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(REVISION)

AMBIENT AIR MONITORING MONTHLY DATA REPORT

PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

THREE CREEKS 986B STATION

JOB #: 8449-2018-11-67-C

November 2018

Prepared for:

PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

Attention: LILY LIN

DATE: **January 7, 2019**

This report supersedes all previous reports with the same Maxxam project number.

Prepared by:

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Reviewed by:

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Supervisor, Customer Service, Air Services

SUMMARY

This is a revision. Station Temperature readings recorded in the Monthly Continuous Data Summary (Page 3) were updated.

In November 2018, 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 non-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.

All data collected this month were within the Alberta Ambient Air Quality Objectives and Guidelines (November, 2018).

Gas Parameters: A Windows update interrupted the automated daily zero-span check scheduled for hour 00:00 on November 14. A successful zero-span check was manually completed at hour 09:00 of the same day. One hour of downtime was recorded due to the unsuccessful attempt.

TRS: Unstable station temperature compromised analyzer performance, impacting data collected at hours 02:00 - 09:00 on November 16. Eight hours of downtime were incurred as a result.

THC/CH_4/NMHC:

- Unstable station temperature compromised analyzer performance, impacting data collected from hour 17:00 on November 15 to hour 10:00 on November 16. Eighteen hours of downtime were incurred as a result.
- Data recorded at hour 08:00 on November 14 was discarded. At this hour, the daily zero-span check commenced and five minutes of data were invalidated due to poor injections. The AMD's 75% data completeness criteria was therefore not met. One hour of downtime was incurred as a result.

Station Temperature: The station temperature began to exhibit instability on November 9. This prompted a site visit on November 15 where a portable heater was installed. Station temperature was back to optimum conditions on November 16. However, fluctuations were again noted on November 18. A technician was onsite on November 20 and November 21 to troubleshoot the HVAC system and the problem was traced to the BARD and Heat Contactor components. A HVAC company was engaged and the faulty components were ordered. In the meantime, a second portable heater was installed to balance the temperature. Parts were supplied, the HVAC system was repaired and the portable heaters were removed on December 11.

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.

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	2	26	13	6.4	ESE	1	16	99.9
TRS (ppb)	-	-	-	-	0.29	0.82	17	16	4.7	SSE	0.36	17	98.8
THC (ppm)	-	-	-	-	2.02	2.37	29	22	1.7	NW	2.11	29	97.2
CH_4 (ppm)	-	-	-	-	2.02	2.37	29	22	1.7	NW	2.11	29	97.2
NMHC (ppm)	-	-	-	-	0.00	0.07	28	8	6.2	SSW	0.01	28	97.2
RELATIVE HUMIDITY (%)	-	-	-	-	85	100	1	0	7.2	NNW	100	28	100.0
BAROMETRIC PRESSURE (millibar)	-	-	-	-	941	962	16	6	0.8	SSE	959	16	100.0
AMBIENT TEMPERATURE (°C)	-	-	-	-	-5.2	6.3	21	12	6.4	S	3.5	13	100.0
STATION TEMPERATURE (°C)	-	-	-	-	23.5	38.7	13	13	10.2	SSW	32.3	13	100.0
VECTOR WS (kph)	-	-	-	-	1.0	16.9	22	15	-	NW	7.8	13	100.0
VECTOR WD (sec)	-	-	-	-	165 (SSE)	-	-	-	-	-	-	-	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	2018	November

CONTINUOUS AMBIENT MONITORING

		ONE - HOUR AVERAGE			24 - HOUR AVERAGE		
PARAMETER	% TIME OPERATIONAL	MAXIMUM VALUES		NO. READINGS > REGULATION	MAXIMUM VALUES		NO. READINGS > REGULATION
SO_2	99.9	0.002	ppm	0	0.001	ppm	0
TRS	98.8	0.001	ppm	-	0.000	ppm	-
THC	97.2	2.37	ppm	-	2.11	ppm	-
CH_4	97.2	2.37	ppm	-	2.11	ppm	-
NMHC	97.2	0.07	ppm	-	0.01	ppm	-
RH	100.0	100	%	-	100	%	-
BP	100.0	962	mb	-	959	mb	-
Ambient TPX	100.0	6.3	°C	-	3.5	°C	-
Station TPX	100.0	1.9	°C	-	38.7	°C	-
Wind Speed	100.0	16.9	kph	-	7.8	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

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 verification and validation based on the requirements of the AMD (December, 2016) Chapter 6: Ambient Data Quality and Chapter 9: Reporting. The descriptions of the data verification and validation process can be found in Section 5 of this report. Instantaneous data, where applicable, is provided for reference purposes and has not undergone zero correction. The minimum and maximum statistics are highlighted in the data table and are for reference only. The highlighted cells are based on the software's interpretation of the exact position of the minimum or maximum value. The visual presentation of these statistics may not be the obvious choice in a data range due to rounding, truncating or analyzer specifications.

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

SULPHUR DIOXIDE (SO_2)

• Operational time for the monitoring period was 99.9%, equivalent to one hour of downtime.
• The routine monthly calibration was performed on November 6.
• A Windows update interrupted the automated daily zero-span check scheduled for hour 00:00 on November 14. A successful zero-span check was manually completed at hour 09:00 of the same day. One hour of downtime was recorded due to the unsuccessful attempt.
• Unstable station temperature was exhibited during the month. Based on instrument diagnostic information, no impact on data quality was demonstrated. The analyzer manual states the operating temperature thus: *20-30 ^{0}C (may be safely operated over the range of 0-45 ^{0}C)* . Data collected at a station temperature range of 0-45^{0}C is therefore considered valid. However, data collected outside the optimum range of 20-30^{0}C should be used with caution.

TOTAL REDUCED SULPHUR (TRS)

• Operational time for the monitoring period was 98.8%, equivalent to nine hours of downtime.
• The routine monthly calibration was performed on November 6.
• A Windows update interrupted the automated daily zero-span check scheduled for hour 00:00 on November 14. A successful zero-span check was manually completed at hour 09:00 of the same day. One hour of downtime was recorded due to the unsuccessful attempt.
• Unstable station temperature compromised analyzer performance. Based on instrument diagnostic information, data recorded at hours 02:00 - 09:00 on November 16 were impacted and were therefore discarded. Eight hours of downtime were incurred as a result.
• The analyzer manual states the operating temperature thus: *15-35 ^{0}C (may be safely operated over the range of 0-45 ^{0}C)* . Data collected at a station temperature range of 0-45^{0}C is therefore considered valid. However, data collected outside the optimum range of 15-35^{0}C should be used with caution.

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

• Operational time for the monitoring period was 97.2%, equivalent to twenty hours of downtime.
• The routine monthly calibration was performed on November 6.
• A Windows update interrupted the automated daily zero-span check scheduled for hour 00:00 on November 14. A successful zero-span check was manually completed at hour 09:00 of the same day. One hour of downtime was recorded due to the unsuccessful attempt.
• Minute data for the month was reviewed. CH_4 minute concentrations recorded lower than 1.80 ppm, due to suspected poor sample injections, along with the corresponding THC and NMHC values, were excluded and the corresponding hourly average recalculated. Impacted minute data include the following:

Date	Time	Conc (ppm)
2018/11/14	07:05	1.67
2018/11/14	07:17	1.77
2018/11/14	07:18	1.73
2018/11/14	07:23	1.66
2018/11/14	07:34	1.67
2018/11/14	08:22	1.67
2018/11/14	08:25	1.64
2018/11/14	08:28	1.59
2018/11/14	08:36	1.64

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

• Data recorded at hour 08:00 on November 14 was discarded. At this hour, the daily zero-span check commenced and five minutes of data were invalidated due to poor injections. The AMD's 75% data completeness criteria was therefore not met. One hour of downtime was incurred as a result.

• Unstable station temperature compromised analyzer performance. Based on instrument diagnostic information, data recorded from hour 17:00 on November 15 to hour 10:00 on November 16 were impacted and were therefore discarded. Eighteen hours of downtime were incurred as a result.

• The analyzer manual states the operating temperature thus: $15\text{-}35\ ^{0}C$. Data collected outside this station temperature range were mostly invalidated as supported by instrument diagnostic information. Other data collected at this temperature range and deemed valid based on diagnostic information, should however be used with caution.

• 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. A trigger test was performed during the routine monthly calibration on November 6 to assess the effectiveness of the canister system. No deficiencies were found.

WIND SPEED (WS) and WIND DIRECTION (WD)

• Operational time for the monitoring period was 100%.

• An anemometer sensor check was conducted on November 1. The result was satisfactory.

• 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%.

• A humidity sensor check was conducted on November 1. The result was satisfactory.

BAROMETRIC PRESSURE (BP)

• Operational time for the monitoring period was 100%.

• A pressure sensor check was conducted on October 10. The result was satisfactory.

AMBIENT TEMPERATURE (AmbTPX)

• Operational time for the monitoring period was 100%.

• A temperature sensor check was conducted on November 1. The result was satisfactory.

STATION TEMPERATURE (StnTPX)

• Operational time for the monitoring period was 100%.

• The station temperature began to exhibit instability on November 9. This prompted a site visit on November 15 where a portable heater was installed. Station temperature was back to optimum conditions on November 16. However, fluctuations were again noted on November 18. A technician was onsite on November 20 and November 21 to troubleshoot the HVAC system and the problem was traced to the BARD and Heat Contactor components. A HVAC company was engaged and the faulty components were ordered. In the meantime, a second portable heater was installed to balance the temperature. Parts were supplied, the HVAC system was repaired and the portable heaters were removed on December 11.

2.0 Project Personnel

Karla Reesor was the contact for Peace River Area Monitoring Program Committee and the Maxxam field technicians were Limin Li and Christopher Wesson.

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.

All data collected this month were within the Alberta Ambient Air Quality Objectives and Guidelines (November, 2018).

4.0 Calculations and Results

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

5.0 Methods and Procedures

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

Maxxam AIR SOP-00001: Methane, Non-Methane Hydrocarbon Analyzer Monitoring
Maxxam AIR SOP-00013: RM Young Wind Monitor Calibration
Maxxam AIR SOP-00209: Ambient Sulphur Monitoring

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 - Envidas Ultimate

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

Level 0 Preliminary Verification

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

Level 1 Primary Validation

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

Level 2 Final Validation

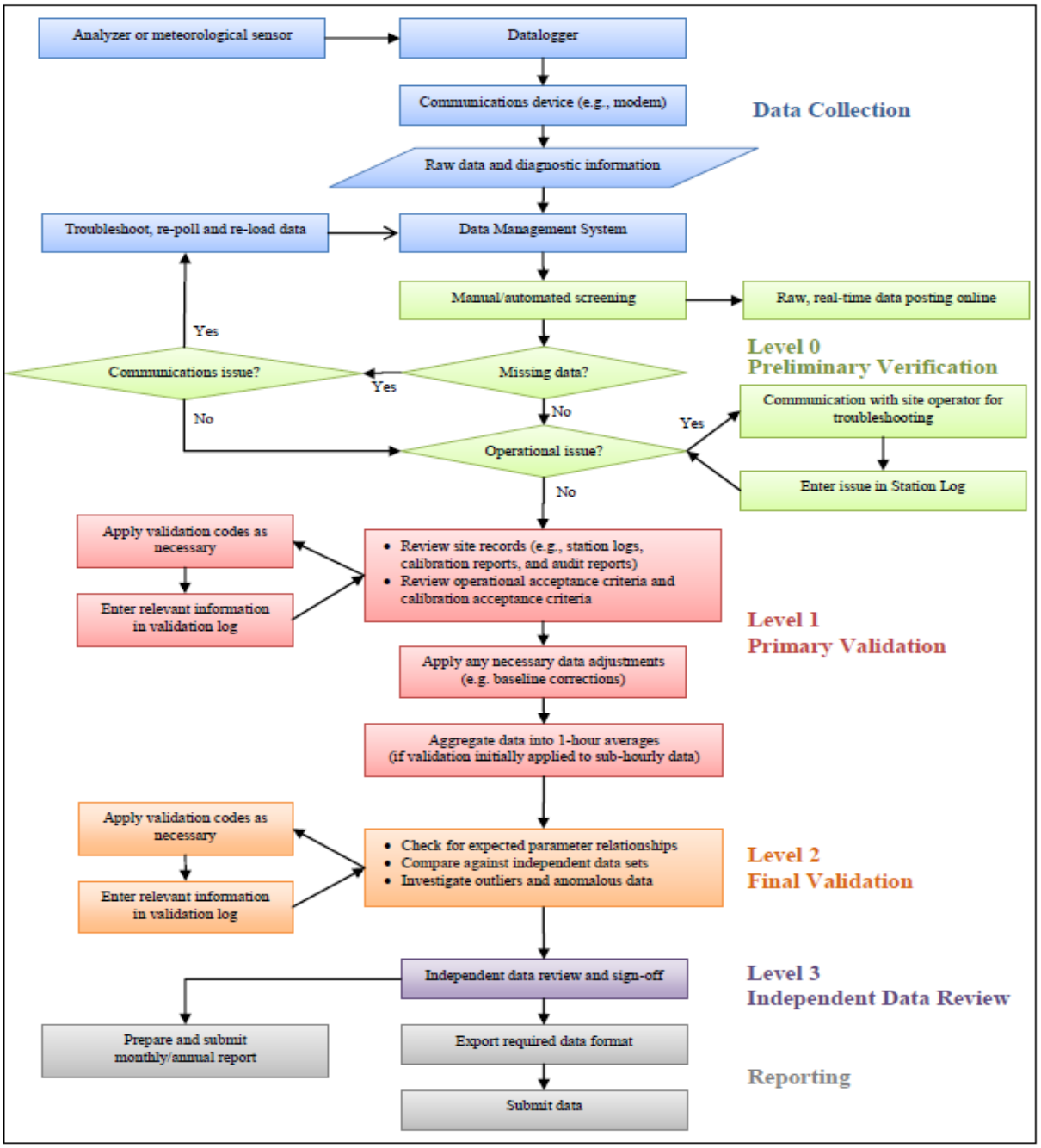
The purpose of Level 2 validation is to verify that there are no inconsistencies among related data, or among regional data measured at nearby sites.

Level 3 Independent Data Review

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

Post-Final Validation

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



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

APPENDIX I
CONTINUOUS MONITORING DATA RESULTS

SULPHUR DIOXIDE

SULPHUR DIOXIDE Hourly Averages (SO_2 ppb)

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

STATUS FLAG CODES

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

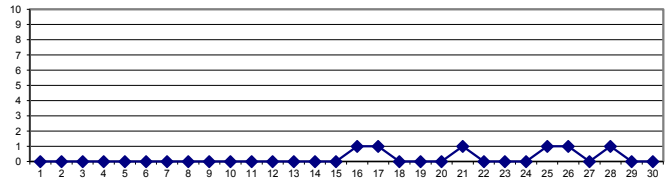
OBJECTIVE LIMIT: **ALBERTA ENVIRONMENT:** 1-HR 172 ppb | 24-HR 48 ppb

MONTHLY SUMMARY

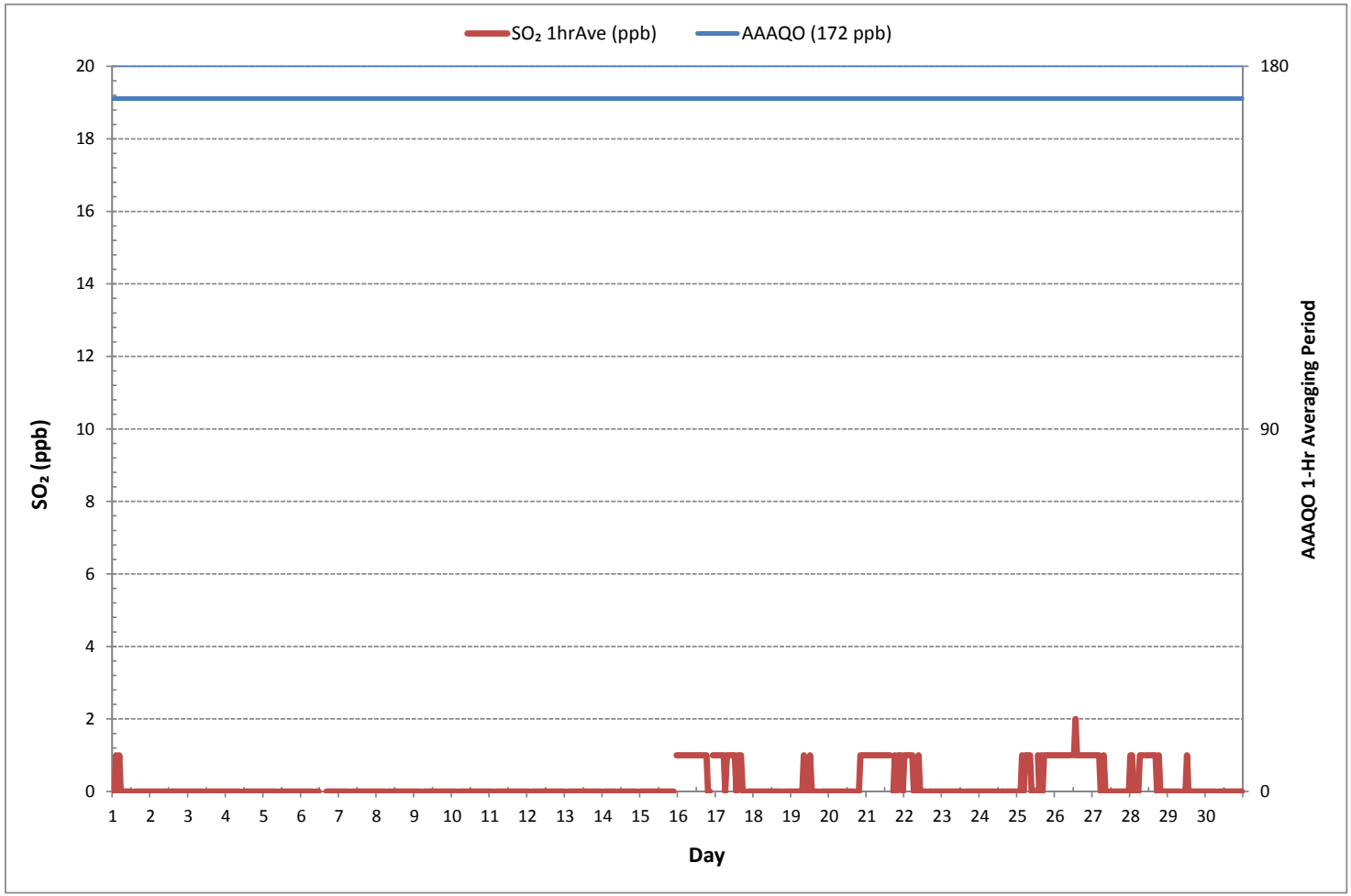
NUMBER OF 1-HR EXCEEDANCES:		0				
NUMBER OF 24-HR EXCEEDANCES:		0				
NUMBER OF NON-ZERO READINGS:		129				
MINIMUM 1-HR AVERAGE	0	ppb	@ HOUR	0	ON DAY	1
MAXIMUM 1-HR AVERAGE:	2	ppb	@ HOUR	13	ON DAY	26
MAXIMUM 24-HR AVERAGE:	1	ppb			ON DAY	16

IZS CALIBRATION TIME:	31	hrs	OPERATIONAL TIME:	719	hrs
MONTHLY CALIBRATION TIME:	4	hrs	AMD OPERATION UPTIME:	99.9	%
STANDARD DEVIATION:	0		MONTHLY AVERAGE:	0	ppb

24 HR AVERAGES November 2018



SULPHUR DIOXIDE Hourly Averages (SO_2 ppb)



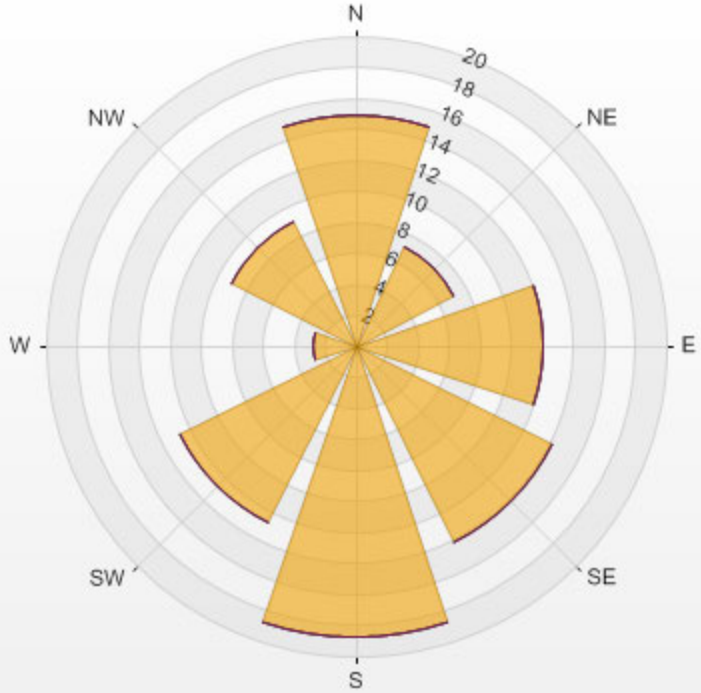
Wind: PRAMP_986
Poll.: PRAMP_986-SO_2 [ppb]
Monthly: 18/11
Type: PollutionRose
Direction: Blowing From (Wind Frequency)
Based On 1 Hr.

