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AMBIENT AIR MONITORING MONTHLY DATA REPORT

PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

THREE CREEKS 986B STATION

JOB #: 8449-2017-12-67-C

December 2017

Prepared for:

PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

Attention: LILY LIN

DATE: **January 22, 2018**

Prepared by:

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SUMMARY

In December 2017, Maxxam Analytics was contracted to manage the ambient air quality monitoring and maintenance activities at the Three Creeks 986b Station, near Peace River Oil Sands Area 2, Alberta. The monitoring station provides continuous meteorological measurements and air quality data for compliance parameters, as requested by the PRAMP Committee.

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: Ten hours of downtime were recorded between December 26 and December 30, due to additional zero-span checks and a repeat calibration performed to address a biased low drift in span response.

THC/CH_4/NMHC: The fuel gas ran out on December 5. A new gas cylinder was installed on December 6 by client site contacts. A zero-span check was completed afterwards as a quality check. Sixteen hours of downtime were recorded due to this event.

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 Peace River Area Monitoring Program Committee, Three Creeks 986b Station.

Should you have any questions concerning the results or if we can be of further assistance, please contact us at 403-219-3661 or toll-free at 1-800-386-7247.

Monthly Continuous Data Summary

Peace River Area Monitoring Program Committee Three Creeks 986b Station						MAXIMUM VALUES							OPERATIONAL TIME (%)
						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	7	17	19	8.2	W	1	17	100.0
TRS (ppb)	-	-	-	-	0.28	0.93	17	19	8.2	W	0.41	29	98.7
THC (ppm)	-	-	-	-	2.16	3.59	29	17	0.7	E	2.72	29	97.8
CH_4 (ppm)	-	-	-	-	2.16	3.59	29	17	0.7	E	2.71	29	97.8
NMHC (ppm)	-	-	-	-	0.00	0.09	26	11	0.1	NW	0.01	26	97.8
RELATIVE HUMIDITY (%)	-	-	-	-	70	99	1	19	4.4	SSW	91	2	100.0
BAROMETRIC PRESSURE (millibar)	-	-	-	-	947	971	29	6	2.2	ESE	968	29	100.0
AMBIENT TEMPERATURE (°C)	-	-	-	-	-10.2	6.7	10	13	13.5	W	4.5	9	100.0
STATION TEMPERATURE (°C)	-	-	-	-	23.1	24.4	14	17	6.6	SW	23.9	26	100.0
VECTOR WS (kph)	-	-	-	-	3.5	24.9	10	9	-	WNW	10.7	5	100.0
VECTOR WD (sec)	-	-	-	-	239 (WSW)	-	-	-	-	-	-	-	100.0

SOUR GAS PROCESSING INDUSTRY

MONTHLY REPORT SUMMARY

Three Creeks 986b Station	Peace River Area Monitoring Program Committee
Plant Name / Location	Company

Licence Number	Report Date	
	YEAR	MONTH
N/A	2017	December

CONTINUOUS AMBIENT MONITORING

		ONE - HOUR AVERAGE			24 - HOUR AVERAGE		
PARAMETER	% TIME OPERATIONAL	MAXIMUM VALUES		NO. READINGS > REGULATION	MAXIMUM VALUES		NO. READINGS > REGULATION
SO_2	100.0	0.007	ppm	0	0.001	ppm	0
TRS	98.7	0.001	ppm	-	0.000	ppm	-
THC	97.8	3.59	ppm	-	2.72	ppm	-
CH_4	97.8	3.59	ppm	-	2.71	ppm	-
NMHC	97.8	0.09	ppm	-	0.01	ppm	-
RH	100.0	99	%	-	91	%	-
BP	100.0	971	mb	-	968	mb	-
Ambient TPX	100.0	6.7	°C	-	4.5	°C	-
Station TPX	100.0	24.4	°C	-	23.9	°C	-
Wind Speed	100.0	24.9	kph	-	10.7	kph	-
Wind Direction	100.0	-		-	-		-

SIGNATURE OF COMPANY REPRESENTATIVE

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Exceedance Summary Report

SO_2 1-Hour Exceedances

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

SO_2 24-Hour Exceedances

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

TABLE OF CONTENTS

Title		Page
SUMMARY		1
MONTHLY CONTINUOUS DATA SUMMARY REPORT		2
SOUR GAS SUMMARY REPORT		3
EXCEEDANCE SUMMARY REPORT		4
TABLE OF CONTENTS		5
1.0 Discussion		7
2.0 Project Personnel		9
3.0 Plant Monthly Required AMD Summary		9
4.0 Calculations and Results		9
5.0 Methods and Procedures		10
Appendix I	Continuous Monitoring Data Results	13
	Sulphur Dioxide	14
	Total Reduced Sulphur	22
	Total Hydrocarbon	30
	Methane	38
	Non-Methane Hydrocarbon	46
	Wind Speed	54
	Wind Direction	61
	Relative Humidity	64
	Barometric Pressure	67
	Ambient Temperature	70
	Station Temperature	73
Appendix II	Equipment Calibration Results	76
	Sulphur Dioxide	77
	Total Reduced Sulphur	80
	Total Hydrocarbon	85
	Wind System	89
	Calibrators	91

	Calibration Gases	94
Appendix III	Report Certification Form	98
Appendix IV	Data Validation Certification Form	100

1.0 Discussion

This monthly report consists of continuous monitoring results for the following parameters: Sulphur Dioxide (SO_2), Total Reduced Sulphur (TRS), Total Hydrocarbon (THC), Methane (CH_4), Non-Methane Hydrocarbon (NMHC), Relative Humidity (RH), Barometric Pressure (BP), Ambient Temperature (AmbTPX), Station Temperature (StnTPX), Wind Speed (WS) and Wind Direction (WD).

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 (SO_2)

- Operational time, for the monitoring period, was 100%.
- The routine monthly calibration was performed on December 15.

TOTAL REDUCED SULPHUR (TRS)

- Operational time, for the monitoring period was 98.7%, equivalent to ten hours of downtime.
- The routine monthly calibration was performed on December 15.
- The analyzer spanned towards the lower acceptance limit on December 26. A repeat span check revealed it was not a trending drift. However, as a precaution, a site visit was scheduled. Upon arrival at the station, the exhaust tube was found frozen due to extremely low temperatures. The tube was defrosted and a successful repeat calibration was completed on December 27, confirming analyzer performance. Six hours of downtime were incurred due to this event.
- Two additional zero-span checks were conducted on December 30 to assess the analyzer in response to another biased low span drift. The results were not trending. The span response recovered afterwards. No further issues were identified. Four hours of downtime were recorded due to the additional quality checks.

TOTAL HYDROCARBONS (THC), METHANE (CH_4) and NON-METHANE HYDROCARBONS (NMHC)

- Operational time, for the monitoring period was 97.8%, equivalent to sixteen hours of downtime.
- The routine monthly calibration was performed on December 15.
- On December 5, the fuel gas ran out, causing the analyzer to span outside acceptance limits. The fuel gas cylinder was replaced on December 6 by client site contacts. A successful zero-span verification was completed afterwards, confirming analyzer performance. Sixteen hours of downtime were recorded due to this event.
- The canister sampler is programmed to draw in a whole air sample when the 5-minute average concentration of NMHC is above 0.30 ppm. A representative sample of ambient air is collected over a one-hour period when the canister event is triggered. No canister event was recorded this month.

WIND SPEED (WS) and WIND DIRECTION (WD)

- 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%.

AMBIENT TEMPERATURE (AmbTPX)

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

STATION TEMPERATURE (StnTPX)

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

2.0 Project Personnel

Karla Reesor was the contact for Peace River Area Monitoring Program Committee and the Maxxam field technician was Raja Ashraf.

3.0 Plant Monthly Required AMD Summary

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

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

4.0 Calculations and Results

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

5.0 Methods and Procedures

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

Maxxam AIR SOP-00001: Methane, Non-Methane Hydrocarbon Analyzer Monitoring
Maxxam AIR SOP-00208: RM Young Wind Monitor Calibration
Maxxam AIR SOP-00209: Ambient Sulphur Monitoring

There were no deviations from the prescribed methods.

The following instruments were used to perform the test program:

Sulphur Dioxide - Thermo 43C UV Fluorescent Analyzer
Total Reduced Sulphur - Thermo 43i - TLE UV Fluorescent Analyzer
Methane, Non-Methane Hydrocarbon - Thermo 55i FID Analyzer
Wind System - RM Young Unit
Relative Humidity - RM Young Unit
Barometric Pressure - Met One Unit
Ambient Temperature - RM Young Unit
Datalogger - ESC 8832

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

Level 0 Preliminary Verification

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

Level 1 Primary Validation

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

Level 2 Final Validation

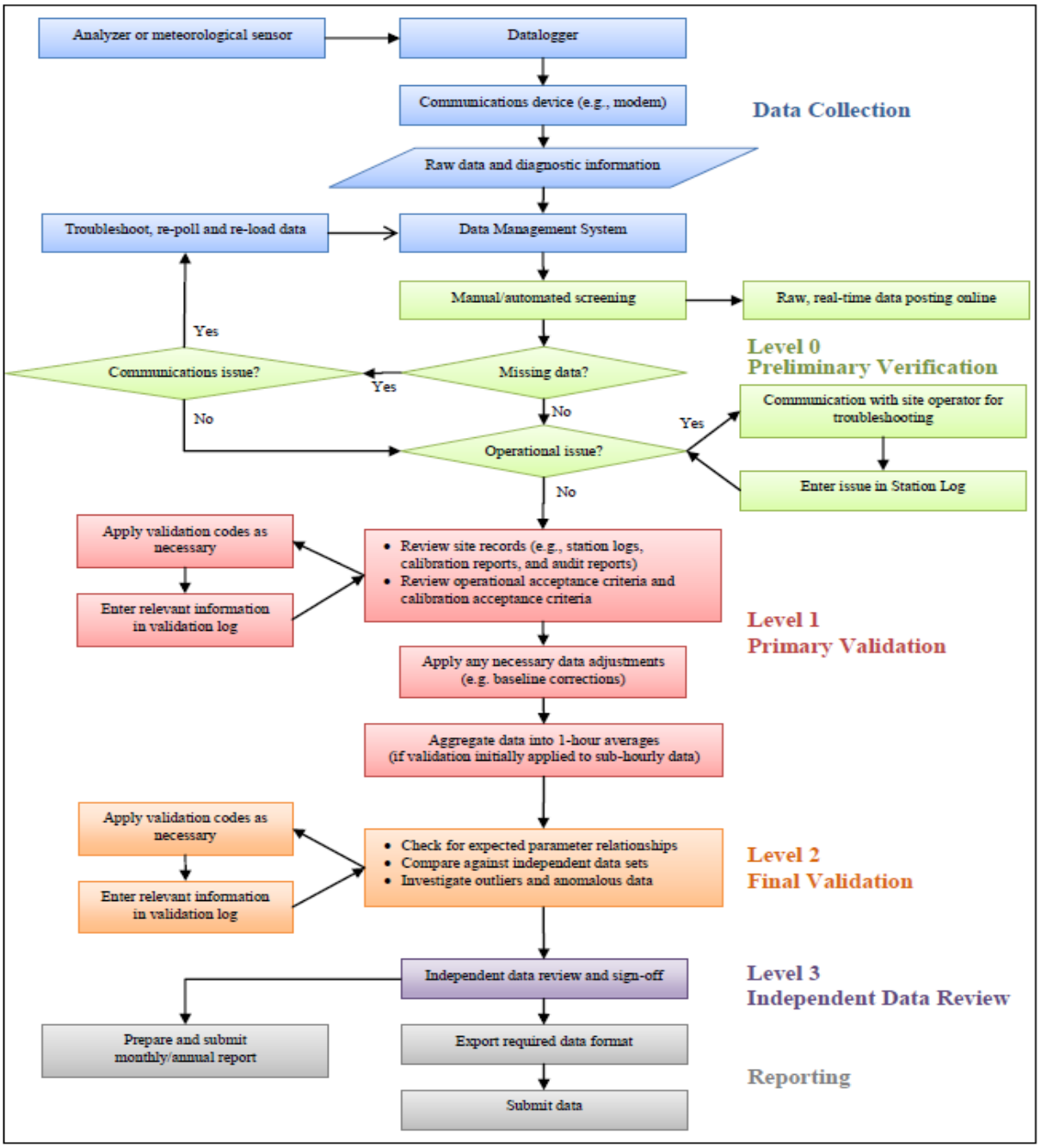
The purpose of Level 2 validation is to verify that there are no inconsistencies among related data, or among regional data measured at nearby sites.

Level 3 Independent Data Review

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

Post-Final Validation

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



Source: 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 (SO_2 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	S	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	1	0	24
2	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
3	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
4	S	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0	0	0	0	0	0	0	S	0	1	0	24
5	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	1	0	24
6	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
7	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	1	0	24
8	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
9	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
10	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	0	S	1	1	0	0	0	0	0	1	0	24
11	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	S	0	0	0	0	0	0	0	0	1	0	24
12	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
13	0	0	0	0	0	0	0	0	0	1	1	1	0	0	S	0	0	0	0	0	0	0	0	0	0	1	0	24
14	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
15	0	0	0	0	0	0	0	0	0	0	C	C	C	C	0	0	0	0	0	0	0	0	0	0	0	0	0	24
16	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	24
17	0	0	0	0	0	0	0	0	1	1	S	0	0	0	0	0	0	2	5	7	1	1	0	0	0	7	1	24
18	0	0	2	4	3	2	1	2	3	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	24
19	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
20	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
21	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
22	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
23	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
24	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
25	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
26	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1	0	1	0	24
27	S	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	1	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	S	0	0	0	0	24
29	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	S	0	0	0	1	0	24
30	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
31	0	0	0	0	1	0	1	0	0	0	0	1	1	1	1	1	1	1	1	S	0	0	0	1	0	1	0	24
HOURLY MAX	1	1	2	4	3	2	1	2	3	1	1	1	1	1	1	1	1	2	5	7	1	1	1	1				
HOURLY AVG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

STATUS FLAG CODES

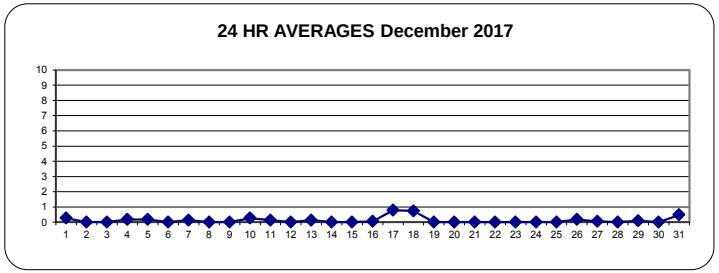
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

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

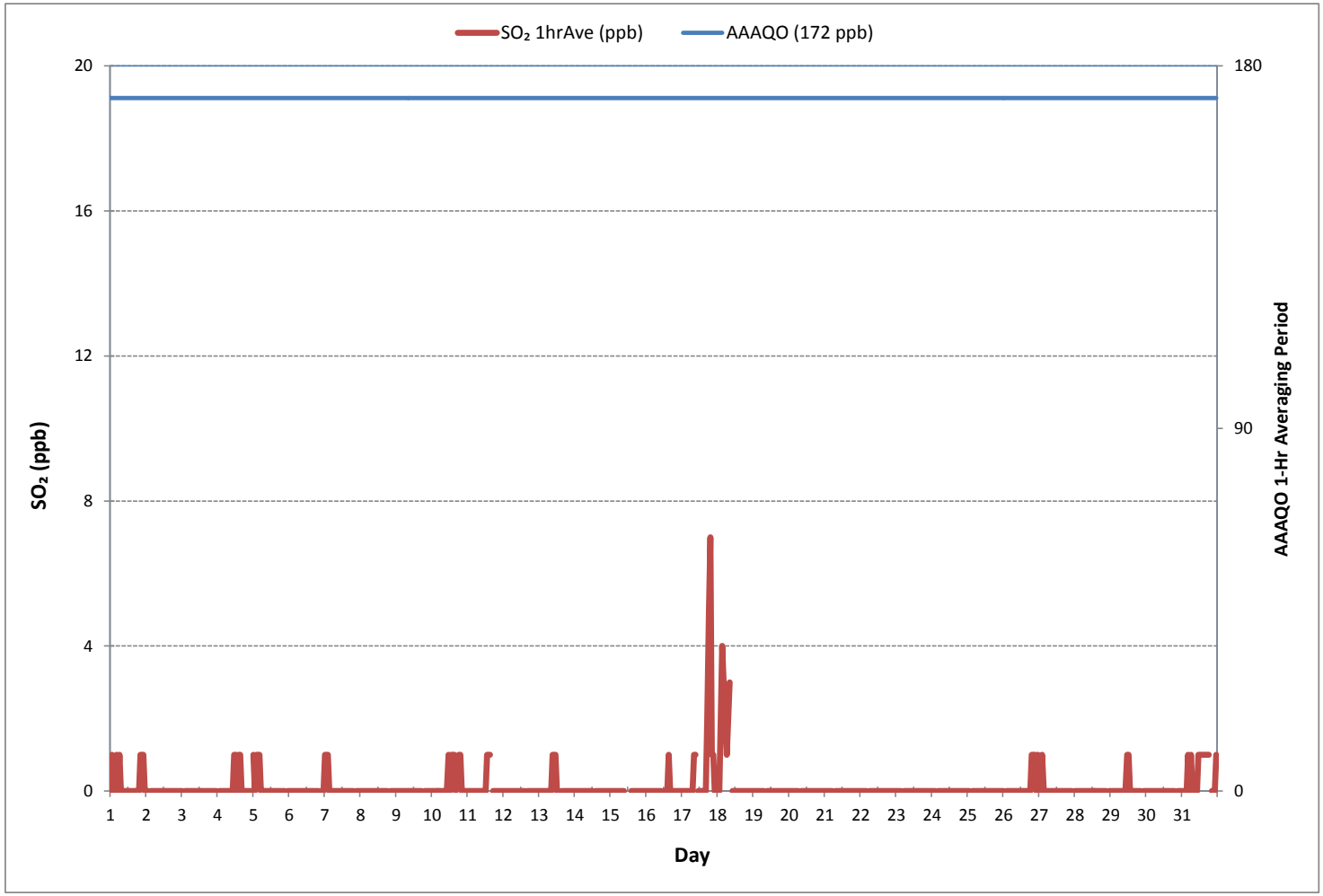
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0					
NUMBER OF 24-HR EXCEEDANCES:	0					
NUMBER OF NON-ZERO READINGS:	62					
MINIMUM 1-HR AVERAGE	0	ppb	@ HOUR	0	ON DAY	1
MAXIMUM 1-HR AVERAGE:	7	ppb	@ HOUR	19	ON DAY	17
MAXIMUM 24-HR AVERAGE:	1	ppb			ON DAY	17

IZS CALIBRATION TIME:	32	hrs	OPERATIONAL TIME:	744	hrs
MONTHLY CALIBRATION TIME:	4	hrs	AMD OPERATION UPTIME:	100.0	%
STANDARD DEVIATION:	0		MONTHLY AVERAGE:	0	ppb



SULPHUR DIOXIDE Hourly Averages (SO_2 ppb)



SULPHUR DIOXIDE Instantaneous Maximum (SO_2 ppb)

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

STATUS FLAG CODES

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

MONTHLY SUMMARY

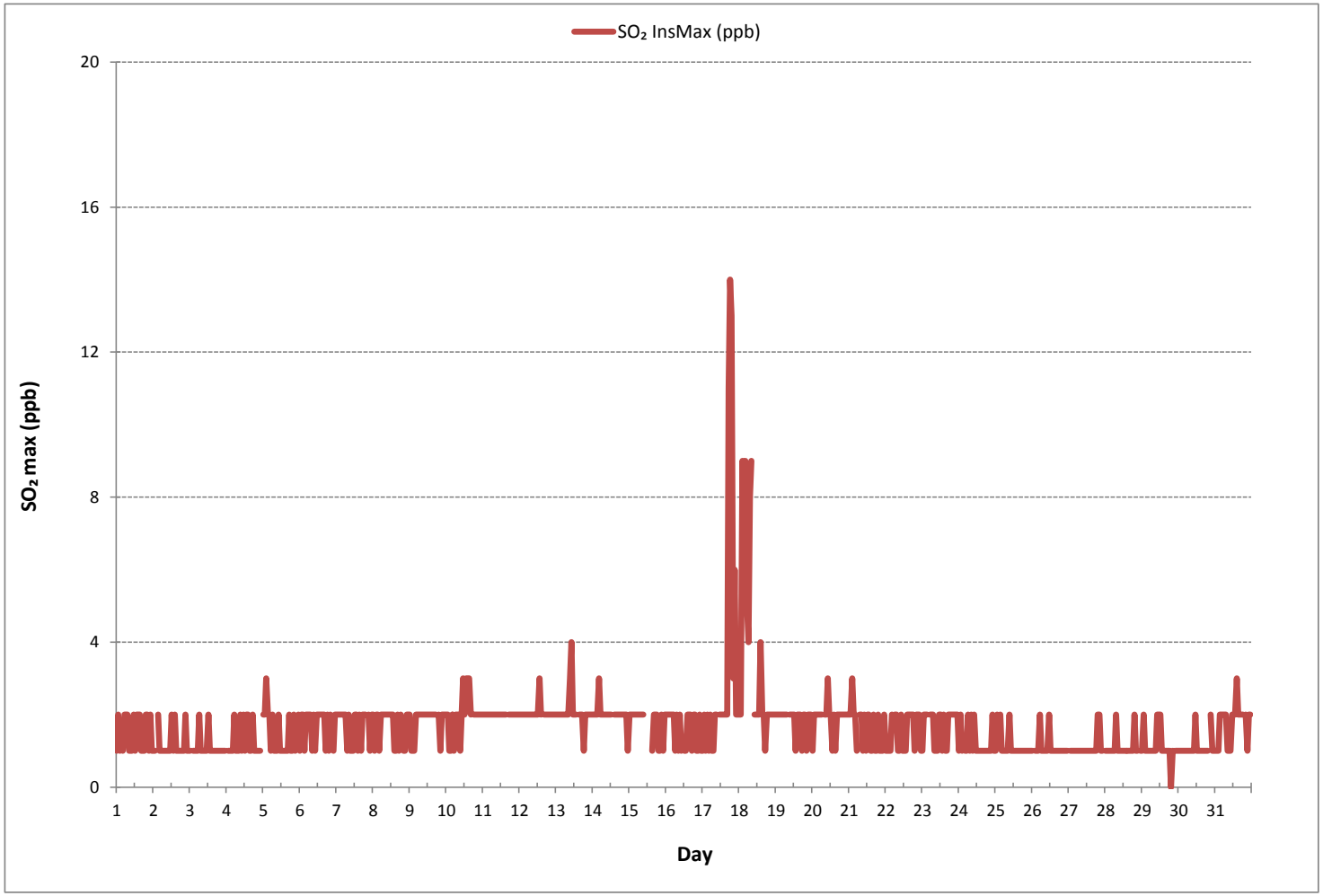
NUMBER OF NON-ZERO READINGS: 706

MAXIMUM INSTANTANEOUS VALUE: 14 ppb @ HOUR 18 ON DAY 17

IZS CALIBRATION TIME: 32 hrs
MONTHLY CALIBRATION TIME: 5 hrs
STANDARD DEVIATION: 1

OPERATIONAL TIME: 744 hrs

SULPHUR DIOXIDE Instantaneous Maximum (SO_2 ppb)



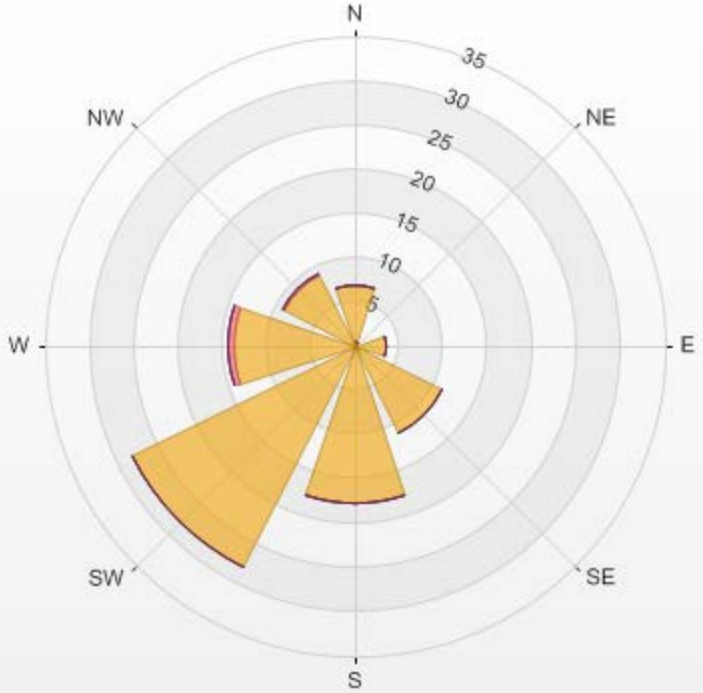
Wind: PRAMP_986
Poll.: PRAMP_986-SO_2[ppb]
Monthly: 17/12
Type: PollutionRose
Direction: Blowing From (Wind Frequency)
Based On 1 Hr.

Calm: 8.76% Calm Avg: 0.16 [ppb]

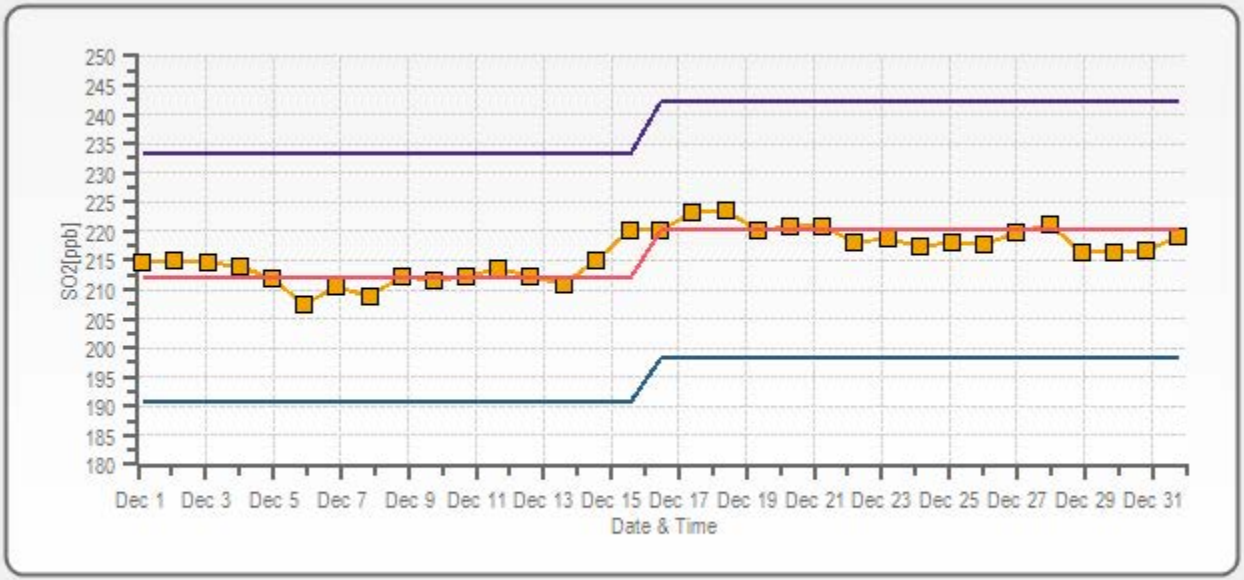
Direction	0-3	3-10	10-85	85-170	>170.0	Total
N	6.9	0.0	0.0	0.0	0.0	6.9
NE	0.6	0.0	0.0	0.0	0.0	0.6
E	3.5	0.0	0.0	0.0	0.0	3.5
SE	11.0	0.0	0.0	0.0	0.0	11.0
S	17.8	0.0	0.0	0.0	0.0	17.8
SW	28.1	0.0	0.0	0.0	0.0	28.1
W	13.7	0.6	0.0	0.0	0.0	14.3
NW	8.9	0.1	0.0	0.0	0.0	9.0
Summary	90.5	0.7	0.0	0.0	0.0	91.2

%	Icon	Classes (ppb)	91	0-3	1	3-10	0	10-85	0	85-170	0	>170.0

PRAMP_986 Poll.: PRAMP_986-SO2[ppb] 2017/12/01 00:00 - 2017/12/31 23:00 Calm: 8.76% Calm Poll Avg: 0.16[ppb]



SO2[ppb] Calibration: PRAMP_986 Monthly: 17/12 Type: Span



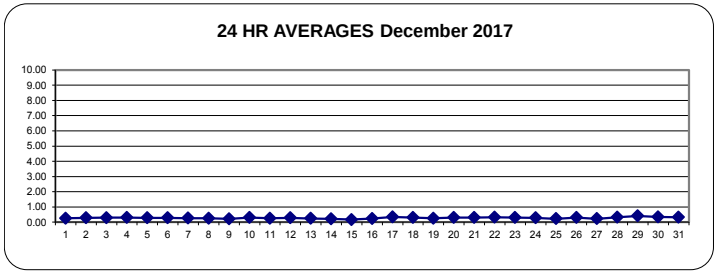
TOTAL REDUCED SULPHUR

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	0.24	0.24	0.25	S	0.29	0.25	0.25	0.24	0.25	0.23	0.26	0.24	0.24	0.24	0.25	0.29	0.28	0.26	0.23	0.25	0.26	0.27	0.28	0.25	0.23	0.29	0.25	24
2	0.26	0.25	S	0.30	0.35	0.36	0.34	0.32	0.31	0.29	0.27	0.25	0.25	0.23	0.24	0.27	0.29	0.28	0.28	0.27	0.27	0.29	0.30	0.29	0.23	0.36	0.29	24
3	0.28	S	0.36	0.30	0.30	0.29	0.29	0.28	0.28	0.28	0.29	0.29	0.31	0.30	0.29	0.28	0.29	0.28	0.27	0.28	0.28	0.28	0.29	0.30	0.27	0.36	0.29	24
4	S	0.40	0.38	0.39	0.35	0.32	0.28	0.29	0.31	0.29	0.29	0.28	0.26	0.27	0.27	0.27	0.27	0.26	0.25	0.26	0.25	0.26	0.26	S	0.25	0.40	0.29	24
5	0.34	0.27	0.29	0.28	0.28	0.25	0.27	0.26	0.25	0.26	0.26	0.26	0.27	0.28	0.27	0.28	0.29	0.28	0.31	0.29	0.29	0.29	S	0.33	0.25	0.34	0.28	24
6	0.29	0.29	0.28	0.29	0.29	0.29	0.30	0.29	0.30	0.29	0.29	0.28	0.29	0.28	0.28	0.27	0.28	0.28	0.28	0.27	0.27	S	0.31	0.28	0.27	0.31	0.29	24
7	0.27	0.26	0.26	0.27	0.26	0.26	0.28	0.27	0.26	0.26	0.26	0.28	0.27	0.25	0.26	0.27	0.25	0.26	0.27	0.25	S	0.30	0.27	0.28	0.25	0.30	0.27	24
8	0.27	0.28	0.26	0.24	0.25	0.26	0.26	0.26	0.25	0.26	0.26	0.25	0.26	0.24	0.22	0.23	0.24	0.23	0.24	S	0.27	0.24	0.23	0.23	0.22	0.28	0.25	24
9	0.21	0.22	0.22	0.22	0.21	0.20	0.21	0.21	0.22	0.22	0.19	0.20	0.20	0.20	0.20	0.19	0.18	0.20	S	0.25	0.23	0.24	0.22	0.22	0.18	0.25	0.21	24
10	0.23	0.24	0.23	0.23	0.24	0.24	0.24	0.24	0.26	0.28	0.30	0.33	0.31	0.34	0.38	0.45	0.34	S	0.36	0.33	0.31	0.30	0.29	0.27	0.23	0.45	0.29	24
11	0.29	0.27	0.28	0.29	0.30	0.28	0.29	0.27	0.27	0.26	0.26	0.25	0.23	0.23	0.21	0.22	S	0.25	0.23	0.23	0.24	0.25	0.24	0.24	0.21	0.30	0.26	24
12	0.25	0.26	0.27	0.26	0.27	0.28	0.28	0.27	0.28	0.30	0.32	0.33	0.30	0.30	0.28	S	0.33	0.28	0.28	0.29	0.26	0.28	0.26	0.27	0.25	0.33	0.28	24
13	0.27	0.26	0.25	0.23	0.24	0.24	0.22	0.26	0.25	0.24	0.25	0.25	0.21	0.20	S	0.24	0.26	0.25	0.25	0.24	0.26	0.24	0.23	0.23	0.20	0.27	0.24	24
14	0.24	0.25	0.26	0.25	0.25	0.23	0.24	0.25	0.25	0.26	0.24	0.23	0.23	S	0.26	0.22	0.23	0.20	0.19	0.17	0.14	0.16	0.17	0.16	0.14	0.26	0.22	24
15	0.14	0.13	0.13	0.13	0.12	0.11	0.11	0.11	0.13	0.12	0.10	0.12	0.08	C	C	C	C	0.41	0.24	0.22	0.20	0.22	0.24	0.22	0.08	0.41	0.16	24
16	0.23	0.24	0.24	0.21	0.22	0.21	0.22	0.22	0.24	0.22	0.23	S	0.30	0.25	0.23	0.24	0.23	0.24	0.24	0.25	0.24	0.24	0.24	0.25	0.21	0.30	0.24	24
17	0.26	0.26	0.25	0.27	0.29	0.28	0.28	0.29	0.31	0.32	S	0.34	0.31	0.30	0.29	0.28	0.28	0.55	0.77	0.93	0.28	0.30	0.26	0.26	0.25	0.93	0.35	24
18	0.26	0.25	0.41	0.55	0.50	0.37	0.27	0.47	0.55	S	0.27	0.23	0.21	0.22	0.24	0.21	0.22	0.22	0.21	0.21	0.22	0.22	0.21	0.22	0.21	0.55	0.29	24
19	0.22	0.23	0.25	0.23	0.24	0.25	0.24	0.24	S	0.30	0.27	0.33	0.25	0.23	0.24	0.23	0.23	0.22	0.25	0.24	0.29	0.27	0.27	0.25	0.22	0.33	0.25	24
20	0.27	0.27	0.29	0.28	0.28	0.29	0.28	S	0.39	0.31	0.30	0.31	0.30	0.30	0.31	0.30	0.29	0.30	0.31	0.31	0.31	0.32	0.31	0.33	0.27	0.39	0.30	24
21	0.32	0.31	0.33	0.31	0.31	0.29	S	0.36	0.32	0.29	0.29	0.29	0.30	0.32	0.31	0.30	0.31	0.31	0.31	0.31	0.31	0.32	0.30	0.31	0.29	0.36	0.31	24
22	0.30	0.30	0.31	0.33	0.33	S	0.42	0.32	0.30	0.30	0.31	0.33	0.33	0.33	0.31	0.32	0.30	0.31	0.33	0.31	0.29	0.32	0.30	0.31	0.29	0.42	0.32	24
23	0.30	0.32	0.33	0.29	S	0.37	0.31	0.30	0.30	0.29	0.30	0.29	0.28	0.29	0.27	0.28	0.29	0.31	0.27	0.31	0.29	0.31	0.31	0.31	0.27	0.37	0.30	24
24	0.30	0.30	0.32	S	0.37	0.31	0.29	0.28	0.28	0.29	0.26	0.27	0.26	0.28	0.28	0.27	0.26	0.27	0.26	0.26	0.26	0.24	0.24	0.23	0.23	0.37	0.28	24
25	0.21	0.22	S	0.32	0.24	0.21	0.21	0.20	0.20	0.21	0.19	0.21	0.24	0.23	0.23	0.21	0.24	0.22	0.21	0.20	0.24	0.24	0.24	0.25	0.19	0.32	0.22	24
26	0.24	S	0.42	0.31	0.29	0.28	0.26	0.28	0.31	0.32	0.30	0.37	0.36	0.26	0.26	0.26	S1	0.40	0.29	0.26	0.25	0.26	0.26	0.26	0.24	0.42	0.30	23
27	S	0.35	0.22	0.21	0.19	0.20	0.21	0.19	0.19	0.17	0.17	0.18	0.19	0.18	0.15	0.13	C1	C1	C1	C1	C1	0.43	0.41	S	0.13	0.43	0.22	19
28	0.52	0.38	0.35	0.33	0.32	0.31	0.29	0.30	0.29	0.29	0.31	0.28	0.28	0.28	0.27	0.29	0.29	0.28	0.30	0.28	0.27	0.26	S	0.44	0.26	0.52	0.31	24
29	0.31	0.32	0.30	0.32	0.34	0.40	0.49	0.45	0.52	0.50	0.62	0.67	0.56	0.40	0.33	0.33	0.35	0.35	0.34	0.36	0.38	S	0.53	0.37	0.30	0.67	0.41	24
30	0.38	0.35	0.32	0.31	0.29	0.29	0.26	S1	S1	0.34	0.32	0.33	0.34	0.36	0.36	0.35	S1	S1	0.46	0.33	S	0.43	0.30	0.27	0.26	0.46	0.34	20
31	0.27	0.27	0.26	0.26	0.26	0.25	0.26	0.27	0.25	0.26	0.28	0.30	0.30	0.34	0.35	0.35	0.33	0.34	0.35	S	0.49	0.39	0.37	0.39	0.25	0.49	0.31	24
HOURLY MAX	0.52	0.40	0.42	0.55	0.50	0.40	0.49	0.47	0.55	0.50	0.62	0.67	0.56	0.40	0.38	0.45	0.35	0.55	0.77	0.93	0.49	0.43	0.53	0.44				
HOURLY AVG	0.27	0.28	0.29	0.28	0.28	0.27	0.27	0.28	0.29	0.28	0.28	0.29	0.27	0.27	0.27	0.27	0.28	0.29	0.30	0.29	0.27	0.28	0.28	0.28				

