18.20	4974	188.4	188.8	184.0	185.0	1.024	1.021
calibrator zero	4787	0.00	4787	0	0	0.0	0.0	n/a	n/a
Average C.F. =								1.012	1.011

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	4888	75.39	4963	0.0	783.0	785.0	2.0	0.0	2.0	
as found high NO2	4888	75.39	4963	470.0	260.0	788.0	528.0	523.0	526.0	0.994
adjusted high NO2	4888	75.39	4963	470.0	260.0	785.0	525.0	523.0	523.0	1.000
gpt mid	4888	75.39	4963	245.0	503.0	785.0	282.0	280.0	280.0	1.000
gpt low	4888	75.39	4963	75.0	693.0	785.0	92.0	90.0	90.0	1.000
Average NO ₂ C.F. =									1.000	

Linear Regression/Calibration Results:

	NO	NOx	NO ₂	LIMITS
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995
Slope =	0.998	0.999	1.003	0.95-1.05
b (Intercept as % of full scale) =	-0.30%	-0.26%	0.11%	± 3% F.S.
% change in C.F. from last cal =	1.22%	1.16%	0.57%	± 10%
NO ₂ converter efficiency			0.99	0.96 to 1.04

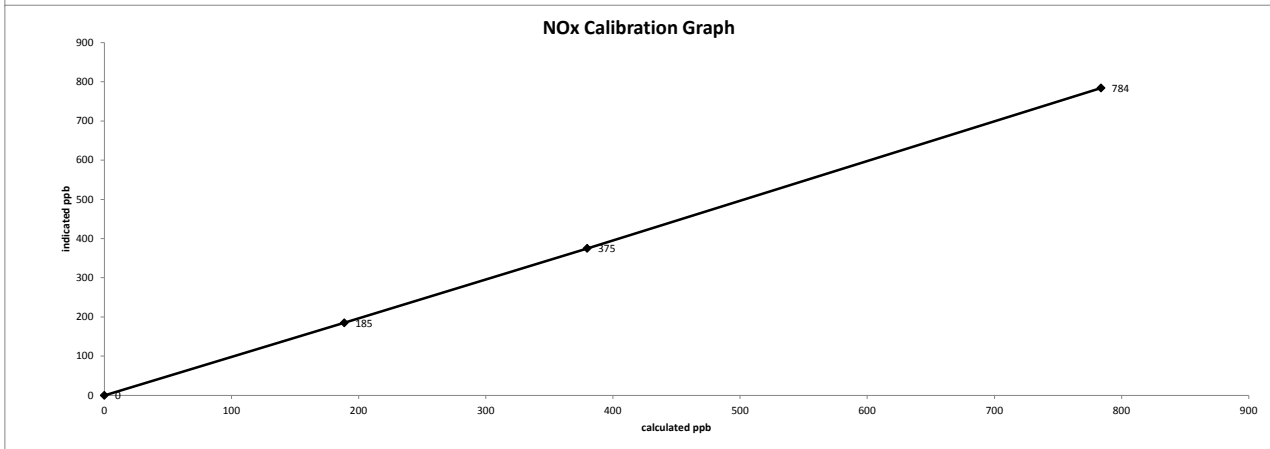
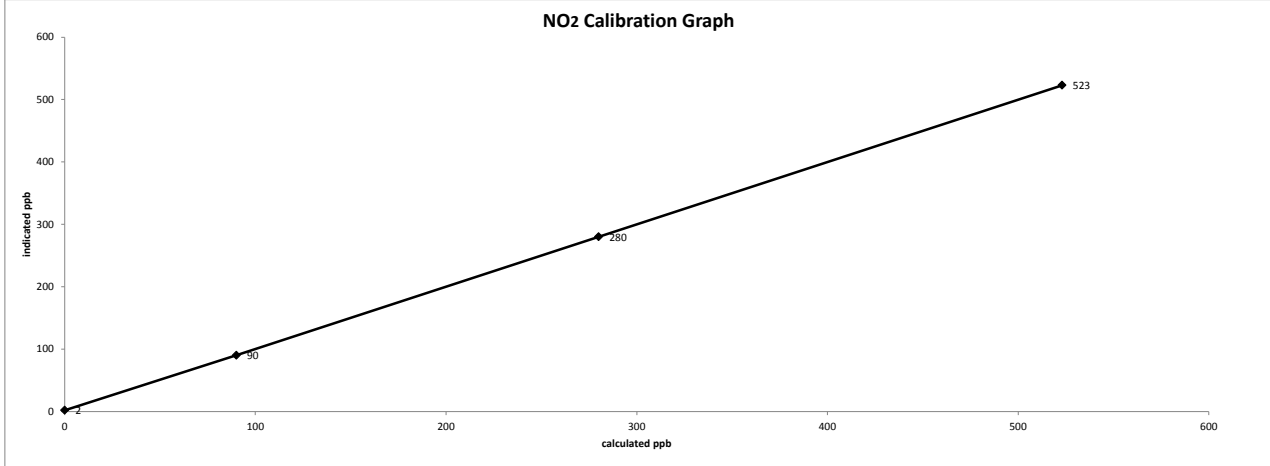
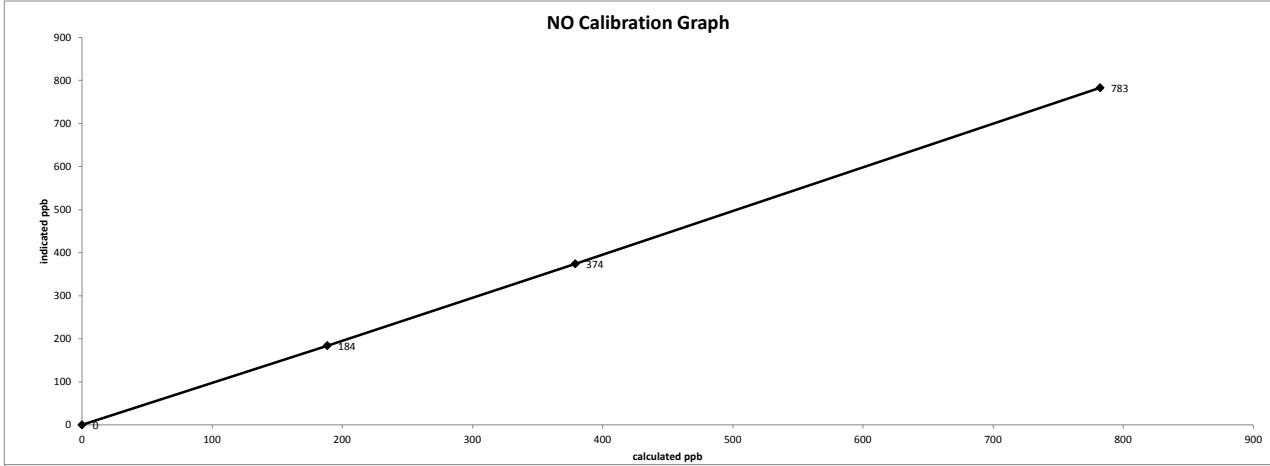
As found:		As left:	
NOx SLOPE:	1.042	NOx SLOPE:	1.029
NOx OFFS:	-3.5	NOx OFFS:	-3.5
NO SLOPE:	1.041	NO SLOPE:	1.030
NO OFFS:	-4.0	NO OFFS:	-4.0
SAMP FLW:	509	SAMP FLW:	508
OZONE FL:	82	OZONE FL:	82
NORM PMT:	-4.5	NORM PMT:	-2.9
AZERO:	46.6	AZERO:	46.5
HVPS:	707	HVPS:	708
DCPS:	2578	DCPS:	2570
RCCELL:	50.6	RCCELL:	50.5
BOX TEMP:	27.9	BOX TEMP:	28.1
IZS TEMP:	43.0	IZS TEMP:	43.2
MOLY TEMP:	314.9	MOLY TEMP:	314.6
RCEL:	7.0	RCEL:	7.0
SAMP:	30.0	SAMP:	30.0
Expected Value NO:	7	Expected Value NO:	7
Expected Value NO ₂ :	378	Expected Value NO ₂ :	367
Expected Value NOx:	385	Expected Value NOx:	374

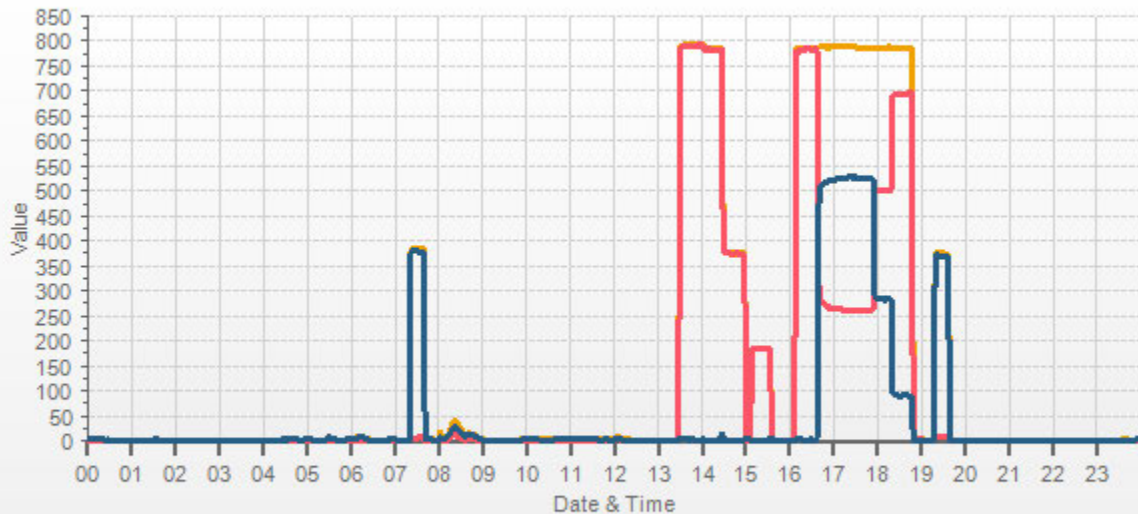
Comments:
 The analyzer sample inlet filter was changed.
 The manifold blower was found to be working normally.

Date: February 8, 2018
Company/Airshed: LICA
Location/Station Name: Maskwa

Start/End Time 24 hr. (mst): 12:19 / 19:42
Calibration Purpose: routine monthly
Calibration Method: Gas Dilution & Gas Phase Titration

API 200A NO-NO₂-NO_x Analyzer Calibration





— NO_x[ppb] — NO[ppb] — NO₂[ppb]

WIND SYSTEM



Meteorological Sensor Audit/Calibration

Location Information

Company:	LICA	Performed By:	Alex Yakupov
Audit Location:	Maskwa	Reviewed By:	Rob Fisher
Audit Date:	December 28, 2017	Start/End Time (mst):	14:16 / 18:15
Calibration Purpose:	installation	Weather Conditions:	Mix of sun and clouds

Wind Sensor Information

Sensor ID Data:		Sensor Outputs:	
Sensor Make:	RM Young	Velocity Voltage Output Range:	0-1 V
Sensor Model:	05305VK	Velocity Unit Output Range:	0-200 km/h
Serial #:	92411	Direction Voltage Output Range:	0-1 V
Previous Cal/Audit Date:	October 23, 2017	Direction Unit Output Range:	0-360 degrees

Wind Calibrator Information

Calibrator I.D. and Expiry Date: RM Young 18802 id# CA03309 expires September 25, 2018

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

RPM	Wind Speed Generated kph	Clockwise Wind Speed kph	Counter Clockwise Wind Speed kph	Correction Factor
0	0	0.0	0.0	-
1000	18.4	18.5	18.5	0.996
2000	36.9	36.9	36.9	1.000
3000	55.3	55.4	55.4	0.999
4000	73.7	73.9	73.8	0.998
5000	92.2	92.3	92.3	0.999
6000	110.6	110.7	110.7	0.999
7000	129.0	129.1	129.1	0.999
8000	147.4	147.6	147.6	0.999
9000	165.9	166.0	166.0	0.999
10000	184.3	184.4	184.4	0.999
The audit meets AMD requirements.			Average Correction Factor=	0.999

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

Generated Wind Direction 0-360 (Up)	Generated Wind Direction 360-0 (Down)	Indicated Wind Direction 0-360 (Up)	Indicated Wind Direction 360-0 (Down)	Degrees Difference 0-360 (Up)	Degrees Difference 360-0 (Down)	Average Absolute Degrees Difference
0	355	0	356	0.0	-0.8	0.4
30	330	32	332	-1.6	-1.8	1.7
60	300	62	302	-2.0	-2.2	2.1
90	270	91	272	-1.4	-1.7	1.6
120	240	121	242	-1.3	-1.5	1.4
150	210	151	212	-1.2	-2.0	1.6
180	180	181	181	-1.4	-1.0	1.2
210	150	212	151	-2.4	-0.7	1.6
240	120	242	121	-2.2	-1.2	1.7
270	90	272	91	-2.4	-1.1	1.7
300	60	302	61	-2.0	-1.4	1.7
330	30	332	31	-2.0	-1.1	1.6
355	0	356	0	-0.8	0.4	0.6
The audit meets AMD requirements.			Average Absolute Degrees Difference=		1.4	

Comments:

The Sonic Wind System was removed due high unrealistic mesurements. The RM Young Wind System was installed.

METEOROLOGICAL SYSTEM CHECK



Meteorological System Checklist

Date:	February 9, 2018		
Technician:	Alex Yakupov		
Reviewer:	Rob Fisher		
Station:	Maskwa		
Unit:	Make:	Model:	Serial #:
Precipitation Sampler:	Met One - Heated Rain Gauge	Part 387	F4481
PRECIPITATION SENSOR CHECK			
Checklist:	Reply:	Comments:	
Previous check date:	October 3, 2017	n/a	
Is the sensor Level?	yes	n/a	
Is the heater operating properly?	yes	n/a	
Are the bucket drain holes clean?	yes	n/a	
Is the screen on the housing? (screen should be on between July and September)	no	n/a	
Is the housing clean?	yes	n/a	
Is the area around the housing clean and free from obstacles?	yes	n/a	
TIP TEST - Slowly pour water until 10 tip are heard. (10 tips = 1 ml)			
# of Tips	Data Logger Response (ml):	Manual Specification = +/- 0.1 ml	
10	1.00	0.00	

CALIBRATORS

Company Maxxam Operator: Mike

Calibrator:		Flow Measurement Device:	
Make/Model	<u>API 700</u>	Make/Model	<u>Bios Defender 530</u>
Serial Number	<u>690</u>	Serial Number	<u>HI148944 Lo 152019</u>
Last Verification Date	<u>March 30, 2016\</u>	Temperature (°C)	<u>23.3</u>
NO Cylinder S/N	<u>EY0000597</u>	Barometric Pressure	<u>704.3mmHg</u>
NO [PPM]	<u>49.0 NOx [PPM]</u>		<u>49.0</u>
Expiry Date	<u>December 8, 2019</u>		

Dilution Flow (sccm)			
Pt. #1	<u>4898</u>	Pt. #2	<u>4942</u>
		Pt. #3	<u>4953</u>
Gas Flow (sccm)			
Pt. #1	<u>79.2</u>	Pt. #2	<u>38.6</u>
		Pt. #3	<u>19.3</u>

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO ₂	NOx	NO	NOx
4977	0.0	0.0000	0.0000	0.0000	0.0000	0.0000	Limit ± 10%	
4977	79.2	0.7792	0.7792	0.7841	0.0012	0.7854	1%	1%
4981	38.6	0.3797	0.3797	0.3813	0.0006	0.3819	0%	1%
492	19.3	0.1902	0.1902	0.1927	0.0002	0.1929	1%	1%
Absolute Average Percent Difference							1%	1%

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

NO		LIMITS		NOx	
Correlation=	1.0000	≥ 0.990		Correlation=	1.0000
m (Slope)=	1.0056	0.90-1.10		m (Slope)=	1.0073
b (Intercept % of FS)=	0.0357	± 3% F.S.		b (Intercept % of FS)=	0.0304

Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
4977	0.000	0.0000	0.7928	0.0014	0.7941	NO ₂	% Diff. Limit
4977	0.500	0.5448	0.2480	0.5391	0.7871	-1%	± 10%
4977	0.250	0.2862	0.5066	0.2861	0.7926	-1%	± 10%
4977	0.100	0.1221	0.6707	0.1193	0.7914	-3%	± 10%
Absolute Average Percent Difference						2%	± 10%

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

NO₂		LIMITS
Correlation=	1.0000	≥ 0.995
m (Slope)=	0.9894	0.90-1.10
b (Intercept % of FS)=	0.0719	± 3% F.S.

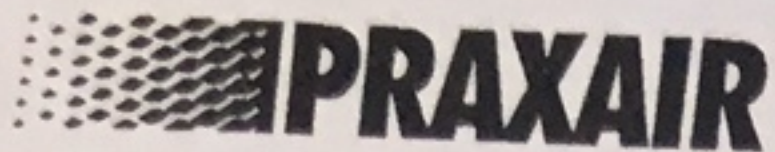
AENV Standards		NO_x Analyzer	
Audit Calibrator		Make/Model	<u>Thermo 42i</u>
Make/Model	<u>Thermo 146i</u>	Serial/AMU Number	<u>1868</u>
Serial/AMU Number	<u>1809</u>	Last Calibration Date	<u>March 15, 2017</u>
SRM Gas Cylinder No.	<u>CAL018140</u>	Full Scale (ppm)	<u>1.0</u>
Cylinder Conc. (ppm)	<u>48.79</u>	Cylinder Gas Expiry Date	<u>March 28, 2019</u>

COMMENTS: Gas has ~50ppm SO2

Auditor: Shea Beaton
Operator Signature: [Signature]

Date: March 17, 2017
Location: McIntyre Center Edmonton

CALIBRATION GASES



Praxair
 5700 South Alameda Street
 Los Angeles, CA 90058
 Tel: (323) 585-2154 Fax: (714) 542-6689
 PGVPID: F22017

DocNumber: 000116115

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

PRAXAIR PKG EDMONTON PLT 8
 9501 34TH ST
 EDMONTON AB T6B 2X

Praxair Order Number: 45314542
 Customer P. O. Number: 582-277
 Customer Reference Number:

Fill Date: 10/12/2017
 Part Number: NI NO50MS2E-AQ
 Lot Number: 70086728507
 Cylinder Style & Outlet: AQ CGA 660
 Cylinder Pressure & Volume: 2000 psig 82 cu. ft.

Certified Concentration:

Expiration Date:	10/24/2020	NIST Traceable
Cylinder Number:	LL104225	Analytical Uncertainty:
51.5 ppm	NITRIC OXIDE	± 0.7 %
49.2 ppm	SULFUR DIOXIDE	± 1 %
Balance	NITROGEN	

NOx = 51.6 ppm

NOx for Reference Only

Certification Information: Certification Date: 10/24/2017 Term: 36 Months Expiration Date: 10/24/2020

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data:

(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. Component: NITRIC OXIDE

Requested Concentration: 50 ppm
 Certified Concentration: 51.5 ppm
 Instrument Used: Thermo Electron 42i-LS S/N 1030645077
 Analytical Method: Chemiluminescence
 Last Multipoint Calibration: 10/14/2017

Reference Standard Type: GMIS
 Ref. Std. Cylinder #: CC363145
 Ref. Std. Conc: 50.79 ppm
 Ref. Std. Traceable to SRM #: vs. 1683b
 SRM Sample #: 45.-V-42
 SRM Cylinder #: CAL017897

First Analysis Data:		Date: 10/17/2017	
Z: 0	R: 50.8	C: 51.5	Conc: 51.49
R: 50.8	Z: 0	C: 51.6	Conc: 51.59
Z: 0	C: 51.6	R: 50.8	Conc: 51.59
UOM: ppm		Mean Test Assay: 51.557 ppm	

Second Analysis Data:		Date: 10/24/2017	
Z: 0	R: 50.8	C: 51.4	Conc: 51.39
R: 50.8	Z: 0	C: 51.5	Conc: 51.49
Z: 0	C: 51.4	R: 50.8	Conc: 51.39
UOM: ppm		Mean Test Assay: 51.423 ppm	

2. Component: SULFUR DIOXIDE

Requested Concentration: 50 ppm
 Certified Concentration: 49.2 ppm
 Instrument Used: Ametek 921CE S/N AW-921-S321
 Analytical Method: Ultraviolet Absorption
 Last Multipoint Calibration: 10/13/2017

Reference Standard Type: NTRM
 Ref. Std. Cylinder #: CC72593
 Ref. Std. Conc: 48.58 ppm
 Ref. Std. Traceable to SRM #: n/a
 SRM Sample #: 12070103
 SRM Cylinder #: N/A

First Analysis Data:		Date: 10/17/2017	
Z: 0	R: 48.2	C: 48.8	Conc: 49.151
R: 48.2	Z: 0	C: 48.8	Conc: 49.151
Z: 0	C: 48.9	R: 48.3	Conc: 49.251
UOM: ppm		Mean Test Assay: 49.184 ppm	

Second Analysis Data:		Date: 10/24/2017	
Z: 0	R: 48.2	C: 48.7	Conc: 49.084
R: 48.2	Z: 0	C: 48.8	Conc: 49.185
Z: 0	C: 48.8	R: 48.2	Conc: 49.185
UOM: ppm		Mean Test Assay: 49.151 ppm	

Analyzed by:

Henry Koung

Certified by:

Amalia Real

Information contained herein has been prepared at your request by qualified experts within Praxair Distribution, Inc. While we believe that the information is accurate within the limits of the analytical methods employed and is complete to the extent of the specific analyses performed, we make no warranty or representation as to the suitability of the use of the information for any purpose. The information is offered with the understanding that any use of the information is at the sole discretion and risk of the user. In no event shall the liability of Praxair Distribution, Inc., arising out of the use of the information contained herein exceed the fee established for providing such information.



Calibration Gas Audit

CH4 / C3H8 Cylinder Gas

File No. 2015-029CGA

Company: Maxxam **Operators name:** Limin Li
Cylinder #: LL165367 **Conc CH4 (PPM)** 590/207 **Tolerance (%)** 2 **Certified By:** Praxair

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 1691</u>			Serial Number	<u>AMU 1650</u>
Last Verification Date	<u>May 21, 2015</u>			Temp. °C	<u>24.0 C</u>
Gas Type	<u>CH4</u>	Conc.	<u>999.2</u>	B.P.	<u>703 mmhg</u>
Cylinder Number	<u>D751932</u>				
Gas Type	<u>C3H8</u>	Conc.	<u>246.5</u>		
Cylinder Number	<u>XF0037998</u>				

Reference Analyzer:

Make/Model Teco 55C Serial/AMU Number: 1643
Instrument Settings Zero: N/A Span: N/A Range: 20
Last Calibration: Date: May 21/15 C.F. 1.000 Done By: Al Clark

Calibrator Flows (sccm)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
		CH4	C3H8			CH4	C3H8
Dilution	Gas						
<u>2600</u>	<u>0.0</u>	<u>0.00</u>	<u>0.00</u>	0.02005	49.883	602	206
<u>2569</u>	<u>51.5</u>	<u>12.06</u>	<u>11.37</u>	<u>0.02005</u>	<u>49.883</u>	<u>602</u>	<u>206</u>
<u>3549</u>	<u>22.3</u>	<u>3.77</u>	<u>3.57</u>	<u>0.00628</u>	<u>159.148</u>	<u>600</u>	<u>207</u>
<u>3523</u>	<u>10.4</u>	<u>1.77</u>	<u>1.70</u>	<u>0.00295</u>	<u>338.750</u>	<u>600</u>	<u>209</u>
Average Cylinder Concentration:						600	207

<u>CH4</u>	<u>C3H8</u>
Previous Stated Concentration PPM: <u>590</u>	<u>207</u>
Percent variance from Stated: <u>1.8</u>	<u>0.2</u>

Cylinder gas tolerances based on CH4 only

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

Auditor: Al Clark Date: May 21, 2015
Operator Signature: _____ Location: McIntyre Center Edmonton

APPENDIX III
MAXIMUM INSTANTANEOUS DATA



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

SULPHUR DIOXIDE Instantaneous Maximum (SO₂ ppb)

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

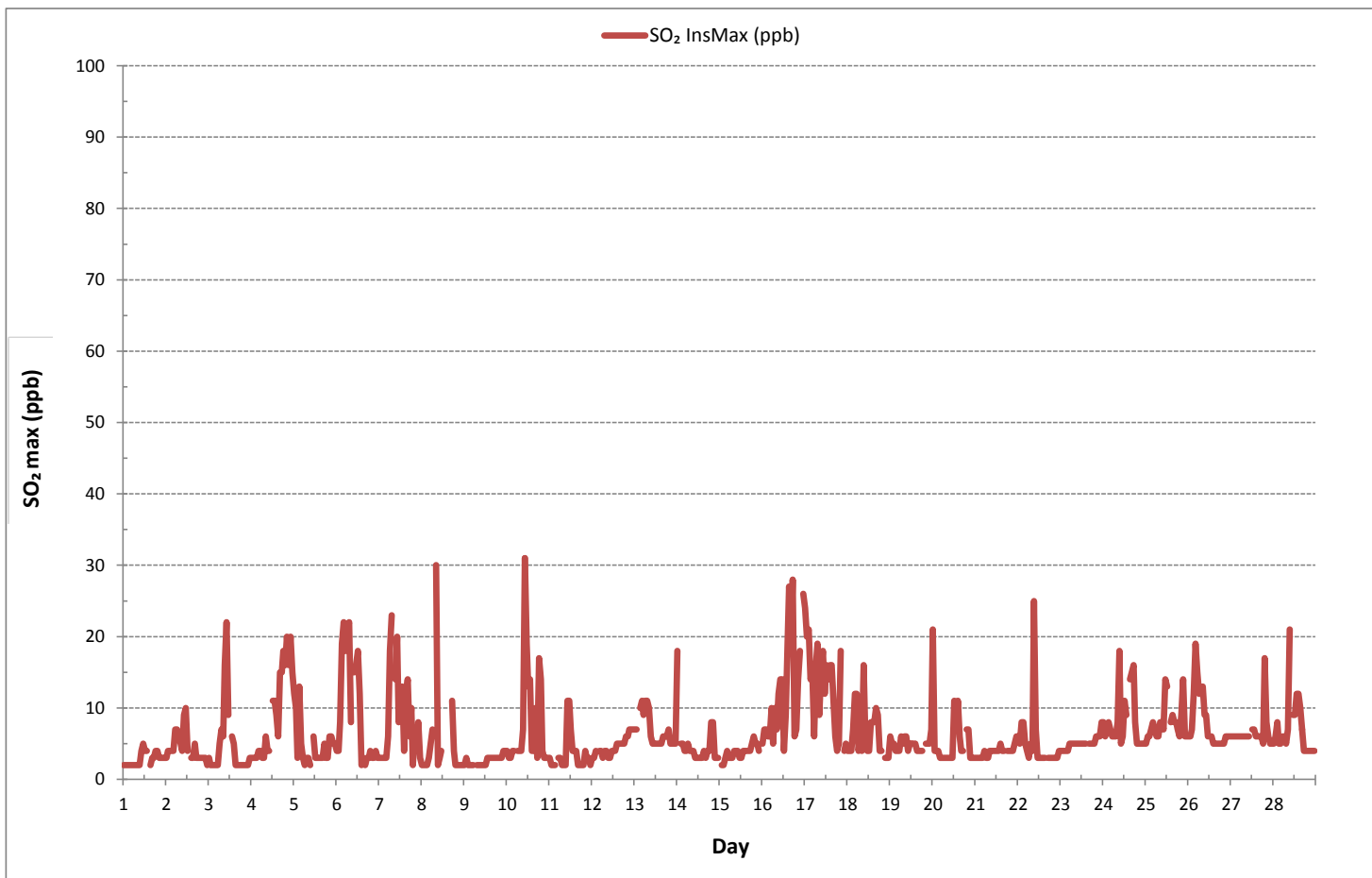
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	638
MAXIMUM INSTANTANEOUS VALUE:	31 ppb @ HOUR 10 ON DAY 10
IZS CALIBRATION TIME:	29 hrs
MONTHLY CALIBRATION TIME:	5 hrs
OPERATIONAL TIME:	672 hrs
STANDARD DEVIATION:	5

SULPHUR DIOXIDE Instantaneous Maximum (SO₂ ppb)





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

HYDROGEN SULPHIDE Instantaneous Maximum (H₂S ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	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	11	11	7	10	9	5	1	3	0	0	0	0	0	S	2	0	0	0	0	0	0	0	0	0	11	3	24	
2	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	1	1	1	3	0	0	0	3	0	24	
3	0	0	0	0	0	0	0	1	0	1	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
4	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	1	3	1	1	1	1	0	3	0	24	
5	0	0	0	1	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24	
6	0	0	0	1	2	2	2	1	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	24	
7	0	0	0	0	0	7	6	1	S	1	2	0	1	1	0	3	1	0	2	0	1	0	4	4	0	7	1	24	
8	2	0	0	0	2	1	0	S	1	0	0	0	Y	Y	Y	Y	Y	Y	Y	0	0	0	0	0	0	2	0	17	
9	0	1	0	0	1	1	S	1	1	1	C	C	C	C	C	0	0	0	0	1	1	0	2	1	0	2	1	24	
10	1	1	2	1	1	S	0	0	0	1	3	3	1	1	1	1	1	1	2	1	1	0	0	0	0	3	1	24	
11	1	0	1	0	S	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1	1	1	0	0	0	1	0	24	
12	0	0	0	S	0	0	0	0	1	0	1	1	1	1	1	1	1	1	1	2	2	1	1	2	0	2	1	24	
13	2	1	S	2	2	1	1	1	1	1	1	1	1	2	1	1	1	5	6	1	1	1	1	1	1	6	2	24	
14	1	S	1	1	1	1	1	4	1	0	1	1	1	0	0	0	0	0	1	0	1	1	1	1	0	4	1	24	
15	S	0	0	1	0	0	0	0	0	1	1	1	1	0	0	1	1	0	0	1	2	2	1	S	0	2	1	24	
16	1	1	1	1	1	1	1	1	1	1	1	2	1	1	3	6	3	5	1	1	5	6	S	5	1	6	2	24	
17	12	3	3	6	4	1	3	3	1	5	3	1	2	3	3	8	1	1	1	1	1	S	1	3	1	12	3	24	
18	1	1	1	1	2	2	1	3	1	1	0	1	0	2	1	4	3	2	1	0	S	0	0	0	0	0	4	1	24
19	0	1	0	1	0	0	0	1	0	0	1	1	1	1	1	1	0	1	S	1	1	1	1	1	0	1	1	24	
20	1	1	0	1	0	0	0	0	0	0	0	0	1	1	1	0	1	0	S	1	3	1	0	0	0	3	1	24	
21	0	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	0	1	1	24	
22	1	1	1	1	1	1	0	0	0	2	1	0	0	0	0	S	0	1	1	1	1	0	0	1	0	2	1	24	
23	1	0	1	1	2	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	0	2	1	24	
24	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	
25	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	
26	1	1	1	1	1	1	1	S1	S1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	22	
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	24	
28	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	0	1	1	1	1	1	0	1	1	24	
HOURLY MAX	12	11	11	7	10	9	6	4	3	5	3	3	2	3	3	8	3	5	6	3	5	6	4	5					
HOURLY AVG	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					

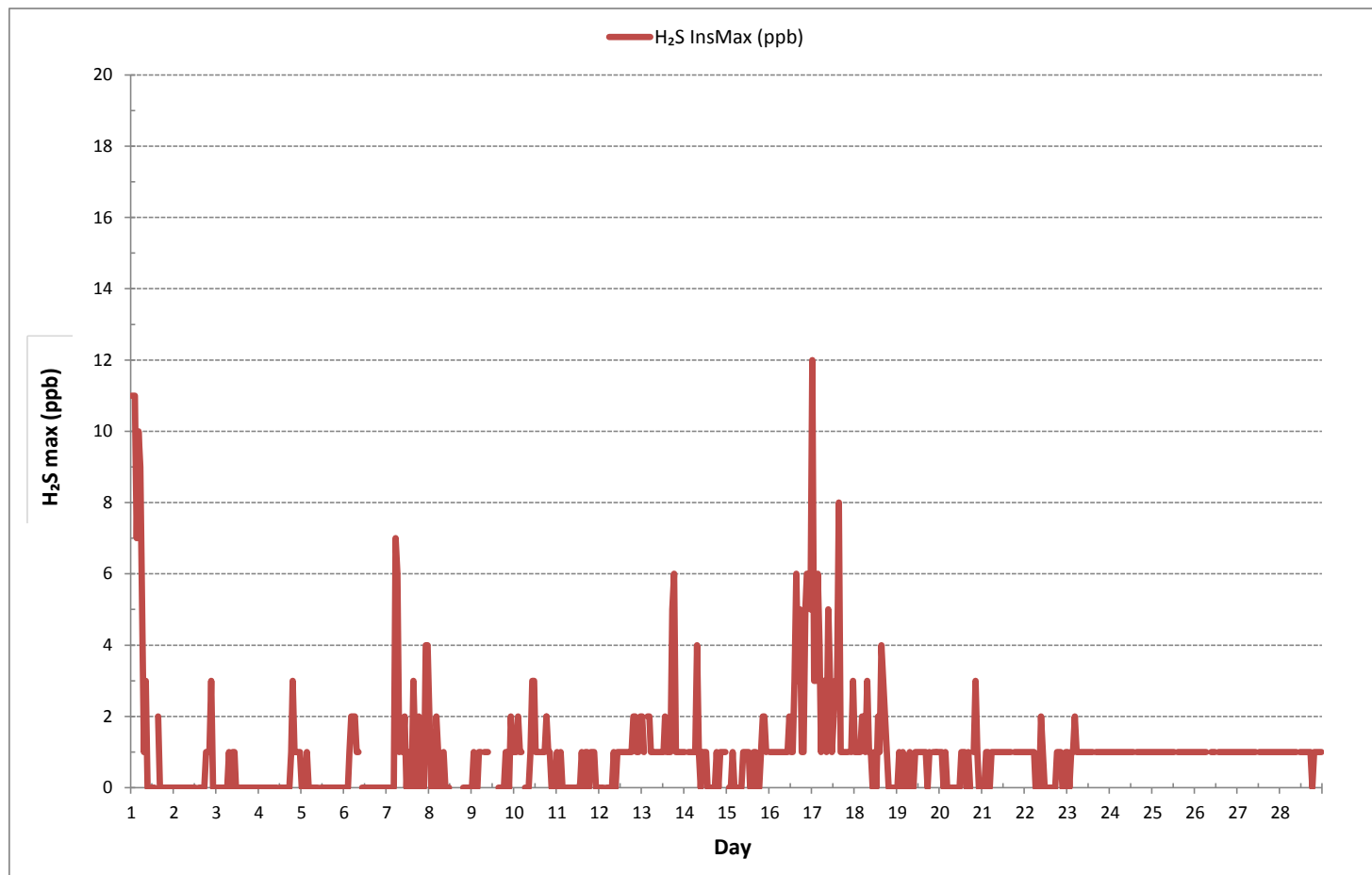
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	401
MAXIMUM INSTANTANEOUS VALUE:	12 ppb @ HOUR 0 ON DAY 17
IZS CALIBRATION TIME:	29 hrs
MONTHLY CALIBRATION TIME:	5 hrs
OPERATIONAL TIME:	663 hrs
STANDARD DEVIATION:	1

HYDROGEN SULPHIDE Instantaneous Maximum (H₂S ppb)





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

TOTAL HYDROCARBONS Instantaneous Maximum (THC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
DAY 1	3.08	3.08	3.06	3.02	3.18	3.06	2.78	2.40	2.60	2.38	2.32	2.29	2.28	2.31	S	2.57	2.84	2.89	2.90	2.38	2.19	2.20	2.20	2.22	2.19	3.18	2.62	24
2	2.23	2.20	2.20	2.20	2.21	2.23	2.20	2.23	2.21	2.20	2.31	2.31	2.17	S	2.14	2.14	2.17	2.17	2.17	2.17	2.16	2.14	2.14	2.17	2.14	2.31	2.19	24
3	2.17	2.17	2.17	2.19	2.17	2.20	2.22	2.35	2.26	2.32	2.28	2.28	S	2.26	2.26	2.17	2.19	2.20	2.20	2.17	2.16	2.14	2.16	2.14	2.14	2.35	2.21	24
4	2.13	2.13	2.16	2.17	2.16	2.21	2.16	2.17	2.28	2.29	2.29	S	2.14	2.08	2.07	2.13	2.10	2.11	2.20	2.23	2.13	2.13	2.17	2.17	2.07	2.29	2.17	24
5	2.13	2.11	2.11	2.26	2.14	2.14	2.17	2.17	2.20	2.20	S	2.19	2.16	2.11	2.13	2.13	2.17	2.19	2.17	2.16	2.26	2.20	2.25	2.31	2.11	2.31	2.18	24
6	2.35	2.35	2.37	2.31	2.31	2.28	2.58	2.54	2.45	S	2.29	2.20	2.72	2.29	2.17	2.17	2.17	2.22	2.21	2.25	2.26	2.32	2.38	2.41	2.17	2.72	2.33	24
7	2.72	2.69	2.54	2.54	2.54	2.81	2.81	2.44	S	2.28	2.32	2.21	2.35	2.29	2.20	2.37	2.25	2.23	2.34	2.20	2.31	2.28	2.47	2.60	2.20	2.81	2.43	24
8	2.41	2.23	2.23	2.25	2.35	2.29	2.28	S	2.32	2.23	2.40	2.23	2.26	2.23	2.25	2.24	2.23	2.32	2.32	2.29	2.25	2.29	2.29	2.29	2.23	2.41	2.28	24
9	2.31	2.35	2.31	2.28	2.26	2.26	S	2.23	2.20	2.19	2.20	2.17	2.17	2.16	C	C	C	C	2.13	2.13	2.13	2.13	2.14	2.13	2.13	2.35	2.20	24
10	2.10	2.10	2.07	2.08	2.07	S	2.07	2.08	2.07	2.07	2.16	2.11	2.04	2.04	1.98	1.98	2.01	1.99	2.07	2.01	2.01	2.01	2.04	2.05	1.98	2.16	2.05	24
11	2.07	2.10	2.10	2.13	S	2.14	2.14	2.16	2.17	2.19	2.20	2.20	2.20	2.20	2.17	2.17	2.23	2.32	2.32	2.29	2.31	2.32	2.35	2.32	2.07	2.35	2.21	24
12	2.32	2.31	2.29	S	2.28	2.29	2.28	2.35	2.41	2.38	2.31	2.28	2.17	2.13	2.13	2.08	2.08	2.07	2.07	2.07	2.07	2.08	2.10	2.11	2.07	2.41	2.20	24
13	2.11	2.19	S	2.29	2.35	2.39	2.26	2.26	2.13	1.92	1.86	1.86	1.86	1.85	2.87	2.25	1.83	1.83	1.83	1.87	1.90	1.85	1.80	1.80	1.80	2.87	2.05	24
14	1.85	S	1.85	1.87	1.92	1.93	1.96	1.98	2.01	2.04	2.04	2.05	2.07	2.08	2.10	2.10	2.10	2.13	2.16	2.19	2.26	2.25	2.26	2.26	1.85	2.26	2.06	24
15	S	2.20	2.17	2.17	2.20	2.21	2.19	2.17	2.19	2.26	2.23	2.26	2.11	2.10	2.10	2.10	2.10	2.11	2.13	2.13	2.15	2.14	2.14	S	2.10	2.26	2.16	24
16	2.17	2.19	2.26	2.34	2.35	2.34	2.23	2.16	2.07	2.04	2.07	2.13	1.95	1.99	2.07	2.20	2.10	2.17	2.01	1.99	2.17	2.18	S	2.16	1.95	2.35	2.15	24
17	2.35	2.13	2.10	2.25	2.14	2.01	2.07	2.13	2.04	2.14	2.07	2.01	2.07	2.04	2.10	2.24	2.01	1.99	1.99	2.01	2.04	S	2.01	2.10	1.99	2.35	2.09	24
18	2.20	2.23	2.08	2.07	2.16	2.17	2.11	3.01	2.10	2.13	2.05	2.05	2.05	2.10	2.10	2.20	2.16	2.14	2.16	2.26	S	2.29	2.14	2.13	2.05	3.01	2.18	24
19	2.35	2.41	2.31	2.31	2.44	2.50	2.47	2.39	2.31	2.23	2.23	2.13	2.10	2.10	2.10	2.10	2.08	2.07	2.05	S	2.11	2.13	2.17	2.17	2.05	2.50	2.23	24
20	2.13	2.04	2.02	2.04	2.05	2.05	2.07	2.08	2.07	2.07	2.08	2.17	2.07	2.10	2.13	2.07	2.10	2.10	S	2.72	2.98	2.28	2.25	2.60	2.02	2.98	2.19	24
21	2.66	2.59	2.51	2.51	2.25	2.21	2.19	2.44	2.43	2.29	2.32	2.35	2.38	2.37	2.39	2.43	2.47	S	2.50	2.48	2.47	2.43	2.32	2.37	2.19	2.66	2.41	24
22	2.41	2.44	2.39	2.25	2.15	2.13	2.10	2.08	2.08	2.45	2.10	2.05	2.17	2.05	2.07	2.05	S	2.07	2.07	2.13	2.17	2.16	2.17	2.19	2.05	2.45	2.17	24
23	2.17	2.23	2.20	2.20	2.29	2.40	2.43	2.35	2.32	2.28	2.20	2.11	2.01	1.98	1.99	S	1.98	1.98	2.01	2.04	2.04	2.07	2.07	2.07	1.98	2.43	2.15	24
24	2.10	2.16	2.20	2.26	2.28	2.21	2.11	2.04	1.98	1.96	1.95	1.92	1.95	1.92	S	1.92	1.95	1.95	1.93	1.93	1.95	2.01	2.02	2.07	1.92	2.28	2.03	24
25	2.08	2.08	2.05	2.04	2.04	2.04	2.02	X	2.08	2.20	2.20	2.26	2.20	S	2.26	2.26	2.20	2.20	2.26	2.26	2.23	2.17	1.98	1.95	1.95	2.26	2.14	23
26	1.95	1.96	1.96	2.01	2.02	1.99	1.95	1.96	1.96	1.96	1.96	1.98	S	1.98	2.01	1.98	1.96	1.98	2.04	2.10	2.11	2.13	2.13	2.20	1.95	2.20	2.01	24
27	2.20	2.20	2.20	2.19	2.17	2.13	2.11	2.10	2.04	2.02	2.04	S	1.93	1.89	1.90	1.90	1.86	1.86	1.87	2.01	1.92	1.90	1.92	1.95	1.86	2.20	2.01	24
28	1.98	2.01	2.17	2.17	2.13	2.07	2.11	2.20	2.23	2.25	S	1.98	1.98	1.96	1.95	1.95	1.96	1.99	1.99	2.01	2.01	2.02	2.04	2.02	1.95	2.25	2.05	24
HOURLY MAX	3.08	3.08	3.06	3.02	3.18	3.06	2.81	3.01	2.60	2.45	2.40	2.35	2.72	2.37	2.87	2.57	2.84	2.89	2.90	2.72	2.98	2.43	2.47	2.60				
HOURLY AVG	2.25	2.25	2.23	2.24	2.24	2.25	2.22	2.25	2.19	2.18	2.17	2.15	2.14	2.10	2.15	2.15	2.13	2.13	2.15	2.17	2.18	2.16	2.15	2.18				

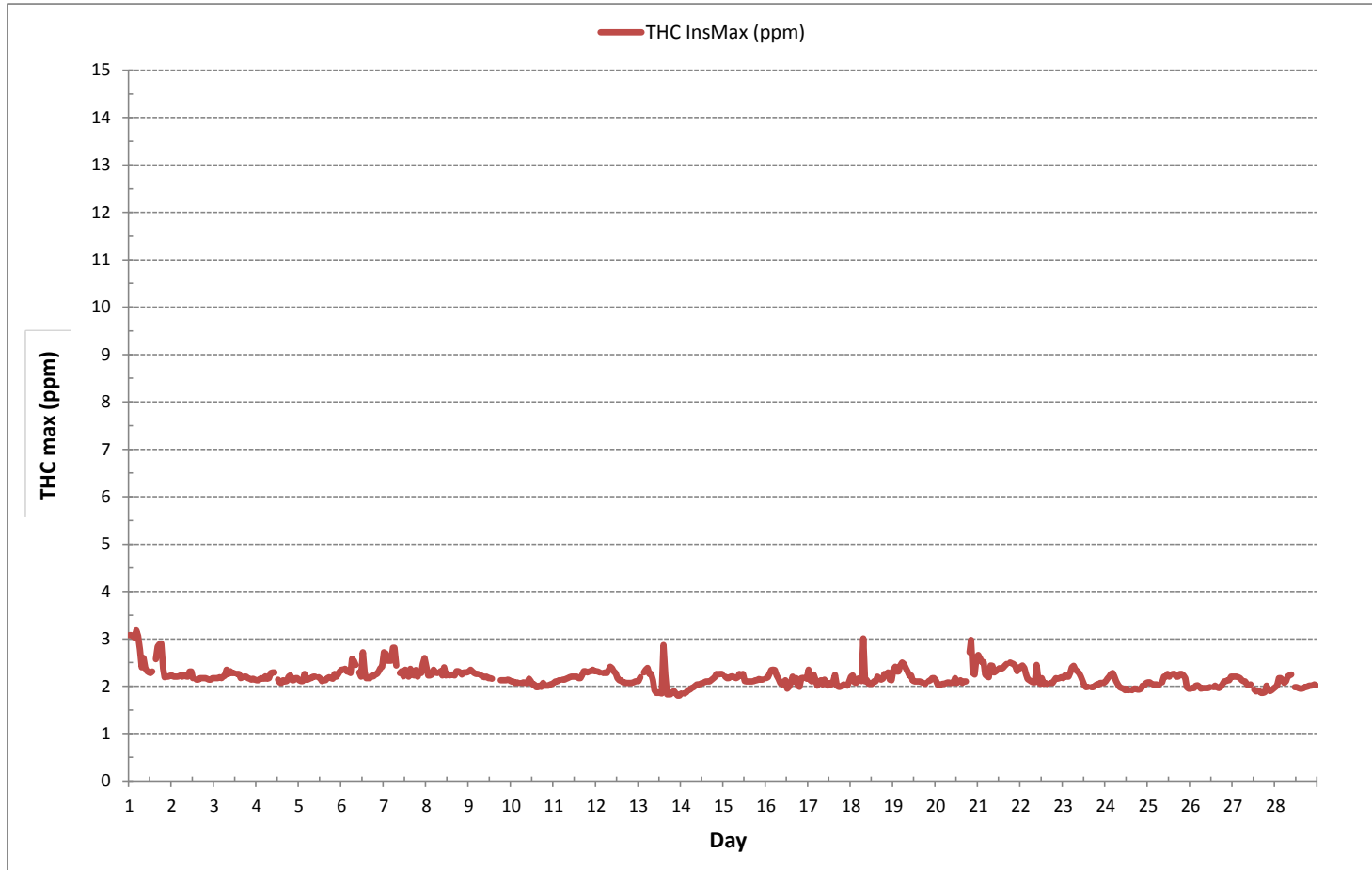
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	638
MAXIMUM INSTANTANEOUS VALUE:	3.18 ppm @ HOUR 4 ON DAY 1
IZS CALIBRATION TIME:	29 hrs
MONTHLY CALIBRATION TIME:	4 hrs
STANDARD DEVIATION:	0.19
OPERATIONAL TIME:	671 hrs

TOTAL HYDROCARBONS Instantaneous Maximum (THC ppm)





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

OXIDES OF NITROGEN Instantaneous Maximum (NO_x ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	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	7	7	6	4	4	11	20	18	12	14	7	6	S	15	20	20	20	9	2	3	4	4	4	2	20	10	24
2	3	2	3	3	4	6	6	6	6	6	11	10	5	S	3	3	4	4	4	4	4	3	2	1	1	1	11	4	24
3	1	1	1	1	2	2	6	13	10	23	28	24	S	8	5	20	2	2	2	2	2	2	1	1	1	1	28	7	24
4	1	3	4	3	6	5	4	7	10	27	9	S	41	9	10	21	16	16	20	20	29	19	26	20	1	41	14	24	
5	14	13	1	16	14	4	14	13	15	10	S	9	2	22	2	6	13	9	3	3	8	7	7	8	1	22	9	24	
6	8	8	16	26	34	27	32	33	25	S	29	32	26	17	26	3	18	6	6	6	6	8	10	9	3	34	18	24	
7	10	9	11	10	6	16	49	66	S	23	30	8	13	16	17	27	18	10	14	2	8	5	11	4	2	66	17	24	
8	4	3	2	2	3	7	10	S	41	3	5	5	C	C	C	C	C	C	C	C	C	2	2	2	3	2	41	6	24
9	4	6	3	3	2	2	S	26	19	3	2	3	2	3	4	5	2	31	2	4	3	3	4	3	2	31	6	24	
10	3	2	3	2	3	S	3	36	4	18	39	19	11	15	2	2	9	1	20	16	2	1	1	1	1	39	9	24	
11	2	0	0	1	S	2	4	3	3	5	14	16	39	13	12	10	5	6	7	6	7	7	7	6	0	39	8	24	
12	6	6	6	S	7	8	10	11	9	9	8	7	6	14	7	8	8	8	7	9	10	11	10	10	6	14	8	24	
13	11	13	S	19	18	17	18	32	22	9	4	3	2	4	47	6	10	4	4	5	3	2	1	3	1	47	11	24	
14	17	S	2	2	2	2	2	6	2	1	1	3	3	2	3	4	3	3	8	10	13	6	5	3	1	17	4	24	
15	S	3	2	4	6	4	7	11	12	10	9	8	6	28	5	7	7	4	7	10	11	10	7	S	2	28	8	24	
16	9	11	12	13	13	17	10	34	24	13	14	16	2	8	23	40	24	48	11	15	17	21	S	37	2	48	19	24	
17	33	27	27	16	18	9	20	27	14	18	45	23	18	18	18	29	17	4	2	2	22	S	2	4	2	45	18	24	
18	3	3	3	16	17	18	7	33	9	42	3	2	2	4	7	9	22	25	12	7	S	4	3	3	2	42	11	24	
19	11	12	10	7	11	11	17	66	10	8	7	21	6	6	6	4	4	3	3	S	7	7	6	16	3	66	11	24	
20	27	2	2	2	1	1	2	2	1	2	2	2	11	6	13	6	8	3	S	11	11	4	4	3	1	27	5	24	
21	4	10	14	13	7	9	35	17	24	13	10	31	9	9	22	9	54	S	13	10	10	10	10	13	4	54	15	24	
22	14	14	18	19	9	4	11	9	37	35	14	3	2	21	3	17	S	3	10	4	9	4	3	4	2	37	12	24	
23	4	7	6	4	6	7	8	10	8	7	7	6	29	15	4	S	6	5	6	5	6	8	8	10	4	29	8	24	
24	10	12	16	13	13	13	9	11	17	21	2	3	9	6	S	10	13	13	5	7	3	3	3	3	2	21	9	24	
25	6	4	4	5	7	4	3	3	6	8	7	17	16	S	7	10	13	13	7	9	9	11	3	3	3	17	8	24	
26	3	4	4	9	15	12	9	8	8	4	7	7	S	5	3	2	2	7	3	4	4	6	6	6	2	15	6	24	
27	7	6	6	6	6	6	8	12	7	31	7	S	10	6	4	4	3	6	2	14	14	4	2	2	2	31	8	24	
28	3	5	9	8	5	5	44	32	17	32	S	9	7	9	10	7	3	2	2	2	2	3	2	2	2	2	44	10	24
HOURLY MAX	33	27	27	26	34	27	49	66	41	42	45	32	41	28	47	40	54	48	20	20	29	21	26	37					
HOURLY AVG	8	7	7	9	9	8	13	20	14	15	13	12	11	11	11	11	12	10	8	8	8	6	6	7					