Calm: 8.33% Calm Avg: 0.17 [ppb]

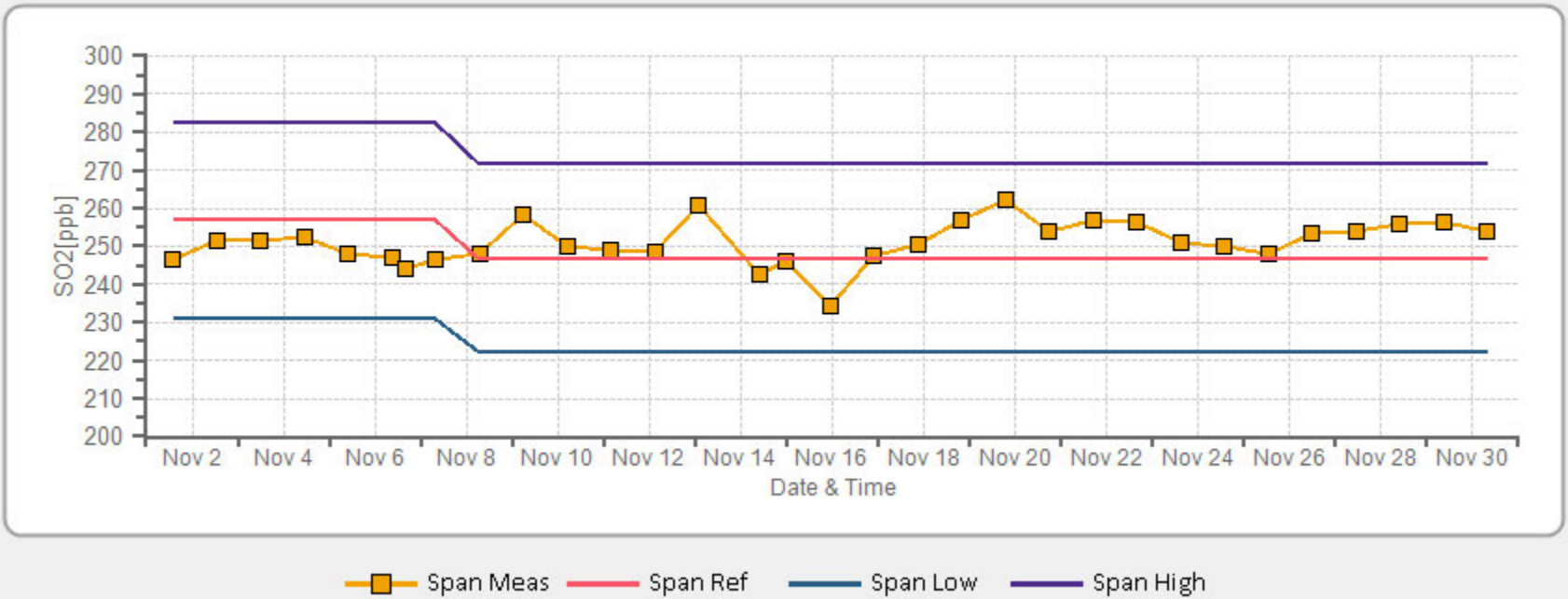
Direction	0-3	3-10	10-85	85-170	>170.0	Total
N	14.9	0.0	0.0	0.0	0.0	14.9
NE	7.2	0.0	0.0	0.0	0.0	7.2
E	12.1	0.0	0.0	0.0	0.0	12.1
SE	14.2	0.0	0.0	0.0	0.0	14.2
S	18.9	0.0	0.0	0.0	0.0	18.9
SW	12.7	0.0	0.0	0.0	0.0	12.7
W	2.8	0.0	0.0	0.0	0.0	2.8
NW	8.9	0.0	0.0	0.0	0.0	8.9
Summary	91.7	0.0	0.0	0.0	0.0	91.7

% Icon Classes (ppb)	92 0-3	0 3-10	0 10-85	0 85-170	0 >170.0

PRAMP_986 Poll.: PRAMP_986-SO2[ppb] 2018/11/01 00:00 - 2018/11/30 23:00 Calm: 8.33% Calm Poll Avg: 0.17[ppb]



SO2[ppb] Calibration: PRAMP_986 Monthly: 18/11 Type: Span



TOTAL REDUCED SULPHUR

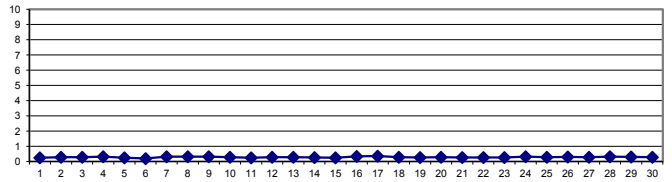
TOTAL REDUCED SULPHUR Hourly Averages (TRS ppb)

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	0.27	0.27	0.24	0.26	0.26	0.28	0.26	0.25	0.25	0.22	0.22	0.22	0.24	S	0.29	0.25	0.25	0.26	0.28	0.24	0.23	0.25	0.24	0.24	0.22	0.29	0.25	24
2	0.23	0.25	0.24	0.23	0.24	0.25	0.27	0.23	0.23	0.23	0.22	0.23	S	0.31	0.25	0.25	0.26	0.30	0.40	0.35	0.32	0.37	0.44	0.42	0.22	0.44	0.28	24
3	0.42	0.46	0.47	0.34	0.27	0.27	0.26	0.25	0.26	0.26	0.27	S	0.32	0.26	0.24	0.25	0.24	0.25	0.24	0.25	0.27	0.28	0.28	0.27	0.24	0.47	0.29	24
4	0.27	0.26	0.26	0.26	0.31	0.51	0.43	0.32	0.28	0.28	S	0.35	0.28	0.30	0.32	0.31	0.32	0.31	0.31	0.31	0.30	0.30	0.29	0.27	0.26	0.51	0.31	24
5	0.25	0.24	0.24	0.22	0.24	0.23	0.21	0.21	0.22	S	0.31	0.25	0.25	0.25	0.25	0.25	0.27	0.25	0.25	0.25	0.27	0.25	0.25	0.25	0.21	0.31	0.25	24
6	0.24	0.24	0.25	0.26	0.26	0.25	0.25	0.27	S	C	C	C	C	C	C	C	0.25	0.14	0.12	0.12	**0.10**	0.16	0.18	0.17	**0.10**	0.27	0.20	24
7	0.17	0.20	0.22	0.25	0.26	0.28	0.29	S	0.47	0.38	0.35	0.35	0.34	0.31	0.31	0.31	0.31	0.32	0.34	0.34	0.33	0.33	0.32	0.29	0.17	0.47	0.31	24
8	0.30	0.30	0.30	0.32	0.35	0.35	S	0.44	0.32	0.33	0.36	0.34	0.33	0.31	0.32	0.31	0.34	0.35	0.31	0.28	0.27	0.26	0.27	0.28	0.26	0.44	0.32	24
9	0.28	0.29	0.28	0.29	0.29	S	0.33	0.30	0.28	0.28	0.29	0.30	0.31	0.27	0.32	0.35	0.34	0.49	0.50	0.38	0.31	0.24	0.25	0.24	0.24	0.50	0.31	24
10	0.26	0.24	0.30	0.30	S	0.38	0.37	0.36	0.35	0.35	0.31	0.34	0.31	0.36	0.25	0.24	0.24	0.23	0.25	0.27	0.28	0.30	0.28	0.22	0.22	0.38	0.29	24
11	0.20	0.20	0.20	S	0.26	0.21	0.23	0.26	0.24	0.24	0.25	0.25	0.26	0.25	0.27	0.25	0.27	0.28	0.27	0.25	0.27	0.26	0.26	0.27	0.20	0.28	0.25	24
12	0.28	0.30	S	0.36	0.30	0.29	0.30	0.31	0.33	0.33	0.32	0.31	0.29	0.29	0.29	0.31	0.28	0.29	0.27	0.27	0.28	0.26	0.26	0.26	0.26	0.36	0.29	24
13	0.28	S	0.34	0.29	0.27	0.26	0.28	0.27	0.28	0.27	0.25	0.27	0.26	0.25	0.24	0.27	0.26	0.28	0.32	0.28	0.28	0.30	0.30	0.26	0.24	0.34	0.28	24
14	X	0.27	0.25	0.27	0.26	0.26	0.26	0.26	0.25	S	0.32	0.29	0.28	0.27	0.24	0.26	0.25	0.23	0.25	0.26	0.26	0.26	0.26	S	0.23	0.32	0.26	23
15	0.31	0.28	0.29	0.31	0.30	0.28	0.29	0.24	0.25	0.23	0.23	0.22	0.22	0.21	0.21	0.20	0.22	0.21	0.21	0.24	0.28	0.27	S	0.33	0.20	0.33	0.25	24
16	0.28	0.29	X	X	X	X	X	X	X	X	0.27	0.28	0.37	0.43	0.39	0.47	0.53	0.27	0.27	0.27	0.29	S	0.38	0.31	0.27	0.53	0.34	16
17	0.28	0.28	0.29	0.29	0.31	0.29	0.30	0.30	0.31	0.32	0.38	0.37	0.42	0.30	0.41	0.68	**0.82**	0.37	0.30	0.29	S	0.37	0.30	0.31	0.28	**0.82**	**0.36**	24
18	0.29	0.29	0.28	0.27	0.27	0.27	0.36	0.37	0.31	0.28	0.29	0.29	0.31	0.30	0.29	0.29	0.28	0.28	0.25	S	0.30	0.28	0.27	0.27	0.25	0.37	0.29	24
19	0.25	0.28	0.26	0.28	0.28	0.28	0.27	0.28	0.27	0.27	0.26	0.24	0.27	0.24	0.22	0.22	0.23	0.24	S	0.32	0.29	0.27	0.23	0.24	0.22	0.32	0.26	24
20	0.24	0.24	0.26	0.28	0.27	0.26	0.26	0.26	0.29	0.29	0.29	0.28	0.28	0.28	0.27	0.27	0.27	S	0.35	0.31	0.30	0.31	0.30	0.28	0.24	0.35	0.28	24
21	0.29	0.28	0.28	0.29	0.28	0.27	0.26	0.26	0.26	0.26	0.26	0.25	0.25	0.24	0.24	0.25	S	0.33	0.31	0.28	0.28	0.28	0.28	0.25	0.24	0.33	0.27	24
22	0.26	0.28	0.30	0.33	0.30	0.30	0.27	0.25	0.25	0.24	0.26	0.25	0.26	0.24	0.24	S	0.30	0.31	0.33	0.24	0.23	0.23	0.22	0.24	0.22	0.33	0.27	24
23	0.29	0.29	0.28	0.26	0.28	0.27	0.27	0.27	0.25	0.25	0.23	0.23	0.24	0.23	S	0.30	0.25	0.27	0.25	0.25	0.26	0.26	0.25	0.26	0.23	0.30	0.26	24
24	0.25	0.26	0.25	0.25	0.26	0.24	0.27	0.25	0.25	0.26	0.26	0.27	0.27	S	0.36	0.39	0.43	0.44	0.46	0.51	0.46	0.39	0.33	0.31	0.24	0.51	0.32	24
25	0.27	0.29	0.30	0.27	0.27	0.32	0.32	0.30	0.30	0.29	0.30	0.28	S	0.32	0.29	0.27	0.26	0.28	0.28	0.27	0.26	0.26	0.28	0.26	0.26	0.32	0.28	24
26	0.27	0.27	0.27	0.30	0.29	0.29	0.27	0.27	0.27	0.28	0.28	S	0.35	0.32	0.32	0.32	0.32	0.31	0.32	0.32	0.31	0.30	0.31	0.29	0.27	0.35	0.30	24
27	0.28	0.29	0.30	0.28	0.30	0.32	0.29	0.28	0.33	0.33	S	0.34	0.29	0.28	0.28	0.29	0.29	0.29	0.29	0.30	0.30	0.28	0.28	0.29	0.28	0.34	0.29	24
28	0.28	0.28	0.28	0.34	0.35	0.34	0.35	0.36	0.39	S	0.40	0.33	0.30	0.32	0.29	0.29	0.29	0.29	0.28	0.28	0.28	0.26	0.27	0.26	0.26	0.40	0.31	24
29	0.25	0.52	0.28	0.26	0.27	0.25	0.25	0.26	S	0.32	0.27	0.28	0.48	0.31	0.32	0.28	0.29	0.31	0.33	0.28	0.26	0.28	0.27	0.25	0.25	0.52	0.30	24
30	0.24	0.27	0.28	0.27	0.26	0.26	0.26	S	0.33	0.30	0.29	0.31	0.28	0.28	0.29	0.29	0.30	0.29	0.28	0.28	0.29	0.30	0.33	0.32	0.24	0.33	0.29	24
HOURLY MAX	0.42	0.52	0.47	0.36	0.35	0.51	0.43	0.44	0.47	0.38	0.40	0.37	0.48	0.43	0.41	0.68	0.82	0.49	0.50	0.51	0.46	0.39	0.44	0.42				
HOURLY AVG	0.27	0.28	0.28	0.28	0.28	0.29	0.29	0.28	0.29	0.28	0.29	0.29	0.30	0.29	0.29	0.30	0.31	0.29	0.30	0.29	0.28	0.28	0.28	0.27				

STATUS FLAG CODES

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

24 HR AVERAGES November 2018

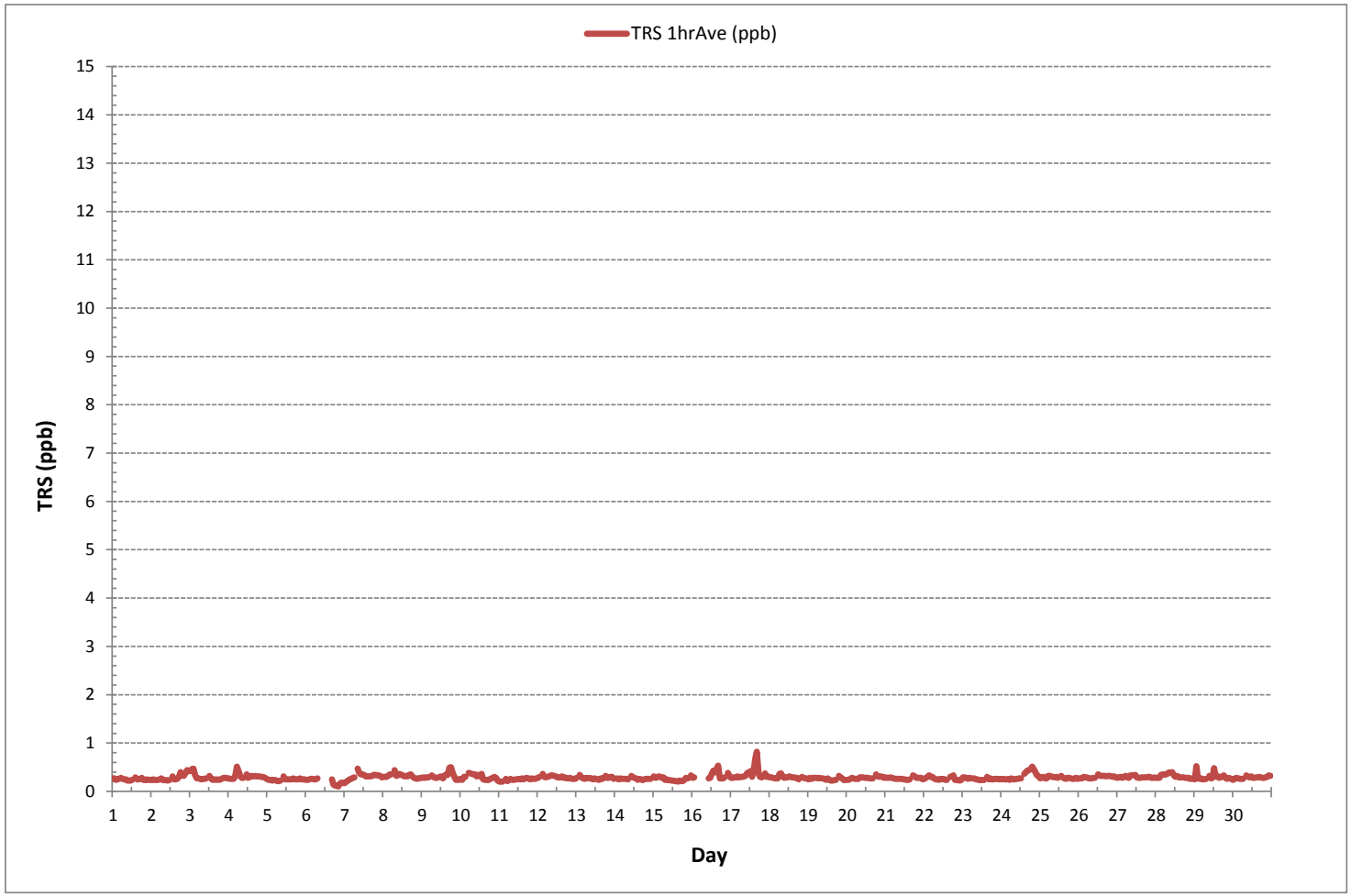


MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:		673				
MINIMUM 1-HR AVERAGE	0.10	ppb	@ HOUR	20	ON DAY	6
MAXIMUM 1-HR AVERAGE:	0.82	ppb	@ HOUR	16	ON DAY	17
MAXIMUM 24-HR AVERAGE:	0.36	ppb			ON DAY	17

IZS CALIBRATION TIME:	31	hrs	OPERATIONAL TIME:	711	hrs
MONTHLY CALIBRATION TIME:	7	hrs	AMD OPERATION UPTIME:	98.8	%
STANDARD DEVIATION:	0.06		MONTHLY AVERAGE:	0.29	ppb

TOTAL REDUCED SULPHUR Hourly Averages (TRS ppb)



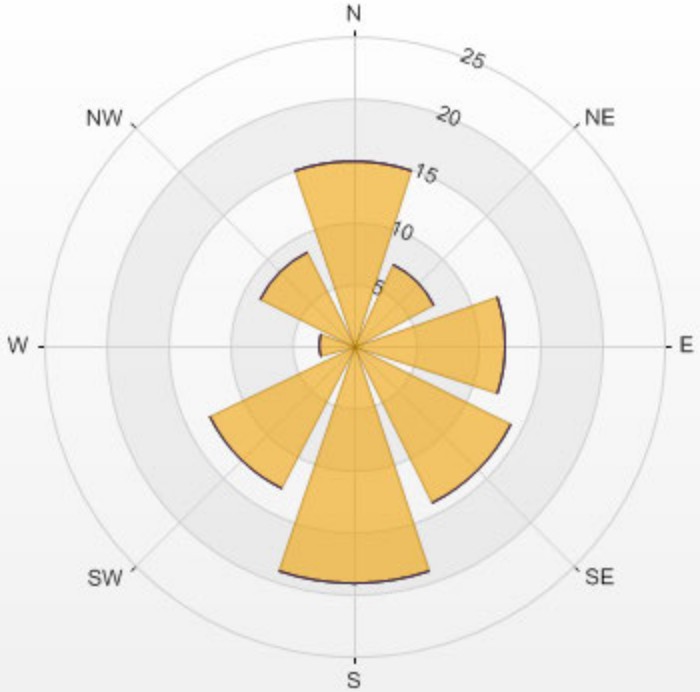
Wind: PRAMP_986
Poll.: PRAMP_986-TRS [ppb]
Monthly: 18/11
Type: PollutionRose
Direction: Blowing From (Wind Frequency)
Based On 1 Hr.