STATUS FLAG CODES

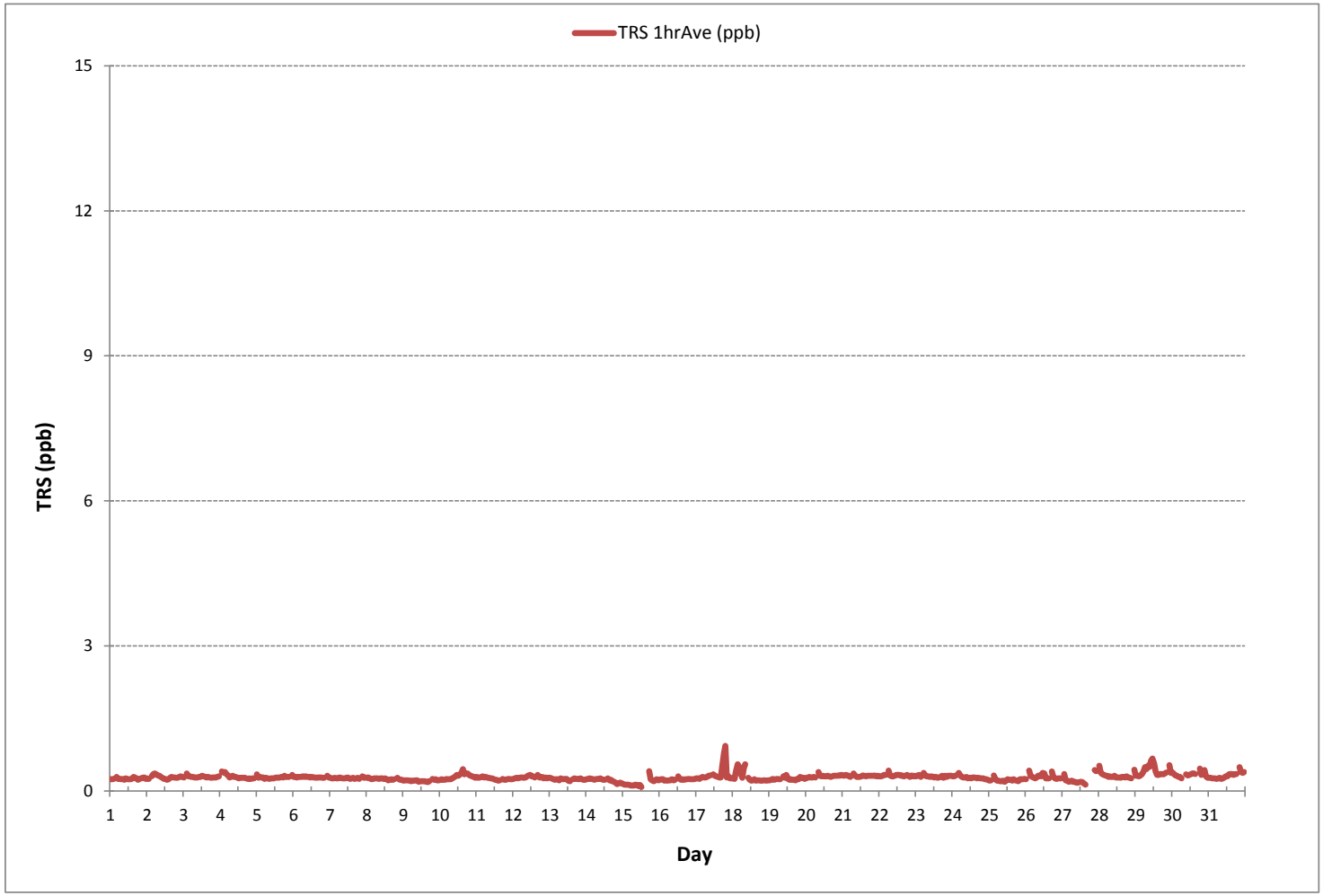
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:			698				
MINIMUM 1-HR AVERAGE		0.08	ppb	@ HOUR	12	ON DAY	15
MAXIMUM 1-HR AVERAGE:		0.93	ppb	@ HOUR	19	ON DAY	17
MAXIMUM 24-HR AVERAGE:		0.41	ppb			ON DAY	29
IZS CALIBRATION TIME:	32	hrs		OPERATIONAL TIME:		734	hrs
MONTHLY CALIBRATION TIME:	4	hrs		AMD OPERATION UPTIME:		98.7	%
STANDARD DEVIATION:	0.07			MONTHLY AVERAGE:		0.28	ppb

TOTAL REDUCED SULPHUR Hourly Averages (TRS ppb)



TOTAL REDUCED SULPHUR Instantaneous Maximum (TRS ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY																												
1	0.35	0.33	0.35	S	0.37	0.32	0.35	0.35	0.35	0.32	0.38	0.34	0.35	0.32	0.33	0.37	0.37	0.37	0.32	0.35	0.34	0.37	0.37	0.37	0.32	0.38	0.35	24
2	0.34	0.33	S	0.42	0.48	0.45	0.43	0.45	0.45	0.40	0.37	0.33	0.43	0.32	0.33	0.40	0.43	0.45	0.37	0.35	0.37	0.37	0.40	0.38	0.32	0.48	0.39	24
3	0.38	S	0.48	0.40	0.43	0.43	0.38	0.35	0.37	0.38	0.37	0.38	0.40	0.37	0.38	0.35	0.40	0.37	0.37	0.38	0.40	0.40	0.40	0.37	0.35	0.48	0.39	24
4	S	0.53	0.48	0.50	0.48	0.40	0.37	0.37	0.40	0.40	0.40	0.38	0.35	0.37	0.34	0.35	0.37	0.35	0.37	0.35	0.34	0.34	0.35	S	0.34	0.53	0.39	24
5	0.48	0.35	0.40	0.42	0.37	0.35	0.35	0.37	0.37	0.37	0.35	0.35	0.37	0.35	0.37	0.37	0.40	0.51	0.45	0.35	0.37	0.40	S	0.45	0.35	0.51	0.39	24
6	0.37	0.38	0.42	0.37	0.37	0.37	0.40	0.37	0.37	0.50	0.37	0.37	0.37	0.37	0.40	0.37	0.37	0.37	0.35	0.35	0.34	S	0.45	0.40	0.34	0.50	0.38	24
7	0.38	0.35	0.35	0.35	0.37	0.38	0.35	0.38	0.37	0.32	0.40	0.35	0.37	0.32	0.34	0.37	0.34	0.42	0.40	0.34	S	0.43	0.37	0.38	0.32	0.43	0.37	24
8	0.40	0.35	0.35	0.35	0.32	0.34	0.37	0.35	0.40	0.32	0.38	0.37	0.37	0.32	0.32	0.32	0.34	0.32	0.32	S	0.40	0.32	0.32	0.32	0.32	0.40	0.35	24
9	0.29	0.32	0.32	0.32	0.32	0.29	0.29	0.27	0.32	0.30	0.27	0.27	0.27	0.30	0.29	0.28	0.27	0.30	S	0.38	0.30	0.29	0.29	0.29	0.27	0.38	0.30	24
10	0.27	0.27	0.27	0.32	0.32	0.29	0.27	0.29	0.29	0.30	0.45	0.43	0.34	0.35	0.40	0.50	0.33	S	0.40	0.33	0.32	0.32	0.30	0.29	0.27	0.50	0.33	24
11	0.29	0.30	0.29	0.32	0.38	0.37	0.32	0.34	0.35	0.35	0.35	0.33	0.30	0.30	0.29	0.33	S	0.37	0.35	0.32	0.32	0.32	0.32	0.27	0.27	0.38	0.33	24
12	0.30	0.30	0.32	0.27	0.30	0.30	0.30	0.30	0.30	0.32	0.32	0.38	0.35	0.29	0.27	S	0.40	0.27	0.29	0.32	0.27	0.27	0.27	0.27	0.27	0.40	0.30	24
13	0.29	0.30	0.27	0.27	0.30	0.32	0.29	0.37	0.33	0.32	0.33	0.32	0.32	0.27	S	0.37	0.48	0.37	0.32	0.34	0.40	0.32	0.32	0.32	0.27	0.48	0.33	24
14	0.32	0.35	0.37	0.32	0.34	0.32	0.35	0.34	0.32	0.34	0.32	0.32	0.33	S	0.37	0.32	0.35	0.30	0.27	0.27	0.24	0.27	0.30	0.32	0.24	0.37	0.32	24
15	0.29	0.27	0.27	0.33	0.25	0.24	0.27	0.27	0.29	0.34	0.26	0.35	C	C	C	C	C	C	0.42	0.41	0.40	0.40	0.45	0.42	0.24	0.45	0.33	24
16	0.43	0.43	0.40	0.40	0.40	0.42	0.42	0.42	0.43	0.43	0.44	S	0.50	0.42	0.40	0.42	0.40	0.42	0.42	0.43	0.38	0.38	0.37	0.38	0.37	0.50	0.41	24
17	0.40	0.43	0.37	0.40	0.38	0.40	0.40	0.40	0.40	0.40	S	0.48	0.40	0.40	0.43	0.40	0.40	**1.76**	1.63	1.56	0.43	0.64	0.43	0.40	0.37	**1.76**	0.58	24
18	0.40	0.43	0.90	0.89	0.95	0.64	0.53	1.00	1.22	S	0.50	0.43	0.40	0.45	0.69	0.42	0.45	0.40	0.40	0.40	0.40	0.40	0.40	0.43	0.40	1.22	0.57	24
19	0.42	0.40	0.43	0.42	0.43	0.45	0.45	0.45	S	0.58	0.50	0.79	0.45	0.45	0.45	0.45	0.43	0.42	0.48	0.45	0.48	0.48	0.48	0.48	0.40	0.79	0.47	24
20	0.48	0.48	0.48	0.45	0.48	0.48	0.48	S	0.66	0.51	0.53	0.53	0.56	0.48	0.51	0.51	0.50	0.50	0.51	0.51	0.50	0.53	0.48	0.53	0.45	0.66	0.51	24
21	0.53	0.50	0.61	0.48	0.51	0.48	S	0.61	0.56	0.48	0.48	0.45	0.51	0.50	0.50	0.50	0.50	0.55	0.50	0.51	0.50	0.50	0.50	0.51	0.45	0.61	0.51	24
22	0.47	0.48	0.50	0.53	0.56	S	0.66	0.53	0.50	0.48	0.50	0.53	0.51	0.53	0.50	0.51	0.48	0.51	0.53	0.48	0.53	0.51	0.53	0.51	0.47	0.66	0.52	24
23	0.50	0.53	0.53	0.50	S	0.64	0.50	0.50	0.48	0.47	0.50	0.45	0.48	0.47	0.45	0.47	0.53	0.64	0.45	0.53	0.48	0.50	0.50	0.50	0.45	0.64	0.50	24
24	0.50	0.48	0.53	S	0.64	0.53	0.48	0.48	0.53	0.58	0.48	0.48	0.50	0.56	0.53	0.53	0.53	0.53	0.56	0.53	0.53	0.53	0.53	0.53	0.48	0.64	0.53	24
25	0.53	0.53	S	0.74	0.50	0.53	0.51	0.50	0.50	0.58	0.48	0.53	0.77	0.50	0.53	0.50	0.61	0.56	0.53	0.53	0.58	0.53	0.53	0.56	0.48	0.77	0.55	24
26	0.53	S	0.93	0.61	0.58	0.58	0.56	0.61	0.61	0.61	0.58	0.69	0.69	0.56	0.56	S1	S1	0.87	0.64	0.56	0.53	0.56	0.56	0.58	0.53	0.93	0.62	22
27	S	0.87	0.56	0.55	0.53	0.56	0.58	0.56	0.58	0.56	0.58	0.61	0.61	0.64	0.58	0.60	C1	C1	C1	C1	C1	0.81	0.71	S	0.53	0.87	0.62	19
28	1.00	0.71	0.66	0.61	0.61	0.64	0.58	0.58	0.61	0.64	0.84	0.71	0.56	0.58	0.58	0.58	0.61	0.64	0.63	0.58	0.60	0.58	S	1.03	0.56	1.03	0.66	24
29	0.61	0.77	0.64	0.64	0.69	0.74	0.82	0.79	0.84	0.92	0.92	1.22	1.09	0.74	0.64	0.69	0.77	0.66	0.66	0.71	0.82	S	1.13	0.69	0.61	1.22	0.79	24
30	0.74	0.77	0.66	0.71	0.66	0.69	0.69	S1	S1	0.72	0.69	0.69	0.66	0.71	0.74	0.64	S1	S1	0.85	0.72	S	1.05	0.69	0.66	0.64	1.05	0.72	20
31	0.69	0.66	0.69	0.64	0.66	0.69	0.64	0.66	0.66	0.66	0.71	0.66	0.71	0.77	0.79	0.74	0.77	0.77	0.77	S	1.11	0.77	0.74	0.79	0.64	1.11	0.73	24
HOURLY MAX	1.00	0.87	0.93	0.89	0.95	0.74	0.82	1.00	1.22	0.92	0.92	1.22	1.09	0.77	0.79	0.74	0.77	1.76	1.63	1.56	1.11	1.05	1.13	1.03				
HOURLY AVG	0.45	0.46	0.48	0.47	0.47	0.45	0.45	0.46	0.48	0.46	0.47	0.48	0.48	0.45	0.46	0.45	0.46	0.52	0.50	0.48	0.45	0.47	0.47	0.46				

STATUS FLAG CODES

C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	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

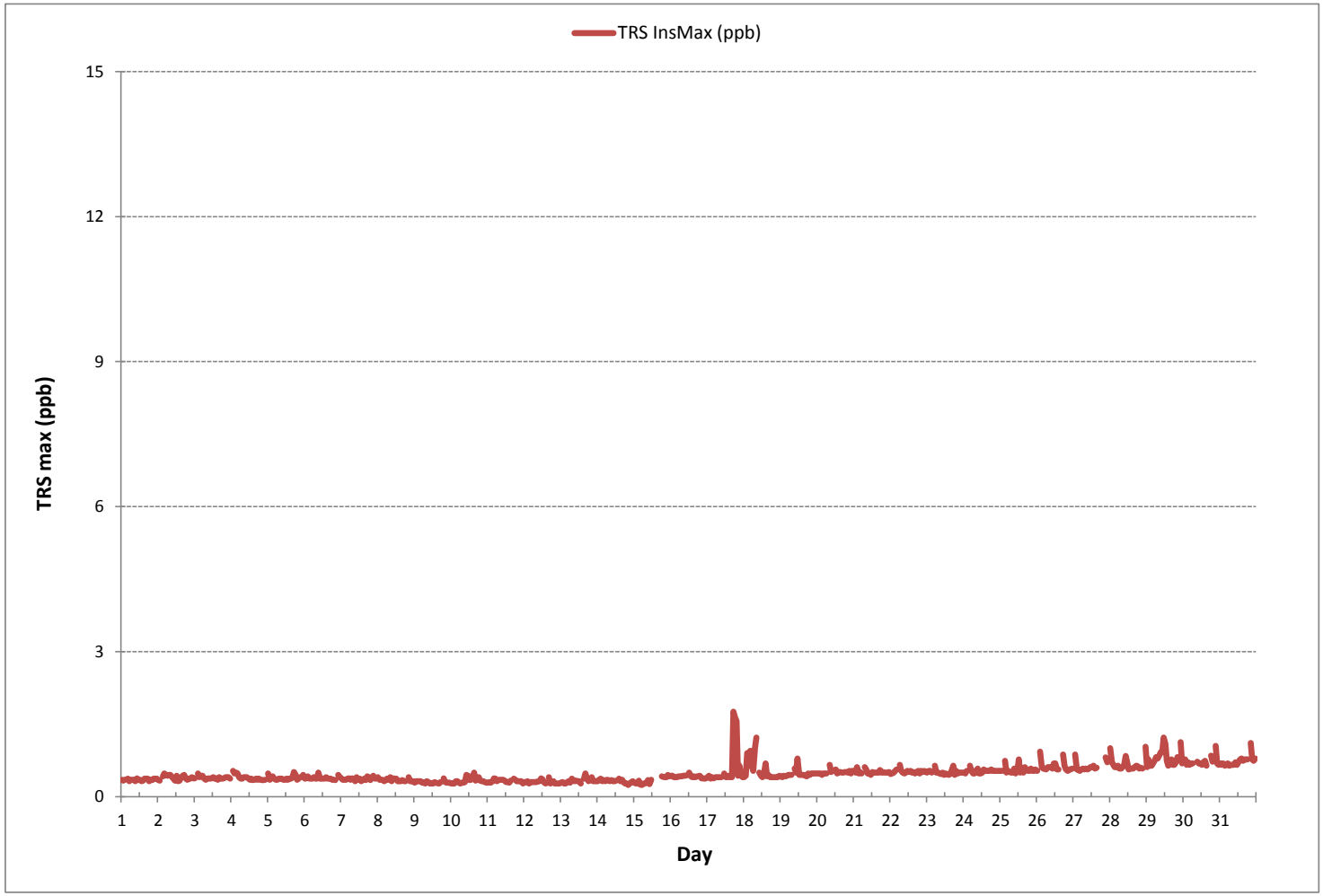
NUMBER OF NON-ZERO READINGS: 695

MAXIMUM INSTANTANEOUS VALUE: 1.76 ppb @ HOUR 17 ON DAY 17

IZS CALIBRATION TIME: 32 hrs
MONTHLY CALIBRATION TIME: 6 hrs
STANDARD DEVIATION: 0.17

OPERATIONAL TIME: 733 hrs

TOTAL REDUCED SULPHUR Instantaneous Maximum (TRS ppb)



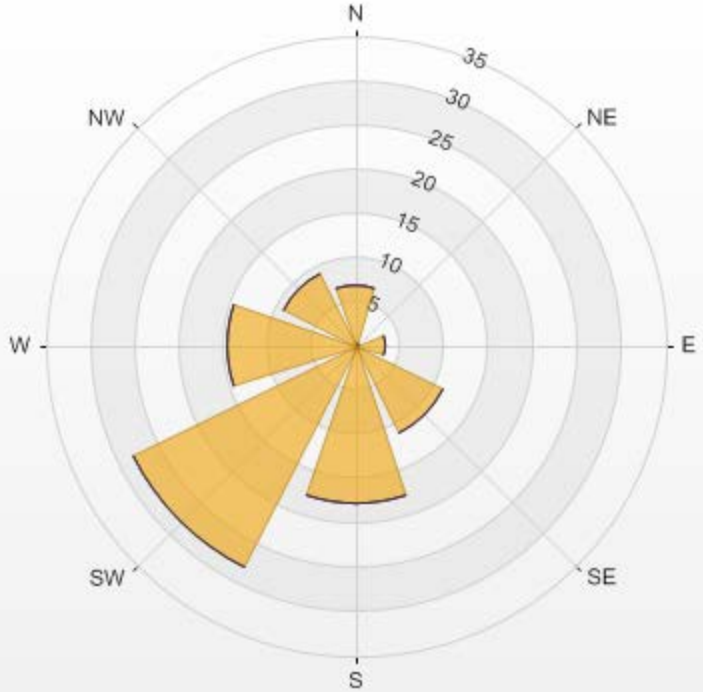
Wind: PRAMP_986
Poll.: PRAMP_986-TRS[ppb]
Monthly: 17/12
Type: PollutionRose
Direction: Blowing From (Wind Frequency)
Based On 1 Hr.

Calm: 8.60% Calm Avg: 0.31 [ppb]

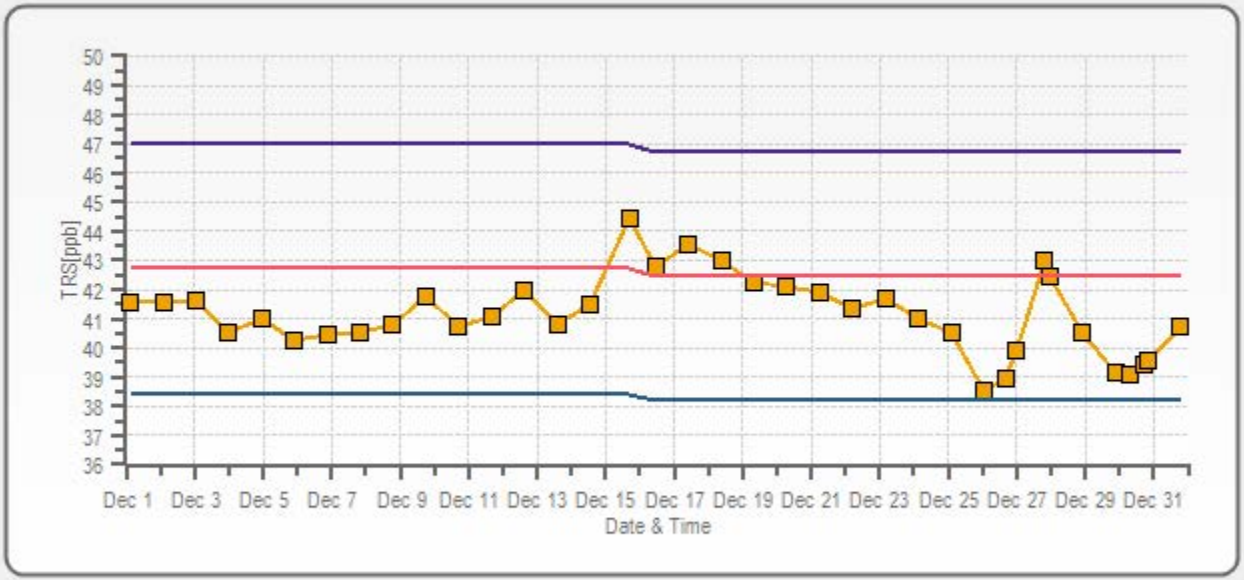
Direction	0-1	1-3	3-10	>10.0	Total
N	6.9	0.0	0.0	0.0	6.9
NE	0.4	0.0	0.0	0.0	0.4
E	3.4	0.0	0.0	0.0	3.4
SE	11.2	0.0	0.0	0.0	11.2
S	17.8	0.0	0.0	0.0	17.8
SW	28.1	0.0	0.0	0.0	28.1
W	14.5	0.0	0.0	0.0	14.5
NW	9.2	0.0	0.0	0.0	9.2
Summary	91.4	0.0	0.0	0.0	91.4

% Icon Classes (ppb)	91 0-1	0 1-3	0 3-10	0 >10.0

PRAMP_986 Poll.: PRAMP_986-TRS[ppb] 2017/12/01 00:00 - 2017/12/31 23:00 Calm: 8.60% Calm Poll Avg: 0.31[ppb]



TRS[ppb] Calibration: PRAMP_986 Monthly: 17/12 Type: Span



TOTAL HYDROCARBON

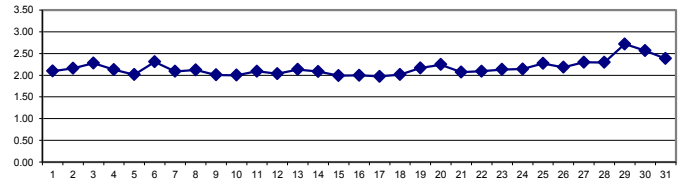
TOTAL HYDROCARBONS Hourly Averages (THC ppm)

HR START (MST) / HR END (MST) / DAY	0:00 0:59	1:00 1:59	2:00 2:59	3:00 3:59	4:00 4:59	5:00 5:59	6:00 6:59	7:00 7:59	8:00 8:59	9:00 9:59	10:00 10:59	11:00 11:59	12:00 12:59	13:00 13:59	14:00 14:59	15:00 15:59	16:00 16:59	17:00 17:59	18:00 18:59	19:00 19:59	20:00 20:59	21:00 21:59	22:00 22:59	23:00 23:59	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.
1	2.01	2.13	2.00	S	2.08	1.99	1.99	2.11	2.13	1.99	2.01	2.00	2.42	2.06	2.01	2.04	2.01	2.02	2.09	2.33	2.17	2.16	2.24	2.22	1.99	2.42	2.10	24
2	2.10	2.09	S	2.04	2.05	2.06	2.19	2.08	2.10	2.02	2.13	2.03	2.03	2.05	2.07	2.07	2.34	2.35	2.61	2.39	2.03	2.26	2.14	2.46	2.02	2.61	2.16	24
3	2.64	S	2.24	2.17	2.20	2.12	2.05	2.05	2.03	2.05	2.32	2.13	2.09	2.22	2.51	2.52	2.36	2.10	2.41	2.31	2.72	2.64	2.32	2.18	2.03	2.72	2.28	24
4	S	2.22	2.32	2.17	2.17	2.12	2.08	2.04	2.15	2.09	2.03	2.02	2.04	2.09	2.07	2.09	2.11	2.15	2.01	2.08	2.50	2.19	2.03	S	2.01	2.50	2.13	24
5	1.99	1.98	1.98	1.98	1.98	1.99	1.99	1.99	2.00	2.00	2.00	2.00	2.00	2.00	2.00	**1.94**	2.05	2.34	X	X	X	X	S	X	**1.94**	2.34	2.01	19
6	X	X	X	X	X	X	X	X	X	X	S1	2.07	2.16	2.36	2.32	2.41	2.51	2.53	2.38	2.39	2.27	S	2.09	2.22	2.07	2.53	2.31	13
7	2.03	2.08	2.14	2.24	2.19	2.10	2.05	2.18	2.16	2.02	2.00	1.99	2.06	2.01	2.07	2.07	2.07	2.29	2.07	2.00	S	2.00	2.12	2.10	1.99	2.29	2.09	24
8	2.28	2.38	2.34	2.27	2.11	2.17	2.21	2.15	2.11	2.08	2.12	1.98	1.97	2.05	2.02	1.99	1.99	1.99	1.99	S	2.20	2.25	2.11	2.07	1.97	2.38	2.12	24
9	2.04	2.04	1.96	1.95	2.00	2.12	2.12	2.26	1.98	1.95	1.95	1.96	1.96	1.96	1.99	1.97	1.95	2.03	S	2.05	1.97	1.96	1.98	1.98	1.95	2.26	2.01	24
10	1.98	2.02	1.97	1.99	1.98	1.97	1.96	1.97	1.96	1.96	2.00	1.97	1.98	1.97	1.98	1.99	1.99	S	1.99	2.00	2.07	2.12	2.07	2.09	1.96	2.12	2.00	24
11	2.07	2.16	2.16	2.27	2.09	2.11	2.19	2.04	2.05	2.02	2.16	2.18	2.05	2.06	2.04	2.03	S	2.02	2.22	2.05	2.05	2.05	2.03	1.98	1.98	2.27	2.09	24
12	1.98	2.02	2.04	2.04	2.25	2.09	2.00	2.00	2.05	2.29	2.12	1.98	1.96	1.96	1.96	S	1.97	1.96	2.01	2.00	1.99	2.01	2.00	2.06	1.96	2.29	2.03	24
13	2.04	2.08	2.04	2.27	2.27	2.21	2.28	2.02	2.00	1.99	1.99	2.00	2.00	2.01	S	2.03	2.44	2.38	2.31	2.02	2.19	2.10	2.22	2.15	1.99	2.44	2.13	24
14	2.18	2.15	2.11	2.22	2.18	2.15	2.13	2.17	2.05	2.04	2.03	2.04	2.03	S	2.02	2.03	2.02	2.10	2.01	2.07	2.01	2.07	2.05	2.04	2.01	2.22	2.08	24
15	1.97	2.02	2.03	2.00	1.99	2.03	1.97	2.07	1.95	1.96	C	C	C	C	1.96	1.97	1.99	2.00	1.97	1.97	1.97	1.97	1.98	1.98	1.95	2.07	1.99	24
16	1.98	1.98	1.98	1.98	1.99	2.03	2.03	1.99	1.99	1.99	2.00	S	2.01	2.00	1.99	2.03	2.00	2.12	1.98	1.99	1.98	1.98	1.97	1.96	1.96	2.12	2.00	24
17	1.99	1.96	1.97	1.97	1.97	1.94	1.94	1.95	1.94	1.96	S	1.94	1.94	1.94	1.95	1.97	1.99	2.00	2.05	2.11	1.97	1.97	1.96	1.97	1.94	2.11	1.97	24
18	2.02	2.04	2.01	2.06	2.04	2.01	1.98	2.02	2.05	S	2.00	1.98	2.06	2.11	2.04	2.05	1.98	1.99	1.97	1.98	1.98	1.98	1.98	1.98	1.97	2.11	2.01	24
19	1.99	2.07	1.99	2.08	2.03	2.12	2.35	2.96	S	2.19	2.06	2.06	2.02	2.00	2.00	2.00	2.00	2.00	2.17	2.62	2.41	2.42	2.11	2.16	1.99	2.96	2.17	24
20	2.22	2.17	2.22	2.20	2.11	2.05	2.05	S	2.21	2.21	2.20	2.24	2.25	2.30	2.17	2.28	2.18	2.51	2.29	2.31	2.34	2.25	2.34	2.49	2.05	2.51	2.24	24
21	2.55	2.25	2.07	2.01	2.00	2.02	S	2.01	2.03	2.06	2.12	2.09	2.07	2.13	2.04	2.04	2.05	2.03	2.02	2.03	2.02	2.01	2.01	2.01	2.00	2.55	2.07	24
22	2.01	2.02	2.01	2.01	2.01	S	2.01	2.19	2.46	2.75	2.28	2.01	2.01	2.00	2.00	2.00	2.01	2.02	2.01	2.03	2.03	2.04	2.06	2.12	2.00	2.75	2.09	24
23	2.01	2.01	2.03	2.15	S	2.02	2.01	2.03	2.03	2.03	2.04	2.06	2.26	2.63	2.10	2.02	2.31	2.30	2.31	2.47	2.05	2.02	2.08	2.04	2.01	2.63	2.13	24
24	2.22	2.21	2.27	S	2.15	2.09	2.06	2.07	2.08	2.18	2.28	2.13	2.51	2.08	2.02	2.03	2.05	2.03	2.03	2.06	2.07	2.12	2.26	2.24	2.02	2.51	2.14	24
25	2.42	3.14	S	2.13	2.61	2.24	2.06	2.43	2.46	2.05	2.13	2.08	2.09	2.07	2.06	2.06	3.06	2.05	2.04	2.12	2.16	2.37	2.16	2.22	2.04	3.14	2.27	24
26	2.21	S	2.19	2.17	2.18	2.27	2.09	2.13	2.45	2.17	2.19	2.51	2.21	2.10	2.04	2.03	2.03	2.11	2.14	2.24	2.12	2.15	2.42	2.05	2.03	2.51	2.18	24
27	S	2.08	2.07	2.09	2.09	2.11	2.16	2.10	2.14	2.48	2.39	2.11	2.32	2.56	2.63	2.11	2.66	2.80	2.69	2.28	2.05	2.39	2.24	S	2.05	2.80	2.30	24
28	2.08	2.29	2.02	2.03	2.03	2.03	2.04	2.05	2.11	2.16	2.01	2.03	2.04	2.04	2.05	2.04	2.71	2.78	2.70	3.33	2.78	2.63	S	2.79	2.01	3.33	2.29	24
29	2.57	3.09	2.80	2.50	2.74	2.68	2.65	2.58	2.77	2.81	2.68	2.57	2.56	2.35	2.20	2.23	2.90	**3.59**	2.74	3.34	2.93	S	2.85	2.32	2.20	**3.59**	**2.72**	24
30	2.61	2.41	3.22	2.42	2.55	3.17	2.60	2.95	2.43	2.79	2.73	2.47	2.19	2.16	2.25	2.13	3.37	2.98	2.41	2.26	S	2.38	2.35	2.11	2.11	3.37	2.56	24
31	2.20	2.42	2.35	2.25	2.22	2.14	2.52	2.41	2.71	2.57	2.49	2.32	2.14	2.15	2.16	2.16	2.36	2.21	2.24	S	2.73	2.88	2.68	2.43	2.14	2.88	2.38	24
HOURLY MAX	2.64	3.14	3.22	2.50	2.74	3.17	2.65	2.96	2.77	2.81	2.73	2.57	2.56	2.63	2.63	2.52	3.37	3.59	2.74	3.34	2.93	2.88	2.85	2.79				
HOURLY AVG	2.16	2.20	2.16	2.13	2.15	2.14	2.13	2.17	2.16	2.17	2.16	2.10	2.11	2.12	2.09	2.08	2.25	2.26	2.20	2.24	2.21	2.19	2.17	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