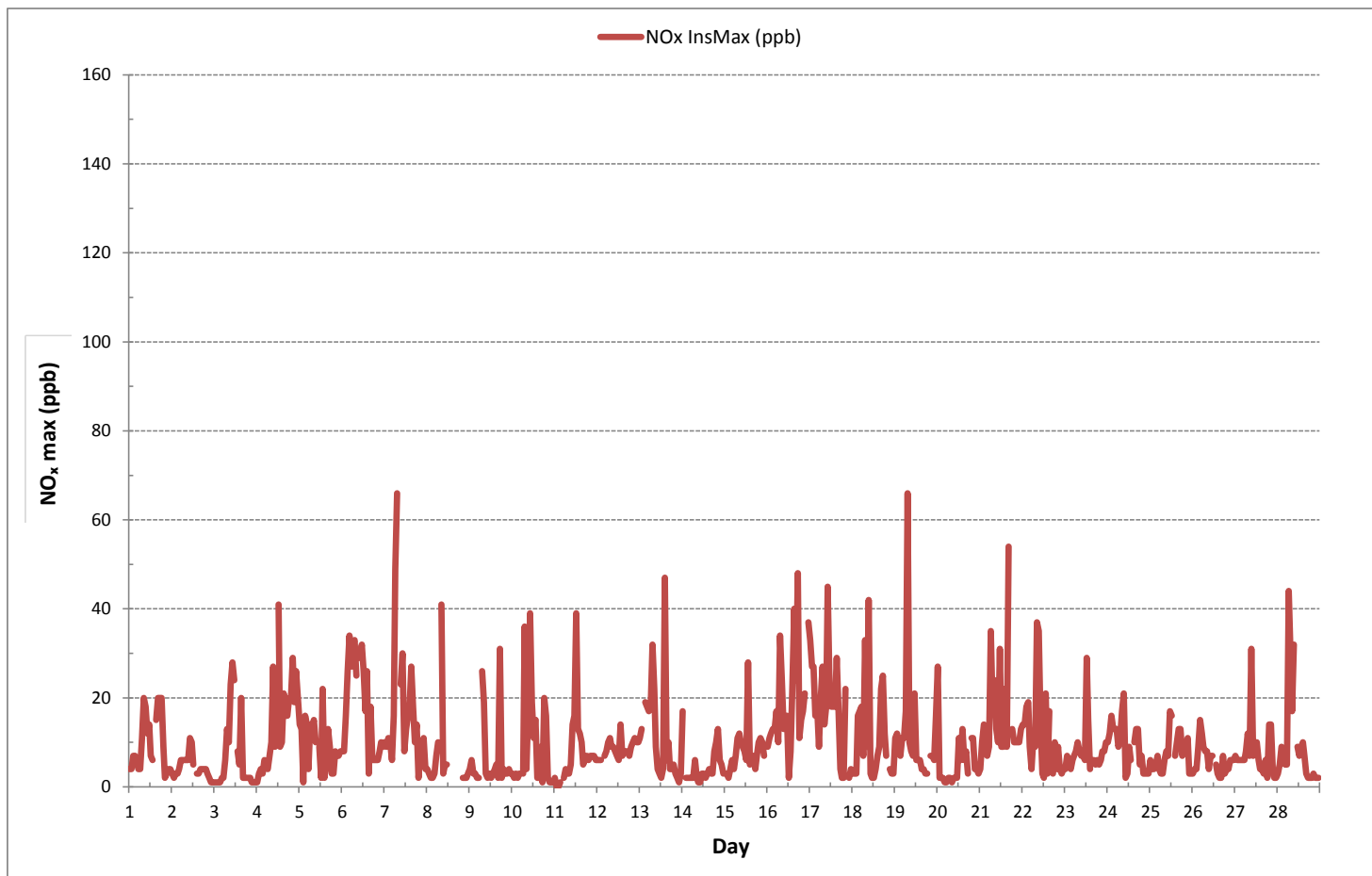
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	633
MAXIMUM INSTANTANEOUS VALUE:	66 ppb @ HOUR 7 ON DAY 7
IZS CALIBRATION TIME:	29 hrs
MONTHLY CALIBRATION TIME:	8 hrs
OPERATIONAL TIME:	672 hrs
STANDARD DEVIATION:	9

OXIDES OF NITROGEN Instantaneous Maximum (NO_x ppb)





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

NITRIC OXIDE Instantaneous Maximum (NO ppb)

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

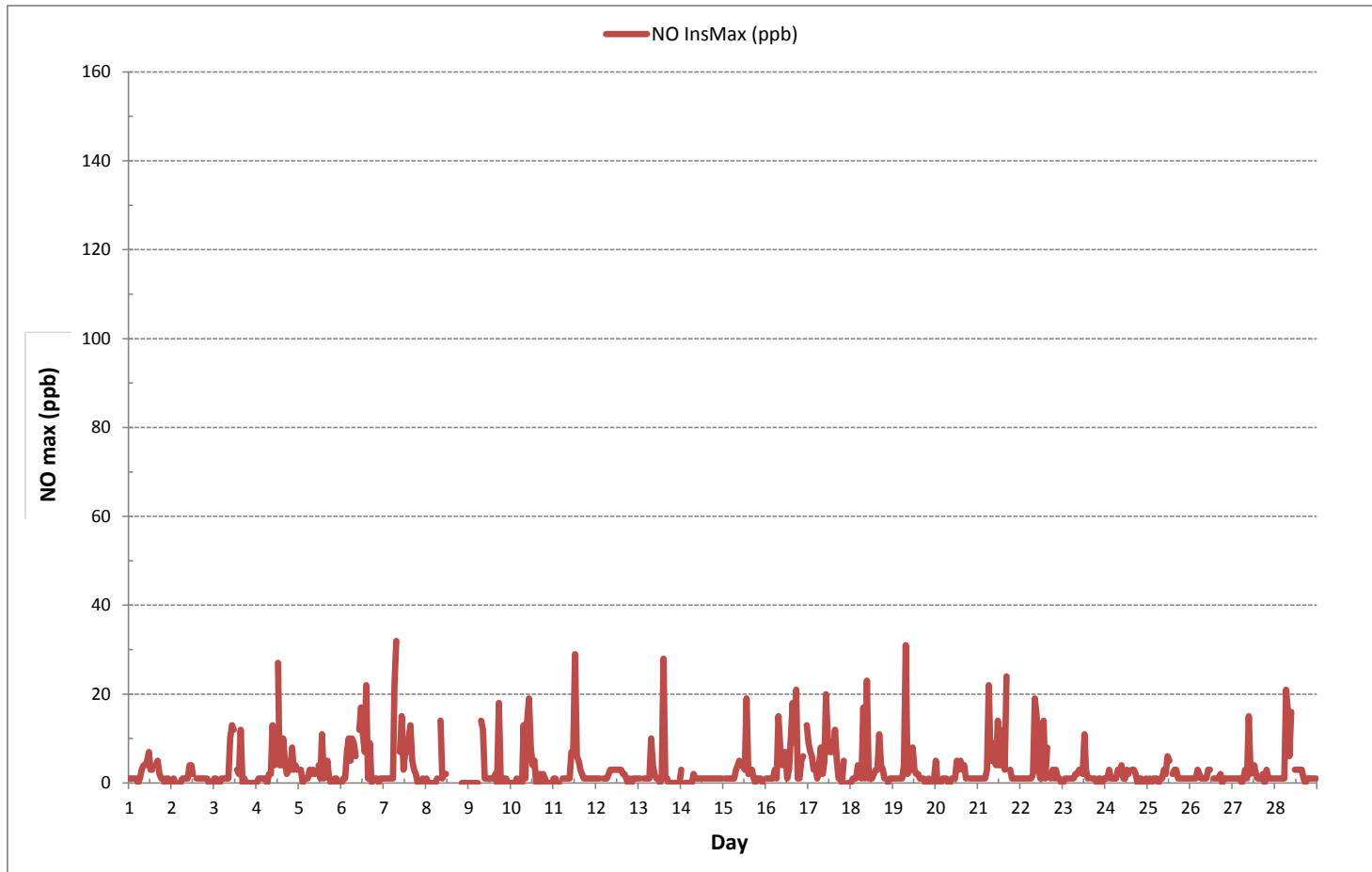
STATUS FLAG CODES

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:	524
MAXIMUM INSTANTANEOUS VALUE:	32 ppb @ HOUR 7 ON DAY 7
IZS CALIBRATION TIME:	29 hrs
MONTHLY CALIBRATION TIME:	8 hrs
STANDARD DEVIATION:	5
OPERATIONAL TIME:	672 hrs

NITRIC OXIDE Instantaneous Maximum (NO ppb)





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

NITROGEN DIOXIDE Instantaneous Maximum (NO₂ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	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	7	7	5	4	4	9	15	14	8	7	4	4	S	11	18	20	20	8	2	3	4	3	2	20	8	24
2	3	2	3	3	4	5	6	6	5	4	7	7	3	S	3	2	3	3	4	4	3	2	1	1	1	7	4	24
3	1	1	1	1	1	2	6	11	9	14	15	12	S	5	3	9	1	1	2	1	1	1	1	1	1	15	4	24
4	1	3	4	3	5	4	4	7	10	17	6	S	15	5	6	12	11	14	18	17	21	16	21	17	1	21	10	24
5	12	10	1	15	14	4	11	11	12	8	S	5	2	12	1	4	8	8	4	3	8	7	7	8	1	15	8	24
6	8	8	15	21	24	22	24	25	20	S	17	16	15	11	8	1	10	6	4	6	5	8	10	9	1	25	13	24
7	10	8	11	10	5	14	28	37	S	16	16	5	8	10	8	16	14	10	12	3	8	5	11	4	3	37	12	24
8	3	3	2	1	3	7	8	S	28	3	3	3	C	C	C	C	C	C	C	C	1	1	2	3	1	28	5	24
9	4	6	3	2	2	2	S	15	11	2	1	2	1	2	3	3	2	20	3	4	2	3	4	4	1	20	4	24
10	3	2	3	2	4	S	3	25	4	12	20	11	7	10	1	1	7	1	18	15	1	1	1	1	1	25	7	24
11	1	0	0	1	S	2	4	3	3	4	8	8	10	7	7	7	4	6	7	6	7	7	6	0	10	5	24	
12	5	6	5	S	7	7	9	10	7	7	5	4	4	13	5	6	7	7	7	8	10	11	10	10	4	13	7	24
13	11	12	S	18	18	17	17	27	18	7	4	3	2	4	21	5	8	4	4	5	3	3	1	3	1	27	9	24
14	15	S	1	1	1	2	1	3	1	1	1	1	1	1	3	3	3	7	10	13	6	5	3	1	15	4	24	
15	S	3	2	3	5	4	7	10	9	7	5	5	3	10	3	5	5	4	7	9	11	10	7	S	2	11	6	24
16	9	11	11	12	13	15	10	20	15	10	9	9	1	5	14	22	15	31	11	14	13	16	S	26	1	31	14	24
17	24	21	21	14	15	8	15	22	12	13	25	14	11	11	12	19	12	4	1	2	17	S	1	4	1	25	13	24
18	3	3	3	16	15	17	7	20	8	22	3	1	1	3	4	7	13	21	9	6	S	4	3	3	1	22	8	24
19	10	11	10	7	10	11	13	39	8	6	5	15	4	4	4	3	4	3	3	S	7	7	6	15	3	39	9	24
20	21	1	1	2	1	0	1	1	1	1	1	1	5	4	7	3	4	2	S	10	11	4	4	3	0	21	4	24
21	4	10	13	13	7	6	16	14	15	8	6	17	5	5	10	7	34	S	11	9	10	10	10	12	4	34	11	24
22	14	14	18	18	8	4	11	8	20	20	10	3	1	7	2	9	S	2	9	4	7	3	3	4	1	20	9	24
23	4	7	6	4	6	7	7	8	7	6	5	4	17	12	3	S	5	4	5	5	6	8	8	10	3	17	7	24
24	10	11	14	13	13	13	8	9	15	18	2	3	5	4	S	7	10	11	5	7	3	3	3	4	2	18	8	24
25	5	4	4	4	7	3	3	3	5	6	5	11	11	S	5	7	11	11	7	8	8	11	3	3	3	11	6	24
26	3	4	4	8	13	10	7	7	4	4	4	S	3	2	1	2	5	3	4	4	6	5	6	1	13	5	24	
27	6	5	5	5	5	5	7	10	6	17	6	S	7	4	3	4	2	4	1	11	13	4	1	2	1	17	6	24
28	3	5	9	7	5	5	26	18	11	18	S	6	5	7	7	4	3	1	1	2	2	1	1	1	1	26	6	24
HOURLY MAX	24	21	21	21	24	22	28	39	28	22	25	17	17	13	21	22	34	31	20	17	21	16	21	26				
HOURLY AVG	7	6	7	8	8	7	10	14	10	10	8	7	6	7	6	7	8	8	7	7	7	6	5	6				

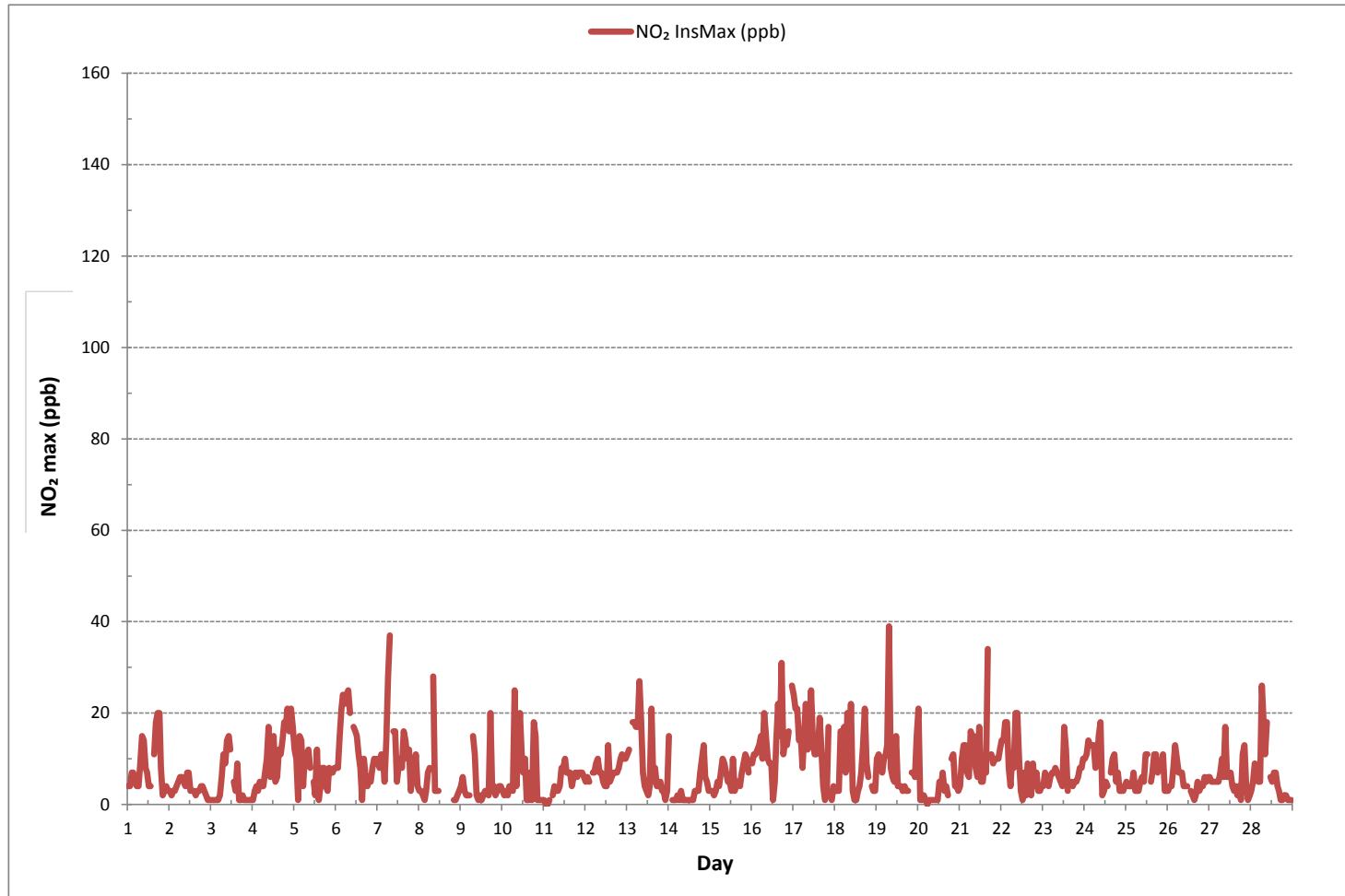
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	632
MAXIMUM INSTANTANEOUS VALUE:	39 ppb @ HOUR 7 ON DAY 19
	VAR-VARIOUS
IZS CALIBRATION TIME:	29 hrs
MONTHLY CALIBRATION TIME:	8 hrs
STANDARD DEVIATION:	6
OPERATIONAL TIME:	672 hrs

NITROGEN DIOXIDE Instantaneous Maximum (NO₂ ppb)





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

WIND SPEED Instantaneous Maximum (WS kph)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	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	2.6	4.1	4.1	3.1	3.9	4.8	3.8	6.9	4.9	10.6	10.3	14.2	11.2	13.0	11.4	10.3	8.6	9.0	9.7	7.9	11.5	12.8	7.9	2.2	14.2	7.9	24				
2	9.4	11.8	7.7	10.3	13.2	12.4	10.4	11.9	13.6	15.3	9.7	10.3	13.9	13.8	15.1	13.0	9.8	5.7	9.8	10.6	11.5	10.9	9.2	8.8	5.7	15.3	11.2	24				
3	9.5	5.2	7.5	5.3	5.4	6.5	7.0	8.8	10.6	19.8	19.9	16.0	25.2	26.0	20.4	26.7	23.8	19.4	15.6	17.6	27.9	24.4	25.9	21.6	5.2	27.9	16.5	24				
4	21.3	25.3	24.0	18.8	19.7	16.9	15.2	21.2	12.8	14.4	17.0	19.1	16.7	19.5	13.5	15.8	15.5	14.1	13.5	16.5	17.6	13.3	16.9	16.7	12.8	25.3	17.3	24				
5	27.1	22.8	18.4	13.6	12.3	7.2	10.2	8.9	8.2	12.5	15.2	28.2	23.1	17.4	18.9	21.6	11.8	11.9	9.7	14.5	12.6	17.3	11.5	9.0	7.2	28.2	15.2	24				
6	8.0	7.3	8.0	15.9	15.0	17.9	19.5	13.5	15.9	18.7	24.8	26.8	25.4	22.8	23.8	25.4	21.4	10.5	12.5	10.3	9.3	10.3	9.1	7.0	7.0	26.8	15.8	24				
7	6.9	5.4	6.4	7.9	9.8	10.9	9.3	12.7	14.0	15.6	22.7	14.8	19.2	18.5	22.5	20.3	17.0	9.4	12.9	7.2	5.3	6.7	6.0	5.3	5.3	22.7	11.9	24				
8	8.1	7.9	11.8	9.6	4.1	6.9	15.1	15.6	14.5	12.0	16.3	16.6	15.8	19.8	20.5	18.2	18.8	15.7	15.5	16.9	11.7	16.3	14.3	4.1	20.5	14.2	24					
9	16.2	14.7	14.3	13.8	16.5	14.4	14.6	18.0	25.2	29.4	29.8	23.9	23.2	25.6	26.7	24.3	20.8	15.9	8.1	8.6	10.3	10.3	10.2	9.9	8.1	29.8	17.7	24				
10	16.0	15.9	16.5	15.5	17.6	16.6	20.3	19.0	21.3	30.2	25.8	30.6	30.8	32.3	30.5	32.6	36.3	26.9	13.6	22.1	36.7	32.8	31.8	21.4	13.6	36.7	24.7	24				
11	15.9	25.4	18.9	14.0	13.8	9.7	10.5	12.7	10.5	12.3	12.1	10.6	10.6	14.5	16.4	12.8	15.0	15.5	15.1	14.5	12.3	14.3	13.5	17.1	9.7	25.4	14.1	24				
12	14.8	16.6	16.8	18.3	14.3	16.4	16.8	14.9	23.2	25.0	26.8	29.9	27.8	24.5	25.1	25.3	26.5	27.1	24.6	19.8	22.5	23.8	19.4	18.3	14.3	29.9	21.6	24				
13	14.7	16.1	18.3	11.2	17.3	18.5	16.6	15.3	13.9	16.9	16.4	24.8	20.6	20.6	23.7	18.7	9.9	15.9	12.6	12.4	14.0	18.6	23.7	16.4	9.9	24.8	17.0	24				
14	17.9	15.2	37.1	41.5	46.9	45.6	42.4	39.6	40.2	35.3	26.8	25.9	28.0	29.6	22.7	21.3	19.3	10.4	8.6	9.1	3.7	5.6	9.6	9.9	3.7	46.9	24.7	24				
15	9.3	12.6	11.3	12.1	10.3	9.9	10.7	13.1	12.0	13.9	18.7	25.6	22.2	21.8	25.1	24.8	25.4	20.5	21.6	20.6	17.6	10.5	9.6	9.9	9.3	25.6	16.2	24				
16	12.0	9.9	9.8	8.0	7.9	12.4	11.4	9.5	10.1	14.7	13.5	14.4	17.9	17.7	24.5	29.9	26.4	21.3	17.9	26.8	30.1	31.6	32.7	25.3	7.9	32.7	18.2	24				
17	27.7	24.5	36.7	24.4	24.0	26.7	26.1	21.5	24.9	25.0	29.3	24.1	25.7	25.0	25.8	22.1	17.6	19.9	16.0	21.2	20.7	22.5	20.9	5.8	5.8	36.7	23.3	24				
18	4.5	6.4	12.4	14.4	11.8	9.6	7.2	9.7	9.7	21.1	17.1	22.3	22.3	21.4	23.5	23.0	16.8	17.2	5.8	5.3	7.1	7.4	8.1	10.4	4.5	23.5	13.1	24				
19	16.8	13.9	8.8	12.4	14.6	11.8	12.3	15.0	15.2	19.9	23.6	18.8	19.9	24.0	25.1	23.4	23.7	16.4	12.5	10.2	15.4	10.9	12.1	11.6	8.8	25.1	16.2	24				
20	16.4	25.8	20.5	24.7	31.9	22.7	26.8	20.8	20.4	16.9	20.3	15.6	13.5	14.7	19.2	15.5	15.6	11.9	5.8	5.2	4.5	6.0	4.0	7.3	4.0	31.9	16.1	24				
21	6.2	9.5	11.9	13.4	14.0	12.6	13.3	6.5	4.4	11.4	15.3	18.5	21.4	24.1	23.7	21.6	17.7	15.7	12.3	14.9	17.7	15.1	12.3	12.8	4.4	24.1	14.4	24				
22	14.0	8.9	14.7	13.6	15.4	15.1	16.7	17.2	20.0	20.6	21.1	22.6	21.3	25.1	23.5	21.9	18.6	14.2	10.0	16.7	14.7	14.4	14.6	15.5	8.9	25.1	17.1	24				
23	14.7	16.9	16.6	16.2	18.9	20.7	24.0	23.8	22.9	30.0	32.9	38.1	40.8	33.3	33.8	31.1	22.0	22.7	17.9	14.3	12.8	11.5	13.5	11.6	11.5	40.8	22.5	24				
24	15.0	11.3	11.9	9.3	12.8	7.7	7.2	8.6	17.0	26.1	23.9	27.5	31.8	24.8	22.1	22.3	27.1	18.0	6.8	4.0	4.1	3.9	6.1	12.1	3.9	31.8	15.1	24				
25	15.2	15.9	19.4	21.5	14.4	9.0	6.7	6.3	9.0	9.5	11.5	12.5	14.8	16.7	14.4	10.2	10.4	8.6	9.2	5.3	6.5	17.0	23.3	25.7	5.3	25.7	13.0	24				
26	22.5	25.6	16.8	16.9	18.3	17.4	19.2	18.0	14.0	15.3	12.8	15.2	17.0	19.9	23.5	24.7	25.8	16.1	20.0	20.8	17.8	13.6	19.3	13.9	12.8	25.8	18.5	24				
27	20.6	20.6	23.5	19.8	17.5	19.8	24.0	23.9	19.6	16.9	16.5	21.1	22.9	30.5	36.2	26.5	33.5	25.9	35.0	26.0	9.3	13.7	11.5	9.6	9.3	36.2	21.9	24				
28	10.3	9.5	11.7	9.0	11.8	14.1	9.3	12.9	11.5	12.0	13.8	11.9	16.0	14.6	15.6	15.0	16.0	11.1	6.0	7.8	5.2	7.0	8.7	9.6	5.2	16.0	11.3	24				
HOURLY MAX	27.7	25.8	37.1	41.5	46.9	45.6	42.4	39.6	40.2	35.3	32.9	38.1	40.8	33.3	36.2	32.6	36.3	27.1	35.0	26.8	36.7	32.8	32.7	25.7								
HOURLY AVG	14.0	14.4	15.6	14.8	15.5	14.8	15.3	15.1	15.8	18.4	19.4	20.6	21.5	21.8	22.4	21.5	19.7	16.1	13.5	13.8	14.0	14.2	14.7	13.0								

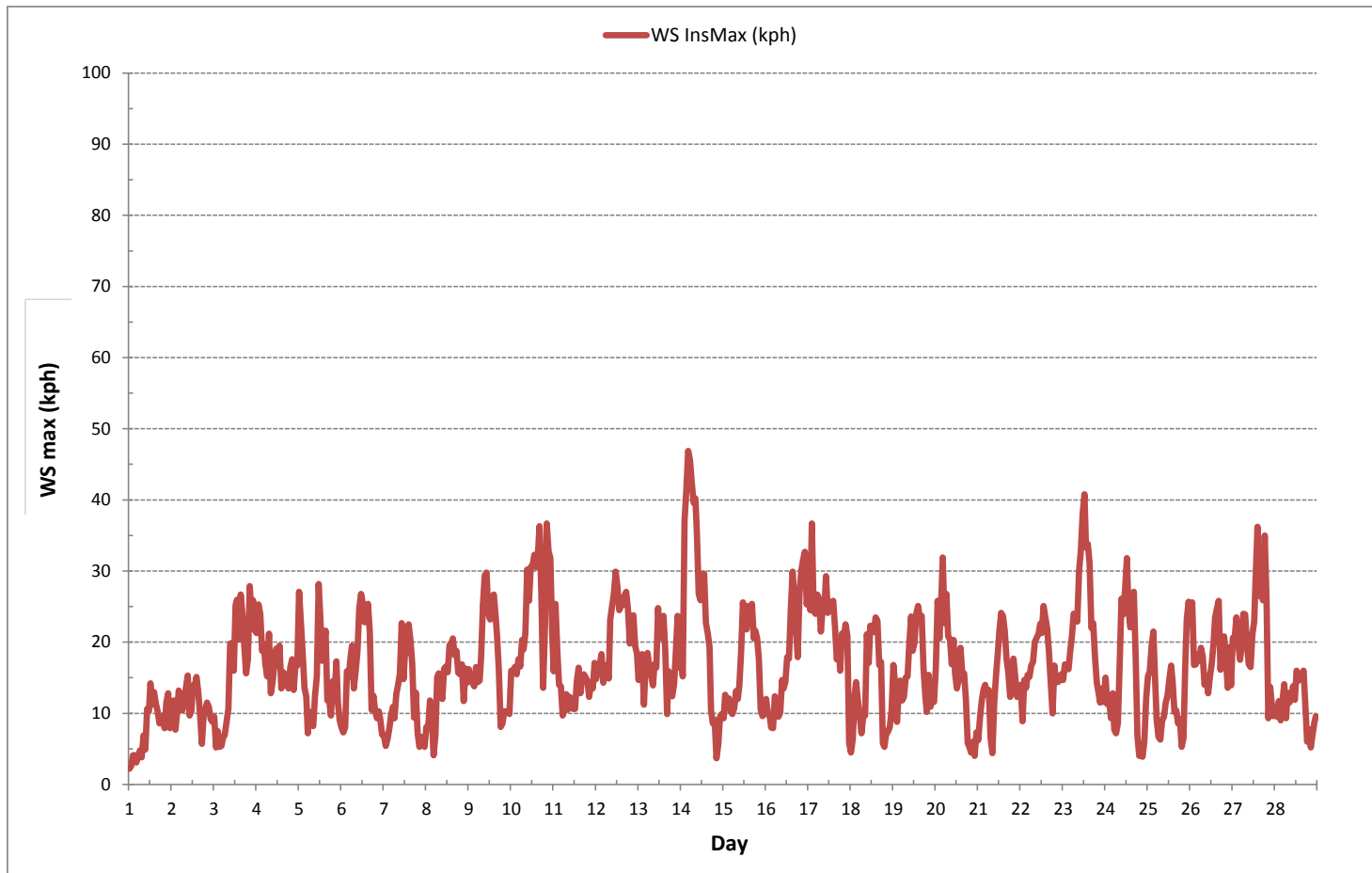
STATUS FLAG CODES

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

MONTHLY SUMMARY

MAXIMUM INSTANTANEOUS VALUE:	46.9	kph	@ HOUR	4	ON DAY	14	
OPERATIONAL TIME:						672	hrs

WIND SPEED Instantaneous Maximum (WS kph)



***APPENDIX IV
REPORT CERTIFICATION FORM***

Report Certification Form

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

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



Signature of the External Person Certifying the Report

29-Mar-2018

Report Issued Date (dd-mon-yyyy)

APPENDIX V
DATA VALIDATION CERTIFICATION FORM



Validation Certificate Form

Client: <u>Lakeland Industry & Community Association</u>	Project #: <u>2833-2018-02-30-C</u>
Site: <u>Maskwa Continuous Monitoring Station</u>	Contact: <u>Mike Bisaga</u>

Level 0 Preliminary Verification	<u>Maram Ghaleb</u>	Date <u>March 12, 2017</u>
Level 1 Primary Validation	<u>Maram Ghaleb</u>	Date <u>March 12, 2017</u>
Level 2 Final Validation	<u>Maram Ghaleb</u>	Date <u>March 28, 2017</u>
Level 3 Independent Data Review	<u>CSA-Lmhq</u>	Date <u>March 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.

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

April 10, 2018

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

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

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

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

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

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

The Maxxam supplied Thermo 51i, s/n: 925436893, analyzer was removed and replaced with the LICA owned Thermo 51C, s/n: 436609739, on February 15.

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

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

Respectfully,



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

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

Michael Bisaga
Technical Program Manager
Lakeland Industry & Community Association
780-266-7068
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 #: 2833-2018-02-31-C

February 2018

Prepared for:

LAKELAND INDUSTRY & COMMUNITY ASSOCIATION

5107 50 ST.
BONNYVILLE, ALBERTA
T9N 2J7

Attention: MIKE BISAGA

DATE: **March 30, 2018**

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

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

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

THC: Sixteen hours of downtime were recorded this month.

- Two hours of downtime were incurred on February 12, as a result of an additional zero-span check performed as a quality check, following a span gas replacement.
- Maxxam's Thermo 51i (s/n: 925436893) analyzer was removed and replaced with LICA's Thermo 51C (s/n: 436609739) on February 15. One hour of downtime was recorded due to this event.
- Twelve hours of downtime were recorded on February 16 due to a negative drift of the analyzer and the additional quality check performed to address it.
- An additional zero-span check was performed on February 24, as a quality check, to assess analyzer response following a brief power outage.

NO_x/NO/NO₂: Between February 25 and February 28, twenty hours of downtime were incurred due to the corrective actions performed to address an instability in span response.

The summary of results is presented on the following pages.

Any deviations or modifications made to the sampling or analytical methods are outlined in Section 1.0, Discussion. On this basis, Maxxam Analytics is issuing this completed report to Lakeland Industry & Community Association, St. Lina Continuous Monitoring Station.

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

Monthly Continuous Data Summary

Lakeland Industry & Community Association						MAXIMUM VALUES							OPERATIONAL TIME (%)
St. Lina Continuous Monitoring Station						1-HOUR					24-HOUR		
PARAMETER	OBJECTIVES		EXCEEDANCES		MONTHLY AVERAGE	READING	DAY	HOUR	WIND SPEED (kph)	WIND DIRECTION (sector)	READING	DAY	
	1-hr	24-hr	1-hr	24-hr									
SO ₂ (ppb)	172	48	0	0	0	3	12	20	17.5	SW	2	12	100.0
H ₂ S (ppb)	10	3	0	0	0	1	5	21	6.9	SW	0	1	100.0
THC (ppm)	-	-	-	-	2.23	2.67	1	5	4.4	SSW	2.48	12	97.6
NO ₂ (ppb)	159	-	0	-	2	19	13	2	15.9	WSW	6	12	97.0
NO (ppb)	-	-	-	-	0	2	19	19	13.7	SW	1	21	97.0
NO _x (ppb)	-	-	-	-	2	19	13	2	15.9	WSW	6	12	97.0
O ₃ (ppb)	82	-	0	-	37.4	45.5	27	15	18.7	WSW	41.0	17	100.0
PM _{2.5} (µg/m ³)	80	30	0	0	3	19	6	2	9.0	WSW	6	21	100.0
RELATIVE HUMIDITY (%)	-	-	-	-	63	88	13	17	7.0	WSW	70	13	100.0
BAROMETRIC PRESSURE (millibar)	-	-	-	-	925	941	8	11	7.5	WNW	939	8	100.0
AMBIENT TEMPERATURE (°C)	-	-	-	-	-15.2	3.1	27	14	24.3	WSW	-2.7	13	100.0
PRECIPITATION (mm)	-	-	-	-	0.0	1.3	6	10	13.6	NW	0.1	6	100.0
VECTOR WS (kph)	-	-	-	-	6.9	26.4	27	13	-	WSW	16.9	12	100.0
VECTOR WD (sec)	-	-	-	-	262 (W)	-	-	-	-	-	-	-	100.0

Exceedance Summary Report

SO₂ 1-Hour Exceedances

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

SO₂ 24-Hour Exceedances

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

H₂S 1-Hour Exceedances

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

H₂S 24-Hour Exceedances

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

NO₂ 1-Hour Exceedances

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

PM_{2.5} 1-Hour Exceedances

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

PM_{2.5} 24-Hour Exceedances

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

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).

The sample inlet filter for all continuous air analyzers are replaced before the calibration begins. The sample manifold is cleaned during the site visit each month.

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

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

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

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

The AMD requires each instrument and accompanying data recording system to be operational 90% of the time, at a minimum, for each monthly monitoring period.

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

Data contained in this monthly report has undergone the verification and validation based on the requirements of the AMD Chapter 6: Ambient Data Quality (December, 2016). The descriptions of the data verification and validation process can be found in Section 5 of this report. Instantaneous data, where applicable, is provided for reference purposes and has not undergone zero correction. The minimum and maximum statistics are highlighted in the data table and are for reference only. The highlighted cells are based on the software's interpretation of the exact position of the minimum or maximum value. The visual presentation of these statistics may not be the obvious choice in a data range due to rounding, truncating or analyzer specifications.

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

SULPHUR DIOXIDE (SO₂)

- Operational time for the monitoring period was 100%.
- The Ozone and SO₂ span programs are designed to run concurrently. An additional quality check was recorded on the SO₂ channel on February 13 at hours 17:00-18:00, due to activities on the Ozone channel.
- The routine monthly calibration was performed on February 14.

HYDROGEN SULPHIDE (H₂S)

- Operational time for the monitoring period was 100%.
- The routine monthly calibration was performed on February 13.

TOTAL HYDROCARBONS (THC)

- Operational time for the monitoring period was 97.6 %, equivalent to 16 hours of downtime.
- The analyzer spanned outside the lower acceptance limit on February 12 at 04:00. Upon investigation, it was discovered that the span gas was running low. This prompted an immediate site visit where a new span gas cylinder was installed, followed by a zero-span check at hours 12:00-13:00. Two hours of downtime were incurred as a result of the additional quality check.
- Following a successful shut-down calibration on February 15, Maxxam's Thermo 51i (s/n: 925436893) analyzer was removed and replaced with LICA's Thermo 51C (s/n: 436609739). A successful installation calibration was completed afterwards. One hour of downtime was recorded due to this event.
- The analyzer started to exhibit a negative drift on February 16 at hour 04:00. This prompted an immediate repeat calibration; the results met AMD requirements. No issues could be identified. Data collected on February 16 at hours 04:00 – 11:00 were impacted by the drift and were therefore discarded. Twelve hours of downtime were recorded due to this issue and the additional quality check performed to address it.
- A brief power outage impacting a few minutes of data occurred on February 23 at 16:00. An additional zero-span check was performed on February 24, at hour 08:00, as a quality check to assess the impact of the power outage. The result was within acceptance limits. One hour of downtime was recorded due to the additional quality check.
- On February 25, at hour 07:00, one hour of maximum instantaneous data was invalidated as the analyzer yielded an off-scan error at 07:17.

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

- Operational time for the monitoring period was 97.0 %, equivalent to 20 hours of downtime.
- The routine monthly calibration was performed on February 14.
- The analyzer spanned outside the lower acceptance limit on February 24. Two subsequent repeat zero-span checks performed on February 25 were within acceptance limits but showed a wide drift from the previous valid response. This prompted an immediate site visit where a successful as-found response check and analyzer diagnostics were carried out. As the span response did not stabilize following the February 25 station activities, the expected span value was not updated. Another repeat zero-span check was performed on February 26 yielding results outside the lower acceptance limit. The LICA-owned analyzer (API 200E, s/n: 594) was, therefore, removed for maintenance following a successful shut-down calibration on February 28. The installation calibration for the Maxxam-supplied replacement analyzer (API 200A, s/n: 1746) was completed on March 1. As the as-found response check and the shut-down calibration met AMD requirements, no data was discarded. Twenty hours of downtime were, however, incurred due to the corrective actions performed to address this span instability issue.

OZONE (O₃)

- Operational time for the monitoring period was 100%.
- The routine monthly calibration was performed on February 13.
- The Ozone and SO₂ span programs are designed to run concurrently. An additional quality check was recorded on the Ozone channel on February 14 at hour 17:00 due to activities on the SO₂ channel.
- One instance of maximum instantaneous data was invalidated on February 20 at hour 10:00, due to an anomalous spike. Three minutes of data considered anomalous (10:41-10:43) were discarded and the hourly average was re-calculated.

PARTICULATE MATTER < 2.5 MICRONS (PM_{2.5})

- Operational time for the monitoring period was 100%.
- The routine quarterly audit was performed on February 26.

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

- Operational time for the monitoring period was 100%
- One instance of maximum instantaneous data was invalidated on February 1 at hour 02:00, due to an anomalous spike. Seven minutes of data considered anomalous (02:12-02:14, 02:19-02:22) were discarded and the hourly average was re-calculated.
- One instance of maximum instantaneous data was discarded on February 23 at hour 16:00 due to a brief power outage.
- Wind data is reported as vector wind speed and vector wind direction. Wind direction is defined as the direction from which the wind is blowing and is measured in degrees from true north.

RELATIVE HUMIDITY (RH)

- Operational time for the monitoring period was 100%.
- The relative humidity (hygrometer) sensor was audited on February 13. The results were satisfactory.

BAROMETRIC PRESSURE (BP)

- Operational time for the monitoring period was 100%.
- The barometric pressure sensor was audited on February 13. The results were satisfactory.

PRECIPITATION (PRECIP)

- Operational time for the monitoring period was 100%.
- The precipitation sensor was audited on February 13. The results were satisfactory.

AMBIENT TEMPERATURE (AmbTPX)

- Operational time for the monitoring period was 100%.
- The ambient temperature sensor was audited on February 13. The results were satisfactory.

2.0 Project Personnel

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

3.0 Plant Monthly Required AMD Summary

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

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

4.0 Calculations and Results

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

5.0 Methods and Procedures

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

Maxxam AIR SOP-00014: Measurement of Particulate Concentration Using the THERMO SHARP
Maxxam AIR SOP-00209: Ambient Sulphur Monitoring
Maxxam AIR SOP-00212: Ambient O₃ Monitoring
Maxxam AIR SOP-00213: Ambient NO/NO₂/NO_x Monitoring
Maxxam AIR SOP-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 51i and 51C FID Analyzer
Oxides of Nitrogen - API 200E Chemiluminescent Analyzer
Ozone - Thermo 49i Photometric Analyzer
Particulate Matter (PM_{2.5}) - Thermo SHARP 5030 Unit
Wind System - Met One Unit
Relative Humidity - Met One Unit
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

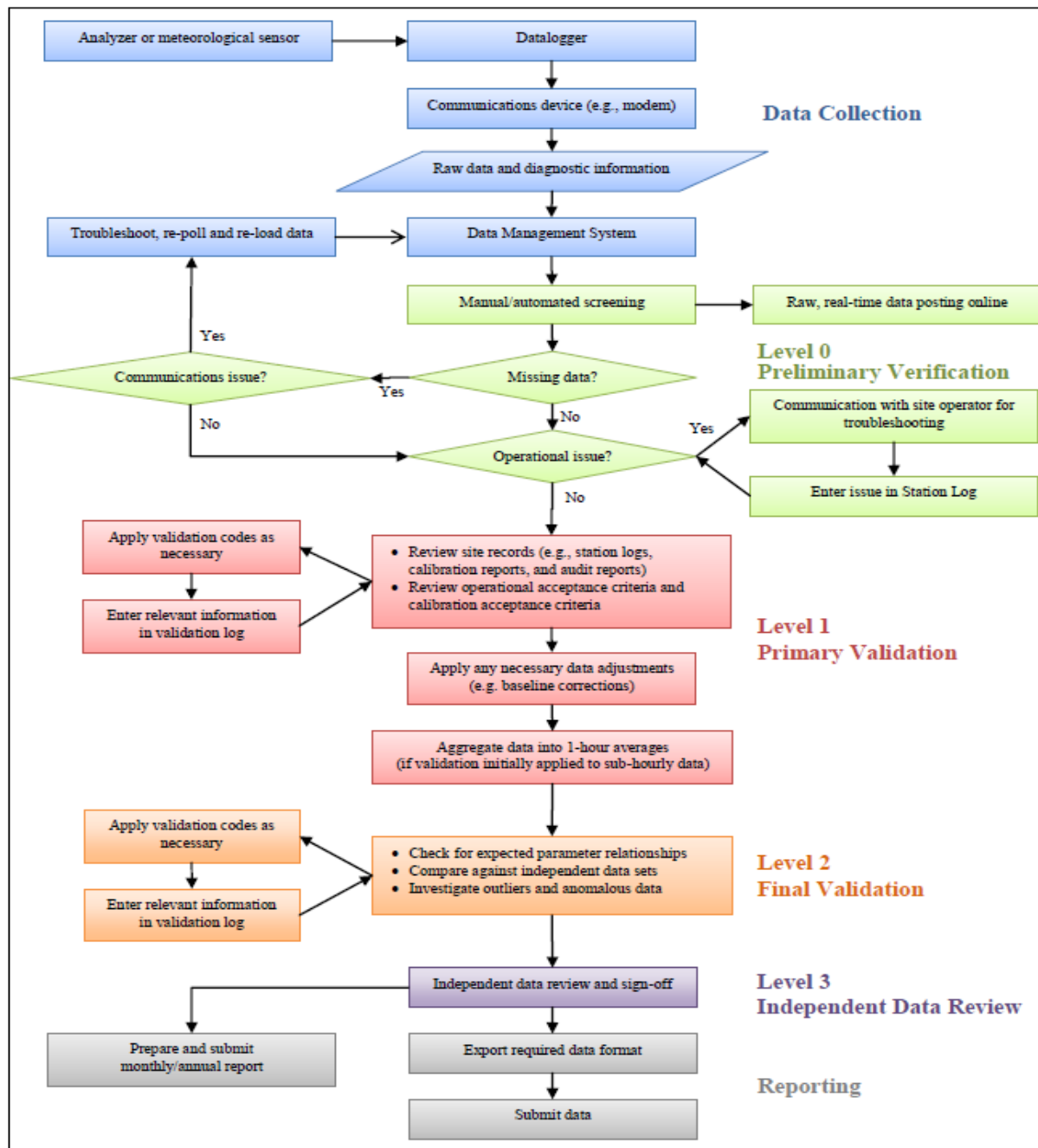
The purpose of Level 2 validation is to verify that there are no inconsistencies among related data, or among regional data measured at nearby sites.