Calm: 8.02% Calm Avg: 0.30 [ppb]

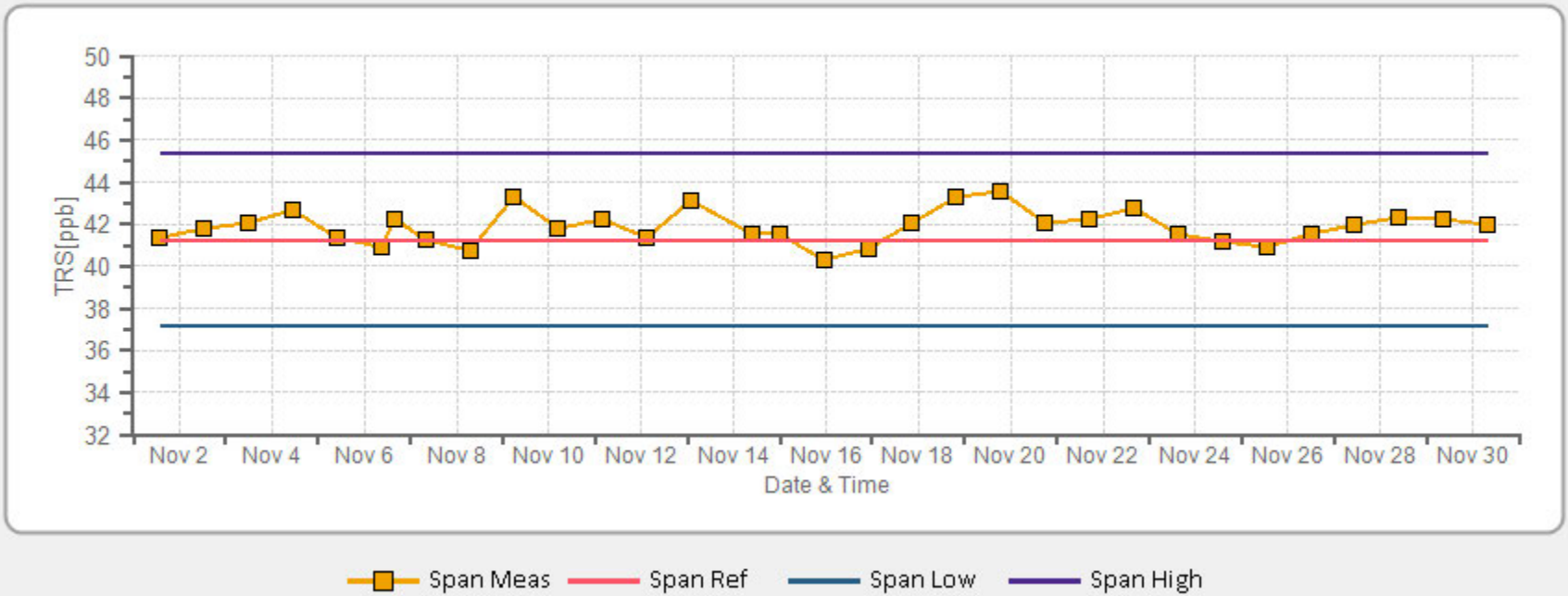
Direction	0-1	1-3	3-10	>10.0	Total
N	14.9	0.0	0.0	0.0	14.9
NE	7.3	0.0	0.0	0.0	7.3
E	12.3	0.0	0.0	0.0	12.3
SE	14.1	0.0	0.0	0.0	14.1
S	19.2	0.0	0.0	0.0	19.2
SW	12.9	0.0	0.0	0.0	12.9
W	2.8	0.0	0.0	0.0	2.8
NW	8.5	0.0	0.0	0.0	8.5
Summary	92.0	0.0	0.0	0.0	92.0

% Icon Classes (ppb)	92 0-1	0 1-3	0 3-10	0 >10.0

PRAMP_986 Poll.: PRAMP_986-TRS[ppb] 2018/11/01 00:00 - 2018/11/30 23:00 Calm: 8.02% Calm Poll Avg: 0.30[ppb]



TRS[ppb] Calibration: PRAMP_986 Monthly: 18/11 Type: Span



TOTAL HYDROCARBON

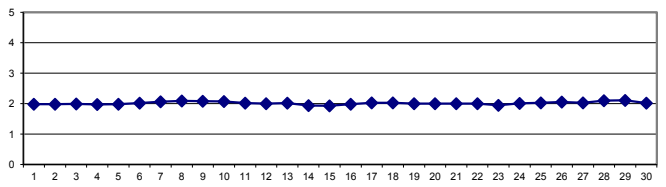
TOTAL HYDROCARBONS Hourly Averages (THC ppm)

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	2.00	2.00	1.99	1.99	2.01	2.02	2.02	2.02	2.02	1.99	1.98	1.97	1.97	S	1.98	1.97	1.96	1.95	1.96	1.96	1.96	1.97	1.97	1.97	1.95	2.02	1.98	24
2	1.97	1.96	1.96	1.96	1.97	1.97	1.97	1.96	1.96	1.96	1.96	1.97	S	1.98	1.98	2.01	2.00	1.99	1.99	1.99	2.00	2.00	2.00	1.99	1.96	2.01	1.98	24
3	2.00	2.01	2.04	2.02	1.98	1.99	1.99	1.99	1.99	1.99	2.00	S	1.98	1.97	1.97	1.97	1.97	1.97	1.98	1.97	1.97	1.97	1.97	1.97	1.97	2.04	1.99	24
4	1.97	1.97	1.97	1.97	1.97	1.98	1.98	1.98	1.97	1.96	S	1.95	1.95	1.96	1.95	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.98	1.98	1.95	1.98	1.97	24
5	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.98	1.98	S	1.98	1.98	1.98	1.99	1.98	1.98	1.98	1.98	1.98	2.04	1.99	1.98	1.99	1.99	1.97	2.04	1.98	24
6	2.04	2.08	2.05	2.01	2.00	2.00	2.02	2.04	S	C	C	C	C	2.01	2.00	2.03	1.98	1.99	2.00	2.00	2.00	2.02	2.02	2.01	1.98	2.08	2.02	24
7	2.02	2.03	2.04	2.05	2.05	2.06	2.08	S	2.08	2.08	2.07	2.06	2.07	2.06	2.02	2.01	2.03	2.05	2.06	2.07	2.08	2.08	2.07	2.10	2.01	2.10	2.06	24
8	2.10	2.10	2.12	2.16	2.17	2.17	S	2.12	2.10	2.08	2.12	2.12	2.08	2.21	2.05	2.01	2.18	2.06	2.06	2.05	2.03	2.01	2.01	2.02	2.01	2.21	2.09	24
9	2.03	2.05	2.05	2.05	2.05	S	2.04	2.04	2.05	2.06	2.05	2.18	2.09	2.20	2.07	2.06	2.18	2.21	2.11	2.03	2.04	2.03	2.04	2.15	2.03	2.21	2.08	24
10	2.10	2.07	1.99	2.00	S	2.00	2.00	2.01	2.01	2.01	2.02	2.27	2.06	2.00	1.99	1.99	1.98	2.22	2.11	2.00	2.27	2.02	2.12	2.29	1.98	2.29	2.07	24
11	2.23	2.05	2.01	S	2.03	2.04	2.01	2.05	2.02	2.05	2.05	2.03	2.04	2.01	2.00	1.99	1.99	1.98	1.98	1.99	2.02	1.98	1.98	1.98	1.98	2.23	2.02	24
12	1.98	1.98	S	2.00	2.00	2.02	2.02	2.02	2.03	2.02	2.01	1.99	1.97	1.96	1.99	2.02	2.02	2.01	2.00	1.99	2.00	2.00	2.01	2.02	1.96	2.03	2.00	24
13	2.02	S	2.02	2.02	2.02	2.02	2.03	2.03	2.03	2.03	2.02	2.02	2.02	2.01	2.02	2.05	2.06	2.07	2.09	2.02	1.96	1.98	1.98	1.94	1.94	2.09	2.02	24
14	X	1.88	1.88	1.88	**1.87**	1.88	1.88	1.88	X	S	1.97	1.98	1.94	2.00	1.97	1.97	1.96	1.97	2.00	1.99	1.99	1.98	1.97	S	**1.87**	2.00	1.94	22
15	1.96	1.95	1.95	1.95	1.95	1.95	1.95	1.93	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.91	X	X	X	X	X	X	X	1.91	1.96	1.93	17
16	X	X	X	X	X	X	X	X	X	X	X	1.97	1.97	1.97	1.97	1.96	1.98	1.98	1.99	1.99	1.99	S	2.02	2.01	1.96	2.02	1.98	13
17	2.00	2.00	2.01	2.03	2.04	2.05	2.05	2.06	2.06	2.07	2.08	2.06	2.04	2.01	2.01	2.06	2.09	2.01	2.01	2.01	S	1.99	1.98	1.98	1.98	2.09	2.03	24
18	1.99	1.99	1.98	1.98	2.01	2.06	2.04	2.04	2.02	2.02	2.01	2.01	2.02	2.03	2.03	2.04	2.07	2.05	2.04	S	2.05	2.05	2.04	2.04	1.98	2.07	2.03	24
19	2.04	2.06	2.02	2.01	2.03	2.02	2.01	2.00	1.99	1.97	1.97	1.96	1.97	1.98	1.99	2.00	2.00	2.01	S	1.99	2.00	1.99	1.99	2.00	1.96	2.06	2.00	24
20	1.99	1.98	1.99	2.00	1.99	1.99	1.98	1.99	2.02	2.01	2.00	2.03	2.04	2.05	2.05	2.01	2.00	S	1.96	1.96	1.97	1.98	1.97	1.96	1.96	2.05	2.00	24
21	1.97	1.97	1.96	1.98	1.97	1.97	1.97	1.97	1.96	1.95	1.95	1.95	1.95	1.95	1.94	1.94	S	2.11	1.99	2.06	2.10	2.14	2.21	2.04	1.94	2.21	2.00	24
22	2.04	2.06	2.08	2.07	2.04	2.03	1.98	1.94	1.96	1.94	1.92	1.93	1.95	1.95	1.99	S	1.95	2.05	2.05	2.07	1.98	1.99	2.01	2.00	1.92	2.08	2.00	24
23	2.00	1.98	1.96	1.94	1.94	1.98	1.95	1.96	1.95	1.94	1.95	1.95	1.96	1.96	S	1.95	1.96	1.94	1.93	1.94	1.95	1.95	1.95	1.95	1.93	2.00	1.95	24
24	1.96	1.96	1.95	1.96	1.97	1.96	1.97	1.96	1.98	1.97	2.00	2.02	2.09	S	2.01	2.16	2.32	2.10	2.00	1.98	1.98	1.98	1.98	1.98	1.95	2.32	2.01	24
25	1.99	2.01	2.02	2.00	2.04	2.05	2.05	2.06	2.06	2.07	2.05	2.02	S	2.00	2.01	2.01	2.01	2.01	2.01	2.00	2.01	2.00	2.04	2.11	1.99	2.11	2.03	24
26	2.03	2.03	2.05	2.06	2.02	1.99	1.98	1.99	1.98	2.02	2.05	S	2.09	2.10	2.09	2.10	2.10	2.08	2.08	2.09	2.09	2.09	2.08	2.05	1.98	2.10	2.05	24
27	2.04	2.03	2.03	2.04	2.03	2.01	2.01	2.01	2.03	2.02	S	2.05	2.03	2.04	2.04	2.05	2.05	2.04	2.03	2.02	2.02	2.02	2.02	2.05	2.01	2.05	2.03	24
28	2.06	2.08	2.07	2.09	2.09	2.10	2.11	2.15	2.30	S	2.27	2.20	2.12	2.11	2.10	2.09	2.07	2.07	2.06	2.03	2.02	2.04	2.03	2.04	2.02	2.30	2.10	24
29	2.05	2.18	2.16	2.15	2.18	2.15	2.06	2.08	S	2.11	2.08	2.05	2.08	2.08	2.06	2.02	2.05	2.07	2.05	2.08	2.05	2.09	**2.37**	2.22	2.02	**2.37**	**2.11**	24
30	2.18	2.04	2.05	2.03	2.03	2.01	2.07	S	2.01	2.04	2.04	2.01	2.02	1.99	1.98	1.98	1.98	2.04	2.01	1.97	1.99	2.02	1.98	1.97	1.97	2.18	2.02	24
HOURLY MAX	2.23	2.18	2.16	2.16	2.18	2.17	2.11	2.15	2.30	2.11	2.27	2.27	2.12	2.21	2.10	2.16	2.32	2.22	2.11	2.09	2.27	2.14	2.37	2.29				
HOURLY AVG	2.03	2.02	2.01	2.01	2.02	2.02	2.01	2.01	2.02	2.01	2.02	2.02	2.01	2.02	2.01	2.01	2.03	2.04	2.02	2.01	2.02	2.01	2.03	2.03				

STATUS FLAG CODES

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

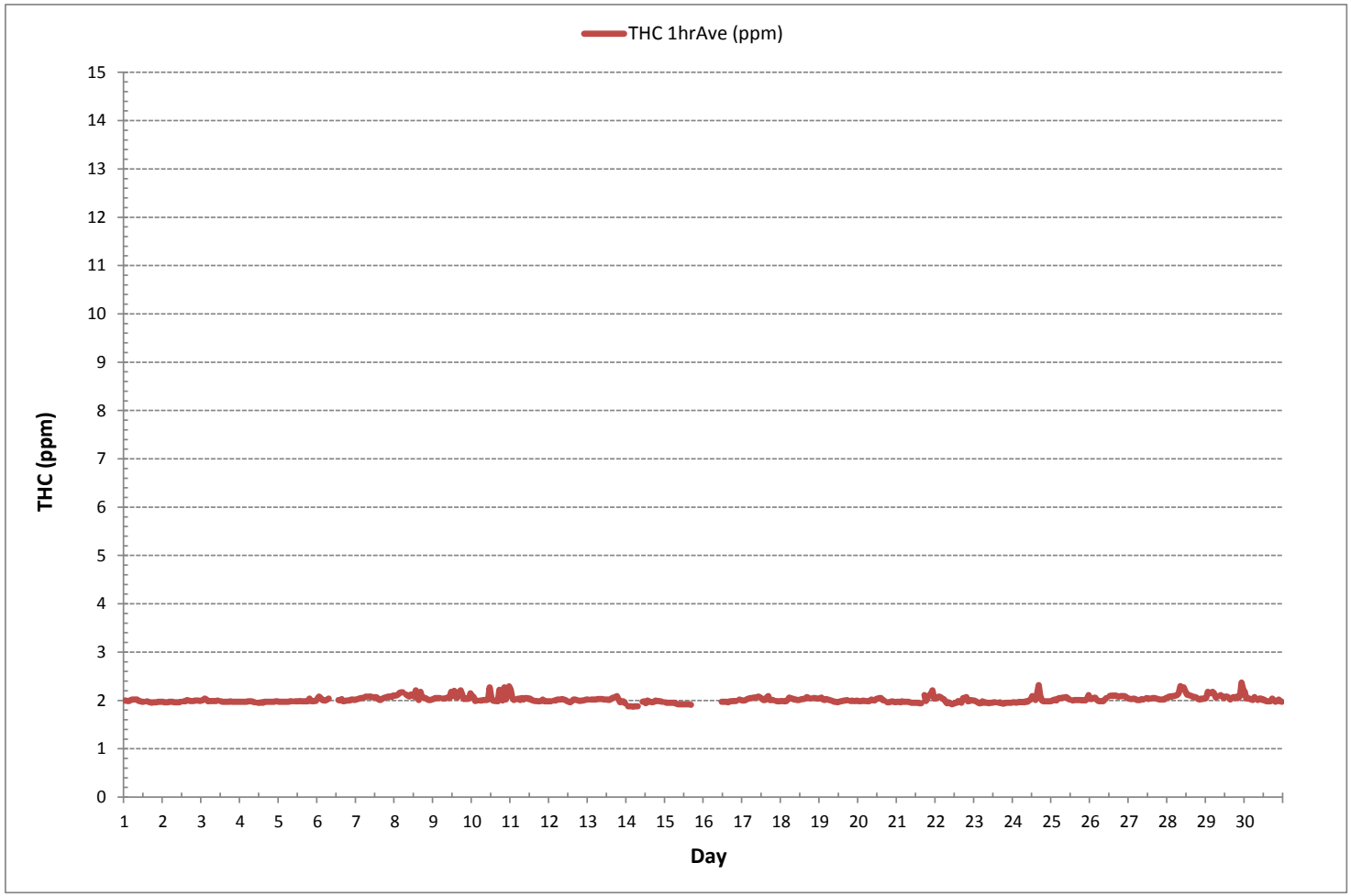
24 HR AVERAGES November 2018



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:			666				
MINIMUM 1-HR AVERAGE	1.87	ppm	@ HOUR	4	ON DAY	14	
MAXIMUM 1-HR AVERAGE:	2.37	ppm	@ HOUR	22	ON DAY	29	
MAXIMUM 24-HR AVERAGE:	2.11	ppm			ON DAY	29	
IZS CALIBRATION TIME:	30	hrs	OPERATIONAL TIME:			700	hrs
MONTHLY CALIBRATION TIME:	4	hrs	AMD OPERATION UPTIME:			97.2	%
STANDARD DEVIATION:	0.06		MONTHLY AVERAGE:			2.02	ppm

TOTAL HYDROCARBONS Hourly Averages (THC ppm)



Wind: PRAMP_986
Poll.: PRAMP_986-THC55[ppm]
Monthly: 18/11
Type: PollutionRose
Direction: Blowing From (Wind Frequency)
Based On 1 Hr.