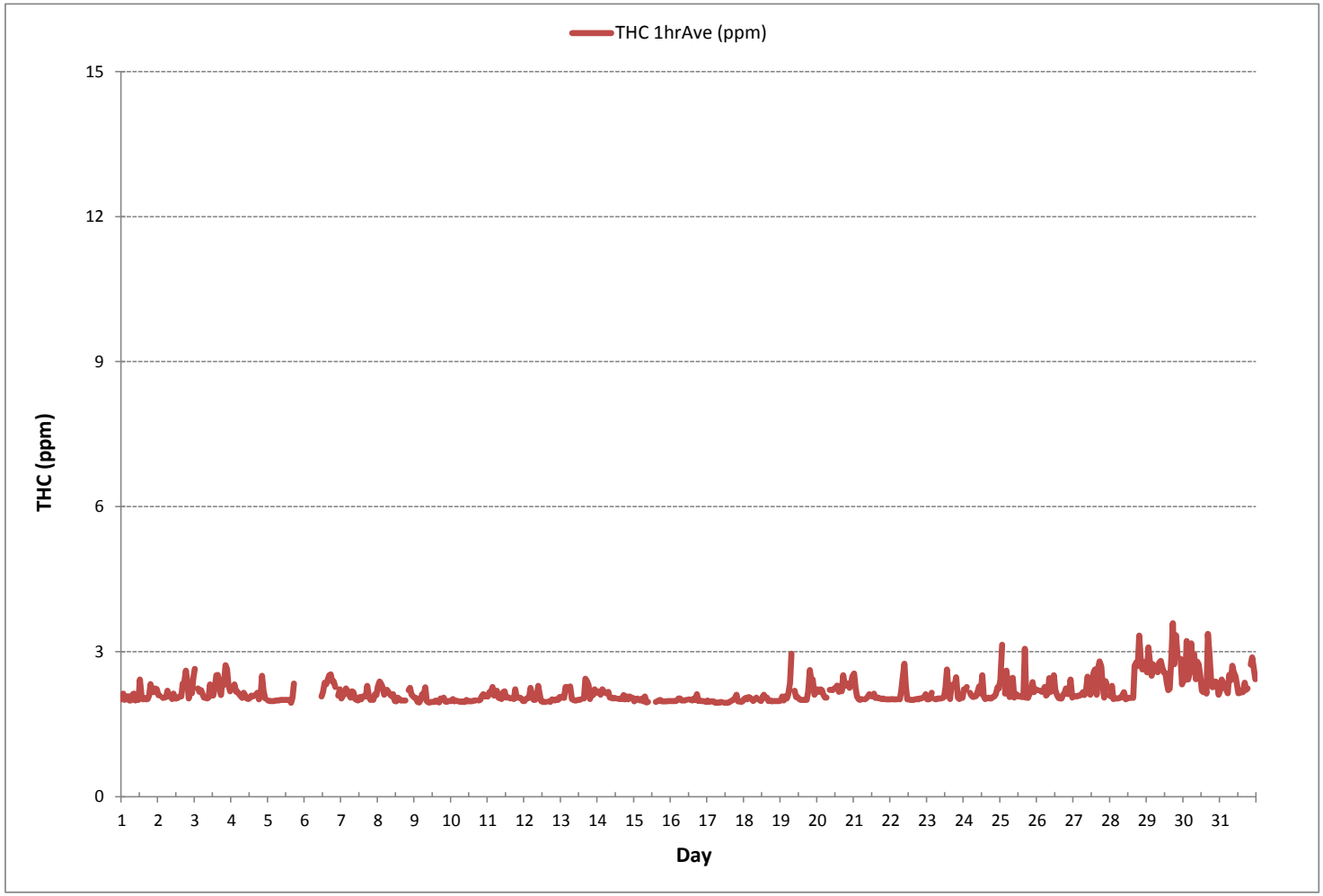
24 HR AVERAGES December 2017



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:			692				
MINIMUM 1-HR AVERAGE		1.94	ppm	@ HOUR	15	ON DAY	5
MAXIMUM 1-HR AVERAGE:		3.59	ppm	@ HOUR	17	ON DAY	29
MAXIMUM 24-HR AVERAGE:		2.72	ppm			ON DAY	29
IZS CALIBRATION TIME:	32	hrs		OPERATIONAL TIME:		728	hrs
MONTHLY CALIBRATION TIME:	4	hrs		AMD OPERATION UPTIME:		97.8	%
STANDARD DEVIATION:	0.24			MONTHLY AVERAGE:		2.16	ppm

TOTAL HYDROCARBONS Hourly Averages (THC ppm)



TOTAL HYDROCARBONS Instantaneous Maximum (THC ppm)

HR START (MST) / HR END (MST) / DAY	0:00 0:59	1:00 1:59	2:00 2:59	3:00 3:59	4:00 4:59	5:00 5:59	6:00 6:59	7:00 7:59	8:00 8:59	9:00 9:59	10:00 10:59	11:00 11:59	12:00 12:59	13:00 13:59	14:00 14:59	15:00 15:59	16:00 16:59	17:00 17:59	18:00 18:59	19:00 19:59	20:00 20:59	21:00 21:59	22:00 22:59	23:00 23:59	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.
1	2.33	3.12	2.04	S	2.89	2.02	2.26	3.35	2.93	2.01	2.01	2.50	3.55	2.76	2.27	2.51	2.13	2.50	3.76	4.09	3.21	3.50	3.62	3.75	2.01	4.09	2.83	24
2	2.87	2.66	S	2.20	2.16	2.30	4.44	2.22	4.92	2.03	4.26	2.64	3.49	3.50	2.40	2.20	5.26	3.67	4.45	3.86	2.25	3.59	3.68	3.99	2.03	5.26	3.26	24
3	4.62	S	5.25	3.90	3.94	3.94	2.06	2.46	2.03	2.36	3.69	2.65	2.10	3.87	3.46	3.91	4.47	2.44	6.92	5.55	7.61	8.06	5.55	3.78	2.03	8.06	4.11	24
4	S	6.43	3.67	2.20	2.18	2.15	2.53	2.05	2.66	2.74	2.04	2.02	2.31	3.44	2.80	2.70	2.61	3.00	2.36	4.91	5.63	3.92	3.85	S	2.02	6.43	3.10	24
5	2.12	2.10	1.99	1.99	1.99	2.00	1.99	2.00	2.02	2.08	2.28	2.01	2.06	2.04	2.38	1.97	3.41	10.27	X	X	X	X	S	X	1.97	10.27	2.59	19
6	X	X	X	X	X	X	X	X	X	X	S1	2.91	3.31	3.89	4.37	3.57	4.64	4.99	3.85	3.38	3.42	S	2.93	4.44	2.91	4.99	3.81	13
7	2.55	2.52	2.70	3.40	3.14	3.32	2.51	2.85	3.31	2.20	2.12	1.99	2.76	2.22	2.82	3.19	2.58	3.99	3.01	2.12	S	2.10	3.57	3.62	1.99	3.99	2.81	24
8	3.75	5.38	3.20	3.87	3.87	3.52	3.21	3.57	3.36	2.54	3.17	1.99	1.98	5.22	2.25	2.01	2.13	2.48	2.60	S	4.61	3.54	2.75	2.84	1.98	5.38	3.21	24
9	2.73	2.51	2.03	1.99	2.70	2.87	3.69	4.58	2.21	2.01	1.96	2.01	1.98	2.03	2.68	2.59	2.01	2.81	S	2.96	2.29	2.29	2.20	2.44	1.96	4.58	2.50	24
10	2.39	2.88	2.33	2.29	2.46	2.22	2.04	2.09	2.00	1.98	2.15	1.98	1.98	1.99	1.99	2.00	2.15	S	1.99	2.08	2.74	3.58	3.34	3.21	1.98	3.58	2.34	24
11	3.35	3.29	7.62	3.72	3.01	3.70	5.58	2.53	2.42	2.03	3.02	3.05	2.26	2.55	2.26	2.14	S	2.20	2.92	2.52	2.38	2.42	2.32	2.06	2.03	7.62	3.02	24
12	2.15	2.53	2.78	2.52	6.01	3.79	2.30	2.61	2.68	5.19	5.59	2.46	1.98	1.97	1.98	S	2.20	2.20	2.63	2.83	2.23	2.28	2.76	2.97	1.97	6.01	2.90	24
13	2.99	2.63	2.56	5.39	3.30	4.17	4.01	2.16	2.05	2.10	1.99	2.12	2.10	2.10	S	2.33	7.39	8.12	5.24	2.09	6.06	3.19	6.33	3.84	1.99	8.12	3.66	24
14	4.08	3.15	5.10	6.36	4.30	3.51	3.57	3.19	2.76	2.59	2.03	2.05	2.08	S	2.12	2.28	2.22	3.32	2.15	2.57	2.36	2.51	2.52	3.17	2.03	6.36	3.04	24
15	2.20	2.33	2.38	2.29	2.18	2.31	2.31	2.52	1.96	2.03	C	C	C	C	C	2.03	2.10	3.65	1.99	2.07	1.98	2.13	1.99	2.00	1.96	3.65	2.23	24
16	1.99	1.98	1.99	2.09	2.12	2.66	2.63	2.18	2.12	2.00	2.03	S	2.33	2.01	2.06	2.79	2.56	3.00	2.03	2.02	1.99	1.98	1.98	1.98	1.98	3.00	2.20	24
17	2.74	2.02	2.71	2.36	2.40	1.96	1.95	1.96	1.96	2.31	S	1.94	2.06	1.95	1.98	2.11	2.35	2.26	2.37	2.34	2.13	2.08	1.98	1.99	1.94	2.74	2.17	24
18	4.51	5.28	2.21	2.59	2.20	2.04	2.03	2.22	2.36	S	2.21	2.48	2.57	2.67	2.68	2.64	2.01	2.60	1.98	1.99	1.98	1.99	2.06	2.01	1.98	5.28	2.49	24
19	2.00	3.18	2.00	3.60	2.66	4.27	5.48	8.46	S	4.24	3.07	2.07	2.05	2.01	2.01	2.00	2.00	2.10	2.97	4.02	3.62	4.22	2.84	2.87	2.00	8.46	3.21	24
20	3.10	2.69	3.57	3.14	2.58	2.39	2.46	S	2.88	3.28	3.05	3.09	3.65	3.83	2.59	5.04	3.84	4.12	3.32	4.29	3.95	2.90	3.35	3.97	2.39	5.04	3.35	24
21	4.45	4.49	2.21	2.13	2.00	2.08	S	2.06	2.10	3.06	3.28	2.61	2.68	3.80	2.14	2.11	2.18	2.11	2.08	2.18	2.11	2.02	2.06	2.01	2.00	4.49	2.52	24
22	2.01	2.03	2.03	2.03	2.03	S	2.01	3.46	6.02	5.16	3.32	2.01	2.02	2.01	2.01	2.05	2.09	2.37	2.04	2.12	2.17	2.17	2.18	4.85	2.01	6.02	2.62	24
23	2.05	2.04	2.69	3.55	S	2.02	2.03	2.12	2.13	2.21	2.18	2.26	4.39	5.97	3.96	2.28	5.10	6.82	8.40	6.27	2.79	2.05	2.22	2.46	2.02	8.40	3.39	24
24	6.47	3.69	4.50	S	3.13	2.49	2.26	2.64	2.65	4.29	10.59	3.80	3.89	2.88	2.02	2.03	2.33	2.23	2.14	2.29	2.62	3.00	5.48	3.70	2.02	10.59	3.53	24
25	8.14	11.81	S	4.27	6.31	5.20	3.18	7.70	7.66	2.18	5.03	2.21	2.16	2.51	2.21	2.17	10.37	2.15	2.06	3.94	3.73	5.35	2.24	2.25	2.06	11.81	4.56	24
26	2.52	S	2.20	2.29	2.54	6.90	2.27	2.40	5.61	3.10	2.94	4.32	2.37	2.28	2.13	2.03	2.32	2.45	2.53	4.79	2.41	2.46	7.71	2.66	2.03	7.71	3.18	24
27	S	3.63	3.38	2.56	2.10	2.11	3.10	2.35	3.56	3.80	3.68	4.56	5.12	5.12	9.04	3.04	9.14	9.14	4.41	3.45	2.05	5.72	3.03	S	2.05	9.14	4.28	24
28	2.87	6.12	2.05	2.03	2.03	2.03	2.42	2.41	3.37	3.08	2.11	2.03	2.04	2.05	2.24	2.33	9.70	11.41	7.08	9.22	7.98	6.64	S	7.18	2.03	11.41	4.37	24
29	5.22	5.96	5.62	4.83	4.82	5.88	4.49	3.69	4.34	4.29	3.86	2.76	2.64	3.10	2.53	3.55	**12.73**	10.36	6.51	8.91	8.14	S	6.93	4.62	2.53	**12.73**	5.47	24
30	7.84	5.42	6.25	4.90	8.65	6.86	4.64	5.60	4.92	8.57	4.91	4.62	2.62	2.54	2.85	2.65	11.59	9.99	5.68	3.94	S	5.07	5.02	3.30	2.54	11.59	5.58	24
31	3.37	3.87	6.20	3.93	3.69	4.60	7.41	5.97	8.58	4.95	4.09	3.37	2.49	2.15	2.18	2.22	6.43	2.68	3.07	S	7.51	7.19	7.10	4.71	2.15	8.58	4.69	24
HOURLY MAX	8.14	11.81	7.62	6.36	8.65	6.90	7.41	8.46	8.58	8.57	10.59	4.62	5.12	5.97	9.04	5.04	12.73	11.41	8.40	9.22	8.14	8.06	7.71	7.18				
HOURLY AVG	3.48	3.78	3.33	3.16	3.22	3.29	3.13	3.22	3.36	3.12	3.31	2.64	2.63	2.91	2.70	2.55	4.40	4.38	3.54	3.67	3.64	3.50	3.57	3.31				

STATUS FLAG CODES

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

MONTHLY SUMMARY

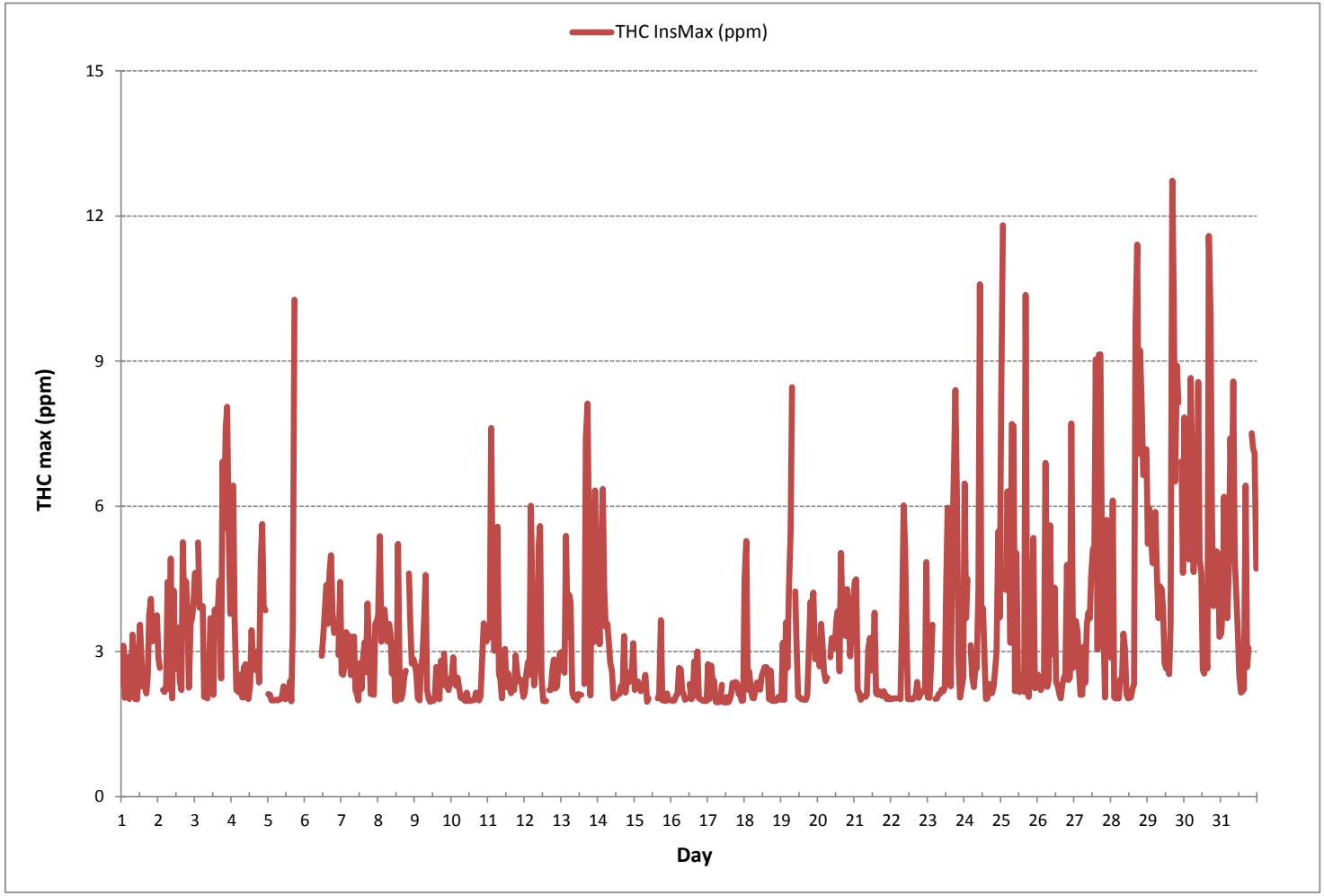
NUMBER OF NON-ZERO READINGS: 691

MAXIMUM INSTANTANEOUS VALUE: 12.73 ppm @ HOUR 16 ON DAY 29

IZS CALIBRATION TIME: 32 hrs
MONTHLY CALIBRATION TIME: 5 hrs
STANDARD DEVIATION: 1.76

OPERATIONAL TIME: 728 hrs

TOTAL HYDROCARBONS Instantaneous Maximum (THC ppm)



Wind: PRAMP_986
Poll.: PRAMP_986-THC55[ppm]
Monthly: 17/12
Type: PollutionRose
Direction: Blowing From (Wind Frequency)
Based On 1 Hr.

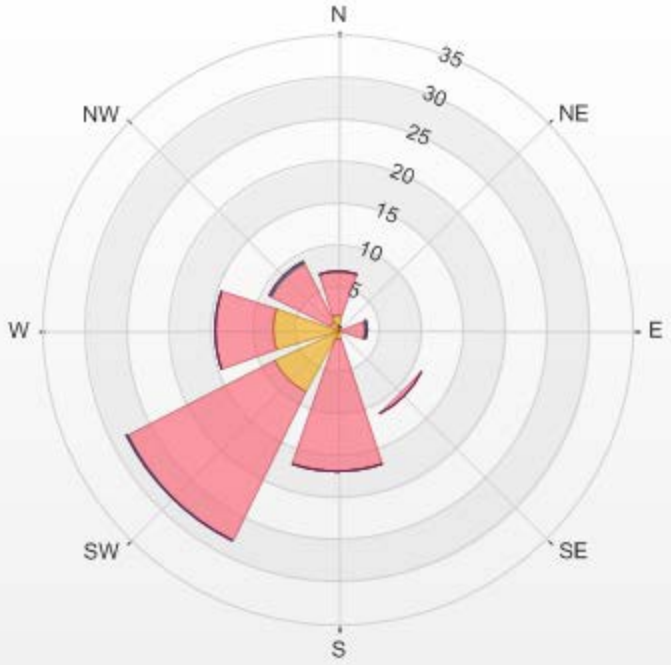
Calm: 8.96%

Calm Avg: 2.45 [ppm]

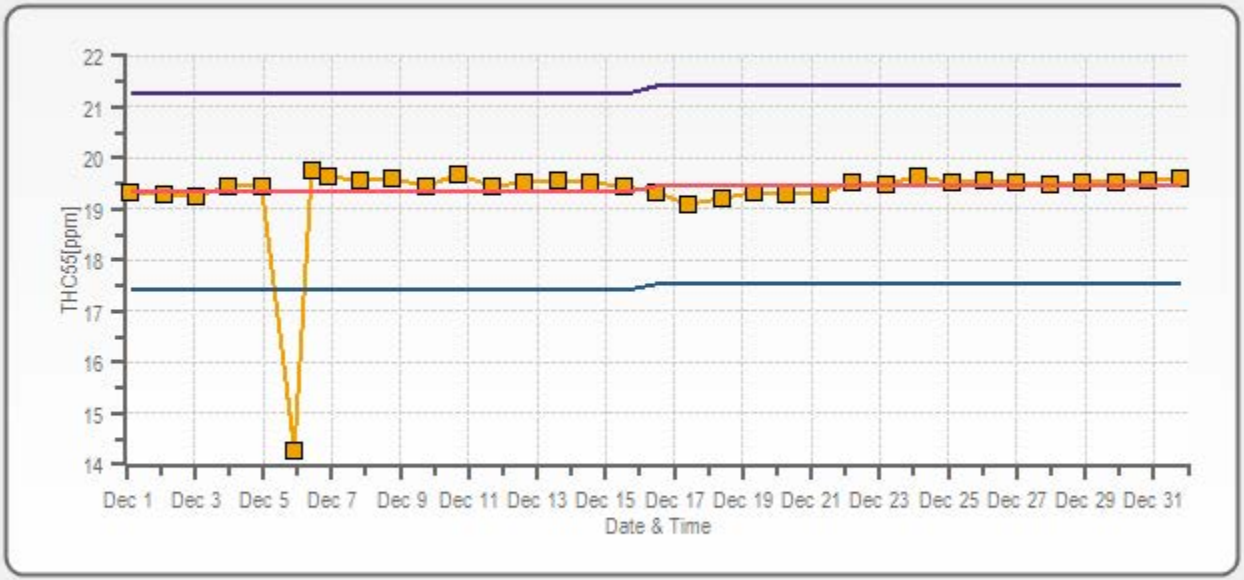
Direction	0-2	2-3	3-5	5-10	>10.0	Total
N	1.7	5.4	0.0	0.0	0.0	7.1
NE	0.0	0.6	0.0	0.0	0.0	0.6
E	0.0	3.3	0.3	0.0	0.0	3.6
SE	0.1	11.0	0.0	0.0	0.0	11.1
S	1.2	15.8	0.0	0.0	0.0	16.9
SW	8.4	19.5	0.1	0.0	0.0	28.0
W	7.7	6.9	0.0	0.0	0.0	14.6
NW	1.2	7.8	0.1	0.0	0.0	9.1
Summary	20.2	70.2	0.6	0.0	0.0	91.0

%	Icon	Classes (ppm)	20	0-2	70	2-3	1	3-5	0	5-10	0	>10.0

PRAMP_986 Poll.: PRAMP_986-THC55[ppm] 2017/12/01 00:00 - 2017/12/31 23:00 Calm: 8.96% Calm Poll Avg: 2.45 [ppm]



THC55[ppm] Calibration: PRAMP_986 Monthly: 17/12 Type: Span



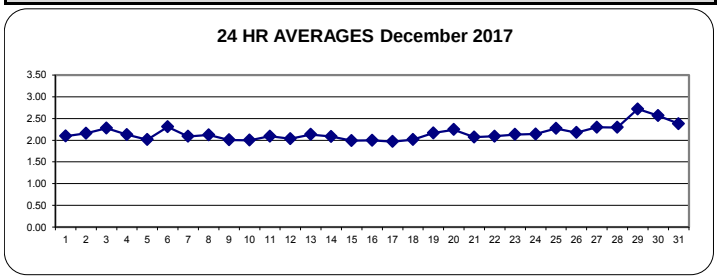
METHANE

METHANE Hourly Averages (CH_4 ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY																												
1	2.01	2.13	2.00	S	2.08	1.99	1.99	2.11	2.13	1.99	2.01	2.00	2.42	2.06	2.01	2.04	2.01	2.02	2.09	2.33	2.17	2.16	2.24	2.22	1.99	2.42	2.10	24
2	2.10	2.09	S	2.04	2.05	2.06	2.19	2.08	2.10	2.02	2.13	2.03	2.03	2.05	2.07	2.07	2.34	2.35	2.61	2.39	2.03	2.26	2.14	2.46	2.02	2.61	2.16	24
3	2.64	S	2.24	2.17	2.20	2.12	2.05	2.05	2.03	2.05	2.32	2.13	2.09	2.22	2.51	2.52	2.36	2.10	2.41	2.31	2.72	2.64	2.32	2.18	2.03	2.72	2.28	24
4	S	2.22	2.32	2.17	2.17	2.12	2.08	2.04	2.15	2.09	2.03	2.02	2.04	2.09	2.07	2.09	2.11	2.15	2.01	2.08	2.50	2.19	2.03	S	2.01	2.50	2.13	24
5	1.99	1.98	1.98	1.98	1.98	1.99	1.99	1.99	2.00	2.00	2.00	2.00	2.00	2.00	2.00	**1.94**	2.05	2.34	X	X	X	X	S	X	**1.94**	2.34	2.01	19
6	X	X	X	X	X	X	X	X	X	X	S1	2.07	2.16	2.36	2.32	2.41	2.51	2.53	2.38	2.39	2.27	S	2.09	2.22	2.07	2.53	2.31	13
7	2.03	2.08	2.14	2.24	2.19	2.10	2.05	2.18	2.16	2.02	2.00	1.99	2.06	2.01	2.07	2.07	2.07	2.29	2.07	2.00	S	2.00	2.12	2.10	1.99	2.29	2.09	24
8	2.28	2.38	2.34	2.27	2.11	2.17	2.21	2.15	2.11	2.08	2.12	1.98	1.97	2.05	2.02	1.99	1.99	1.99	1.99	S	2.20	2.25	2.11	2.07	1.97	2.38	2.12	24
9	2.04	2.04	1.96	1.95	2.00	2.12	2.12	2.26	1.98	1.95	1.95	1.96	1.96	1.96	1.99	1.97	1.95	2.03	S	2.05	1.97	1.96	1.98	1.98	1.95	2.26	2.01	24
10	1.98	2.02	1.97	1.99	1.98	1.97	1.96	1.97	1.96	1.96	2.00	1.97	1.98	1.97	1.98	1.99	1.99	S	1.99	2.00	2.07	2.12	2.07	2.09	1.96	2.12	2.00	24
11	2.07	2.16	2.16	2.27	2.09	2.11	2.19	2.04	2.05	2.02	2.16	2.18	2.05	2.06	2.04	2.03	S	2.02	2.22	2.05	2.05	2.05	2.03	1.98	1.98	2.27	2.09	24
12	1.98	2.02	2.04	2.04	2.25	2.09	2.00	2.00	2.05	2.29	2.12	1.98	1.96	1.96	1.96	S	1.97	1.96	2.01	2.00	1.99	2.01	2.00	2.06	1.96	2.29	2.03	24
13	2.04	2.08	2.04	2.27	2.27	2.21	2.28	2.02	2.00	1.99	1.99	2.00	2.00	2.01	S	2.03	2.44	2.38	2.31	2.02	2.19	2.10	2.22	2.15	1.99	2.44	2.13	24
14	2.18	2.15	2.11	2.22	2.18	2.15	2.13	2.17	2.05	2.04	2.03	2.04	2.03	S	2.02	2.03	2.02	2.10	2.01	2.07	2.01	2.07	2.05	2.04	2.01	2.22	2.08	24
15	1.97	2.02	2.03	2.00	1.99	2.03	1.97	2.07	1.95	1.96	C	C	C	C	1.96	1.97	1.99	2.00	1.97	1.97	1.97	1.97	1.98	1.98	1.95	2.07	1.99	24
16	1.98	1.98	1.98	1.98	1.99	2.03	2.03	1.99	1.99	1.99	2.00	S	2.01	2.00	1.99	2.03	2.00	2.12	1.98	1.99	1.98	1.98	1.97	1.96	1.96	2.12	2.00	24
17	1.99	1.96	1.97	1.97	1.97	1.94	1.94	1.95	1.94	1.96	S	1.94	1.94	1.94	1.95	1.97	1.99	1.99	2.03	2.07	1.97	1.97	1.96	1.97	1.94	2.07	1.97	24
18	2.02	2.04	2.01	2.05	2.04	2.01	1.98	2.02	2.03	S	2.00	1.98	2.06	2.11	2.04	2.05	1.98	1.99	1.97	1.98	1.98	1.98	1.98	1.98	1.97	2.11	2.01	24
19	1.99	2.07	1.99	2.08	2.03	2.12	2.35	2.96	S	2.19	2.06	2.06	2.02	2.00	2.00	2.00	2.00	2.00	2.17	2.62	2.41	2.42	2.11	2.16	1.99	2.96	2.17	24
20	2.22	2.17	2.22	2.20	2.11	2.05	2.05	S	2.21	2.21	2.20	2.24	2.25	2.30	2.17	2.28	2.18	2.51	2.29	2.31	2.34	2.25	2.34	2.49	2.05	2.51	2.24	24
21	2.55	2.25	2.07	2.01	2.00	2.02	S	2.01	2.03	2.06	2.12	2.09	2.07	2.13	2.04	2.04	2.05	2.03	2.02	2.03	2.02	2.01	2.01	2.01	2.00	2.55	2.07	24
22	2.01	2.02	2.01	2.01	2.01	S	2.01	2.19	2.46	2.75	2.28	2.01	2.01	2.00	2.00	2.00	2.01	2.02	2.01	2.03	2.03	2.04	2.06	2.12	2.00	2.75	2.09	24
23	2.01	2.01	2.03	2.15	S	2.02	2.01	2.03	2.03	2.03	2.04	2.06	2.26	2.63	2.10	2.02	2.31	2.30	2.31	2.47	2.05	2.02	2.08	2.04	2.01	2.63	2.13	24
24	2.22	2.21	2.27	S	2.15	2.09	2.06	2.07	2.08	2.18	2.28	2.13	2.51	2.08	2.02	2.03	2.05	2.03	2.03	2.06	2.07	2.12	2.26	2.24	2.02	2.51	2.14	24
25	2.42	3.14	S	2.13	2.61	2.24	2.06	2.43	2.46	2.05	2.13	2.08	2.09	2.07	2.06	2.06	3.06	2.05	2.04	2.12	2.16	2.37	2.16	2.22	2.04	3.14	2.27	24
26	2.21	S	2.19	2.17	2.18	2.27	2.09	2.13	2.45	2.17	2.16	2.42	2.16	2.10	2.04	2.03	2.03	2.11	2.14	2.24	2.12	2.15	2.42	2.05	2.03	2.45	2.18	24
27	S	2.08	2.07	2.09	2.09	2.11	2.16	2.10	2.14	2.48	2.39	2.11	2.32	2.56	2.63	2.11	2.66	2.80	2.69	2.28	2.05	2.39	2.24	S	2.05	2.80	2.30	24
28	2.08	2.29	2.02	2.03	2.03	2.03	2.04	2.05	2.11	2.16	2.01	2.03	2.04	2.04	2.05	2.04	2.71	2.78	2.70	3.33	2.78	2.63	S	2.79	2.01	3.33	2.29	24
29	2.57	3.09	2.80	2.50	2.74	2.68	2.65	2.58	2.77	2.80	2.68	2.57	2.56	2.35	2.20	2.23	2.90	**3.59**	2.74	3.34	2.93	S	2.85	2.32	2.20	**3.59**	**2.71**	24
30	2.61	2.41	3.22	2.42	2.55	3.17	2.60	2.95	2.43	2.79	2.73	2.47	2.19	2.16	2.25	2.13	3.37	2.98	2.41	2.26	S	2.38	2.35	2.11	2.11	3.37	2.56	24
31	2.20	2.42	2.35	2.25	2.22	2.14	2.52	2.41	2.71	2.57	2.49	2.32	2.14	2.15	2.16	2.16	2.36	2.21	2.23	S	2.73	2.88	2.68	2.43	2.14	2.88	2.38	24
HOURLY MAX	2.64	3.14	3.22	2.50	2.74	3.17	2.65	2.96	2.77	2.80	2.73	2.57	2.56	2.63	2.63	2.52	3.37	3.59	2.74	3.34	2.93	2.88	2.85	2.79				
HOURLY AVG	2.16	2.20	2.16	2.13	2.15	2.14	2.13	2.17	2.16	2.17	2.16	2.10	2.11	2.12	2.09	2.08	2.25	2.26	2.20	2.24	2.21	2.19	2.17	2.16				