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	1	1	1	S	1	2	1	1	0	0	0	0	0	0	2	0	24
2	0	0	0	0	0	0	1	1	1	1	1	2	2	2	S	2	2	2	2	2	2	2	1	1	0	2	1	1	24
3	1	1	1	1	1	1	1	0	1	1	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
4	0	0	0	0	1	1	0	0	0	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	0	S	0	0	0	0	0	1	2	1	2	2	2	2	0	2	2	0	24
6	2	1	2	2	2	1	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	24
7	1	1	1	1	1	0	0	0	0	S	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	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	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
10	0	0	0	0	0	0	S	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	1	1	0	1	1	0	24
11	0	0	0	0	0	S	0	0	0	0	0	1	1	0	1	1	0	1	0	0	0	1	1	2	0	2	2	0	24
12	2	2	2	1	S	1	1	1	0	1	1	1	1	1	2	2	2	2	2	2	2	3	3	3	0	3	2	2	24
13	3	3	3	S	3	2	2	1	0	0	0	0	0	0	0	1	Q	Q	0	0	0	0	0	0	0	0	3	1	24
14	0	0	S	0	0	0	0	0	1	1	1	1	1	C	C	C	C	C	0	0	0	0	0	0	0	0	1	0	24
15	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	3	1	1	1	0	0	0	0	0	3	0	24
16	S	2	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	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	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	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	24
19	0	0	0	0	0	1	0	0	0	1	1	1	1	0	0	0	0	0	0	0	S	0	0	0	0	0	1	0	24
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	24
21	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	S	0	1	1	1	0	0	0	1	1	24
22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	1	0	1	0	1	0	1	24
23	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	2	2	2	0	2	2	1	24
24	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	S	0	0	0	0	0	0	0	0	0	0	2	1	24
25	0	1	0	0	1	1	1	1	1	0	1	0	1	S	1	1	1	0	0	0	0	0	0	0	0	0	1	0	24
26	0	1	1	1	1	0	0	0	0	0	0	0	0	S	0	1	1	1	1	1	1	1	1	1	0	1	1	1	24
27	1	1	1	1	1	1	1	1	1	1	2	2	S	0	1	0	0	0	0	0	0	0	0	0	0	0	2	1	24
28	0	0	1	1	1	1	1	1	1	1	1	S	0	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	24
HOURLY MAX	3	3	3	2	3	2	2	1	1	1	2	2	2	2	2	2	2	3	2	2	2	3	3	3	3				
HOURLY AVG	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	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

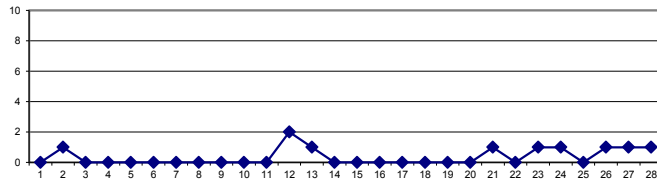
OBJECTIVE LIMIT:

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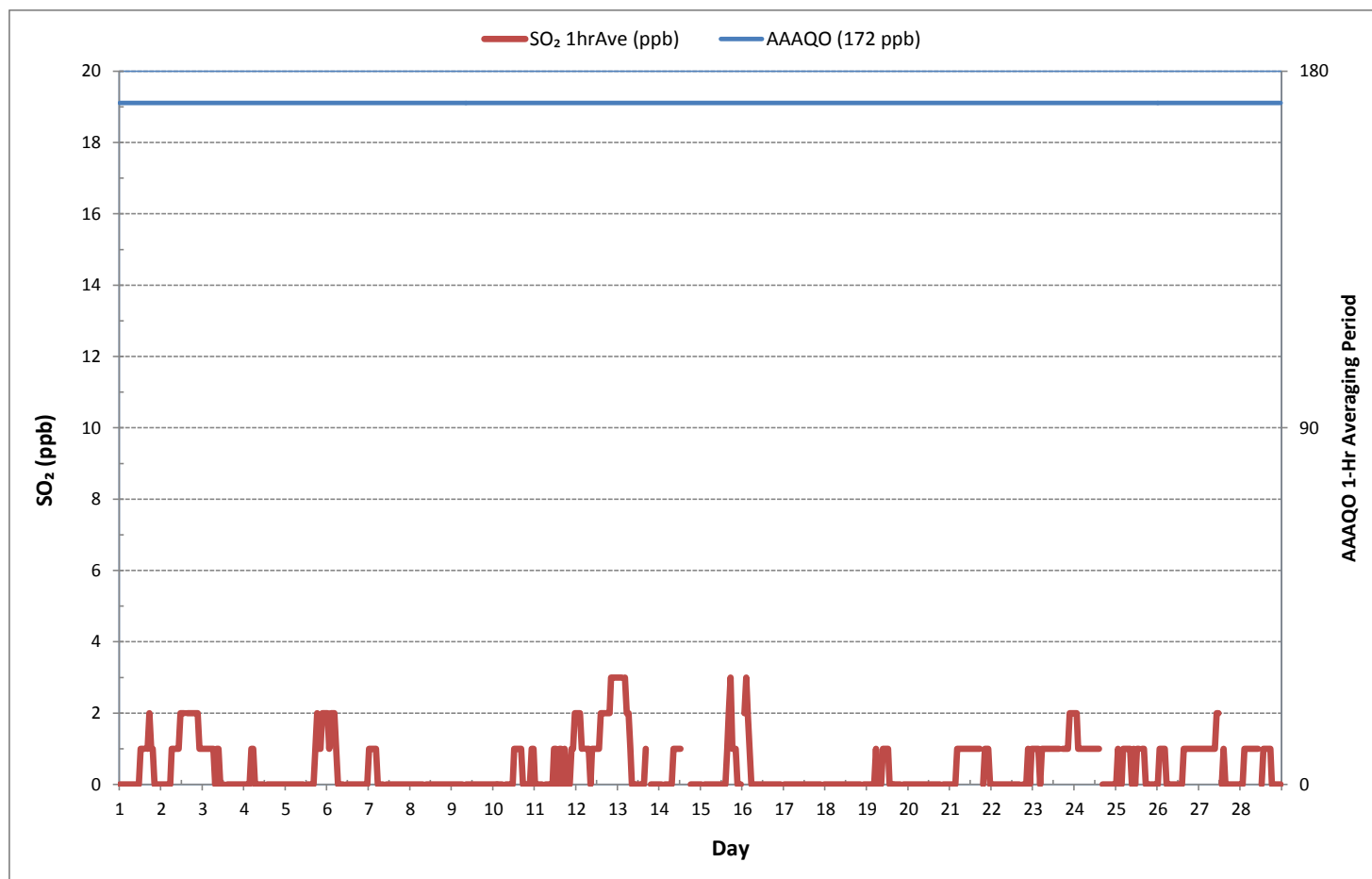
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0				
NUMBER OF 24-HR EXCEEDANCES:	0				
NUMBER OF NON-ZERO READINGS:	225				
MINIMUM 1-HR AVERAGE:	0 ppb @ HOUR	0	ON DAY	1	
MAXIMUM 1-HR AVERAGE:	3 ppb @ HOUR	20	ON DAY	12	
MAXIMUM 24-HR AVERAGE:	2 ppb		ON DAY	12	
IZS CALIBRATION TIME:	29	hrs	OPERATIONAL TIME:	672	hrs
MONTHLY CALIBRATION TIME:	5	hrs	AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	1		MONTHLY AVERAGE:	0	ppb

24 HR AVERAGES February 2018



SULPHUR DIOXIDE Hourly Averages (SO₂ ppb)



Wind: LICA ST. LINA
 Poll.: LICA ST. LINA-SO2[ppb]
 Monthly: 18/02
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

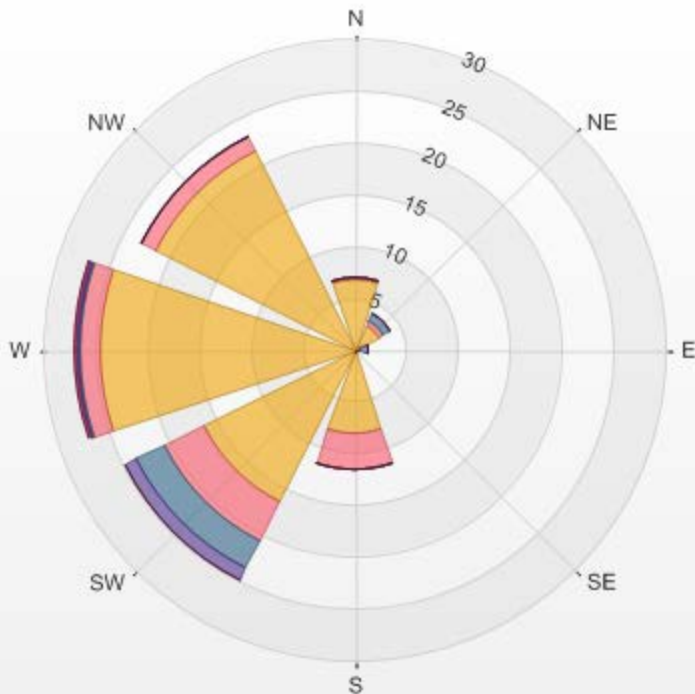
Calm: 0.47%

Calm Avg: 0.34 [ppb]

Direction	0.0-0.8	0.8-1.6	1.6-2.4	2.4-3.2	3.2-4.0	>4.0	Total
N	6.9	0.2	0.0	0.0	0.0	0.0	7.1
NE	2.7	0.5	0.8	0.0	0.0	0.0	3.9
E	0.0	0.6	0.8	0.0	0.0	0.0	1.4
SE	0.5	0.0	0.0	0.0	0.0	0.0	0.5
S	8.2	3.3	0.2	0.0	0.0	0.0	11.6
SW	16.4	4.3	3.0	1.3	0.0	0.0	24.9
W	24.7	1.9	0.2	0.2	0.2	0.0	27.1
NW	21.5	1.4	0.2	0.0	0.0	0.0	23.1
Summary	80.8	12.1	5.1	1.4	0.2	0.0	100.0

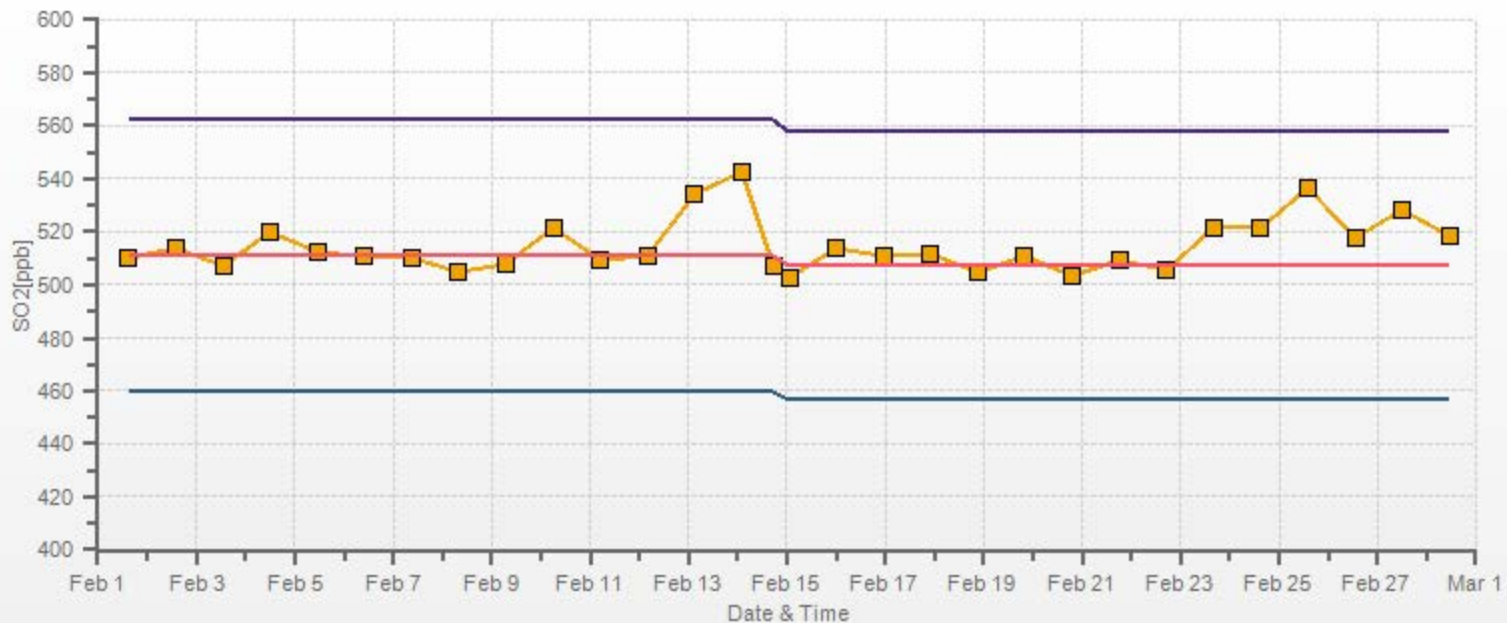
% Icon	Classes (ppb)	81	 0.0-0.8	12	 0.8-1.6	5	 1.6-2.4	1	 2.4-3.2	0	 3.2-4.0	0	 >4.0
--------	---------------	----	---	----	---	---	---	---	---	---	---	---	--

LICA ST. LINA Poll.: LICA ST. LINA-SO₂[ppb] 2018/02/01 00:00 - 2018/02/28 23:00 Calm: 0.47% Calm Poll Avg: 0.34[ppb]



SO2[ppb] Calibration: LICA ST. LINA Monthly: 18/02 Type: Span

Span Meas Span Ref Span Low Span High



HYDROGEN SULPHIDE



HYDROGEN SULPHIDE Hourly Averages (H₂S ppb)

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

STATUS FLAG CODES

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

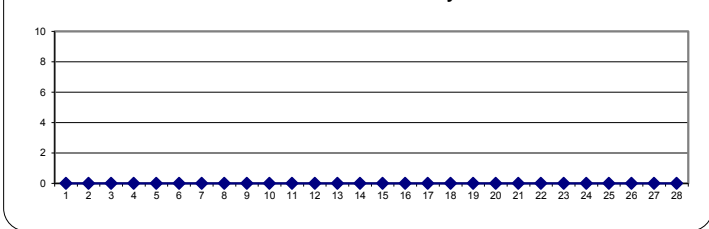
OBJECTIVE LIMIT:

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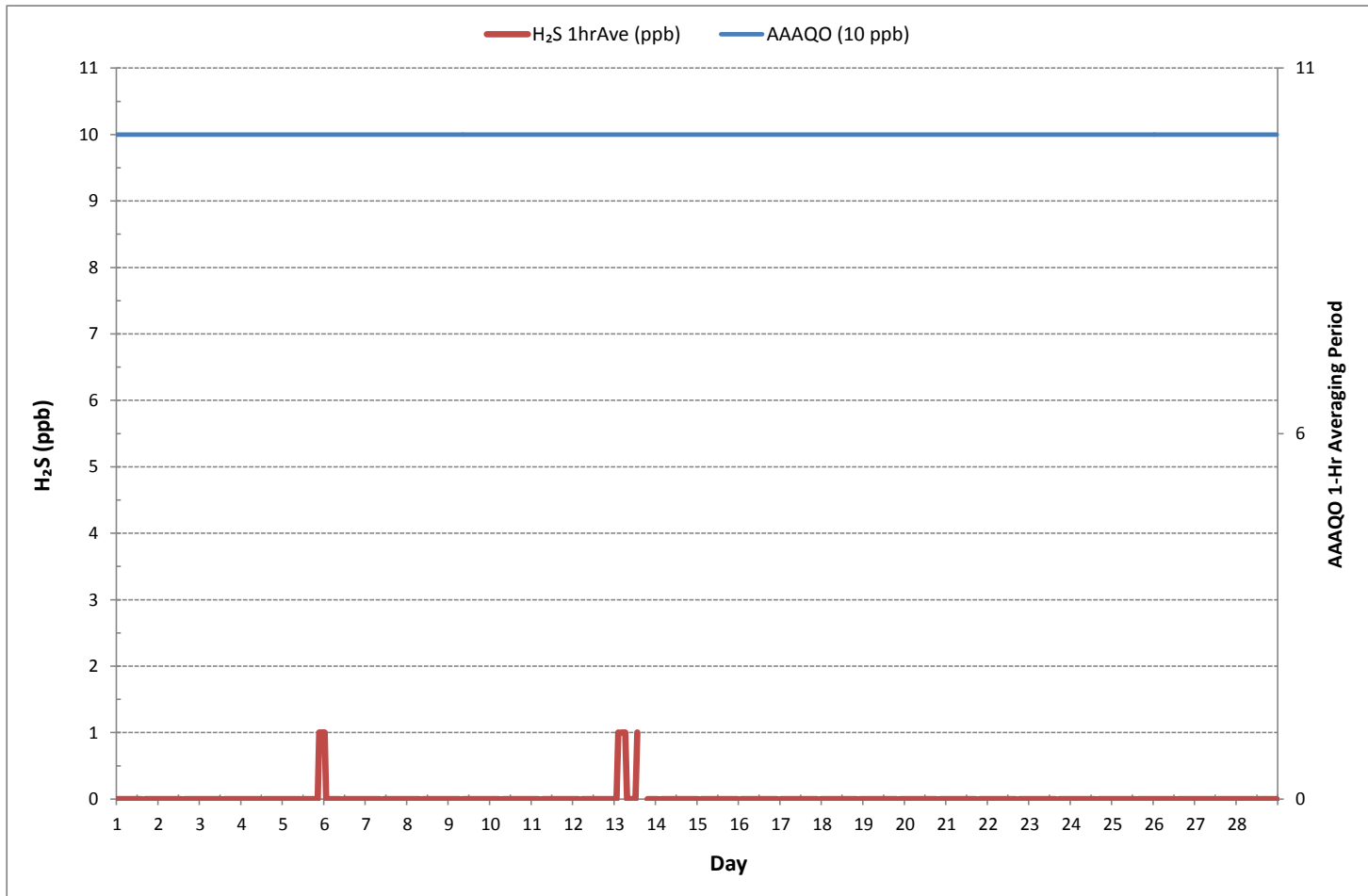
MONTHLY SUMMARY





NUMBER OF 1-HR EXCEEDANCES:	0				
NUMBER OF 24-HR EXCEEDANCES:	0				
NUMBER OF NON-ZERO READINGS:	9				
MINIMUM 1-HR AVERAGE:	0 ppb @ HOUR	0	ON DAY	1	
MAXIMUM 1-HR AVERAGE:	1 ppb @ HOUR	21	ON DAY	5	
MAXIMUM 24-HR AVERAGE:	0 ppb		ON DAY	1	
IZS CALIBRATION TIME:	29	hrs	OPERATIONAL TIME:	672	hrs
MONTHLY CALIBRATION TIME:	5	hrs	AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	0		MONTHLY AVERAGE:	0	ppb

24 HR AVERAGES February 2018

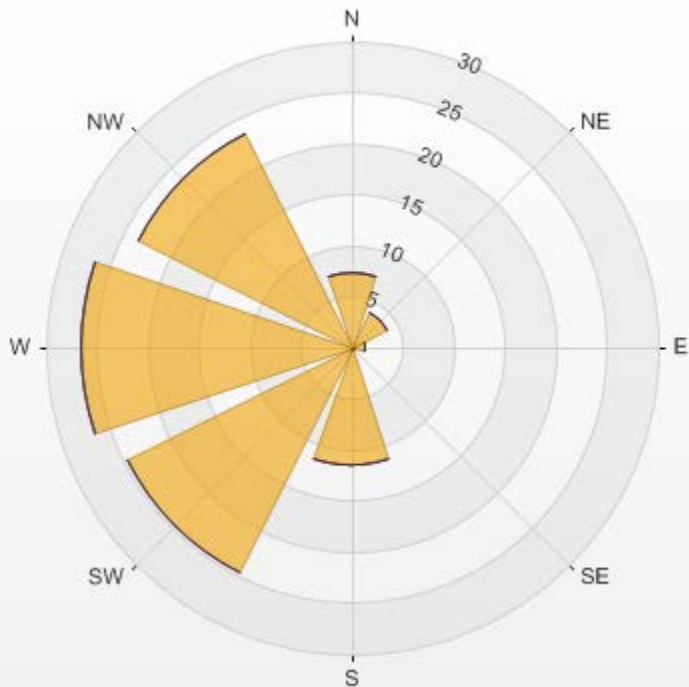


HYDROGEN SULPHIDE Hourly Averages (H₂S ppb)



% Icon	Classes (ppb)	100		0.0-0.7	0		0.7-1.3	0		1.3-2.0	0		>2.0
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LICA ST. LINA Poll.: LICA ST. LINA-H2S[ppb] 2018/02/01 00:00 - 2018/02/28 23:00 Calm: 0.47% Calm Poll Avg: 0.04[ppb]



H2S[ppb] Calibration: LICA ST. LINA Monthly: 18/02 Type: Span

Span Meas Span Ref Span Low Span High



TOTAL HYDROCARBON



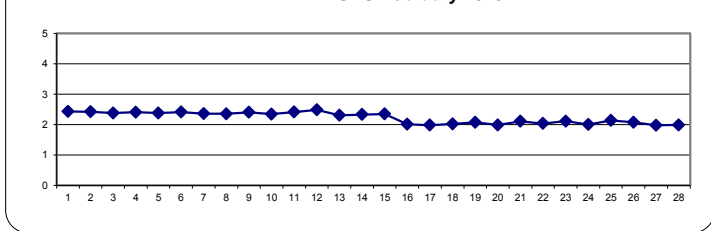
TOTAL HYDROCARBONS Hourly Averages (THC ppm)

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	2.36	2.40	2.35	2.34	2.66	2.67	2.48	2.49	2.49	2.48	2.47	2.44	2.41	2.39	2.41	S	2.39	2.38	2.36	2.38	2.37	2.36	2.37	2.41	2.34	2.67	2.43	24
2	2.40	2.38	2.39	2.38	2.38	2.47	2.55	2.53	2.49	2.45	2.44	2.41	2.41	2.41	S	2.43	2.41	2.43	2.39	2.37	2.38	2.41	2.36	2.34	2.34	2.55	2.42	24
3	2.37	2.36	2.40	2.45	2.44	2.45	2.41	2.40	2.38	2.40	2.38	2.37	2.35	S	2.34	2.32	2.32	2.33	2.36	2.35	2.36	2.34	2.36	2.35	2.32	2.45	2.37	24
4	2.33	2.36	2.40	2.41	2.42	2.45	2.47	2.49	2.49	2.46	2.45	2.42	S	2.39	2.43	2.42	2.45	2.43	2.34	2.36	2.36	2.34	2.35	2.31	2.31	2.49	2.41	24
5	2.33	2.33	2.33	2.32	2.33	2.33	2.34	2.34	2.35	2.34	2.34	S	2.34	2.33	2.34	2.33	2.37	2.34	2.41	2.45	2.51	2.50	2.50	2.51	2.32	2.51	2.37	24
6	2.50	2.53	2.56	2.54	2.50	2.46	2.42	2.38	2.38	2.38	S	2.36	2.37	2.35	2.35	2.36	2.34	2.36	2.38	2.41	2.39	2.40	2.41	2.41	2.34	2.56	2.41	24
7	2.43	2.40	2.38	2.38	2.39	2.36	2.36	2.36	S	2.37	2.35	2.33	2.32	2.33	2.31	2.33	2.33	2.34	2.33	2.34	2.33	2.34	2.35	2.35	2.31	2.43	2.35	24
8	2.33	2.34	2.33	2.33	2.34	2.42	2.40	2.36	S	2.39	2.38	2.37	2.34	2.34	2.33	2.36	2.35	2.35	2.35	2.37	2.35	2.33	2.33	2.33	2.42	2.35	2.42	24
9	2.36	2.39	2.37	2.39	2.40	2.38	2.40	S	2.40	2.40	2.41	2.39	2.37	2.37	2.37	2.40	2.39	2.40	2.44	2.43	2.44	2.45	2.46	2.45	2.36	2.46	2.40	24
10	2.46	2.42	2.44	2.42	2.42	2.41	S	2.36	2.37	2.38	2.35	2.32	2.32	2.30	2.30	2.29	2.28	2.28	2.28	2.29	2.31	2.29	2.31	2.30	2.28	2.46	2.34	24
11	2.32	2.33	2.34	2.35	2.36	S	2.37	2.40	2.41	2.39	2.41	2.37	2.38	2.38	2.40	2.40	2.42	2.44	2.46	2.47	2.49	2.53	2.52	2.50	2.32	2.53	2.41	24
12	2.50	2.54	2.55	2.56	S	2.55	2.55	2.53	2.50	2.49	2.46	2.46	S1	S1	2.43	2.43	2.42	2.44	2.46	2.44	2.45	2.47	2.45	2.44	2.42	2.56	2.48	22
13	2.44	2.50	2.56	S	2.59	2.56	2.54	2.36	2.28	2.31	2.30	2.29	2.31	2.25	2.21	2.20	2.17	2.14	2.13	2.15	2.17	2.17	2.15	2.16	2.13	2.59	2.30	24
14	2.19	2.17	S	2.17	2.21	2.24	2.25	2.26	2.28	2.29	2.31	2.32	2.32	2.34	2.36	2.41	2.43	2.44	2.43	2.43	2.44	2.44	2.41	2.42	2.17	2.44	2.33	24
15	2.43	S	2.44	2.47	2.43	2.47	2.47	2.47	2.48	2.47	2.48	C	C	C	Y	C	C	C	2.21	2.18	2.16	2.14	2.16	2.17	2.14	2.48	2.35	23
16	S	2.04	2.02	1.99	X	X	X	X	X	X	X	X	C1	C1	C1	C1	2.04	2.03	2.01	2.00	2.00	1.99	1.98	S	1.98	2.04	2.01	12
17	1.98	1.96	1.98	1.97	1.97	2.00	2.02	1.99	1.99	1.99	1.99	1.97	1.97	1.99	1.95	1.97	1.97	1.95	1.99	2.00	2.01	S	1.99	1.95	2.02	1.98	2.02	24
18	1.99	2.00	2.02	2.01	2.03	2.02	2.02	2.02	2.05	2.05	2.05	2.02	2.01	2.01	2.00	2.00	2.02	2.02	2.01	2.04	2.02	S	2.01	2.05	1.99	2.05	2.02	24
19	2.06	2.07	2.09	2.10	2.09	2.14	2.12	2.13	2.14	2.12	2.11	2.11	2.08	2.04	2.03	2.01	2.01	2.03	2.05	2.08	S	2.01	2.03	1.98	1.98	2.14	2.07	24
20	1.95	1.92	1.94	1.94	1.91	1.95	1.97	1.98	1.99	2.00	2.02	2.01	1.97	1.97	1.97	1.99	1.99	2.01	2.02	S	2.03	2.05	2.07	2.06	1.91	2.07	1.99	24
21	2.08	2.07	2.08	2.11	2.08	2.07	2.08	2.07	2.09	2.10	2.13	2.12	2.15	2.14	2.13	2.15	2.15	2.14	S	2.13	2.11	2.11	2.11	2.14	2.07	2.15	2.11	24
22	2.07	2.07	2.07	2.04	2.00	2.02	2.02	2.01	2.00	2.03	2.03	2.04	2.05	1.98	1.98	1.97	1.98	S	2.00	2.03	2.07	2.06	2.11	2.14	1.97	2.14	2.03	24
23	2.14	2.16	2.18	2.18	2.19	2.18	2.15	2.15	2.12	2.11	2.10	2.06	2.04	2.06	2.05	2.06	S	2.07	2.09	2.08	2.10	2.09	2.11	2.10	2.04	2.19	2.11	24
24	2.06	2.08	2.04	1.98	1.97	1.98	1.97	1.97	S1	1.93	1.93	1.96	1.96	1.97	1.96	S	1.95	1.97	1.99	1.99	2.09	2.08	2.08	2.08	1.93	2.09	2.00	23
25	2.05	1.99	1.99	2.01	2.03	2.06	2.10	2.13	2.17	2.16	2.20	2.16	2.16	2.16	S	2.35	2.17	2.15	2.13	2.14	2.17	2.18	2.18	2.20	1.99	2.35	2.13	24
26	2.18	2.18	2.17	2.17	2.17	2.14	2.12	2.10	2.08	2.05	2.05	2.06	1.97	S	2.02	2.02	2.02	1.98	1.99	2.02	2.04	2.05	2.02	2.02	1.97	2.18	2.07	24
27	1.99	1.98	1.99	2.01	2.02	2.05	2.04	2.01	2.00	2.00	2.01	2.00	S	1.87	1.85	1.96	1.97	1.96	1.97	1.97	1.93	1.94	1.93	1.95	1.85	2.05	1.97	24
28	1.97	1.97	1.98	2.03	2.00	2.02	2.02	2.05	2.05	2.03	2.00	S	1.94	1.90	1.92	1.94	1.94	1.94	1.95	2.00	1.95	1.95	1.96	2.18	1.90	2.18	1.99	24
HOURLY MAX	2.50	2.54	2.56	2.56	2.66	2.67	2.55	2.53	2.50	2.49	2.48	2.46	2.41	2.41	2.43	2.43	2.45	2.44	2.46	2.47	2.51	2.53	2.52	2.51				
HOURLY AVG	2.23	2.22	2.24	2.22	2.24	2.26	2.25	2.25	2.25	2.24	2.24	2.23	2.20	2.18	2.19	2.21	2.20	2.21	2.20	2.22	2.22	2.22	2.23	2.23				

STATUS FLAG CODES

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

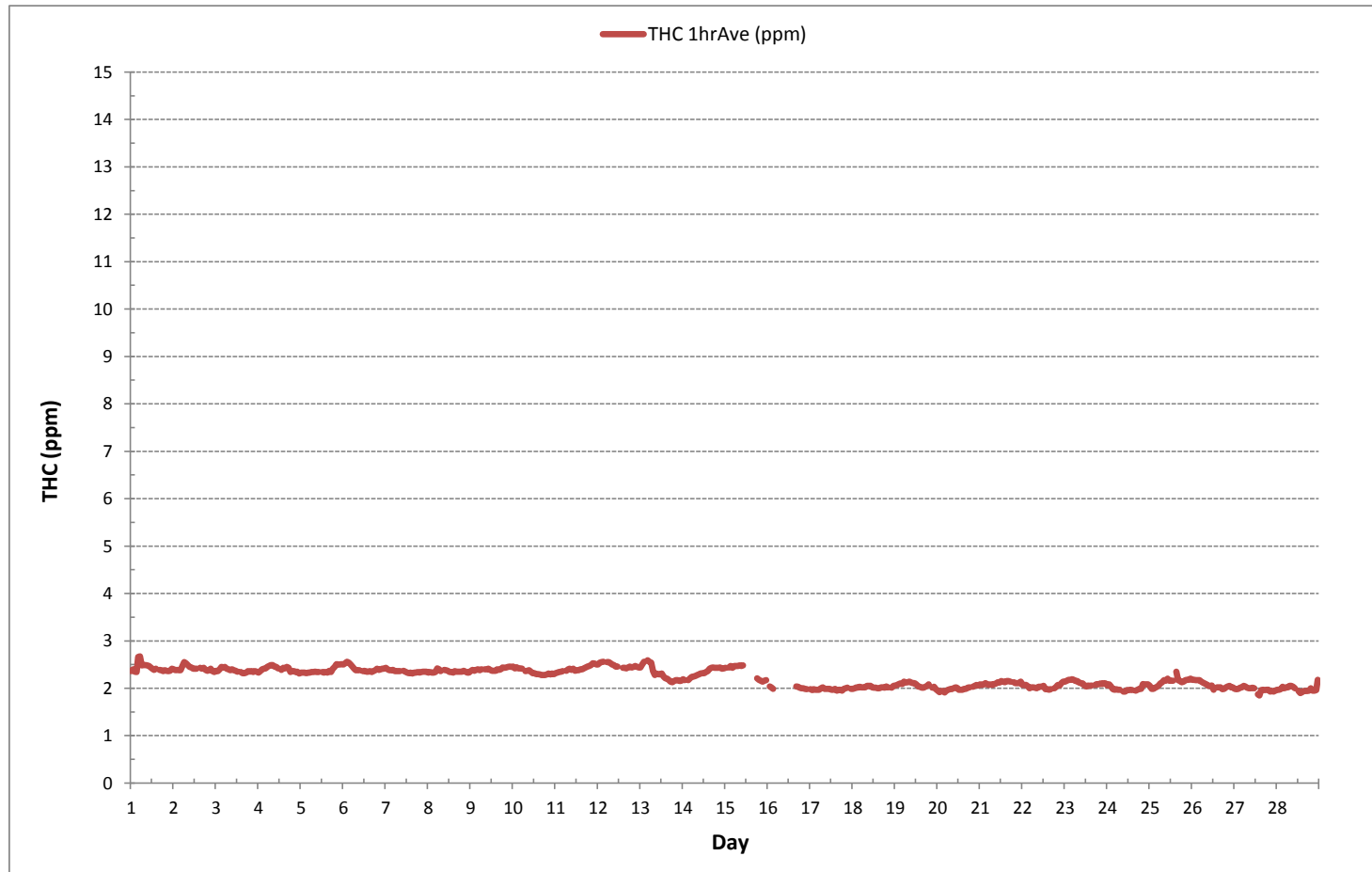
24 HR AVERAGES February 2018



MONTHLY SUMMARY

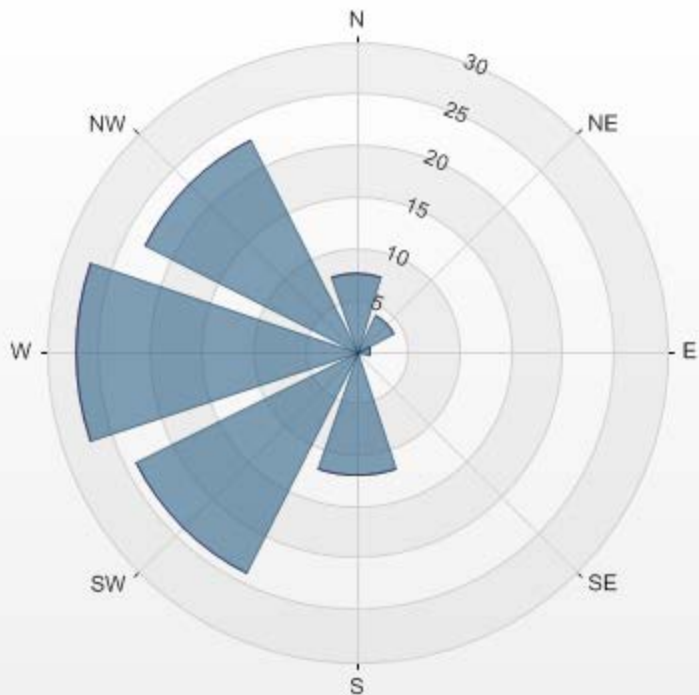
NUMBER OF NON-ZERO READINGS:	621			
MINIMUM 1-HR AVERAGE:	1.85 ppm	@ HOUR	14	ON DAY 27
MAXIMUM 1-HR AVERAGE:	2.67 ppm	@ HOUR	5	ON DAY 1
MAXIMUM 24-HR AVERAGE:	2.48 ppm			ON DAY 12
IZS CALIBRATION TIME:	29 hrs	OPERATIONAL TIME:	656 hrs	
MONTHLY CALIBRATION TIME:	6 hrs	AMD OPERATION UPTIME:	97.6 %	
STANDARD DEVIATION:	0.19	MONTHLY AVERAGE:	2.23 ppm	

TOTAL HYDROCARBONS Hourly Averages (THC ppm)



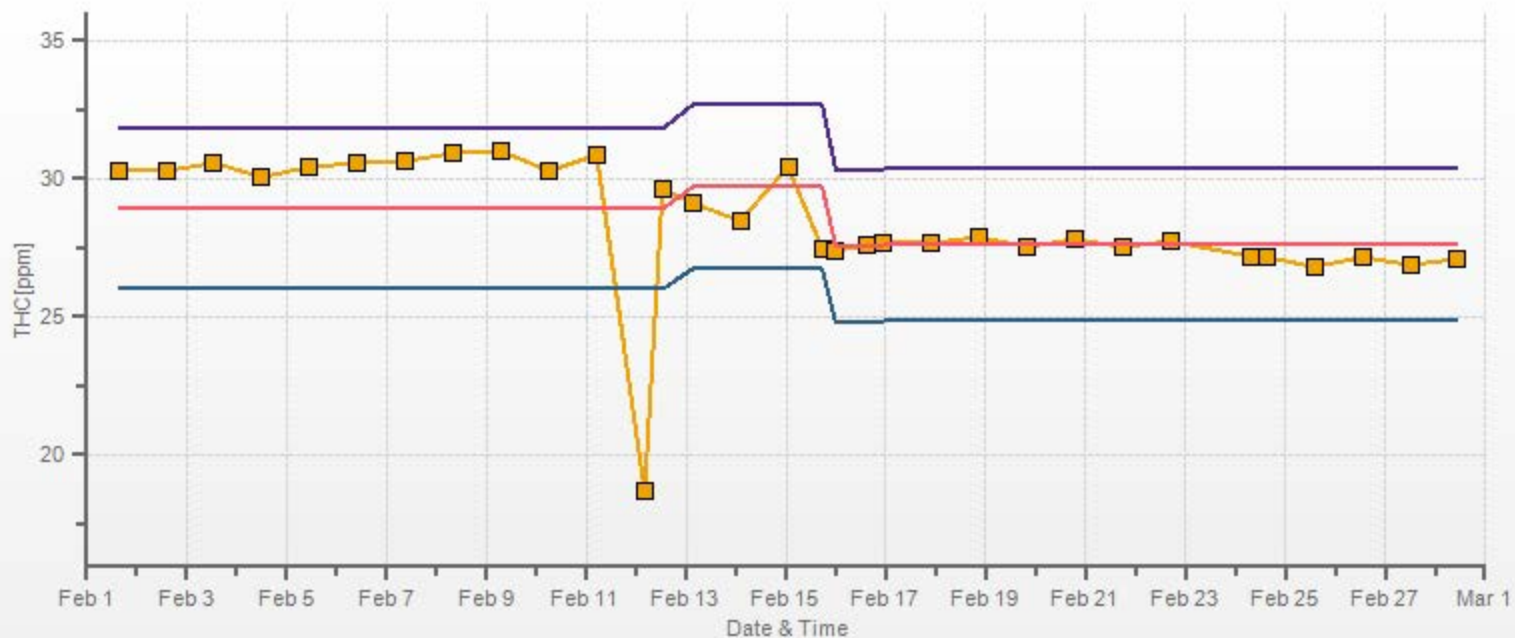
% Icon Classes (ppm) 0 0.0-0.9 0 0.9-1.8 100 1.8-2.7 0 >2.7

LICA ST. LINA Poll.: LICA ST. LINA-THC[ppm] 2018/02/01 00:00 - 2018/02/28 23:00 Calm: 0.48% Calm Poll Avg: 2.10[ppm]



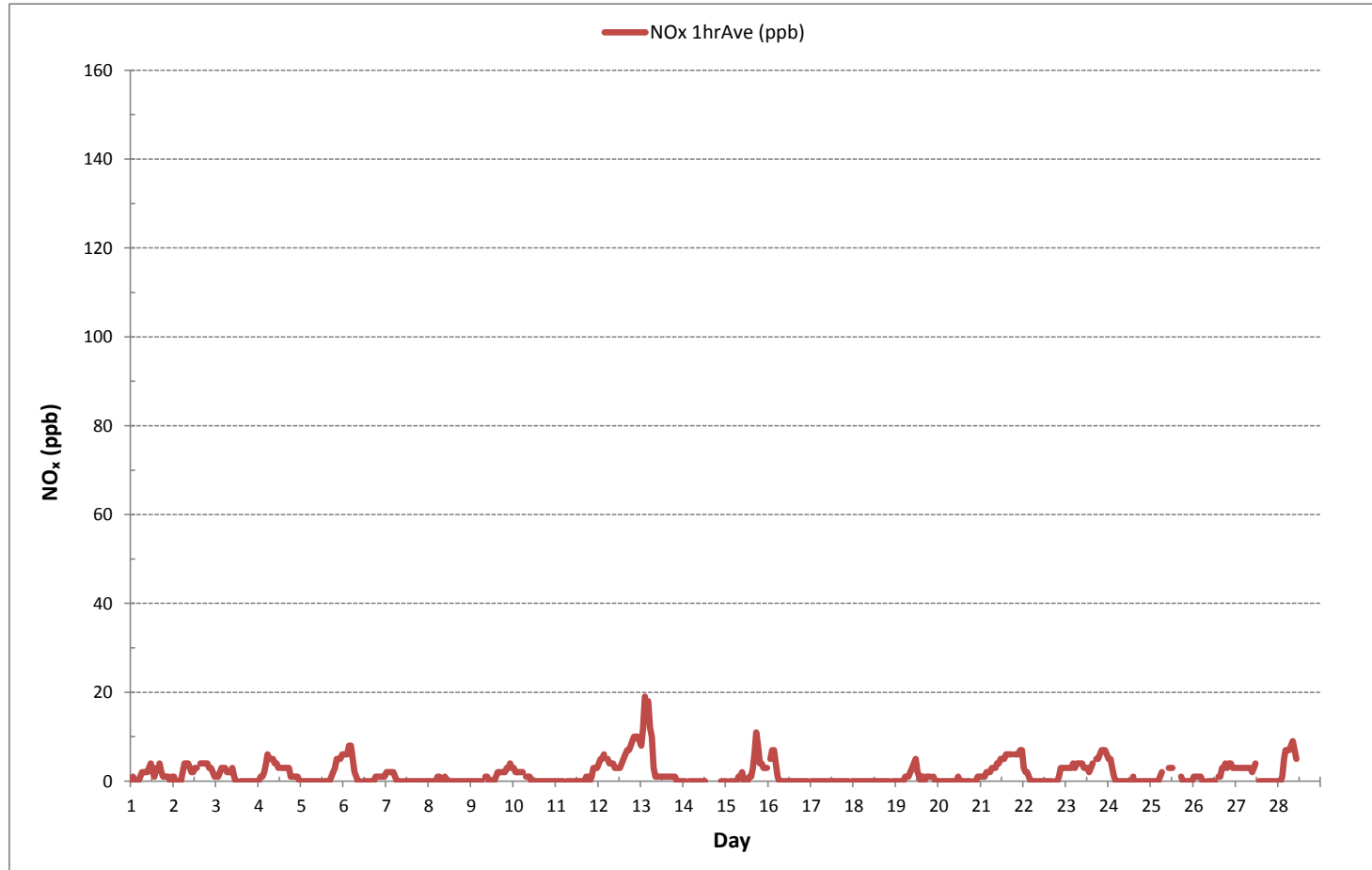
THC[ppm] Calibration: LICA ST. LINA Monthly: 18/02 Type: Span

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



OXIDES OF NITROGEN

OXIDES OF NITROGEN Hourly Averages (NO_x ppb)



% Icon Classes (ppb)

95



0.0-6.7

4



6.7-13.3

0



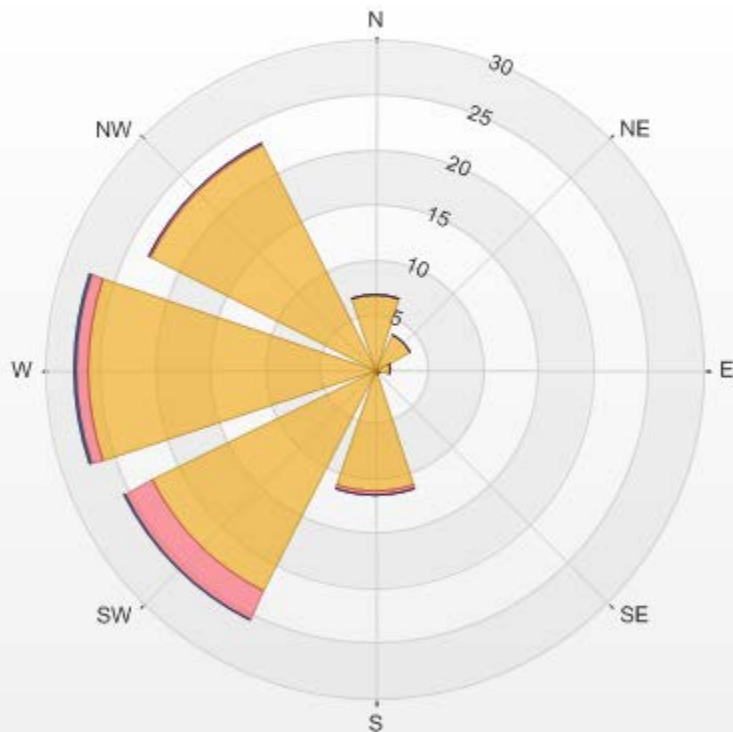
13.3-20.0

0



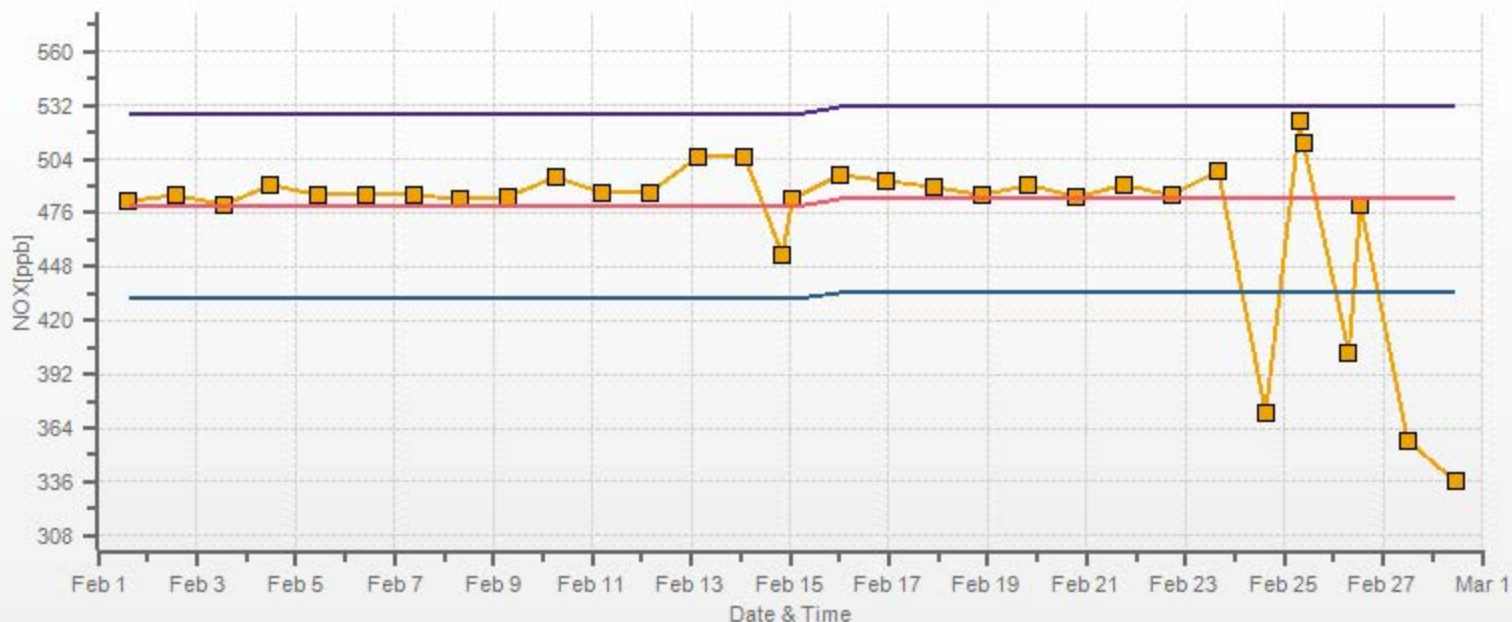
>20.0

LICA ST. LINA Poll.: LICA ST. LINA-NOX[ppb] 2018/02/01 00:00 - 2018/02/28 23:00 Calm: 0.16% Calm Poll Avg: 0.42[ppb]



NOX[ppb] Calibration: LICA ST. LINA Monthly: 18/02 Type: Span

Span Meas Span Ref Span Low Span High



NITRIC OXIDES



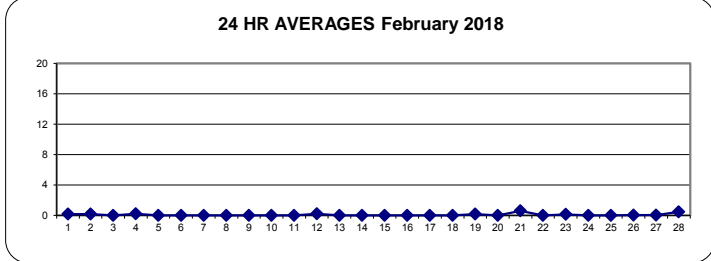
NITRIC OXIDE Hourly Averages (NO ppb)

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	1	1	1	0	1	S	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	1	1	1	S	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	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	1	1	S	1	1	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	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	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	24		
8	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24		
9	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24		
10	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	24		
12	0	0	0	0	S	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	24		
13	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24		
14	0	0	S	0	0	0	0	0	0	0	0	0	0	C	C	C	C	C	C	C	C	C	C	C	C	C	0	0	0	24		
15	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24		
16	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	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	S	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	S	0	0	0	0	0	0	24		
19	0	0	0	0	0	0	0	0	0	0	1	2	1	0	0	0	0	0	0	0	0	S	0	0	0	0	0	2	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	0	24		
21	0	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	1	0	S	0	0	0	0	0	0	0	0	2	1	24		
22	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		
23	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	S	0	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	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	24		
25	0	0	0	0	0	0	0	S1	S1	S1	0	0	0	C1	C1	C1	C1	0	0	0	0	0	0	0	0	0	0	0	0	17		
26	0	0	0	0	0	0	0	S1	0	0	0	0	0	S	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	23		
27	0	0	0	0	0	0	0	0	0	0	0	1	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24		
28	0	0	0	0	0	0	0	0	1	2	2	S	C1	C1	C1	C1	C1	Y	Y	Y	Y	Y	Y	Y	Y	Y	0	2	0	12		
HOURLY MAX	0	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	1	0	0	0	0	0	0	0	0	0						
HOURLY AVG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0						

STATUS FLAG CODES

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

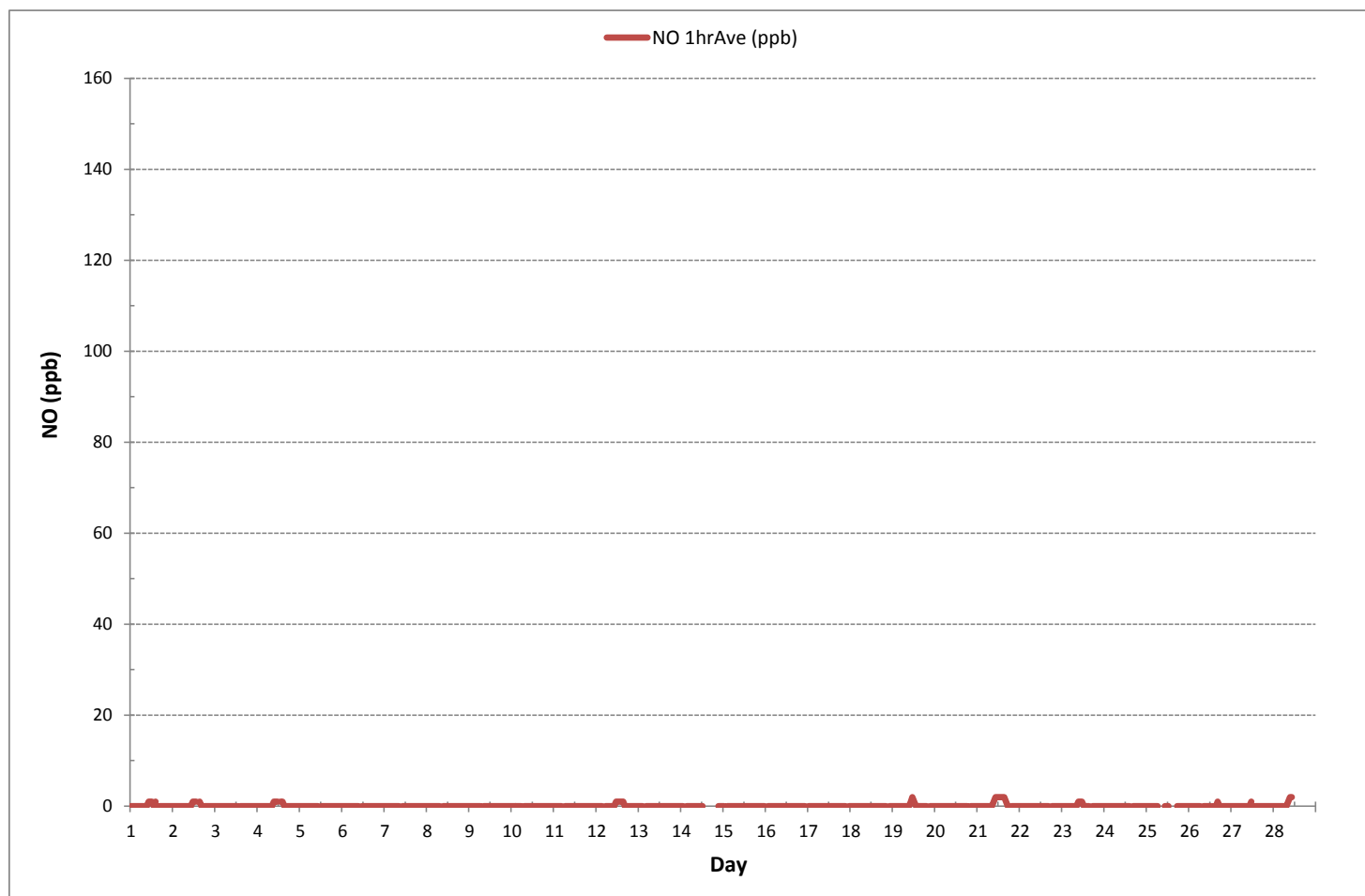
24 HR AVERAGES February 2018



MONTHLY SUMMARY

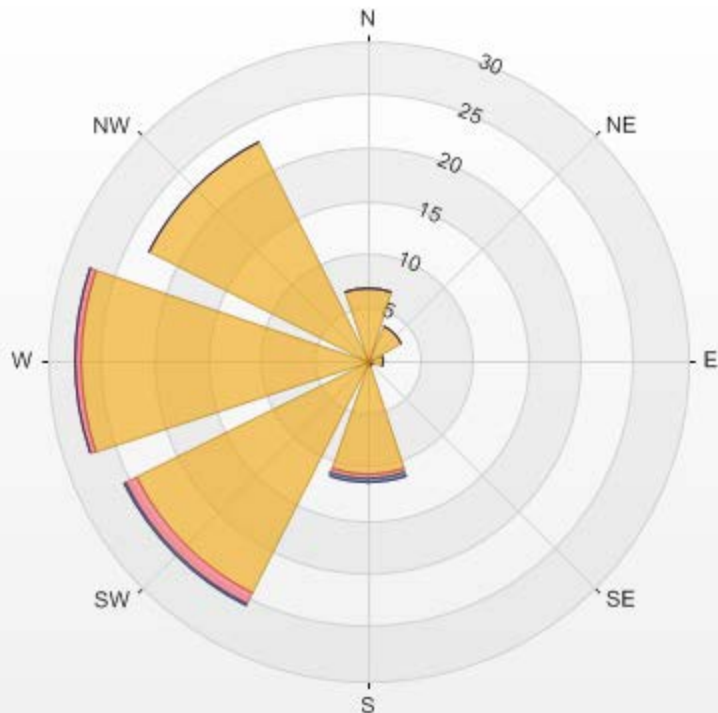
NUMBER OF NON-ZERO READINGS:	37				
MINIMUM 1-HR AVERAGE:	0	ppb @ HOUR	0	ON DAY	1
MAXIMUM 1-HR AVERAGE:	2	ppb @ HOUR	19	ON DAY	19
MAXIMUM 24-HR AVERAGE:	1	ppb		ON DAY	21
IZS CALIBRATION TIME:	28	hrs	OPERATIONAL TIME:	652	hrs
MONTHLY CALIBRATION TIME:	8	hrs	AMD OPERATION UPTIME:	97.0	%
STANDARD DEVIATION:	0		MONTHLY AVERAGE:	0	ppb

NITRIC OXIDE Hourly Averages (NO ppb)



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

LICA ST. LINA Poll.: LICA ST. LINA-NO[ppb] 2018/02/01 00:00 - 2018/02/28 23:00 Calm: 0.16% 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	1	0	0	0	1	2	2	2	2	3	3	2	1	3	S	4	2	1	1	1	1	0	1	0	4	1	24
2	1	0	0	0	0	2	4	4	4	3	2	2	2	2	S	3	4	4	4	4	3	3	2	1	0	4	2	24
3	1	1	2	3	3	3	2	2	2	3	1	0	0	S	0	0	0	0	0	0	0	0	0	0	0	3	1	24
4	0	1	1	2	4	6	5	5	5	3	3	2	S	2	3	3	3	3	1	1	1	1	1	0	0	6	2	24
5	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	1	2	3	5	5	5	6	0	6	1	24
6	6	6	6	8	8	5	2	1	0	0	S	0	0	0	0	0	0	0	1	1	1	1	1	1	0	8	2	24
7	2	2	2	2	2	1	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	24
8	0	0	0	0	0	1	1	0	S	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
9	0	0	0	0	0	0	0	S	1	1	0	0	0	0	1	2	2	2	2	2	3	3	4	3	0	4	1	24
10	3	2	2	2	2	S	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	24
11	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	1	1	0	1	3	3	3	0	3	1	1	24
12	4	5	5	6	S	5	4	4	4	3	3	3	3	3	4	6	7	7	8	9	10	10	10	9	3	10	6	24
13	8	12	19	S	18	12	10	3	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	19	4	4	24
14	0	0	S	0	0	0	0	0	0	0	0	0	0	C	C	C	C	C	C	C	C	C	C	0	0	0	0	24
15	0	S	0	0	0	0	0	1	1	1	0	0	0	1	1	2	5	11	8	4	4	3	3	3	0	11	2	24
16	S	5	7	7	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	7	1	24
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	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	S	0	0	0	0	0	24
19	0	0	0	0	0	1	1	1	2	3	3	3	2	1	0	1	0	1	1	1	S	1	0	0	0	3	1	24
20	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	S	0	1	1	0	0	1	0	24
21	1	1	1	2	2	2	3	3	3	3	3	3	3	3	4	5	5	6	S	6	6	6	7	7	1	7	4	24
22	3	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	1	3	3	3	0	3	1	24
23	3	3	3	3	4	3	4	4	4	4	3	2	2	2	2	3	S	5	5	6	7	7	7	6	2	7	4	24
24	5	5	3	1	0	0	0	0	0	0	0	0	0	0	1	S	0	0	0	0	0	0	0	0	0	5	1	24
25	0	0	0	0	0	1	2	S1	S1	S1	3	3	3	C1	C1	C1	C1	1	0	0	0	0	0	0	0	3	1	17
26	1	1	1	1	1	0	0	S1	0	0	0	0	0	S	0	1	2	3	4	3	4	4	3	3	0	4	1	23
27	3	3	3	3	3	3	3	3	3	3	2	2	3	S	0	0	0	0	0	0	0	0	0	0	0	3	1	24
28	0	0	1	5	7	7	7	8	7	5	4	S	C1	C1	C1	C1	Y	Y	Y	Y	Y	Y	Y	Y	0	8	5	12
HOURLY MAX	8	12	19	8	18	12	10	8	7	5	4	3	3	3	4	6	7	11	8	9	10	10	10	9				
HOURLY AVG	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	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