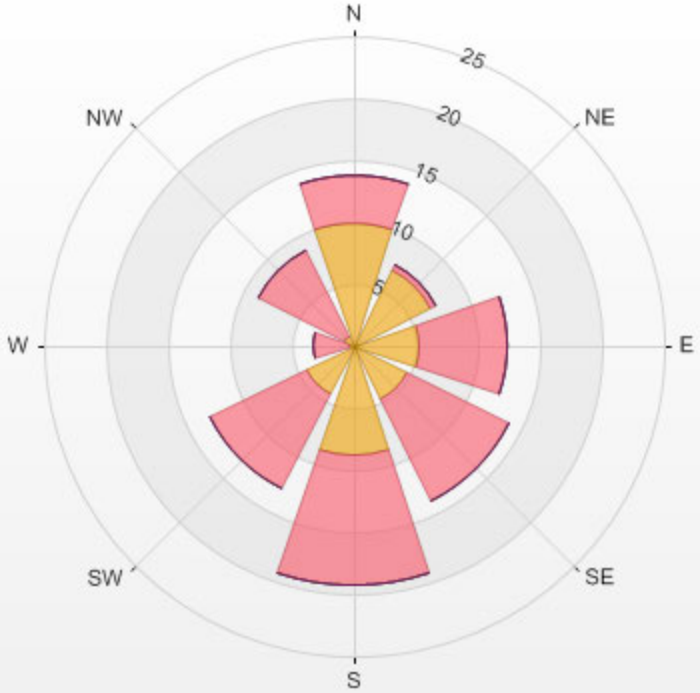
Calm: 8.11%

Calm Avg: 2.04 [ppm]

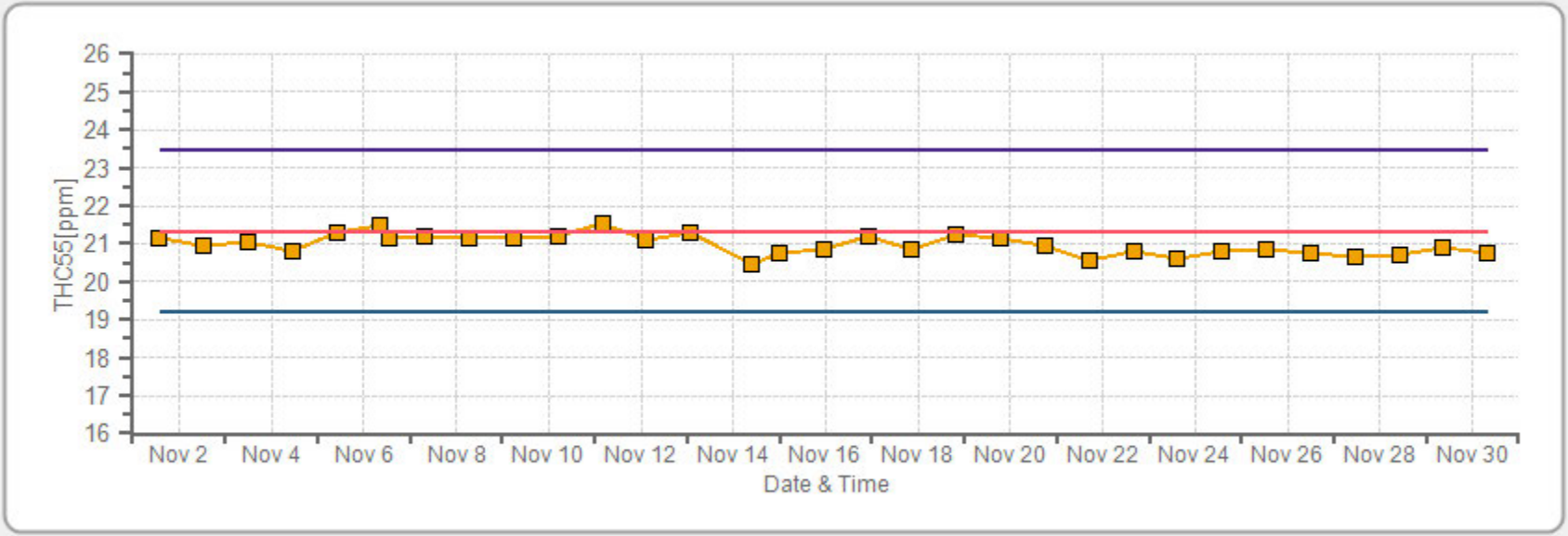
Direction	0-2	2-3	3-5	5-10	>10.0	Total
N	9.9	3.9	0.0	0.0	0.0	13.8
NE	6.9	0.5	0.0	0.0	0.0	7.4
E	5.3	7.2	0.0	0.0	0.0	12.5
SE	4.8	9.3	0.0	0.0	0.0	14.1
S	8.9	10.5	0.0	0.0	0.0	19.4
SW	4.4	8.6	0.0	0.0	0.0	12.9
W	0.5	2.9	0.0	0.0	0.0	3.3
NW	0.9	7.7	0.0	0.0	0.0	8.6
Summary	41.4	50.5	0.0	0.0	0.0	91.9

% Icon Classes (ppm)	41 0-2	50 2-3	0 3-5	0 5-10	0 >10.0

PRAMP_986 Poll.: PRAMP_986-THC55[ppm] 2018/11/01 00:00 - 2018/11/30 23:00 Calm: 8.11% Calm Poll Avg: 2.04[ppm]



THC55[ppm] Calibration: PRAMP_986 Monthly: 18/11 Type: Span



METHANE

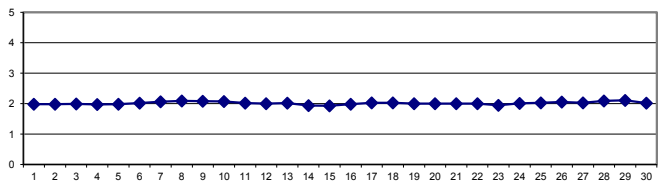
METHANE Hourly Averages (CH_4 ppm)

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	2.00	2.00	1.99	1.99	2.01	2.02	2.02	2.02	2.02	1.99	1.98	1.97	1.97	S	1.98	1.97	1.96	1.95	1.96	1.96	1.96	1.97	1.97	1.97	1.95	2.02	1.98	24
2	1.97	1.96	1.96	1.96	1.97	1.97	1.97	1.96	1.96	1.96	1.96	1.97	S	1.98	1.98	2.01	2.00	1.99	1.99	1.99	2.00	2.00	2.00	1.99	1.96	2.01	1.98	24
3	2.00	2.01	2.04	2.02	1.98	1.99	1.99	1.99	1.99	1.99	2.00	S	1.98	1.97	1.97	1.97	1.97	1.97	1.98	1.97	1.97	1.97	1.97	1.97	1.97	2.04	1.99	24
4	1.97	1.97	1.97	1.97	1.97	1.98	1.98	1.98	1.97	1.96	S	1.95	1.95	1.96	1.95	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.98	1.98	1.95	1.98	1.97	24
5	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.98	1.98	S	1.98	1.98	1.98	1.99	1.98	1.98	1.98	1.98	1.98	2.04	1.99	1.98	1.99	1.99	1.97	2.04	1.98	24
6	2.04	2.08	2.05	2.01	2.00	2.00	2.02	2.04	S	C	C	C	C	2.01	2.00	2.03	1.98	1.99	2.00	2.00	2.00	2.02	2.02	2.01	1.98	2.08	2.02	24
7	2.02	2.03	2.04	2.05	2.05	2.06	2.08	S	2.08	2.08	2.07	2.06	2.07	2.06	2.02	2.01	2.03	2.05	2.06	2.07	2.08	2.08	2.07	2.10	2.01	2.10	2.06	24
8	2.10	2.10	2.12	2.16	2.17	2.17	S	2.12	2.10	2.08	2.12	2.12	2.08	2.21	2.05	2.01	2.18	2.06	2.06	2.05	2.03	2.01	2.01	2.02	2.01	2.21	2.09	24
9	2.03	2.05	2.05	2.05	2.05	S	2.04	2.04	2.05	2.06	2.05	2.18	2.09	2.20	2.07	2.06	2.18	2.21	2.11	2.03	2.04	2.03	2.04	2.15	2.03	2.21	2.08	24
10	2.10	2.07	1.99	2.00	S	2.00	2.00	2.01	2.01	2.01	2.02	2.27	2.06	2.00	1.99	1.99	1.98	2.22	2.11	2.00	2.27	2.02	2.12	2.29	1.98	2.29	2.07	24
11	2.23	2.05	2.01	S	2.03	2.04	2.01	2.05	2.02	2.05	2.05	2.03	2.04	2.01	2.00	1.99	1.99	1.98	1.98	1.99	2.02	1.98	1.98	1.98	1.98	2.23	2.02	24
12	1.98	1.98	S	2.00	2.00	2.02	2.02	2.02	2.03	2.02	2.01	1.99	1.97	1.96	1.99	2.02	2.02	2.01	2.00	1.99	2.00	2.00	2.01	2.02	1.96	2.03	2.00	24
13	2.02	S	2.02	2.02	2.02	2.02	2.03	2.03	2.03	2.03	2.02	2.02	2.02	2.01	2.02	2.05	2.06	2.07	2.09	2.02	1.96	1.98	1.98	1.94	1.94	2.09	2.02	24
14	X	1.88	1.88	1.88	**1.87**	1.88	1.88	1.87	X	S	1.97	1.98	1.94	2.00	1.97	1.97	1.96	1.97	2.00	1.99	1.99	1.98	1.97	S	**1.87**	2.00	1.94	22
15	1.96	1.95	1.95	1.95	1.95	1.95	1.95	1.93	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.91	X	X	X	X	X	X	X	1.91	1.96	1.93	17
16	X	X	X	X	X	X	X	X	X	X	X	1.97	1.97	1.97	1.97	1.96	1.98	1.98	1.99	1.99	1.99	S	2.02	2.01	1.96	2.02	1.98	13
17	2.00	2.00	2.01	2.03	2.04	2.05	2.05	2.06	2.06	2.07	2.08	2.06	2.04	2.01	2.01	2.06	2.09	2.01	2.01	2.01	S	1.99	1.98	1.98	1.98	2.09	2.03	24
18	1.99	1.99	1.98	1.98	2.01	2.06	2.04	2.04	2.02	2.02	2.01	2.01	2.02	2.03	2.03	2.04	2.07	2.05	2.04	S	2.05	2.05	2.04	2.04	1.98	2.07	2.03	24
19	2.04	2.06	2.02	2.01	2.03	2.02	2.01	2.00	1.99	1.97	1.97	1.96	1.97	1.98	1.99	2.00	2.00	2.01	S	1.99	2.00	1.99	1.99	2.00	1.96	2.06	2.00	24
20	1.99	1.98	1.99	2.00	1.99	1.99	1.98	1.99	2.02	2.01	2.00	2.03	2.04	2.05	2.05	2.01	2.00	S	1.96	1.96	1.97	1.98	1.97	1.96	1.96	2.05	2.00	24
21	1.97	1.97	1.96	1.98	1.97	1.97	1.97	1.97	1.96	1.95	1.95	1.95	1.95	1.95	1.94	1.94	S	2.11	1.99	2.06	2.10	2.14	2.21	2.04	1.94	2.21	2.00	24
22	2.04	2.06	2.08	2.07	2.04	2.03	1.98	1.94	1.96	1.94	1.92	1.93	1.95	1.95	1.99	S	1.95	2.05	2.05	2.07	1.98	1.99	2.01	2.00	1.92	2.08	2.00	24
23	2.00	1.98	1.96	1.94	1.94	1.98	1.95	1.96	1.95	1.94	1.95	1.95	1.96	1.96	S	1.95	1.96	1.94	1.93	1.94	1.95	1.95	1.95	1.95	1.93	2.00	1.95	24
24	1.96	1.96	1.95	1.96	1.97	1.96	1.97	1.96	1.98	1.97	2.00	2.02	2.09	S	2.01	2.16	2.32	2.10	2.00	1.98	1.98	1.98	1.98	1.98	1.95	2.32	2.01	24
25	1.99	2.01	2.02	2.00	2.04	2.05	2.05	2.06	2.06	2.07	2.05	2.02	S	2.00	2.01	2.01	2.01	2.01	2.01	2.00	2.01	2.00	2.04	2.11	1.99	2.11	2.03	24
26	2.03	2.03	2.05	2.06	2.02	1.99	1.98	1.99	1.98	2.02	2.05	S	2.09	2.10	2.09	2.10	2.10	2.08	2.08	2.09	2.09	2.09	2.08	2.05	1.98	2.10	2.05	24
27	2.04	2.03	2.03	2.04	2.03	2.01	2.01	2.01	2.03	2.02	S	2.05	2.03	2.04	2.04	2.05	2.05	2.04	2.03	2.02	2.02	2.02	2.02	2.05	2.01	2.05	2.03	24
28	2.06	2.08	2.07	2.09	2.09	2.10	2.11	2.15	2.23	S	2.21	2.17	2.12	2.10	2.10	2.09	2.07	2.07	2.06	2.03	2.02	2.04	2.03	2.04	2.02	2.23	2.09	24
29	2.05	2.18	2.16	2.15	2.18	2.15	2.06	2.08	S	2.11	2.08	2.05	2.08	2.08	2.06	2.02	2.05	2.07	2.05	2.08	2.05	2.09	**2.37**	2.22	2.02	**2.37**	**2.11**	24
30	2.18	2.04	2.05	2.03	2.03	2.01	2.07	S	2.01	2.04	2.04	2.01	2.02	1.99	1.98	1.98	1.98	2.04	2.01	1.97	1.99	2.02	1.98	1.97	1.97	2.18	2.02	24
HOURLY MAX	2.23	2.18	2.16	2.16	2.18	2.17	2.11	2.15	2.23	2.11	2.21	2.27	2.12	2.21	2.10	2.16	2.32	2.22	2.11	2.09	2.27	2.14	2.37	2.29				
HOURLY AVG	2.03	2.02	2.01	2.01	2.02	2.02	2.01	2.01	2.02	2.01	2.02	2.02	2.01	2.02	2.01	2.01	2.03	2.04	2.02	2.01	2.02	2.01	2.03	2.03				

STATUS FLAG CODES

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

24 HR AVERAGES November 2018

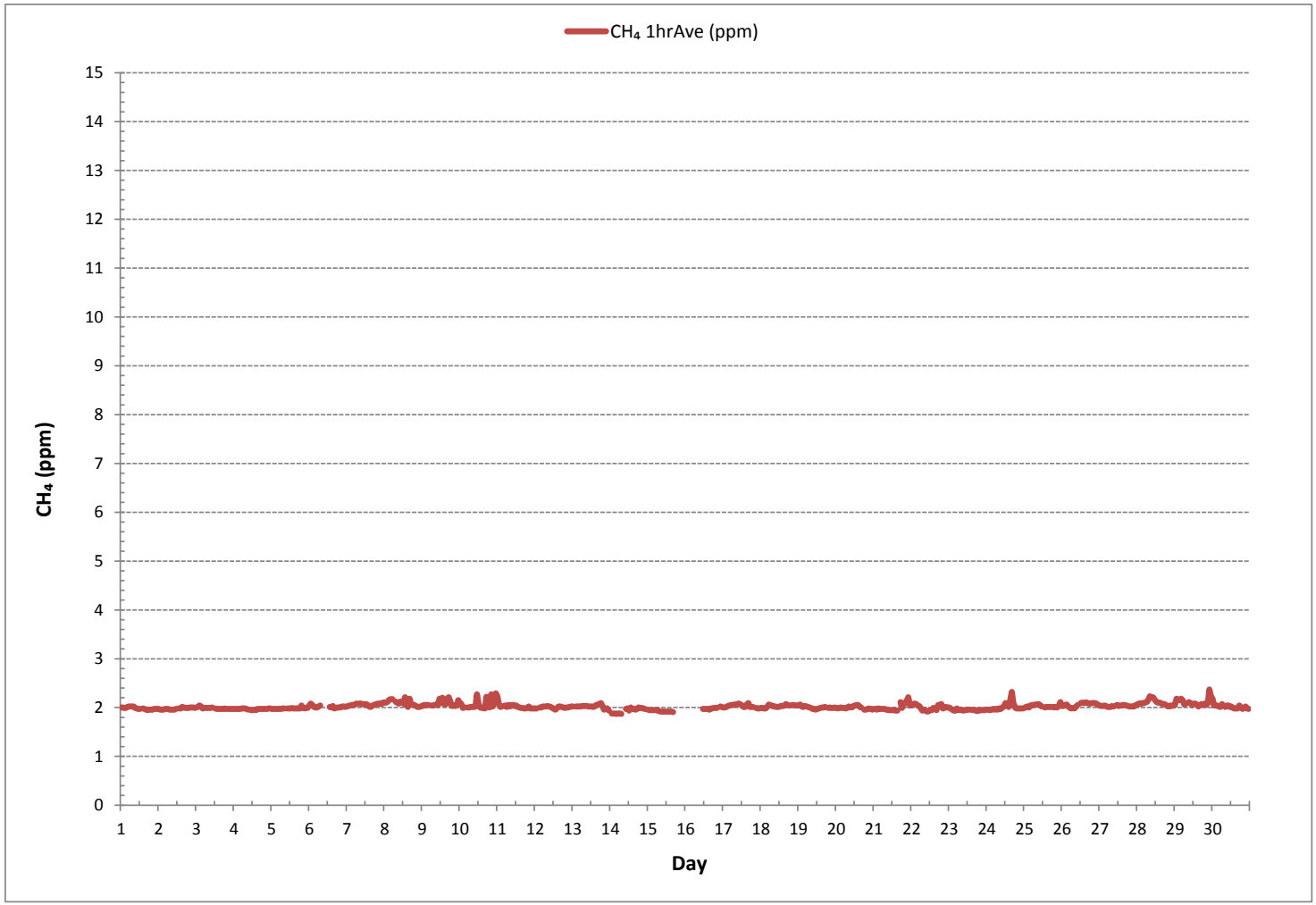


MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:		666				
MINIMUM 1-HR AVERAGE	1.87	ppm	@ HOUR	4	ON DAY	14
MAXIMUM 1-HR AVERAGE:	2.37	ppm	@ HOUR	22	ON DAY	29
MAXIMUM 24-HR AVERAGE:	2.11	ppm			ON DAY	29

IZS CALIBRATION TIME:	30	hrs	OPERATIONAL TIME:	700	hrs
MONTHLY CALIBRATION TIME:	4	hrs	AMD OPERATION UPTIME:	97.2	%
STANDARD DEVIATION:	0.06		MONTHLY AVERAGE:	2.02	ppm

METHANE Hourly Averages (CH_4 ppm)



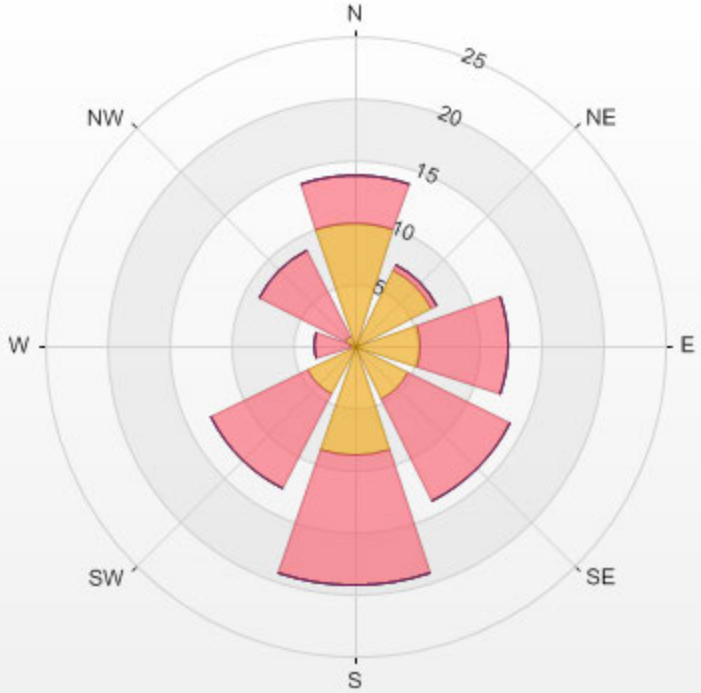
Wind: PRAMP_986
Poll.: PRAMP_986-CH_4 [ppm]
Monthly: 18/11
Type: PollutionRose
Direction: Blowing From (Wind Frequency)
Based On 1 Hr.