STATUS FLAG CODES

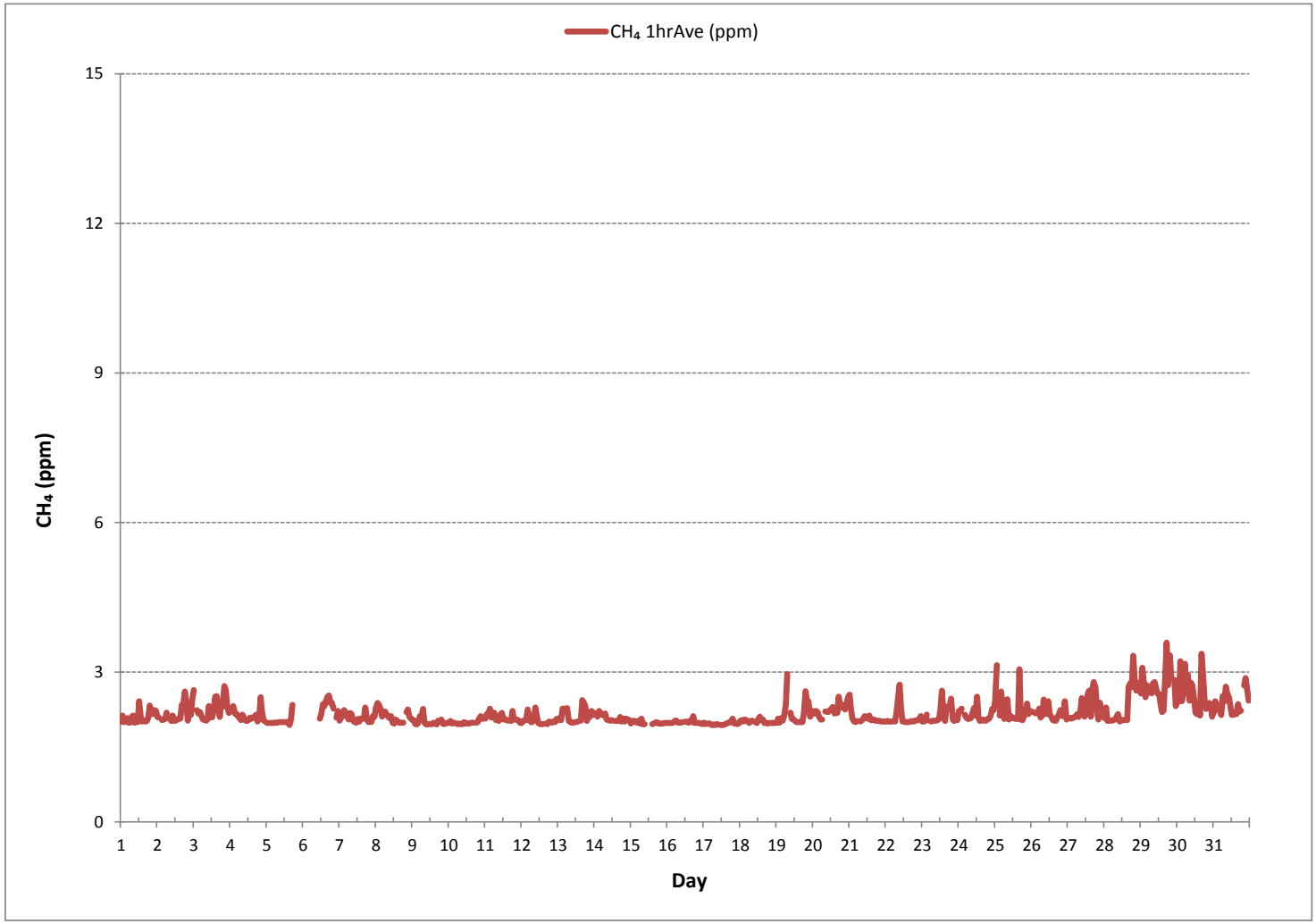
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:			692				
MINIMUM 1-HR AVERAGE	1.94	ppm	@ HOUR	15	ON DAY	5	
MAXIMUM 1-HR AVERAGE:	3.59	ppm	@ HOUR	17	ON DAY	29	
MAXIMUM 24-HR AVERAGE:	2.71	ppm			ON DAY	29	
IZS CALIBRATION TIME:	32	hrs	OPERATIONAL TIME:			728	hrs
MONTHLY CALIBRATION TIME:	4	hrs	AMD OPERATION UPTIME:			97.8	%
STANDARD DEVIATION:	0.24		MONTHLY AVERAGE:			2.16	ppm

METHANE Hourly Averages (CH_4 ppm)



METHANE MAX Instantaneous Maximum (CH_4 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	2.34	3.13	2.05	S	2.90	2.03	2.28	3.36	2.95	2.02	2.02	2.51	3.57	2.78	2.28	2.52	2.14	2.51	3.77	4.11	3.23	3.51	3.65	3.76	2.02	4.11	2.84	24
2	2.89	2.68	S	2.21	2.17	2.31	4.45	2.24	4.93	2.04	4.28	2.65	3.51	3.51	2.42	2.22	5.27	3.69	4.47	3.88	2.26	3.60	3.70	4.01	2.04	5.27	3.28	24
3	4.63	S	5.26	3.92	3.96	3.96	2.07	2.47	2.04	2.37	3.71	2.67	2.11	3.90	3.48	3.92	4.48	2.46	6.94	5.54	7.61	8.06	5.55	3.80	2.04	8.06	4.13	24
4	S	6.44	3.69	2.21	2.19	2.17	2.54	2.06	2.67	2.75	2.05	2.03	2.32	3.46	2.82	2.72	2.62	3.02	2.38	4.92	5.63	3.93	3.87	S	2.03	6.44	3.11	24
5	2.13	2.11	2.00	2.00	1.99	2.01	2.00	2.01	2.02	2.09	2.30	2.01	2.07	2.06	2.39	1.98	3.43	10.26	X	X	X	X	S	X	1.98	10.26	2.60	19
6	X	X	X	X	X	X	X	X	X	X	S1	2.93	3.33	3.92	4.39	3.59	4.65	5.00	3.87	3.40	3.44	S	2.95	4.45	2.93	5.00	3.83	13
7	2.56	2.52	2.71	3.41	3.15	3.34	2.52	2.87	3.33	2.21	2.13	2.00	2.77	2.24	2.83	3.21	2.59	4.00	3.03	2.14	S	2.11	3.58	3.64	2.00	4.00	2.82	24
8	3.77	5.38	3.21	3.89	3.89	3.53	3.23	3.59	3.37	2.55	3.19	2.00	1.98	5.23	2.27	2.01	2.14	2.49	2.61	S	4.62	3.56	2.76	2.85	1.98	5.38	3.22	24
9	2.74	2.52	2.04	2.00	2.72	2.88	3.71	4.59	2.23	2.01	1.96	2.01	1.99	2.03	2.70	2.60	2.02	2.82	S	2.98	2.30	2.30	2.22	2.45	1.96	4.59	2.51	24
10	2.40	2.90	2.34	2.30	2.47	2.23	2.05	2.10	2.01	1.98	2.16	1.99	1.99	1.99	1.99	2.01	2.16	S	2.00	2.09	2.75	3.60	3.36	3.23	1.98	3.60	2.35	24
11	3.37	3.31	7.63	3.75	3.01	3.72	5.58	2.55	2.44	2.04	3.03	3.06	2.27	2.56	2.27	2.15	S	2.21	2.94	2.53	2.39	2.43	2.33	2.07	2.04	7.63	3.03	24
12	2.16	2.55	2.79	2.52	6.01	3.81	2.31	2.62	2.70	5.20	5.59	2.47	1.99	1.98	1.99	S	2.21	2.21	2.64	2.85	2.25	2.28	2.77	2.99	1.98	6.01	2.91	24
13	3.00	2.64	2.57	5.39	3.32	4.18	4.02	2.17	2.06	2.11	2.00	2.13	2.11	2.11	S	2.34	7.39	8.13	5.25	2.10	6.06	3.20	6.34	3.86	2.00	8.13	3.67	24
14	4.11	3.17	5.10	6.38	4.32	3.52	3.58	3.20	2.78	2.60	2.04	2.06	2.08	S	2.13	2.30	2.24	3.34	2.16	2.58	2.37	2.52	2.52	3.18	2.04	6.38	3.06	24
15	2.21	2.35	2.39	2.30	2.19	2.32	2.32	2.52	1.96	2.04	C	C	C	C	C	2.04	2.10	3.67	2.00	2.07	1.99	2.14	2.00	2.00	1.96	3.67	2.24	24
16	2.00	1.99	1.99	2.09	2.13	2.68	2.64	2.19	2.13	2.00	2.03	S	2.34	2.02	2.07	2.81	2.57	3.02	2.04	2.03	2.00	1.99	1.99	1.99	1.99	3.02	2.21	24
17	2.75	2.03	2.73	2.37	2.42	1.96	1.96	1.96	1.96	2.32	S	1.94	2.07	1.95	1.98	2.11	2.36	2.11	2.19	2.17	2.14	2.09	1.99	1.99	1.94	2.75	2.15	24
18	4.53	5.28	2.19	2.60	2.13	2.05	2.04	2.10	2.17	S	2.22	2.48	2.58	2.68	2.69	2.66	2.02	2.61	1.99	2.00	1.99	2.00	2.07	2.01	1.99	5.28	2.48	24
19	2.01	3.20	2.01	3.62	2.68	4.29	5.49	8.46	S	4.25	3.08	2.08	2.06	2.02	2.02	2.01	2.01	2.11	2.99	4.03	3.63	4.24	2.85	2.88	2.01	8.46	3.22	24
20	3.11	2.71	3.58	3.16	2.59	2.40	2.47	S	2.89	3.30	3.07	3.11	3.67	3.85	2.60	5.05	3.86	4.13	3.34	4.31	3.96	2.91	3.37	3.98	2.40	5.05	3.37	24
21	4.47	4.50	2.23	2.14	2.01	2.09	S	2.07	2.11	3.07	3.29	2.62	2.70	3.82	2.15	2.12	2.19	2.11	2.10	2.19	2.12	2.03	2.07	2.02	2.01	4.50	2.53	24
22	2.02	2.03	2.04	2.04	2.04	S	2.02	3.48	6.02	5.17	3.34	2.02	2.03	2.01	2.02	2.06	2.10	2.38	2.06	2.13	2.18	2.18	2.19	4.86	2.01	6.02	2.63	24
23	2.06	2.05	2.71	3.57	S	2.03	2.03	2.13	2.14	2.23	2.19	2.28	4.41	5.97	3.97	2.29	5.10	6.83	8.41	6.28	2.81	2.06	2.24	2.47	2.03	8.41	3.40	24
24	6.48	3.71	4.52	S	3.14	2.49	2.28	2.65	2.66	4.31	10.58	3.82	3.91	2.89	2.03	2.04	2.35	2.25	2.15	2.30	2.63	3.02	5.49	3.73	2.03	10.58	3.54	24
25	8.14	11.80	S	4.28	6.32	5.20	3.20	7.71	7.67	2.19	5.03	2.22	2.17	2.51	2.22	2.19	10.35	2.16	2.06	3.95	3.74	5.34	2.25	2.26	2.06	11.80	4.56	24
26	2.53	S	2.22	2.30	2.55	6.92	2.27	2.42	5.62	3.11	2.96	4.21	2.33	2.29	2.14	2.04	2.32	2.46	2.54	4.80	2.43	2.47	7.72	2.68	2.04	7.72	3.19	24
27	S	3.66	3.40	2.57	2.11	2.13	3.11	2.36	3.58	3.82	3.70	4.57	5.12	5.13	9.05	3.05	9.14	9.14	4.43	3.47	2.06	5.73	3.04	S	2.06	9.14	4.29	24
28	2.88	6.13	2.05	2.03	2.03	2.03	2.44	2.42	3.38	3.10	2.12	2.04	2.05	2.05	2.25	2.33	9.69	11.40	7.10	9.21	7.99	6.64	S	7.19	2.03	11.40	4.37	24
29	5.23	5.96	5.62	4.84	4.83	5.88	4.51	3.71	4.36	4.24	3.88	2.75	2.65	3.12	2.54	3.57	**12.71**	10.36	6.52	8.90	8.14	S	6.94	4.63	2.54	**12.71**	5.47	24
30	7.85	5.42	6.26	4.91	8.65	6.87	4.65	5.61	4.93	8.56	4.92	4.63	2.63	2.55	2.86	2.67	11.57	9.98	5.69	3.95	S	5.09	5.03	3.31	2.55	11.57	**5.59**	24
31	3.39	3.89	6.20	3.94	3.72	4.61	7.42	5.97	8.57	4.95	4.11	3.39	2.50	2.16	2.19	2.24	6.44	2.70	3.08	S	7.51	7.20	7.12	4.73	2.16	8.57	4.70	24
HOURLY MAX	8.14	11.80	7.63	6.38	8.65	6.92	7.42	8.46	8.57	8.56	10.58	4.63	5.12	5.97	9.05	5.05	12.71	11.40	8.41	9.21	8.14	8.06	7.72	7.19				
HOURLY AVG	3.49	3.79	3.34	3.17	3.23	3.30	3.14	3.23	3.37	3.13	3.32	2.64	2.64	2.92	2.72	2.56	4.41	4.39	3.54	3.68	3.65	3.51	3.58	3.32				

STATUS FLAG CODES

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

MONTHLY SUMMARY

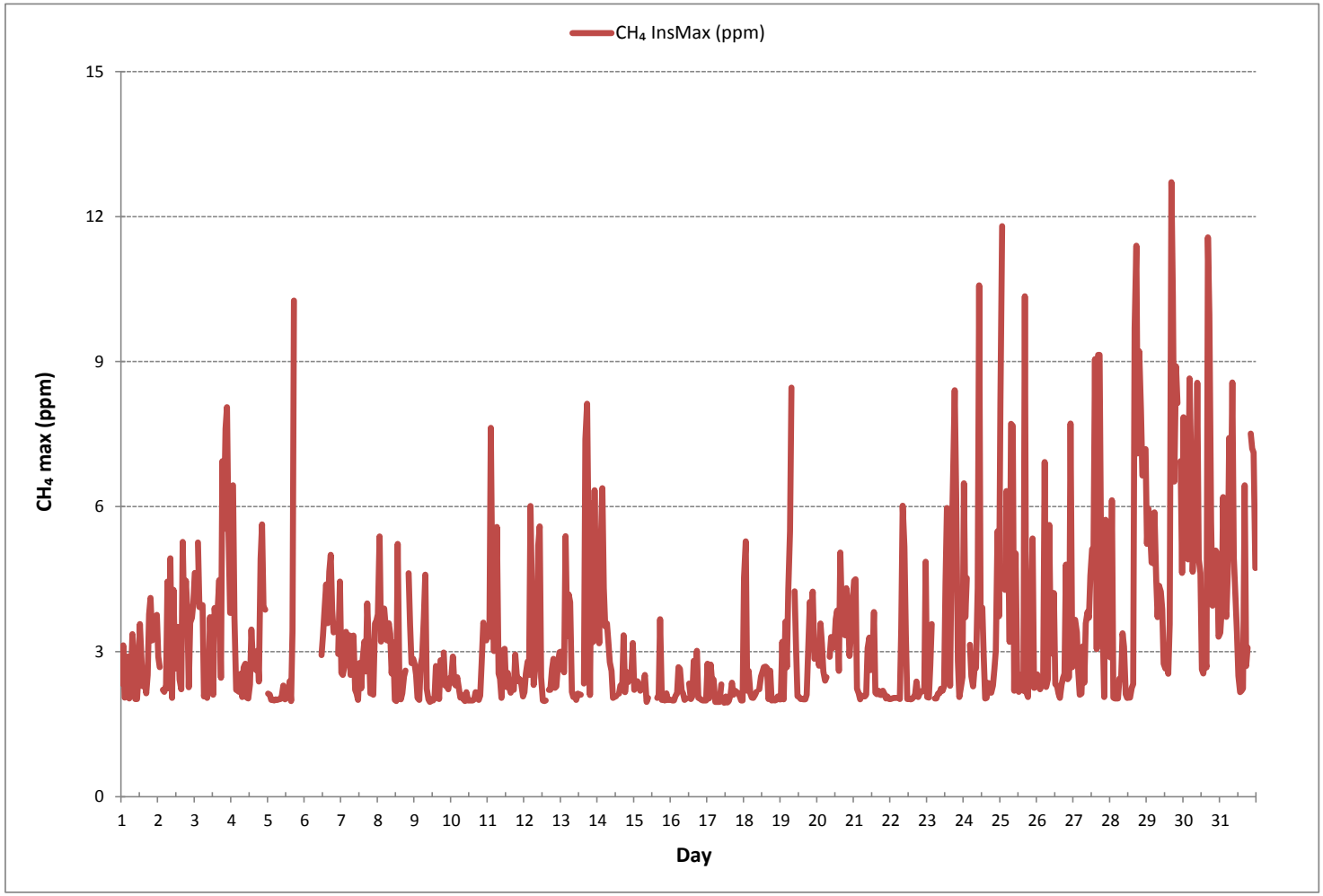
NUMBER OF NON-ZERO READINGS: 691

MAXIMUM INSTANTANEOUS VALUE: 12.71 ppm @ HOUR 16 ON DAY 29

IZS CALIBRATION TIME: 32 hrs
MONTHLY CALIBRATION TIME: 5 hrs
STANDARD DEVIATION: 1.76

OPERATIONAL TIME: 728 hrs

METHANE MAX Instantaneous Maximum (CH_4 ppm)



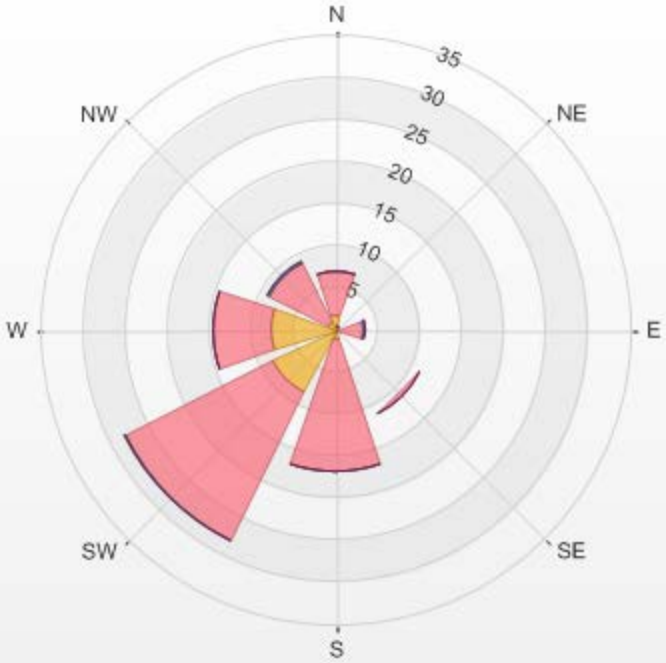
Wind: PRAMP_986
Poll.: PRAMP_986-CH_4[ppm]
Monthly: 17/12
Type: PollutionRose
Direction: Blowing From (Wind Frequency)
Based On 1 Hr.

Calm: 8.96% Calm Avg: 2.45 [ppm]

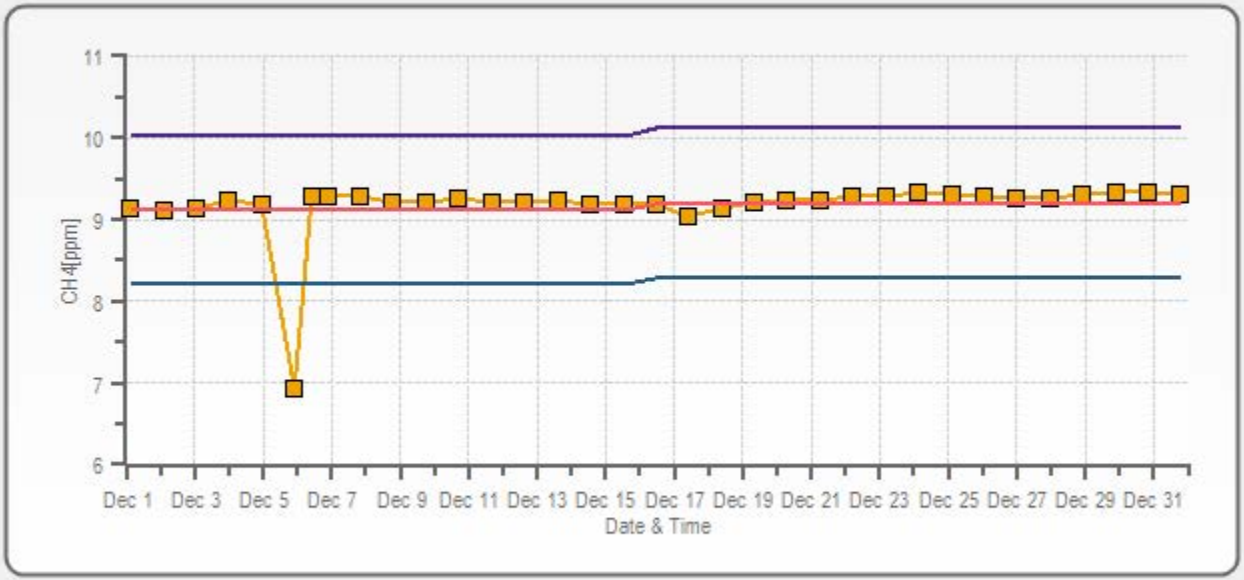
Direction	0-2	2-3	3-5	5-10	>10.0	Total
N	1.7	5.4	0.0	0.0	0.0	7.1
NE	0.0	0.6	0.0	0.0	0.0	0.6
E	0.0	3.3	0.3	0.0	0.0	3.6
SE	0.1	11.0	0.0	0.0	0.0	11.1
S	1.2	15.8	0.0	0.0	0.0	16.9
SW	8.4	19.5	0.1	0.0	0.0	28.0
W	7.7	6.9	0.0	0.0	0.0	14.6
NW	1.2	7.8	0.1	0.0	0.0	9.1
Summary	20.2	70.2	0.6	0.0	0.0	91.0

%	Icon	Classes (ppm)									
		20	0-2	70	2-3	1	3-5	0	5-10	0	>10.0

PRAMP_986 Poll.: PRAMP_986-CH4[ppm] 2017/12/01 00:00 - 2017/12/31 23:00 Calm: 8.96% Calm Poll Avg: 2.45 [ppm]



CH4[ppm] Calibration: PRAMP_986 Monthly: 17/12 Type: Span



NON-METHANE HYDROCARBON

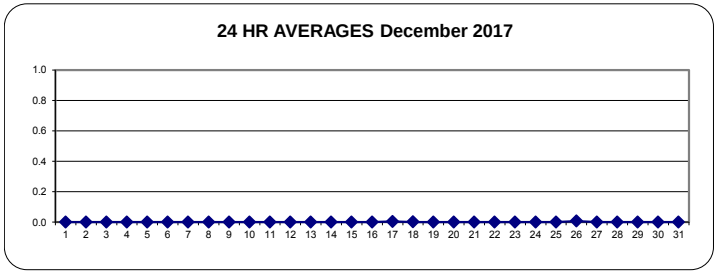
Maxxam
A Bureau Veritas Group Company

NON-METHANE HYDROCARBONS Hourly Averages (NMHC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY																												
1	**0.00**	0.00	0.00	**S**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00	0.00	24
2	0.00	0.00	**S**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
3	0.00	**S**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
4	**S**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**S**	0.00	0.00	0.00	24
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**X**	**X**	**X**	**X**	**S**	**X**	0.00	0.00	0.00	19
6	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**S1**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**S**	0.00	0.00	0.00	0.00	0.00	13
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**S**	0.00	0.00	0.00	0.00	0.00	0.00	24
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**S**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**S**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**S**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**S**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**S**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**S**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**S**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**C**	**C**	**C**	**C**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**S**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**S**	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.05	0.00	0.00	0.00	0.00	0.00	0.05	0.00	24
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	**S**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	24
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**S**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**S**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
21	0.00	0.00	0.00	0.00	0.00	0.00	**S**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
22	0.00	0.00	0.00	0.00	0.00	**S**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
23	0.00	0.00	0.00	0.00	**S**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
24	0.00	0.00	0.00	**S**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
25	0.00	0.00	**S**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
26	0.00	**S**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	**0.09**	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.09**	**0.01**	24
27	**S**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**S**	0.00	0.00	0.00	24
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**S**	0.00	0.00	0.00	0.00	24
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**S**	0.00	0.00	0.00	0.00	0.00	24
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**S**	0.00	0.00	0.00	0.00	0.00	0.00	24
31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	**S**	0.00	0.00	0.00	0.00	0.00	0.01	0.00	24
HOURLY MAX	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.03	0.09	0.04	0.00	0.00	0.00	0.00	0.01	0.03	0.05	0.00	0.00	0.00	0.00				
HOURLY AVG	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				

STATUS FLAG CODES

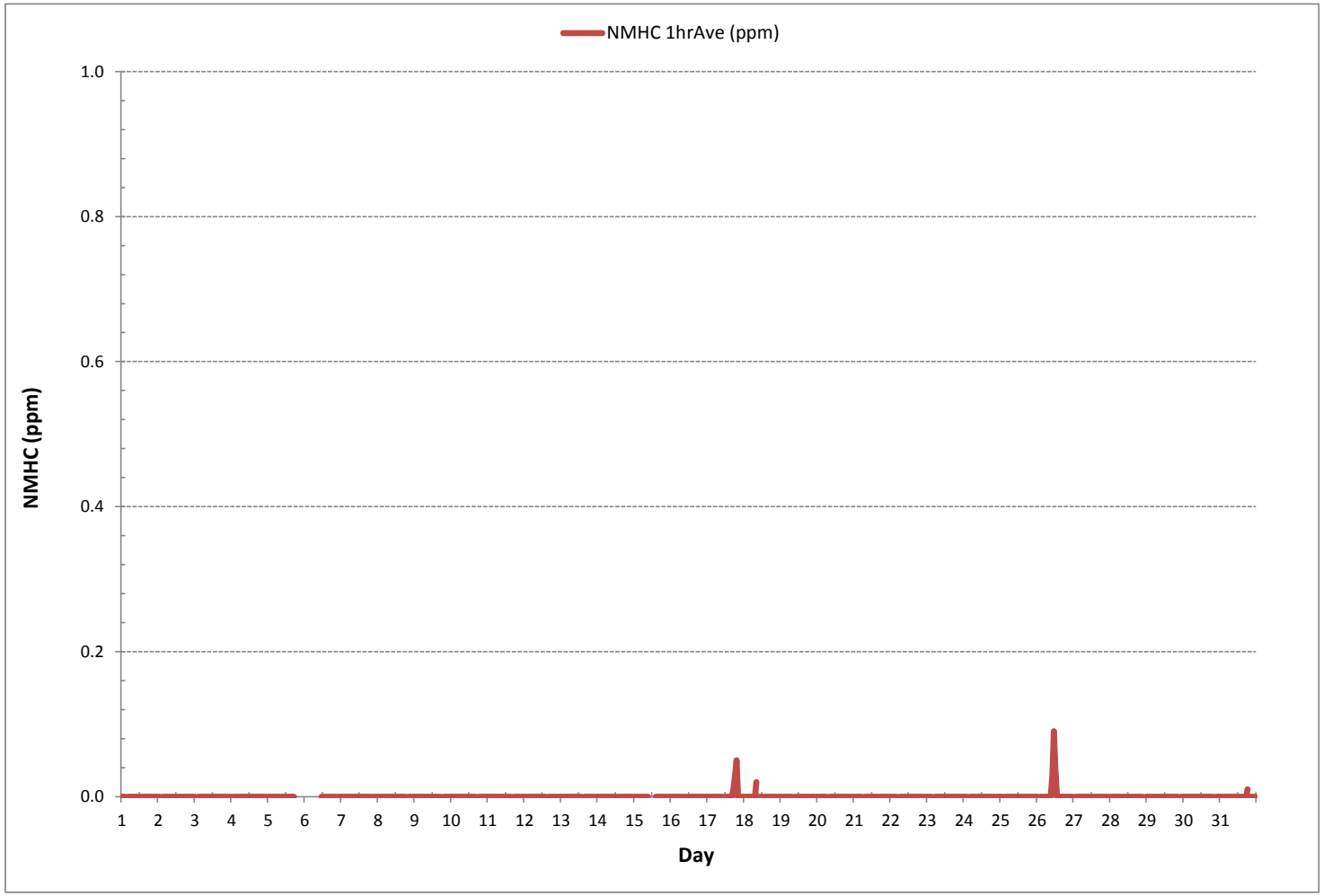
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:			8				
MINIMUM 1-HR AVERAGE	0.00	ppm	@ HOUR	0	ON DAY	1	
MAXIMUM 1-HR AVERAGE:	0.09	ppm	@ HOUR	11	ON DAY	26	
MAXIMUM 24-HR AVERAGE:	0.01	ppm			ON DAY	26	
IZS CALIBRATION TIME:	32	hrs	OPERATIONAL TIME:			728	hrs
MONTHLY CALIBRATION TIME:	4	hrs	AMD OPERATION UPTIME:			97.8	%
STANDARD DEVIATION:	0.00		MONTHLY AVERAGE:			0.00	ppm

NON-METHANE HYDROCARBONS Hourly Averages (NMHC ppm)



NON-METHANE HYDROCARBONS Instantaneous Maximum (NMHC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY																												
1	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	24
2	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
3	0.00	S	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	24
4	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	24
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	X	X	X	X	S	X	0.00	0.00	0.00	19
6	X	X	X	X	X	X	X	X	X	X	S1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	13
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	24
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
13	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	24
14	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.01	24
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	C	C	C	C	C	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.16	0.19	0.20	0.00	0.00	0.00	0.00	0.00	0.20	0.02	24
18	0.00	0.00	0.11	0.10	0.09	0.00	0.00	0.14	**0.21**	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.21**	0.03	24
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
21	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
22	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
23	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
24	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
25	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	24
26	0.00	S	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.15	0.13	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.02	24
27	S	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.01	0.00	24
28	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.01	0.00	24
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.08	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.08	0.01	24
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	24
31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.08	0.09	S	0.00	0.00	0.06	0.00	0.00	0.09	0.01	24
HOURLY MAX	0.01	0.00	0.11	0.13	0.09	0.01	0.07	0.14	0.21	0.07	0.15	0.13	0.13	0.00	0.00	0.00	0.00	0.16	0.19	0.20	0.00	0.00	0.06	0.00				
HOURLY AVG	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00				

STATUS FLAG CODES

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

MONTHLY SUMMARY

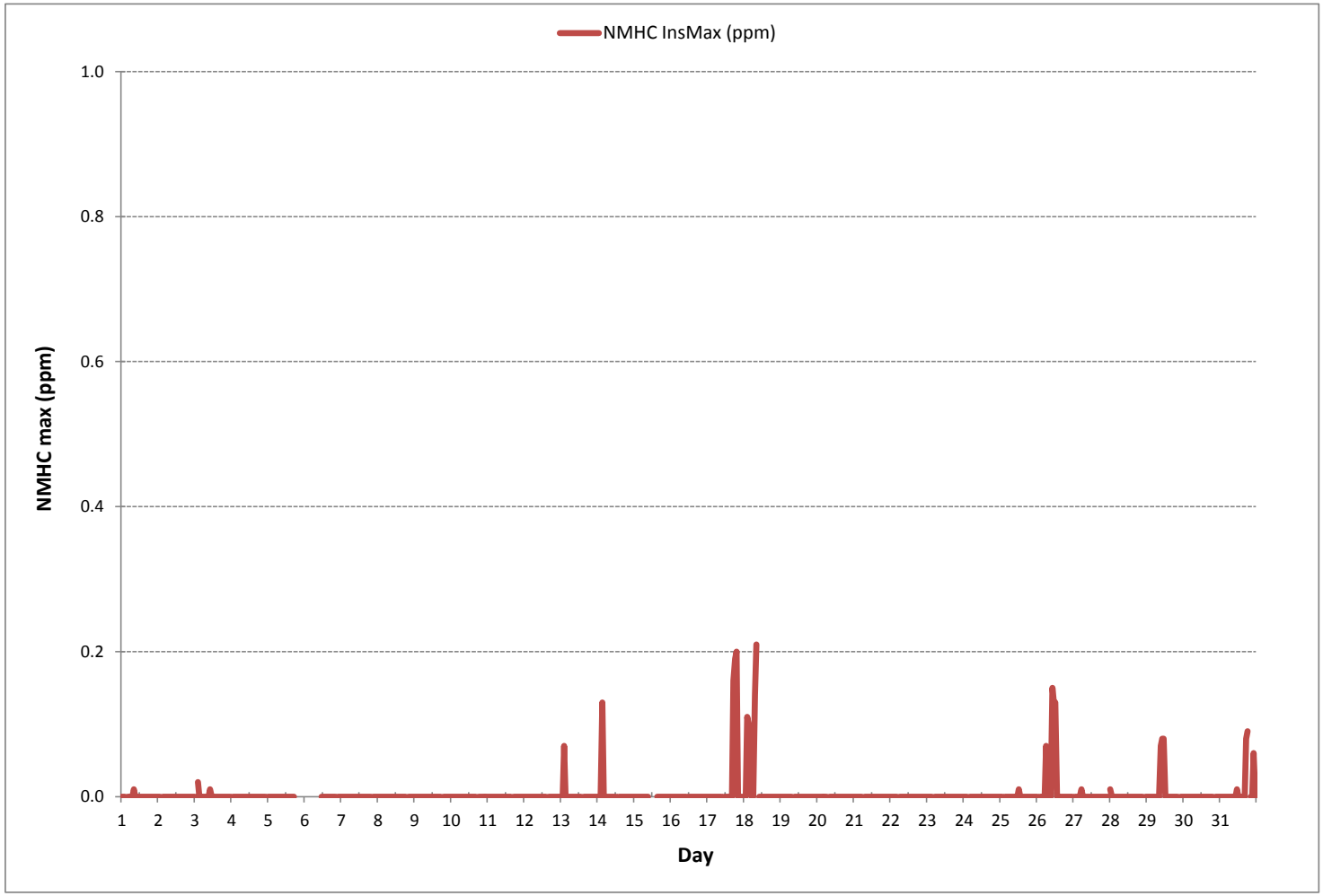
NUMBER OF NON-ZERO READINGS: 27

MAXIMUM INSTANTANEOUS VALUE: 0.21 ppm @ HOUR 8 ON DAY 18

IZS CALIBRATION TIME: 32 hrs
MONTHLY CALIBRATION TIME: 5 hrs
STANDARD DEVIATION: 0.02

OPERATIONAL TIME: 728 hrs

NON-METHANE HYDROCARBONS Instantaneous Maximum (NMHC ppm)



Wind: PRAMP_986
Poll.: PRAMP_986-NMHC[ppm]
Monthly: 17/12
Type: PollutionRose
Direction: Blowing From (Wind Frequency)
Based On 1 Hr.