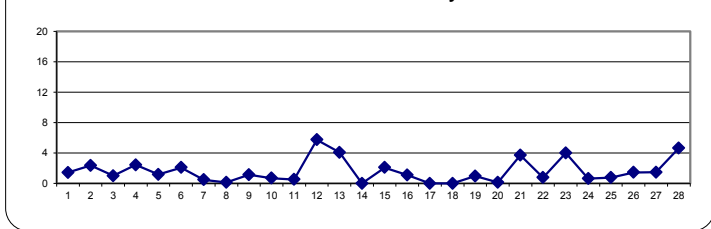
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR 159 ppb

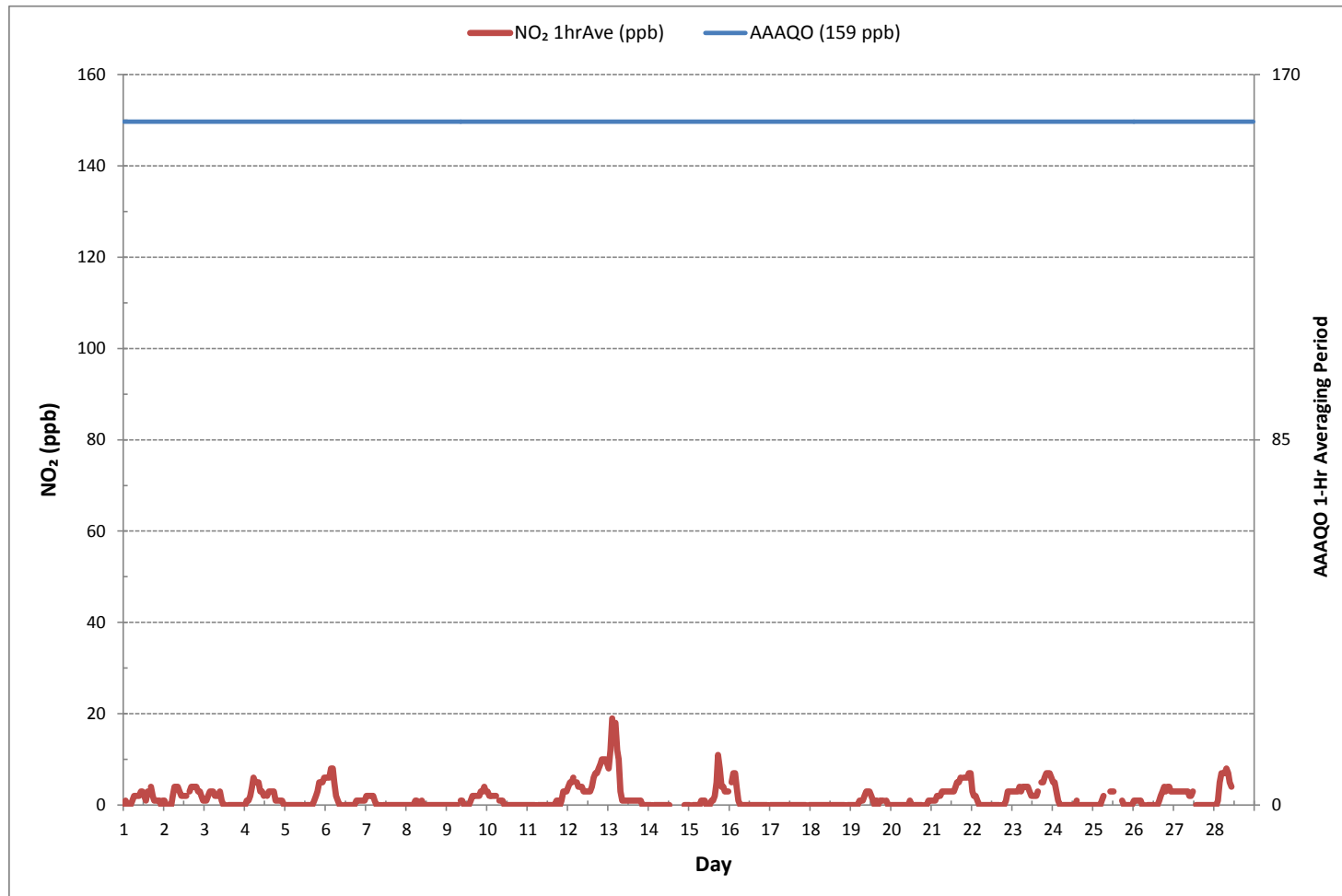
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0					
NUMBER OF NON-ZERO READINGS:	304					
MINIMUM 1-HR AVERAGE:	0	ppb	@ HOUR	0	ON DAY	1
MAXIMUM 1-HR AVERAGE:	19	ppb	@ HOUR	2	ON DAY	13
MAXIMUM 24-HR AVERAGE:	6	ppb			ON DAY	12
I2S CALIBRATION TIME:	28	hrs	OPERATIONAL TIME:	652	hrs	
MONTHLY CALIBRATION TIME:	8	hrs	AMD OPERATION UPTIME:	97.0	%	
STANDARD DEVIATION:	2		MONTHLY AVERAGE:	2	ppb	

24 HR AVERAGES February 2018



NITROGEN DIOXIDE Hourly Averages (NO₂ ppb)



Wind: LICA ST. LINA
 Poll.: LICA ST. LINA-NO2[ppb]
 Monthly: 18/02
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

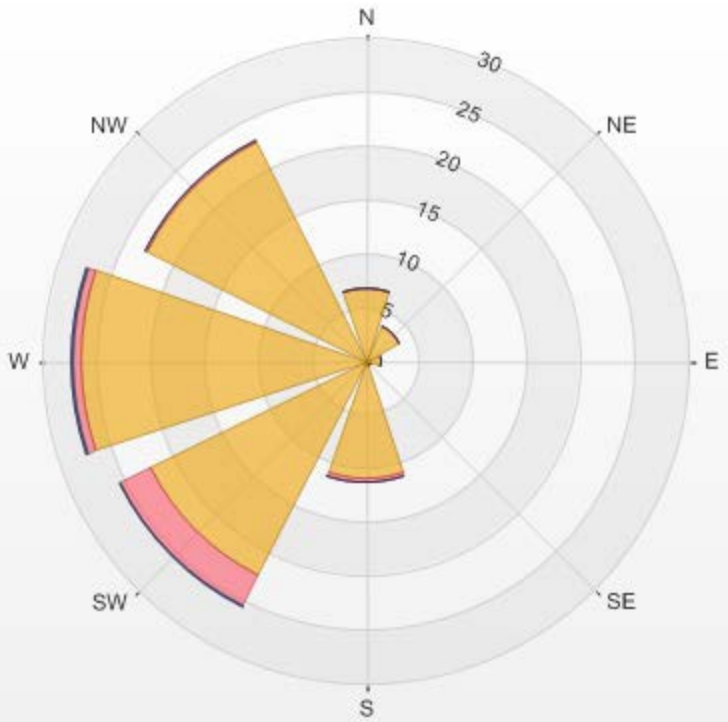
Calm: 0.16%

Calm Avg: 0.42 [ppb]

Direction	0.0-6.3	6.3-12.7	12.7-19.0	>19.0	Total
N	6.9	0.0	0.0	0.0	6.9
NE	3.6	0.0	0.0	0.0	3.6
E	1.5	0.0	0.0	0.0	1.5
SE	0.5	0.0	0.0	0.0	0.5
S	10.9	0.5	0.0	0.0	11.4
SW	22.4	3.1	0.2	0.0	25.6
W	26.4	0.8	0.2	0.0	27.4
NW	22.8	0.2	0.0	0.0	23.0
Summary	95.0	4.6	0.3	0.0	100.0

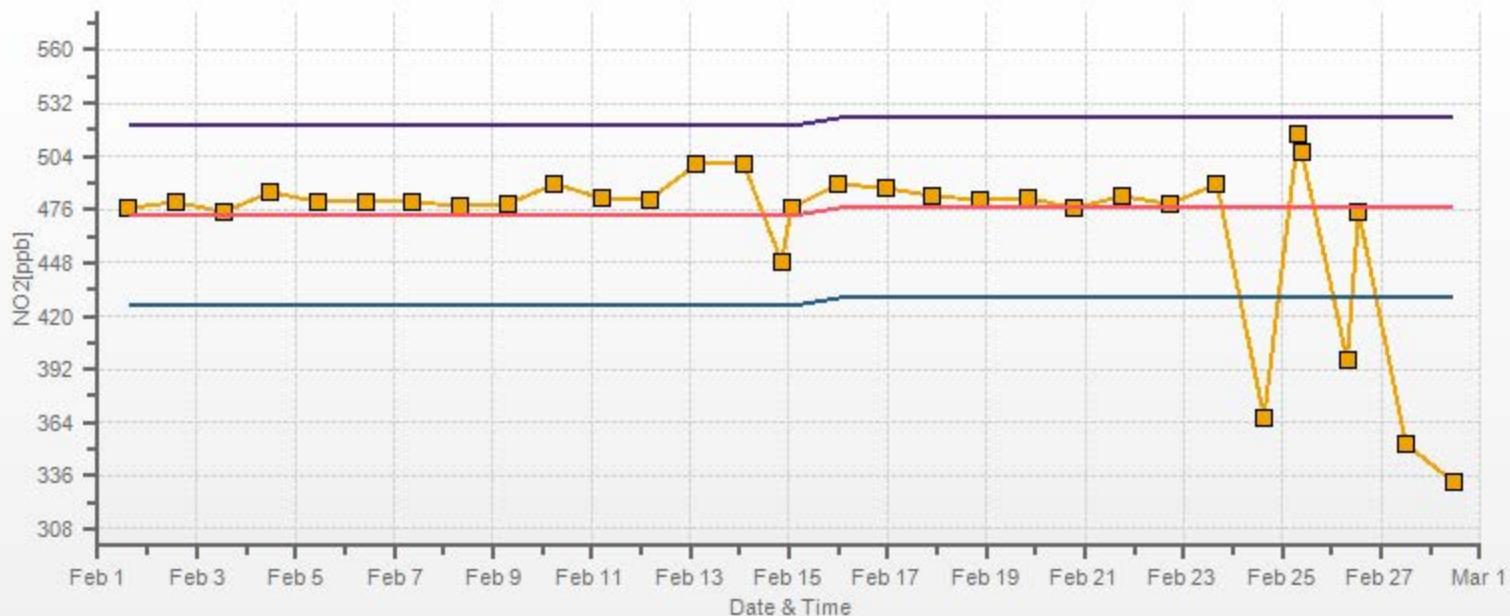
% Icon Classes (ppb) 95 0.0-6.3 5 6.3-12.7 0 12.7-19.0 0 >19.0

LICA ST. LINA Poll.: LICA ST. LINA-NO2[ppb] 2018/02/01 00:00 - 2018/02/28 23:00 Calm: 0.16% Calm Poll Avg: 0.42[ppb]



NO2[ppb] Calibration: LICA ST. LINA Monthly: 18/02 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	34.2	32.9	33.9	33.8	32.7	31.6	30.0	29.0	28.9	29.2	29.1	29.2	31.0	S	29.8	31.4	32.4	32.4	32.4	32.0	31.2	30.6	28.9	34.2	31.4	24		
2	30.4	31.4	31.1	31.1	31.7	28.9	26.7	27.3	27.7	28.8	30.7	30.5	30.0	30.1	S	29.4	28.1	28.2	28.1	29.0	30.0	30.3	32.0	34.3	26.7	34.3	29.8	24
3	35.2	34.7	34.0	31.8	30.8	30.5	30.7	30.6	31.3	30.8	33.2	35.8	37.3	S	37.5	38.8	39.5	39.6	36.9	35.7	34.8	35.0	33.8	35.5	30.5	39.6	34.5	24
4	37.7	36.8	34.9	33.5	29.9	26.9	27.2	26.6	27.4	29.6	30.9	33.1	S	34.8	33.3	32.9	31.8	33.5	37.9	36.8	37.3	38.6	39.5	41.0	26.6	41.0	33.6	24
5	41.2	41.4	41.9	42.2	42.3	42.3	42.0	41.7	41.6	40.8	41.1	S	42.3	42.5	41.8	41.7	41.5	40.3	38.5	35.7	33.5	31.7	31.1	30.4	30.4	42.5	39.5	24
6	30.0	29.4	29.3	26.2	26.2	30.5	34.2	36.5	37.4	38.1	S	39.3	39.2	39.6	39.5	39.3	39.4	38.8	37.7	37.6	38.0	37.8	37.3	36.5	26.2	39.6	35.6	24
7	36.0	36.8	36.7	36.6	35.9	36.8	37.3	37.2	37.5	S	37.5	38.0	40.5	41.1	42.2	42.6	42.5	41.7	41.2	41.3	41.0	40.4	40.1	39.9	35.9	42.6	39.2	24
8	39.5	39.4	39.5	39.4	39.0	36.6	36.7	37.5	S	36.2	37.1	38.1	39.4	39.8	40.0	39.9	39.7	39.7	39.3	38.9	39.0	39.6	39.5	39.2	36.2	40.0	38.8	24
9	39.4	39.3	38.6	38.5	38.1	37.9	37.9	S	38.0	38.3	38.8	39.8	40.7	40.7	39.7	39.5	39.6	39.6	39.5	38.8	37.2	36.5	35.6	36.2	35.6	40.7	38.6	24
10	35.8	37.4	36.9	37.3	37.6	37.6	S	39.8	39.7	39.7	40.8	42.3	42.7	43.4	43.4	43.5	43.4	43.1	43.2	42.8	42.7	42.3	41.5	43.6	35.8	43.6	40.9	24
11	42.7	41.7	40.7	39.9	39.2	S	37.3	36.2	36.0	36.0	36.4	37.5	38.1	38.7	38.8	38.9	38.5	36.5	36.8	36.8	36.2	33.5	33.2	33.5	33.2	42.7	37.5	24
12	32.3	31.5	31.7	31.5	S	33.0	34.7	35.0	35.8	37.9	39.2	39.8	40.5	40.4	39.9	38.8	37.9	36.8	35.4	34.4	33.2	32.3	31.7	32.5	31.5	40.5	35.5	24
13	32.6	28.8	23.0	S	23.7	27.7	29.2	38.5	41.3	41.3	41.6	41.9	42.2	42.5	C	C	C	C	C	36.4	36.5	37.3	37.7	39.0	23.0	42.5	35.6	24
14	39.5	38.8	S	38.7	42.2	42.7	41.9	40.2	39.1	37.9	37.0	37.4	36.3	35.0	35.6	35.0	34.7	Q	34.6	34.5	34.5	35.0	35.2	35.0	34.5	42.7	37.3	24
15	34.5	S	34.4	34.2	34.3	34.1	34.4	34.6	35.0	34.7	34.6	35.9	36.7	36.8	37.8	36.2	34.7	30.8	32.2	34.2	35.1	35.8	35.6	35.1	30.8	37.8	34.9	24
16	S	32.2	30.5	29.9	32.4	36.1	38.3	37.3	37.0	37.0	37.4	38.1	38.8	39.0	37.5	37.5	38.5	38.2	38.4	38.4	39.8	40.5	40.9	S	29.9	40.9	37.0	24
17	41.4	41.5	41.4	41.1	40.9	41.0	41.4	41.2	40.8	40.4	40.9	41.4	41.9	41.8	41.6	41.3	41.2	41.1	40.8	40.7	40.3	40.0	S	39.5	39.5	41.9	41.0	24
18	39.3	39.1	39.2	39.5	39.7	39.4	39.2	39.2	39.0	38.6	38.7	39.6	39.8	40.2	40.3	40.4	40.4	40.5	40.2	39.8	39.7	S	39.2	39.2	38.6	40.5	39.6	24
19	38.9	38.6	38.4	38.1	37.7	36.4	36.5	36.3	35.8	35.7	37.3	37.9	40.3	41.3	41.6	41.7	41.4	40.9	41.0	39.8	S	40.6	40.2	40.6	35.7	41.7	39.0	24
20	41.2	41.3	41.3	41.3	40.2	39.6	38.9	36.7	37.2	36.5	36.3	35.2	35.0	35.8	36.8	37.1	37.9	37.2	36.3	S	34.9	34.9	34.8	34.2	34.2	41.3	37.4	24
21	34.5	34.4	33.9	32.4	32.1	32.5	32.2	32.0	32.6	32.9	33.5	33.8	35.0	35.7	36.2	36.5	36.7	36.4	S	36.7	36.3	35.6	33.4	33.1	32.0	36.7	34.3	24
22	36.5	36.8	36.9	37.5	38.6	38.9	39.0	39.1	38.9	38.8	39.0	39.9	40.0	40.9	41.3	41.4	42.4	S	41.5	41.5	40.2	38.5	37.6	35.8	35.8	42.4	39.2	24
23	34.7	34.4	34.7	34.8	34.3	34.7	35.0	35.2	35.7	36.9	38.4	39.3	40.1	40.6	40.7	40.0	S	38.2	37.1	36.0	35.0	34.4	34.2	34.4	34.2	40.7	36.5	24
24	35.3	34.8	36.5	39.1	40.6	40.9	41.0	41.0	40.4	40.5	41.5	40.5	40.2	41.3	39.4	S	42.4	42.6	43.0	43.4	42.7	42.1	40.8	40.0	34.8	43.4	40.4	24
25	40.7	41.0	41.3	41.1	40.3	39.2	37.9	36.9	36.5	37.1	37.9	38.7	40.0	40.4	S	41.6	42.4	42.8	42.7	42.3	42.2	40.5	37.2	36.7	36.5	42.8	39.9	24
26	36.2	37.0	36.8	36.8	37.2	41.1	41.0	41.6	41.6	40.8	40.6	41.2	41.7	S	41.7	40.5	39.3	38.9	37.9	38.0	37.1	38.7	40.5	39.2	36.2	41.7	39.4	24
27	38.8	38.0	37.5	37.3	37.0	36.4	36.6	36.2	37.7	39.3	39.9	40.7	S	44.1	45.1	45.5	44.6	44.2	43.7	43.2	43.2	43.2	42.9	42.5	36.2	45.5	40.8	24
28	41.5	41.2	39.5	33.7	31.1	31.0	30.0	29.6	30.5	33.9	37.0	S	41.8	42.9	43.2	43.3	43.9	43.9	43.6	43.0	44.3	44.3	43.7	35.0	29.6	44.3	38.8	24
HOURLY MAX	42.7	41.7	41.9	42.2	42.3	42.7	42.0	41.7	41.6	41.3	41.6	42.3	42.7	44.1	45.1	45.5	44.6	44.2	43.7	43.4	44.3	44.3	43.7	43.6				
HOURLY AVG	37.0	36.7	36.1	36.2	35.8	35.7	35.8	36.0	36.3	36.6	37.3	37.9	38.9	39.3	39.4	39.3	38.9	38.6	38.5	38.1	37.7	37.5	37.1	36.8				

STATUS FLAG CODES

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

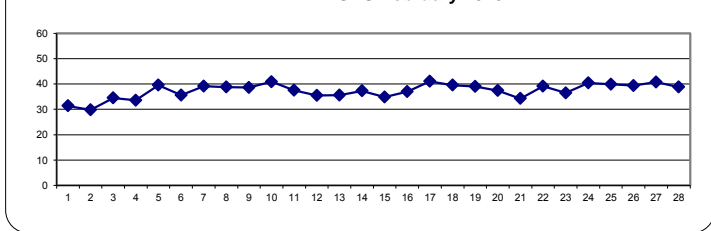
OBJECTIVE LIMIT:

ALBERTA ENVIRONMENT: 1-HR 82 ppb

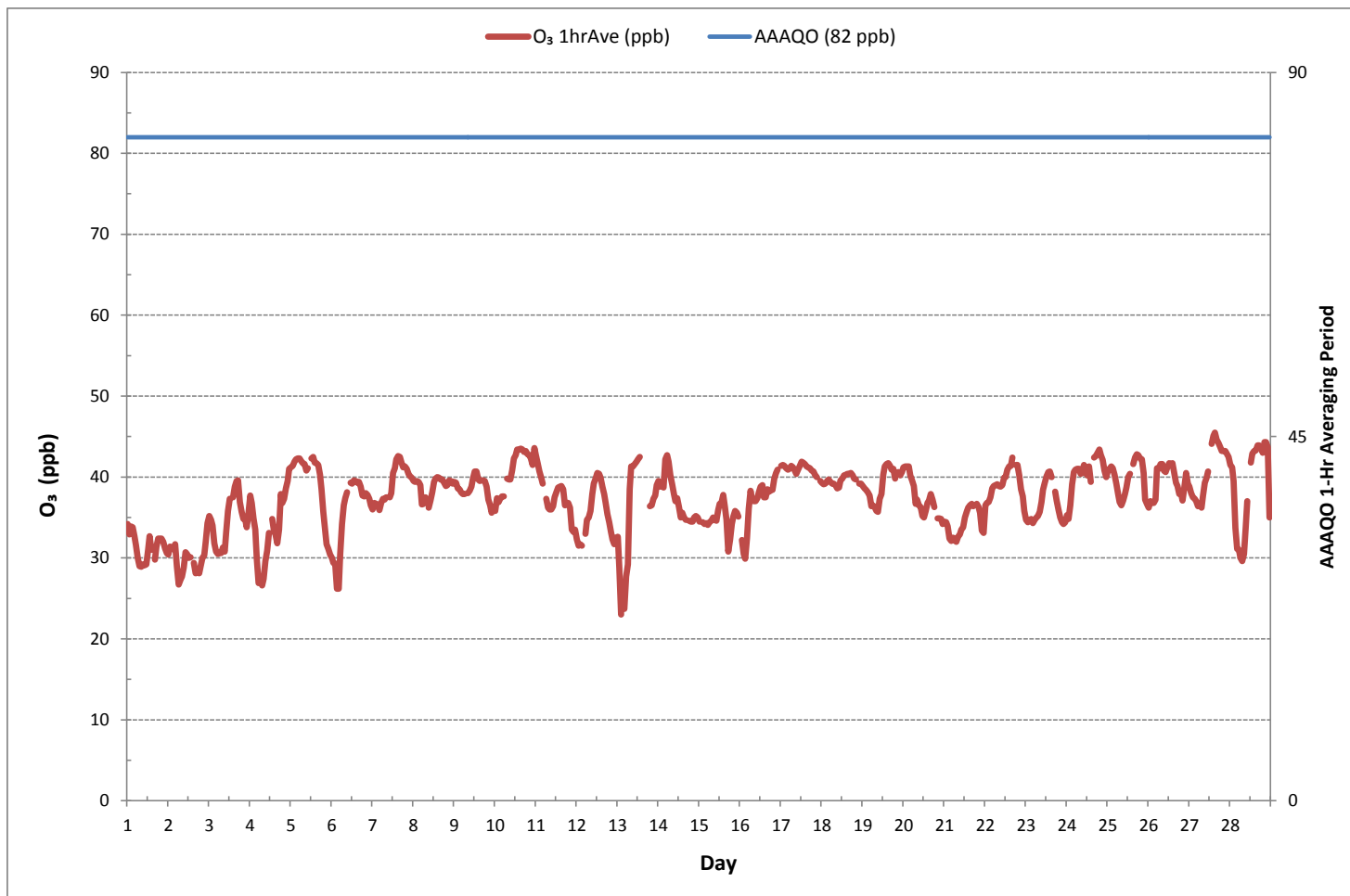
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0		
NUMBER OF NON-ZERO READINGS:	637		
MINIMUM 1-HR AVERAGE:	23.0 ppb	@ HOUR	2 ON DAY 13
MAXIMUM 1-HR AVERAGE:	45.5 ppb	@ HOUR	15 ON DAY 27
MAXIMUM 24-HR AVERAGE:	41.0 ppb		ON DAY 17
IZS CALIBRATION TIME:	29 hrs	OPERATIONAL TIME:	672 hrs
MONTHLY CALIBRATION TIME:	5 hrs	AMD OPERATION UPTIME:	100.0 %
STANDARD DEVIATION:	4.0	MONTHLY AVERAGE:	37.4 ppb

24 HR AVERAGES February 2018



OZONE Hourly Averages (O₃ ppb)



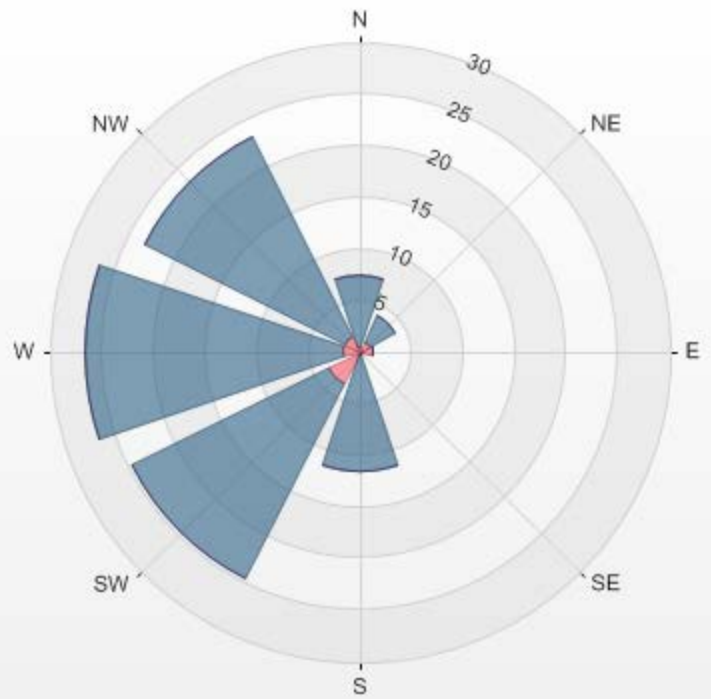
Wind: LICA ST. LINA
 Poll.: LICA ST. LINA-O3[ppb]
 Monthly: 18/02
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 0.47% Calm Avg: 40.26 [ppb]

Direction	0.0-15.7	15.7-31.3	31.3-47.0	>47.0	Total
N	0.0	0.5	6.9	0.0	7.4
NE	0.0	1.1	2.8	0.0	3.9
E	0.0	1.4	0.0	0.0	1.4
SE	0.0	0.0	0.5	0.0	0.5
S	0.0	0.3	11.3	0.0	11.6
SW	0.0	3.5	21.2	0.0	24.6
W	0.0	1.6	25.1	0.0	26.7
NW	0.0	1.7	21.7	0.0	23.4
Summary	0.0	10.0	89.5	0.0	100.0

% Icon Classes (ppb) 0 0.0-15.7 10 15.7-31.3 89 31.3-47.0 0 >47.0

LICA ST. LINA Poll.: LICA ST. LINA-O3[ppb] 2018/02/01 00:00 - 2018/02/28 23:00 Calm: 0.47% Calm Poll Avg: 40.26[ppb]



O3[ppb] Calibration: LICA ST. LINA Monthly: 18/02 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	1	1	2	2	2	2	2	2	3	5	5	5	7	10	13	12	10	8	5	4	3	3	3	1	13	5	24				
2	2	2	2	2	1	2	4	3	4	3	3	3	3	3	3	3	3	3	4	5	4	4	3	3	1	5	3	24					
3	2	2	2	2	2	2	2	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	2	24				
4	1	1	2	3	6	7	5	4	3	3	5	4	3	3	4	4	4	4	3	4	3	3	2	2	1	7	3	24					
5	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	3	3	5	5	6	7	7	1	7	3	24				
6	7	8	19	10	7	5	3	2	2	2	2	2	2	2	2	2	3	5	4	6	5	4	4	5	2	19	5	24					
7	5	5	6	6	6	5	4	4	3	3	3	3	3	3	3	3	3	3	3	5	4	4	4	4	3	6	4	24					
8	3	2	2	2	3	3	6	3	3	3	4	3	2	2	2	2	2	2	3	3	3	2	2	2	2	2	6	3	24				
9	2	2	3	3	4	4	4	4	5	5	5	4	3	3	4	5	4	5	5	5	6	7	7	6	2	7	4	24					
10	7	4	4	4	3	4	3	2	3	2	2	2	2	2	1	1	1	1	1	1	1	1	2	8	1	8	3	24					
11	13	3	1	1	1	2	2	2	2	2	2	2	2	2	3	3	3	4	4	4	4	9	9	7	1	13	4	24					
12	7	8	8	7	7	6	4	4	3	4	4	5	4	4	5	4	4	4	4	4	4	4	5	4	3	8	5	24					
13	5	5	7	7	8	8	7	3	2	2	2	1	1	1	2	2	2	2	3	1	1	0	0	0	0	8	3	24					
14	0	0	0	1	1	2	1	2	2	3	5	8	13	14	9	9	10	11	9	8	7	6	6	5	0	14	6	24					
15	5	4	4	3	5	4	4	4	4	5	6	5	4	4	4	6	6	9	4	4	4	3	4	3	3	9	5	24					
16	4	4	5	5	5	2	1	2	2	2	2	2	2	4	5	4	3	2	2	2	1	1	1	1	1	5	3	24					
17	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	24				
18	1	1	1	1	1	1	1	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	3	1	1	3	1	24					
19	2	2	2	2	3	5	5	5	5	5	4	4	3	2	2	2	2	2	2	2	2	2	2	4	2	5	3	24					
20	2	2	1	1	1	1	1	1	1	1	1	1	2	3	3	2	2	2	2	3	3	3	5	5	1	5	2	24					
21	6	5	5	4	4	4	4	5	6	6	6	7	7	6	7	6	7	5	5	4	4	5	9	7	4	9	6	24					
22	5	5	5	3	3	2	2	2	1	1	1	1	1	1	2	3	4	4	5	6	6	5	5	5	1	6	3	24					
23	5	5	4	4	4	4	4	4	5	7	5	5	4	4	4	4	5	6	6	6	8	9	10	4	10	5	24						
24	11	11	8	5	3	2	2	1	1	1	1	2	3	3	5	5	3	2	2	2	2	2	3	3	1	11	3	24					
25	3	3	5	6	6	6	7	8	7	6	7	3	3	3	2	3	2	1	1	1	1	1	2	2	1	8	4	24					
26	3	5	5	5	4	3	3	3	2	2	2	2	C	C	C	C	C	6	8	8	10	8	5	3	2	10	5	24					
27	4	5	5	5	5	5	5	5	4	3	2	2	3	2	2	1	1	1	1	1	1	1	1	1	1	5	3	24					
28	1	1	2	5	8	9	10	11	11	9	7	4	1	1	1	1	1	1	1	3	1	1	1	1	1	11	4	24					
HOURLY MAX	13	11	19	10	8	9	10	11	11	9	7	8	13	14	9	10	13	12	10	8	10	9	9	10									
HOURLY AVG	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3	3	4	4	4	3	3	4	4									

STATUS FLAG CODES

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

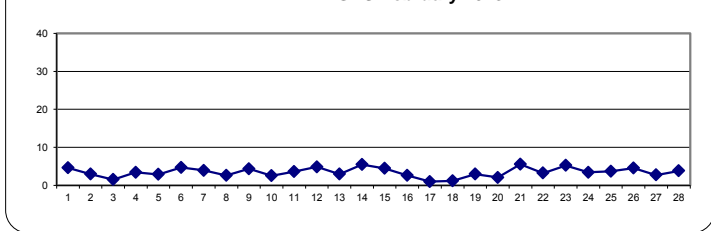
OBJECTIVE LIMIT:

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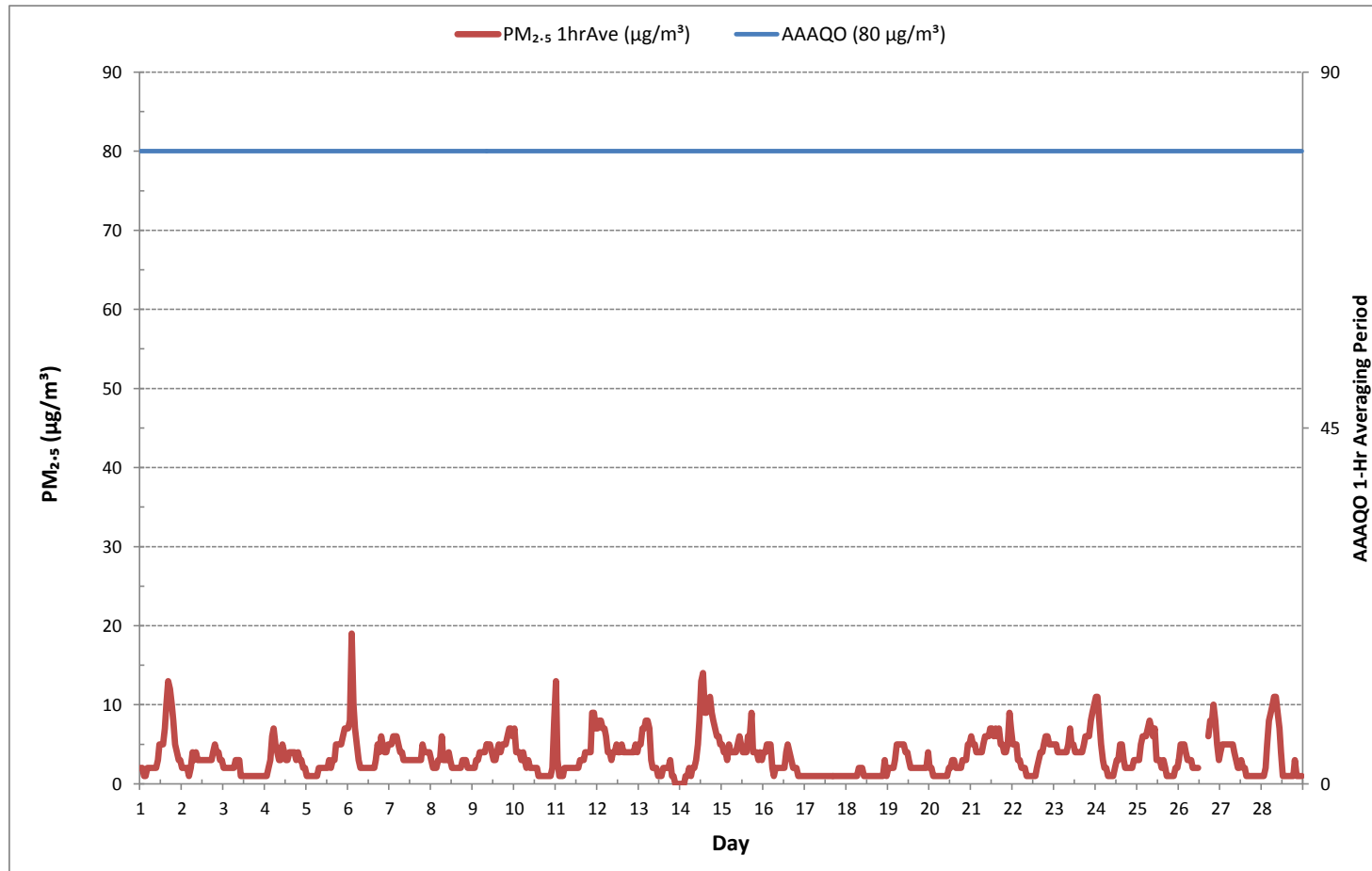
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0				
NUMBER OF 24-HR EXCEEDANCES:	0				
NUMBER OF NON-ZERO READINGS:	661				
MINIMUM 1-HR AVERAGE:	0 µg/m ³ @ HOUR	21	ON DAY	13	
MAXIMUM 1-HR AVERAGE:	19 µg/m ³ @ HOUR	2	ON DAY	6	
MAXIMUM 24-HR AVERAGE:	6 µg/m ³		ON DAY	21	
MONTHLY CALIBRATION TIME:	5	hrs	OPERATIONAL TIME:	672	hrs
STANDARD DEVIATION:	2		AMD OPERATION UPTIME:	100.0	%
			MONTHLY AVERAGE:	3	µg/m ³

24 HR AVERAGES February 2018



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: 18/02
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

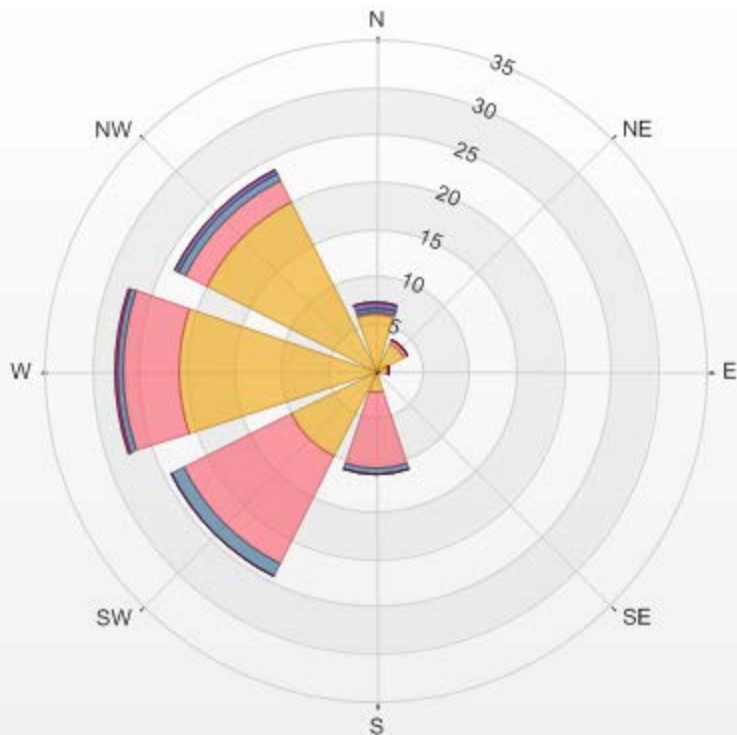
Calm: 0.45%

Calm Avg: 2.00 [ug/m3(L)]

Direction	0.0-4.0	4.0-8.0	8.0-12.0	12.0-16.0	16.0-20.0	>20.0	Total
N	6.0	0.3	0.5	0.5	0.0	0.0	7.2
NE	3.3	0.5	0.0	0.0	0.0	0.0	3.8
E	1.4	0.2	0.0	0.0	0.0	0.0	1.5
SE	0.5	0.0	0.0	0.0	0.0	0.0	0.5
S	2.3	8.1	0.6	0.0	0.0	0.0	11.0
SW	10.1	12.8	1.5	0.0	0.0	0.0	24.3
W	20.9	5.9	0.8	0.0	0.2	0.0	27.6
NW	20.0	2.6	0.9	0.3	0.0	0.0	23.7
Summary	64.3	30.2	4.2	0.8	0.2	0.0	100.0

% Icon Classes (ug/m3(L)) 64 0.0-4.0 30 4.0-8.0 4 8.0-12.0 1 12.0-16.0 0 16.0-20.0 0 >20.0

LICA ST. LINA Poll.: LICA ST. LINA-PM25[ug/m3(L)] 2018/02/01 00:00 - 2018/02/28 23:00 Calm: 0.45% Calm Poll Avg: 2.00[ug/m3(L)]



WIND SPEED



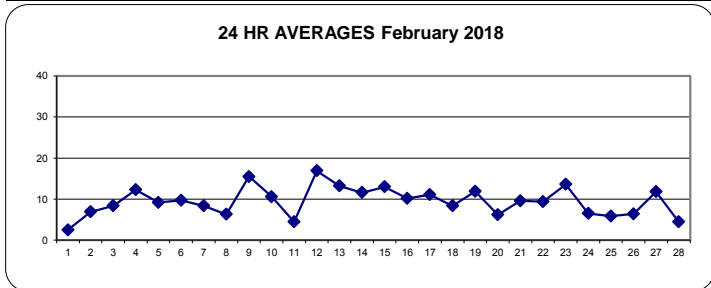
WIND SPEED Hourly Averages (WS kph)

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	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	0.6	4.0	4.2	3.3	5.7	4.4	5.1	5.8	5.1	3.2	5.3	5.4	5.6	6.9	7.0	5.3	2.3	3.1	6.0	5.0	6.2	7.0	6.7	4.8	0.6	7.0	2.5	24
2	6.1	6.1	5.7	5.2	5.1	6.0	7.6	8.1	7.6	8.7	8.5	9.5	9.1	7.0	5.7	7.1	7.9	8.0	9.6	10.1	12.3	9.9	8.5	7.5	5.1	12.3	6.9	24
3	6.1	5.5	5.9	4.9	4.7	6.2	8.0	10.9	10.6	9.0	9.1	11.0	10.7	9.8	13.0	12.6	12.9	14.0	13.5	13.8	15.0	15.6	13.7	14.0	4.7	15.6	8.4	24
4	17.0	20.2	21.0	19.9	18.2	20.5	21.9	21.0	19.1	18.9	16.7	14.7	12.2	10.4	7.5	5.2	4.2	4.6	5.3	7.6	9.1	9.8	8.0	10.1	4.2	21.9	12.3	24
5	11.8	9.7	13.0	11.2	9.8	5.4	6.7	7.8	8.4	9.8	12.8	16.8	15.1	14.3	18.2	15.7	14.4	14.5	12.0	10.7	11.7	6.9	8.6	7.8	5.4	18.2	9.2	24
6	8.9	8.1	9.0	10.5	12.4	13.9	15.5	13.1	13.9	14.9	13.6	11.7	13.7	11.5	9.9	10.2	7.1	8.4	9.2	11.7	13.3	9.5	7.6	8.2	7.1	15.5	9.7	24
7	7.3	8.6	7.4	6.3	6.6	9.8	12.4	11.4	12.8	11.4	10.5	10.4	10.9	9.5	10.6	7.1	9.1	6.2	6.9	7.7	8.3	6.8	7.2	7.8	6.2	12.8	8.4	24
8	8.7	7.3	5.5	5.0	8.6	7.0	3.9	6.8	6.7	5.1	7.8	7.5	10.1	8.9	10.2	7.8	7.8	7.6	6.1	7.2	7.5	9.4	10.4	12.3	3.9	12.3	6.3	24
9	14.7	14.1	12.0	12.9	13.6	14.1	17.7	20.5	18.8	17.4	19.6	21.4	18.9	16.3	15.2	11.8	13.9	16.4	16.8	14.7	12.1	12.3	15.3	15.2	11.8	21.4	15.5	24
10	13.9	12.4	11.1	10.8	10.7	10.8	12.5	12.8	15.1	14.5	13.3	18.0	16.5	16.7	18.2	17.2	13.8	15.5	10.9	11.7	11.0	15.8	14.9	14.8	10.7	18.2	10.6	24
11	9.9	9.8	8.9	11.1	10.6	9.7	11.8	11.3	8.9	10.4	7.9	6.1	6.0	5.9	5.7	8.9	13.1	12.3	11.2	10.2	11.0	12.2	10.1	11.9	5.7	13.1	4.5	24
12	12.3	10.9	9.9	13.5	14.3	15.9	17.4	18.9	23.2	22.8	24.3	21.0	19.7	19.1	22.2	19.5	21.0	18.7	17.8	17.0	17.5	14.6	11.0	10.9	9.9	24.3	16.9	24
13	9.6	14.2	15.9	18.9	17.2	16.4	13.7	16.4	15.7	11.9	10.9	10.1	14.7	14.4	15.2	16.7	7.8	7.0	11.9	14.6	13.5	13.2	10.5	13.8	7.0	18.9	13.2	24
14	11.8	10.6	11.1	13.8	25.4	21.6	18.8	20.4	18.9	20.6	23.9	20.5	19.0	17.0	15.4	14.0	10.6	8.7	7.9	6.5	5.9	7.0	8.1	8.5	5.9	25.4	11.6	24
15	10.7	9.9	10.6	12.2	11.6	10.9	12.0	13.7	14.6	14.5	13.6	19.2	18.2	16.5	17.9	16.9	14.6	11.5	13.8	13.0	11.9	11.8	12.0	10.0	9.9	19.2	13.0	24
16	9.8	10.0	8.5	8.4	13.1	9.7	9.2	6.0	3.9	4.4	6.6	8.9	10.6	17.4	18.5	15.7	16.2	12.8	12.6	15.5	17.3	16.6	16.9	17.0	3.9	18.5	10.2	24
17	13.0	13.3	11.7	10.4	11.9	15.0	20.0	15.5	10.3	9.4	12.9	13.4	15.5	14.4	14.4	13.4	13.5	9.8	9.1	10.7	8.6	3.3	3.4	5.4	3.3	20.0	11.1	24
18	6.0	6.6	7.9	8.5	9.1	9.4	9.0	9.0	8.5	8.2	11.6	13.9	13.4	14.9	14.4	10.2	8.8	5.4	5.6	4.1	8.7	8.8	8.8	11.8	4.1	14.9	8.4	24
19	9.8	7.7	8.5	9.9	11.1	9.2	10.9	12.6	11.9	12.2	16.6	13.7	20.6	18.3	19.5	17.6	14.8	12.4	10.4	7.1	8.5	8.8	10.3	9.7	7.1	20.6	11.9	24
20	7.2	8.8	9.0	8.3	10.4	11.0	9.6	12.0	9.8	9.1	8.2	7.3	8.7	9.3	10.3	10.6	10.2	7.9	7.5	6.4	5.3	5.7	8.9	8.6	5.3	12.0	6.2	24
21	9.9	11.0	12.2	12.5	11.8	9.7	9.1	9.4	9.3	8.5	8.7	10.2	11.0	9.8	11.3	10.3	9.1	8.1	8.6	8.9	10.1	9.7	9.9	9.9	8.1	12.5	9.6	24
22	12.3	11.0	11.3	10.4	9.7	11.1	11.5	10.6	11.0	8.5	8.8	11.6	7.9	10.4	12.0	9.2	15.5	14.6	8.0	8.8	11.7	9.2	10.0	11.3	7.9	15.5	9.4	24
23	11.8	13.0	14.4	16.1	17.5	17.2	17.0	16.6	18.5	17.9	18.1	16.5	13.3	13.7	14.1	12.5	11.7	11.9	10.0	10.6	8.6	9.0	8.5	9.8	8.5	18.5	13.6	24
24	10.5	10.8	10.9	11.4	8.8	9.6	9.4	9.1	10.3	10.9	16.5	16.9	17.3	14.2	14.5	12.5	8.0	4.6	2.5	2.0	5.7	8.4	9.9	11.3	2.0	17.3	6.5	24
25	14.8	12.4	15.2	15.1	11.5	9.8	9.6	9.7	10.2	8.9	10.0	10.6	13.3	7.8	5.4	2.8	5.3	8.6	8.1	5.9	6.0	8.8	13.6	14.5	2.8	15.2	5.9	24
26	16.8	12.6	8.7	5.5	6.7	8.1	5.7	6.0	6.3	6.4	5.7	8.6	15.4	12.6	14.2	14.7	16.0	14.3	14.1	14.0	13.7	13.3	14.1	15.4	5.5	16.8	6.4	24
27	14.1	11.3	11.2	8.5	8.0	8.5	11.7	11.2	10.0	12.4	18.1	18.4	21.6	26.4	24.3	18.7	16.4	9.8	8.5	12.6	12.4	9.7	8.8	9.6	8.0	26.4	11.8	24
28	9.7	8.3	8.8	9.5	9.6	9.2	10.5	10.3	10.0	10.7	11.1	8.6	8.6	11.2	10.9	8.2	6.3	4.0	0.6	1.4	1.9	3.5	6.8	12.9	0.6	12.9	4.5	24
HOURLY MAX	17.0	20.2	21.0	19.9	25.4	21.6	21.9	21.0	23.2	22.8	24.3	21.4	21.6	26.4	24.3	19.5	21.0	18.7	17.8	17.0	17.5	16.6	16.9	17.0				
HOURLY AVG	6.8	6.4	6.4	6.1	5.8	6.1	6.9	6.9	7.2	6.9	7.7	8.2	9.3	9.3	9.4	7.8	7.1	6.4	6.1	6.3	6.6	6.1	5.9	6.0				

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

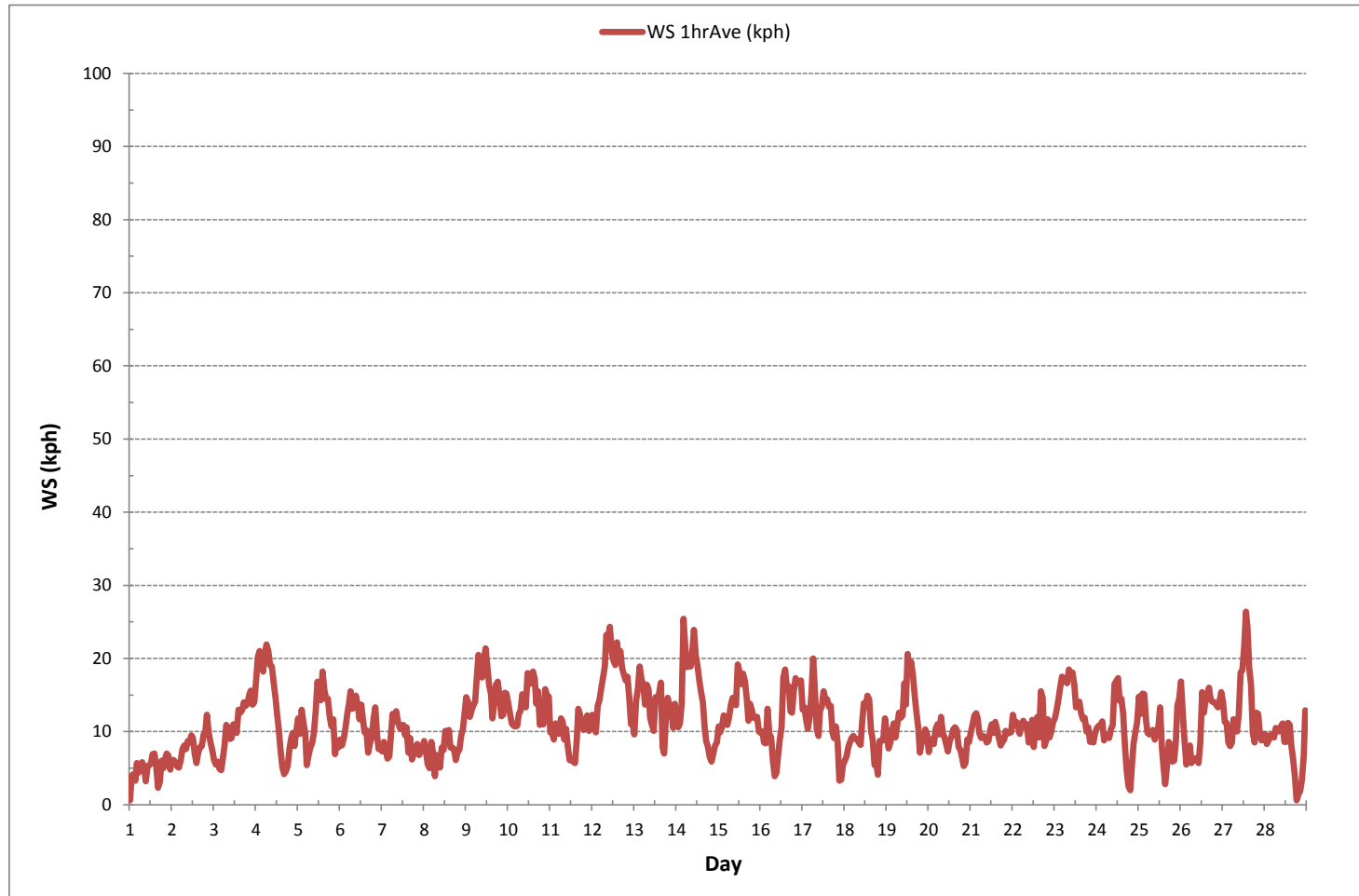
LAST CALIBRATION:	May 25, 2017
DECLINATION :	MAGNETIC DECLINATION 19 DEGREE EAST