Calm: 8.11% Calm Avg: 2.04 [ppm]

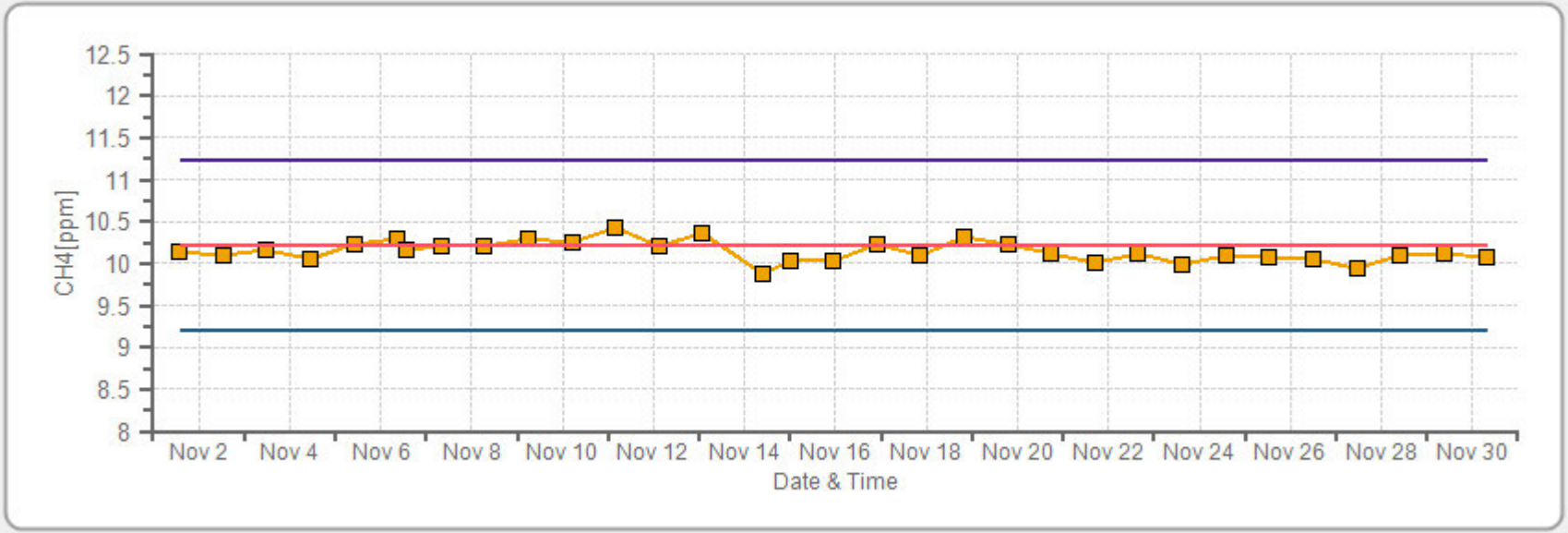
Direction	0-2	2-3	3-5	5-10	>10.0	Total
N	9.9	3.9	0.0	0.0	0.0	13.8
NE	6.9	0.5	0.0	0.0	0.0	7.4
E	5.3	7.2	0.0	0.0	0.0	12.5
SE	4.8	9.3	0.0	0.0	0.0	14.1
S	8.9	10.5	0.0	0.0	0.0	19.4
SW	4.4	8.6	0.0	0.0	0.0	12.9
W	0.5	2.9	0.0	0.0	0.0	3.3
NW	0.9	7.7	0.0	0.0	0.0	8.6
Summary	41.4	50.5	0.0	0.0	0.0	91.9

% Icon Classes (ppm)	41 0-2	50 2-3	0 3-5	0 5-10	0 >10.0

PRAMP_986 Poll.: PRAMP_986-CH4[ppm] 2018/11/01 00:00 - 2018/11/30 23:00 Calm: 8.11% Calm Poll Avg: 2.04[ppm]



CH4[ppm] Calibration: PRAMP_986 Monthly: 18/11 Type: Span



NON-METHANE HYDROCARBON

Maxxam
A Bureau Veritas Group Company

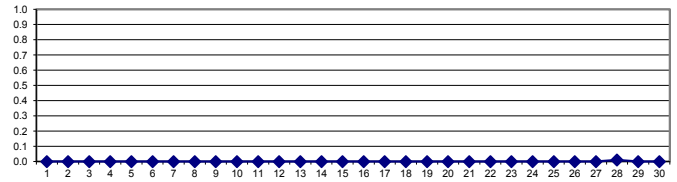
NON-METHANE HYDROCARBONS Hourly Averages (NMHC ppm)

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	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
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	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	0.00	24
7	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
8	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
9	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
10	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
11	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
12	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
13	0.00	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
14	X	0.00	0.00	0.00	0.00	0.00	0.00	0.00	X	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	S	0.00	0.00	0.00	22
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	X	X	X	X	X	X	X	0.00	0.00	0.00	17
16	X	X	X	X	X	X	X	X	X	X	X	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
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	24
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	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	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
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
26	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
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.07**	S	0.07	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.07**	**0.01**	24
29	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
30	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
HOURLY MAX	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.07	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
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

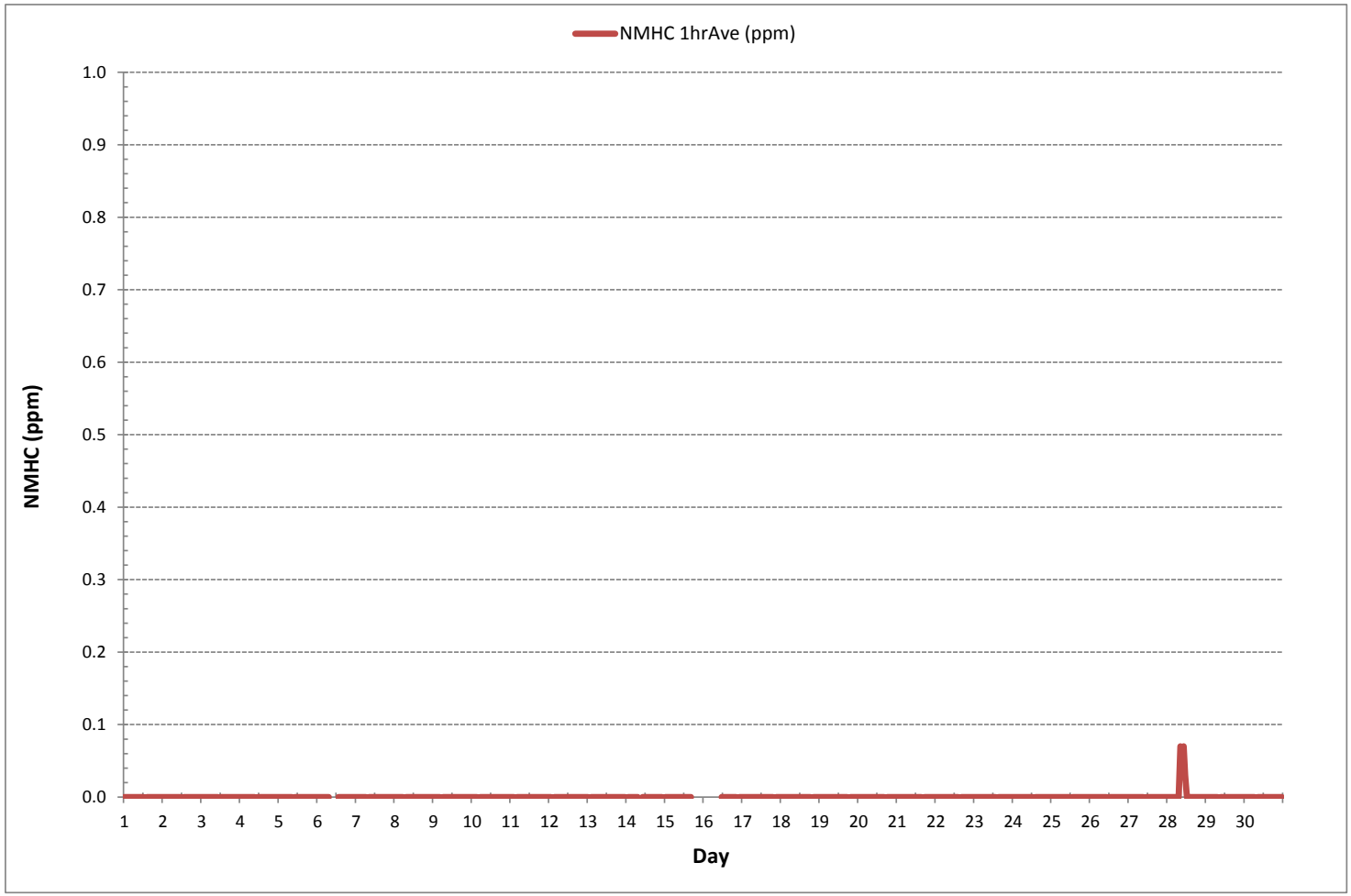
24 HR AVERAGES November 2018



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:			3				
MINIMUM 1-HR AVERAGE	0.00	ppm	@ HOUR	0	ON DAY	1	
MAXIMUM 1-HR AVERAGE:	0.07	ppm	@ HOUR	8	ON DAY	28	
MAXIMUM 24-HR AVERAGE:	0.01	ppm			ON DAY	28	
IZS CALIBRATION TIME:	30	hrs	OPERATIONAL TIME:			700	hrs
MONTHLY CALIBRATION TIME:	4	hrs	AMD OPERATION UPTIME:			97.2	%
STANDARD DEVIATION:	0.00		MONTHLY AVERAGE:			0.00	ppm

NON-METHANE HYDROCARBONS Hourly Averages (NMHC ppm)



Wind: PRAMP_986
Poll.: PRAMP_986-NMHC [ppm]
Monthly: 18/11
Type: PollutionRose
Direction: Blowing From (Wind Frequency)
Based On 1 Hr.

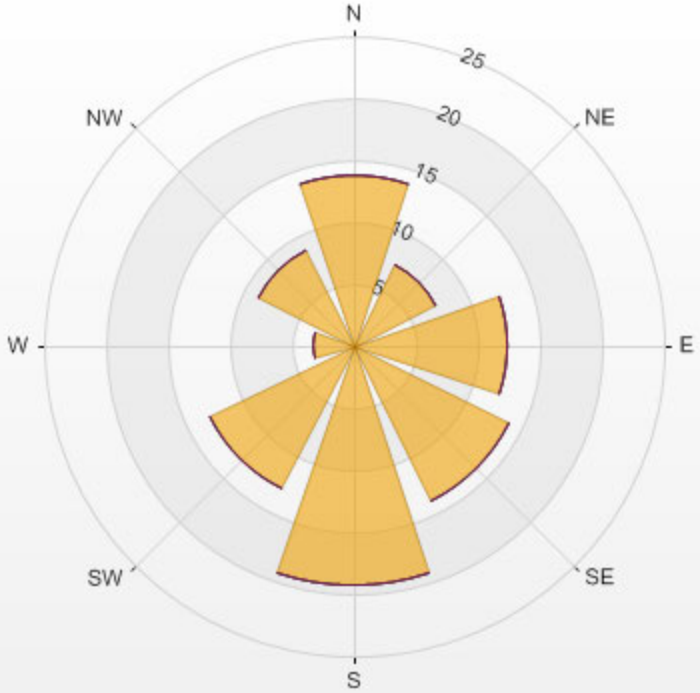
Calm: 8.11%

Calm Avg: 0.00 [ppm]

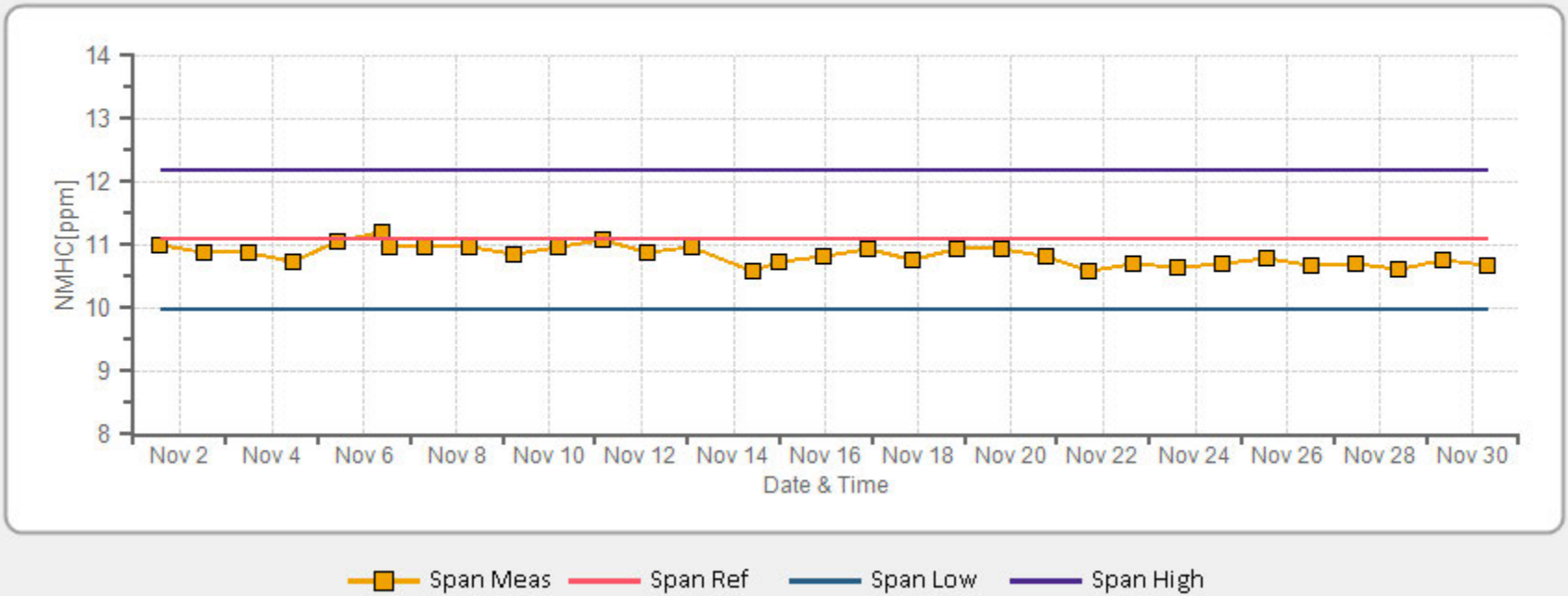
Direction	0-0.1	0.1-0.3	0.3-1	1-2	>2.0	Total
N	13.8	0.0	0.0	0.0	0.0	13.8
NE	7.4	0.0	0.0	0.0	0.0	7.4
E	12.5	0.0	0.0	0.0	0.0	12.5
SE	14.1	0.0	0.0	0.0	0.0	14.1
S	19.4	0.0	0.0	0.0	0.0	19.4
SW	12.9	0.0	0.0	0.0	0.0	12.9
W	3.3	0.0	0.0	0.0	0.0	3.3
NW	8.6	0.0	0.0	0.0	0.0	8.6
Summary	91.9	0.0	0.0	0.0	0.0	91.9

% Icon Classes (ppm)	92 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] 2018/11/01 00:00 - 2018/11/30 23:00 Calm: 8.11% Calm Poll Avg: 0.00[ppm]



NMHC[ppm] Calibration: PRAMP_986 Monthly: 18/11 Type: Span



WIND SPEED

WIND SPEED Hourly Averages (WS kph)