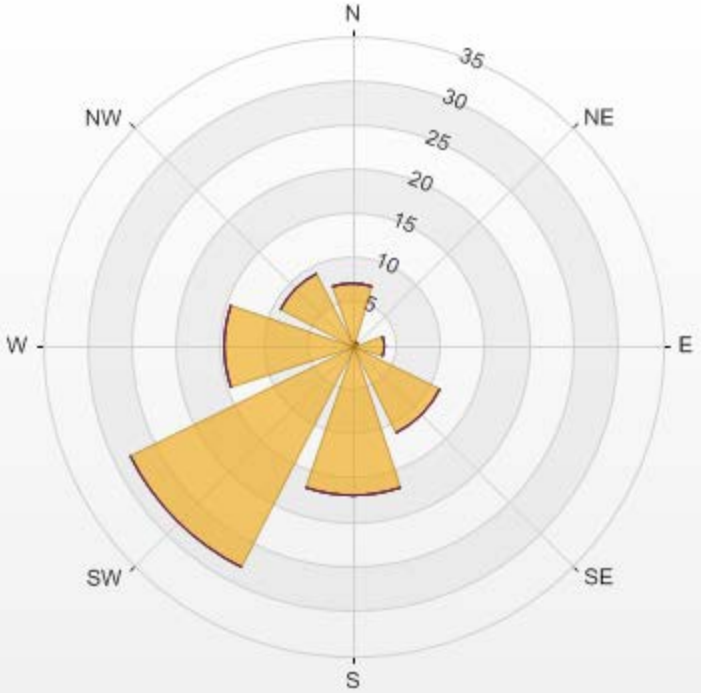
Calm: 8.96%

Calm Avg: 0.00 [ppm]

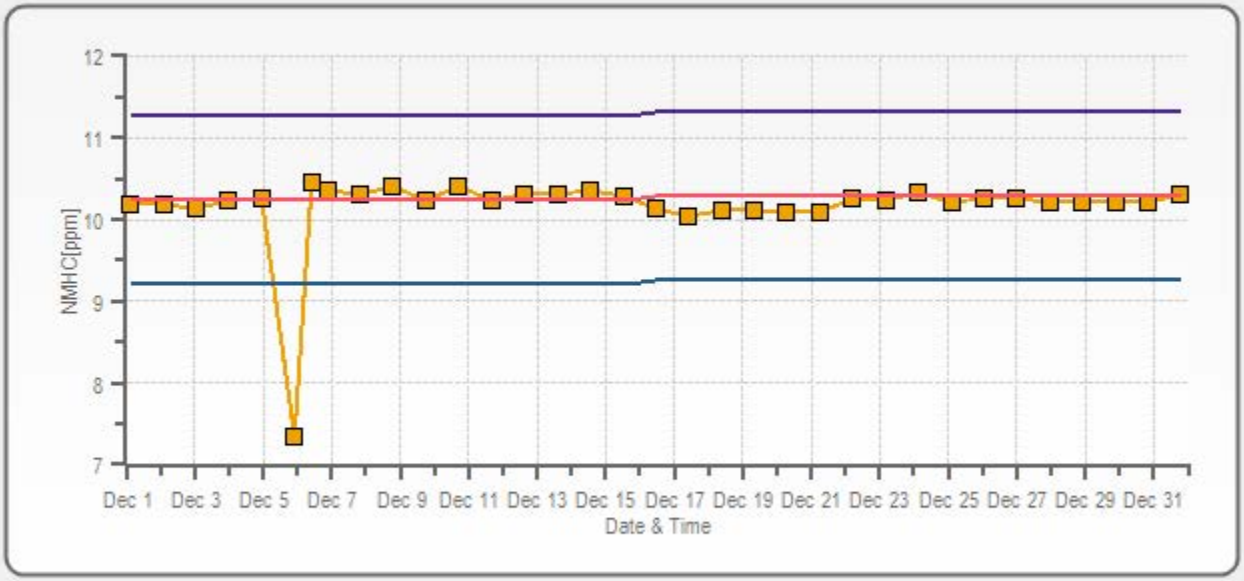
Direction	0-0.1	0.1-0.3	0.3-1	1-2	>2.0	Total
N	7.1	0.0	0.0	0.0	0.0	7.1
NE	0.6	0.0	0.0	0.0	0.0	0.6
E	3.6	0.0	0.0	0.0	0.0	3.6
SE	11.1	0.0	0.0	0.0	0.0	11.1
S	16.9	0.0	0.0	0.0	0.0	16.9
SW	28.0	0.0	0.0	0.0	0.0	28.0
W	14.6	0.0	0.0	0.0	0.0	14.6
NW	9.1	0.0	0.0	0.0	0.0	9.1
Summary	91.0	0.0	0.0	0.0	0.0	91.0

% Icon Classes (ppm)	91 0-0.1	0 0.1-0.3	0 0.3-1	0 1-2	0 >2.0

PRAMP_986 Poll.: PRAMP_986-NMHC[ppm] 2017/12/01 00:00 - 2017/12/31 23:00 Calm: 8.96% Calm Poll Avg: 0.00[ppm]



NMHC[ppm] Calibration: PRAMP_986 Monthly: 17/12 Type: Span



WIND SPEED

Maxxam
A Bureau Veritas Group Company

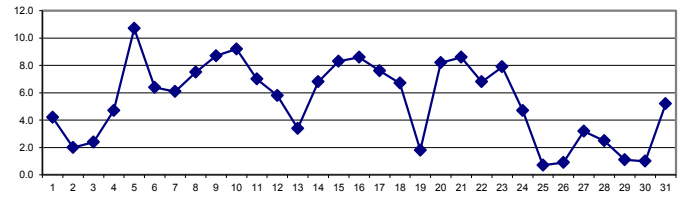
WIND SPEED Hourly Averages (WS kph)

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	6.8	6.1	7.5	9.8	7.1	5.9	4.1	4.9	3.8	3.1	3.6	3.3	5.5	4.7	3.2	3.5	4.1	5.3	5.7	4.4	3.8	4.1	3.7	2.7	2.7	9.8	4.2	24
2	3.2	2.1	0.9	5.5	5.5	1.4	1.3	1.2	1.7	1.8	2.9	2.8	2.1	2.3	0.9	5.1	2.0	4.7	6.4	7.0	7.6	6.4	4.1	4.1	0.9	7.6	2.0	24
3	2.0	1.4	2.8	2.3	3.1	3.8	4.1	3.1	3.5	4.3	5.6	2.5	5.0	4.9	5.4	3.4	4.1	1.7	2.1	0.5	0.6	1.8	0.3	0.8	0.3	5.6	2.4	24
4	1.6	1.8	2.4	3.0	5.4	6.4	9.0	6.9	8.8	7.6	6.6	7.3	8.0	7.7	8.5	8.2	8.2	7.7	7.8	7.1	3.3	4.8	9.0	10.3	1.6	10.3	4.7	24
5	7.3	16.0	14.9	13.2	17.4	16.0	19.6	20.6	18.4	18.6	15.0	14.0	17.6	16.6	14.5	13.8	3.9	2.2	3.2	2.2	2.0	1.7	1.6	2.1	1.6	20.6	**10.7**	24
6	4.1	5.6	5.3	6.9	6.0	7.5	7.7	8.2	7.8	7.7	7.9	7.8	6.9	6.8	5.5	6.1	6.0	6.0	6.4	7.0	7.0	6.9	8.1	6.3	4.1	8.2	6.4	24
7	9.0	7.5	7.9	6.3	7.2	7.4	7.1	7.1	7.4	7.8	8.0	8.9	7.5	7.0	5.3	4.6	5.7	4.2	5.2	6.2	4.4	4.3	4.9	6.0	4.2	9.0	6.1	24
8	5.0	4.3	6.4	6.3	7.5	6.4	7.6	6.6	6.1	8.4	8.6	9.1	9.6	9.3	9.4	11.2	8.9	9.9	11.1	7.8	7.0	7.2	6.8	8.2	4.3	11.2	7.5	24
9	8.1	4.3	10.5	12.8	9.5	7.4	6.7	5.1	8.7	14.3	13.5	10.9	11.8	9.3	7.4	7.3	6.7	8.7	8.2	8.6	9.4	10.0	8.9	7.3	4.3	14.3	8.7	24
10	7.6	8.2	9.2	8.5	10.2	9.5	12.8	13.2	14.4	**24.9**	20.2	10.7	10.2	13.5	12.9	8.7	6.8	8.3	11.4	10.4	4.2	3.1	4.0	4.1	3.1	**24.9**	9.2	24
11	4.7	6.5	3.2	7.4	3.9	3.5	4.3	3.7	5.9	7.4	7.5	8.0	9.3	10.6	11.4	11.6	9.8	11.1	9.6	8.7	10.9	10.5	8.2	10.7	3.2	11.6	7.0	24
12	9.7	3.7	6.9	7.9	6.0	6.3	7.7	6.4	4.3	2.6	4.6	6.5	8.9	6.2	6.5	6.9	5.9	8.0	4.7	5.6	8.3	6.3	6.3	4.9	2.6	9.7	5.8	24
13	5.9	5.2	4.6	3.0	3.4	2.8	3.4	5.1	8.8	13.9	11.8	13.6	10.7	12.7	8.4	5.6	1.3	2.3	2.1	3.3	3.6	4.0	4.9	4.0	1.3	13.9	3.4	24
14	5.2	5.3	4.8	3.0	5.7	8.7	6.6	9.0	8.8	9.6	10.0	9.4	9.9	11.0	9.8	7.8	7.8	6.6	6.6	6.3	8.0	8.0	7.5	7.2	3.0	11.0	6.8	24
15	6.8	8.1	8.4	7.9	5.7	7.5	7.0	5.1	12.4	10.7	16.4	10.0	11.3	7.6	10.1	8.1	7.8	8.5	7.5	7.4	9.0	8.4	9.0	9.0	5.1	16.4	8.3	24
16	7.8	9.1	7.9	5.7	6.3	4.3	5.2	8.2	6.9	5.6	6.0	7.0	8.8	9.0	8.5	10.7	13.1	14.3	15.6	16.0	16.4	13.8	12.8	10.1	4.3	16.4	8.6	24
17	9.3	11.4	9.3	5.0	4.8	9.3	11.4	6.5	8.0	7.1	8.9	11.8	9.6	8.8	8.9	7.4	7.5	7.6	8.8	8.2	5.6	6.9	7.7	7.1	4.8	11.8	7.6	24
18	5.5	4.3	7.1	12.6	10.6	16.8	16.9	14.6	13.6	9.9	8.0	5.4	5.6	5.1	8.3	5.3	6.0	5.9	5.8	5.0	6.0	5.6	5.2	3.6	3.6	16.9	6.7	24
19	3.3	1.6	2.6	1.1	0.3	0.4	1.5	1.5	2.3	2.0	1.7	2.7	4.2	3.6	3.5	3.2	3.5	3.2	3.3	5.7	3.5	5.3	4.7	6.7	0.3	6.7	1.8	24
20	7.2	6.5	5.8	7.5	8.4	9.9	8.7	9.8	11.4	9.2	9.7	9.8	10.5	10.2	9.8	8.7	8.9	9.3	8.5	6.9	7.4	6.4	5.4	4.4	4.4	11.4	8.2	24
21	1.9	4.3	5.0	8.1	7.1	6.6	5.9	7.0	8.6	6.8	6.9	7.6	8.0	9.6	13.9	13.3	13.1	13.8	10.7	12.8	12.8	9.2	12.8	10.3	1.9	13.9	8.6	24
22	10.4	7.8	9.0	6.7	5.1	6.8	6.4	2.5	2.5	2.7	2.9	3.2	6.1	7.1	7.6	6.0	6.2	6.1	7.9	15.1	13.8	16.4	15.0	7.5	2.5	16.4	6.8	24
23	7.0	8.6	5.4	4.6	9.4	8.4	10.3	16.8	17.2	17.1	15.8	13.8	12.6	10.4	10.6	7.4	4.6	1.2	1.4	2.7	5.1	6.5	9.2	7.9	1.2	17.2	7.9	24
24	7.4	10.7	10.4	9.7	10.7	10.8	9.6	7.0	3.9	2.0	0.3	0.9	1.0	2.2	3.1	3.3	1.4	2.0	2.0	1.3	3.3	7.3	6.8	5.6	0.3	10.8	4.7	24
25	2.4	2.1	1.0	2.5	3.0	2.2	0.4	1.0	0.7	1.7	2.1	1.6	1.9	0.4	0.2	1.8	1.5	2.2	3.2	3.2	3.2	2.2	2.5	2.6	0.2	3.2	0.7	24
26	3.7	4.9	4.0	4.2	4.1	3.3	4.4	2.5	0.6	1.8	0.7	**0.1**	1.0	2.9	3.7	3.2	2.2	2.0	1.7	1.4	4.2	3.7	1.0	0.3	**0.1**	4.9	0.9	24
27	1.1	1.3	1.5	2.6	2.8	3.2	2.1	3.9	5.0	3.7	5.0	5.8	6.4	6.1	5.5	5.4	5.7	4.3	4.7	2.8	2.9	1.8	3.5	3.3	1.1	6.4	3.2	24
28	8.5	9.5	9.0	9.2	8.9	5.2	3.6	3.1	0.7	0.8	0.1	1.7	3.7	4.9	3.6	2.8	1.0	0.7	1.3	1.1	1.0	0.9	2.0	1.3	0.1	9.5	2.5	24
29	1.7	1.6	0.2	1.8	1.5	2.4	2.2	1.7	0.9	1.6	2.6	1.6	1.0	0.8	2.8	2.2	0.8	0.7	1.8	2.4	1.9	2.6	1.3	2.5	0.2	2.8	1.1	24
30	0.4	2.2	0.3	0.6	1.4	0.7	1.6	2.3	0.1	0.7	0.5	1.6	1.0	0.8	1.8	3.6	0.6	1.8	3.3	5.7	4.9	2.6	8.7	7.6	0.1	8.7	1.0	24
31	6.3	7.2	5.6	4.6	5.5	7.1	4.8	3.0	2.8	3.1	4.1	5.9	7.8	8.8	7.1	7.5	7.8	8.8	8.5	5.8	6.3	4.4	6.7	8.7	2.8	8.8	5.2	24
HOURLY MAX	10.4	16.0	14.9	13.2	17.4	16.8	19.6	20.6	18.4	24.9	20.2	14.0	17.6	16.6	14.5	13.8	13.1	14.3	15.6	16.0	16.4	16.4	15.0	10.7				
HOURLY AVG	3.1	2.7	2.6	2.4	2.6	3.1	3.4	3.2	3.7	3.8	4.0	4.0	4.9	4.7	4.5	4.1	3.8	3.8	3.8	3.5	3.4	3.2	3.2	3.2				

STATUS FLAG CODES

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

24 HR AVERAGES December 2017

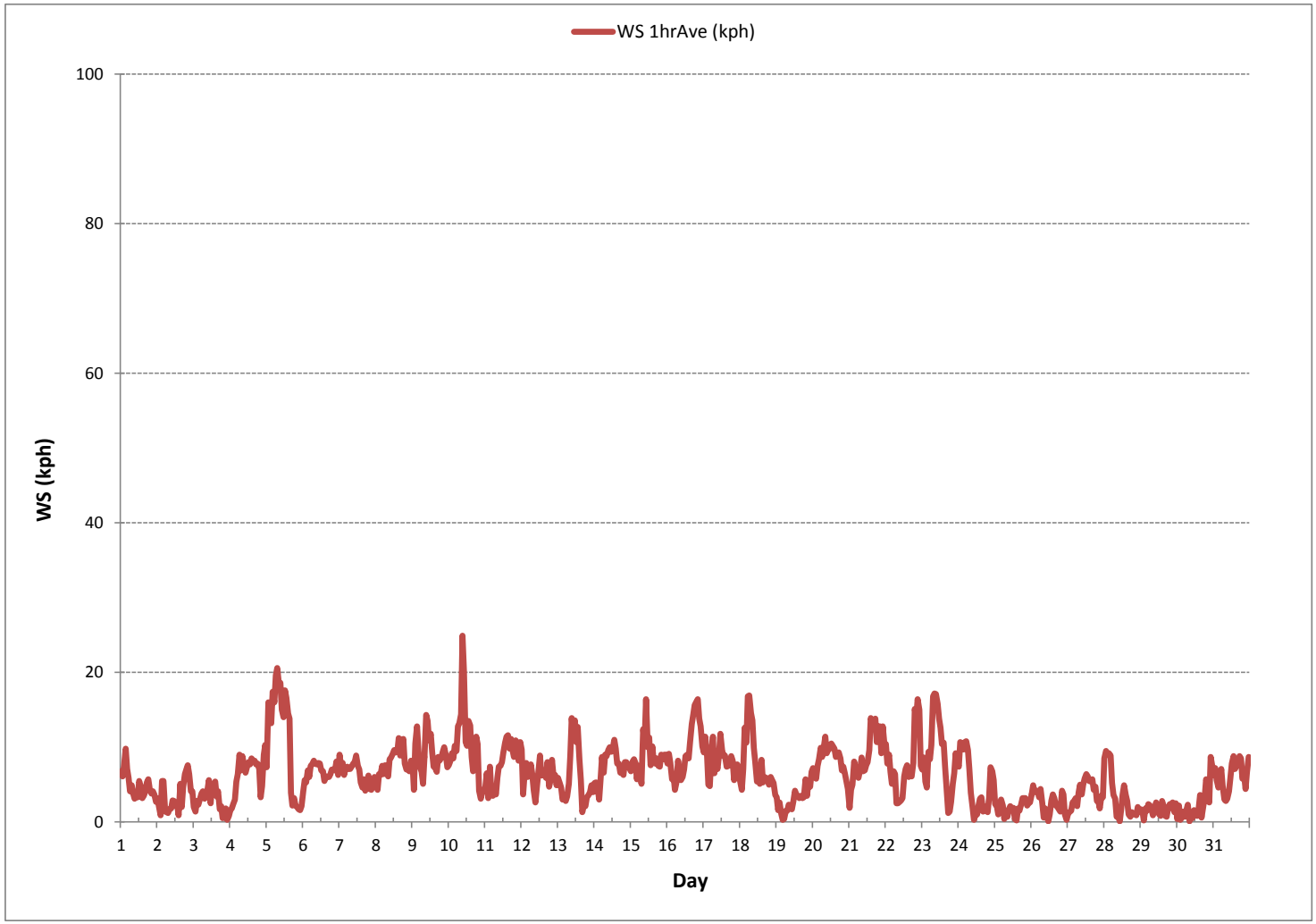


LAST CALIBRATION:	April 5, 2017
DECLINATION :	MAGNETIC DECLINATION 15 DEGREE EAST

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:			744					
MINIMUM 1-HR AVERAGE	0.1	kph	@ HOUR	11	ON DAY	26		
MAXIMUM 1-HR AVERAGE:	24.9	kph	@ HOUR	9	ON DAY	10		
MAXIMUM 24-HR AVERAGE:	10.7	kph			ON DAY	5		
			OPERATIONAL TIME:			744	hrs	
MONTHLY CALIBRATION TIME:	0	hrs	AMD OPERATION UPTIME:			100.0	%	
STANDARD DEVIATION:	3.9		MONTHLY AVERAGE:			3.5	kph	

WIND SPEED Hourly Averages (WS kph)



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	19.4	15.9	13.3	14.7	16.5	15.3	10.7	9.2	10.3	6.2	6.4	10.0	13.1	14.6	11.0	10.4	11.3	14.9	16.9	10.9	12.9	11.2	12.0	14.0	6.2	19.4	12.5	24
2	12.0	7.8	5.0	11.2	10.8	4.5	4.3	3.9	4.1	4.5	5.7	5.2	5.9	6.0	5.6	8.8	8.7	11.2	11.0	15.6	10.9	16.8	13.6	13.9	3.9	16.8	8.6	24
3	9.4	4.8	4.9	5.2	5.5	6.2	6.1	6.3	5.7	13.4	16.4	18.8	9.8	12.7	10.1	9.3	7.7	7.2	5.8	3.1	3.8	5.3	7.0	2.9	2.9	18.8	7.8	24
4	4.0	4.8	8.5	6.4	9.1	13.6	13.9	11.5	12.1	12.1	14.5	19.3	19.3	18.6	20.5	21.1	20.6	20.4	20.2	19.7	11.1	23.6	29.1	23.1	4.0	29.1	15.7	24
5	19.1	41.2	36.3	30.4	33.3	29.7	39.6	38.6	30.8	33.9	32.6	25.2	29.1	31.3	26.9	26.5	17.0	7.6	11.1	6.1	4.1	5.2	6.1	5.1	4.1	41.2	23.6	24
6	7.2	10.5	7.9	10.8	14.5	17.8	20.1	22.4	20.6	23.5	20.3	20.8	19.6	16.8	12.8	15.0	17.6	14.1	16.2	18.3	18.0	17.8	13.4	17.0	7.2	23.5	16.4	24
7	23.5	19.2	19.3	17.8	19.9	21.7	16.4	18.1	16.6	22.3	23.8	22.5	18.7	19.4	17.9	17.9	10.7	10.3	10.1	11.8	10.0	7.9	11.6	16.5	7.9	23.8	16.8	24
8	14.9	12.0	12.4	12.7	19.6	21.3	18.3	13.8	12.6	16.2	19.0	25.2	28.8	28.0	30.5	29.8	25.0	28.3	28.7	22.6	18.0	15.8	16.7	20.4	12.0	30.5	20.4	24
9	17.1	14.7	33.8	33.1	26.4	18.2	20.9	12.9	28.7	36.8	34.5	31.4	30.1	25.4	21.6	18.0	16.5	18.4	18.3	23.2	23.8	22.5	23.0	23.6	12.9	36.8	23.9	24
10	19.9	22.1	23.9	24.3	25.4	27.3	39.5	43.4	39.4	**52.6**	45.9	24.8	25.4	33.7	31.8	21.2	23.4	21.9	25.8	24.1	12.3	7.6	10.1	8.7	7.6	**52.6**	**26.4**	24
11	9.9	13.6	16.0	11.6	9.3	7.8	8.9	9.3	10.0	13.8	11.3	18.1	20.5	21.5	24.6	23.8	20.1	24.2	17.5	19.5	27.3	29.6	24.4	31.4	7.8	31.4	17.7	24
12	32.3	15.6	15.9	21.1	12.2	17.3	22.1	20.1	14.9	9.6	13.0	15.5	23.7	16.7	19.6	17.0	13.8	23.6	16.1	15.8	23.5	18.9	16.7	14.1	9.6	32.3	17.9	24
13	15.6	11.7	14.3	8.8	5.4	9.5	12.4	13.4	22.3	28.7	25.7	21.9	19.0	25.6	27.1	12.9	7.6	7.7	6.0	6.2	5.6	6.8	7.8	9.2	5.4	28.7	13.8	24
14	8.0	10.3	9.1	7.3	12.7	16.8	13.7	13.5	28.8	24.7	23.1	23.1	26.2	30.7	22.8	20.6	19.6	19.9	14.9	18.0	17.4	18.3	21.4	21.1	7.3	30.7	18.4	24
15	18.3	28.2	21.3	26.2	16.4	22.1	20.4	16.4	31.8	25.9	39.9	30.0	32.6	25.0	27.7	25.9	22.1	22.0	23.3	23.5	26.5	22.4	24.9	23.6	16.4	39.9	24.9	24
16	18.8	26.1	21.1	17.2	17.4	13.0	15.0	20.0	19.4	21.1	19.4	18.6	20.9	25.4	21.2	22.6	25.2	27.2	33.9	33.9	33.5	31.1	37.2	32.7	13.0	37.2	23.8	24
17	23.1	29.3	27.3	14.4	19.3	32.8	30.9	20.8	22.2	22.0	27.5	39.2	30.5	25.9	22.2	21.7	19.9	19.3	29.3	25.6	14.1	20.7	18.1	18.2	14.1	39.2	23.9	24
18	16.2	11.3	17.0	23.0	25.7	30.9	32.3	26.3	22.3	25.0	21.0	14.3	14.5	14.4	15.2	14.9	15.7	19.3	16.9	15.2	19.4	18.5	17.1	10.9	10.9	32.3	19.1	24
19	10.6	4.6	7.4	8.7	4.4	4.5	6.6	4.4	4.7	5.3	5.2	4.9	12.9	10.0	9.7	7.0	7.1	6.5	9.5	12.3	9.4	11.2	13.6	16.3	4.4	16.3	8.2	24
20	15.2	15.9	13.1	23.7	24.6	28.1	23.0	24.8	25.1	27.8	26.3	23.4	23.9	22.4	20.7	20.2	17.9	22.8	20.8	17.7	17.1	14.7	13.9	14.2	13.1	28.1	20.7	24
21	7.3	13.3	11.3	26.8	20.9	12.0	13.4	13.9	15.7	15.6	20.0	20.7	19.4	21.6	24.2	28.8	27.2	30.1	21.1	25.3	23.3	18.2	22.3	18.4	7.3	30.1	19.6	24
22	19.5	15.3	16.3	13.6	13.6	13.5	13.8	6.9	4.6	5.7	10.6	11.2	16.5	18.9	19.2	15.3	17.3	16.1	17.1	26.8	25.6	31.0	29.1	21.3	4.6	31.0	16.6	24
23	20.4	24.3	14.3	13.9	18.5	16.3	19.4	29.2	27.0	27.5	27.7	24.4	31.2	32.6	32.1	20.6	10.2	6.0	5.8	12.0	13.6	16.2	26.0	25.3	5.8	32.6	20.6	24
24	27.8	42.0	35.6	29.2	34.9	33.5	31.1	20.4	12.8	6.2	3.6	7.0	7.5	8.8	9.3	9.6	7.9	6.3	6.1	5.0	11.0	21.0	18.7	17.5	3.6	42.0	17.2	24
25	8.7	7.8	3.3	9.2	5.9	6.0	3.8	3.4	2.6	3.4	4.8	4.3	3.8	4.1	2.6	5.1	3.7	4.7	5.7	6.4	6.6	4.8	5.5	6.0	2.6	9.2	5.1	24
26	7.9	9.3	7.7	7.7	8.6	7.6	8.4	9.3	3.8	4.0	2.8	1.6	4.7	6.1	8.7	8.3	6.9	4.7	4.8	4.6	9.8	6.9	4.1	1.9	1.6	9.8	6.3	24
27	3.3	3.2	3.4	4.7	4.7	5.4	5.5	9.2	10.2	11.1	10.8	11.6	13.8	14.5	12.0	10.9	14.6	13.5	14.0	14.7	6.2	9.8	11.1	11.5	3.2	14.7	9.6	24
28	25.5	27.7	25.0	24.1	28.5	16.1	13.2	7.6	8.0	5.0	3.4	4.1	8.0	8.1	10.9	9.3	4.8	3.3	4.5	6.2	4.3	6.2	3.9	3.1	3.1	28.5	10.9	24
29	2.9	3.6	3.3	4.6	3.2	5.2	5.4	4.1	2.7	4.4	5.3	3.7	3.3	5.8	6.3	4.4	3.7	3.8	5.4	8.6	8.4	12.5	6.0	10.5	2.7	12.5	5.3	24
30	5.2	5.6	3.0	4.7	5.4	4.6	7.9	7.3	3.6	4.1	2.9	3.5	4.4	4.1	4.8	6.1	5.9	6.8	7.0	12.1	14.5	14.0	15.4	14.7	2.9	15.4	7.0	24
31	11.8	17.7	17.2	10.6	8.7	12.2	8.4	5.6	5.2	6.2	9.2	10.4	16.1	16.4	17.6	14.1	16.2	17.3	17.4	13.2	10.6	9.7	15.6	18.3	5.2	18.3	12.7	24
HOURLY MAX	32.3	42.0	36.3	33.1	34.9	33.5	39.6	43.4	39.4	52.6	45.9	39.2	32.6	33.7	32.1	29.8	27.2	30.1	33.9	33.9	33.5	31.1	37.2	32.7				
HOURLY AVG	14.7	15.8	15.1	15.4	15.5	15.8	16.3	15.0	15.4	16.7	17.2	16.6	17.8	18.2	17.7	16.0	14.4	14.8	14.9	15.4	14.6	15.4	16.0	15.7				

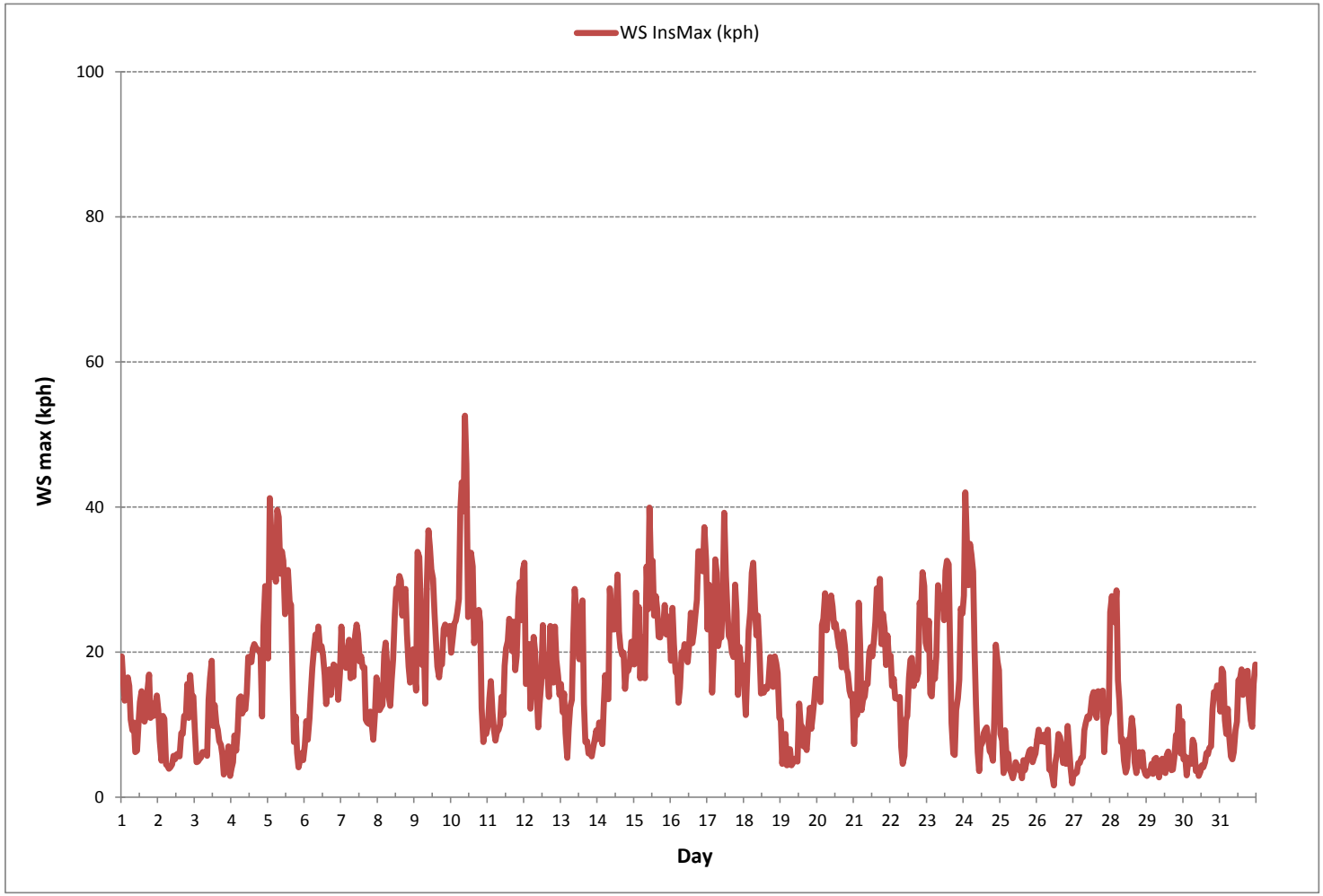
STATUS FLAG CODES

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

MONTHLY SUMMARY

MAXIMUM INSTANTANEOUS VALUE:	52.6	kph	@ HOUR	9	ON DAY	10
OPERATIONAL TIME:					744	hrs

WIND SPEED Instantaneous Maximum (WS kph)



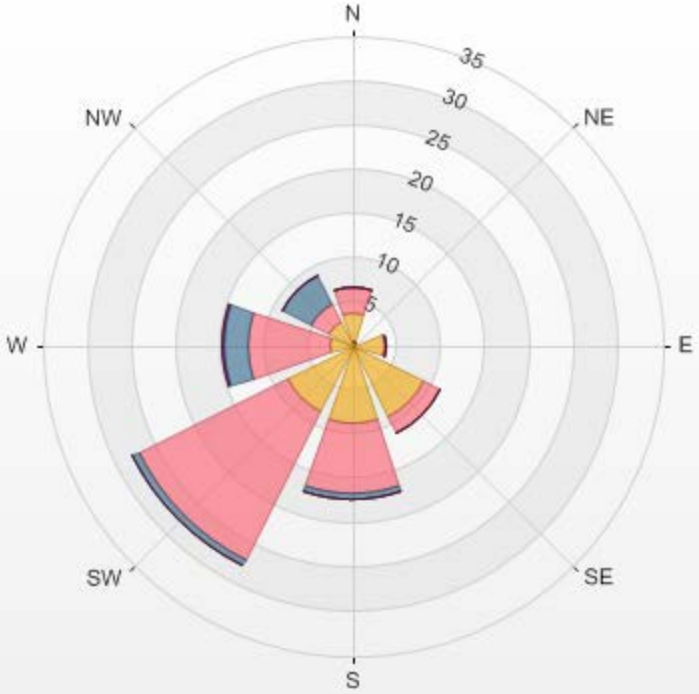
Wind: PRAMP_986
Monitor: WSP [kph]
Monthly: 17/12
Type: WindRose
Direction: Blowing From (Wind Frequency)
Based On 1 Hr.