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	672
MINIMUM 1-HR AVERAGE	0.6 kph @ HOUR 0 ON DAY 1
MAXIMUM 1-HR AVERAGE:	26.4 kph @ HOUR 13 ON DAY 27
MAXIMUM 24-HR AVERAGE:	16.9 kph ON DAY 12
MONTHLY CALIBRATION TIME:	0 hrs
STANDARD DEVIATION:	4.3
OPERATIONAL TIME:	672 hrs
AMD OPERATION UPTIME:	100.0 %
MONTHLY AVERAGE:	6.9 kph

WIND SPEED Hourly Averages (WS kph)



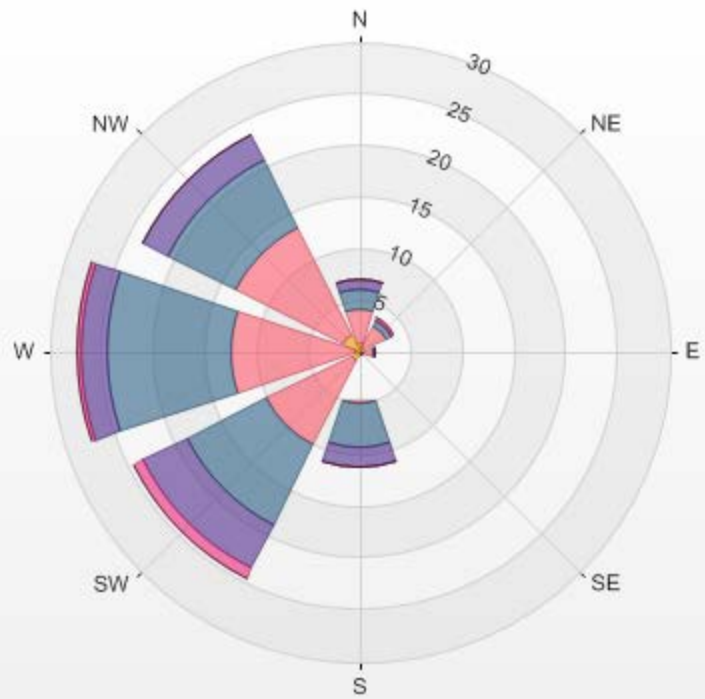
Wind: LICA ST. LINA
 Monitor: WSP [kph]
 Monthly: 18/02
 Type: WindRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 0.45%

Direction	1.8-5.3	5.3-10.6	10.6-15.9	15.9-21.2	21.2-26.5	>26.5	Total
N	0.9	3.3	1.9	0.9	0.2	0.0	7.1
NE	0.5	2.4	0.6	0.0	0.3	0.0	3.7
E	0.0	1.3	0.2	0.0	0.0	0.0	1.5
SE	0.5	0.0	0.0	0.0	0.0	0.0	0.5
S	0.2	4.9	4.3	1.9	0.0	0.0	11.3
SW	0.9	9.2	8.6	4.8	1.0	0.0	24.6
W	0.5	12.1	11.9	2.7	0.3	0.0	27.4
NW	1.9	11.5	7.4	2.7	0.0	0.0	23.5
Summary	5.2	44.6	35.0	12.9	1.8	0.0	100.0

% Icon	Classes (kph)	5	1.8-5.3	45	5.3-10.6	35	10.6-15.9	13	15.9-21.2	2	21.2-26.5	0	>26.5
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LICA ST. LINA 2018/02/01 00:00 - 2018/02/28 23:00 Calm: 0.45% Calm Wind Avg Speed: 0.89(kph)



WIND DIRECTION



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

WIND DIRECTION Hourly Averages (WD)

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

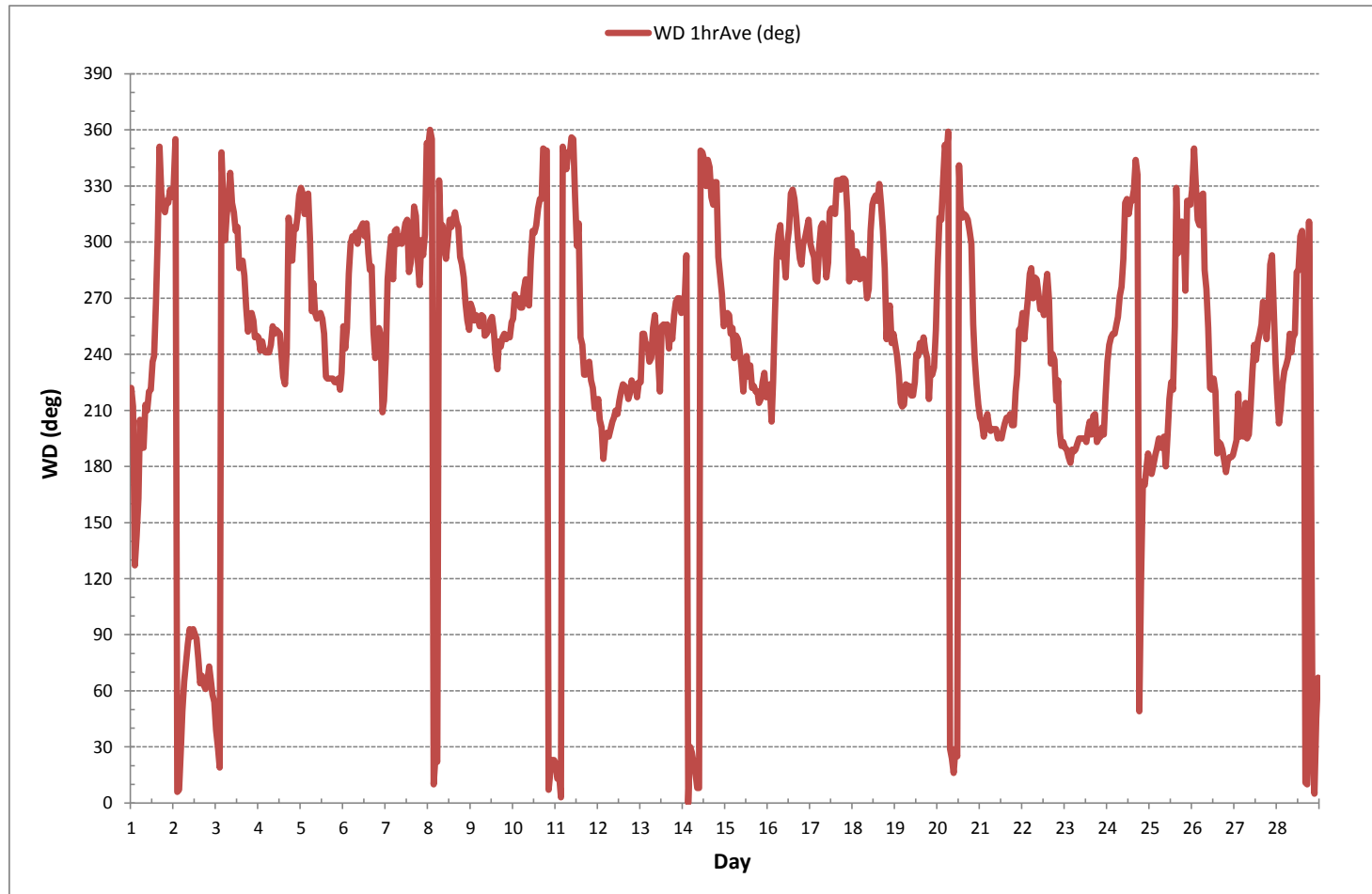
STATUS FLAG CODES

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

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

MONTHLY CALIBRATION TIME:	0 hrs	OPERATIONAL TIME:	672 hrs
STANDARD DEVIATION:	76	AMD OPERATION UPTIME:	100.0 %
		MONTHLY AVERAGE:	262 (W)

WIND DIRECTION Hourly Averages (WD)



STANDARD DEVIATION WIND DIRECTION



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

STANDARD DEVIATION WIND DIRECTION Hourly Averages (STDWD deg)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	
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	26	22	64	30	11	11	11	8	7	9	7	6	12	11	18	19	27	19	13	15	13	12	14	13	24
2	13	15	16	15	11	10	11	11	13	11	14	13	12	16	19	13	13	12	12	11	12	11	11	12	24
3	12	12	16	21	12	11	11	11	13	12	15	15	17	19	17	15	14	11	6	8	8	7	6	6	24
4	7	7	6	6	6	6	5	6	6	6	7	8	8	9	10	8	17	12	9	10	12	12	14	14	24
5	13	14	15	14	13	15	10	13	9	10	11	10	12	10	11	7	7	5	5	5	5	8	5	3	24
6	7	6	4	14	13	13	13	14	15	15	15	17	16	16	19	15	15	9	7	5	5	4	12	4	24
7	4	10	12	11	14	10	11	12	12	13	14	13	15	17	16	15	12	12	10	8	12	10	10	11	24
8	9	13	17	14	10	12	16	10	11	15	13	16	14	17	17	16	18	16	17	15	14	12	8	7	24
9	10	9	6	7	9	6	8	7	5	6	6	8	10	11	7	8	6	5	5	5	5	5	6	7	24
10	8	12	9	9	8	7	10	12	7	10	15	15	16	16	14	13	14	16	17	15	13	13	13	13	24
11	13	12	11	12	16	13	15	14	15	19	17	19	18	23	26	11	7	5	5	5	5	5	6	5	24
12	5	8	9	10	9	9	10	10	9	10	10	10	10	10	8	8	7	7	6	5	4	6	5	24	
13	7	6	6	6	5	5	4	5	7	6	8	12	10	9	9	9	37	35	9	10	13	12	12	11	24
14	11	13	15	15	11	13	13	12	17	14	15	15	20	14	16	17	13	12	11	12	10	8	6	7	24
15	7	7	8	5	5	4	4	4	5	5	6	7	8	8	9	8	8	6	6	8	8	6	5	6	24
16	6	7	7	8	8	14	14	13	14	18	16	18	18	14	13	14	14	14	15	15	14	16	14	14	24
17	13	14	14	12	12	15	15	14	16	18	15	16	16	17	17	15	15	16	15	14	14	14	16	12	24
18	11	12	13	12	10	13	12	12	9	14	17	15	16	17	15	14	17	12	12	17	8	8	4	6	24
19	6	9	6	6	5	7	7	4	3	6	8	11	8	10	11	10	9	7	9	8	7	8	6	5	24
20	13	13	12	15	16	17	15	11	12	14	20	18	24	18	17	15	13	11	9	14	16	26	3	6	24
21	7	7	8	8	7	8	9	9	10	12	11	12	12	12	11	11	9	8	7	6	4	4	6	4	24
22	5	5	7	10	13	13	9	11	14	13	13	15	19	16	19	17	9	8	8	8	6	9	7	7	24
23	8	8	9	10	10	11	11	11	11	11	12	12	13	12	12	12	10	8	9	9	6	7	7	7	24
24	6	5	5	4	5	5	7	9	14	15	13	14	14	15	15	18	19	18	13	23	12	7	8	10	24
25	10	10	10	11	10	9	10	8	11	12	12	9	7	8	20	29	17	14	13	10	12	15	14	14	24
26	14	15	16	14	13	14	14	12	12	9	10	12	7	15	13	14	12	11	11	10	8	9	9	10	24
27	11	13	10	9	10	10	8	11	12	12	8	9	10	10	9	13	16	12	10	11	14	13	7	6	24
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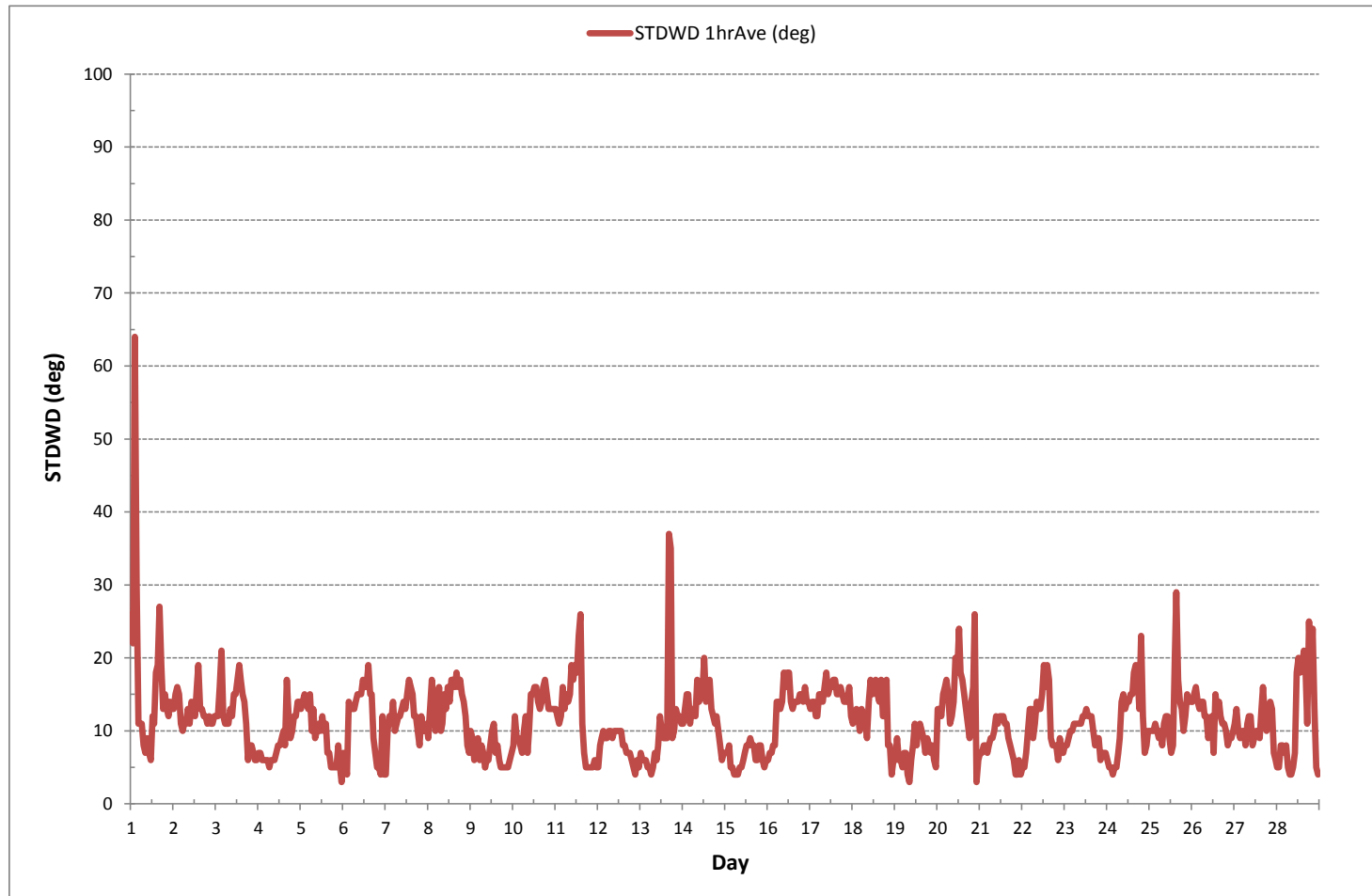
STATUS FLAG CODES

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: May 25, 2017

CALIBRATION TIME: 0 hrs OPERATIONAL TIME: 672 hrs

STANDARD DEVIATION WIND DIRECTION Hourly Averages (STDWD deg)



RELATIVE HUMIDITY



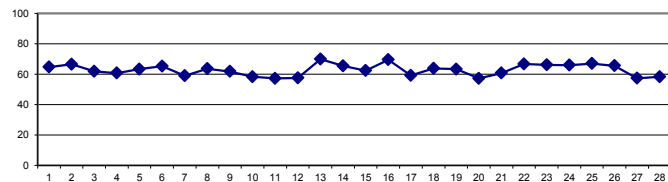
RELATIVE HUMIDITY Hourly Averages (RH %)

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

STATUS FLAG CODES

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

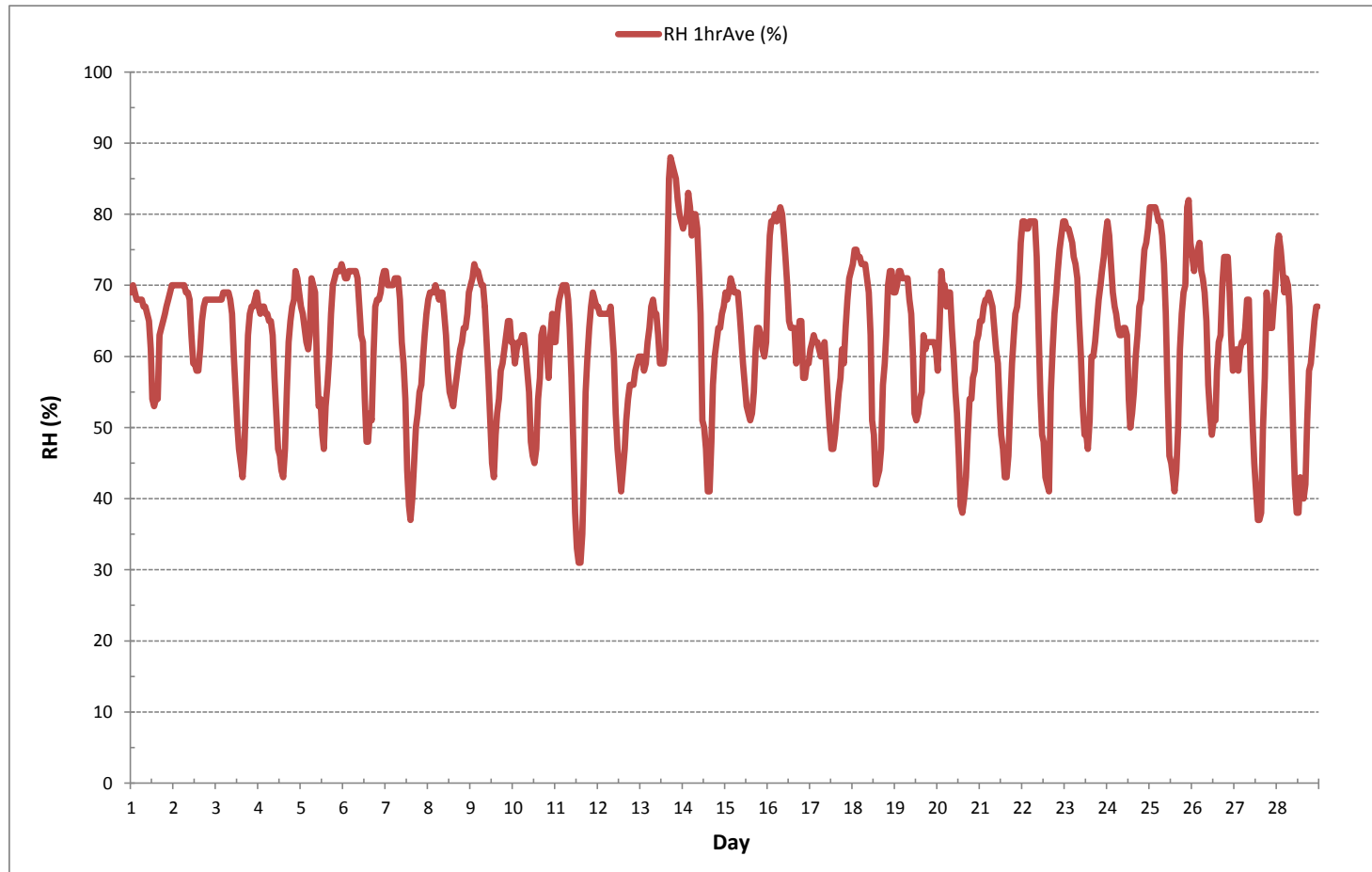
24 HR AVERAGES February 2018



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	31	%	@ HOUR	13	ON DAY	11
MAXIMUM 1-HR AVERAGE:	88	%	@ HOUR	17	ON DAY	13
MAXIMUM 24-HR AVERAGE:	70	%			ON DAY	13
OPERATIONAL TIME:						672 hrs
AMD OPERATION UPTIME:						100.0 %
STANDARD DEVIATION:	10					MONTHLY AVERAGE: 63 %

RELATIVE HUMIDITY Hourly Averages (RH %)



BAROMETRIC PRESSURE



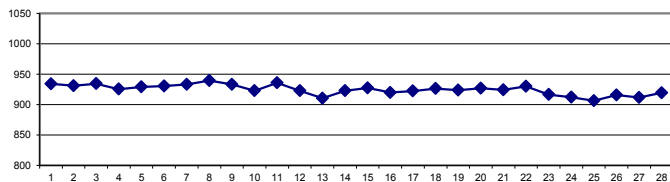
BAROMETRIC PRESSURE Hourly Averages (BP mbar)

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	935	936	936	935	935	935	935	934	934	934	934	934	934	933	934	933	933	933	933	933	933	933	933	934	933	936	934	24	
2	934	933	933	933	933	933	932	932	932	932	932	932	931	930	930	930	930	929	929	929	929	929	929	930	929	934	931	24	
3	931	931	932	932	932	933	934	934	935	936	937	937	937	937	936	936	936	936	935	935	934	933	932	931	931	937	934	24	
4	931	929	928	928	927	926	926	925	925	924	924	924	923	923	923	923	923	923	924	924	925	926	927	928	923	931	925	24	
5	929	929	930	931	931	931	932	932	932	932	932	932	931	930	929	928	928	927	926	926	926	925	925	925	925	925	932	929	24
6	925	925	926	926	927	929	929	931	932	932	933	934	934	933	933	933	932	932	931	931	931	931	930	929	929	925	934	930	24
7	929	929	929	930	930	930	931	931	932	933	934	934	935	935	935	935	936	935	935	936	936	936	936	936	929	936	933	24	
8	936	936	937	937	937	937	938	938	939	939	940	941	941	941	941	941	941	941	941	941	941	940	940	939	936	941	939	24	
9	939	938	938	937	936	936	935	935	934	934	934	934	934	933	933	932	932	931	930	929	929	928	927	926	926	939	933	24	
10	925	924	923	923	922	922	921	921	921	921	922	922	922	922	922	922	922	922	923	923	924	925	926	927	921	927	923	24	
11	928	930	931	932	933	934	935	935	936	937	938	939	939	939	939	938	938	938	938	938	938	937	937	936	928	939	936	24	
12	935	934	934	932	931	930	928	927	925	924	923	923	922	921	920	919	918	917	916	915	914	913	913	912	912	935	923	24	
13	911	911	910	910	909	909	910	910	911	911	912	912	912	912	911	911	911	910	910	910	910	910	909	910	909	912	911	24	
14	910	910	911	911	912	915	917	918	920	922	924	925	926	927	928	928	929	929	929	930	930	931	931	931	910	931	923	24	
15	931	931	931	931	931	931	930	930	930	930	929	929	929	928	927	927	926	925	924	923	922	921	921	920	920	931	927	24	
16	919	919	918	918	918	918	918	918	918	919	919	919	920	920	920	921	921	921	921	921	922	922	922	922	918	923	920	24	
17	923	922	923	923	922	922	923	923	923	923	923	923	922	922	922	921	921	921	921	921	922	922	922	923	921	923	922	24	
18	923	923	924	924	924	924	924	925	925	926	927	927	927	928	927	928	928	928	928	928	928	928	928	928	923	928	926	24	
19	927	927	927	926	926	925	925	925	924	924	924	924	924	923	923	923	923	923	922	922	922	922	922	922	922	927	924	24	
20	922	923	923	923	924	924	925	926	926	927	927	928	928	928	929	929	929	929	929	930	929	929	929	929	922	930	927	24	
21	928	927	927	926	925	924	924	923	923	923	923	923	923	923	924	924	924	924	924	924	924	924	925	925	923	928	924	24	
22	926	926	927	927	928	928	929	929	930	932	933	933	933	933	933	932	932	931	930	930	929	929	928	926	933	930	24		
23	927	925	925	923	922	921	919	918	918	917	917	916	915	915	914	913	913	912	912	911	911	911	910	910	910	927	916	24	
24	910	910	910	910	910	911	911	911	911	912	913	914	914	914	915	915	915	915	914	914	913	912	912	911	910	915	912	24	
25	909	908	907	906	906	905	904	904	904	903	904	904	905	905	905	906	906	907	907	907	908	908	909	910	903	910	906	24	
26	911	912	913	914	914	915	916	916	917	918	919	919	919	919	919	918	918	917	916	916	915	914	913	912	911	919	916	24	
27	912	911	911	911	911	911	910	910	910	910	911	911	911	911	912	912	912	912	912	913	913	914	914	914	910	914	912	24	
28	915	914	915	915	915	915	915	916	916	917	918	920	921	921	922	922	923	923	923	923	924	924	925	925	914	925	919	24	
HOURLY MAX	939	938	938	937	937	937	938	938	939	939	940	941	941	941	941	941	941	941	941	941	941	941	940	939					
HOURLY AVG	924	924	924	924	924	924	924	924	924	925	925	925	925	925	925	925	925	925	924	924	924	924	924	924					

STATUS FLAG CODES

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

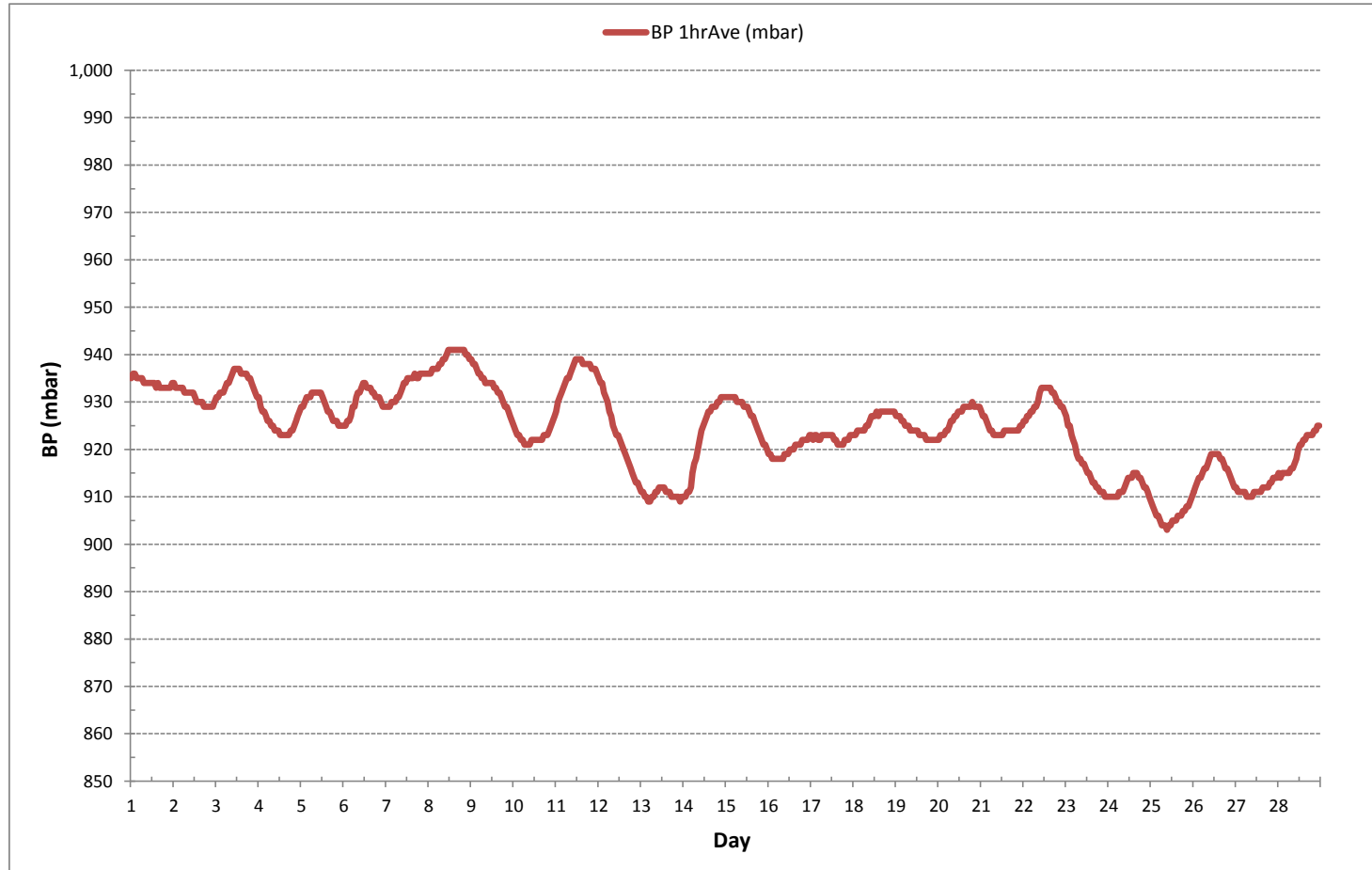
24 HR AVERAGES February 2018



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	903	mbar	@ HOUR	9	ON DAY	25
MAXIMUM 1-HR AVERAGE:	941	mbar	@ HOUR	11	ON DAY	8
MAXIMUM 24-HR AVERAGE:	939	mbar			ON DAY	8
OPERATIONAL TIME:						672 hrs
AMD OPERATION UPTIME:						100.0 %
STANDARD DEVIATION:	9					MONTHLY AVERAGE: 925 mbar

BAROMETRIC PRESSURE Hourly Averages (BP mbar)



AMBIENT TEMPERATURE



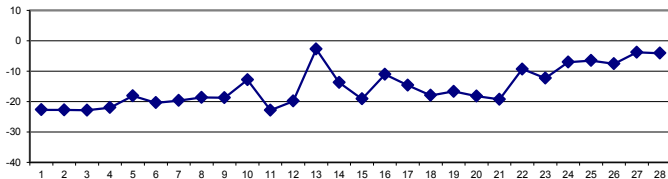
AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)

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	-25.7	-26.7	-25.3	-24.8	-25.1	-25.6	-25.9	-26.5	-26.5	-25.3	-23.9	-21.5	-18.7	-17.9	-18.2	-18.2	-20.8	-21.1	-21.2	-21.2	-21.2	-21.1	-21.2	-21.5	-26.7	-17.9	-22.7	24	
2	-21.6	-22.1	-22.2	-22.2	-22.5	-22.9	-23.4	-23.8	-23.8	-23.3	-22.2	-21.3	-21.1	-20.8	-20.7	-21.6	-22.9	-23.7	-23.8	-23.9	-24.0	-24.1	-24.1	-24.1	-24.1	-24.1	-20.7	-22.8	24
3	-24.1	-24.0	-24.0	-23.8	-24.0	-24.4	-24.6	-24.9	-25.2	-23.1	-20.4	-19.4	-18.4	-17.5	-18.0	-18.4	-19.8	-22.1	-24.4	-24.7	-24.8	-25.0	-26.2	-26.9	-26.9	-17.5	-22.8	24	
4	-26.3	-26.5	-27.0	-26.8	-26.9	-27.1	-26.8	-27.0	-26.3	-24.2	-22.0	-19.4	-17.7	-16.3	-15.3	-16.4	-19.1	-20.2	-19.3	-19.7	-19.6	-19.7	-19.4	-18.1	-27.1	-15.3	-22.0	24	
5	-17.4	-17.4	-17.6	-18.0	-18.1	-18.3	-18.5	-18.6	-18.9	-16.5	-15.4	-15.5	-14.8	-14.2	-15.7	-16.5	-17.5	-19.4	-20.4	-21.0	-21.1	-21.2	-21.6	-22.1	-22.1	-14.2	-18.2	24	
6	-22.3	-22.7	-23.1	-22.9	-23.2	-22.6	-22.2	-21.6	-20.4	-18.4	-17.3	-17.8	-16.0	-14.8	-15.1	-16.5	-16.5	-19.5	-20.9	-21.8	-22.1	-22.5	-23.9	-24.7	-24.7	-14.8	-20.4	24	
7	-24.0	-22.6	-22.2	-22.0	-23.9	-23.2	-23.2	-23.7	-22.7	-20.6	-19.7	-17.6	-14.1	-12.8	-13.0	-14.7	-16.6	-18.1	-18.2	-19.1	-18.7	-20.0	-20.5	-21.0	-24.0	-12.8	-19.7	24	
8	-21.0	-20.5	-19.9	-19.7	-19.9	-20.5	-20.6	-20.9	-21.1	-20.0	-18.7	-16.4	-15.2	-14.9	-15.3	-15.8	-16.7	-17.7	-17.9	-18.1	-18.2	-18.7	-19.8	-20.9	-21.1	-14.9	-18.7	24	
9	-21.0	-21.6	-23.0	-23.0	-23.5	-23.6	-23.8	-23.5	-23.1	-21.1	-18.4	-15.4	-13.0	-11.8	-14.2	-15.3	-15.4	-16.7	-17.2	-17.4	-17.2	-17.4	-17.0	-16.0	-23.8	-11.8	-18.7	24	
10	-16.0	-15.3	-15.6	-15.6	-16.1	-16.1	-15.7	-15.1	-14.0	-9.9	-7.5	-6.5	-6.5	-6.5	-8.5	-9.2	-10.1	-11.1	-12.0	-12.6	-13.6	-14.2	-15.1	-17.1	-17.1	-6.5	-12.9	24	
11	-19.2	-21.0	-22.0	-23.5	-24.4	-25.2	-25.8	-26.7	-25.2	-23.3	-20.8	-18.6	-17.0	-16.1	-16.3	-17.9	-20.5	-23.6	-25.1	-25.9	-26.7	-27.3	-27.8	-27.5	-27.8	-16.1	-22.8	24	
12	-27.9	-28.8	-29.6	-29.4	-28.3	-27.7	-26.8	-25.8	-23.7	-21.9	-19.7	-17.5	-15.8	-14.0	-14.6	-14.4	-14.3	-14.2	-14.1	-13.9	-13.5	-13.8	-13.7	-13.1	-29.6	-13.1	-19.9	24	
13	-12.6	-11.2	-8.9	-8.3	-8.2	-7.3	-7.1	-5.1	-3.5	-3.0	-1.2	0.8	1.5	2.2	2.4	1.8	-0.1	-0.3	0.4	0.7	0.6	0.5	0.3	0.0	-12.6	2.4	-2.7	24	
14	-0.2	-0.5	-0.6	-1.9	-5.8	-7.8	-9.9	-11.5	-12.5	-14.3	-15.3	-16.4	-15.0	-15.9	-15.4	-16.2	-17.8	-19.9	-21.0	-21.6	-22.3	-22.5	-22.9	-23.5	-23.5	-0.2	-13.7	24	
15	-24.4	-24.3	-25.0	-25.3	-25.4	-26.1	-26.2	-26.0	-23.8	-22.1	-19.2	-16.4	-14.2	-13.3	-12.8	-12.9	-13.4	-15.2	-15.7	-15.9	-15.8	-15.5	-15.3	-15.1	-26.2	-12.8	-19.1	24	
16	-15.1	-14.1	-13.3	-13.1	-11.1	-10.5	-10.1	-10.5	-10.1	-9.0	-8.2	-7.2	-6.7	-8.2	-8.8	-9.1	-9.8	-11.1	-11.9	-12.4	-12.8	-13.3	-13.8	-14.3	-15.1	-6.7	-11.0	24	
17	-14.9	-15.5	-15.7	-15.8	-16.2	-15.5	-15.1	-15.3	-15.0	-14.3	-13.1	-12.1	-11.9	-11.9	-12.7	-13.4	-14.3	-14.7	-15.0	-15.1	-15.5	-15.9	-16.2	-16.5	-16.5	-11.9	-14.7	24	
18	-16.8	-17.3	-17.7	-18.7	-19.4	-19.6	-20.2	-20.4	-19.5	-18.0	-15.8	-14.0	-14.5	-14.1	-14.7	-15.4	-15.6	-18.0	-19.1	-20.3	-20.5	-20.2	-21.0	-20.7	-21.0	-14.0	-18.0	24	
19	-20.5	-20.6	-20.6	-21.4	-22.0	-22.0	-22.2	-22.8	-21.5	-19.5	-15.9	-13.2	-12.6	-11.6	-11.0	-11.5	-12.2	-13.1	-14.1	-14.5	-14.3	-14.4	-14.4	-13.8	-22.8	-11.0	-16.7	24	
20	-13.2	-13.1	-13.3	-13.4	-14.0	-15.0	-16.7	-16.7	-18.2	-17.7	-17.1	-16.9	-15.9	-15.6	-16.2	-17.4	-18.9	-21.1	-22.8	-23.0	-24.0	-24.4	-25.7	-26.4	-26.4	-13.1	-18.2	24	
21	-27.1	-27.5	-28.1	-28.3	-28.1	-27.7	-27.5	-27.1	-24.1	-20.7	-18.2	-16.0	-14.0	-12.7	-10.8	-10.3	-11.0	-12.8	-14.5	-15.5	-15.9	-15.3	-14.6	-15.1	-28.3	-10.3	-19.3	24	
22	-14.6	-15.0	-14.9	-14.1	-13.4	-13.1	-13.4	-12.7	-10.3	-6.9	-4.1	-2.8	-2.6	-1.7	-1.7	-1.6	-4.9	-7.0	-8.9	-10.2	-10.9	-11.6	-12.9	-14.2	-15.0	-1.6	-9.3	24	
23	-15.1	-15.6	-15.5	-15.8	-15.9	-16.4	-16.7	-16.7	-15.3	-13.9	-12.1	-10.6	-10.1	-9.1	-8.9	-9.2	-8.7	-9.8	-10.1	-10.1	-10.3	-9.8	-9.6	-9.5	-16.7	-8.7	-12.3	24	
24	-8.9	-8.3	-8.0	-7.8	-7.5	-7.8	-7.4	-6.8	-5.9	-4.7	-2.2	-2.9	-2.7	-2.7	-3.6	-4.3	-6.3	-7.1	-9.1	-9.7	-10.3	-11.1	-12.0	-12.2	-12.2	-2.2	-7.1	24	
25	-11.1	-10.5	-10.2	-10.4	-11.1	-11.6	-11.8	-11.6	-10.8	-9.4	-7.8	-4.6	-3.1	-0.9	1.1	0.5	-1.1	-2.5	-3.5	-4.4	-4.4	-4.9	-5.2	-7.0	-11.8	1.1	-6.5	24	
26	-8.5	-9.0	-9.2	-9.8	-10.0	-10.1	-10.2	-10.5	-9.4	-6.3	-4.8	-4.0	-4.8	-4.2	-5.5	-5.5	-5.0	-6.5	-6.9	-7.3	-7.8	-8.1	-8.7	-8.8	-10.5	-4.0	-7.5	24	
27	-8.9	-9.5	-9.1	-9.8	-9.9	-9.5	-8.3	-7.5	-6.3	-2.8	-0.8	1.7	2.7	3.0	3.1	3.1	0.7	-0.1	-2.3	-2.8	-3.1	-3.7	-4.9	-5.8	-9.9	3.1	-3.8	24	
28	-7.2	-8.2	-7.9	-7.5	-7.5	-8.4	-9.2	-9.2	-7.7	-5.5	-1.9	1.4	3.0	2.6	2.7	3.1	1.7	-1.8	-3.7	-3.7	-4.8	-5.4	-5.8	-7.2	-9.2	3.1	-4.1	24	
HOURLY MAX	-0.2	-0.5	-0.6	-1.9	-5.8	-7.3	-7.1	-5.1	-3.5	-2.8	-0.8	1.7	3.0	3.0	3.1	3.1	1.7	-0.1	0.4	0.7	0.6	0.5	0.3	0.0					
HOURLY AVG	-17.3	-17.5	-17.5	-17.6	-17.9	-18.1	-18.2	-18.2	-17.4	-15.7	-13.8	-12.1	-11.0	-10.4	-10.6	-11.2	-12.4	-13.9	-14.7	-15.2	-15.5	-15.7	-16.2	-16.5					

STATUS FLAG CODES

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

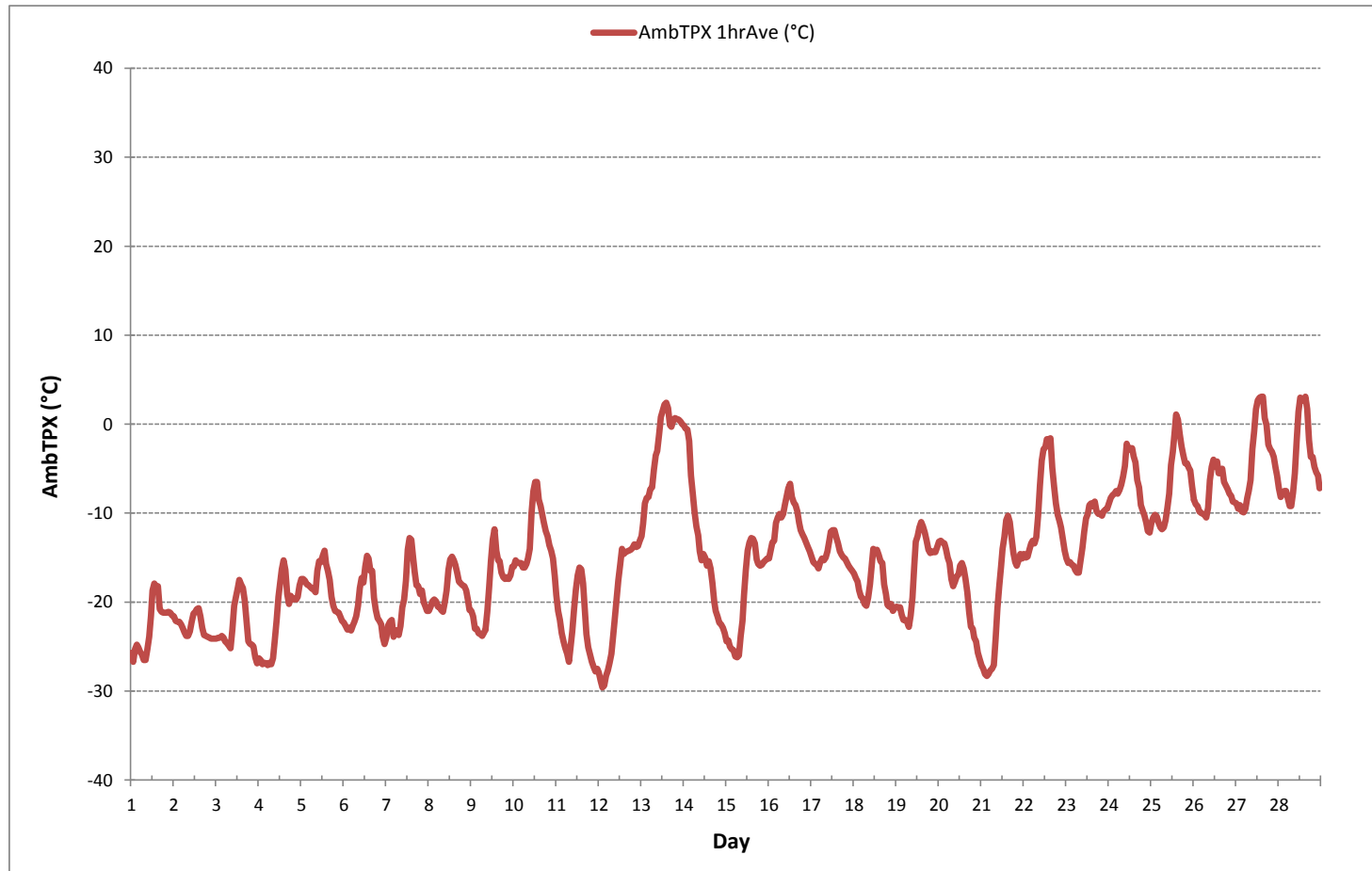
24 HR AVERAGES February 2018



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	-29.6 °C	@ HOUR	2	ON DAY	12
MAXIMUM 1-HR AVERAGE:	3.1 °C	@ HOUR	14	ON DAY	27
MAXIMUM 24-HR AVERAGE:	-2.7 °C			ON DAY	13
OPERATIONAL TIME:					672 hrs
AMD OPERATION UPTIME:					100.0 %
STANDARD DEVIATION:	7.4	MONTHLY AVERAGE:			-15.2 °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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24		
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	24	
3	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	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	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	24		
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.7	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	1.3	0.1	0.1	24	
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24	
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	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	C	C	0.3	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	24	
14	0.0	0.0	0.0	0.2	0.0	0.2	0.5	1.0	0.2	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.1	0.1	0.1	24	
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
25	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	24	
26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24
HOURLY MAX	0.2	0.1	0.0	0.2	0.1	0.2	0.5	1.0	0.2	0.0	1.3	0.7	0.1	0.0	0.1	0.0	0.0	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
HOURLY AVG	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

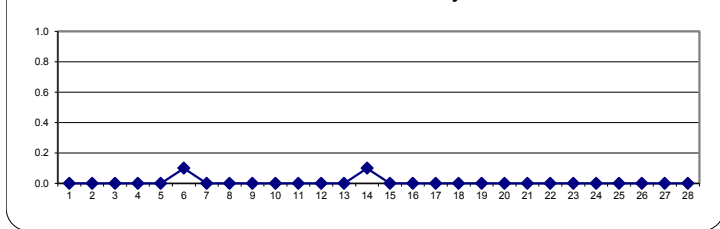
STATUS FLAG CODES

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

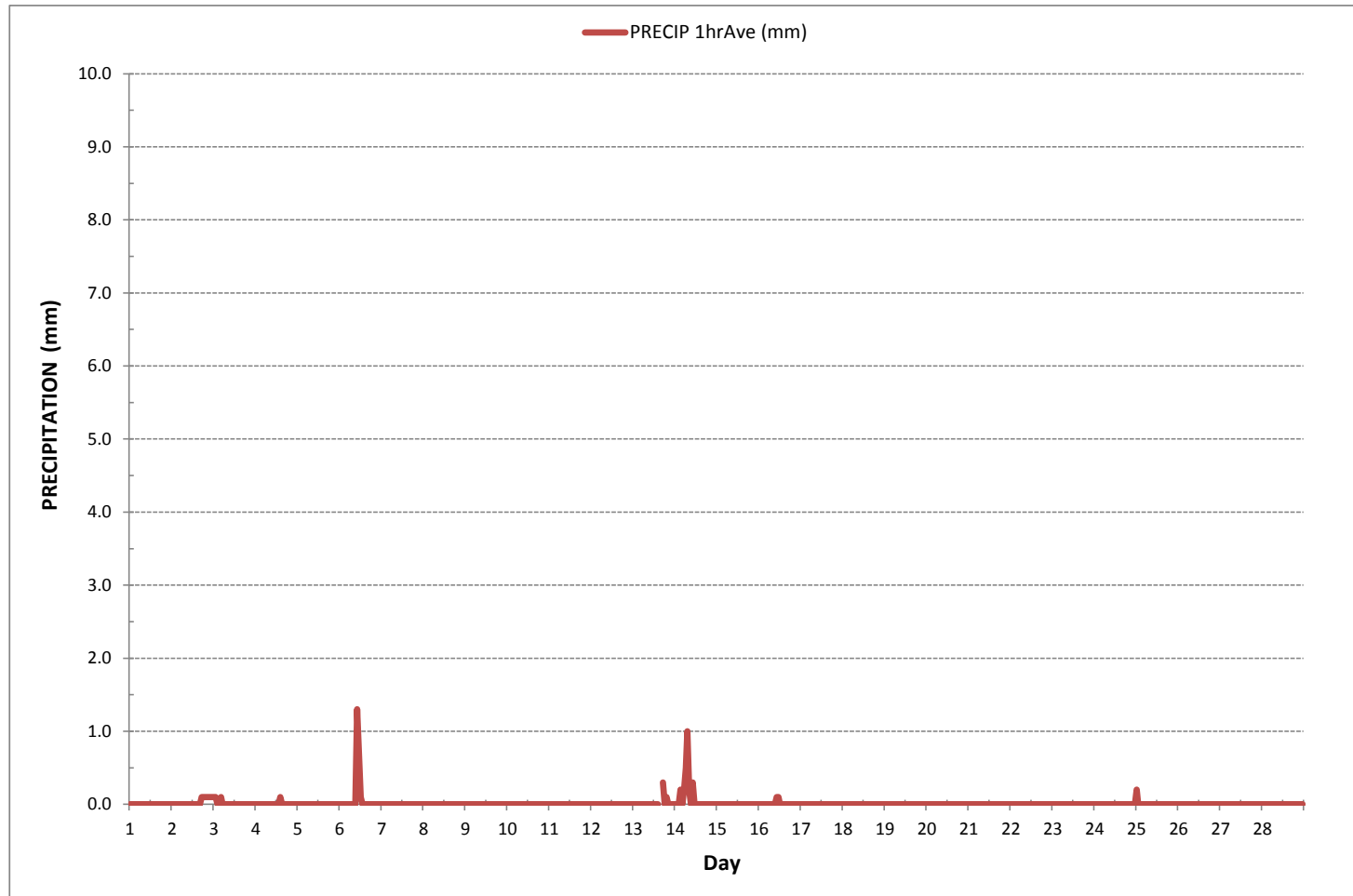
MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	0.0 mm	@ HOUR	0	ON DAY	1
MAXIMUM 1-HR AVERAGE:	1.3 mm	@ HOUR	10	ON DAY	6
MAXIMUM 24-HR AVERAGE:	0.1 mm			ON DAY	6
MONTHLY TOTAL	6.4 mm				
OPERATIONAL TIME:					672 hrs
AMD OPERATION UPTIME:					100.0 %
STANDARD DEVIATION:	0.1	MONTHLY AVERAGE:			0.0 mm

24 HR AVERAGES February 2018



PRECIPITATION Hourly Averages (mm)



APPENDIX II
EQUIPMENT CALIBRATION RESULTS

SULPHUR DIOXIDE



API 100E Sulphur Dioxide Analyzer Calibration

Date: February 14, 2018	Barometer/B.P./units: F.S. 05544 expires January 5, 2019	927	millibars
Company/Airshed: LICA	Thermometer/Station Temp: F.S. 170286131 expires April 19, 2019	23	°C
Location/Station Name: St. Lina	Weather Conditions: Mix of sun and clouds		
Parameter: Sulphur Dioxide	Calibration Purpose: routine monthly		
Start Time 24 hr. (mst): 13:44	Performed By/Reviewer: Alex Yakupov		Rob Fisher
End Time 24 hr. (mst): 18:06	Cal Gas Expiry Date: October 24, 2020		
Calibration Method: Gas Dilution	Converter Model & s/n (if applicable): n/a		

Analyzer: ID# or Serial Number: 468	Range ppb: 1000
Last Calibration Date: January 10, 2018	As Found C.F.: 0.985
Previous C.F.: 1.000	New C.F.: 1.000

Calibration Standards: Low Flow Meter ID/Expiry Date: Defender Low 152019 expires December 13, 2018 High Flow Meter ID/Expiry Date: Defender High 148944 expires December 13, 2018 Calibrator ID/Expiry Date: API id# 690 expires March 17, 2018 Cal Gas Cylinder I.D. #: LL 104225 Cal Gas Conc. (ppm): 49.2	Standard Calibration Points for Ranges <table border="1" style="margin: auto;"> <tr><th>Point</th><th>ppb</th></tr> <tr><td>High</td><td>780</td></tr> <tr><td>Mid</td><td>380</td></tr> <tr><td>Low</td><td>190</td></tr> </table>	Point	ppb	High	780	Mid	380	Low	190
Point	ppb								
High	780								
Mid	380								
Low	190								

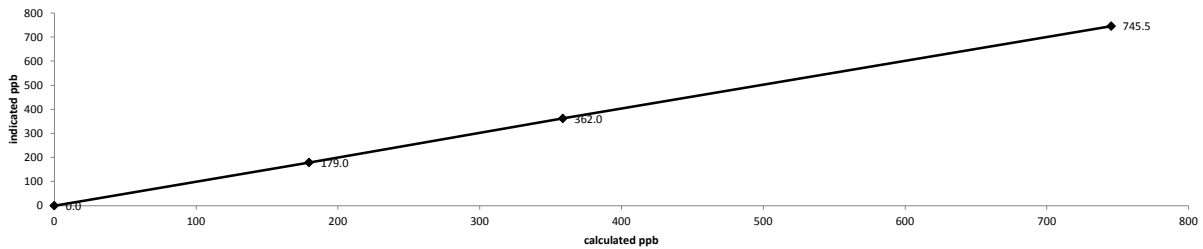
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Point	Calibrator Flow Rates (cc/min)			Calculated Concentration (ppb):	Indicated Concentration (ppb):	Correction Factors (C.F.):
	Diluent	Cal Gas	Total			
as found zero	4989	0.00	4989	0.0	1.0	n/a
as found high	4916	75.64	4992	745.5	758.0	0.985
adjusted zero	4989	0.00	4989	0.0	0.0	n/a
adjusted high	4916	75.64	4992	745.5	745.5	1.000
mid	4970	36.50	5006	358.7	362.0	0.991
low	4992	18.30	5010	179.7	179.0	1.004
calibrator zero	4989	0.00	4989	0.0	0.0	n/a
Average C.F. =						0.998

Linear Regression/Calibration Results:

	LIMITS
Correlation Coefficient = 1.000	> or = 0.995
Slope = 0.999	0.95-1.05
b (Intercept as % of full scale) = -0.04%	± 3% F.S.
% change in C.F. from last cal = 1.52%	± 10%

API 100E Sulphur Dioxide Analyzer Calibration



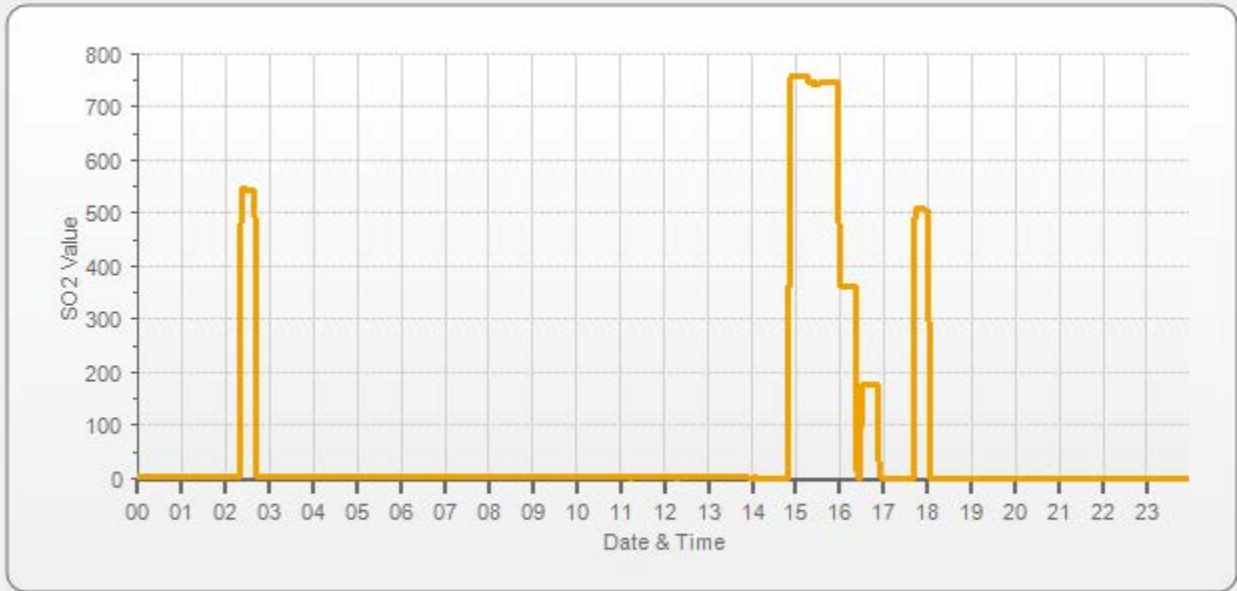
As found: Slope: 0.990 Offset: 143.4 Hvps: 651 Rcell Temp: 50.0 Box Temp: 32.7 Pmt Temp: 7.9 Izs Temp: 45.0 Pres: 23.9 Samp Fl: 602 Norm Pmt: 145.2 Uv Lamp: 2835.1 Lamp Ratio: 90.0 Str Lgt: 71.0 Drk Pmt: 5.8 Expected Value: 511.0	As left: Slope: 0.974 Offset: 145.6 Hvps: 651 Rcell Temp: 50.0 Box Temp: 29.9 Pmt Temp: 7.9 Izs Temp: 45.0 Pres: 24.0 Samp Fl: 607 Norm Pmt: 146.4 Uv Lamp: 2836.6 Lamp Ratio: 90.2 Str Lgt: 70.9 Drk Pmt: 6.1 Expected Value: 507.0
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Comments:

The analyzer sample inlet filter was changed.