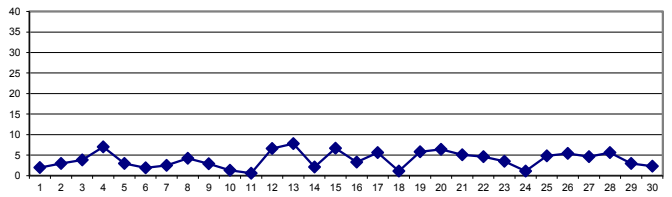
HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY																												
1	7.2	7.5	7.4	6.7	5.6	6.8	5.1	3.3	2.4	2.3	1.8	2.0	3.9	2.8	2.1	3.9	5.5	4.3	5.2	5.7	4.2	5.2	5.9	6.0	1.8	7.5	2.0	24
2	6.5	7.7	8.2	7.5	6.9	4.2	6.2	5.8	5.2	6.5	4.8	3.1	4.3	2.8	1.9	2.2	0.7	0.3	2.3	2.3	2.5	3.9	3.7	2.5	0.3	8.2	3.0	24
3	2.5	3.3	3.0	10.4	8.1	4.6	4.3	4.6	3.8	3.7	4.3	3.9	4.1	5.5	5.1	5.2	4.0	3.6	5.9	7.5	6.7	7.4	8.3	7.4	2.5	10.4	3.8	24
4	7.9	9.4	7.6	7.5	8.2	7.6	6.9	7.5	8.6	8.7	9.5	9.0	9.4	9.1	8.9	8.9	8.7	7.6	7.2	6.2	6.1	5.2	3.3	3.3	3.3	9.5	7.0	24
5	3.7	4.1	4.0	5.2	4.3	5.5	3.4	2.1	3.6	3.5	4.2	4.4	3.0	3.8	4.1	2.7	2.8	3.0	1.6	0.8	1.4	1.8	1.6	1.4	0.8	5.5	3.0	24
6	1.5	3.2	2.4	2.8	2.7	1.8	2.9	3.1	2.2	4.2	4.8	5.4	6.6	5.3	4.6	4.6	3.2	3.3	3.7	4.1	4.0	4.0	4.2	2.6	1.5	6.6	1.9	24
7	2.5	2.3	3.0	3.2	2.3	1.8	2.1	1.9	2.6	2.8	3.4	3.7	1.0	2.8	5.0	4.6	4.7	5.5	4.8	4.7	5.1	4.1	4.6	3.2	1.0	5.5	2.5	24
8	2.5	2.5	2.4	2.2	3.5	3.3	3.3	2.9	3.9	4.7	3.2	3.6	6.0	2.7	7.8	6.5	1.5	3.3	5.2	8.9	5.7	9.8	9.2	9.7	1.5	9.8	4.2	24
9	9.2	7.9	7.1	8.2	9.2	7.8	7.5	5.9	3.3	2.1	3.4	4.7	6.3	6.9	7.3	4.1	2.0	5.8	6.7	5.5	7.0	4.0	3.6	2.5	2.0	9.2	2.9	24
10	1.3	1.5	2.3	2.5	2.0	2.1	1.7	2.4	2.8	2.3	0.7	6.4	7.7	7.8	7.5	6.4	4.0	2.0	1.2	0.8	1.0	1.6	1.9	3.8	0.7	7.8	1.3	24
11	3.5	0.6	3.0	4.4	4.4	4.7	5.9	3.9	2.6	3.2	4.1	3.0	3.6	5.3	6.9	4.0	1.2	3.1	2.6	3.4	6.8	8.2	10.1	9.2	0.6	10.1	0.6	24
12	9.7	8.9	6.8	6.7	6.2	5.1	4.8	5.7	5.4	5.9	6.5	7.8	8.4	8.0	8.3	7.7	6.5	5.9	5.8	5.5	5.1	6.5	6.2	7.1	4.8	9.7	6.6	24
13	7.2	7.1	5.1	5.3	7.0	8.8	8.0	7.4	8.5	8.9	8.9	9.8	9.0	10.2	10.9	8.0	6.8	8.2	8.8	6.2	10.1	6.3	8.7	6.7	5.1	10.9	**7.8**	24
14	6.6	9.2	8.8	6.8	3.6	6.5	6.1	6.2	5.5	0.9	3.2	8.4	5.1	7.0	5.4	5.8	4.8	3.6	3.5	4.9	5.0	4.4	5.2	4.5	0.9	9.2	2.1	24
15	4.6	6.0	6.1	5.8	4.6	4.9	4.5	4.3	4.5	5.5	5.4	6.5	6.8	7.9	8.4	9.0	8.9	8.5	8.8	7.7	7.8	8.7	9.0	8.2	4.3	9.0	6.7	24
16	7.1	7.1	5.9	5.3	3.0	1.1	0.8	1.4	2.2	2.3	3.8	3.8	6.5	8.9	10.1	8.8	8.7	7.5	6.9	7.8	6.1	6.0	6.2	8.9	0.8	10.1	3.3	24
17	6.4	7.3	6.3	8.1	7.5	6.4	4.7	3.8	3.8	2.7	2.9	4.4	3.2	2.5	4.0	7.0	4.7	7.7	9.4	8.2	8.8	8.2	6.3	7.7	2.5	9.4	5.6	24
18	5.6	5.9	5.7	4.4	3.6	4.4	8.5	8.0	8.0	7.9	7.2	4.5	4.4	3.7	3.2	2.2	4.0	1.8	4.1	6.0	6.0	3.8	4.8	4.3	1.8	8.5	1.1	24
19	4.5	2.9	6.2	7.3	7.0	6.2	7.2	7.7	7.0	7.0	5.2	6.9	8.5	7.6	7.6	7.9	6.8	6.1	6.1	5.5	5.4	5.0	3.8	4.4	2.9	8.5	5.8	24
20	4.5	5.3	6.8	6.5	4.9	5.5	4.5	5.3	7.5	8.1	5.7	6.7	8.2	8.5	7.9	8.0	6.5	5.4	4.9	7.3	8.6	7.7	9.6	7.5	4.5	9.6	6.4	24
21	7.3	5.7	8.2	9.0	8.6	7.5	7.3	6.0	4.3	8.7	6.1	4.1	6.4	6.3	5.8	5.3	6.0	0.5	1.3	4.4	3.1	4.0	2.2	2.9	0.5	9.0	5.1	24
22	4.8	6.3	8.4	6.4	8.2	7.7	9.5	10.3	3.8	6.6	8.0	9.1	10.7	9.0	8.6	**16.9**	6.3	3.1	3.7	5.6	6.2	6.0	6.4	5.8	3.1	**16.9**	4.6	24
23	7.1	8.5	7.1	7.5	5.6	2.4	2.4	1.1	0.5	3.4	2.7	2.3	1.1	3.9	4.2	3.8	5.0	4.7	4.4	5.0	3.9	3.4	4.0	3.5	0.5	8.5	3.5	24
24	3.5	2.9	5.2	7.5	5.7	6.8	3.5	2.1	3.5	0.5	0.6	1.0	4.5	2.9	3.7	4.5	1.2	0.6	**0.1**	0.2	0.7	0.9	1.1	1.7	**0.1**	7.5	1.1	24
25	2.1	1.3	1.4	2.8	3.7	4.5	5.3	5.3	5.4	5.4	7.0	7.9	5.5	6.8	9.2	8.1	5.8	7.9	7.1	7.8	10.0	3.5	2.6	2.5	1.3	10.0	4.8	24
26	5.2	4.7	4.1	4.6	5.5	4.1	4.9	4.8	5.7	5.6	5.9	6.1	6.4	6.4	3.1	5.8	8.2	7.8	4.7	6.4	7.8	3.6	5.2	4.9	3.1	8.2	5.4	24
27	5.4	5.8	4.9	5.4	4.5	3.2	3.9	5.3	6.3	4.8	4.3	4.8	5.2	6.0	4.1	4.2	4.8	3.9	5.0	6.1	5.4	4.6	4.0	3.8	3.2	6.3	4.6	24
28	3.7	4.3	2.8	3.6	5.6	6.8	5.5	7.2	6.2	7.2	7.0	8.4	7.1	6.5	7.6	7.9	7.1	7.9	6.3	5.7	6.1	6.8	4.9	5.6	2.8	8.4	5.6	24
29	5.4	7.9	4.6	4.9	5.8	5.5	4.4	6.3	5.3	2.7	2.7	2.7	3.1	1.6	2.2	2.8	3.9	4.0	2.4	1.7	3.1	1.2	1.7	1.9	1.2	7.9	3.0	24
30	1.4	1.9	2.6	2.5	3.2	2.7	4.6	4.3	3.0	3.3	3.7	3.5	2.9	3.4	2.7	3.1	1.1	2.3	1.3	0.9	0.4	0.3	0.3	1.4	0.3	4.6	2.3	24
HOURLY MAX	9.7	9.4	8.8	10.4	9.2	8.8	9.5	10.3	8.6	8.9	9.5	9.8	10.7	10.2	10.9	16.9	8.9	8.5	9.4	8.9	10.1	9.8	10.1	9.7				

STATUS FLAG CODES

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

LAST CALIBRATION:	April 4, 2018
DECLINATION :	MAGNETIC DECLINATION 15 DEGREE EAST

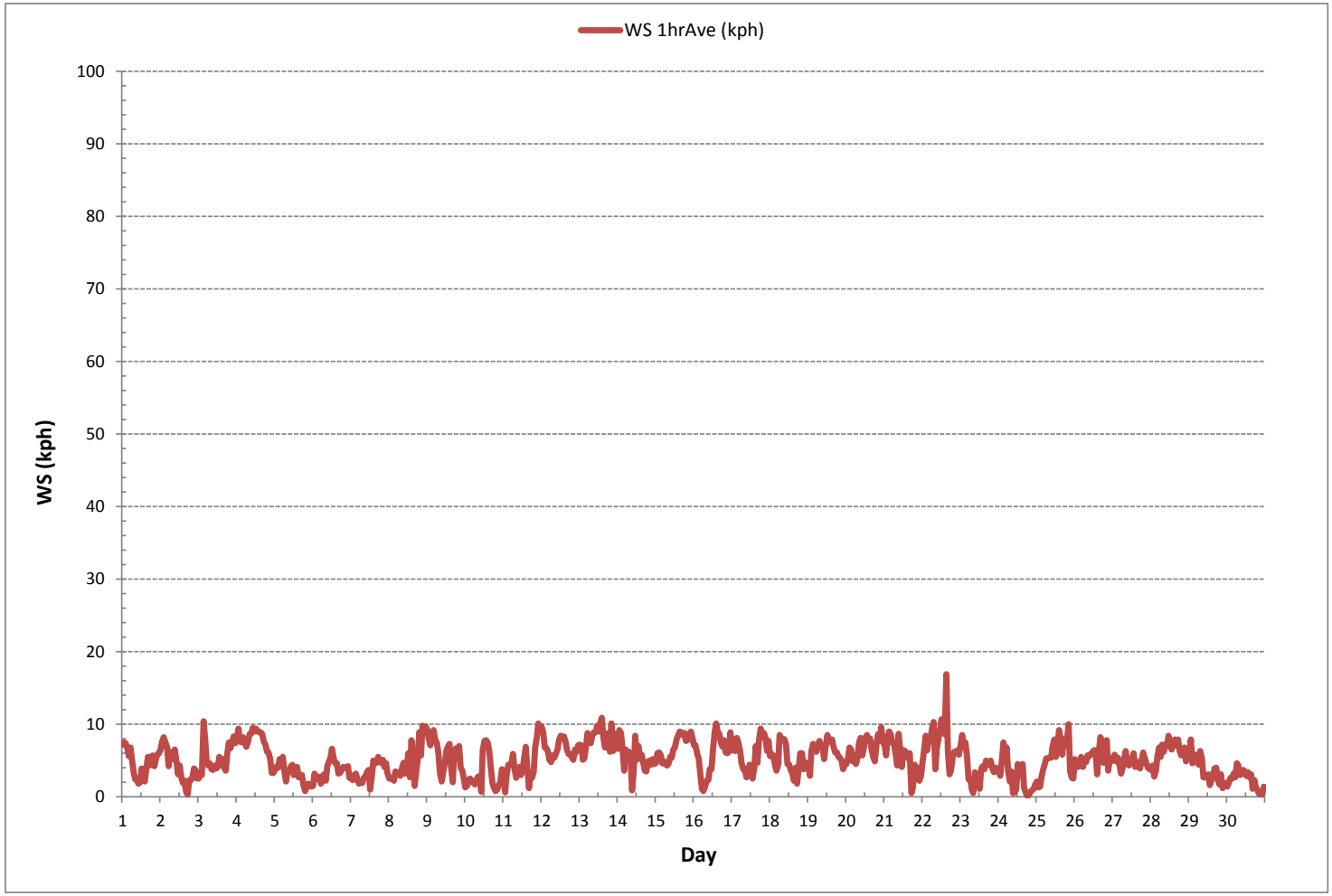
24 HR AVERAGES November 2018



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:			720				
MINIMUM 1-HR AVERAGE	0.1	kph	@ HOUR	18	ON DAY	24	
MAXIMUM 1-HR AVERAGE:	16.9	kph	@ HOUR	15	ON DAY	22	
MAXIMUM 24-HR AVERAGE:	7.8	kph			ON DAY	13	
			OPERATIONAL TIME:			720	hrs
MONTHLY CALIBRATION TIME:	0	hrs	AMD OPERATION UPTIME:			100.0	%
STANDARD DEVIATION:	2.4		MONTHLY AVERAGE:			1.0	kph

WIND SPEED Hourly Averages (WS kph)



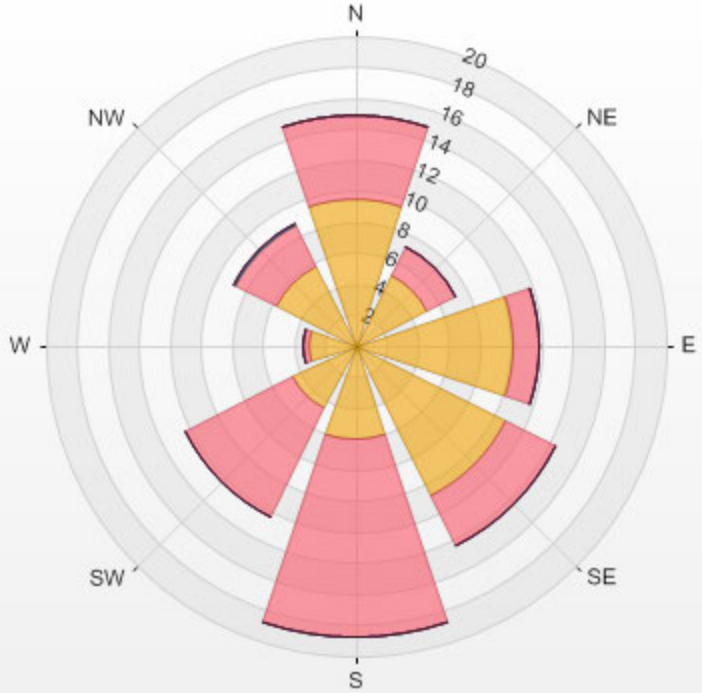
Wind: PRAMP_986
Monitor: WSP [kph]
Monthly: 18/11
Type: WindRose
Direction: Blowing From (Wind Frequency)
Based On 1 Hr.

Calm: 8.06%

Direction	1.8-6.0	6.0-12.0	12.0-20.0	20.0-29.0	29.0-39.0	>39.0	Total
N	9.4	5.4	0.0	0.0	0.0	0.0	14.9
NE	5.1	2.1	0.0	0.0	0.0	0.0	7.2
E	10.1	1.7	0.0	0.0	0.0	0.0	11.8
SE	10.8	3.6	0.0	0.0	0.0	0.0	14.4
S	6.1	12.8	0.0	0.0	0.0	0.0	18.9
SW	4.6	7.8	0.0	0.0	0.0	0.0	12.4
W	3.1	0.4	0.0	0.0	0.0	0.0	3.5
NW	5.7	3.1	0.1	0.0	0.0	0.0	8.9
Summary	55.0	36.8	0.1	0.0	0.0	0.0	92.0

% Icon Classes (kph)	55 1.8-6.0	37 6.0-12.0	0 12.0-20.0	0 20.0-29.0	0 29.0-39.0	0 >39.0

PRAMP_986 2018/11/01 00:00 - 2018/11/30 23:00 Calm: 8.06% Calm Wind Avg Speed: 1.10(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	NNW	NNW	NNW	NNW	NW	NW	NW	NW	NW	N	NNE	ENE	SE	ESE	ESE	SE	SE	E	E	E	E	ENE	ENE	E	NNE	24
2	E	E	E	E	E	ENE	E	E	E	ESE	E	NE	NE	ENE	ENE	NW	S	S	S	S	SW	SSW	SW	SSW	E	24
3	SSW	SW	W	NNW	NNW	N	NNW	N	NNW	NNW	NNW	N	NNE	NE	NE	NE	NNE	NNE	NE	ENE	ENE	NE	NE	NE	NNE	24
4	NE	NE	NE	NE	NE	NE	NNE	NNE	NNE	NNE	NNE	N	N	N	N	NNW	NNW	NNW	NNW	N	N	N	N	N	NNE	24
5	NNE	NE	NE	NE	NE	NE	NE	NNE	NE	NE	NE	NE	ENE	N	NNE	NNE	N	NE	NE	WNW	NE	NNE	N	N	NE	24
6	WNW	NW	NW	NNW	NNW	NNW	NNW	WNW	W	WNW	WNW	WNW	WNW	WNW	WSW	W	SSW	S	SSE	SSE	S	SSW	SSE	SE	W	24
7	ESE	ESE	ESE	ESE	ESE	E	ESE	ESE	ESE	SE	SSE	SE	WNW	WSW	SW	SW	SSW	S	SSE	SE	ESE	ESE	ESE	ESE	SE	24
8	E	E	E	E	ESE	ESE	ESE	ESE	ESE	ESE	SE	SE	SE	S	SE	SSE	NNW	E	ESE	SE	SE	SSE	SSE	S	SE	24
9	S	S	S	SSW	SSW	SSW	SSW	SSW	SSW	SSW	WSW	WNW	WNW	NW	WNW	W	W	WNW	NW	NNW	NNW	NNW	NNW	NNW	WSW	24
10	NNW	S	S	SSE	ESE	SE	SSE	SSE	SSE	SSE	S	NW	NNW	NNW	NNW	N	N	N	NNW	NNE	NW	NW	NNW	NW	NNW	24
11	NW	NNW	N	N	NNW	NNW	N	NNW	NNW	NNW	NW	W	WSW	S	SSW	S	SSE	SSE	ESE	E	SE	SE	SSE	SSE	SSE	24
12	S	S	S	S	SSW	SSW	SSW	SSW	SSW	S	S	S	S	SSW	SSW	S	S	S	S	SSW	SSE	S	SSW	SSW	S	24
13	SSW	S	SSW	SSW	SW	SSW	SSW	SSW	SSW	SW	SW	SSW	SSW	SSW	S	SSE	SSW	SSW	SSW	SSW	SW	SW	SSW	SSW	SSW	24
14	SW	SW	SSW	S	S	SSW	SSW	SSW	SW	S	WSW	WNW	NNW	NW	NNW	NNW	NNE	N	N	NNE	N	NNW	NNW	NNW	W	24
15	NNW	N	N	N	N	N	N	NNE	NNE	NNE	NNE	N	N	N	N	N	N	N	NNW	NNW	NNW	N	N	NNW	N	24
16	NNW	NNW	NNW	NNW	NNW	NNW	SSE	SSE	SE	SSE	SSE	SSE	SSW	SSW	SSW	SSW	SSW	SSW	S	S	S	SSW	SSW	S	SSW	24
17	S	SSW	SSW	S	SSW	SSW	S	S	S	S	SSE	SSE	SE	ESE	ESE	SSE	SSE	S	SSE	SSE	SSE	SSE	S	S	S	24
18	SSW	SSW	SSW	SSW	WSW	WSW	NNW	NNW	NNW	NNW	N	N	N	NNW	NNW	NNW	NW	WNW	ESE	ESE	ESE	ESE	ESE	ESE	NNW	24
19	SE	SSE	S	S	SSW	SSW	S	SSW	S	S	S	S	SSW	SSW	SSW	S	S	SSE	SSE	SE	SE	SE	SE	SSE	S	24
20	SSW	S	S	S	S	SSE	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	S	S	S	S	S	SSE	SSE	SSE	S	24
21	SE	SE	SSE	SSE	S	SSE	SE	SE	SE	SSE	SE	SE	S	SSE	SSE	SE	SE	S	ENE	E	ESE	ESE	S	SSE	SSE	24
22	S	S	SSW	SSW	SW	SW	SSW	SSW	SW	SSW	SSW	SW	SW	SW	W	NW	W	W	WNW	NW	N	NNW	NNW	N	WSW	24
23	N	NNE	NE	NE	NE	N	NE	NE	SE	ESE	ENE	ESE	NNW	NNE	NE	NE	NE	NE	ENE	ENE	E	ENE	E	E	NE	24
24	E	E	ESE	ESE	ESE	SE	SE	SE	ESE	E	N	NW	NW	W	WSW	WNW	WNW	W	SW	NE	SE	ESE	E	ESE	ESE	24
25	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	SE	SE	SE	SSE	S	SSW	SSE	SE	SSE	SE	SSE	ESE	ESE	E	SE	24
26	ESE	ESE	ESE	ESE	ESE	E	ESE	E	E	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	E	ESE	ESE	ESE	ENE	E	ESE	24
27	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	ESE	E	E	E	E	ENE	NE	ENE	E	ESE	ESE	ESE	ESE	ESE	ESE	24
28	ESE	SE	SSE	SSW	SSW	S	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SW	SW	WSW	SW	WSW	SSW	24
29	W	NW	NW	NW	NW	NW	WNW	WNW	WNW	WNW	WNW	WSW	W	SSW	SSE	SW	WSW	NW	N	N	N	NNW	NW	NW	WNW	24
30	NNW	NNW	NNW	NNW	NNW	NNW	NW	NNW	NNW	NW	NNW	NNW	NNW	NNW	N	N	N	NNW	NNW	N	N	N	E	ENE	NNW	24