Calm: 8.87%

Direction	1.5-6.0	6.0-12.0	12.0-20.0	20.0-29.0	29.0-39.0	>39.0	Total
N	3.8	3.0	0.0	0.0	0.0	0.0	6.7
NE	0.5	0.0	0.0	0.0	0.0	0.0	0.5
E	3.6	0.1	0.0	0.0	0.0	0.0	3.8
SE	9.1	1.9	0.0	0.0	0.0	0.0	11.0
S	8.7	8.1	0.7	0.0	0.0	0.0	17.5
SW	8.3	18.7	0.8	0.0	0.0	0.0	27.8
W	2.6	9.4	2.6	0.3	0.0	0.0	14.8
NW	3.1	2.3	3.5	0.1	0.0	0.0	9.0
Summary	39.8	43.4	7.5	0.4	0.0	0.0	91.1

%	Icon	Classes (kph)											
		40	1.5-6.0	43	6.0-12.0	8	12.0-20.0	0	20.0-29.0	0	29.0-39.0	0	>39.0

PRAMP_986 2017/12/01 00:00 - 2017/12/31 23:00 Calm: 8.87% Calm Wind Avg Speed: 0.85(kph)



WIND DIRECTION

WIND DIRECTION Hourly Averages (WD)

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

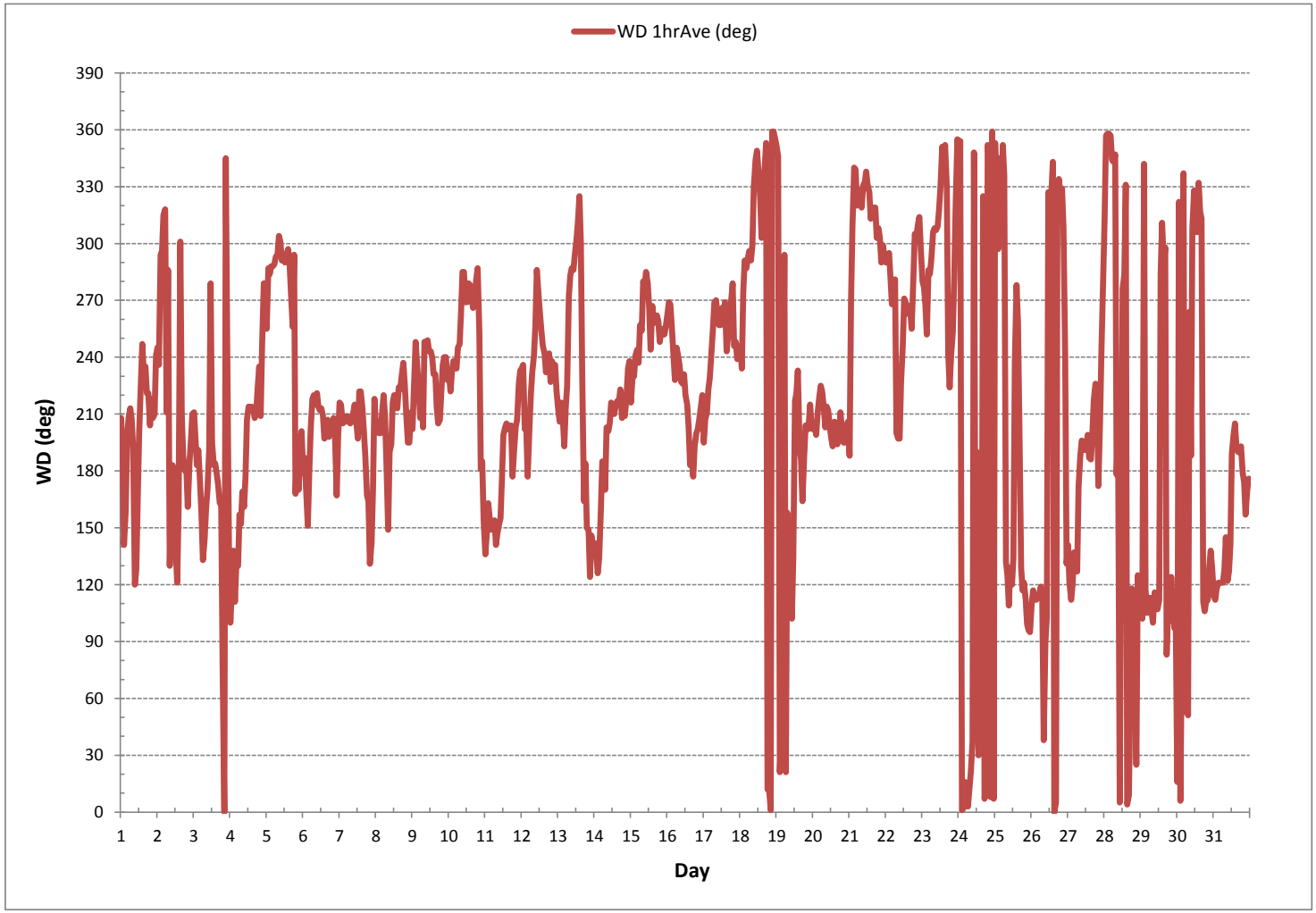
STATUS FLAG CODES

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

LAST CALIBRATION:	April 5, 2017
DECLINATION :	MAGNETIC DECLINATION 15 DEGREE EAST

MONTHLY CALIBRATION TIME:	0	hrs	OPERATIONAL TIME:	744	hrs
STANDARD DEVIATION:	77		AMD OPERATION UPTIME:	100.0	%
			MONTHLY AVERAGE:	239 (WSW)	

WIND DIRECTION Hourly Averages (WD)



RELATIVE HUMIDITY

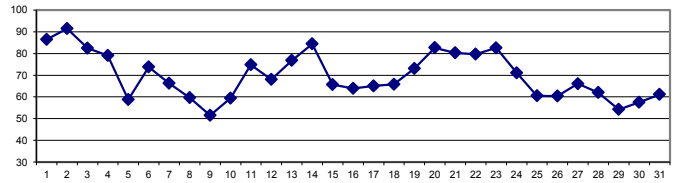
RELATIVE HUMIDITY Hourly Averages (RH %)

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	77	77	81	85	85	82	81	82	82	84	83	77	72	73	90	94	95	96	98	**99**	98	96	94	93	72	**99**	86	24
2	93	94	94	95	96	96	94	93	91	91	92	92	91	90	90	92	90	89	89	88	88	90	89	88	88	96	**91**	24
3	86	84	83	84	85	83	81	83	84	84	84	83	79	79	80	80	82	84	84	83	81	80	80	82	79	86	82	24
4	81	78	83	84	85	85	85	86	86	84	82	78	75	73	75	77	79	80	78	74	77	74	71	68	68	86	79	24
5	68	61	60	59	56	55	52	52	56	57	54	51	48	46	46	**44**	51	62	67	69	72	73	75	75	**44**	75	59	24
6	75	71	71	77	78	73	73	73	75	75	74	73	71	71	70	73	74	75	75	75	73	73	75	77	70	78	74	24
7	68	68	69	66	67	66	65	64	65	64	59	56	56	53	54	58	65	70	75	76	78	80	80	69	53	80	66	24
8	69	72	71	69	68	63	63	65	73	64	57	52	49	51	52	52	53	50	49	54	59	60	59	57	49	73	60	24
9	58	54	46	49	50	56	52	56	46	47	46	46	46	47	49	50	57	59	59	58	53	51	50	51	46	59	52	24
10	49	52	49	50	55	63	60	61	61	58	64	63	60	52	50	56	61	60	56	55	62	76	77	76	49	77	59	24
11	81	82	80	84	85	87	87	87	86	88	85	73	62	58	58	62	66	67	72	71	71	71	69	64	58	88	75	24
12	65	67	78	76	78	79	72	67	71	74	71	59	53	54	55	60	69	65	64	65	68	71	74	77	53	79	68	24
13	81	81	82	85	89	90	87	79	71	64	63	61	60	58	58	61	74	78	84	85	86	88	88	89	58	90	77	24
14	88	89	89	89	89	92	91	91	92	90	87	82	79	77	75	76	75	77	80	81	80	82	84	90	75	92	84	24
15	92	85	81	78	77	76	75	79	71	69	67	70	57	52	47	49	54	55	56	58	57	59	57	55	47	92	66	24
16	57	55	56	58	59	67	67	65	68	72	69	66	65	65	68	68	66	66	62	59	58	61	67	70	55	72	64	24
17	74	74	70	70	70	69	68	69	67	68	68	68	66	64	58	58	59	59	60	59	61	63	61	59	58	74	65	24
18	57	59	56	51	51	54	62	65	70	77	77	73	66	68	69	69	69	69	71	73	71	68	66	69	51	77	66	24
19	68	70	71	72	74	75	77	78	77	75	75	72	67	65	65	65	69	73	73	72	74	79	82	84	65	84	73	24
20	86	86	86	87	87	88	89	88	87	87	86	84	84	83	81	81	83	82	79	77	76	74	71	71	71	89	83	24
21	72	69	72	73	78	82	81	84	87	87	87	87	87	84	83	81	80	79	80	80	80	77	77	79	69	87	80	24
22	80	82	80	81	81	79	77	79	82	82	79	73	69	71	82	86	88	88	84	75	76	79	80	80	69	88	80	24
23	80	79	81	82	87	88	89	89	88	88	87	87	86	80	73	71	79	78	76	82	82	81	83	85	71	89	83	24
24	84	81	78	76	74	71	66	67	68	71	67	67	68	65	65	67	70	72	72	72	73	71	70	71	65	84	71	24
25	70	68	64	62	64	63	58	57	56	56	57	59	62	64	64	64	63	58	58	58	58	57	56	56	56	70	61	24
26	57	57	56	56	56	56	57	57	55	55	56	59	61	65	64	65	66	66	66	66	66	66	61	60	55	66	60	24
27	59	57	56	56	58	59	59	62	64	65	66	67	67	68	69	70	71	73	73	74	72	73	74	74	56	74	66	24
28	75	71	69	67	66	65	65	65	62	59	59	60	63	63	62	63	63	58	57	57	56	56	54	54	54	75	62	24
29	53	52	51	51	51	51	51	51	51	51	52	54	57	60	62	62	59	56	54	54	55	55	54	54	51	62	54	24
30	55	54	53	53	54	53	53	53	53	54	55	58	61	60	61	62	60	58	60	60	64	63	63	61	53	64	58	24
31	62	62	62	61	62	62	62	60	59	59	60	62	59	58	57	60	60	61	61	62	62	63	64	66	57	66	61	24
HOURLY MAX	93	94	94	95	96	96	94	93	92	91	92	92	91	90	90	94	95	96	98	99	98	96	94	93				
HOURLY AVG	72	71	70	71	71	72	71	71	71	71	70	68	66	65	66	67	69	70	70	70	71	71	71	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

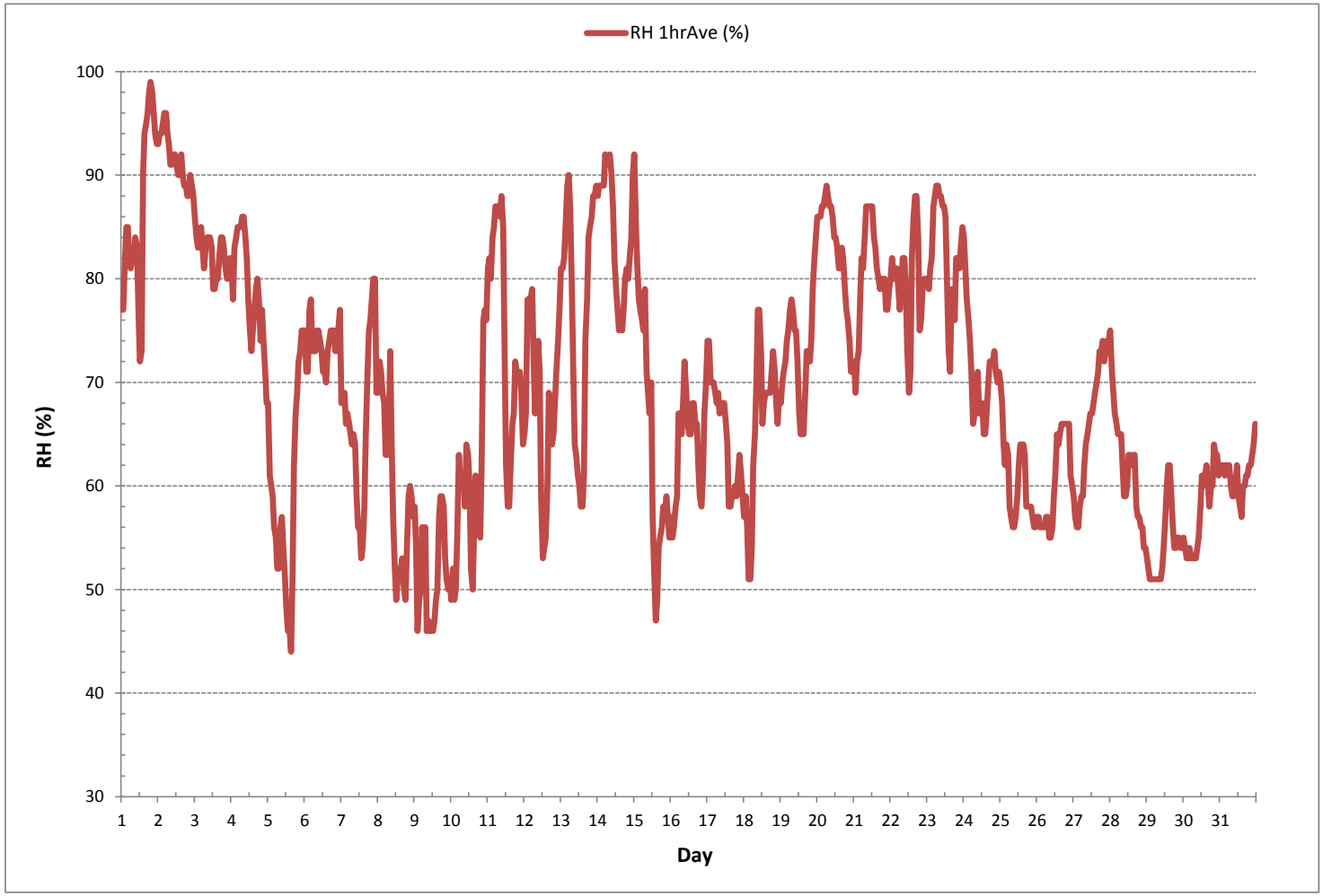
24 HR AVERAGES December 2017



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	44	%	@ HOUR	15	ON DAY	5	
MAXIMUM 1-HR AVERAGE:	99	%	@ HOUR	19	ON DAY	1	
MAXIMUM 24-HR AVERAGE:	91	%			ON DAY	2	
			OPERATIONAL TIME:			744	hrs
			AMD OPERATION UPTIME:			100.0	%
STANDARD DEVIATION:	12		MONTHLY AVERAGE:			70	%

RELATIVE HUMIDITY Hourly Averages (RH %)



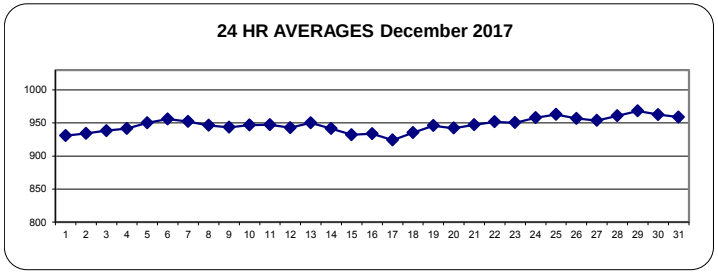
BAROMETRIC PRESSURE

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	932	932	932	931	931	931	931	931	931	931	931	930	930	930	930	930	930	931	931	931	931	931	931	931	930	932	931	24
2	932	932	932	933	933	934	934	934	935	935	935	935	935	935	935	935	935	935	935	935	934	934	934	934	932	935	934	24
3	934	934	935	935	935	936	936	937	937	937	937	938	938	938	938	939	940	940	941	941	942	943	943	944	934	944	938	24
4	944	944	945	945	944	944	943	943	943	943	942	942	941	941	940	940	939	938	938	938	939	939	940	940	938	945	941	24
5	940	941	941	942	943	944	945	946	947	948	950	951	952	953	953	954	955	956	956	957	957	958	958	958	940	958	950	24
6	958	958	959	958	958	958	957	957	956	956	956	956	956	956	955	955	955	955	955	954	954	953	953	953	953	959	956	24
7	953	953	953	953	952	952	952	952	952	951	952	952	952	952	952	952	952	952	952	952	951	951	951	951	951	953	952	24
8	950	950	949	949	949	948	948	947	947	947	946	946	946	946	945	945	945	945	945	944	944	944	944	944	944	950	946	24
9	944	944	944	944	943	943	943	942	942	942	942	943	943	943	943	943	943	943	944	944	944	944	944	944	942	944	943	24
10	944	944	944	943	943	942	942	942	942	944	945	947	947	948	949	949	950	950	951	951	951	951	951	951	942	951	947	24
11	952	951	952	951	952	951	951	951	950	949	949	948	948	947	946	945	945	944	943	943	942	942	941	940	940	952	947	24
12	940	940	940	939	939	939	938	939	940	941	942	943	944	945	945	945	945	946	946	946	946	946	946	946	938	946	943	24
13	946	946	947	947	947	947	948	948	948	949	950	951	951	952	952	953	953	953	954	953	953	953	952	952	946	954	950	24
14	951	950	950	949	949	947	947	946	945	944	943	942	940	939	938	938	937	936	936	935	934	934	933	933	933	951	942	24
15	932	931	931	931	931	931	931	931	931	931	932	932	932	932	931	932	932	932	932	933	933	934	934	935	931	935	932	24
16	935	936	936	937	937	937	937	937	937	937	937	937	936	935	935	933	932	931	930	929	928	927	926	925	925	937	934	24
17	924	923	923	923	**922**	922	922	922	923	923	923	923	924	924	925	925	925	926	926	926	926	926	926	926	**922**	926	924	24
18	927	927	928	928	928	929	930	930	931	933	934	935	936	936	937	938	939	940	940	941	942	943	944	945	927	945	935	24
19	945	946	946	946	947	947	947	947	947	948	948	947	947	946	946	945	945	945	945	945	944	944	944	944	944	948	946	24
20	944	944	944	944	944	944	943	943	943	943	943	943	942	941	941	941	941	941	940	940	940	940	940	940	940	944	942	24
21	940	940	940	941	942	943	944	945	945	947	948	948	949	949	950	950	951	951	952	952	952	952	952	952	940	952	947	24
22	952	952	952	952	952	952	952	952	952	952	952	952	951	951	951	951	951	951	951	951	951	951	951	951	951	952	952	24
23	951	950	950	949	949	948	948	948	948	948	948	949	949	950	950	951	952	953	953	953	952	952	952	953	948	953	950	24
24	954	954	956	956	957	957	958	959	959	960	960	960	959	958	958	958	958	958	958	958	958	958	959	960	954	960	958	24
25	960	961	962	963	963	963	964	965	965	966	965	964	963	962	962	962	962	963	963	963	963	962	962	961	960	966	963	24
26	960	960	960	959	959	958	958	957	958	957	957	956	955	954	954	954	954	955	955	955	955	956	956	957	954	960	957	24
27	957	957	958	958	957	957	956	955	955	954	954	953	952	952	951	951	951	951	951	951	951	951	951	951	951	958	954	24
28	952	953	955	957	957	958	959	960	961	962	963	962	961	961	960	960	961	962	964	964	965	965	966	967	952	967	961	24
29	967	968	969	970	970	970	**971**	971	971	971	971	969	968	967	966	966	967	967	967	966	965	965	965	965	965	**971**	**968**	24
30	964	963	963	963	963	963	963	963	963	964	964	963	962	961	961	962	962	963	963	963	962	961	961	961	961	964	963	24
31	961	960	960	960	961	960	960	960	960	960	960	959	958	958	958	958	958	958	958	958	958	957	956	955	955	961	959	24
HOURLY MAX	967	968	969	970	970	970	971	971	971	971	971	969	968	967	966	966	967	967	967	966	965	965	966	967				
HOURLY AVG	947	947	947	947	947	947	947	947	947	948	948	948	947	947	947	947	947	947	948	947	947	947	947	947				

STATUS FLAG CODES

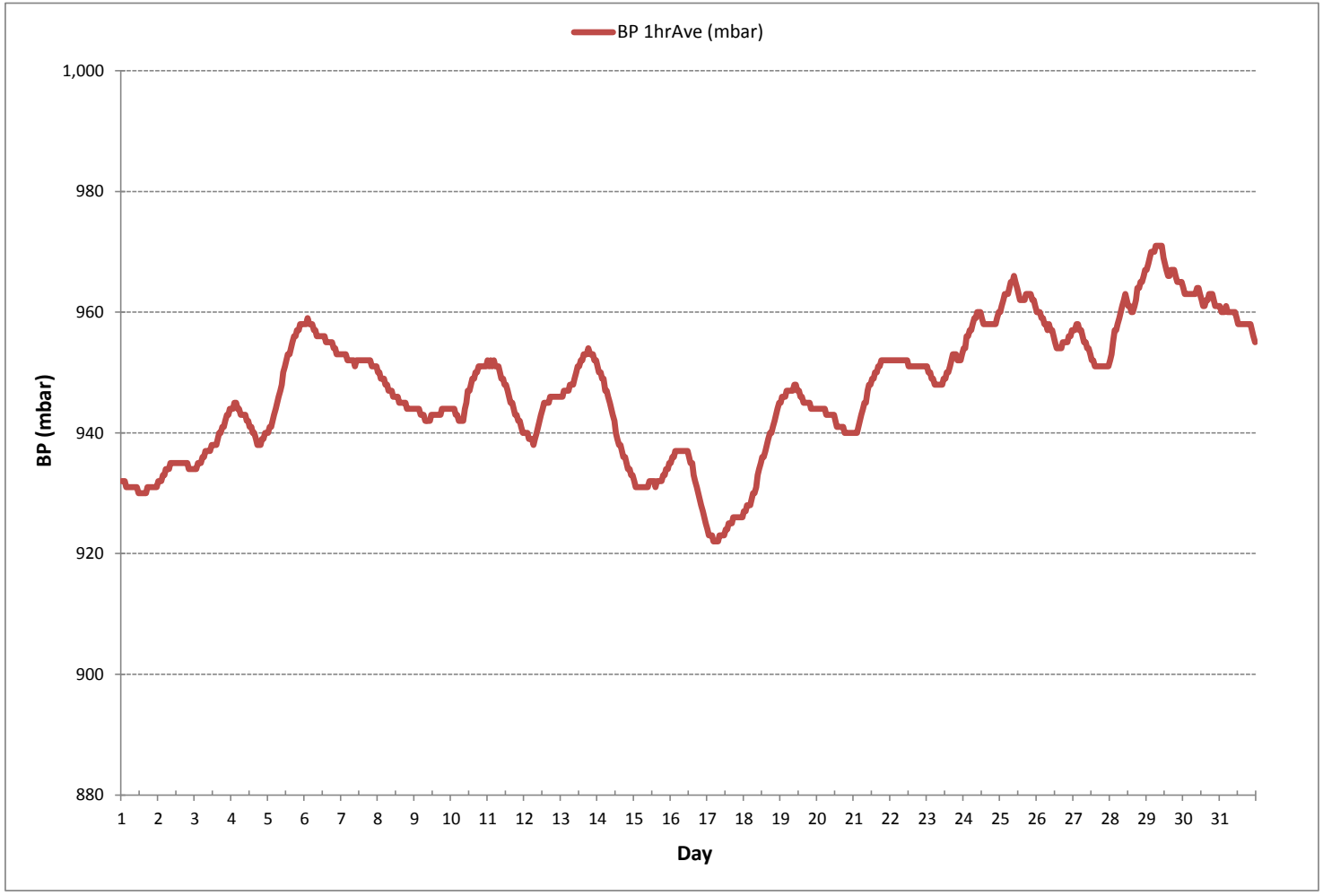
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	922	mbar	@ HOUR	4	ON DAY	17	
MAXIMUM 1-HR AVERAGE:	971	mbar	@ HOUR	6	ON DAY	29	
MAXIMUM 24-HR AVERAGE:	968	mbar			ON DAY	29	
			OPERATIONAL TIME:			744	hrs
			AMD OPERATION UPTIME:			100.0	%
STANDARD DEVIATION:	11		MONTHLY AVERAGE:			947	mbar

BAROMETRIC PRESSURE Hourly Averages (BP mbar)



AMBIENT TEMPERATURE

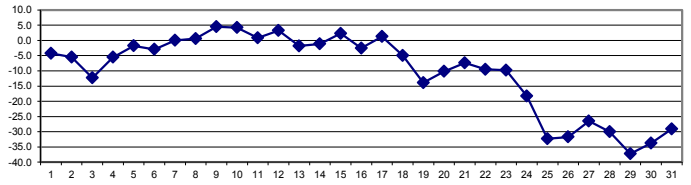
AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)

HR START (MST) / HR END (MST)	0:00 0:59	1:00 1:59	2:00 2:59	3:00 3:59	4:00 4:59	5:00 5:59	6:00 6:59	7:00 7:59	8:00 8:59	9:00 9:59	10:00 10:59	11:00 11:59	12:00 12:59	13:00 13:59	14:00 14:59	15:00 15:59	16:00 16:59	17:00 17:59	18:00 18:59	19:00 19:59	20:00 20:59	21:00 21:59	22:00 22:59	23:00 23:59	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.
DAY																												
1	-4.0	-4.3	-7.4	-7.6	-6.4	-5.2	-4.3	-4.9	-7.4	-9.2	-8.2	-5.6	-2.8	-1.6	-1.7	-1.6	-1.6	-1.6	-1.6	-1.8	-2.3	-3.1	-3.5	-3.8	-9.2	-1.6	-4.2	24
2	-3.3	-3.0	-3.1	-3.1	-3.5	-3.9	-5.1	-6.9	-7.1	-6.7	-5.6	-4.6	-4.2	-3.5	-3.5	-4.3	-4.7	-5.0	-5.1	-6.5	-10.5	-9.2	-9.8	-9.9	-10.5	-3.0	-5.5	24
3	-11.0	-13.4	-14.5	-13.4	-12.3	-13.4	-15.7	-14.1	-12.2	-12.1	-10.6	-10.1	-9.6	-9.2	-8.6	-8.9	-9.4	-10.1	-10.9	-12.8	-14.9	-16.8	-16.2	-14.9	-16.8	-8.6	-12.3	24
4	-14.7	-17.6	-14.1	-12.3	-10.9	-9.9	-8.7	-8.7	-8.0	-7.7	-6.7	-4.6	-3.4	-2.4	-2.4	-2.3	-2.1	-1.5	-0.5	0.6	0.2	1.1	1.6	1.9	-17.6	1.9	-5.5	24
5	1.6	2.0	2.0	1.6	1.9	1.7	2.0	1.4	0.4	0.3	1.0	1.4	1.9	2.1	1.9	2.0	-0.9	-5.1	-8.0	-9.1	-10.0	-11.4	-11.3	-11.5	-11.5	2.1	-1.8	24
6	-10.4	-7.8	-9.1	-9.3	-8.0	-5.0	-4.3	-3.6	-3.5	-2.3	-1.4	-0.8	0.1	0.4	0.6	0.2	0.0	-0.5	-0.4	-0.5	-0.1	-0.4	-2.2	-2.5	-10.4	0.6	-3.0	24
7	0.1	0.0	0.1	0.6	0.2	0.3	0.6	0.9	1.0	1.4	2.9	4.0	4.0	4.7	4.2	2.9	0.9	-1.6	-3.5	-3.9	-5.0	-6.5	-6.6	-1.2	-6.6	4.7	0.0	24
8	-1.6	-2.9	-2.6	-2.3	-1.8	-0.8	-1.3	-3.1	-6.7	-2.2	0.0	2.9	4.5	4.2	4.0	3.5	2.8	3.6	3.6	2.7	1.5	1.5	1.9	2.6	-6.7	4.5	0.6	24
9	2.2	2.6	4.9	4.4	4.2	2.8	3.3	2.2	4.8	5.4	5.9	6.1	6.2	6.2	6.0	5.6	4.3	4.3	4.0	4.2	4.9	5.0	5.2	4.3	2.2	6.2	**4.5**	24
10	4.5	3.8	4.8	5.5	5.9	5.2	5.5	5.4	5.8	6.5	6.0	5.6	5.8	**6.7**	6.7	5.4	4.2	4.1	4.5	3.8	1.9	-2.1	-2.3	-2.0	-2.3	**6.7**	4.2	24
11	-3.6	-3.3	-2.2	-4.0	-4.5	-5.1	-4.7	-3.8	-3.0	-1.1	-0.3	2.4	4.3	4.9	5.1	4.6	4.2	4.5	3.3	3.5	4.1	4.3	4.9	6.2	-5.1	6.2	0.9	24
12	6.0	4.9	2.2	3.0	1.8	1.9	3.2	3.8	3.1	2.2	2.5	5.0	5.9	5.8	5.5	4.4	2.0	2.8	3.1	2.7	2.4	2.0	1.6	0.6	0.6	6.0	3.3	24
13	0.2	0.2	-0.2	-1.5	-2.8	-3.2	-2.7	-1.2	0.1	1.6	2.0	2.5	2.7	3.3	3.5	1.9	-2.6	-4.6	-5.1	-6.0	-7.6	-8.0	-8.5	-7.9	-8.5	3.5	-1.8	24
14	-8.9	-7.9	-8.2	-8.6	-8.7	-5.0	-5.2	-5.2	-4.1	-2.5	-1.1	-0.1	1.0	2.0	2.7	2.7	3.0	3.5	3.3	3.5	3.7	3.9	4.3	3.9	-8.9	4.3	-1.2	24
15	3.4	4.0	4.0	3.9	3.7	3.6	3.4	2.8	3.5	3.5	3.5	3.2	3.7	3.7	3.3	2.6	1.4	0.7	0.1	-0.6	-0.7	-1.0	-0.7	-0.7	-1.0	4.0	2.3	24
16	-1.5	-1.6	-1.8	-2.4	-2.6	-3.9	-4.3	-4.0	-4.7	-5.3	-4.1	-3.0	-2.6	-2.6	-3.3	-3.3	-2.5	-2.8	-1.8	-1.2	-0.9	-1.1	-0.9	0.4	-5.3	0.4	-2.6	24
17	-0.1	0.8	1.1	1.3	1.1	1.5	1.8	1.7	2.4	2.1	2.1	2.3	2.6	2.8	3.0	2.8	2.2	1.7	1.1	0.5	-0.1	-0.8	-1.6	-2.0	-2.0	3.0	1.3	24
18	-2.2	-2.7	-2.3	-1.9	-1.9	-2.2	-2.8	-2.8	-2.7	-2.7	-3.3	-3.7	-4.0	-4.1	-4.4	-4.7	-5.2	-5.9	-7.4	-8.8	-9.5	-10.3	-11.2	-12.3	-12.3	-1.9	-5.0	24
19	-12.6	-13.0	-13.2	-13.2	-13.3	-13.4	-14.7	-16.8	-18.5	-19.3	-18.1	-16.1	-12.2	-11.8	-11.9	-11.8	-13.8	-15.2	-14.2	-13.2	-12.6	-12.3	-11.9	-11.6	-19.3	-11.6	-13.9	24
20	-11.4	-11.2	-11.4	-10.4	-10.0	-10.0	-9.7	-9.7	-10.6	-10.7	-10.4	-10.3	-10.1	-9.6	-9.6	-10.3	-11.0	-10.9	-10.4	-10.4	-10.6	-9.3	-8.3	-7.8	-11.4	-7.8	-10.2	24
21	-7.2	-6.1	-6.8	-7.2	-8.5	-9.3	-8.7	-8.9	-8.9	-8.7	-8.3	-7.8	-7.3	-6.9	-6.7	-6.4	-6.2	-6.2	-6.3	-6.5	-6.4	-6.6	-6.7	-7.7	-9.3	-6.1	-7.3	24
22	-8.2	-8.9	-8.9	-10.0	-10.5	-10.8	-10.9	-12.2	-13.0	-12.8	-11.8	-10.9	-10.1	-9.2	-8.9	-8.5	-8.1	-8.3	-8.4	-7.6	-7.5	-7.5	-7.3	-7.7	-13.0	-7.3	-9.5	24
23	-7.9	-7.7	-8.0	-8.3	-8.2	-8.1	-7.8	-7.4	-7.5	-7.5	-7.3	-7.2	-7.1	-8.0	-8.7	-10.8	-14.0	-18.0	-20.1	-14.5	-11.2	-10.3	-9.6	-10.2	-20.1	-7.1	-9.8	24
24	-10.7	-11.0	-12.8	-13.5	-14.3	-15.6	-17.0	-17.7	-19.0	-22.7	-25.7	-23.7	-21.0	-19.0	-18.7	-18.3	-18.6	-18.7	-18.9	-19.1	-19.1	-19.7	-21.2	-23.3	-25.7	-10.7	-18.3	24
25	-25.5	-28.0	-30.4	-31.8	-31.4	-32.0	-34.7	-36.1	-36.7	-36.9	-35.2	-31.5	-28.2	-25.9	-26.0	-27.6	-29.7	-33.6	-34.8	-35.1	-35.3	-35.8	-36.4	-36.4	-36.9	-25.5	-32.3	24
26	-35.6	-35.6	-36.1	-36.5	-36.6	-36.6	-35.9	-35.3	-36.6	-36.9	-34.9	-31.8	-28.7	-25.6	-25.3	-25.4	-25.7	-26.4	-27.3	-27.1	-27.9	-29.3	-31.8	-32.9	-36.9	-25.3	-31.7	24
27	-33.8	-34.6	-36.2	-36.3	-34.9	-33.7	-33.2	-31.4	-29.8	-28.3	-26.5	-25.1	-23.6	-22.5	-21.7	-21.0	-20.5	-20.6	-20.2	-19.9	-21.8	-21.5	-19.7	-19.1	-36.3	-19.1	-26.5	24
28	-18.9	-20.6	-22.4	-24.3	-25.5	-27.0	-28.4	-29.5	-32.0	-34.4	-33.7	-30.7	-27.2	-26.6	-26.6	-27.2	-29.3	-33.9	-35.6	-36.0	-36.3	-36.7	-38.2	-38.5	-38.5	-18.9	-30.0	24
29	-39.2	-39.6	-40.4	**-41.2**	-40.9	-40.5	-40.4	-40.7	-40.8	-41.0	-38.9	-35.9	-32.2	-29.1	-29.9	-29.9	-32.7	-35.9	-37.5	-37.7	-37.1	-37.3	-37.9	-37.9	**-41.2**	-29.1	-37.3	24
30	-37.4	-37.7	-38.4	-38.9	-38.1	-38.4	-38.8	-38.6	-38.5	-38.1	-36.2	-32.7	-28.9	-27.4	-26.7	-27.5	-30.1	-33.6	-33.6	-33.1	-29.9	-29.4	-29.0	-29.6	-38.9	-26.7	-33.8	24
31	-30.5	-30.4	-30.0	-31.0	-31.2	-31.0	-31.3	-32.4	-33.5	-32.9	-31.5	-27.7	-24.5	-24.0	-24.5	-25.3	-26.7	-27.4	-27.8	-28.6	-29.7	-29.9	-29.6	-26.8	-33.5	-24.0	-29.1	24
HOURLY MAX	6.0	4.9	4.9	5.5	5.9	5.2	5.5	5.4	5.8	6.5	6.0	6.1	6.2	6.7	6.7	5.6	4.3	4.5	4.5	4.2	4.9	5.0	5.2	6.2				
HOURLY AVG	-10.4	-10.7	-11.0	-11.2	-11.2	-11.2	-11.3	-11.5	-11.7	-11.6	-10.8	-9.3	-7.9	-7.2	-7.2	-7.6	-8.7	-9.7	-10.2	-10.3	-10.6	-10.9	-11.1	-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