The manifold blower was found to be working normally.

SO2[ppb] Station: LICA ST. LINA Daily: 18/02/14 Type: AVG 1 Min. [1 Min.]



— SO2[ppb]

HYDROGEN SULPHIDE



API 101E Hydrogen Sulphide Analyzer Calibration

Date: February 13, 2018	Barometer/B.P./units: F.S. 05544 expires January 5, 2019	912	millibars
Company/Airshed: LICA	Thermometer/Station Temp: F.S. 170286131 expires April 19, 2019	22	°C
Location/Station Name: St. Lina	Weather Conditions: Cloudy/Overcast		
Parameter: Hydrogen Sulphide	Calibration Purpose: routine monthly		
Start Time 24 hr. (mst): 13:51	Performed By/Reviewer: Alex Yakupov		Rob Fisher
End Time 24 hr. (mst): 18:20	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: January 9, 2018	As Found C.F.: 0.931
Previous C.F.: 1.000	New C.F.: 1.000

Calibration Standards: Low Flow Meter ID/Expiry Date: Defender Low 152019 expires December 13, 2018 High Flow Meter ID/Expiry Date: Defender High 148944 expires December 13, 2018 Calibrator ID/Expiry Date: API id# 690 expires March 17, 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	SO2 Scrubber Check (10 minutes): Start/End Time 24 hr.: 14:43 / 14:53 SO2 Analyzer Range: 1000 Target Concentration (ppb): 780 As Found Zero: 0.0 Analyzer Response (ppb): 0.0 Zero Corrected Result (ppb): 0.0
Point	ppb									
High	78									
Mid	38									
Low	19									

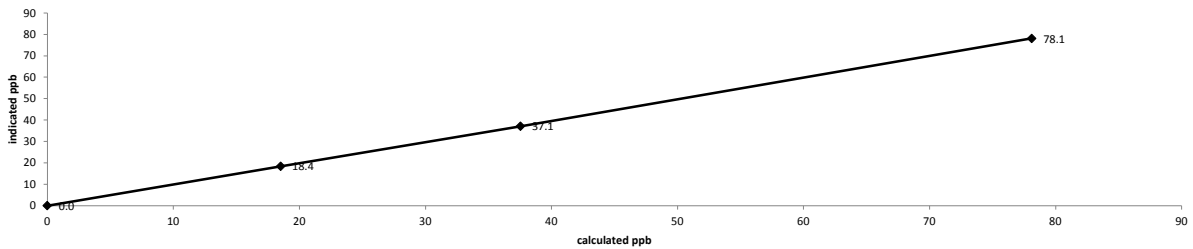
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated	Indicated Concentration (ppb):	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total	Concentration (ppb):		
as found zero	7232	0.00	7232	0.0	0.5	n/a
as found high	7419	57.25	7476	78.1	84.4	0.931
adjusted zero	7232	0.00	7232	0.0	0.0	n/a
adjusted high	7419	57.25	7476	78.1	78.1	1.000
mid	7460	27.56	7488	37.5	37.1	1.012
low	7473	13.59	7487	18.5	18.4	1.006
calibrator zero	7232	0.00	7232	0.0	0.0	n/a
Average C.F.=						1.006

Linear Regression/Calibration Results:

Correlation Coefficient =	1.000	LIMITS	> or = 0.995
Slope =	1.000		0.95-1.05
b (Intercept as % of full scale)=	0.14%		± 3% F.S.
% change in C.F. from last cal=	6.90%		± 10%

API 101E Hydrogen Sulphide Analyzer Calibration



As found: Slope: 0.986 Offset: 70.8 Hvps: 671 Rcell Temp: 50.0 Box Temp: 32.5 Pmt Temp: 8.0 Izs Temp: 48.0 Converter Temp: 314.1 Pres: 19.8 Samp Fl: 508 Uv Lamp: 3198.0 Lamp Ratio: 95.3 Str Lgt: 34.9 Drk Pmt: 0.7 Expected Value: 66.8	As left: Slope: 0.887 Offset: 70.7 Hvps: 671 Rcell Temp: 50.0 Box Temp: 35.1 Pmt Temp: 8.0 Izs Temp: 48.0 Converter Temp: 314.0 Pres: 19.8 Samp Fl: 508 Uv Lamp: 3193.3 Lamp Ratio: 95.1 Str Lgt: 31.3 Drk Pmt: 0.7 Expected Value: 62.5
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Comments:

The analyzer sample inlet filter was changed.

The manifold blower was found to be working normally.



— H2S[ppb]

TOTAL HYDROCARBON



Thermo 51i Total Hydrocarbon Analyzer Calibration

Date:	February 15, 2018	Barometer/B.P./units:	F.S. 05544 expires January 5, 2019	930	millibars
Company/Airshed:	LICA	Thermometer/Station Temp:	F.S. 170286131 expires April 19, 2019	22	°C
Location/Station Name:	St. Lina	Weather Conditions:	Mix of sun and clouds		
Parameter:	Total Hydrocarbon	Calibration Purpose:	shut down		
Start/End Time 24 hr. (mst):	10:59 / 13:51	Performed By/Reviewer:	Alex Yakupov	Rob Fisher	
Calibration Method:	Gas Dilution	Cal Gas Expiry Date:	November 24, 2022		

Analyzer:	
ID# or Serial Number:	925436893
Range ppm:	50
Last Calibration Date:	January 9, 2018
As Found C.F.:	0.912
Previous Cal High Point C.F.:	1.000
New C.F.:	n/a

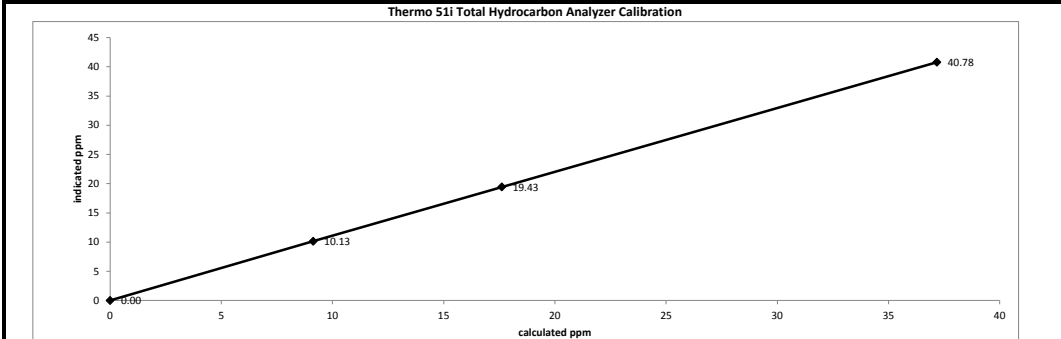
Calibration Standards:	
Low Flow Meter ID/Expiry Date:	Defender Low 152019 expires December 13, 2018
High Flow Meter ID/Expiry Date:	Defender High 148944 expires December 13, 2018
Calibrator ID/Expiry Date:	API id# 690 expires March 17, 2018
Cal Gas Cylinder I.D. #:	LL 165367
CH ₄ /C ₂ H ₆ Cylinder Conc. (ppm):	590.0 207.0
CH ₄ as propane/total CH ₄ equivalents (ppm):	569.3 1159.3
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	2490	0.00	2490	0.0	0.00	n/a
as found high	2496	82.70	2579	37.17	40.78	0.912
mid	2502	38.60	2541	17.61	19.43	0.906
low	2503	19.88	2523	9.13	10.13	0.902
Average C.F. =						0.907

Linear Regression/Calibration Results:

Correlation Coefficient =	1.000	LIMITS	> or = 0.995
Slope =	0.912		0.90-1.10
b (Intercept as % of full scale) =	-0.12%		± 3% F.S.
% change in C.F. from last cal =	8.84%		± 10%



<p style="text-align: center;">As found:</p> <p>Bkg: 4.25</p> <p>Coef: 3.869</p> <p>H2 cylinder (psi): 1100</p> <p>H2 cylinder reg set (psi): 50</p> <p>Span Cylinder (psi): 200</p> <p>Span Cylinder Reg Set (psi): 22</p> <p>Zero Air Gen Pressure: 45</p> <p>Bias Supply: -297.9</p> <p>Detector Base: 124.9</p> <p>Filter: 124.9</p> <p>Pump: n/a</p> <p>Flame: 141.8</p> <p>Internal: 28.2</p> <p>Sample: 9.7</p> <p>Fuel: 19.9</p> <p>Air: 39.7</p> <p>Signal: 1464</p> <p>Status: UT</p> <p>Measured Flow: 0.8241</p> <p>Expected Value: 29.70</p>	<p style="text-align: center;">As left:</p> <p>Bkg: n/a</p> <p>Coef: n/a</p> <p>H2 cylinder (psi): n/a</p> <p>H2 cylinder reg set (psi): n/a</p> <p>Span Cylinder (psi): n/a</p> <p>Span Cylinder Reg Set (psi): n/a</p> <p>Zero Air Gen Pressure: n/a</p> <p>Bias Supply: n/a</p> <p>Detector Base: n/a</p> <p>Filter: n/a</p> <p>Pump: n/a</p> <p>Flame: n/a</p> <p>Internal: n/a</p> <p>Sample: n/a</p> <p>Fuel: n/a</p> <p>Air: n/a</p> <p>Signal: n/a</p> <p>Status: n/a</p> <p>Measured Flow: n/a</p> <p>Expected Value: n/a</p>
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Comments:

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

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

The manifold blower was found to be working normally.

Shutdown calibration was completed to replace the Maxxam Analyzer #925436893 with the LICA THC Analyzer #436609739



Thermo 51C Total Hydrocarbon Analyzer Calibration

Date:	February 15, 2018	Barometer/B.P./units:	F.S. 05544 expires January 5, 2019	930	millibars
Company/Airshed:	LICA	Thermometer/Station Temp:	F.S. 170286131 expires April 19, 2019	22	°C
Location/Station Name:	St. Lina	Weather Conditions:	Mix of sun and clouds		
Parameter:	Total Hydrocarbon	Calibration Purpose:	installation		
Start/End Time 24 hr. (mst):	14:52 / 18:11	Performed By/Reviewer:	Alex Yakupov	Rob Fisher	
Calibration Method:	Gas Dilution	Cal Gas Expiry Date:	November 24, 2022		

Analyzer:	ID# or Serial Number:	436609739	Range ppm:	50
	Last Calibration Date:	n/a	As Found C.F.:	n/a
	Previous Cal High Point C.F.:	n/a	New C.F.:	1.000

Calibration Standards:	Low Flow Meter ID/Expiry Date:	Defender Low 152019 expires December 13, 2018	Standard Calibration Points for a Range of:	50 ppm
	High Flow Meter ID/Expiry Date:	Defender High 148944 expires December 13, 2018		
	Calibrator ID/Expiry Date:	API id# 690 expires March 17, 2018		
	Cal Gas Cylinder I.D. #:	LL 165367		
	CH ₄ /C ₂ H ₆ Cylinder Conc. (ppm):	590.0 207.0		
	CH ₄ as propane/total CH ₄ equivalents (ppm):	569.3 1159.3		

Point	Target ppm
High	38
Mid	18
Low	9

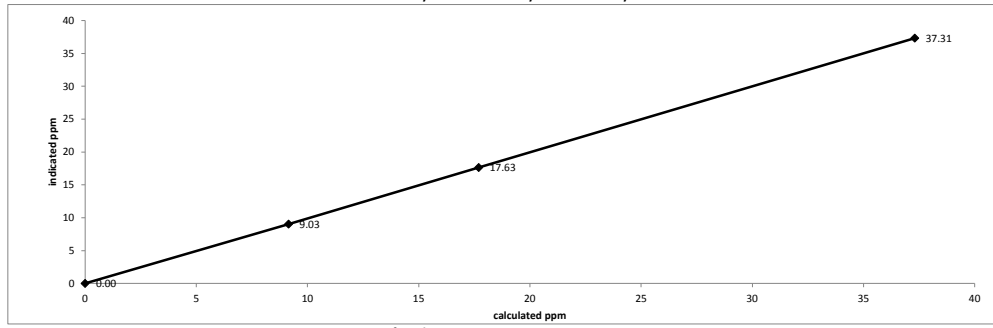
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Point	Calibrator Flow Rates (cc/min)			Calculated Concentration (ppm)	Indicated Concentration (ppm)	Correction Factors
	Diluent	Cal Gas	Total			
adjusted zero	2496	0.00	2496	0.0	0.00	n/a
adjusted high	2497	83.03	2580	37.31	37.31	1.000
mid	2496	38.71	2535	17.70	17.63	1.004
low	2501	19.90	2521	9.15	9.03	1.013
calibrator zero	2496	0.00	2496	0.00	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) =	0.13%		± 3% F.S.
% change in C.F. from last cal =	n/a		n/a

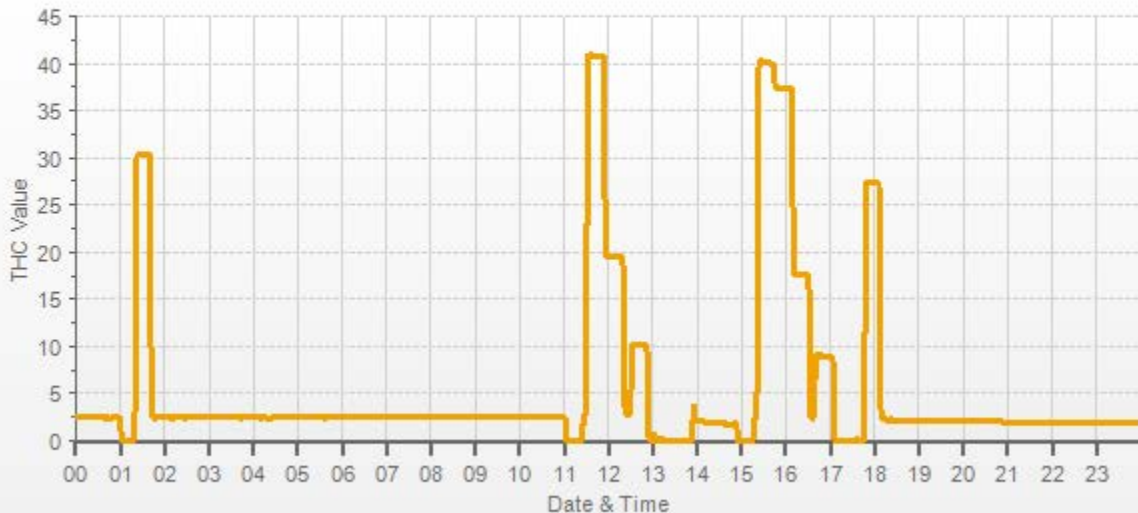
Thermo 51C Total Hydrocarbon Analyzer Calibration



As found:	As left:		
H2 cylinder (psi):	n/a	H2 cylinder (psi):	1100
H2 cylinder reg set (psi):	n/a	H2 cylinder reg set (psi):	22
Span Cylinder (psi):	n/a	Span Cylinder (psi):	2000
Span Cylinder Reg Set (psi):	n/a	Span Cylinder Reg Set (psi):	22
Zero Air Gen Pressure:	n/a	Zero Air Gen Pressure:	44
measurement alarms:	n/a	measurement alarms:	None
service alarms:	n/a	service alarms:	None
cnt:	n/a	cnt:	3462
rng:	n/a	rng:	1
try:	n/a	try:	3
flm:	n/a	flm:	207.3
det:	n/a	det:	125.7
Flame:	n/a	Flame:	207
Filter:	n/a	Filter:	125
Base:	n/a	Base:	125
Sample psi:	n/a	Sample psi:	06.79
Internal Air Pressure:	n/a	Internal Air Pressure:	20
Internal Fuel Pressure:	n/a	Internal Fuel Pressure:	13
Measured Flow:	n/a	Measured Flow:	0.9092
Expected Value:	n/a	Expected Value:	27.50

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

— THC[ppm]





Thermo 51C Total Hydrocarbon Analyzer Calibration

Date:	February 16, 2018	Barometer/B.P./units:	F.S. 05544 expires January 5, 2019	919	millibars
Company/Airshed:	LICA	Thermometer/Station Temp:	F.S. 170286131 expires April 19, 2019	22	°C
Location/Station Name:	St. Lina	Weather Conditions:	Cloudy/Overcast		
Parameter:	Total Hydrocarbon	Calibration Purpose:	repeat		
Start/End Time 24 hr. (mst):	12:11 / 16:04	Performed By/Reviewer:	Alex Yakupov	Rob Fisher	
Calibration Method:	Gas Dilution	Cal Gas Expiry Date:	November 24, 2022		

Analyzer:	ID# or Serial Number:	436609739	Range ppm:	50
	Last Calibration Date:	February 15, 2018	As Found C.F.:	0.992
	Previous Cal High Point C.F.:	1.000	New C.F.:	1.000

Calibration Standards:	Low Flow Meter ID/Expiry Date:	Defender Low 152019 expires December 13, 2018	High Flow Meter ID/Expiry Date:	Defender High 148944 expires December 13, 2018
	Calibrator ID/Expiry Date:	API id# 690 expires March 17, 2018	Cal Gas Cylinder I.D. #:	LL 165367
	CH ₄ /C ₃ H ₈ Cylinder Conc. (ppm):	590.0	207.0	
	CH ₄ as propane/total CH ₄ equivalents (ppm):	569.3	1159.3	
	Standard Calibration Points for a Range of:	50 ppm		
	Point	Target ppm		
	High	38		
	Mid	18		
	Low	9		

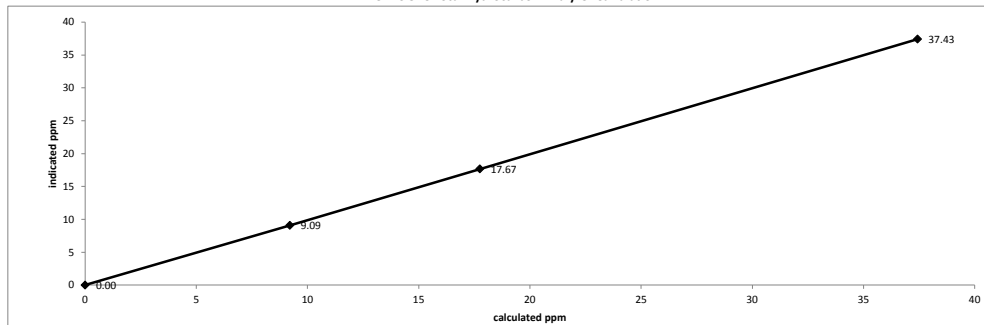
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Point	Calibrator Flow Rates (cc/min)			Calculated Concentration: (ppm)	Indicated Concentration: (ppm)	Correction Factors:
	Diluent	Cal Gas	Total			
as found zero	2483	0.00	2483	0.0	-0.37	n/a
as found high	2487	82.98	2570	37.43	37.37	0.992
adjusted zero	2483	0.00	2483	0.00	0.00	n/a
adjusted high	2487	82.98	2570	37.43	37.43	1.000
mid	2493	38.76	2532	17.75	17.67	1.004
low	2494	19.96	2514	9.20	9.09	1.013
calibrator zero	2483	0.00	2483	0.0	0.00	n/a
Average C.F.=						1.006

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 =	0.82%	± 3% F.S.
		± 10%

Thermo 51C Total Hydrocarbon Analyzer Calibration



As found:	H2 cylinder (psi):	1100	As left:	H2 cylinder (psi):	1100
	H2 cylinder reg set (psi):	22		H2 cylinder reg set (psi):	22
	Span Cylinder (psi):	2000		Span Cylinder (psi):	2000
	Span Cylinder Reg Set (psi):	22		Span Cylinder Reg Set (psi):	22
	Zero Air Gen Pressure:	44		Zero Air Gen Pressure:	44
	measurement alarms:	None		measurement alarms:	None
	service alarms:	None		service alarms:	None
	cnt:	3237		cnt:	3230
	rng:	1		rng:	1
	try:	3		try:	3
	flm:	205.0		flm:	205.2
	det:	125.1		det:	125.7
	Flame:	205		Flame:	205
	Filter:	125		Filter:	125
	Base:	125		Base:	125
	Sample psi:	06.79		Sample psi:	06.79
	Internal Air Pressure:	20		Internal Air Pressure:	20
	Internal Fuel Pressure:	13		Internal Fuel Pressure:	13
	Measured Flow:	0.9098		Measured Flow:	n/a
	Expected Value:	27.50		Expected Value:	27.60

Comments:

The manifold blower was found to be working normally.

The repeat calibration was performed to correct a negative drift after the February 15, 2018 installation calibration.

— THC[ppm]



NITROGEN DIOXIDE



API 200E NO-NO2-NOx Analyzer Calibration

Date: February 14, 2018 Company/Airshed: LICA Location/Station Name: St. Lina Start/End Time 24 hr. (mst): 13:44 / 21:08 G.P.T. to be used for Ozone? No Calibration Method: Gas Dilution & Gas Phase Titration	Barometer/B.P./units: F.S. 05544 expires January 5, 2019 927 millibars Thermometer/Station Temp: F.S. 170286131 expires April 19, 2019 23 °C Weather Conditions: Mix of sun and clouds Calibration Purpose: routine monthly Performed By/Reviewer: Alex Yakupov Rob Fisher Cal Gas Expiry Date: October 24, 2020
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Analyzer: ID# or Serial Number: 594 Last Calibration Date: January 10, 2018 Range ppb: 1000	Correction Factors: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Previous C.F.:</th> <th>As Found C.F.:</th> <th>New C.F.:</th> </tr> </thead> <tbody> <tr> <td>NO =</td> <td>0.998</td> <td>0.997</td> <td>0.997</td> </tr> <tr> <td>NO₂ =</td> <td>1.000</td> <td>1.006</td> <td>1.000</td> </tr> <tr> <td>NOx =</td> <td>0.999</td> <td>0.980</td> <td>0.999</td> </tr> </tbody> </table>		Previous C.F.:	As Found C.F.:	New C.F.:	NO =	0.998	0.997	0.997	NO ₂ =	1.000	1.006	1.000	NOx =	0.999	0.980	0.999
	Previous C.F.:	As Found C.F.:	New C.F.:														
NO =	0.998	0.997	0.997														
NO ₂ =	1.000	1.006	1.000														
NOx =	0.999	0.980	0.999														

Calibration Standards: Low Flow Meter ID/Expiry Date: Defender Low 152019 expires December 13, 2018 High Flow Meter ID/Expiry Date: Defender High 148944 expires December 13, 2018 Calibrator ID/Expiry Date: API id# 690 expires March 17, 2018 Cal Gas Cylinder I.D. # : LL 104225 Cal Gas Conc. (ppm): 51.5 51.6	Standard Calibration Points for a Range of: 1000 ppb <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Point</th> <th>Target NO (ppb)</th> <th>Target NO₂ (ppb)</th> <th>Cc Ozone ?</th> </tr> </thead> <tbody> <tr> <td>High</td> <td>780</td> <td>500</td> <td>n/a</td> </tr> <tr> <td>Mid</td> <td>380</td> <td>275</td> <td>n/a</td> </tr> <tr> <td>Low</td> <td>190</td> <td>100</td> <td>n/a</td> </tr> <tr> <td>Extra Point #1</td> <td>n/a</td> <td>n/a</td> <td>n/a</td> </tr> <tr> <td>Extra Point #2</td> <td>n/a</td> <td>n/a</td> <td>n/a</td> </tr> </tbody> </table>	Point	Target NO (ppb)	Target NO ₂ (ppb)	Cc Ozone ?	High	780	500	n/a	Mid	380	275	n/a	Low	190	100	n/a	Extra Point #1	n/a	n/a	n/a	Extra Point #2	n/a	n/a	n/a
Point	Target NO (ppb)	Target NO ₂ (ppb)	Cc Ozone ?																						
High	780	500	n/a																						
Mid	380	275	n/a																						
Low	190	100	n/a																						
Extra Point #1	n/a	n/a	n/a																						
Extra Point #2	n/a	n/a	n/a																						

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

Calibrator Flow Rates (cc/min)				Calculated NO	Calculated NOx	Indicated NO	Indicated NOx	NO C.F.	NOx C.F.
Point	Diluent	Cal Gas	Total Flow	(ppb)	(ppb)	(ppb)	(ppb)		
as found zero	4989	0.0	4989	0	0	1.0	2.0	n/a	n/a
as found high	4916	75.64	4992	780.3	781.9	784.0	800.0	0.997	0.980
adjusted zero	4989	0.00	4989	0.0	0.0	0.0	0.0	n/a	n/a
adjusted high	4916	75.64	4992	780.3	781.9	783.0	783.0	0.997	0.999
mid	4970	36.50	5006	375.5	376.2	381.0	381.0	0.986	0.987
low	4992	18.30	5010	188.1	188.5	189.0	190.0	0.995	0.992
calibrator zero	4989	0.00	4989	0	0	0.0	0.0	n/a	n/a
Average C.F. =								0.992	0.993

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	4916	75.64	4992	0.0	782.0	782.0	1.0	0.0	1.0	
as found high NO2	4916	75.64	4992	470.0	274.0	778.0	506.0	508.0	505.0	1.006
adjusted high NO2	4916	75.64	4992	470.0	273.0	782.0	510.0	509.0	509.0	1.000
gpt mid	4916	75.64	4992	255.0	499.0	777.0	280.0	283.0	279.0	1.014
gpt low	4916	75.64	4992	93.0	680.0	777.0	100.0	102.0	99.0	1.030
Average NO₂ C.F. =										1.015

Linear Regression/Calibration Results:

	NO	NOx	NO ₂	LIMITS
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995
Slope =	0.996	0.999	1.001	0.95-1.05
b (Intercept as % of full scale) =	0.10%	0.14%	-0.14%	± 3% F.S.
% change in C.F. from last cal =	0.14%	1.93%	-0.59%	± 10%
NO2 converter efficiency			0.96	0.96 to 1.04

As found:		As left:	
NOx SLOPE:	1.039	NOx SLOPE:	1.023
NOx OFFS:	1.6	NOx OFFS:	5.5
NO SLOPE:	1.038	NO SLOPE:	1.031
NO OFFS:	0.9	NO OFFS:	2.3
SAMP FLW:	484	SAMP FLW:	484
OZONE FL:	78	OZONE FL:	78
PMT:	14.0	PMT:	15.5
NORM PMT:	-1.6	NORM PMT:	0.6
AZERO:	17.9	AZERO:	16.7
HVPS:	767	HVPS:	767
RCCELL TEMP:	50.0	RCCELL TEMP:	50.0
BOX TEMP:	34.4	BOX TEMP:	31.7
PMT TEMP:	6.8	PMT TEMP:	6.7
IZS TEMP:	41.2	IZS TEMP:	41.1
MOLY TEMP:	313.9	MOLY TEMP:	313.9
RCEL:	5.3	RCEL:	5.3
SAMP:	26.7	SAMP:	26.2
Expected Value NO:	7	Expected Value NO:	8
Expected Value NO2:	473	Expected Value NO2:	477
Expected Value NOx:	479	Expected Value NOx:	483

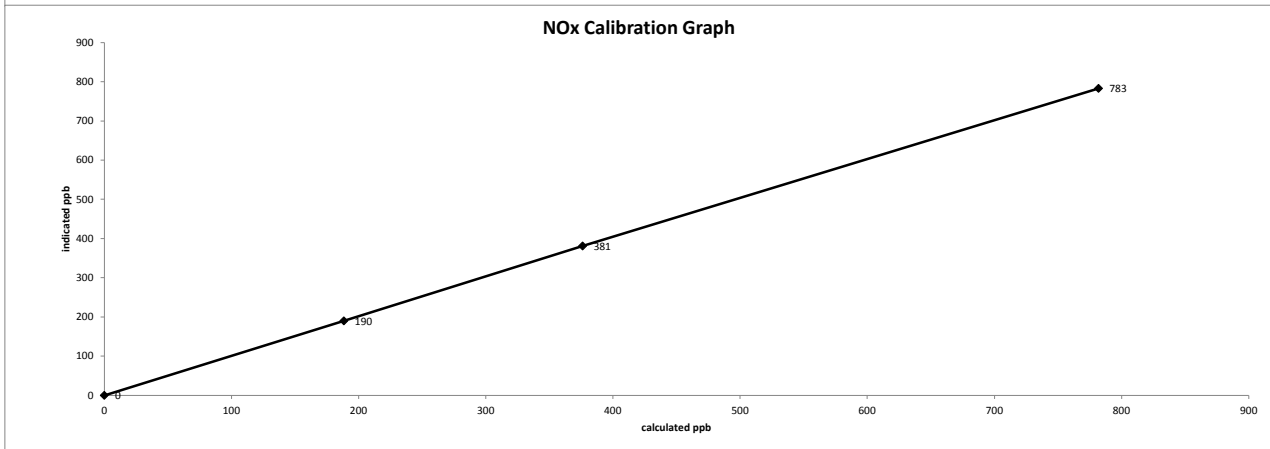
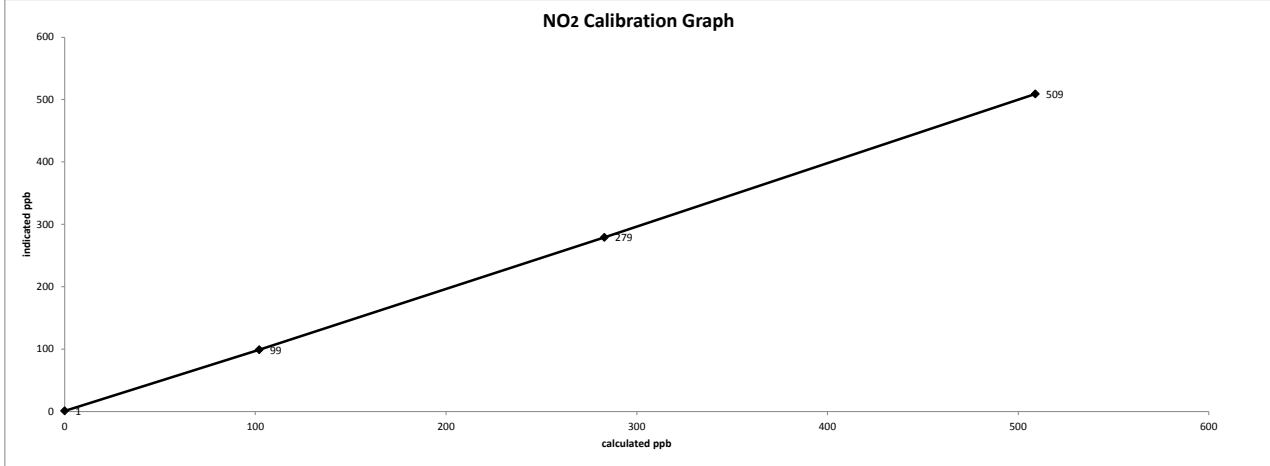
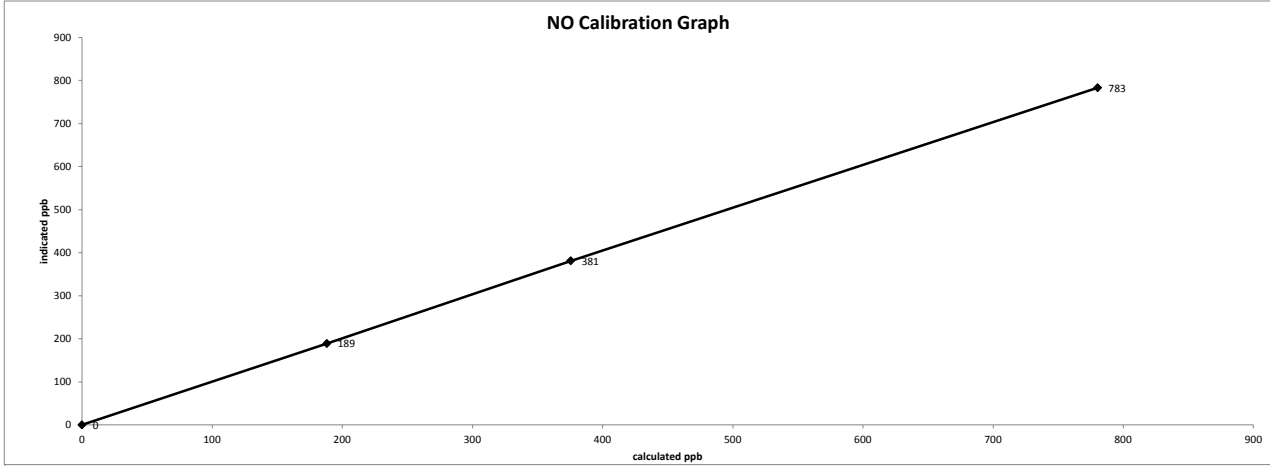
Comments:
 The analyzer sample inlet filter was changed.
 The manifold blower was found to be working normally.

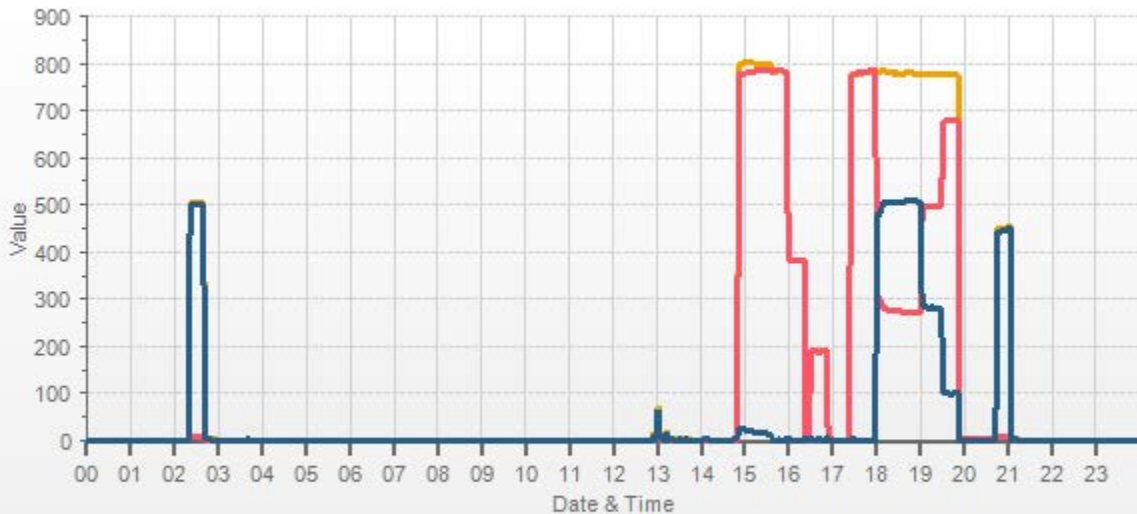
The EV will be adjusted after the first scheduled ZS check.

Date: February 14, 2018
Company/Airshed: LICA
Location/Station Name: St. Lina

Start/End Time 24 hr. (mst): 13:44 / 21:08
Calibration Purpose: routine monthly
Calibration Method: Gas Dilution & Gas Phase Titration

API 200E NO-NO2-NOx Analyzer Calibration





— NOx[ppb] — NO[ppb] — NO2[ppb]



API 200E NO-NO2-NOx Analyzer Calibration

Date: February 25, 2018	Barometer/B.P./units: F.S. 05544 expires January 5, 2019	905	millibars
Company/Airshed: LICA	Thermometer/Station Temp: F.S. 170286131 expires April 19, 2019	22	°C
Location/Station Name: St. Lina	Weather Conditions: Cloudy/Overcast		
Start/End Time 24 hr. (mst): 13:21 / 16:25	Calibration Purpose: as found		
G.P.T. to be used for Ozone? No	Performed By/Reviewer: Alex Yakupov	Rob Fisher	
Calibration Method: Gas Dilution & Gas Phase Titration	Cal Gas Expiry Date: October 24, 2020		

Analyzer:	Correction Factors:
ID# or Serial Number: 594	Previous C.F.:
Last Calibration Date: February 14, 2018	As Found C.F.:
Range ppb: 1000	New C.F.:
	NO = 0.997 0.998 n/a
	NO ₂ = 1.000 0.994 n/a
	NOx = 0.999 0.999 n/a

Calibration Standards:

Low Flow Meter ID/Expiry Date: Defender Low 152019 expires December 13, 2018	Standard Calibration Points for a Range of: 1000 ppb
High Flow Meter ID/Expiry Date: Defender High 148944 expires December 13, 2018	
Calibrator ID/Expiry Date: API id# 690 expires March 17, 2018	
Cal Gas Cylinder I.D. #: LL 104225	
Cal Gas Conc. (ppm): 51.5 51.6	

Point	Target NO (ppb)	Target NO ₂ (ppb)	Cc Ozone ?
High	780	500	n/a
Mid	380	275	n/a
Low	190	100	n/a
Extra Point #1	n/a	n/a	n/a
Extra Point #2	n/a	n/a	n/a

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

Calibrator Flow Rates (cc/min)				Calculated NO	Calculated NOx	Indicated NO	Indicated NOx	NO C.F.	NOx C.F.
Point	Diluent	Cal Gas	Total Flow	(ppb)	(ppb)	(ppb)	(ppb)		
as found zero	4860	0.0	4860	0	0	0.6	0.2	n/a	n/a
as found high	4941	75.8	5017	777.9	779.4	780.0	780.0	0.998	0.999
Average C.F.=								n/a	n/a

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

Calibrator Flow Rates (cc/min)				Calibrator Setting	Indicated NO	Indicated NOx	Indicated NO ₂	NO drop	NO ₂ gain	NO ₂ C.F.
Point	Diluent	Cal Gas	Total Flow	volts or ppb	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)	(ppb)
NOx reference	4941	75.78	5017	0.0	780.0	780.0	780.0	0.6	2.0	
as found high NO ₂	4941	75.78	5017	470.0	282.0	783.0	503.0	498.0	501.0	0.994
Average NO ₂ C.F.=										n/a

Linear Regression/Calibration Results:

	NO	NOx	NO ₂	LIMITS
Correlation Coefficient =	n/a	n/a	n/a	n/a
Slope =	n/a	n/a	n/a	n/a
b (Intercept as % of full scale) =	n/a	n/a	n/a	n/a
% change in C.F. from last cal =	n/a	n/a	n/a	n/a
NO ₂ converter efficiency			0.96	0.96 to 1.04

As found:	As left:
NOx SLOPE: 1.023	NOx SLOPE: 1.023
NOx OFFS: 5.5	NOx OFFS: 5.5
NO SLOPE: 1.031	NO SLOPE: 1.031
NO OFFS: 2.3	NO OFFS: 2.3
SAMP FLW: 471	SAMP FLW: 472
OZONE FL: 76	OZONE FL: 76
PMT: 17.1	PMT: 24.0
NORM PMT: -1.3	NORM PMT: 3.2
AZERO: 16.6	AZERO: 17.2
HVPS: 767	HVPS: 767
RCELL TEMP: 50.0	RCELL TEMP: 767
BOX TEMP: 31.8	BOX TEMP: 50.0
PMT TEMP: 6.7	PMT TEMP: 31.4
IZS TEMP: 41.1	IZS TEMP: 41.1
MOLY TEMP: 315.4	MOLY TEMP: 315.8
RCEL: 5.2	RCEL: 5.2
SAMP: 26.0	SAMP: 26.0
Expected Value NO: 8	Expected Value NO: 8
Expected Value NO ₂ : 477	Expected Value NO ₂ : 477
Expected Value NOx: 483	Expected Value NOx: 483

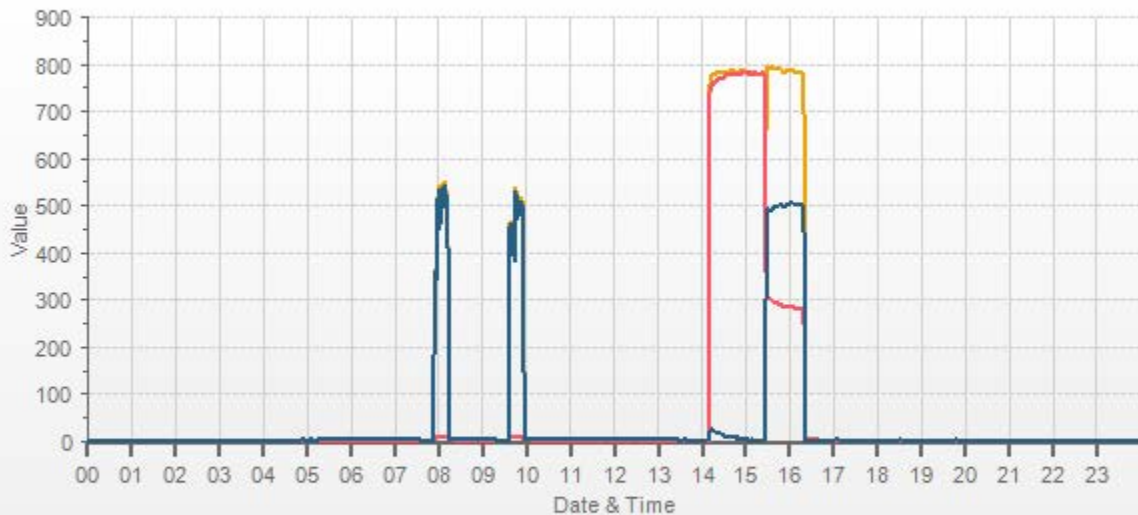
Comments:

No high point NO₂ adjustment was required/made. As found values were copied to adjusted high values for linearity calculation purposes.

The manifold blower was found to be working normally.

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

An "As Found" calibration was performed because of an unstable and high SPAN results after a power outage event (-23.06%, 8.37%).



— NOx[ppb] — NO[ppb] — NO2[ppb]



API 200E NO-NO2-NOx Analyzer Calibration

Date: February 28, 2018	Barometer/B.P./units: F.S. 05544 expires January 5, 2019	919	millibars	
Company/Airshed: LICA	Thermometer/Station Temp: F.S. 170286131 expires April 19, 2019	22	°C	
Location/Station Name: St. Lina	Weather Conditions: Mainly sunny			
Start/End Time 24 hr. (mst): 12:05 / 16:38	Calibration Purpose: shut down			
G.P.T. to be used for Ozone? No	Performed By/Reviewer: Alex Yakupov		Rob Fisher	
Calibration Method: Gas Dilution & Gas Phase Titration	Cal Gas Expiry Date: October 24, 2020			

Analyzer:		Correction Factors:		
ID# or Serial Number: 594	NO =	Previous C.F.: 0.997	As Found C.F.: 1.020	New C.F.: n/a
Last Calibration Date: February 14, 2018	NO ₂ =	1.000	0.980	n/a
Range ppb: 1000	NOx =	0.999	1.010	n/a

Calibration Standards:				
Low Flow Meter ID/Expiry Date: Defender Low 152019 expires December 13, 2018	Standard Calibration Points for a Range of: 1000 ppb			
High Flow Meter ID/Expiry Date: Defender High 148944 expires December 13, 2018	Point	Target NO (ppb)	Target NO ₂ (ppb)	Cc Ozone ?
Calibrator ID/Expiry Date: API id# 690 expires March 17, 2018	High	780	500	n/a
Cal Gas Cylinder I.D. #: LL 104225	Mid	380	275	n/a
Cal Gas Conc. (ppm): 51.5 51.6	Low	190	100	n/a
	Extra Point #1	n/a	n/a	n/a
	Extra Point #2	n/a	n/a	n/a

ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015										
Calibrator Flow Rates (cc/min)				Calculated NO	Calculated NOx	Indicated NO	Indicated NOx	NO C.F.	NOx C.F.	
Point	Diluent	Cal Gas	Total Flow	(ppb)	(ppb)	(ppb)	(ppb)			
as found zero	5046	0.0	5046	0	0	0.9	1.7	n/a	n/a	
as found high	4970	76.3	5046	778.3	779.8	764.0	774.0	1.020	1.010	
mid	4995	36.56	5032	374.2	374.9	371.0	376.0	1.011	1.002	
low	5015	18.17	5033	185.9	186.3	182.0	184.0	1.027	1.022	
Average C.F. =								1.019	1.011	

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	4970	76.26	5046	0.0	769.0	768.0	1.0	0.9	1.0	
as found high NO ₂	4970	76.26	5046	470.0	271.0	778.0	509.0	498.0	508.0	0.980
gpt mid	4970	76.26	5046	245.0	501.0	772.0	273.0	268.0	272.0	0.985
gpt low	4970	76.26	5046	90.0	669.0	768.0	102.0	100.0	101.0	0.990
Average NO₂ C.F. =									0.985	

Linear Regression/Calibration Results:				
	NO	NOx	NO ₂	LIMITS
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995
Slope =	1.019	1.008	0.980	0.90-1.10
b (Intercept as % of full scale) =	0.11%	0.15%	-0.06%	± 3% F.S.
% change in C.F. from last cal =	-2.30%	1.97%	-1.08%	± 10%
NO ₂ converter efficiency			0.96	0.96 to 1.04

<p>As found:</p> NOx SLOPE: 1.023 NOx OFFS: 5.5 NO SLOPE: 1.031 NO OFFS: 2.3 SAMP FLW: 479 OZONE FL: 77 PMT: 18.0 NORM PMT: 1.2 AZERO: 17.2 HVPS: 767 RCCELL TEMP: 50.0 BOX TEMP: 31.2 PMT TEMP: 6.7 IZS TEMP: 41.1 MOLY TEMP: 313.8 RCEL: 5.4 SAMP: 25.9 Expected Value NO: 8 Expected Value NO ₂ : 477 Expected Value NOx: 483	<p>As left:</p> NOx SLOPE: n/a NOx OFFS: n/a NO SLOPE: n/a NO OFFS: n/a SAMP FLW: n/a OZONE FL: n/a PMT: n/a NORM PMT: n/a AZERO: n/a HVPS: n/a RCCELL TEMP: n/a BOX TEMP: n/a PMT TEMP: n/a IZS TEMP: n/a MOLY TEMP: n/a RCEL: n/a SAMP: n/a Expected Value NO: n/a Expected Value NO ₂ : n/a Expected Value NOx: n/a
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Comments:

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.