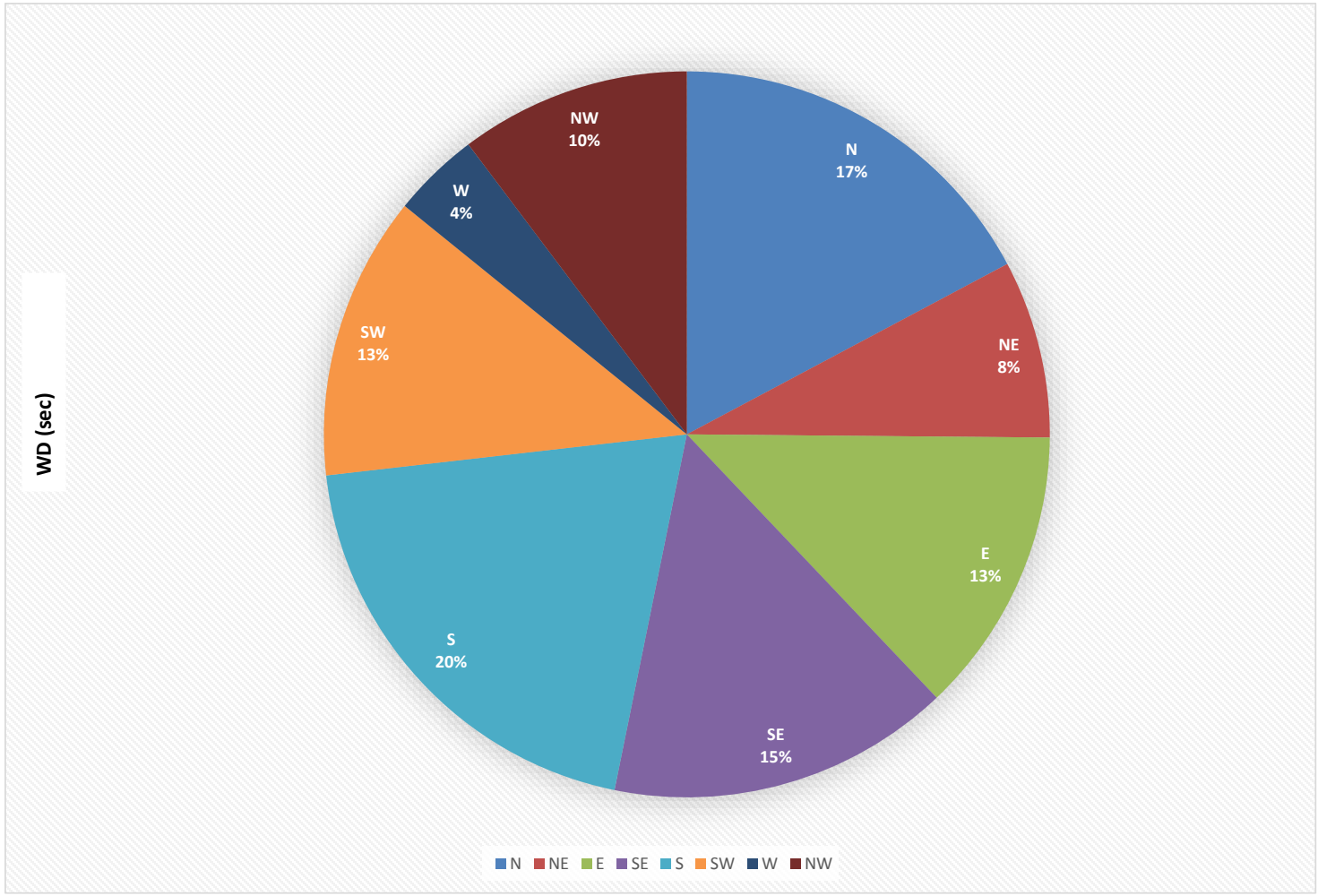
STATUS FLAG CODES

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

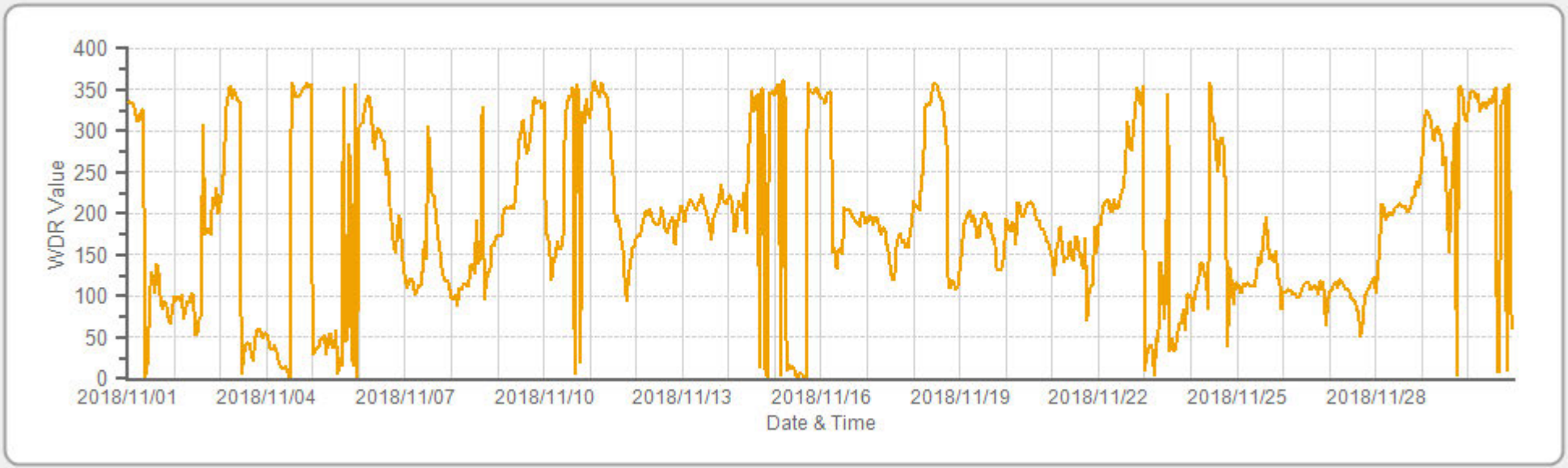
LAST CALIBRATION:	April 4, 2018
DECLINATION :	MAGNETIC DECLINATION 15 DEGREE EAST

MONTHLY CALIBRATION TIME:	0	hrs	OPERATIONAL TIME:	720	hrs
STANDARD DEVIATION:	101		AMD OPERATION UPTIME:	100.0	%
			MONTHLY AVERAGE:	165 (SSE)	

WIND DIRECTION Hourly Averages (WD)



WDR[degwdr] Station: PRAMP_986 Monthly: 18/11 Type: AVG 1 Hr. [1 Hr.]



RELATIVE HUMIDITY

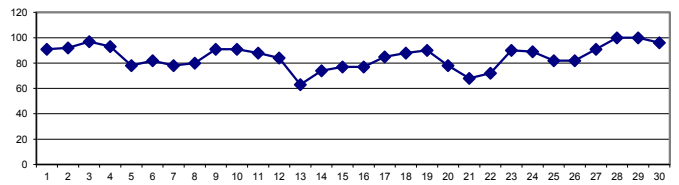
RELATIVE HUMIDITY Hourly Averages (RH %)

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	**100**	100	100	100	100	100	100	100	100	100	91	86	85	83	80	78	78	79	81	85	86	87	88	88	78	**100**	91	24
2	88	88	88	87	91	95	94	93	95	92	88	89	89	89	88	88	88	90	93	96	98	100	100	100	87	100	92	24
3	100	100	100	100	100	100	100	98	98	98	96	92	88	90	92	97	99	100	100	96	97	95	93	94	88	100	97	24
4	95	96	98	99	98	97	98	98	98	96	93	92	89	88	88	89	90	90	89	88	88	88	89	89	88	99	93	24
5	86	84	84	83	82	80	80	82	79	76	74	72	71	72	73	73	75	76	76	80	79	78	79	78	71	86	78	24
6	78	82	85	87	88	87	87	87	87	85	83	78	74	74	74	74	75	83	85	84	86	87	86	81	74	88	82	24
7	80	79	79	79	76	75	75	75	74	78	79	77	75	74	72	74	80	85	85	82	81	79	79	77	72	85	78	24
8	76	76	75	74	75	75	77	77	79	80	80	76	75	76	76	79	81	85	89	89	89	85	83	84	74	89	80	24
9	86	88	89	88	89	89	90	91	94	91	85	84	83	84	83	84	91	100	100	100	99	97	97	97	83	100	91	24
10	96	96	96	97	97	96	96	97	98	97	95	92	88	85	79	75	78	84	90	91	90	90	91	93	75	98	91	24
11	93	93	92	92	92	92	90	87	86	86	86	86	87	88	90	88	85	87	85	84	87	88	87	87	84	93	88	24
12	87	88	90	91	92	93	93	93	92	90	86	81	74	73	79	80	80	81	80	79	82	77	77	73	73	93	84	24
13	71	70	68	63	60	60	64	66	66	64	58	55	55	55	60	68	67	69	68	65	56	63	61	68	55	71	63	24
14	71	69	71	74	74	73	76	81	79	75	67	69	67	67	64	67	72	75	77	78	80	81	83	86	64	86	74	24
15	86	85	80	77	77	75	75	71	71	71	72	73	77	82	76	78	79	75	77	79	79	79	78	77	71	86	77	24
16	78	80	80	79	79	79	77	74	75	77	79	77	70	67	68	70	74	77	79	80	81	82	83	84	67	84	77	24
17	84	84	84	84	83	84	83	82	82	81	80	78	76	79	80	80	81	82	83	87	94	98	100	100	76	100	85	24
18	93	90	91	90	85	83	91	94	93	91	86	83	82	82	84	85	87	88	89	89	89	90	90	91	82	94	88	24
19	94	94	97	95	94	93	93	92	92	91	91	85	80	79	79	78	80	86	91	93	92	92	95	97	78	97	90	24
20	90	87	88	85	84	87	83	82	86	85	76	70	68	65	68	70	71	74	75	75	73	75	73	72	65	90	78	24
21	73	77	72	71	67	68	71	71	70	70	64	54	**50**	50	53	56	60	71	76	81	78	77	77	73	**50**	81	68	24
22	73	72	73	73	73	77	76	70	72	72	66	61	60	59	60	68	73	77	77	79	78	78	79	80	59	80	72	24
23	79	79	81	85	88	89	90	92	93	94	94	93	92	90	89	89	90	92	93	93	93	93	93	92	79	94	90	24
24	91	91	89	89	89	86	87	88	88	88	87	84	89	88	89	90	94	94	93	93	92	90	86	86	84	94	89	24
25	87	87	84	84	85	87	88	89	90	91	94	95	85	77	65	59	65	72	74	77	77	81	82	88	59	95	82	24
26	93	91	91	90	87	87	85	83	77	75	75	74	73	73	72	75	77	78	80	83	83	83	85	87	72	93	82	24
27	89	89	89	88	89	92	94	95	95	95	89	84	82	81	83	87	89	91	92	92	96	98	100	100	81	100	91	24
28	100	100	100	100	100	100	100	100	100	100	100	100	100	100	98	98	97	98	98	98	99	100	100	100	97	100	**100**	24
29	99	100	100	100	100	100	100	100	100	100	100	99	99	98	98	99	100	100	100	100	100	100	100	100	98	100	100	24
30	100	100	100	100	100	100	100	99	98	97	96	93	92	92	93	94	94	94	95	95	95	95	95	95	92	100	96	24
HOURLY MAX	100	100	100	100	100	100	100	100	100	100	100	100	100	100	98	99	100	100	100	100	100	100	100	100				
HOURLY AVG	87	87	87	87	86	87	87	87	87	86	84	81	79	79	78	80	82	84	86	86	87	87	87	87				

STATUS FLAG CODES

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

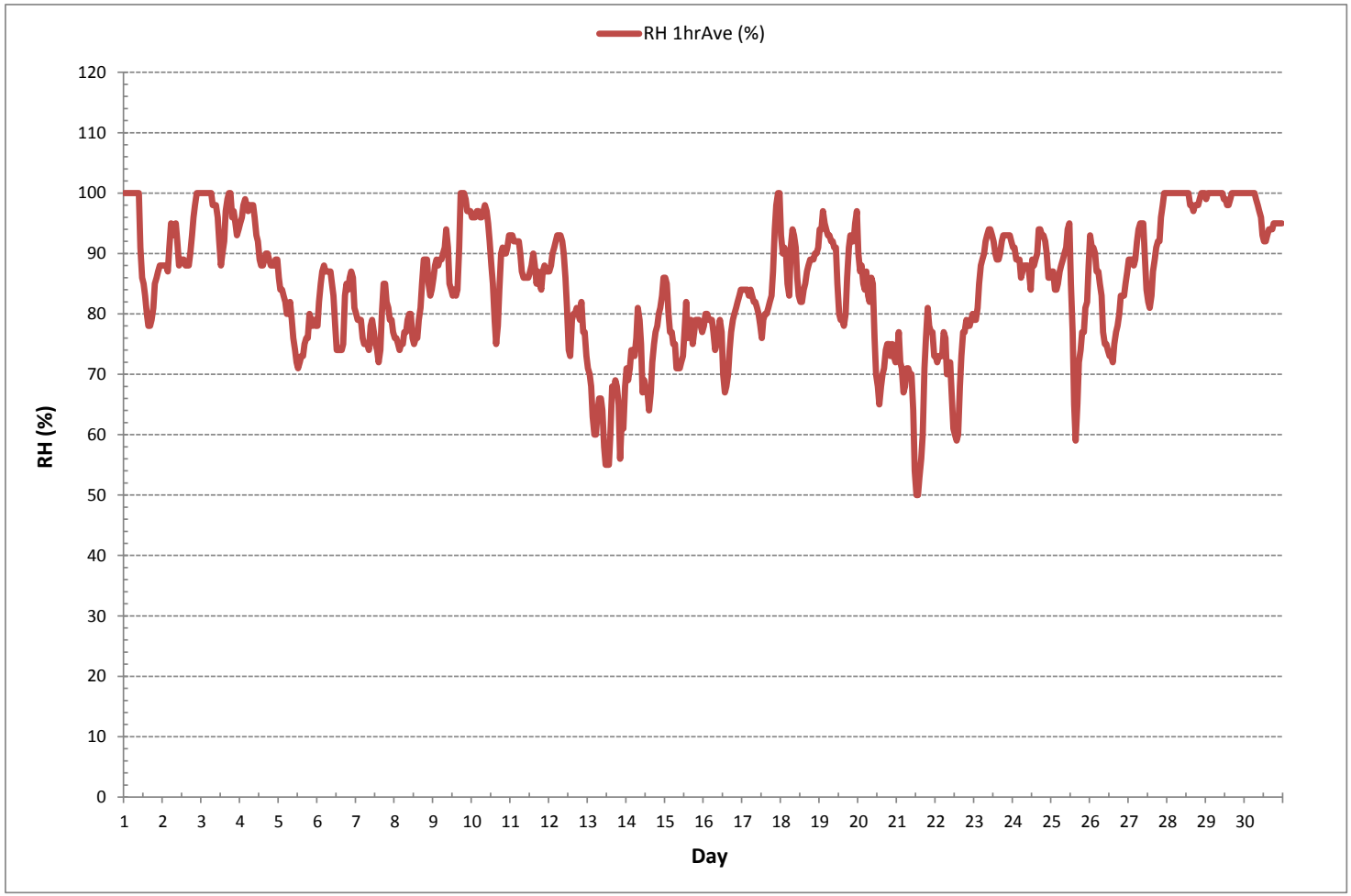
24 HR AVERAGES November 2018



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	50	%	@ HOUR	12	ON DAY	21	
MAXIMUM 1-HR AVERAGE:	100	%	@ HOUR	0	ON DAY	1	
MAXIMUM 24-HR AVERAGE:	100	%			ON DAY	28	
			OPERATIONAL TIME:			720	hrs
			AMD OPERATION UPTIME:			100.0	%
STANDARD DEVIATION:	10		MONTHLY AVERAGE:			85	%

RELATIVE HUMIDITY Hourly Averages (RH %)