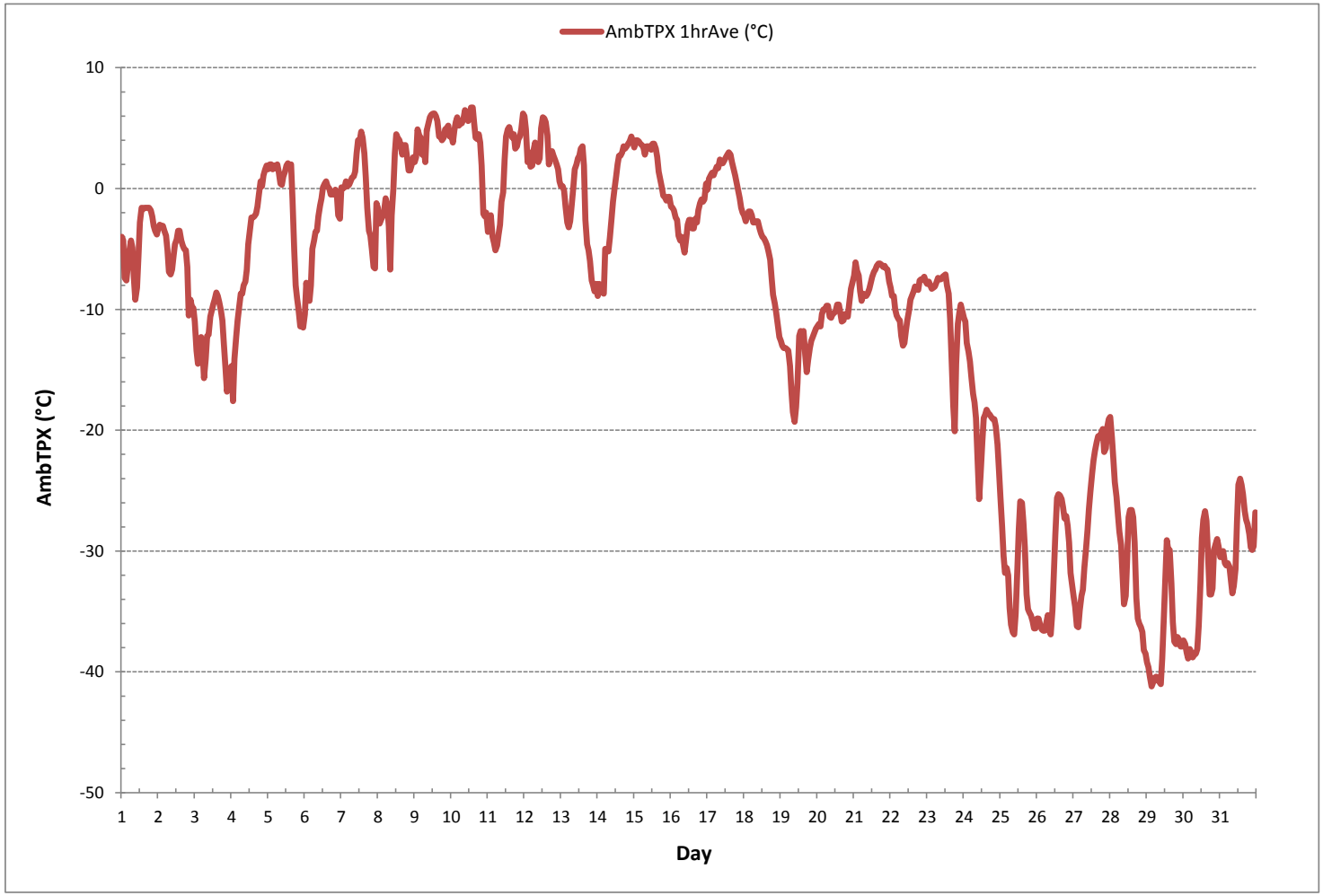
24 HR AVERAGES December 2017



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	-41.2	°C	@ HOUR	3	ON DAY	29	
MAXIMUM 1-HR AVERAGE:	6.7	°C	@ HOUR	13	ON DAY	10	
MAXIMUM 24-HR AVERAGE:	4.5	°C			ON DAY	9	
			OPERATIONAL TIME:			744	hrs
			AMD OPERATION UPTIME:			100.0	%
STANDARD DEVIATION:	13.2		MONTHLY AVERAGE:			-10.2	°C

AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)



STATION TEMPERATURE

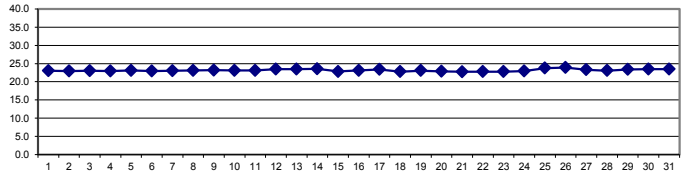
STATION TEMPERATURE Hourly Averages (StnTPX °C)

HR START (MST) / HR END (MST)	0:00 0:59	1:00 1:59	2:00 2:59	3:00 3:59	4:00 4:59	5:00 5:59	6:00 6:59	7:00 7:59	8:00 8:59	9:00 9:59	10:00 10:59	11:00 11:59	12:00 12:59	13:00 13:59	14:00 14:59	15:00 15:59	16:00 16:59	17:00 17:59	18:00 18:59	19:00 19:59	20:00 20:59	21:00 21:59	22:00 22:59	23:00 23:59	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.
DAY																												
1	23.3	22.8	23.0	23.0	23.1	23.1	23.2	22.9	22.9	23.0	23.1	23.2	23.0	23.2	23.0	23.0	23.0	23.0	23.0	23.0	22.9	22.9	22.8	22.6	22.6	23.3	23.0	24
2	23.0	23.1	23.0	23.0	22.8	22.7	22.7	23.1	22.9	22.9	23.1	22.8	22.7	23.4	22.9	22.7	22.5	23.4	22.6	23.1	22.8	22.9	22.9	23.2	22.5	23.4	22.9	24
3	23.0	22.9	23.3	23.2	23.0	23.2	23.2	23.0	23.1	23.1	23.2	23.0	22.9	23.2	23.1	23.0	22.9	22.8	23.0	23.1	22.9	23.1	23.0	23.0	22.8	23.3	23.1	24
4	22.9	23.0	23.1	23.2	23.1	23.0	23.1	23.1	22.9	23.1	23.0	23.0	22.9	23.1	22.8	22.7	22.6	22.5	22.6	22.7	22.8	22.9	23.1	23.2	22.5	23.2	22.9	24
5	23.4	23.2	23.1	23.1	23.0	22.9	22.8	22.6	22.6	22.5	22.6	22.9	23.1	23.3	23.6	23.8	23.9	23.8	23.3	22.7	23.0	22.9	22.9	23.2	22.5	23.9	23.1	24
6	22.9	23.2	22.9	22.9	22.8	22.7	22.9	22.9	22.6	22.2	22.9	22.6	22.7	22.9	23.1	23.3	23.4	23.4	23.4	23.3	23.2	23.2	23.1	22.9	22.2	23.4	23.0	24
7	22.8	22.8	22.7	22.8	22.8	22.8	22.8	22.9	22.9	23.0	23.3	23.8	24.2	23.4	22.7	23.1	22.3	23.0	23.1	23.0	22.8	22.7	23.1	23.2	22.3	24.2	23.0	24
8	22.8	23.3	22.8	22.9	23.1	22.7	23.0	23.0	23.0	22.8	23.3	23.6	24.0	24.1	22.5	22.0	23.2	23.6	23.8	23.5	22.1	22.8	23.2	23.4	22.0	24.1	23.1	24
9	23.5	23.6	23.8	24.0	23.4	22.2	23.1	23.5	23.7	23.9	23.7	22.1	22.9	23.8	22.5	22.3	23.5	23.4	22.1	23.1	23.6	23.9	22.2	22.8	22.1	24.0	23.2	24
10	23.4	23.8	23.8	22.2	22.9	23.7	23.6	22.2	23.1	23.5	23.6	22.6	22.1	23.4	22.7	22.1	23.2	23.8	22.5	22.9	23.4	23.5	23.4	23.3	22.1	23.8	23.1	24
11	23.1	22.8	22.7	22.5	23.1	22.7	23.1	22.5	23.2	22.8	22.7	23.0	23.5	24.1	22.7	22.6	23.8	22.7	23.0	23.6	23.8	24.1	23.0	23.0	22.5	24.1	23.1	24
12	23.7	24.1	23.5	22.9	23.5	23.8	24.0	24.0	22.7	23.4	23.8	24.0	22.9	24.0	23.9	22.6	23.4	23.9	23.9	22.3	23.0	23.3	23.4	23.5	22.3	24.1	23.5	24
13	23.5	23.5	23.5	23.4	23.2	23.3	23.5	23.5	23.3	23.5	23.4	23.4	23.7	24.2	23.9	22.8	23.5	23.5	23.3	23.2	23.4	23.5	23.4	23.5	22.8	24.2	23.5	24
14	23.6	23.5	23.7	23.5	23.7	23.6	23.5	23.5	23.4	23.5	23.2	23.6	23.4	23.6	23.8	24.0	24.2	**24.4**	23.5	21.9	22.9	23.4	23.8	24.1	21.9	**24.4**	23.6	24
15	24.4	23.3	22.6	23.6	23.8	22.2	23.1	23.6	23.5	22.0	22.4	23.2	23.7	23.6	22.6	22.6	**21.3**	21.3	21.9	22.3	22.6	22.3	23.1	22.7	**21.3**	24.4	22.8	24
16	23.2	22.7	23.3	22.8	23.4	23.3	23.0	23.2	23.2	22.3	22.5	23.3	23.1	23.0	23.0	23.4	23.0	23.3	23.1	23.1	23.3	23.0	23.4	23.1	22.3	23.4	23.1	24
17	23.0	23.0	23.0	23.1	23.2	23.3	23.3	23.3	23.4	23.6	23.8	23.9	24.0	24.2	23.0	22.3	23.2	23.5	23.6	23.7	23.6	23.5	23.4	23.2	22.3	24.2	23.4	24
18	23.0	23.2	23.4	22.9	22.6	22.5	22.7	22.9	22.7	22.8	22.7	23.0	22.7	22.6	22.4	22.8	22.5	22.9	22.8	22.8	22.8	22.7	23.1	22.8	22.4	23.4	22.8	24
19	23.1	23.1	23.1	23.0	22.9	23.2	23.1	23.1	23.2	23.3	23.4	23.3	23.3	23.1	22.8	23.0	22.7	23.0	23.1	23.1	23.1	22.9	22.8	22.8	22.7	23.4	23.1	24
20	23.0	22.9	22.9	22.8	22.9	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.7	22.9	22.9	22.7	22.9	22.7	23.0	22.9	22.9	22.8	22.8	22.7	23.0	22.8	24
21	22.7	22.6	22.6	22.7	22.9	22.7	22.7	22.8	22.8	22.6	22.9	22.8	22.6	22.7	22.7	22.7	22.7	22.7	23.0	22.8	22.7	22.8	22.9	22.8	22.7	22.6	23.0	22.7	24
22	23.0	22.8	22.9	22.8	22.9	22.8	22.8	22.8	22.8	22.8	23.0	23.0	22.6	23.0	22.7	22.6	22.5	22.6	22.7	22.9	22.9	22.8	23.0	22.8	22.5	23.0	22.8	24
23	22.9	22.9	22.8	22.7	22.7	22.7	22.7	22.8	22.8	23.0	22.9	22.9	22.8	22.7	22.6	22.5	22.5	22.9	23.1	23.0	22.8	22.8	22.7	22.5	22.5	23.1	22.8	24
24	22.8	22.4	22.7	22.5	22.6	22.7	22.8	23.0	22.8	23.0	23.0	23.2	23.2	23.1	23.0	23.1	23.0	23.0	23.0	23.1	22.9	23.1	23.1	23.2	22.4	23.2	22.9	24
25	23.3	23.3	23.5	23.5	23.6	23.7	23.8	23.8	23.8	23.8	23.9	24.0	24.0	23.9	24.0	23.9	23.8	23.8	23.8	23.8	24.0	23.9	23.8	23.9	23.3	24.0	23.8	24
26	23.9	23.9	23.9	23.9	24.0	23.9	23.9	23.9	23.9	23.9	23.9	24.0	24.0	24.0	24.0	23.8	23.8	23.9	23.8	23.9	23.9	23.9	23.8	23.9	23.8	24.0	**23.9**	24
27	23.9	23.9	23.9	23.9	24.0	23.9	24.0	24.0	23.9	23.9	23.9	24.1	23.9	23.9	23.8	22.2	21.6	21.6	21.7	22.0	22.0	22.9	23.2	23.3	21.6	24.1	23.3	24
28	23.2	23.4	23.4	23.4	23.3	23.5	23.5	23.5	23.5	21.7	21.6	22.8	23.1	23.1	23.1	23.0	23.0	22.9	23.0	23.0	23.1	23.1	23.2	23.1	21.6	23.5	23.1	24
29	23.1	23.2	23.1	23.2	23.2	23.2	23.5	23.5	23.4	23.6	23.5	23.6	23.5	23.4	23.5	23.4	23.3	23.4	23.4	23.4	23.5	23.6	23.5	23.5	23.1	23.6	23.4	24
30	23.6	23.5	23.6	23.5	23.5	23.6	23.5	23.7	23.6	23.6	23.6	23.5	23.5	23.6	23.4	23.5	23.4	23.4	23.4	23.5	23.5	23.4	23.4	23.3	23.3	23.7	23.5	24
31	23.4	23.4	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.4	23.4	23.5	23.5	23.5	23.3	23.5	23.3	23.3	23.4	23.5	23.4	23.4	23.4	23.5	23.3	23.5	23.4	24
HOURLY MAX	24.4	24.1	23.9	24.0	24.0	23.9	24.0	24.0	23.9	23.9	23.9	24.1	24.2	24.2	24.2	24.0	24.0	24.2	24.4	23.9	23.9	24.0	24.1	23.8	24.1			
HOURLY AVG	23.2	23.2	23.2	23.1	23.2	23.1	23.2	23.2	23.2	23.1	23.2	23.2	23.2	23.4	23.1	22.9	23.0	23.2	23.0	23.0	23.1	23.2	23.2	23.2				

STATUS FLAG CODES

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

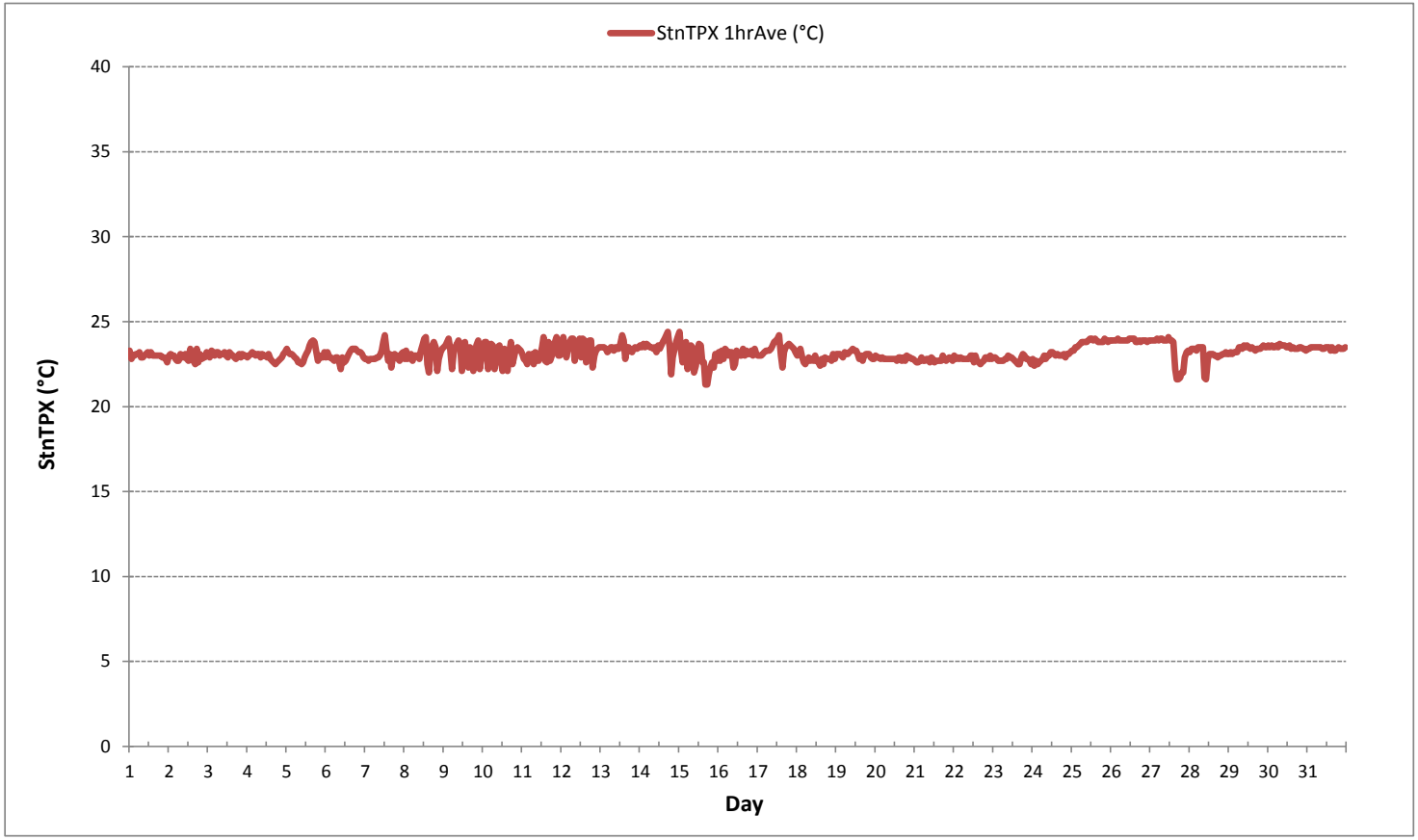
24 HR AVERAGES December 2017



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	21.3	°C	@ HOUR	16	ON DAY	15	
MAXIMUM 1-HR AVERAGE:	24.4	°C	@ HOUR	17	ON DAY	14	
MAXIMUM 24-HR AVERAGE:	23.9	°C			ON DAY	26	
			OPERATIONAL TIME:			744	hrs
			AMD OPERATION UPTIME:			100.0	%
STANDARD DEVIATION:	0.5		MONTHLY AVERAGE:			23.1	°C

STATION TEMPERATURE Hourly Averages (StnTPX °C)



APPENDIX II
EQUIPMENT CALIBRATION RESULTS

SULPHUR DIOXIDE

Thermo 43C Sulphur Dioxide Analyzer Calibration

Date:	December 15, 2017	**Barometer/B.P./units:**	Environment Canada Website	27.48	inHg
Company/Airshed:	PRAMP	**Thermometer/Station Temp:**	Data Acquisition Unit	22.33	°C
Location/Station Name:	986b	**Weather Conditions:**	Mix of sun and clouds		
Parameter:	Sulphur Dioxide	**Calibration Purpose:**	routine monthly		
Start Time 24 hr. (mst):	10:16	**Performed By/Reviewer:**	Raja Abid	Rob Fisher	
End Time 24 hr. (mst):	13:21	**Cal Gas Expiry Date:**	May 23, 2019		
Calibration Method:	Gas Dilution	**Converter Model & s/n (if applicable):**	n/a		

Analyzer:

ID# or Serial Number:	43C-62339-335	**Range ppb:**	500
Last Calibration Date:	November 9, 2017	**As Found C.F.:**	1.019
Previous C.F.:	1.000	**New C.F.:**	0.999

Calibration Standards:

Low Flow Meter ID/Expiry Date:	Defender 530 Low # 162020 expires November 22, 2018
High Flow Meter ID/Expiry Date:	Defender 530 High #148943 expires November 21, 2018
Calibrator ID/Expiry Date:	Environics id# 5212 expires February 14, 2018
Cal Gas Cylinder I.D. # :	LL 119513
Cal Gas Conc. (ppm):	50.6

Standard Calibration Points for Ranges

Point	ppb
High	380
Mid	180
Low	90

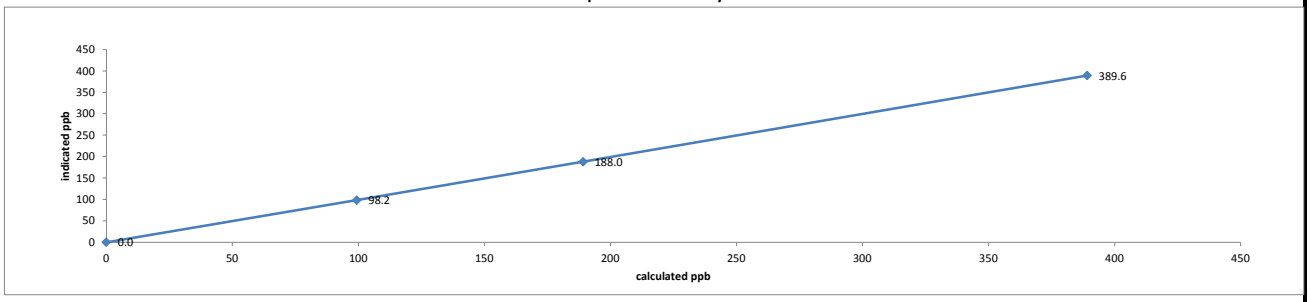
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

	Calibrator Flow Rates (cc/min)			Calculated		
Point	**Diluent**	**Cal Gas**	**Total**	**Concentration (ppb):**	**Indicated Concentration (ppb):**	**Correction Factors (C.F.):**
as found zero	6484	0.00	6484	0.0	1.0	n/a
as found high	6435	49.87	6484	389.1	383.0	1.019
adjusted zero	6484	0.00	6484	0.0	0.0	n/a
adjusted high	6435	49.87	6484	389.1	389.6	0.999
mid	6500	24.39	6525	189.2	188.0	1.006
low	6521	12.84	6534	99.4	98.2	1.012
calibrator zero	6484	0.00	6484	0.0	0.0	n/a
					Average C.F.=	1.006

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)=	**0.16%**	**± 3% F.S.**
% change in C.F. from last cal=	**-1.87%**	**± 10%**

Thermo 43C Sulphur Dioxide Analyzer Calibration



As found:		**As left:**	
Bkg:	74.1	Bkg:	75.5
Coef:	0.873	Coef:	0.884
Pmt:	-654 V	Pmt:	-654 V
Battery:	3.3 V	Battery:	3.3 V
Internal:	28.9 C	Internal:	30.2 C
Chamber:	45.4 C	Chamber:	45.4 C
Pressure:	448.9 mmHg	Pressure:	448.8 mmHg
Flow:	0.780 LPM	Flow:	0.780 LPM
Intensity:	38057 Hz	Intensity:	38057 Hz
Converter:	n/a	Converter:	n/a
Converter Set:	n/a	Converter Set:	n/a
Averaging Time:	120 sec	Averaging Time:	120 sec
Expected Value:	212.0	Expected Value:	220.2

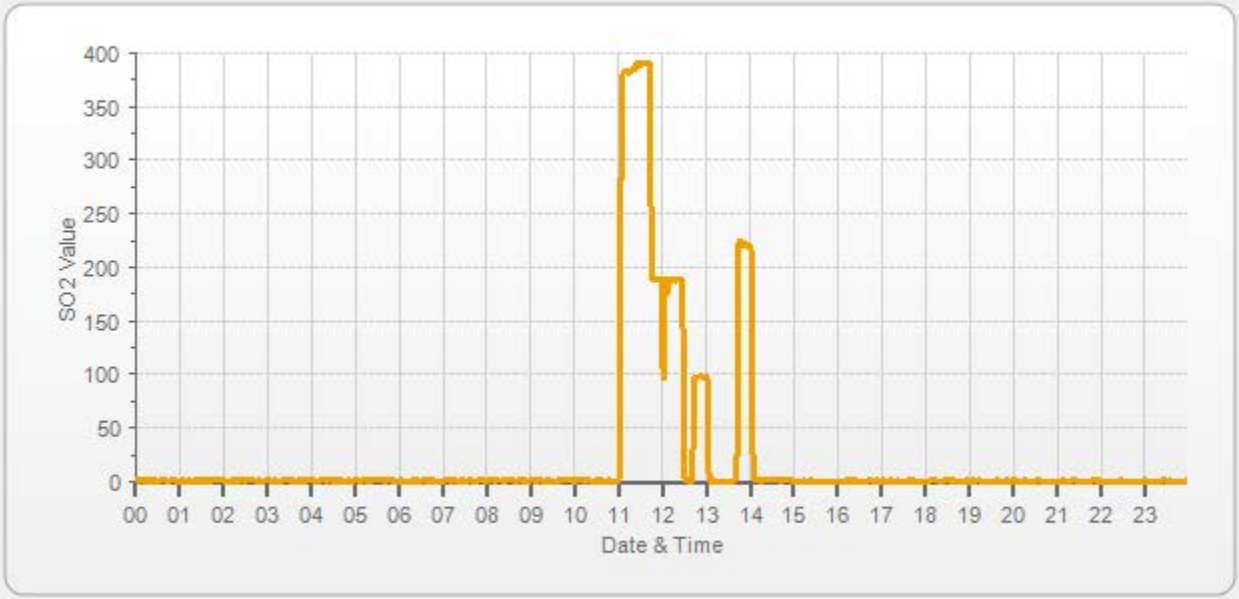
Comments:

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] Station: PRAMP_986 Daily: 17/12/15 Type: AVG 1 Min. [1 Min.]



TOTAL REDUCED SULPHUR

Thermo 43I-TLE Total Reduced Sulphur Analyzer Calibration

Date:	December 15, 2017	**Barometer/B.P./units:**	Environment Canada Website	27.48	inHg
Company/Airshed:	PRAMP	**Thermometer/Station Temp:**	Data Acquisition Unit	22.33	°C
Location/Station Name:	986b	**Weather Conditions:**	Mix of sun and clouds		
Parameter:	Total Reduced Sulphur	**Calibration Purpose:**	routine monthly		
Start Time 24 hr. (mst):	13:24	**Performed By/Reviewer:**	Raja Abid	Rob Fisher	
End Time 24 hr. (mst):	17:12	**Cal Gas Expiry Date:**	December 1, 2018		
Calibration Method:	Gas Dilution	**Converter Model & s/n (if applicable):**	CD NOVA-CDN 101#316		

Analyzer:

ID# or Serial Number:	1152940011	**Range ppb:**	100
Last Calibration Date:	November 9, 2017	**As Found C.F.:**	1.013
Previous C.F.:	1.000	**New C.F.:**	1.000

Calibration Standards:

Low Flow Meter ID/Expiry Date:	Defender 530 Low # 162020 expires November 22, 2018
High Flow Meter ID/Expiry Date:	Defender 530 High #148943 expires November 21, 2018
Calibrator ID/Expiry Date:	Environics id# 4760 expires February 15, 2018
Cal Gas Cylinder I.D. # :	BLM 001927
Cal Gas Conc. (ppm):	10.3

Standard Calibration Points for Ranges

Point	ppb
High	78
Mid	38
Low	19

SO2 Scrubber Check (10 minutes):

Start/End Time 24 hr.:	14:00/14:10
SO2 Analyzer Range:	500
Target Concentration (ppb):	380
As Found Zero:	0.0
Analyzer Response: (ppb):	0.0
Zero Corrected Result (ppb):	0.0

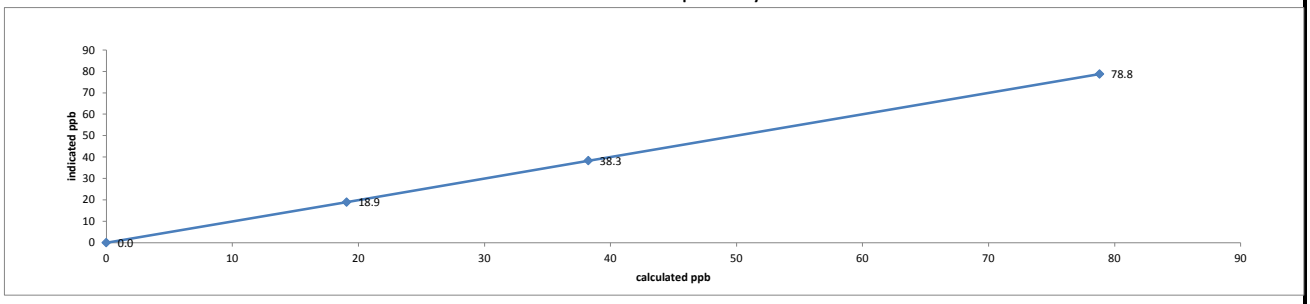
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated	Indicated Concentration (ppb):	Correction Factors (C.F.):
Point	**Diluent**	**Cal Gas**	**Total**	**Concentration (ppb):**		
as found zero	8078	0.00	8078	0.0	0.1	n/a
as found high	8017	61.82	8079	78.8	77.9	1.013
adjusted zero	8078	0.00	8078	0.0	0.0	n/a
adjusted high	8017	61.82	8079	78.8	78.8	1.000
mid	8031	29.93	8061	38.2	38.3	0.999
low	8054	14.94	8069	19.1	18.9	1.009
calibrator zero	8078	0.00	8078	0.0	0.2	n/a
					Average C.F.=	1.003

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)=	**0.06%**	**± 3% F.S.**
% change in C.F. from last cal=	**-1.31%**	**± 10%**

Thermo 43I-TLE Total Reduced Sulphur Analyzer Calibration



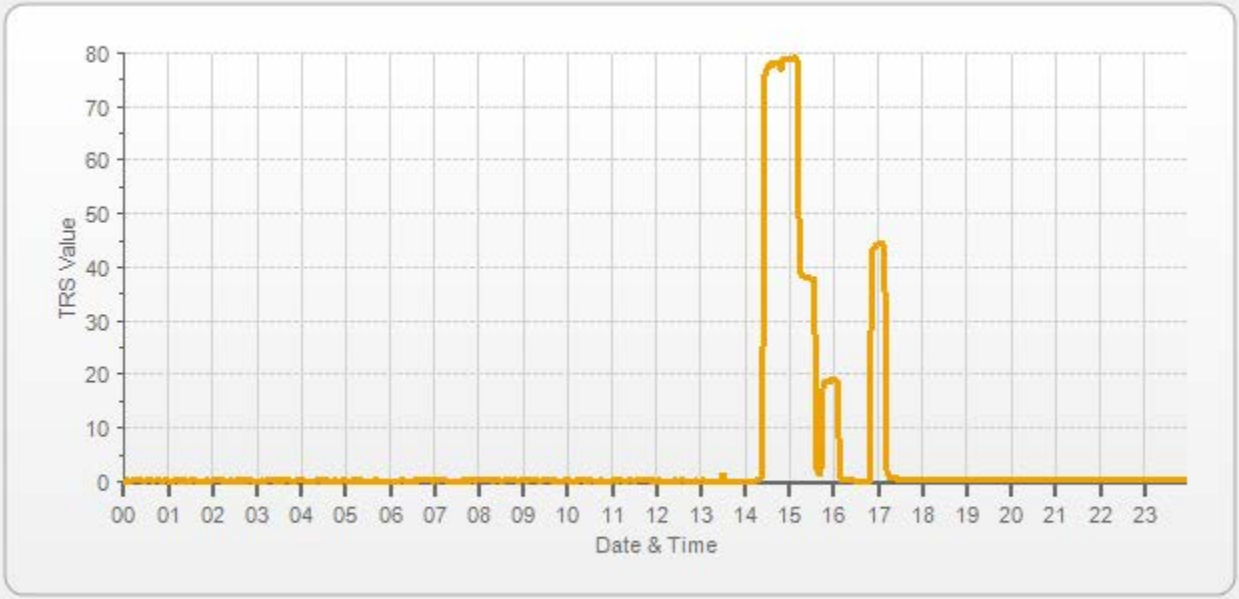
As found:		**As left:**	
Bkg:	1.96	Bkg:	1.88
Coef:	0.978	Coef:	0.999
Pmt:	-687.5 V	Pmt:	-687.1 V
Flash:	971 V	Flash:	970 V
Internal:	34.3 C	Internal:	32.8 C
Chamber:	45.0 C	Chamber:	44.9 C
Perm Oven Gas:	45.00 C	Perm Oven Gas:	45.00 C
Perm Oven Heater:	44.25 C	Perm Oven Heater:	44.25 C
Pressure:	647.7 mmHg	Pressure:	648.3 mmHg
Sample Flow:	0.463 L/min	Sample Flow:	0.463 L/min
Lamp Intensity:	91 %	Lamp Intensity:	90 %
Converter:	820 C	Converter:	820 C
Converter Set:	820 C	Converter Set:	820 C
Averaging Time:	120 sec	Averaging Time:	120 sec
Expected Value:	42.7	Expected Value:	44.5

Comments:

The analyzer cooling fan filter(s) were cleaned.