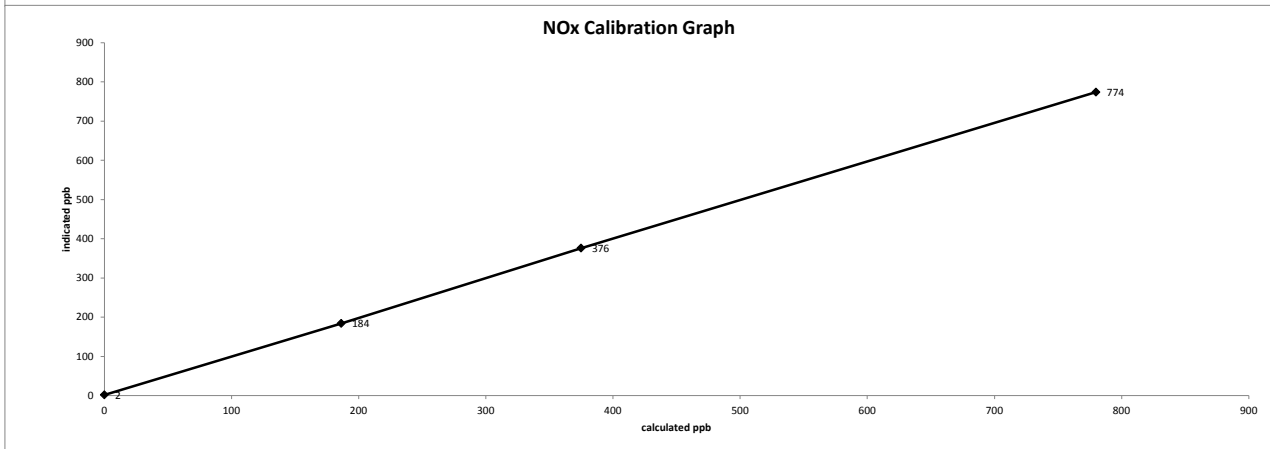
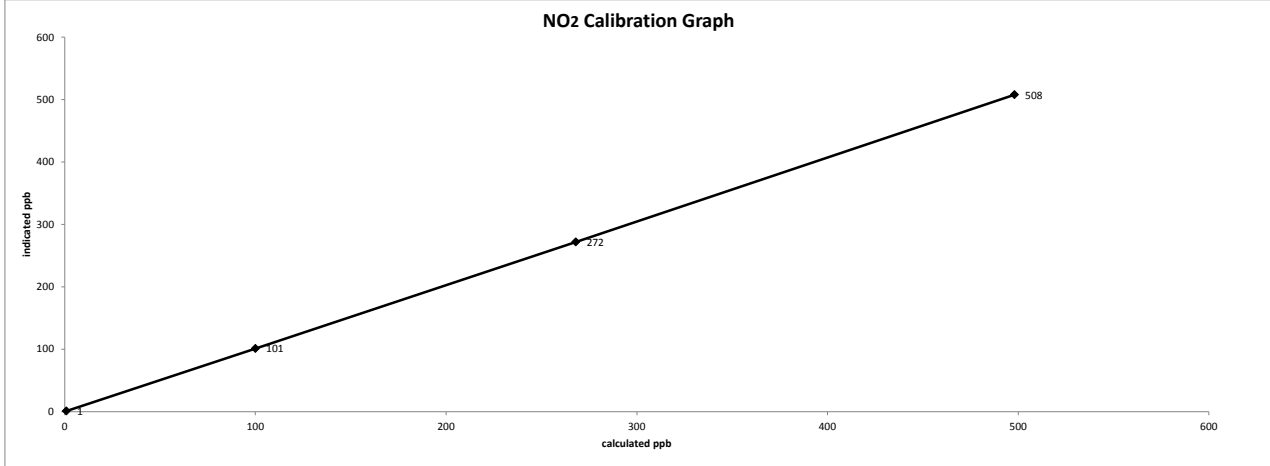
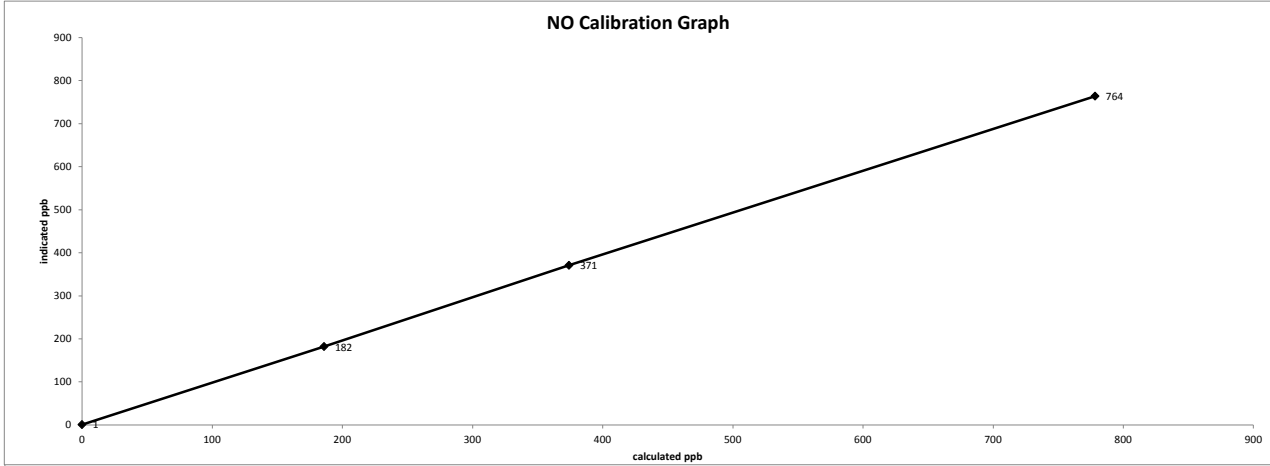
No high point NO₂ adjustment was required/made. As found values were copied to adjusted high values for linearity calculation purposes.

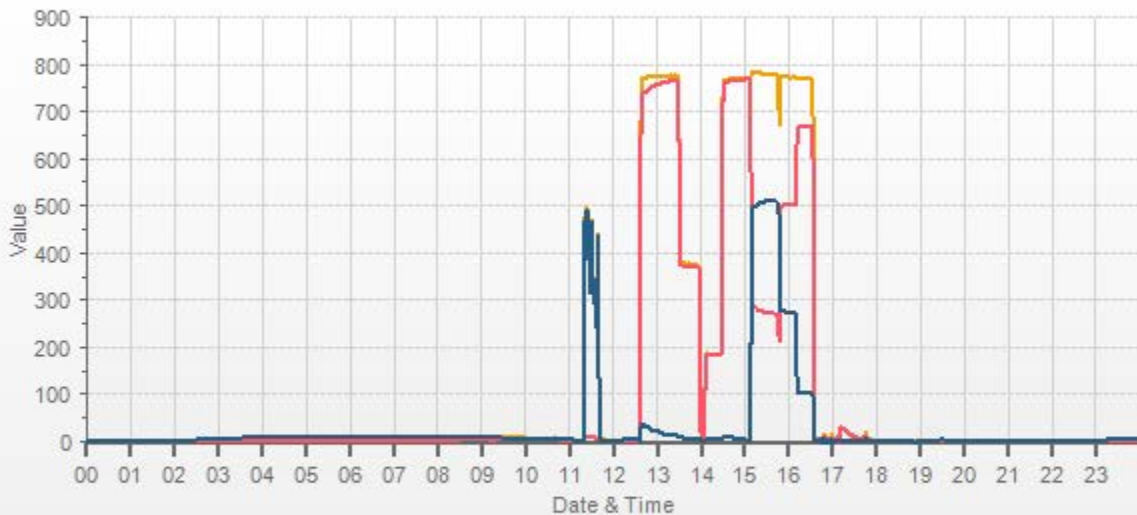
Shutdown calibration was completed to replace the analyzer #594 because of an unstable SPAN.

Date: February 28, 2018
Company/Airshed: LICA
Location/Station Name: St. Lina

Start/End Time 24 hr. (mst): 12:05 / 16:38
Calibration Purpose: shut down
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: February 13, 2018 Company/Airshed: LICA Location/Station Name: St. Lina Start/End Time 24 hr. (mst): 13:51 / 18:23 Ozone Calibration Method: Varying UV Lamp Power G.P.T. Date: n/a-done by Varying UV Lamp Power	Barometer/B.P./units: F.S. 05544 expires January 5, 2019 912 millibars Thermometer/Station Temp: F.S. 170286131 expires April 19, 2019 22 °C Weather Conditions: Cloudy/Overcast Calibration Purpose: routine monthly Performed By/Reviewer: Alex Yakupov Rob Fisher Cal Gas Expiry Date: n/a-done by Varying UV Lamp Power
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Analyzer: ID# or Serial Number: 1002240371 Last Calibration Date: January 12, 2018 Previous Cal High Point C.F.: 1.000	Ozone Range ppb: 500 As Found C.F.: 0.972 New C.F.: 1.000
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Calibration Standards:									
Low Flow Meter ID/Expiry Date: Defender Low 152019 expires December 13, 2018 High Flow Meter ID/Expiry Date: Defender High 148944 expires December 13, 2018 Calibrator ID/Expiry Date: Sabio id# 11900613 expires March 16, 2018 Cal Gas Cylinder I.D. #: n/a	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Point</th> <th>AMD Required Range of Ozone Calibration Points</th> </tr> <tr> <td>High</td> <td>300-400 ppb</td> </tr> <tr> <td>Mid</td> <td>150-200 ppb</td> </tr> <tr> <td>Low</td> <td>50-75 ppb</td> </tr> </table>	Point	AMD Required Range of Ozone Calibration Points	High	300-400 ppb	Mid	150-200 ppb	Low	50-75 ppb
Point	AMD Required Range of Ozone Calibration Points								
High	300-400 ppb								
Mid	150-200 ppb								
Low	50-75 ppb								

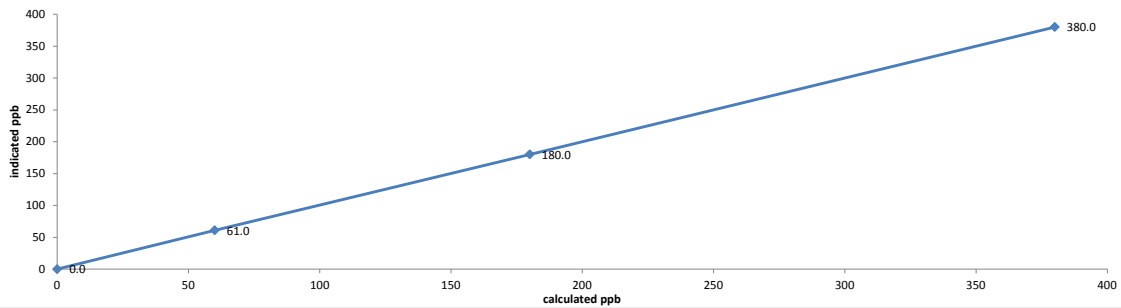
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Point	Calibrator Flow Rate (cc/min)		Calculated Concentration:	Corrected Calculated Concentration:	Indicated Concentration:	Correction Factors:
	Total Flow @ Point Start	Total Flow @ Point Finish	(ppb)	(ppb)	(ppb)	
as found zero	5000	5000	0.0	n/a	0.0	n/a
as found high	5000	5000	380.0	380.0	391.0	0.972
adjusted zero	5000	5000	0.0	0.0	0.0	n/a
adjusted high	5000	5000	380.0	380.0	380.0	1.000
mid	5000	5000	180.0	180.0	180.0	1.000
low	5000	5000	60.0	60.0	61.0	0.984
calibrator zero	5000	5000	0.0	n/a	0.0	n/a
Average C.F. =						0.995

Linear Regression/Calibration Results:

Correlation Coefficient = 1.000	LIMITS
Slope = 1.001	> or = 0.995
b (Intercept as % of full scale) = -0.08%	0.95-1.05
% change in C.F. from last cal = 2.81%	± 3% F.S.
	± 10%

Thermo 49i Ozone Analyzer Calibration



As found:	As left:
O3 Bkg: -0.1	O3 Bkg: -0.1
O3 Coef: 0.991	O3 Coef: 0.961
Photo Lamp: 10.7	Photo Lamp: 10.7
O3 Lamp: 8.2	O3 Lamp: 8.2
Bench: 29.6	Bench: 32.2
Bench Lamp: 53.6	Bench Lamp: 53.7
O3 Lamp: 67.8	O3 Lamp: 67.9
Pressure: 668.7	Pressure: 668.1
Cell A lpm: 0.724	Cell A lpm: 0.722
Cell B lpm: 0.760	Cell B lpm: 0.760
O3 ppb: -5.6	O3 ppb: -0.3
Cell A ppb: -6.0	Cell A ppb: 0.5
Cell B ppb: -5.2	Cell B ppb: -1.0
Cell A int: 79162	Cell A int: 79013
Cell B int: 99071.0	Cell B int: 98915.0
Expected Value: 318.0	Expected Value: 303.0

Comments:

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

O3[ppb]



PARTICULATE MATTER 2.5

Thermo 5030i SHARP Monitor Quarterly Audit/Calibration

Date: <u>February 26, 2018</u>	Performed By/Reviewer: <u>Alex Yakupov</u> <u>Tom Bourque</u>
Company: <u>LICA</u>	Start Time (mst): <u>12:25</u>
Station Name/Location: <u>St Lina</u>	End Time (mst): <u>16:49</u>
Previous Audit Date: <u>January 18, 2018</u>	Calibration Purpose: <u>quarterly</u>
Parameter: <u>PM 2.5</u>	Weather Conditions: <u>Mainly sunny</u>

SHARP 5030i Information and Status:
 Serial Number: CM17091001 Filter Tape Counter 270 / 50% left

Reference Standards: Air Flow				
	Manometer	Orifice	Pressure:	Temp / RH:
Make:	<u>Dwyer</u>	<u>Chinook</u>	<u>Fisher Scientific</u>	<u>Fisher Scientific</u>
Model:	<u>475 Mk.III</u>	<u>CHN0901</u>	<u>FB61290</u>	<u>11-661-7A, 11745843</u>
Serial Number:	<u>#1</u>	<u>#1</u>	<u>05544</u>	<u>170286131</u>
Calibration Date:	<u>April 24, 2017</u>	<u>February 14, 2018</u>	<u>January 15, 2018</u>	<u>April 19, 2017</u>

Ambient Temperature (°C)						
As Found:			As Left: (same as found if acceptable)			
	Reference	SHARP	Difference	Reference	SHARP	Difference
#1	-4.23	-5.3	1.1	-4.10	-4.1	0.0
#2	-4.16	-5.3	1.1	-4.09	-4.1	0.0
#3	-4.00	-5.3	1.3	-4.12	-4.1	0.0
Average	-4.1	-5.3	1.2	-4.1	-4.1	0.0

Temp Limit: ± 2°C

Ambient Relative Humidity (%RH)						
As Found:			As Left: (same as found if acceptable)			
	Reference	SHARP	Offset (ZERO)	Reference	SHARP	Offset (ZERO)
#1	55.23	53.8	1.4	54.10	54.1	0.0
#2	55.12	53.6	1.5	54.10	54.1	0.0
#3	55.16	53.6	1.6	54.10	54.1	0.0
Average	55.2	53.7	1.5	54.1	54.1	0.0

RH Limit: ± 2 %RH

Barometric Pressure (mmHg)						
As Found:			As Left: (same as found if acceptable)			
	Reference	SHARP	Difference	Reference	SHARP	Difference
#1	691.5	692.8	-1.3	691.5	691.5	0.0

BP Limit: ± 2 mmHg

Nephelometer Source Level						
As Found:			As Left: (same as found if acceptable)			
	Variable	Value		Variable	Value	
	IRED	65		IRED	65	
	SRC LEVEL	47		SRC LEVEL	47	

*IRED Limit (as found): 60-70 mA
Adjusted IRED Limit (as left): 65 mA*

Detector Calibration (Auto)			As Left:	
Detector Auto Calibration Completed: <u>YES</u>			Variable	Value
			HIGH VOLT	<u>1350</u>
			BETA REF TH	<u>270</u>
			ALPHA TH	<u>670</u>
			DIFF HV	<u>2</u>

Mass Coefficient (Auto)					
Zero			Span		
	Variable	Value		Variable	Value
	MASS COEF	<u>6995.6</u>		MASS COEF	<u>7125.9</u>
	FOIL VALUE	<u>1045</u>		FOIL VALUE	<u>1045</u>
	Beta Avg	<u>9587</u>		Beta Avg	<u>7932</u>
	difference	<u>n/a</u>		difference	<u>1.9</u>

Foil Set: 4804

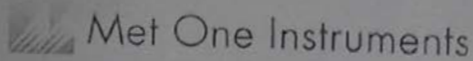
Flow Calibration (L/min)						
As Found:			As Left: (same as found if acceptable)			
	Reference	SHARP	Difference	Reference	SHARP	Difference
#1	16.33	16.65	-0.32	16.66	16.67	-0.01
#2	16.45	16.67	-0.22	16.66	16.66	0.00
#3	16.41	16.66	-0.25	16.66	16.67	-0.01
Average	16.40	16.66	-0.26	16.66	16.67	-0.01

Flow Limit: 16.67 ± 0.33 L/min

Leak Check (L/min)						
Without Leak Check Adapter			With leak Check Adapter			
	Reference	SHARP	Difference	Reference	SHARP	Difference
#1	16.67	16.67	0.00	16.61	16.65	-0.04

Leak Limit: 0.08 L/min
LEAK RATE: -0.04

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 SYSTEMS CHECK



Meteorological System Checklist

Date:	February 13, 2018		
Technician:	Alex Yakupov		
Reviewer:	Rob Fisher		
Station:	St. Lina		
Unit:	Make:	Model:	Serial #:
Precipitation Sampler:	Met One - Heated Rain Gauge	Part 387	n/a
Temperature Sensor:	Met One - RH with Temperature	083-1-35	F4091
Barometric Pressure Sensor:	Met One - BP sensor	Part 090D	F4498
Relative Humidity Sensor:	Met One - RH with Temperature	083-1-35	F4091
Anemometer:	n/a	n/a	n/a
PRECIPITATION SENSOR CHECK			
Checklist:	Reply:	Comments:	
Previous check date:	October 5, 2017		
Is the sensor Level?	yes		
Is the heater operating properly?	yes		
Are the bucket drain holes clean?	yes		
Is the screen on the housing? (screen should be on between July and September)	no		
Is the housing clean?	yes		
Is the area around the housing clean and free from obstacles?	yes		
TIP TEST - Slowly pour water until 10 tip are heard. (10 tips = 1 ml)			
# of Tips	Data Logger Response (ml):	Manual Specification = +/- 0.1 ml	
10	1.00	0.00	
AMBIENT TEMPERATURE SENSOR CHECK			
Previous check date:	October 5, 2017		
Parameter:	Temperature @ 2 metres (1 C tolerance)		
Reference Thermometer ID:	F.S. 170286131 expires April 19, 2019		
Reference Temperature (°C):	2.8		
Station - Ambient Temperature (°C):	2.3		
Temperature Difference (°C):	0.5		
BAROMETRIC PRESSURE SENSOR CHECK			
Previous check date:	October 5, 2017		
Reference Barometer ID:	F.S. 05544 expires January 5, 2019		
Reference Pressure - Units/Reading:	atm	0.9001	
Station Pressure - Units/Reading:	atm	0.9001	
Pressure Tolerance +/- 15% of error:	0.765 - 1.035	0.00%	
RELATIVE HUMIDITY (HYGROMETER) SENSOR CHECK			
Previous check date:	October 5, 2017		
Reference Hygrometer ID:	F.S. 170286131 expires April 19, 2019		
Reference Hygrometer % RH- Reading:	62.00		
Station Hygrometer % RH- Reading:	62.00		
Pressure Tolerance +/- 15% of error:	52.70 - 71.30	0.0%	

CALIBRATORS

Company Maxxam **Operator:** Mike

Calibrator:		Flow Measurement Device:	
Make/Model	<u>API 700</u>	Make/Model	<u>Bios Defender 530</u>
Serial Number	<u>690</u>	Serial Number	<u>HI148944 Lo 152019</u>
Last Verification Date	<u>March 30, 2016\</u>	Temperature (°C)	<u>23.3</u>
NO Cylinder S/N	<u>EY0000597</u>	Barometric Pressure	<u>704.3mmHg</u>
NO [PPM]	<u>49.0 NOx [PPM]</u>		<u>49.0</u>
Expiry Date	<u>December 8, 2019</u>		

Dilution Flow (sccm)			
Pt. #1	<u>4898</u>	Pt. #2	<u>4942</u>
		Pt. #3	<u>4953</u>
Gas Flow (sccm)			
Pt. #1	<u>79.2</u>	Pt. #2	<u>38.6</u>
		Pt. #3	<u>19.3</u>

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO ₂	NOx	NO	NOx
4977	0.0	0.0000	0.0000	0.0000	0.0000	0.0000	Limit ± 10%	
4977	79.2	0.7792	0.7792	0.7841	0.0012	0.7854	1%	1%
4981	38.6	0.3797	0.3797	0.3813	0.0006	0.3819	0%	1%
492	19.3	0.1902	0.1902	0.1927	0.0002	0.1929	1%	1%
Absolute Average Percent Difference							1%	1%

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

NO		LIMITS		NOx	
Correlation=	1.0000	≥ 0.990		Correlation=	1.0000
m (Slope)=	1.0056	0.90-1.10		m (Slope)=	1.0073
b (Intercept % of FS)=	0.0357	± 3% F.S.		b (Intercept % of FS)=	0.0304

Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
4977	0.000	0.0000	0.7928	0.0014	0.7941	NO ₂	% Diff. Limit
4977	0.500	0.5448	0.2480	0.5391	0.7871	-1%	± 10%
4977	0.250	0.2862	0.5066	0.2861	0.7926	-1%	± 10%
4977	0.100	0.1221	0.6707	0.1193	0.7914	-3%	± 10%
Absolute Average Percent Difference						2%	± 10%

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

NO₂		LIMITS
Correlation=	1.0000	≥ 0.995
m (Slope)=	0.9894	0.90-1.10
b (Intercept % of FS)=	0.0719	± 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>March 15, 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: March 17, 2017
Location: McIntyre Center Edmonton

Company <u>Maxxam</u>		Operator: <u>Mike</u>	
Calibrator:		Flow Measurement Device:	
Make/Model	<u>Sabio 2010D</u>	Make/Model	<u>Bios Defender 530</u>
Serial Number	<u>11900613</u>	Serial Number	<u>HI148944 Lo 152019</u>
Last Verification Date	<u>March 31, 2016</u>	Temperature (°C)	<u>23.9</u>
NO Cylinder S/N	<u>EY0000769</u>	Barometric Pressure	<u>698mmHg</u>
NO [PPM]	<u>51.1 NOx [PPM]</u>		<u>51.2</u>
Expiry Date	<u>December 8, 2019</u>		

Dilution Flow (sccm)		
Pt. #1 <u>4879</u>	Pt. #2 <u>4932</u>	Pt. #3 <u>4950</u>
Gas Flow (sccm)		
Pt. #1 <u>74.5</u>	Pt. #2 <u>36.4</u>	Pt. #3 <u>18.2</u>

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO ₂	NOx	NO	NOx
4965	0.0	0.0000	0.0000	0.0001	0.0000	0.0001	Limit ± 10%	
4954	74.5	0.7685	0.7700	0.7915	0.0008	0.7923	3%	3%
4968	36.4	0.3744	0.3751	0.3832	0.0006	0.3838	2%	2%
4968	18.2	0.1872	0.1876	0.1916	0.0002	0.1918	2%	2%
Absolute Average Percent Difference							3%	2%

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

NO		LIMITS		NOx	
Correlation=	1.0000	≥ 0.990		Correlation=	1.0000
m (Slope)=	1.0301	0.90-1.10		m (Slope)=	1.0291
b (Intercept % of FS)=	-0.0919	± 3% F.S.		b (Intercept % of FS)=	-0.0881

Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOx	% Diff. Vs Audit gas	
4954	0.000	0.0000	0.7949	0.0005	0.7954	NO ₂	% Diff. Limit
4954	0.510	0.5104	0.2845	0.5072	0.7917	-1%	± 10%
4954	0.250	0.2516	0.5433	0.2514	0.7944	0%	± 10%
4954	0.100	0.1085	0.6864	0.1087	0.7951	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)=	0.9926	0.90-1.10
b (Intercept % of FS)=	0.0925	± 3% F.S.

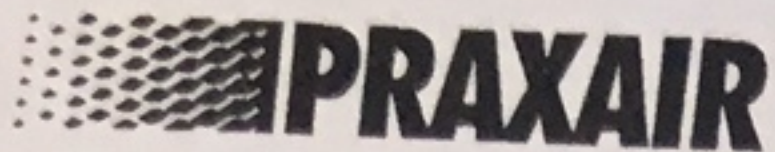
AENV Standards	NO_x Analyzer
Audit Calibrator	
Make/Model	<u>Thermo 146i</u>
Serial/AMU Number	<u>1809</u>
SRM Gas Cylinder No.	<u>CAL018140</u>
Cylinder Conc. (ppm)	<u>48.79</u>
	Make/Model
	<u>Thermo 42i</u>
	Serial/AMU Number
	<u>1868</u>
	Last Calibration Date
	<u>March 15, 2017</u>
	Full Scale (ppm)
	<u>1.0</u>
	Cylinder Gas Expiry Date
	<u>March 28, 2019</u>

COMMENTS: Gas has ~50ppm SO2

Auditor: Shea Beaton
Operator Signature: [Signature]

Date: March 16, 2017
Location: McIntyre Center Edmonton

CALIBRATION GASES



Praxair
 5700 South Alameda Street
 Los Angeles, CA 90058
 Tel: (323) 585-2154 Fax: (714) 542-6689
 PGVPID: F22017

DocNumber: 000116115

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

PRAXAIR PKG EDMONTON PLT 8
 9501 34TH ST
 EDMONTON AB T6B 2X

Praxair Order Number: 45314542
 Customer P. O. Number: 582-277
 Customer Reference Number:

Fill Date: 10/12/2017
 Part Number: NI NO50MS2E-AQ
 Lot Number: 70086728507
 Cylinder Style & Outlet: AQ CGA 660
 Cylinder Pressure & Volume: 2000 psig 82 cu. ft.

Certified Concentration:

Expiration Date:	10/24/2020	NIST Traceable
Cylinder Number:	LL104225	Analytical Uncertainty:
51.5 ppm	NITRIC OXIDE	± 0.7 %
49.2 ppm	SULFUR DIOXIDE	± 1 %
Balance	NITROGEN	

NOx = 51.6 ppm

NOx for Reference Only

Certification Information: Certification Date: 10/24/2017 Term: 36 Months Expiration Date: 10/24/2020

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data:

(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. Component: NITRIC OXIDE

Requested Concentration: 50 ppm
 Certified Concentration: 51.5 ppm
 Instrument Used: Thermo Electron 42i-LS S/N 1030645077
 Analytical Method: Chemiluminescence
 Last Multipoint Calibration: 10/14/2017

Reference Standard Type: GMIS
 Ref. Std. Cylinder #: CC363145
 Ref. Std. Conc: 50.79 ppm
 Ref. Std. Traceable to SRM #: vs. 1683b
 SRM Sample #: 45.-V-42
 SRM Cylinder #: CAL017897

First Analysis Data:				Date: 10/17/2017
Z: 0	R: 50.8	C: 51.5	Conc: 51.49	
R: 50.8	Z: 0	C: 51.6	Conc: 51.59	
Z: 0	C: 51.6	R: 50.8	Conc: 51.59	
UOM: ppm			Mean Test Assay: 51.557 ppm	

Second Analysis Data:				Date: 10/24/2017
Z: 0	R: 50.8	C: 51.4	Conc: 51.39	
R: 50.8	Z: 0	C: 51.5	Conc: 51.49	
Z: 0	C: 51.4	R: 50.8	Conc: 51.39	
UOM: ppm			Mean Test Assay: 51.423 ppm	

2. Component: SULFUR DIOXIDE

Requested Concentration: 50 ppm
 Certified Concentration: 49.2 ppm
 Instrument Used: Ametek 921CE S/N AW-921-S321
 Analytical Method: Ultraviolet Absorption
 Last Multipoint Calibration: 10/13/2017

Reference Standard Type: NTRM
 Ref. Std. Cylinder #: CC72593
 Ref. Std. Conc: 48.58 ppm
 Ref. Std. Traceable to SRM #: n/a
 SRM Sample #: 12070103
 SRM Cylinder #: N/A

First Analysis Data:				Date: 10/17/2017
Z: 0	R: 48.2	C: 48.8	Conc: 49.151	
R: 48.2	Z: 0	C: 48.8	Conc: 49.151	
Z: 0	C: 48.9	R: 48.3	Conc: 49.251	
UOM: ppm			Mean Test Assay: 49.184 ppm	

Second Analysis Data:				Date: 10/24/2017
Z: 0	R: 48.2	C: 48.7	Conc: 49.084	
R: 48.2	Z: 0	C: 48.8	Conc: 49.185	
Z: 0	C: 48.8	R: 48.2	Conc: 49.185	
UOM: ppm			Mean Test Assay: 49.151 ppm	

Analyzed by:

Henry Koung

Certified by:

Amalia Real

Information contained herein has been prepared at your request by qualified experts within Praxair Distribution, Inc. While we believe that the information is accurate within the limits of the analytical methods employed and is complete to the extent of the specific analyses performed, we make no warranty or representation as to the suitability of the use of the information for any purpose. The information is offered with the understanding that any use of the information is at the sole discretion and risk of the user. In no event shall the liability of Praxair Distribution, Inc., arising out of the use of the information contained herein exceed the fee established for providing such information.

DocNumber: 000095123

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

MAXXAM ANALYTICS INC *NA*
 9372 49TH ST
 EDMONTON AB T6B 2L7

Praxair Order Number: 26284032
 Customer PO Number: 35-63415
 Customer Reference Number:

Fill Date: 5/31/2016
 Part Number: NI HS10ME-AQ
 Lot Number: 109615204
 Cylinder Style and Outlet: AS CGA 330
 Cylinder Pressure and Volume: 2000 psig 140 cu. ft.

Certified Concentration:

Expiration Date:	06/14/2019	NIST Traceable
Cylinder Number:	EY0000654	Expanded Uncertainty:
10.2 ppm	HYDROGEN SULFIDE	± 2.2 %
Balance	NITROGEN	

Certification Information: Certification Date : 6/14/2016 Term : 36 Months Expiration Date : 06/14/2019

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1.
 Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data:

(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. Component:

HYDROGEN SULFIDE

Requested Concentration: 10 ppm
 Certified Concentration: 10.2 ppm
 Instrument Used: INTERSCAN RM-17 S/N 715726
 Analytical Method: ELECTROLYTIC CELL
 Last Multipoint Calibration: 05/20/2016

Reference Standard Type: GMS
 Ref. Std. Cylinder #: ND03635
 Ref. Std. Conc: 20.20 PPM
 Ref. Std. traceable to SRM #: 2730
 SRM Sample #: 66-E-106
 SRM Cylinder #: CAL015447

First Analysis Data:			Date: 05/31/2016
Z: 0	R: 41.8	C: 21.02	Conc: 10.2
R: 41.6	Z: 0	C: 21.1	Conc: 10.2
Z: 0	C: 21.1	R: 41.6	Conc: 10.2
UOM: mV	Mean Test Assay: 10.2 ppm		

Second Analysis Data:			Date: 06/14/2016
Z: 0	R: 45.15	C: 22.55	Conc: 10.1
R: 45.1	Z: 0	C: 22.6	Conc: 10.1
Z: 0	C: 22.6	R: 45.1	Conc: 10.1
UOM: mV	Mean Test Assay: 10.1 ppm		

Analyzed by:



Ying Yu

Certified by:



Pupongmontre Pete



Calibration Gas Audit

CH4 / C3H8 Cylinder Gas

File No. 2015-029CGA

Company: Maxxam **Operators name:** Limin Li
Cylinder #: LL165367 **Conc CH4 (PPM)** 590/207 **Tolerance (%)** 2 **Certified By:** Praxair

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 1691</u>			Serial Number	<u>AMU 1650</u>
Last Verification Date	<u>May 21, 2015</u>			Temp. °C	<u>24.0 C</u>
Gas Type	<u>CH4</u>	Conc.	<u>999.2</u>	B.P.	<u>703 mmhg</u>
Cylinder Number	<u>D751932</u>				
Gas Type	<u>C3H8</u>	Conc.	<u>246.5</u>		
Cylinder Number	<u>XF0037998</u>				

Reference Analyzer:
 Make/Model Teco 55C Serial/AMU Number: 1643
 Instrument Settings Zero: N/A Span: N/A Range: 20
 Last Calibration: Date: May 21/15 C.F. 1.000 Done By: Al Clark

Calibrator Flows (sccm)		Indicated Conc. (ppm)		Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration	
		CH4	C3H8			CH4	C3H8
Dilution	Gas						
2600	0.0	0.00	0.00	0.02005	49.883	602	206
2569	51.5	12.06	11.37	0.02005	49.883	602	206
3549	22.3	3.77	3.57	0.00628	159.148	600	207
3523	10.4	1.77	1.70	0.00295	338.750	600	209
Average Cylinder Concentration:						600	207

	<u>CH4</u>		<u>C3H8</u>
Previous Stated Concentration PPM:	<u>590</u>		<u>207</u>
Percent variance from Stated:	<u>1.8</u>		<u>0.2</u>

Cylinder gas tolerances based on CH4 only

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

Auditor: Al Clark Date: May 21, 2015
 Operator Signature: _____ Location: McIntyre Center Edmonton

***APPENDIX III
MAXIMUM INSTANTANEOUS DATA***



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

SULPHUR DIOXIDE Instantaneous Maximum (SO₂ ppb)

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

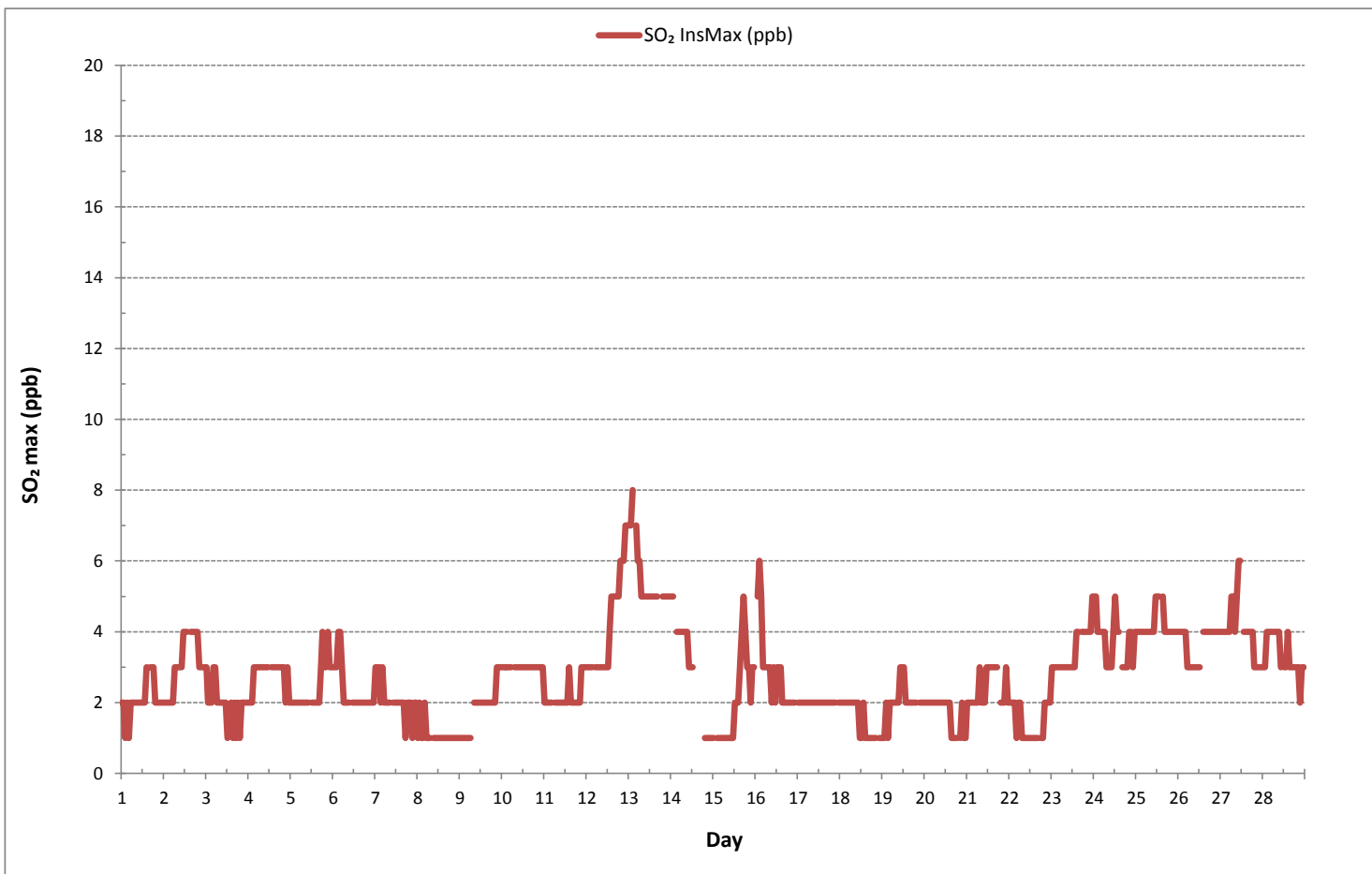
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	635
MAXIMUM INSTANTANEOUS VALUE:	8 ppb @ HOUR 2 ON DAY 13
IZS CALIBRATION TIME:	29 hrs
MONTHLY CALIBRATION TIME:	6 hrs
OPERATIONAL TIME:	672 hrs
STANDARD DEVIATION:	1

SULPHUR DIOXIDE Instantaneous Maximum (SO₂ ppb)





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

HYDROGEN SULPHIDE Instantaneous Maximum (H₂S ppb)

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

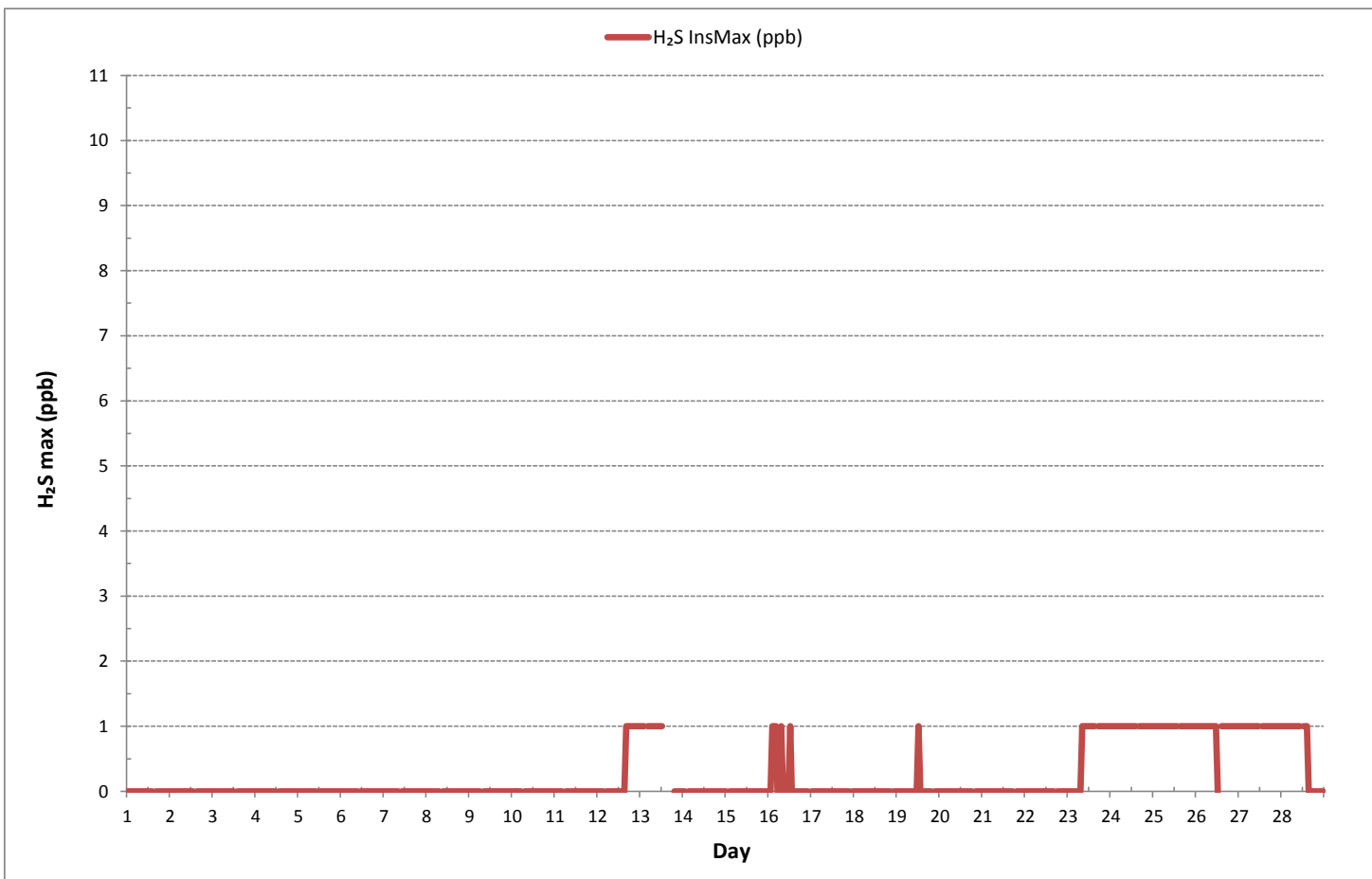
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	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:	146
MAXIMUM INSTANTANEOUS VALUE:	1 ppb @ HOUR 16 ON DAY 12
IZS CALIBRATION TIME:	29 hrs
MONTHLY CALIBRATION TIME:	6 hrs
OPERATIONAL TIME:	672 hrs
STANDARD DEVIATION:	0

HYDROGEN SULPHIDE Instantaneous Maximum (H₂S ppb)





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

TOTAL HYDROCARBONS Instantaneous Maximum (THC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY																													
1	2.66	2.63	2.46	2.50	3.05	2.94	2.58	2.59	2.59	2.56	2.55	2.55	2.52	2.48	2.49	S	2.46	2.45	2.46	2.46	2.46	2.46	2.46	2.48	2.45	3.05	2.56	24	
2	2.48	2.45	2.46	2.44	2.45	2.63	2.64	2.59	2.59	2.54	2.50	2.49	2.49	2.49	S	2.52	2.50	2.52	2.48	2.45	2.46	2.48	2.44	2.42	2.42	2.64	2.50	24	
3	2.46	2.50	2.48	2.54	2.54	2.49	2.49	2.48	2.52	2.49	2.46	2.42	S	2.44	2.41	2.44	2.42	2.42	2.48	2.45	2.45	2.42	2.44	2.43	2.41	2.54	2.47	24	
4	2.42	2.45	2.49	2.49	2.52	2.53	2.55	2.58	2.56	2.58	2.53	2.49	S	2.49	2.53	2.50	2.53	2.55	2.41	2.48	2.44	2.42	2.42	2.40	2.40	2.58	2.49	24	
5	2.40	2.39	2.39	2.40	2.39	2.40	2.39	2.41	2.40	2.41	2.40	S	2.40	2.39	2.40	2.37	2.44	2.41	2.46	2.53	2.56	2.56	2.56	2.56	2.37	2.56	2.44	24	
6	2.56	2.59	2.63	2.61	2.57	2.55	2.49	2.48	2.46	2.45	S	2.44	2.44	2.42	2.42	2.43	2.42	2.44	2.45	2.50	2.50	2.49	2.52	2.50	2.42	2.63	2.49	24	
7	2.53	2.48	2.48	2.48	2.49	2.46	2.46	2.48	2.46	S	2.50	2.45	2.46	2.44	2.44	2.43	2.44	2.44	2.45	2.46	2.46	2.48	2.49	2.46	2.43	2.53	2.47	24	
8	2.44	2.46	2.46	2.46	2.49	2.55	2.54	2.48	S	2.50	2.50	2.50	2.49	2.48	2.46	2.49	2.46	2.48	2.48	2.45	2.49	2.48	2.48	2.48	2.44	2.55	2.48	24	
9	2.48	2.52	2.48	2.49	2.51	2.48	2.50	S	2.50	2.50	2.53	2.49	2.48	2.48	2.46	2.53	2.50	2.49	2.50	2.54	2.53	2.54	2.57	2.55	2.46	2.57	2.51	24	
10	2.53	2.50	2.51	2.50	2.49	2.50	S	2.44	2.49	2.46	2.42	2.40	2.41	2.36	2.37	2.37	2.36	2.39	2.37	2.40	2.41	2.40	2.40	2.41	2.36	2.53	2.43	24	
11	2.41	2.42	2.44	2.46	2.48	S	2.48	2.49	2.50	2.48	2.49	2.48	2.46	2.44	2.49	2.49	2.53	2.54	2.55	2.55	2.58	2.62	2.59	2.58	2.41	2.62	2.50	24	
12	2.56	2.62	2.64	2.66	S	2.62	2.62	2.62	2.59	2.57	2.53	2.53	S1	S1	2.53	2.53	2.49	2.52	2.53	2.51	2.54	2.53	2.54	2.51	2.49	2.66	2.56	22	
13	2.54	2.56	2.63	S	2.67	2.66	2.62	2.46	2.37	2.36	2.36	2.35	2.36	2.31	2.25	2.25	2.23	2.20	2.18	2.18	2.19	2.19	2.18	2.18	2.18	2.18	2.67	2.36	24
14	2.21	2.19	S	2.21	2.25	2.29	2.30	2.31	2.32	2.35	2.37	2.35	2.36	2.42	2.46	2.49	2.49	2.50	2.53	2.49	2.53	2.54	2.52	2.53	2.19	2.54	2.39	24	
15	2.54	S	2.54	2.56	2.55	2.56	2.56	2.56	2.56	2.55	C	C	C	C	Y	C	C	C	C	C	2.14	2.09	2.00	2.00	1.95	1.95	2.56	2.37	23
16	S	1.87	1.84	1.84	X	X	X	X	X	X	X	X	C1	C1	C1	C1	C1	2.08	2.08	2.08	2.08	2.09	S	1.84	2.09	2.00	11		
17	2.06	2.05	2.08	2.06	2.06	2.06	2.11	2.11	2.06	2.08	2.08	2.08	2.05	2.05	2.06	2.03	2.05	2.03	2.02	2.06	2.08	2.09	S	2.06	2.02	2.11	2.06	24	
18	2.08	2.11	2.12	2.12	2.15	2.15	2.15	2.17	2.20	2.21	2.21	2.20	2.20	2.21	2.21	2.21	2.24	2.26	2.24	2.30	2.27	S	2.24	2.27	2.08	2.30	2.20	24	
19	2.29	2.29	2.29	2.30	2.29	2.32	2.30	2.30	2.30	2.27	2.27	2.26	2.21	2.18	2.15	2.11	2.12	2.14	2.14	2.15	S	2.11	2.12	2.09	2.09	2.32	2.22	24	
20	2.06	2.05	2.06	2.08	2.06	2.12	2.15	2.15	2.18	2.21	2.24	2.24	2.18	2.20	2.20	2.23	2.24	2.27	2.27	S	2.29	2.30	2.30	2.29	2.05	2.30	2.19	24	
21	2.30	2.29	2.30	2.30	2.29	2.24	2.26	2.23	2.24	2.26	2.27	2.26	2.27	2.27	2.24	2.27	2.26	2.24	S	2.24	2.24	2.24	2.24	2.27	2.23	2.30	2.26	24	
22	2.24	2.23	2.24	2.21	2.17	2.18	2.20	2.21	2.20	2.24	2.24	2.24	2.27	2.23	2.21	2.21	2.23	S	2.21	2.24	2.24	2.21	2.27	2.26	2.17	2.27	2.23	24	
23	2.24	2.24	2.24	2.23	2.21	2.21	2.14	2.14	2.08	2.06	2.03	2.00	1.93	1.93	1.90	1.90	S	1.90	1.92	1.90	1.92	1.90	1.93	1.93	1.90	2.24	2.04	24	
24	1.87	1.87	1.86	1.80	1.77	1.78	1.77	S1	S1	1.75	1.75	1.81	1.84	1.87	1.84	S	1.83	1.81	1.81	1.86	2.06	1.89	1.90	1.84	1.75	2.06	1.84	22	
25	1.81	1.72	1.69	1.71	1.71	1.74	1.75	X	1.80	1.78	1.80	1.78	1.75	1.74	S	2.24	1.90	1.84	1.83	1.89	1.93	1.98	2.00	2.03	1.69	2.24	1.84	23	
26	2.05	2.08	2.09	2.14	2.14	2.15	2.15	2.15	2.18	2.17	2.21	2.23	2.23	S	2.21	2.18	2.17	2.18	2.12	2.15	2.15	2.17	2.12	2.11	2.05	2.23	2.15	24	
27	2.06	2.03	2.03	2.05	2.05	2.08	2.03	2.03	1.99	1.97	1.97	1.99	1.97	S	1.86	1.90	1.96	1.99	1.98	2.00	2.03	2.00	2.00	2.02	2.06	1.86	2.08	2.00	24
28	2.08	2.10	2.14	2.17	2.15	2.18	2.23	2.24	2.27	2.27	2.23	S	2.22	2.17	2.20	2.21	2.23	2.21	2.32	2.33	2.24	2.27	2.30	2.55	2.08	2.55	2.23	24	
HOURLY MAX	2.66	2.63	2.64	2.66	3.05	2.94	2.64	2.62	2.59	2.58	2.55	2.55	2.52	2.49	2.53	2.53	2.53	2.55	2.55	2.55	2.58	2.62	2.59	2.58					
HOURLY AVG	2.31	2.28	2.30	2.29	2.33	2.34	2.33	2.36	2.33	2.31	2.30	2.29	2.28	2.26	2.29	2.31	2.30	2.28	2.28	2.29	2.30	2.29	2.30	2.30					

STATUS FLAG CODES

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

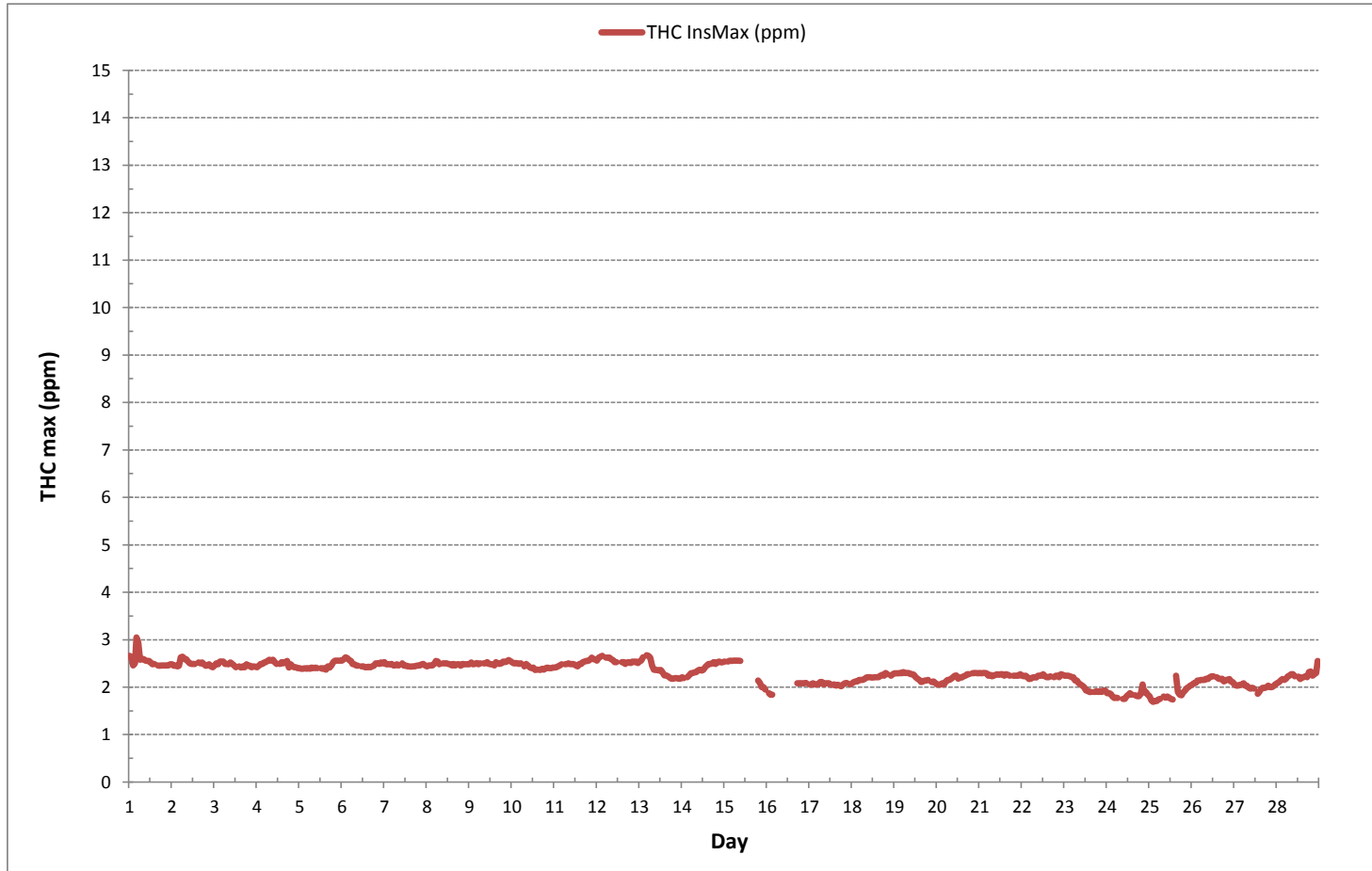
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	616
MAXIMUM INSTANTANEOUS VALUE:	3.05 ppm @ HOUR 4 ON DAY 1
IZS CALIBRATION TIME:	29 hrs
MONTHLY CALIBRATION TIME:	8 hrs
OPERATIONAL TIME:	653 hrs
STANDARD DEVIATION:	0.23