The manifold blower was found to be working normally.

TRS[ppb] Station: PRAMP_986 Daily: 17/12/15 Type: AVG 1 Min. [1 Min.]



Thermo 43I-TLE Total Reduced Sulphur Analyzer Calibration

Date:	December 27, 2017	**Barometer/B.P./units:**	Environment Canada Website	28.24	inHg
Company/Airshed:	PRAMP	**Thermometer/Station Temp:**	Data Acquisition Unit	20.75	°C
Location/Station Name:	986b	**Weather Conditions:**	Cloudy/Overcast		
Parameter:	Total Reduced Sulphur	**Calibration Purpose:**	repeat		
Start Time 24 hr. (mst):	16:29	**Performed By/Reviewer:**	Raja Abid	Tom Bourque	
End Time 24 hr. (mst):	20:28	**Cal Gas Expiry Date:**	December 1, 2018		
Calibration Method:	Gas Dilution	**Converter Model & s/n (if applicable):**	CD NOVA-CDN 101#316		

Analyzer:

ID# or Serial Number:	1152940011	**Range ppb:**	100
Last Calibration Date:	December 15, 2018	**As Found C.F.:**	1.058
Previous C.F.:	1.000	**New C.F.:**	1.003

Calibration Standards:

Low Flow Meter ID/Expiry Date:	Defender 530 Low # 162020 expires November 22, 2018
High Flow Meter ID/Expiry Date:	Defender 530 High #148943 expires November 21, 2018
Calibrator ID/Expiry Date:	Environics id# 4760 expires February 15, 2018
Cal Gas Cylinder I.D. # :	BLM 001927
Cal Gas Conc. (ppm):	10.3

Standard Calibration Points for Ranges

Point	ppb
High	**78**
Mid	**38**
Low	**19**

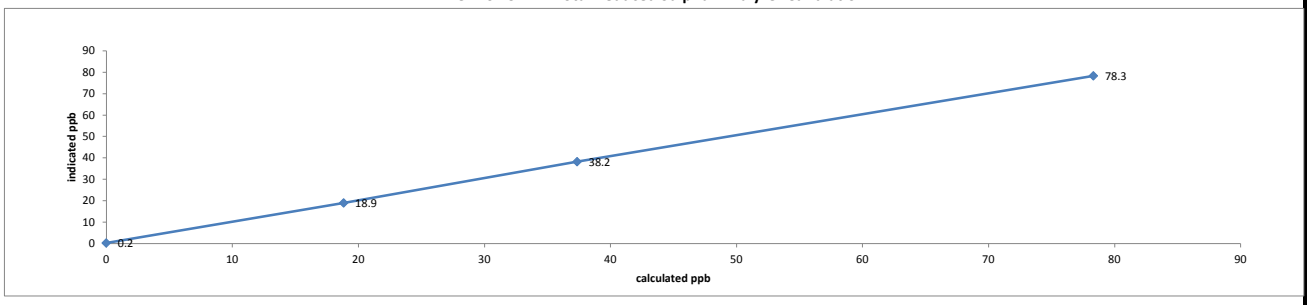
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated	Indicated Concentration (ppb):	Correction Factors (C.F.):
Point	**Diluent**	**Cal Gas**	**Total**	**Concentration (ppb):**		
as found zero	7538	0.00	7538	0.0	0.2	n/a
as found high	7506	57.52	7563	78.3	74.2	1.058
adjusted zero	7538	0.00	7538	0.0	0.2	n/a
adjusted high	7506	57.52	7563	78.3	78.3	1.003
mid	7946	28.93	7975	37.4	38.2	0.983
low	7949	14.56	7963	18.8	18.9	1.007
calibrator zero	7538	0.00	7538	0.0	0.0	n/a
					Average C.F.=	0.998

Linear Regression/Calibration Results:

		LIMITS
Correlation Coefficient =	**1.000**	**> or = 0.995**
Slope =	**1.002**	**0.95-1.05**
b (Intercept as % of full scale)=	**-0.32%**	**± 3% F.S.**
% change in C.F. from last cal=	**-5.85%**	**± 10%**

Thermo 43I-TLE Total Reduced Sulphur Analyzer Calibration



	As found:		As left:
Bkg:	1.85	Bkg:	1.94
Coef:	0.999	Coef:	1.046
Pmt:	-687.5 V	Pmt:	-686.4
Flash:	976 V	Flash:	971 V
Internal:	33.4 C	Internal:	33.2 C
Chamber:	45.1 C	Chamber:	45.2 C
Perm Oven Gas:	45.00 C	Perm Oven Gas:	45.00 C
Perm Oven Heater:	44.25 C	Perm Oven Heater:	44.25 C
Pressure:	662.0 mmHg	Pressure:	661.7 mmHg
Sample Flow:	0.470 L\min	Sample Flow:	0.472 L\min
Lamp Intensity:	91 %	Lamp Intensity:	91 %
Converter:	820 C	Converter:	820 C
Converter Set:	820 C	Converter Set:	820 C
Averaging Time:	120 sec	Averaging Time:	120 sec
Expected Value:	42.5	Expected Value:	42.4

Comments:

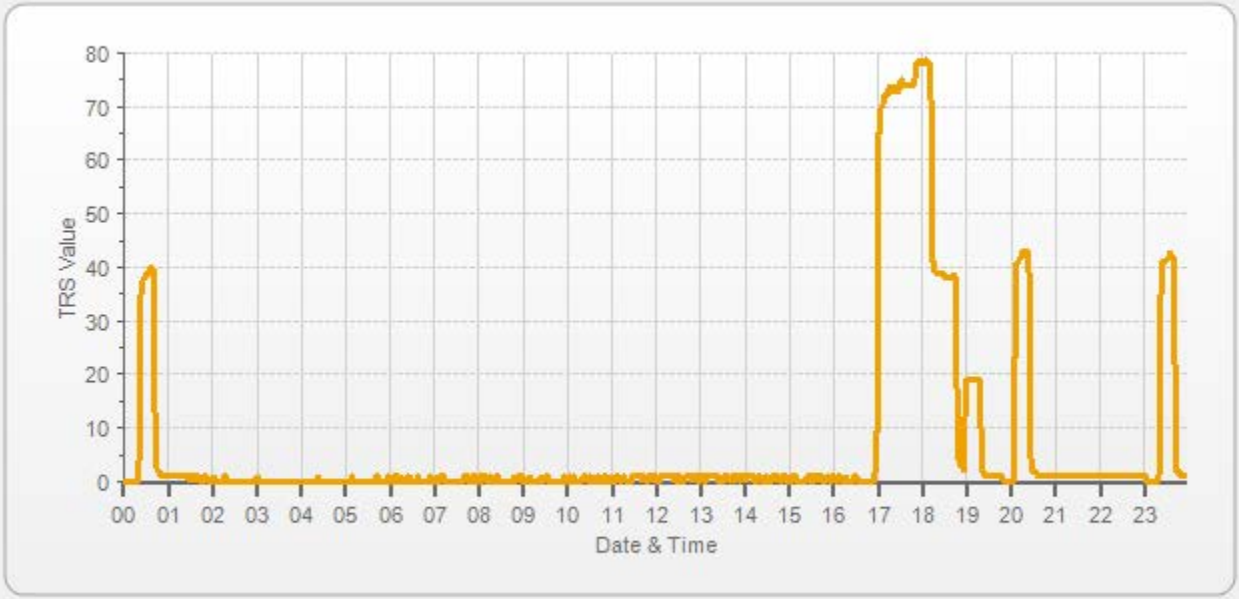
The analyzer cooling fan filter(s) were cleaned.

The manifold blower was found to be working normally.

No zero adjustment was required/made. The "as found" zero value was copied to the adjusted zero value field for linearity calculation purposes.

Repeat calibration performed due to drift in Daily IZS. As found high was extended to demonstrate stability.

TRS[ppb] Station: PRAMP_986 Daily: 17/12/27 Type: AVG 1 Min. [1 Min.]



TOTAL HYDROCARBON

Thermo 55i Methane/Non-Methane Analyzer Calibration

Date:	December 15, 2017	**Barometer/B.P./units:**	Environment Canada Website	27.48	inHg
Company/Airshed:	PRAMP	**Thermometer/Station Temp:**	Data Acquisition Unit	22.33	°C
Location/Station Name:	986b	**Weather Conditions:**	Mix of sun and clouds		
Parameter:	CH4 / NMHC / THC	**Calibration Purpose:**	routine monthly		
Start/End Time 24 hr. (mst):	10:16/14:07	**Performed By/Reviewer:**	Raja Abid	Rob Fisher	
Calibration Method:	Gas Dilution	**Cal Gas Expiry Date:**	November 25, 2023		

Analyzer:

ID# or Serial Number:	1022143392
Measured Flow:	1060.7 cc/min
Last Calibration Date:	November 9, 2017
Range ppm:	20 CH4/20 NMHC/40 THC

Correction Factors:

	Previous C.F.:	As Found C.F.:	New C.F.:
CH_4 =	1.000	0.999	1.000
NMHC =	0.999	0.992	1.001
THC =	0.999	0.995	1.000

Calibration Standards:

Low Flow Meter ID/Expiry Date:	Defender 530 Low # 162020 expires November 22, 2018		
High Flow Meter ID/Expiry Date:	Defender 530 High #148943 expires November 21, 2018		
Calibrator ID/Expiry Date:	Environics id# 4760 expires February 15, 2018		
Cal Gas Cylinder I.D. # :	LL 86139		
CH4 Cylinder Conc.=	599.0	211.0	**=C_3H_8 Cylinder Conc.**
CH_4 expressed as C_3H_8=	580.3	1179.3	**=total CH4 equivalent**

Standard Calibration Points for Analyzer Range of 20/20/40 ppm

Point	CH4	NMHC	THC
High	13.00	13.00	26.00
Mid	7.00	7.00	14.00
Low	3.00	3.00	6.00

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

Calibrator Flow Rates (cc/min)				Calculated CH_4 (ppm)	Calculated NMHC (ppm)	Calculated THC (ppm)	Indicated CH_4 (ppm)	Indicated NMHC (ppm)	Indicated THC (ppm)	Correction Factors:		
Point	**Diluent**	**Cal Gas**	**Total Flow**							**CH_4**	**NMHC**	**THC**
as found zero	2681	0.00	2681	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
as found high	2617	65.78	2683	14.69	14.23	28.91	14.70	14.34	29.06	0.999	0.992	0.995
adjusted zero	2681	0.00	2681	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
adjusted high	2617	65.78	2683	14.69	14.23	28.91	14.68	14.22	28.90	1.000	1.001	1.000
mid	2646	33.66	2680	7.52	7.29	14.81	7.50	7.29	14.79	1.003	1.000	1.001
low	2682	17.33	2699	3.85	3.73	7.57	3.91	3.77	7.65	0.984	0.988	0.990
calibrator zero	2681	0.00	2681	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
									Average C.F.=	0.996	0.996	0.997

Linear Regression/Calibration Results:

	CH_4	NMHC	THC	LIMITS
Correlation Coefficient =	1.000	1.000	1.000	> or = 0.995
Slope =	0.998	0.998	0.998	0.95-1.05
b (Intercept as % of full scale)=	0.11%	0.10%	0.08%	± 3% F.S.
% change in C.F. from last cal=	0.09%	0.69%	0.40%	± 10%

As Left Instrument Diagnostics:

Interface Board Voltages:	Bias Supply:	-311.7		Calibration History cnt'd:	NM Peak Area:	74020
Temperatures:	Detector Oven:	175.0		Crucial Settings:	Methane Start:	n/a
	Filter:	175.0			Methane End:	n/a
	Column Oven:	75.4			Backflush:	n/a
	Internal:	37.0			NMHV Start:	n/a
Cylinder Pressures/reg.:	Carrier:	950	50		NMHC End:	n/a
	Fuel:	1700	50	Run History>1:	Date:	15Dec17
	Span Gas:	2000	28		Time:	10:47
	Zero Air Generator:	47			CH_4 PK HT:	0
Internal Pressures:	Carrier:	31.4 psi			CH_4 RT:	8.0
	Fuel:	40.5 psi			CH_4 Baseline:	1598
	Air:	32.4 psi			CH_4 LOD:	17
FID Status:	Status:	LIT			CH_4 SD:	5
	Counts:	19981			CH_4 CONC:	0.00
	Flame:	319.6			NM PK HT:	0
	Det Base:	175.0			NM Peak Area:	0
Flame and Power Stats:	Last Power On:	7OCT 2017@02:39			NM CONC:	0.00
	Flameouts:	4			NM Base Start:	1597
	Det Oven at Start:	37.4			NM Base End:	1596
	Col Oven at Start:	34.9			NM LOD:	9
Calibration History:	Time:	09Nov17@13:29			NM Start IDX:	10
	Type:	SPAN			NM End IDX:	48
	Status:	GOOD			NM Max Slope:	3.4e-01
	Check/Adjust:	ADJUST			NM Min Slope:	-3.2e-01
	CH_4 Span Conc:	14.56			NM PT Count:	0
	CH_4 SP Ratio:	0.000774		Expected Values:	Previous CH4:	9.11
	CH_4 RT:	12.4			Previous NMHC	10.23
	CH_4 PK IDX:	22			Previous THC:	19.34
	CH_4 PK HT:	18811			New CH4:	9.19
	NM Span Conc:	14.10			New NMHC	10.29
	NM SP Ratio:	0.00019			New THC:	19.47

Comments:

The analyzer sample inlet filter was changed.

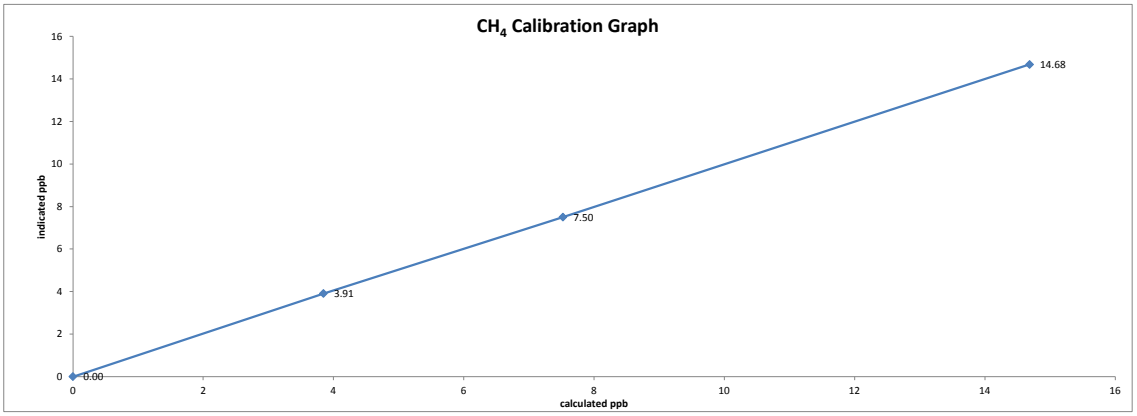
A new span gas cylinder was installed.

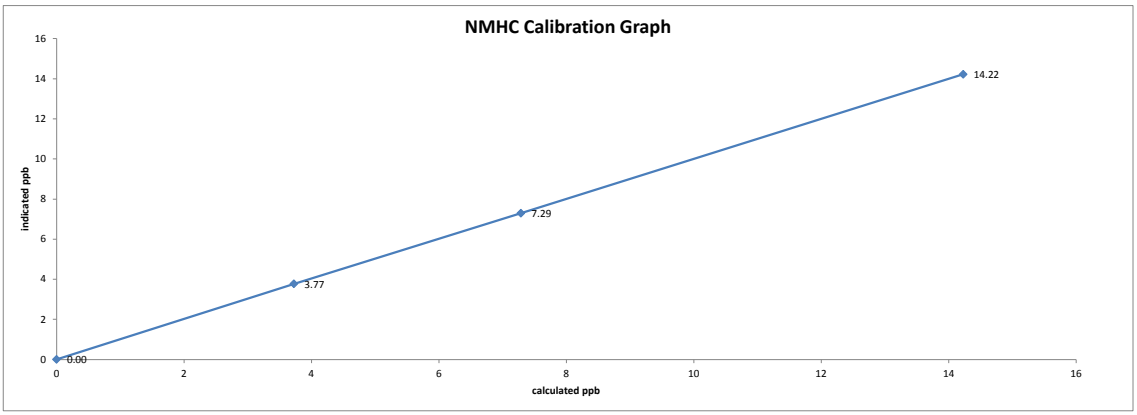
The analyzer cooling fan filter(s) were cleaned.

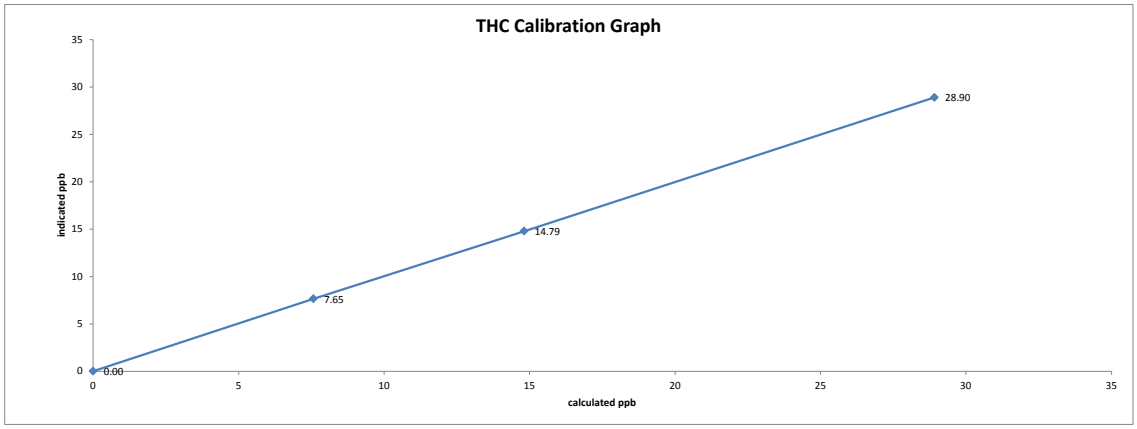
The manifold blower was found to be working normally.

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

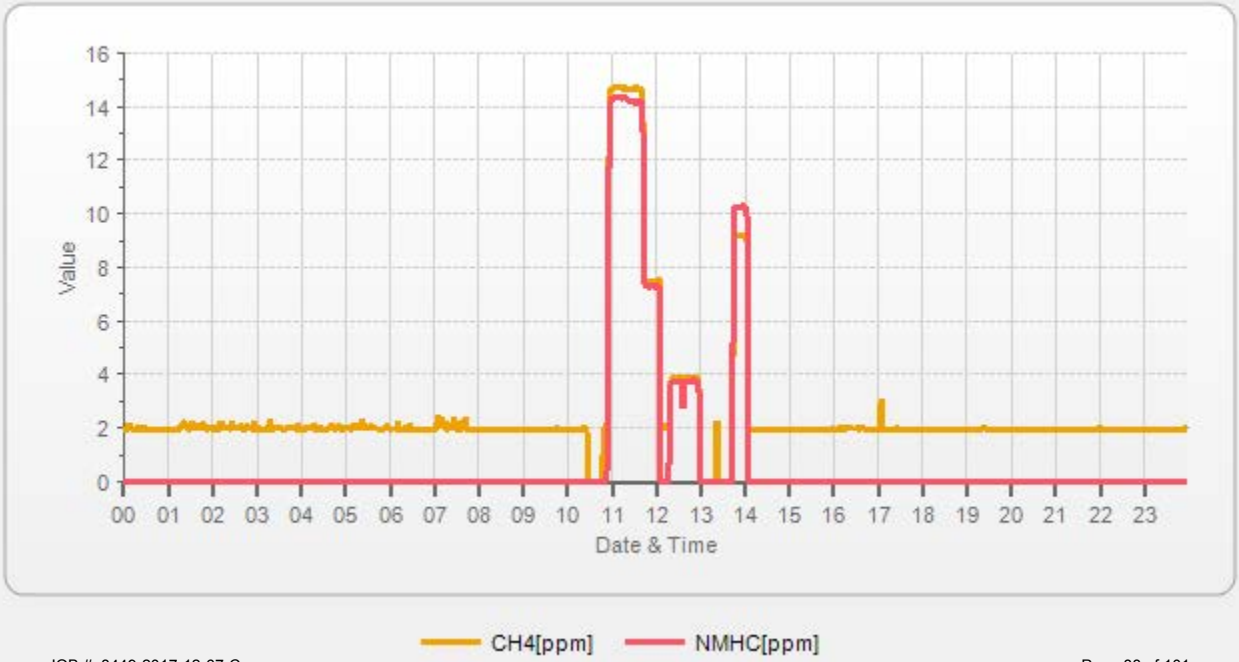
Date:	December 15, 2017	Start/End Time 24 hr. (mst):	10:16/14:07
Company/Airshed:	PRAMP	Calibration Purpose:	routine monthly
Location/Station Name:	986b	Calibration Method:	Gas Dilution







Station: PRAMP_986 Daily: 17/12/15 Type: AVG 1 Min. [1 Min.]



WIND SYSTEM

Meteorological Sensor Audit/Calibration

Location Information

Company:	PRAMP	**Performed By:**	Limin Li
Audit Location:	986b	**Reviewed By:**	Trina Whitsitt
Audit Date:	April 5, 2017	**Start /EndTime (mst):**	13:30/15:30

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 #:	129612	**Direction Voltage Output Range:**	0-1 V
Previous Cal/Audit Date:	February 15, 2017	**Direction Unit Output Range:**	0-360 degrees

Wind Calibrator Information

Calibrator Make/ Model:	RM Young 18802	**Serial #:**	CA 0309
Maxxam Unit ID #:	13-3357	**Certification Date:**	October 6, 2016

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

RPM	Wind Speed Generated kph	Clockwise Wind Speed kph	Counter Clockwise Wind Speed kph	Correction Factor
0	0	0.1	0.1	-
1000	18.4	18.4	18.4	0.999
2000	36.9	36.8	36.8	1.003
3000	55.3	55.2	55.2	1.002
4000	73.7	73.6	73.6	1.002
5000	92.2	92.0	92.0	1.002
6000	110.6	110.5	110.5	1.001
7000	129.0	128.9	128.9	1.001
8000	147.4	147.4	147.4	1.000
9000	165.9	165.9	165.9	1.000
10000	184.3	184.5	184.5	0.999
		The audit meets AMD requirements.	**Average Correction Factor=**	**1.001**

Wind Direction Audit Data **+/- 5° 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	353	0.4	2.5	1.5
30	330	29	329	1.4	1.3	1.3
60	300	60	300	0.4	0.3	0.3
90	270	89	271	0.8	-1.2	1.0
120	240	120	242	0.5	-1.6	1.1
150	210	150	212	0.1	-1.8	1.0
180	180	181	181	-0.9	-1.1	1.0
210	150	212	151	-1.5	-0.8	1.2
240	120	241	120	-1.3	-0.2	0.8
270	90	271	90	-0.5	-0.1	0.3
300	60	300	60	0.2	0.5	0.3
330	30	329	29	1.4	0.7	1.1
355	0	353	0	2.5	0.3	1.4
The audit meets AMD requirements.			**Average Absolute Degrees Difference=**			**0.9**

Comments: Adjust wind speed gain before calibration.

CALIBRATORS

Alberta Government

Calibrator Performance Audit

Oxides Of Nitrogen

File No. 2016-510A

Company Maxxam **Operator:** Mike

Calibrator:

Make/Model	Environics 6100
Serial Number	5212
Last Verification Date	February 3, 2016
NO Cylinder S/N	EY0000597
NO [PPM]	49.0 NOx [PPM] 49.0
Expiry Date	December 8, 2019

Flow Measurement Device:

Make/Model	Bios Defender 530
Serial Number	Hi148944 Lo 152019
Temperature (°C)	24.6
Barometric Pressure	701.4mmHg

Dilution Flow (sccm)

Pt. #1 4919 Pt. #2 4934 Pt. #3 4960

Gas Flow (sccm)

Pt. #1 79.2 Pt. #2 38.3 Pt. #3 19.1

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO_2	NOx	NO	NOx
4987	0.0	0.0000	0.0000	0.0000	0.0002	0.0002	Limit ± 10%	
4998	79.2	0.7765	0.7765	0.7801	-0.0003	0.7798	0%	0%
4977	38.3	0.3775	0.3775	0.3790	0.0000	0.3790	0%	0%
4979	19.1	0.1880	0.1880	0.1888	-0.0001	0.1887	0%	0%
				Absolute Average Percent Difference			0%	0%

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

	NO	LIMITS	NOx
Correlation=	1.0000	**≥ 0.990**	1.0000
m (Slope)=	1.0046	**0.90-1.10**	1.0041
b (Intercept % of FS)=	-0.0080	**± 3% F.S.**	0.0057

Flow	O_3 Conc	NO Decrease	NO	NO2	NOX	% Diff. Vs Audit gas	
4998	0.000	0.0000	0.7799	-0.0008	0.7790	NO_2	% Diff. Limit
4998	0.500	0.4949	0.2850	0.4909	0.7776	-1%	± 10%
4998	0.275	0.2765	0.5034	0.2742	0.7776	-1%	± 10%
4998	0.100	0.1003	0.6796	0.0989	0.7786	-1%	± 10%
			Absolute Average Percent Difference			1%	± 10%

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

	NO_2	LIMITS
Correlation=	1.0000	**≥ 0.995**
m (Slope)=	0.9936	**0.90-1.10**
b (Intercept % of FS)=	-0.0733	**± 3% F.S.**

AENV Standards

Audit Calibrator

Make/Model	Thermo 146i
Serial/AMU Number	1809
SRM Gas Cylinder No.	CAL018140
Cylinder Conc. (ppm)	48.79

NO_X Analyzer

Make/Model	Thermo 42i
Serial/AMU Number	1868
Last Calibration Date	February 13, 2017
Full Scale (ppm)	1.0
Cylinder Gas Expiry Date	March 28, 2019

COMMENTS: Gas has ~50ppm SO2

Auditor: Shea Beaton Date: February 14, 2017

Operator Signature: Location: McIntyre Center Edmonton

Alberta Government

Calibrator Performance Audit

Oxides Of Nitrogen

File No. 2016-512AA

Company Maxxam **Operator:** Mike

Calibrator:				**Flow Measurement Device:**	
Make/Model	Environics 6100			Make/Model	Bios Defender 530
Serial Number	4760			Serial Number	Hi148944 Lo 152019
Last Verification Date	February 1, 2016			Temperature (°C)	24.6
NO Cylinder S/N	EY0000597			Barometric Pressure	687.5mmHg
NO [PPM]	49.0	NOx [PPM]	49.0		
Expiry Date	December 8, 2019				

Dilution Flow (sccm)

Pt. #1 4890 Pt. #2 4936 Pt. #3 4958

Gas Flow (sccm)

Pt. #1 79.6 Pt. #2 38.9 Pt. #3 19.4

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO_2	NOx	NO	NOx
4951	0.0	0.0000	0.0000	-0.0001	0.0001	0.0000	Limit ± 10%	
4970	79.6	0.7848	0.7848	0.7925	-0.0006	0.7920	1%	1%
4975	38.9	0.3831	0.3831	0.3858	0.0000	0.3857	1%	1%
4977	19.4	0.1910	0.1910	0.1924	0.0001	0.1925	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)=	1.0100	**0.90-1.10**	m (Slope)=	1.0092
b (Intercept % of FS)=	-0.0467	**± 3% F.S.**	b (Intercept % of FS)=	-0.0290

Flow	O_3 Conc	NO Decrease	NO	NO2	NOX	% Diff. Vs Audit gas	
4970	0.000	0.0000	0.7922	-0.0001	0.7922	NO_2	% Diff. Limit
4970	0.500	0.5272	0.2650	0.5241	0.7890	-1%	± 10%
4970	0.275	0.2916	0.5006	0.2901	0.7907	0%	± 10%
4970	0.100	0.1056	0.6866	0.1048	0.7913	-1%	± 10%
				Absolute Average Percent Difference		1%	± 10%

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

NO_2		**LIMITS**
Correlation=	1.0000	**≥ 0.995**
m (Slope)=	0.9945	**0.90-1.10**
b (Intercept % of FS)=	-0.0100	**± 3% F.S.**

AENV Standards		**NO_X Analyzer**	
Audit Calibrator		Make/Model	Thermo 42i
Make/Model	Thermo 146i	Serial/AMU Number	1868
Serial/AMU Number	1809	Last Calibration Date	February 13, 2017
SRM Gas Cylinder No.	CAL018140	Full Scale (ppm)	1.0
Cylinder Conc. (ppm)	48.79	Cylinder Gas Expiry Date	March 28, 2019

COMMENTS: Gas has >50ppm SO2

Auditor: Shea Beaton Date: February 15, 2017

Operator Signature: Location: McIntyre Center Edmonton

CALIBRATION GASES

aemera.org

Calibration Gas Audit

Single Component Cylinder Gas

File No. 2016-086CGA

Company: Maxxam **Operator's Name:** Chris Wesson

Cylinder #: LL119513 Concentration PPM: 50.6 Tolerance(%) 1 Certified By: Praxair

Reference Calibrator and Gas:

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

Flow Measurement Device:

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

Reference Analyzer:

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

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

Previous Stated Concentration PPM: 50.6

Percent variance from Stated: **1.1**

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

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

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

Auditor: Al Clark Date: June 17, 2016

Operator Signature: Location: McIntyre Center Edmonton

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Calibration Gas Audit

Single Component Cylinder Gas

File No. 2015-109CGA

Company: Maxxam **Operator's Name:** Chris Wesson

Cylinder #: BLM001927 Concentration PPM: 10.3 Tolerance(%) 2 Certified By: Air Liquide

Reference Calibrator and Gas:

Make/Model: R&R MFC 201
Serial Number: AMU 1690
Last Verification Date: February 2, 2016
Gas Type: H2S Conc. 20.43
Cylinder Number: CAL015584

Flow Measurement Device:

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

Reference Analyzer:

Make/Model: Thermo 450i Serial/AMU Number: 1980
Instrument Settings: Zero: 15.3 Span: 1.126 Range: 0.1
Last Calibration: Date: 1-Feb-16 C.F. 1.000 Done By: SB

Calibrator Flows (sccm)		Indicated	Gas Flow/	Concentration	Cylinder
Dilution	Gas	Concentration (PPM)	Dilution Flow	Factor	Concentration
5025	0.0	0.000			
5058	37.84	0.078	0.00748	133.668	10.4
5059	17.85	0.036	0.00353	283.417	10.3
5031	9.15	0.019	0.00182	549.836	10.2
				Average Cylinder Concentration:	**10.3**

Previous Stated Concentration PPM: 10.3

Percent variance from Stated: **0.1**

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

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

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

Auditor: Shea Beaton Date: February 2, 2016

Operator Signature: Location: McIntyre Center Edmonton

aemera.org

Calibration Gas Audit

CH4 / C3H8 Cylinder Gas

File No. 2015-091CGA

Company: Maxxam **Operators name:** Chris Wesson

Cylinder #: LL86139 Conc CH4 (PPM) 599/211 Tolerance (%) 0.5 Certified By: Praxair

Reference Calibrator and Gas:

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

Flow Measurement Device:

Make/Model	Bios DC-2
Serial Number	Bios D
Temp.°C	23
B.P.	599mmHg

Reference Analyzer:

Make/Model: Thermo 55C Serial/AMU Number: 1643

Instrument Settings Zero: NA Span: NA Range: 20.0

Last Calibration: Date: 18-Jan-16 C.F. 1.000 Done By: SB

Calibrator Flows (sccm)		Indicated Conc. (ppm)		Gas Flow/	Concentration	Cylinder Concentration	
Dilution	Gas	CH4	C3H8	Dilution Flow	Factor	CH4	C3H8
2583	0.00	0.00	0.00				
2635	56.52	12.80	12.59	0.02145	46.621	597	213
2592	19.72	4.54	4.49	0.00761	131.440	597	215
2584	9.69	2.25	2.24	0.00375	266.667	600	217
					Average Cylinder Concentration:	**598**	**215**

	CH4	C3H8
Previous Stated Concentration PPM:	599	211
Percent variance from Stated:	**0.2**	**1.9**

Cylinder gas tolerances based on CH4 only

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

<= 5% Outside Manufacturer Tolerance. Use manufacturers concentration [ ] C3H8 manufacturers tolerance 1.1%

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

Auditor: Shea Beaton Date: January 19, 2016

Operator Signature: Location: McIntyre Center Edmonton

APPENDIX III
REPORT CERTIFICATION FORM

Report Certification Form

Alberta Airshed (if applicable)	**EPA Approval or Code of Practice Registration #** (if applicable)
YES	**NA**
Company Name (if applicable)	**Industrial Operation Name** (if applicable)
Peace River Area Monitoring Program Committee	**Three Creeks 986b Station**
Name of the Representative of the Person Responsible (Last, First, Middle)	**Position / Title of the Representative of the Person Responsible**
Wunmi Adekanmbi	**Project Manager, Customer Service, Air Services**
Is an External Party Certifying the Report? (If 'Yes', fill in the fields below for the external person.	
☐ **Yes** ■ **No**	
Name of External Person Certifying the Report (Last, First, Middle)	**Position / Title of External Person Certifying the Report**
NA	**NA**
Company Name for the External Person Certifying the Report	**Identification of Qualifications / Professional Designations of the External Person Certifying the Report**
NA	**NA**

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

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

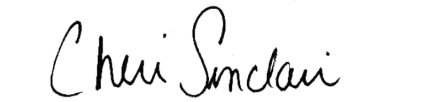
January 22, 2018

Report Issued Date (dd-mm-yyyy)

APPENDIX IV
DATA VALIDATION CERTIFICATION FORM

Validation Certificate Form

Client: Peace River Area Monitoring Program Committee **Project #:** 8449-2017-12-67-C
Site: Three Creeks 986b Station **Contact:** Karla Reesor

Level 0 Preliminary Verification		**Date**	Jan 11, 2018
Level 1 Primary Validation		**Date**	Jan 11, 2018
Level 2 Final Validation		**Date**	Jan 22, 2018
Level 3 Independent Data Review		**Date**	Jan 22, 2018
Post-Final Validation	**NA**	**Date**	**NA**

Notes

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