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

TOTAL HYDROCARBONS Instantaneous Maximum (THC ppm)





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

OXIDES OF NITROGEN Instantaneous Maximum (NO_x ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	4	4	3	3	3	4	7	7	5	6	6	32	7	5	7	S	9	5	5	4	4	3	3	3	3	32	6	24	
DAY 2	3	3	3	3	3	7	8	6	6	6	4	5	5	5	S	6	7	6	7	6	6	5	5	3	3	3	8	5	24
DAY 3	3	4	4	5	5	5	5	5	5	6	4	3	2	S	3	3	2	2	20	3	3	3	3	3	2	20	4	24	
DAY 4	2	3	4	5	7	8	8	7	7	7	7	5	S	6	6	7	6	6	4	4	3	18	25	2	2	25	7	24	
DAY 5	2	2	2	2	2	2	2	3	3	2	2	S	2	33	2	2	16	5	5	7	9	10	8	10	2	33	6	24	
DAY 6	9	8	8	12	11	9	6	4	5	3	S	3	3	3	3	3	14	31	4	4	4	4	5	3	31	7	24		
DAY 7	6	6	5	5	5	5	4	4	3	S	4	3	3	3	2	3	3	3	4	3	3	3	4	3	2	6	4	24	
DAY 8	3	3	3	3	3	4	5	3	S	5	3	4	4	2	2	3	5	3	3	3	2	3	2	2	2	5	3	24	
DAY 9	2	2	3	3	3	3	3	S	3	3	3	3	3	4	4	5	6	10	5	5	6	7	6	6	2	10	4	24	
DAY 10	16	5	5	5	4	5	S	3	3	4	3	3	4	3	3	26	2	3	2	2	2	2	3	3	2	26	5	24	
DAY 11	3	3	3	2	2	S	3	3	4	3	3	3	3	3	3	3	17	5	4	5	7	7	7	2	17	4	24		
DAY 12	8	9	9	10	S	9	8	8	8	7	7	8	8	20	9	11	25	11	12	13	13	14	14	12	7	25	11	24	
DAY 13	12	18	26	S	23	17	16	9	8	5	4	5	4	4	4	4	8	5	4	4	3	3	4	3	3	26	8	24	
DAY 14	2	2	S	3	2	2	2	2	2	2	2	2	19	C	C	C	C	C	C	C	C	C	2	2	2	19	3	24	
DAY 15	2	S	3	3	3	3	3	4	4	4	4	3	3	3	3	7	10	23	13	7	27	5	6	5	2	27	7	24	
DAY 16	S	8	8	8	7	4	1	4	3	1	2	3	2	1	1	1	1	1	0	0	0	0	0	S	0	8	3	24	
DAY 17	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	S	0	0	1	0	24	
DAY 18	0	0	0	0	0	0	0	0	1	1	1	0	0	0	1	0	1	1	2	1	1	S	1	1	0	2	1	24	
DAY 19	1	1	1	1	2	3	3	3	4	5	6	34	5	2	2	12	2	4	3	7	S	2	2	1	1	34	5	24	
DAY 20	1	0	0	0	0	0	0	1	1	1	2	3	2	2	1	1	1	1	2	S	1	1	2	2	0	3	1	24	
DAY 21	2	2	2	4	4	3	6	6	5	5	7	7	8	7	8	40	10	9	S	9	8	8	9	9	2	40	8	24	
DAY 22	7	4	4	3	2	1	1	1	1	1	1	1	2	0	2	12	1	S	2	2	4	5	4	5	0	12	3	24	
DAY 23	5	5	5	5	6	5	6	6	6	6	6	6	5	5	5	9	S	7	7	11	10	10	9	8	5	11	7	24	
DAY 24	8	8	6	4	2	2	2	2	2	2	1	1	2	2	3	S	1	3	1	1	1	1	1	1	1	8	2	24	
DAY 25	1	1	1	1	2	4	3	S1	S1	S1	S1	5	5	C1	C1	C1	C1	2	3	3	2	1	1	1	1	5	2	16	
DAY 26	2	2	2	2	1	1	S1	S1	2	3	20	2	S	3	3	36	5	6	5	6	7	6	5	1	36	6	22		
DAY 27	5	5	5	5	5	5	5	5	4	5	6	S	S	3	2	2	1	14	1	1	1	1	1	1	1	14	4	24	
DAY 28	1	1	4	9	9	8	9	10	10	9	7	S	C1	C1	C1	C1	C1	Y	Y	Y	Y	Y	Y	Y	1	10	7	12	
HOURLY MAX	16	18	26	12	23	17	16	10	10	9	7	34	19	33	9	40	36	23	31	13	27	18	25	12					
HOURLY AVG	4	4	4	4	4	4	4	4	4	4	4	7	4	5	3	7	7	6	6	4	5	5	5	4					

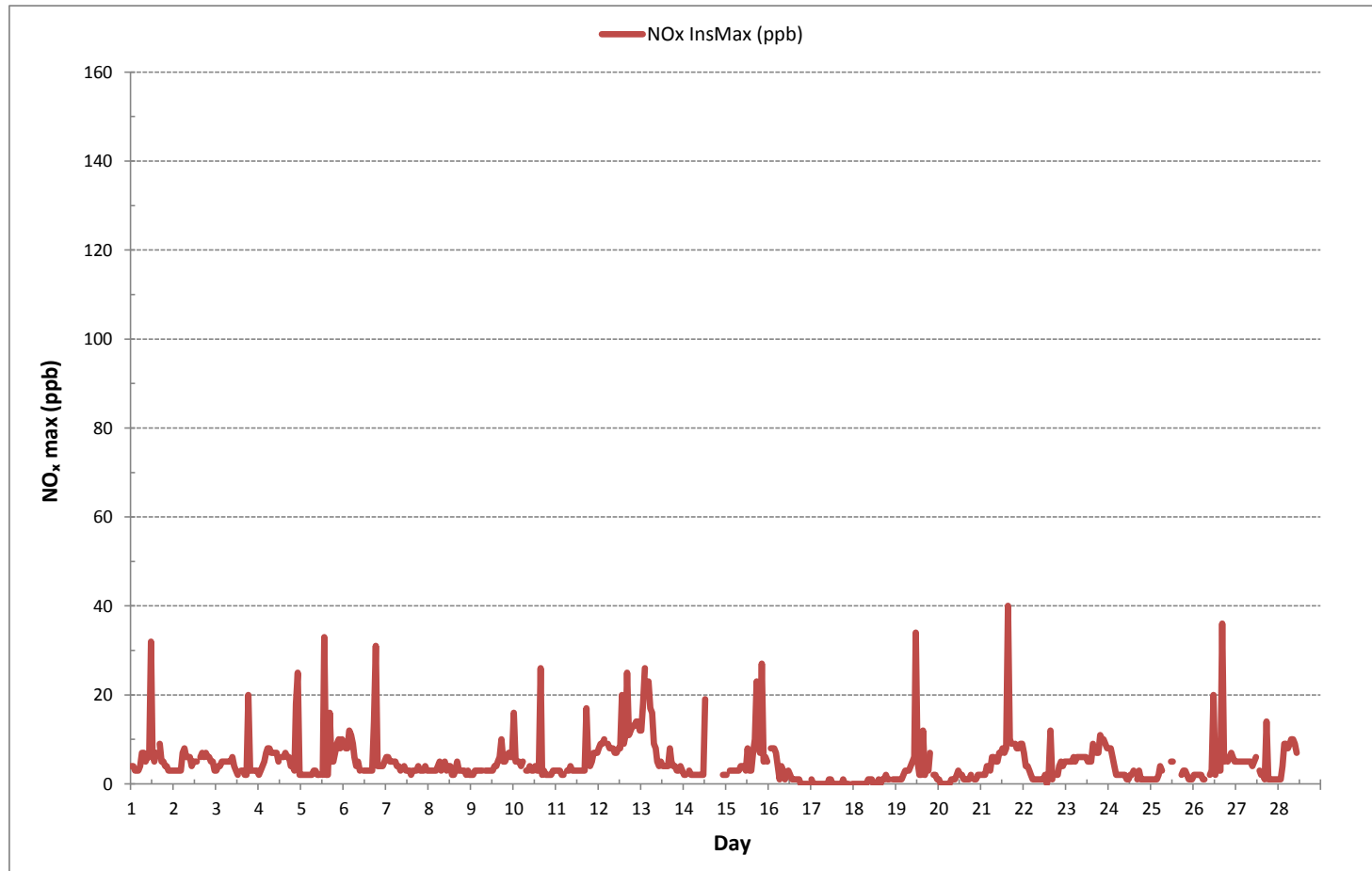
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	570
MAXIMUM INSTANTANEOUS VALUE:	40 ppb @ HOUR 15 ON DAY 21
IZS CALIBRATION TIME:	28 hrs
MONTHLY CALIBRATION TIME:	9 hrs
OPERATIONAL TIME:	650 hrs
STANDARD DEVIATION:	5

OXIDES OF NITROGEN Instantaneous Maximum (NO_x ppb)





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

NITRIC OXIDE Instantaneous Maximum (NO ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY																													
1	2	2	2	2	1	2	3	2	2	3	3	20	4	3	3	S	3	2	2	2	2	2	1	2	1	20	3	24	
2	2	2	2	2	2	2	1	2	2	2	2	3	3	3	S	3	2	2	2	2	2	2	2	1	1	3	2	24	
3	2	1	2	2	2	2	2	2	2	3	2	2	2	S	2	2	2	2	8	2	2	2	1	2	1	8	2	24	
4	2	2	2	2	2	2	2	2	3	4	4	3	S	3	3	3	2	2	2	2	2	9	16	2	2	16	3	24	
5	2	2	2	2	2	2	2	2	2	2	2	S	2	16	2	2	11	2	2	2	2	2	3	2	2	16	3	24	
6	2	2	2	2	2	2	2	2	3	2	S	2	2	2	2	2	2	5	20	2	2	2	2	1	1	20	3	24	
7	2	2	1	2	2	2	2	2	2	S	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	24	
8	2	2	1	2	2	2	2	2	S	3	2	3	3	2	2	2	3	2	2	2	2	2	2	2	1	3	2	24	
9	2	1	2	2	2	2	2	S	2	2	3	2	2	2	2	3	3	2	2	2	2	2	2	2	1	3	2	24	
10	4	2	2	2	2	2	S	2	2	2	2	2	2	2	2	11	2	2	2	2	2	2	1	2	1	11	2	24	
11	2	2	2	1	2	S	2	2	2	2	2	2	2	2	2	2	2	8	2	2	2	2	2	2	1	8	2	24	
12	2	2	2	2	S	2	2	2	2	3	3	4	4	12	4	4	13	2	2	2	2	2	2	2	2	13	3	24	
13	2	2	2	S	2	2	2	2	6	2	2	2	2	2	2	2	2	1	1	1	1	2	2	1	1	6	2	24	
14	1	1	S	2	1	1	1	1	2	2	1	1	9	C	C	C	C	C	C	C	C	C	C	2	2	1	9	2	24
15	2	S	2	2	2	2	2	2	2	3	3	2	3	2	2	3	4	4	2	2	13	1	2	1	1	13	3	24	
16	S	2	1	1	1	1	1	2	2	2	2	2	2	1	1	2	1	1	1	1	1	1	1	S	1	2	1	24	
17	2	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	S	1	1	2	1	24
18	1	1	1	1	1	1	1	1	2	1	1	1	2	1	2	2	1	2	2	2	1	S	1	1	1	2	1	24	
19	2	1	1	1	1	2	1	1	2	3	3	16	3	2	2	3	2	4	2	3	S	2	2	2	1	16	3	24	
20	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	1	2	S	2	2	2	1	1	2	1	24	
21	2	2	1	2	1	1	3	2	3	3	4	4	5	4	4	24	4	2	S	2	2	2	2	2	1	24	4	24	
22	2	2	2	2	1	2	1	2	2	2	2	1	2	1	2	2	2	S	2	2	2	2	2	2	1	2	2	24	
23	1	2	2	2	2	1	2	2	2	3	3	3	3	3	2	4	S	2	2	3	2	2	2	1	1	4	2	24	
24	2	2	2	1	1	1	1	2	2	2	2	2	2	2	2	S	2	2	2	2	2	2	2	2	1	2	2	24	
25	2	1	2	1	2	2	2	S1	S1	S1	S1	3	3	C1	C1	C1	C1	2	2	2	2	2	2	2	1	3	2	16	
26	2	1	1	2	2	2	2	S1	S1	2	3	12	2	S	3	2	25	2	2	2	2	2	2	2	1	25	4	22	
27	2	2	2	2	2	2	2	2	2	3	3	4	S	3	2	2	2	7	2	2	2	1	2	2	1	7	2	24	
28	1	2	1	2	1	2	2	2	4	4	4	S	C1	C1	C1	C1	C1	Y	Y	Y	Y	Y	Y	Y	1	4	2	12	
HOURLY MAX	4	2	2	2	2	2	3	2	6	4	4	20	9	16	4	24	25	8	20	3	13	9	16	2	1	4	2	12	
HOURLY AVG	2	2	2	2	2	2	2	2	2	2	2	4	3	3	2	4	4	3	3	2	2	2	2	2	1	4	2	12	

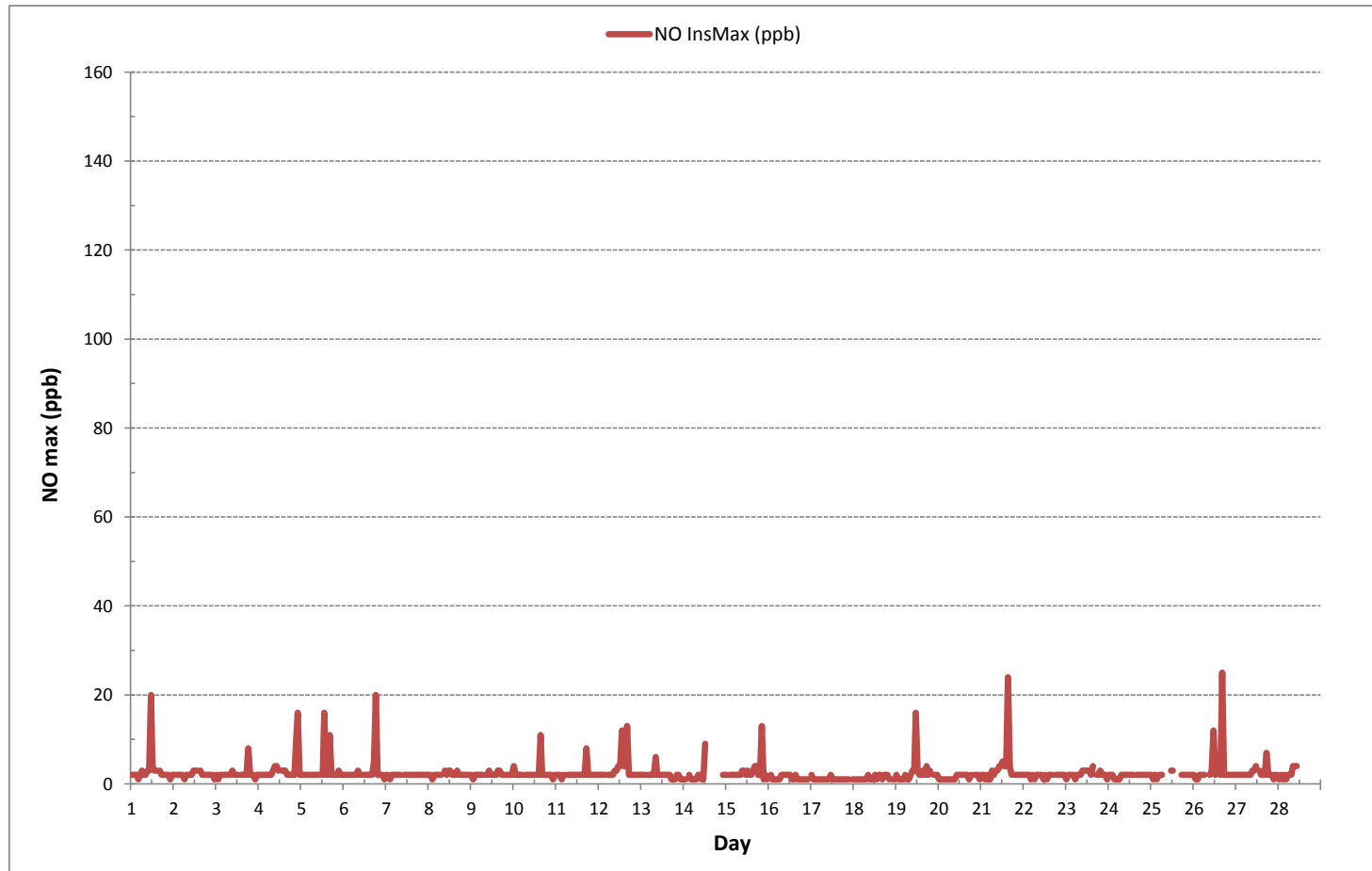
STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	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:	613
MAXIMUM INSTANTANEOUS VALUE:	25 ppb @ HOUR 16 ON DAY 26
IZS CALIBRATION TIME:	28 hrs
MONTHLY CALIBRATION TIME:	9 hrs
STANDARD DEVIATION:	2
OPERATIONAL TIME:	650 hrs

NITRIC OXIDE Instantaneous Maximum (NO ppb)





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

NITROGEN DIOXIDE Instantaneous Maximum (NO₂ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	4	5	3	3	3	4	6	6	5	5	5	15	5	3	5	S	7	5	5	4	4	4	4	4	3	15	5	24	
2	4	3	3	3	3	7	8	6	6	6	4	4	4	4	S	5	7	6	7	6	6	6	5	4	3	8	5	24	
3	4	4	5	5	5	5	5	5	5	5	3	3	3	S	3	3	3	2	13	3	3	3	3	3	2	13	4	24	
4	3	4	4	5	8	9	8	8	7	6	5	4	S	4	5	6	6	6	4	4	4	12	12	3	3	12	6	24	
5	3	2	2	2	2	2	2	3	3	2	2	S	2	20	3	3	10	5	5	7	8	9	8	9	2	20	5	24	
6	9	9	9	12	12	9	6	4	4	3	S	3	3	3	3	3	3	12	14	4	4	4	5	5	3	14	6	24	
7	6	6	6	5	6	5	4	4	3	S	3	3	3	3	3	3	3	3	4	3	3	3	4	3	3	6	4	24	
8	3	3	3	3	3	5	5	3	S	4	3	3	3	3	2	3	4	3	4	3	3	2	3	3	2	5	3	24	
9	3	3	3	3	3	3	3	S	3	3	3	3	3	4	4	4	5	10	5	6	6	6	7	7	3	10	4	24	
10	14	6	5	5	5	5	S	3	3	4	3	3	3	3	3	17	3	3	3	3	2	2	4	3	2	17	5	24	
11	3	3	3	3	3	S	3	4	4	3	3	3	3	3	3	3	4	12	5	4	5	7	7	8	3	12	4	24	
12	8	9	9	10	S	9	8	8	8	6	5	6	6	12	8	9	15	12	12	13	13	14	14	13	5	15	10	24	
13	12	18	26	S	23	17	16	10	5	5	4	4	4	4	4	4	7	5	4	4	3	3	4	3	3	26	8	24	
14	2	2	S	3	3	3	2	2	3	2	2	2	12	C	C	C	C	C	C	C	C	C	2	3	2	12	3	24	
15	3	S	3	4	3	4	4	3	4	4	3	3	7	3	3	6	10	21	14	7	16	6	6	6	3	21	6	24	
16	S	9	9	9	8	5	2	4	3	2	3	3	2	2	2	2	2	2	2	2	2	2	1	1	S	1	9	4	24
17	1	1	1	1	1	1	1	1	1	2	2	2	1	1	1	2	1	1	2	1	1	1	1	S	1	1	2	1	24
18	1	1	1	1	1	1	1	2	2	2	2	1	1	1	2	1	2	2	3	2	2	S	2	2	1	3	2	24	
19	2	2	2	2	3	4	4	4	4	4	5	5	21	4	3	2	11	3	5	3	7	S	3	3	2	21	5	24	
20	2	2	2	2	2	2	2	2	2	2	2	3	2	2	2	2	2	2	2	3	S	2	2	2	3	2	3	2	24
21	3	3	3	5	5	5	5	6	5	5	5	5	5	6	6	21	8	9	S	9	9	9	10	10	3	21	7	24	
22	8	5	5	4	3	2	2	2	2	2	2	2	2	2	2	12	2	S	3	3	4	6	5	6	2	12	4	24	
23	6	6	6	6	7	6	7	6	6	6	5	5	5	5	5	6	S	8	8	10	11	10	10	10	5	11	7	24	
24	8	9	7	5	3	3	3	3	3	2	2	2	3	3	3	S	2	3	2	2	2	2	2	2	2	2	9	3	24
25	2	2	2	2	3	4	4	S1	S1	S1	S1	4	4	C1	C1	C1	C1	3	4	4	2	2	2	2	2	4	3	16	
26	3	4	4	3	3	2	2	S1	S1	2	3	13	3	S	3	3	14	6	6	6	7	8	7	6	2	14	5	22	
27	6	6	6	6	6	6	6	6	6	5	5	5	S	4	3	2	2	10	2	2	2	2	2	2	2	10	4	24	
28	2	2	5	10	10	9	10	10	10	9	6	S	C1	C1	C1	C1	C1	Y	Y	Y	Y	Y	Y	Y	2	10	8	12	
HOURLY MAX	14	18	26	12	23	17	16	10	10	9	6	21	12	20	8	21	15	21	14	13	16	14	14	13					
HOURLY AVG	5	5	5	5	5	5	5	5	4	4	3	5	4	4	3	6	5	6	5	5	5	5	5	5					

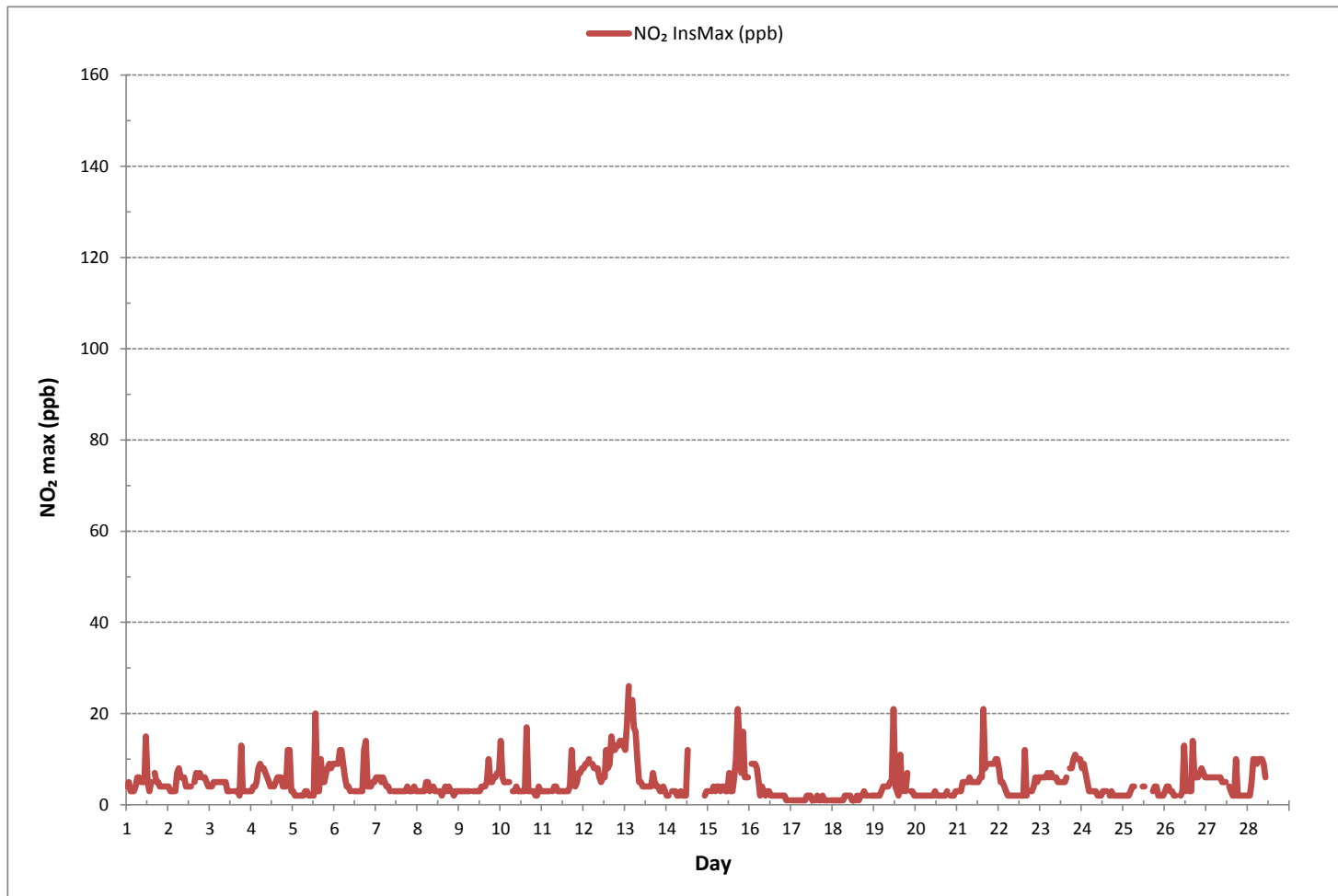
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	613
MAXIMUM INSTANTANEOUS VALUE:	26 ppb @ HOUR 2 ON DAY 13
	VAR-VARIOUS
IZS CALIBRATION TIME:	28 hrs
MONTHLY CALIBRATION TIME:	9 hrs
OPERATIONAL TIME:	650 hrs
STANDARD DEVIATION:	3

NITROGEN DIOXIDE Instantaneous Maximum (NO₂ ppb)





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

OZONE Instantaneous Maximum (O₃ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	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	35.3	34.2	34.4	34.8	33.2	33.0	31.0	30.3	29.3	30.0	29.8	30.0	33.0	33.2	32.5	S	31.9	31.8	33.0	32.7	32.9	32.9	31.8	31.2	29.3	35.3	32.3	24	
2	31.1	31.8	31.5	32.1	32.1	31.3	27.8	27.7	28.0	30.0	31.3	31.2	30.4	30.5	S	29.8	28.9	28.9	28.9	29.7	30.6	30.9	33.9	34.8	27.7	34.8	30.6	24	
3	36.1	35.6	34.6	33.8	31.4	31.1	31.2	31.2	31.8	31.7	34.4	37.3	37.9	S	38.9	39.6	40.3	40.5	37.9	36.8	35.8	36.1	34.4	37.5	31.1	40.5	35.5	24	
4	38.3	37.6	35.8	34.6	32.2	27.7	27.7	27.2	28.2	30.9	32.2	34.3	S	35.8	34.4	33.9	32.7	37.5	38.7	37.9	38.1	39.6	40.9	41.5	27.2	41.5	34.7	24	
5	41.5	41.8	42.5	42.5	42.6	42.6	42.6	42.2	42.2	41.4	41.5	S	42.7	42.8	42.6	41.9	42.0	41.4	39.7	37.1	34.2	33.0	31.5	30.9	30.9	42.8	40.1	24	
6	30.6	29.7	29.8	28.4	28.1	32.5	35.7	37.2	37.8	38.5	S	39.7	39.7	39.9	39.8	39.7	39.8	39.6	38.2	38.0	38.4	38.2	38.2	37.1	28.1	39.9	36.3	24	
7	36.4	37.6	37.2	37.1	36.7	37.3	37.8	38.0	38.0	S	37.9	39.3	41.8	41.7	42.7	42.9	43.1	42.3	41.7	41.7	41.5	40.9	40.6	40.3	36.4	43.1	39.8	24	
8	39.8	39.8	39.8	39.8	39.6	38.1	38.2	38.4	S	36.7	37.9	38.8	40.1	40.2	40.5	40.5	40.5	40.2	39.8	39.3	39.9	40.1	39.9	39.6	36.7	40.5	39.5	24	
9	39.8	39.9	39.2	38.9	38.5	38.6	38.4	S	38.4	38.8	39.4	40.5	41.4	41.4	40.1	40.1	40.2	40.1	39.9	39.6	38.0	36.9	36.5	37.5	36.5	41.4	39.2	24	
10	37.0	38.4	37.9	37.7	38.1	38.4	S	40.1	40.1	40.1	42.0	42.6	43.5	43.8	43.6	43.9	43.9	43.8	43.5	43.4	43.1	42.8	42.3	45.0	37.0	45.0	41.5	24	
11	44.7	42.5	41.4	40.6	39.7	S	38.1	37.0	36.3	36.5	37.1	38.5	38.6	39.4	39.3	39.6	39.4	37.5	37.3	37.3	37.0	34.7	34.2	34.2	34.2	44.7	38.3	24	
12	33.1	32.4	32.6	33.1	S	33.9	35.4	35.3	37.0	38.9	39.7	40.2	40.9	41.0	40.5	39.3	38.6	37.3	36.1	34.9	33.9	33.0	32.4	32.9	32.4	41.0	36.2	24	
13	33.1	32.1	27.0	S	27.3	29.3	34.1	40.9	41.8	41.8	42.2	42.3	42.6	C	C	C	C	C	C	C	37.1	37.1	38.2	38.5	39.8	27.0	42.6	36.8	24
14	40.2	39.3	S	41.0	43.5	43.5	42.6	41.1	40.2	38.5	37.5	37.9	37.6	36.0	36.1	35.4	35.4	Q	Q	34.8	34.8	35.6	35.6	35.3	34.8	43.5	38.2	24	
15	35.1	S	34.8	34.6	34.7	34.4	35.2	35.3	35.7	35.1	35.3	36.8	37.0	37.5	38.2	37.3	35.5	33.1	34.0	34.8	36.0	36.1	36.0	35.4	33.1	38.2	35.6	24	
16	S	33.8	31.1	30.8	34.0	38.9	39.0	38.2	37.3	37.7	37.7	38.8	39.9	40.1	37.9	38.0	39.0	38.8	38.8	38.9	40.5	41.0	41.4	S	30.8	41.4	37.8	24	
17	41.7	41.8	41.7	41.5	41.1	41.4	41.9	41.8	41.4	41.0	41.4	42.2	42.2	42.3	41.9	41.8	41.7	41.5	41.3	41.1	41.0	40.4	S	39.9	39.9	42.3	41.5	24	
18	39.7	39.6	39.6	40.0	40.1	39.9	39.6	39.5	39.4	39.2	39.4	40.0	40.2	40.6	40.9	40.7	40.9	40.9	40.7	40.5	40.3	S	39.8	39.6	39.2	40.9	40.0	24	
19	39.6	39.4	39.0	38.5	38.2	37.3	37.0	37.0	36.2	36.7	37.7	39.6	41.1	41.7	42.0	42.2	41.8	41.4	41.4	40.9	S	41.0	40.7	41.0	36.2	42.2	39.6	24	
20	41.6	41.7	41.5	41.5	41.4	39.9	39.7	37.7	37.6	36.8	X	35.7	35.6	36.2	37.7	37.9	38.4	37.5	37.3	S	35.8	35.2	35.2	34.9	34.9	41.7	38.0	23	
21	35.1	34.9	34.6	33.8	32.6	32.9	32.9	32.5	33.1	33.4	33.8	34.8	35.6	36.2	36.6	37.1	37.1	37.0	S	37.3	36.6	36.3	34.9	34.9	32.5	37.3	35.0	24	
22	37.6	37.5	37.9	38.5	39.2	39.3	39.7	39.7	39.3	39.2	39.7	40.5	41.1	41.3	41.8	42.5	43.0	S	41.9	42.2	41.8	39.4	38.4	37.2	37.2	43.0	39.9	24	
23	35.2	35.2	35.4	35.3	34.8	35.3	35.4	35.8	36.1	37.9	39.3	39.9	40.6	41.1	41.2	40.5	S	38.9	37.6	37.1	35.7	35.3	34.6	35.6	34.6	41.2	37.1	24	
24	35.9	35.4	37.9	40.3	41.0	41.3	41.5	41.5	40.9	41.0	42.5	42.3	41.8	41.9	40.6	S	43.2	43.4	43.7	43.8	43.6	42.6	41.8	40.6	35.4	43.8	41.2	24	
25	41.0	41.5	41.7	41.7	41.0	40.0	38.6	37.5	37.1	37.8	38.7	39.8	40.5	41.0	S	42.4	43.1	43.2	43.2	42.8	42.7	42.2	39.1	37.2	37.1	43.2	40.6	24	
26	37.2	37.5	37.2	37.1	39.4	41.9	41.7	42.5	42.3	41.3	41.3	42.6	42.7	S	43.0	41.7	41.7	40.2	38.7	38.5	37.6	39.9	41.0	40.1	37.1	43.0	40.3	24	
27	39.2	38.5	38.0	37.7	37.3	36.7	36.8	37.1	39.2	39.8	40.5	41.5	S	45.0	45.8	45.9	45.2	45.0	44.2	43.5	43.5	43.6	43.2	43.2	36.7	45.9	41.3	24	
28	42.0	41.4	41.3	36.3	31.7	31.5	30.5	30.0	31.3	35.6	38.6	S	42.4	43.4	43.6	43.6	44.3	44.5	44.3	43.8	45.0	45.4	44.4	40.6	30.0	45.4	39.8	24	
HOURLY MAX	44.7	42.5	42.5	42.5	43.5	43.5	42.6	42.5	42.3	41.8	42.5	42.6	43.5	45.0	45.8	45.9	45.2	45.0	44.3	43.8	45.0	45.4	44.4	45.0					
HOURLY AVG	37.7	37.4	36.9	37.1	36.6	36.6	36.7	36.8	36.9	37.3	38.0	38.7	39.7	39.8	40.1	39.9	39.7	39.5	39.3	38.7	38.3	38.2	37.8	37.7					

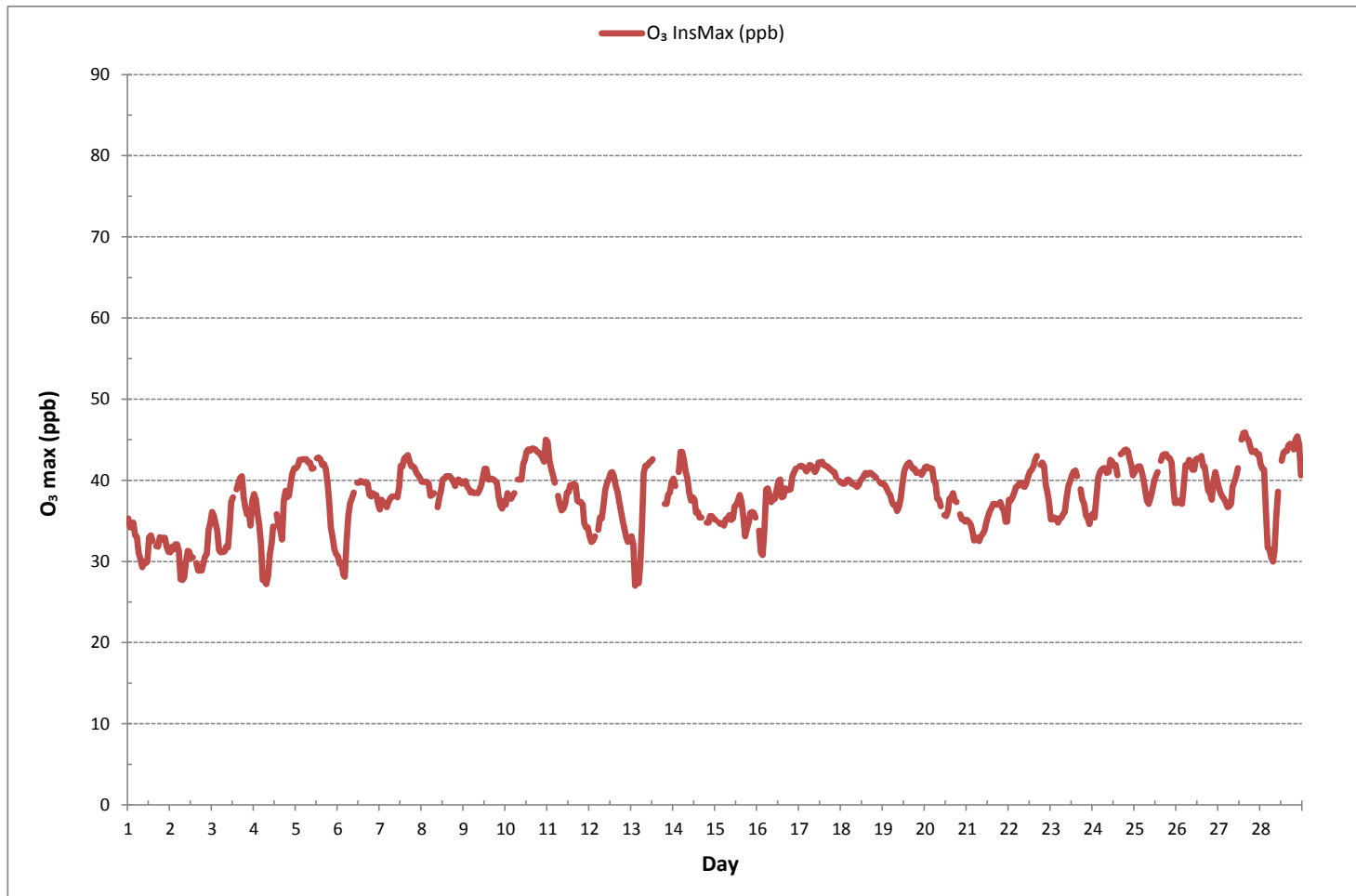
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	634
MAXIMUM INSTANTANEOUS VALUE:	45.9 ppb @ HOUR 15 ON DAY 27
IZS CALIBRATION TIME:	29 hrs
MONTHLY CALIBRATION TIME:	6 hrs
OPERATIONAL TIME:	671 hrs
STANDARD DEVIATION:	3.9

OZONE Instantaneous Maximum (O₃ ppb)





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

WIND SPEED Instantaneous Maximum (WS kph)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	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	39.0	11.2	X	26.3	31.3	16.2	16.6	14.7	10.7	9.2	8.8	7.9	18.2	17.1	20.6	15.5	43.1	27.1	17.5	26.2	17.3	21.2	21.6	19.7	7.9	43.1	19.9	23
2	19.3	23.7	18.0	31.6	13.9	14.9	23.0	22.6	25.4	21.7	23.0	23.0	18.8	19.7	19.3	21.0	20.7	24.7	23.4	33.5	23.5	21.9	18.2	13.9	33.5	22.0	24	
3	13.6	15.4	45.6	53.7	19.0	13.1	18.6	23.6	28.6	22.0	22.3	28.0	24.9	25.8	30.9	30.4	30.9	31.1	25.1	30.6	32.1	27.4	26.4	33.9	13.1	53.7	27.2	24
4	31.1	31.9	40.0	31.3	26.4	32.3	31.5	32.8	37.1	31.7	32.1	30.0	24.5	21.3	15.8	13.4	25.4	18.4	12.5	18.1	18.2	20.1	23.2	28.9	12.5	40.0	26.2	24
5	28.1	29.1	32.9	31.8	23.4	16.9	16.2	20.1	21.2	24.5	28.5	34.4	31.4	28.3	32.7	24.3	21.2	20.6	19.9	19.5	18.4	13.4	13.6	11.2	11.2	34.4	23.4	24
6	20.6	15.1	21.5	23.0	26.5	31.3	32.8	29.9	32.6	35.3	35.9	30.0	30.8	27.2	28.1	23.9	18.1	18.6	18.4	21.9	24.7	20.6	16.0	11.0	11.0	35.9	24.7	24
7	14.4	20.2	16.6	14.3	15.9	19.2	25.3	24.7	26.0	24.8	23.4	24.5	25.2	25.2	25.9	19.6	21.6	17.5	15.8	17.7	17.9	15.3	17.5	17.5	14.3	26.0	20.3	24
8	23.0	18.2	24.5	24.3	22.2	19.7	32.4	14.4	14.2	17.6	20.8	15.8	19.8	20.4	23.0	23.0	21.0	22.3	19.9	22.6	23.4	22.3	22.1	26.9	14.2	32.4	21.4	24
9	32.2	27.6	25.4	27.2	27.0	28.4	31.9	39.3	33.1	31.8	34.0	41.6	37.5	33.8	24.3	21.5	23.3	28.5	29.4	27.9	21.9	23.2	27.4	29.4	21.5	41.6	29.5	24
10	25.8	27.4	24.4	23.5	22.8	22.2	27.4	25.8	28.3	31.1	38.8	40.1	44.1	37.3	42.3	37.1	39.3	48.8	32.7	34.4	27.0	39.1	37.8	35.3	22.2	48.8	33.0	24
11	30.7	25.5	22.8	29.4	26.2	24.9	30.9	31.5	23.8	29.8	28.0	35.0	19.7	19.5	19.7	18.6	22.7	21.2	16.2	15.3	17.4	18.8	16.4	17.3	15.3	35.0	23.4	24
12	18.8	21.2	22.0	32.8	27.1	31.1	40.2	39.0	46.6	43.5	44.9	37.7	34.6	33.8	37.5	32.3	32.6	30.9	29.4	27.1	25.6	21.3	18.6	15.4	15.4	46.6	31.0	24
13	17.2	28.3	27.9	30.5	29.9	24.6	18.5	32.1	33.8	18.9	19.0	22.9	36.9	32.2	37.4	40.6	23.8	22.7	29.3	29.0	41.9	31.9	22.7	30.4	17.2	41.9	28.4	24
14	27.1	24.9	26.2	63.0	57.3	58.8	47.4	46.7	50.8	49.5	60.9	47.8	50.2	41.0	39.1	38.4	32.7	24.0	22.4	21.7	13.9	15.5	18.9	18.2	13.9	63.0	37.4	24
15	21.2	18.8	23.2	23.9	23.2	15.7	20.1	24.7	24.9	22.1	23.9	34.7	27.8	29.8	28.7	30.1	27.5	20.8	21.4	24.1	23.6	18.9	19.3	17.1	15.7	34.7	23.6	24
16	14.5	16.2	16.1	21.5	29.6	25.0	21.9	14.9	12.5	28.7	16.9	25.3	32.9	37.8	37.2	41.5	38.1	29.1	28.7	32.9	41.2	37.1	44.7	41.8	12.5	44.7	28.6	24
17	28.1	28.7	24.8	23.2	26.0	46.7	44.5	38.3	29.1	27.0	30.0	38.8	34.6	35.5	34.6	30.7	35.0	28.7	27.6	30.2	25.6	15.5	40.8	10.8	10.8	46.7	30.6	24
18	15.2	17.5	17.7	18.6	19.9	23.2	18.6	21.2	18.6	21.9	28.9	31.6	34.8	47.3	37.0	28.9	27.4	14.6	14.7	12.2	18.1	21.9	16.6	22.8	12.2	47.3	22.9	24
19	18.4	20.2	14.7	15.3	15.6	14.2	16.2	17.2	14.6	17.8	28.5	25.4	33.7	31.4	36.0	36.8	28.2	22.8	18.4	12.3	14.3	13.8	21.7	19.5	12.3	36.8	21.1	24
20	16.2	21.1	19.1	23.5	33.8	28.5	28.0	26.1	25.7	29.3	25.6	25.9	25.6	23.7	24.1	23.0	25.4	19.4	13.8	20.5	25.6	72.3	12.2	14.9	12.2	72.3	25.1	24
21	15.9	21.0	20.8	23.6	20.3	17.7	17.3	18.5	21.0	20.8	22.4	23.2	23.7	21.8	20.2	20.9	15.8	16.6	18.2	15.7	14.2	14.1	21.7	19.3	14.1	23.7	19.4	24
22	25.0	19.5	24.3	21.7	22.8	24.3	25.0	22.6	27.9	18.5	20.3	24.7	25.3	29.1	27.8	21.1	27.0	27.9	16.9	16.5	20.6	16.2	19.1	23.0	16.2	29.1	22.8	24
23	25.0	24.3	28.3	32.7	34.0	34.9	33.5	32.6	36.1	35.3	39.0	34.0	28.5	31.0	30.8	29.7	P	21.5	20.8	18.7	13.9	14.8	13.9	15.9	13.9	39.0	27.4	23
24	13.9	15.1	17.8	16.5	15.6	15.0	18.7	22.4	23.3	24.4	39.8	40.4	36.4	33.4	33.4	35.6	25.2	18.9	17.0	54.0	17.2	18.0	22.2	24.6	13.9	54.0	25.0	24
25	31.4	27.0	32.4	33.1	29.9	17.4	20.2	18.7	20.5	22.2	26.6	22.3	22.1	17.3	16.5	13.6	15.5	26.6	18.1	12.0	16.6	25.1	34.5	31.5	12.0	34.5	23.0	24
26	41.9	35.2	21.6	13.7	19.6	23.3	18.5	15.5	15.9	16.6	13.6	22.1	23.4	31.1	29.3	33.0	34.1	32.1	29.3	29.3	31.0	26.9	28.8	36.0	13.6	41.9	25.9	24
27	29.5	25.6	28.1	23.8	17.9	20.3	21.4	24.4	23.1	28.2	32.6	40.7	38.5	58.0	53.0	47.9	57.7	24.7	27.9	30.4	24.9	23.9	15.7	13.7	13.7	58.0	30.5	24
28	13.2	12.6	14.5	18.5	16.6	15.6	17.0	17.4	14.6	15.3	16.8	20.8	20.7	28.3	24.9	20.6	18.2	13.7	12.4	8.3	4.0	11.2	14.0	26.2	4.0	28.3	16.5	24
HOURLY MAX	41.9	35.2	45.6	63.0	57.3	58.8	47.4	46.7	50.8	49.5	60.9	47.8	50.2	58.0	53.0	47.9	57.7	48.8	32.7	54.0	41.9	72.3	44.7	41.8				
HOURLY AVG	23.2	22.2	24.1	26.9	24.8	24.1	25.5	25.4	25.7	25.7	28.0	29.6	29.6	29.9	29.7	27.5	27.8	23.9	21.4	23.3	22.3	23.0	22.5	22.5				

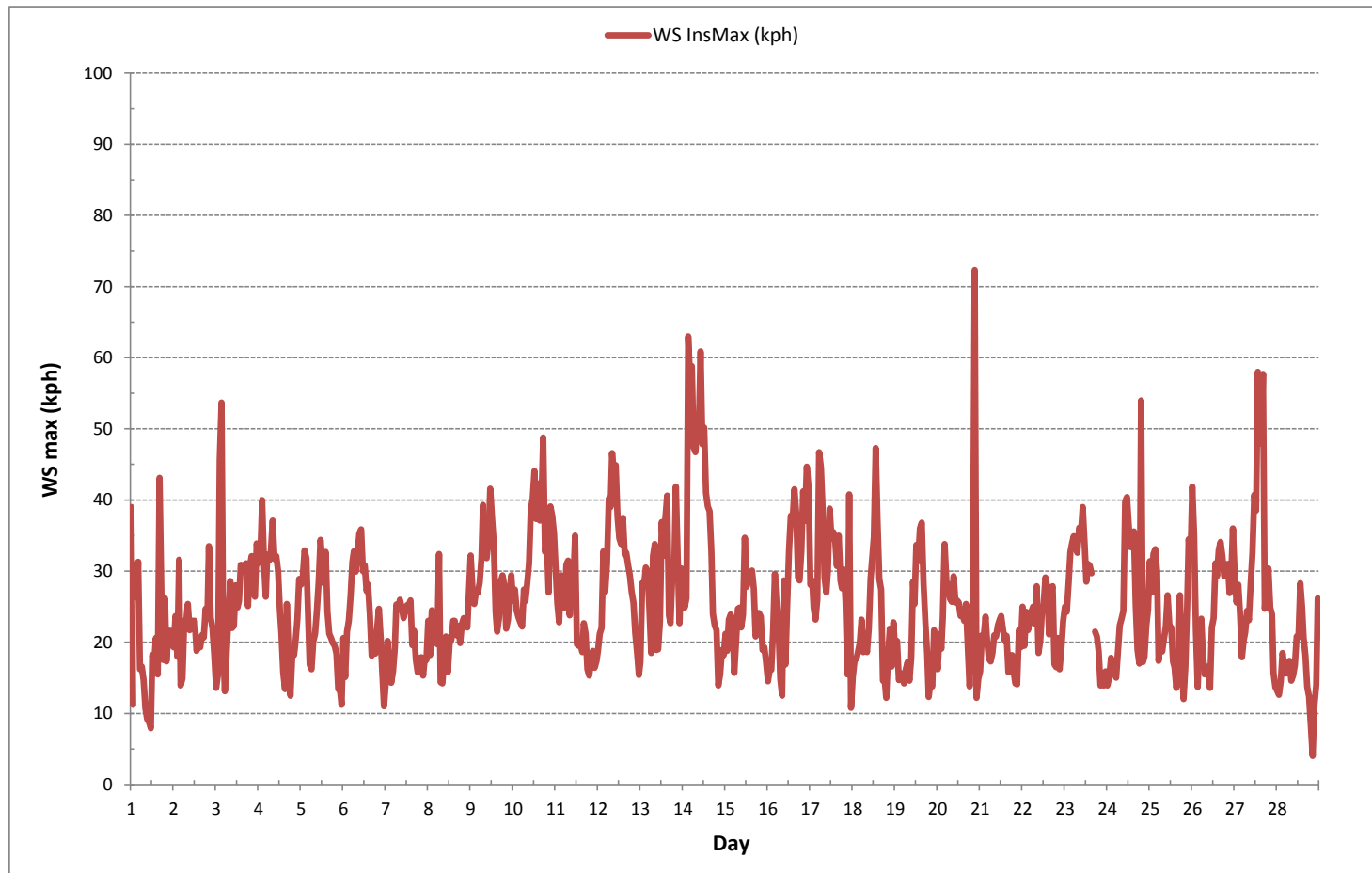
STATUS FLAG CODES

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

MONTHLY SUMMARY

MAXIMUM INSTANTANEOUS VALUE:	72.3 kph	@ HOUR	21	ON DAY	20
OPERATIONAL TIME:	670 hrs				

WIND SPEED Instantaneous Maximum (WS kph)



APPENDIX IV
REPORT CERTIFICATION FORM

Report Certification Form

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

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



 Signature of the External Person Certifying the Report

30-Mar-2018

 Report Issued Date (dd-mon-yyyy)

APPENDIX V
DATA VALIDATION CERTIFICATION FORM



Validation Certificate Form

Client: <u>Lakeland Industry & Community Association</u>	Project #: <u>2833-2018-02-31-C</u>
Site: <u>St. Lina Continuous Monitoring Station</u>	Contact: <u>Mike Bisaga</u>

Level 0 Preliminary Verification	<u>Maram Ghaaleb</u>	Date <u>14-Mar-18</u>
Level 1 Primary Validation	<u>Maram Ghaaleb</u>	Date <u>14-Mar-18</u>
Level 2 Final Validation	<u>Maram Ghaaleb</u>	Date <u>29-Mar-18</u>
Level 3 Independent Data Review	<u>Mike Bisaga</u>	Date <u>30-Mar-18</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.