BAROMETRIC PRESSURE

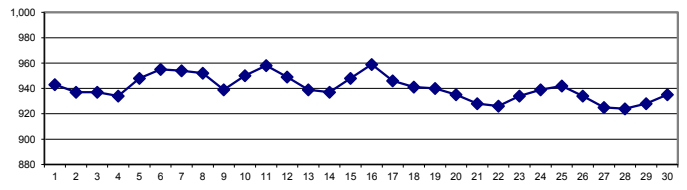
BAROMETRIC PRESSURE Hourly Averages (BP mbar)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY																												
1	942	943	944	945	945	946	946	946	946	946	946	946	945	945	944	944	943	942	942	941	940	939	939	938	938	946	943	24
2	937	936	935	935	934	934	934	934	935	935	936	936	936	937	937	938	939	939	939	939	939	939	939	939	934	939	937	24
3	939	939	939	939	940	940	940	940	940	940	940	939	939	938	937	937	936	935	935	934	933	932	931	930	930	940	937	24
4	929	929	928	927	927	927	927	928	929	930	931	932	933	934	936	937	938	939	940	941	942	943	943	944	927	944	934	24
5	944	945	945	945	946	946	946	947	947	948	948	949	949	949	949	950	950	950	951	951	951	952	952	952	944	952	948	24
6	953	953	953	953	954	954	954	955	955	955	956	956	956	956	956	956	956	956	956	956	956	955	956	956	953	956	955	24
7	956	956	955	955	955	955	955	955	955	954	954	953	953	953	954	954	954	954	954	954	954	954	954	954	953	956	954	24
8	954	954	954	954	954	954	954	954	954	953	953	953	953	953	952	951	951	951	950	949	948	947	946	944	944	954	952	24
9	943	942	941	940	939	938	937	937	936	936	937	937	937	937	938	938	939	939	940	941	942	943	944	945	936	945	939	24
10	946	946	946	947	947	947	947	948	948	948	948	949	950	950	951	951	952	952	953	953	954	955	955	956	946	956	950	24
11	956	957	957	958	958	959	959	960	960	961	961	961	961	961	961	960	959	958	958	957	956	955	954	953	953	961	958	24
12	953	952	951	951	950	950	950	950	950	950	950	950	949	949	949	948	948	948	948	947	947	947	946	946	946	953	949	24
13	945	945	944	943	942	942	941	941	940	940	939	939	939	938	938	937	937	937	936	936	936	936	936	936	936	945	939	24
14	935	935	934	934	934	934	934	935	935	935	936	936	936	937	938	938	939	939	940	941	941	942	942	943	934	943	937	24
15	944	945	945	946	946	947	947	947	947	947	947	947	947	947	947	947	948	949	950	952	953	954	956	957	944	957	948	24
16	958	959	959	960	961	961	**962**	962	962	962	962	961	961	961	960	960	959	959	958	957	956	955	955	953	953	**962**	**959**	24
17	953	952	951	950	950	949	949	949	949	949	948	948	947	947	946	944	944	943	941	940	939	938	937	936	936	953	946	24
18	936	935	935	936	936	937	938	939	940	942	943	943	944	944	944	944	945	944	944	944	943	943	943	942	935	945	941	24
19	942	942	941	941	941	941	940	940	940	940	940	940	940	940	939	939	939	939	939	939	938	938	938	938	938	942	940	24
20	937	937	937	937	936	936	936	935	936	935	935	936	935	935	935	935	935	934	934	934	933	933	933	933	933	937	935	24
21	932	932	931	931	930	930	930	929	929	929	928	928	928	927	927	926	926	925	925	**924**	924	924	924	925	**924**	932	928	24
22	925	925	925	925	925	925	924	924	925	925	925	925	925	925	926	926	927	927	928	928	929	930	930	931	924	931	926	24
23	931	931	932	932	932	933	933	934	934	934	934	935	935	935	935	935	935	935	936	936	936	936	936	937	931	937	934	24
24	937	937	937	937	937	937	937	937	937	938	938	938	938	939	939	940	940	941	941	942	942	943	943	943	937	943	939	24
25	943	943	943	943	943	943	942	942	942	942	942	942	942	942	942	942	942	941	941	941	941	941	941	940	940	943	942	24
26	939	939	939	939	937	937	936	935	935	934	934	933	933	933	932	932	931	930	930	930	929	929	929	929	929	939	934	24
27	928	928	928	928	927	927	927	927	926	926	925	925	924	924	924	924	924	924	924	924	924	924	924	924	924	928	925	24
28	924	924	924	924	924	924	924	924	924	924	924	924	924	924	924	924	925	925	925	925	925	925	925	926	924	926	924	24
29	926	926	926	927	927	927	927	927	928	928	928	929	929	929	929	929	929	929	929	929	930	930	930	930	926	930	928	24
30	931	931	931	932	932	932	932	933	933	934	934	935	935	935	936	936	937	937	937	938	938	938	939	939	931	939	935	24
HOURLY MAX	958	959	959	960	961	961	962	962	962	962	962	961	961	961	961	960	959	959	958	957	956	955	956	957				
HOURLY AVG	941	941	940	940	940	940	940	940	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941	941				

STATUS FLAG CODES

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

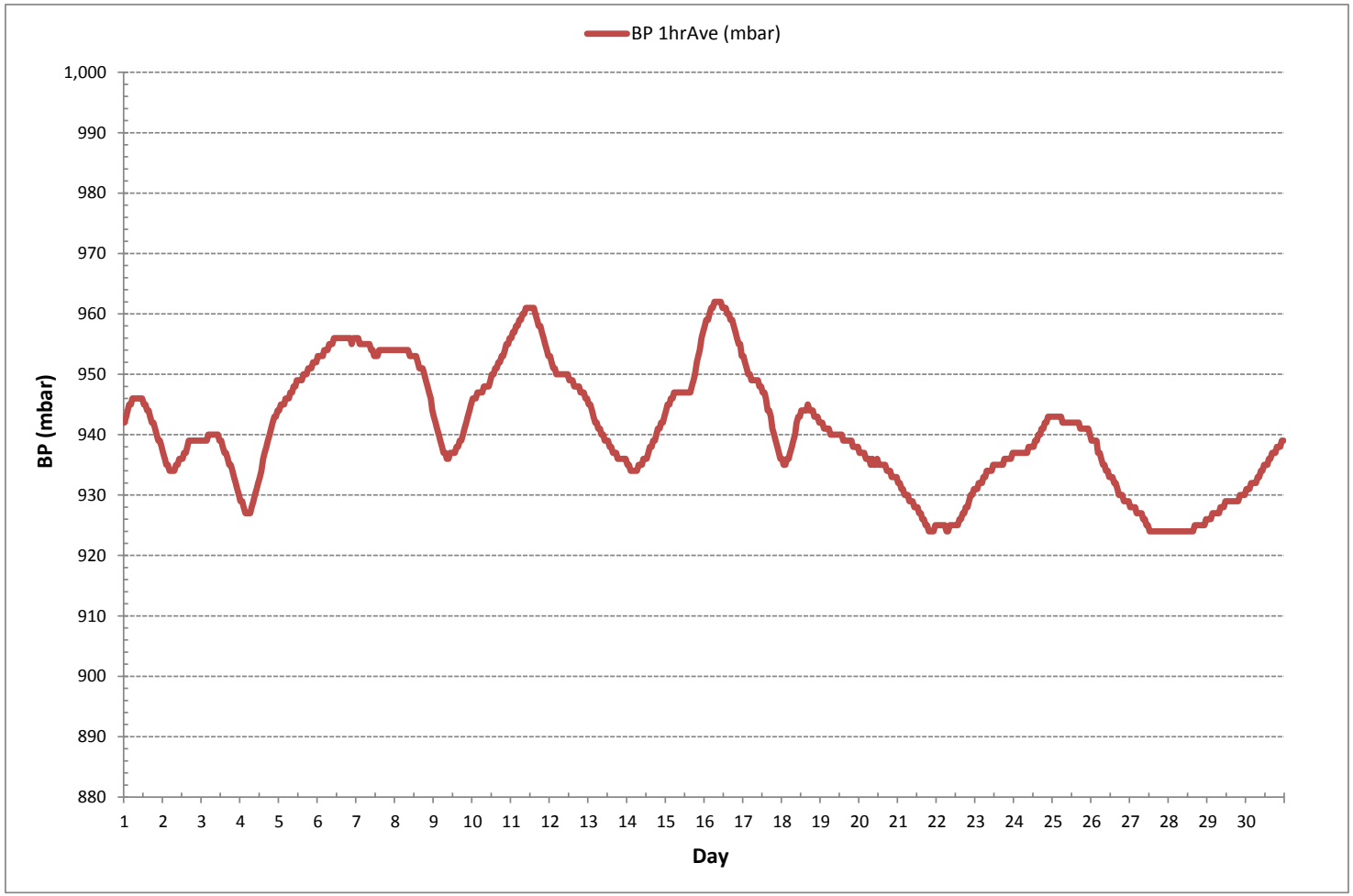
24 HR AVERAGES November 2018



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	924	mbar	@ HOUR	19	ON DAY	21	
MAXIMUM 1-HR AVERAGE:	962	mbar	@ HOUR	6	ON DAY	16	
MAXIMUM 24-HR AVERAGE:	959	mbar			ON DAY	16	
			OPERATIONAL TIME:			720	hrs
			AMD OPERATION UPTIME:			100.0	%
STANDARD DEVIATION:	10		MONTHLY AVERAGE:			941	mbar

BAROMETRIC PRESSURE Hourly Averages (BP mbar)



AMBIENT TEMPERATURE

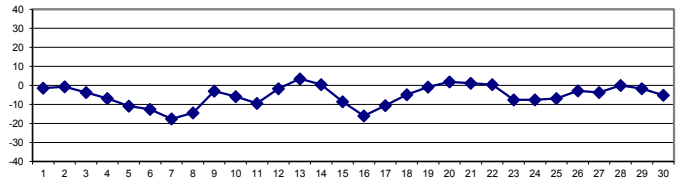
AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY																												
1	-2.5	-2.5	-2.4	-2.3	-2.2	-2.2	-2.2	-2.1	-2.1	-1.8	-1.4	-1.2	-0.9	-0.5	-0.2	-0.1	-0.4	-0.6	-0.9	-1.1	-1.0	-1.1	-1.1	-1.1	-2.5	-0.1	-1.4	24
2	-1.0	-0.9	-1.0	-0.9	-0.8	-1.1	-1.4	-1.5	-1.6	-1.3	-1.0	-0.9	-0.9	-0.5	0.1	0.3	0.3	-0.1	-0.4	-0.5	-0.5	-0.4	-0.2	-0.3	-1.6	0.3	-0.7	24
3	-0.3	-0.4	-0.4	-2.0	-4.0	-4.5	-4.6	-4.8	-4.8	-4.8	-4.5	-4.0	-3.9	-3.7	-3.7	-3.8	-3.9	-4.0	-3.9	-4.3	-4.6	-4.6	-4.5	-4.6	-4.8	-0.3	-3.7	24
4	-4.6	-4.6	-4.8	-4.7	-4.7	-4.8	-5.2	-5.5	-5.8	-5.8	-5.9	-5.9	-6.0	-6.1	-6.5	-7.2	-8.1	-8.7	-9.0	-9.3	-9.8	-10.2	-10.5	-10.6	-10.6	-4.6	-6.8	24
5	-10.6	-10.7	-10.8	-10.8	-10.8	-11.0	-11.0	-11.0	-10.9	-10.8	-10.6	-10.4	-10.3	-10.2	-10.3	-10.5	-10.8	-11.0	-11.1	-11.2	-11.2	-11.1	-11.2	-11.2	-11.2	-10.2	-10.8	24
6	-11.2	-11.5	-11.5	-11.6	-11.7	-11.7	-11.8	-11.8	-11.7	-11.6	-11.2	-10.8	-10.8	-10.7	-10.7	-10.7	-11.4	-14.1	-16.7	-17.5	-14.9	-13.4	-15.3	-18.5	-18.5	-10.7	-12.6	24
7	-19.0	-19.6	-20.5	-20.4	-22.0	-22.8	-23.0	-22.9	**-23.3**	-18.2	-15.5	-13.0	-11.6	-10.5	-9.7	-10.8	-12.9	-14.9	-16.1	-17.5	-18.2	-19.6	-19.6	-20.7	**-23.3**	-9.7	-17.6	24
8	-21.9	-21.6	-22.0	-22.8	-22.2	-21.9	-20.7	-21.1	-19.1	-16.0	-13.8	-11.4	-9.9	-9.0	-7.9	-7.8	-9.8	-12.6	-12.8	-11.0	-10.0	-7.8	-7.1	-6.4	-22.8	-6.4	-14.4	24
9	-5.6	-5.2	-4.3	-3.0	-2.7	-2.7	-3.1	-3.3	-4.0	-3.3	-2.5	-2.4	-1.6	-1.1	-0.8	-1.0	-1.2	-1.5	-1.3	-1.8	-2.9	-4.6	-5.4	-5.7	-5.7	-0.8	-3.0	24
10	-5.8	-6.1	-7.2	-7.0	-6.5	-6.6	-6.6	-5.7	-4.9	-4.8	-2.9	-1.5	-1.5	-2.0	-2.5	-3.3	-4.2	-5.8	-8.2	-8.7	-10.3	-11.0	-9.7	-8.2	-11.0	-1.5	-5.9	24
11	-8.9	-8.4	-8.2	-8.0	-8.3	-8.5	-8.6	-8.8	-8.9	-8.5	-8.5	-8.5	-8.5	-8.5	-8.8	-8.9	-9.7	-13.2	-15.1	-15.3	-13.1	-8.8	-7.2	-5.9	-15.3	-5.9	-9.4	24
12	-5.3	-5.0	-5.0	-4.8	-5.1	-4.8	-4.7	-4.3	-4.2	-3.7	-2.6	-1.1	0.9	1.1	-0.2	0.2	0.6	0.6	0.9	1.0	0.3	1.1	1.3	1.8	-5.3	1.8	-1.7	24
13	1.9	1.6	1.7	2.2	2.9	3.2	2.4	2.3	2.4	3.0	4.6	5.7	6.1	6.2	4.9	3.6	3.5	3.4	3.6	4.1	5.5	3.6	3.6	2.9	1.6	6.2	**3.5**	24
14	3.7	4.6	3.9	3.2	3.2	3.4	2.5	1.3	1.7	2.3	4.0	3.5	3.1	2.0	1.4	0.1	-1.3	-2.4	-3.1	-3.7	-4.6	-5.1	-5.8	-6.1	-6.1	4.6	0.5	24
15	-5.9	-5.6	-5.7	-6.0	-6.3	-6.6	-6.8	-7.0	-7.2	-7.4	-7.4	-7.3	-7.6	-7.8	-7.8	-8.5	-9.4	-10.0	-11.5	-12.0	-12.3	-12.7	-13.0	-13.6	-13.6	-5.6	-8.6	24
16	-14.1	-14.6	-14.9	-15.3	-16.6	-18.5	-20.8	-22.9	-21.5	-19.2	-16.9	-15.6	-13.5	-13.1	-13.1	-13.6	-14.6	-15.4	-15.8	-15.6	-15.9	-14.5	-14.5	-14.5	-22.9	-13.1	-16.0	24
17	-14.8	-13.9	-14.2	-14.4	-15.0	-15.1	-15.9	-17.2	-17.1	-15.2	-13.6	-11.9	-10.0	-8.6	-8.5	-7.1	-8.1	-7.5	-6.8	-5.6	-5.2	-4.1	-2.9	-1.8	-17.2	-1.8	-10.6	24
18	-1.2	-0.9	-0.6	-0.4	0.5	0.9	-1.6	-4.2	-5.9	-7.2	-7.6	-7.5	-7.2	-6.9	-6.7	-6.6	-7.5	-7.6	-6.4	-6.2	-6.0	-5.6	-5.9	-7.6	-7.6	0.9	-4.8	24
19	-8.1	-8.7	-4.5	-2.8	-2.1	-1.9	-1.7	-1.5	-1.5	-0.9	-0.4	2.0	3.3	3.6	3.4	3.6	3.0	0.7	-0.3	-0.8	-0.7	-1.2	-2.5	-2.4	-8.7	3.6	-0.9	24
20	-0.3	0.5	-0.1	0.4	0.3	-0.6	1.4	1.0	0.2	0.4	2.4	3.8	4.3	5.0	4.3	3.9	3.5	2.4	1.9	1.6	2.2	1.5	1.7	1.8	-0.6	5.0	1.8	24
21	1.6	0.2	1.5	2.2	2.7	1.8	0.8	0.4	0.3	0.3	1.8	4.6	**6.3**	6.1	5.1	3.7	2.4	-0.8	-3.5	-4.3	-2.8	-1.4	-1.1	0.6	-4.3	**6.3**	1.2	24
22	0.9	0.8	0.6	1.0	2.0	1.0	1.2	1.8	0.9	0.5	1.9	2.8	2.9	3.2	3.0	1.4	-0.3	-1.6	-1.0	-1.2	-1.9	-2.6	-3.1	-4.1	-4.1	3.2	0.4	24
23	-5.2	-5.4	-5.9	-6.6	-7.1	-8.0	-8.0	-8.1	-8.1	-8.3	-8.1	-7.8	-7.5	-7.4	-7.3	-7.2	-7.5	-7.8	-7.8	-8.2	-8.6	-8.8	-9.0	-9.2	-9.2	-5.2	-7.6	24
24	-9.4	-9.2	-8.9	-8.4	-7.6	-7.0	-6.7	-6.4	-6.1	-5.8	-5.4	-4.5	-4.4	-4.2	-4.1	-5.4	-7.0	-7.9	-8.2	-8.4	-9.3	-11.5	-13.7	-14.1	-14.1	-4.1	-7.6	24
25	-12.6	-13.2	-14.9	-14.6	-13.8	-12.8	-11.8	-11.3	-10.1	-9.1	-6.7	-3.3	-1.3	0.3	1.6	1.6	-0.6	-2.5	-2.5	-3.1	-2.6	-4.1	-6.1	-9.6	-14.9	1.6	-6.8	24
26	-7.7	-6.5	-7.1	-6.3	-6.1	-6.1	-4.8	-4.1	-2.3	-1.9	-1.6	-1.1	-0.6	-0.1	0.4	0.4	0.2	-0.6	-1.0	-2.0	-1.8	-2.0	-3.5	-4.0	-7.7	0.4	-2.9	24
27	-4.2	-3.5	-3.4	-3.0	-4.0	-5.6	-6.2	-7.2	-7.0	-6.5	-4.3	-3.3	-2.4	-2.6	-3.0	-3.2	-3.4	-3.5	-3.4	-2.9	-2.4	-1.7	-1.5	-1.5	-7.2	-1.5	-3.7	24
28	-1.5	-1.4	-0.7	-0.3	-0.4	-0.4	-0.6	-1.2	-1.8	-2.0	-1.1	-0.7	-0.3	0.3	0.6	0.7	1.0	1.1	1.3	1.6	1.5	1.2	1.0	1.1	-2.0	1.6	0.0	24
29	0.8	-0.6	-1.1	-1.5	-1.9	-2.1	-2.2	-2.4	-2.7	-2.7	-2.4	-2.0	-1.9	-1.8	-1.4	-0.6	-0.4	-0.6	-1.4	-1.7	-2.2	-2.7	-3.2	-3.1	-3.2	0.8	-1.7	24
30	-3.1	-3.1	-3.2	-3.4	-3.7	-4.0	-4.3	-4.7	-5.2	-5.3	-5.4	-5.3	-5.3	-5.3	-5.4	-5.7	-5.9	-6.1	-6.2	-6.3	-6.4	-6.7	-7.0	-7.1	-7.1	-3.1	-5.2	24
HOURLY MAX	3.7	4.6	3.9	3.2	3.2	3.4	2.5	2.3	2.4	3.0	4.6	5.7	6.3	6.2	5.1	3.9	3.5	3.4	3.6	4.1	5.5	3.6	3.6	2.9				
HOURLY AVG	-5.9	-5.8	-5.9	-5.7	-5.8	-6.0	-6.2	-6.5	-6.4	-5.9	-4.9	-4.0	-3.4	-3.1	-3.1	-3.4	-4.1	-5.1	-5.6	-5.7	-5.7	-5.7	-5.9	-6.1				

STATUS FLAG CODES

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

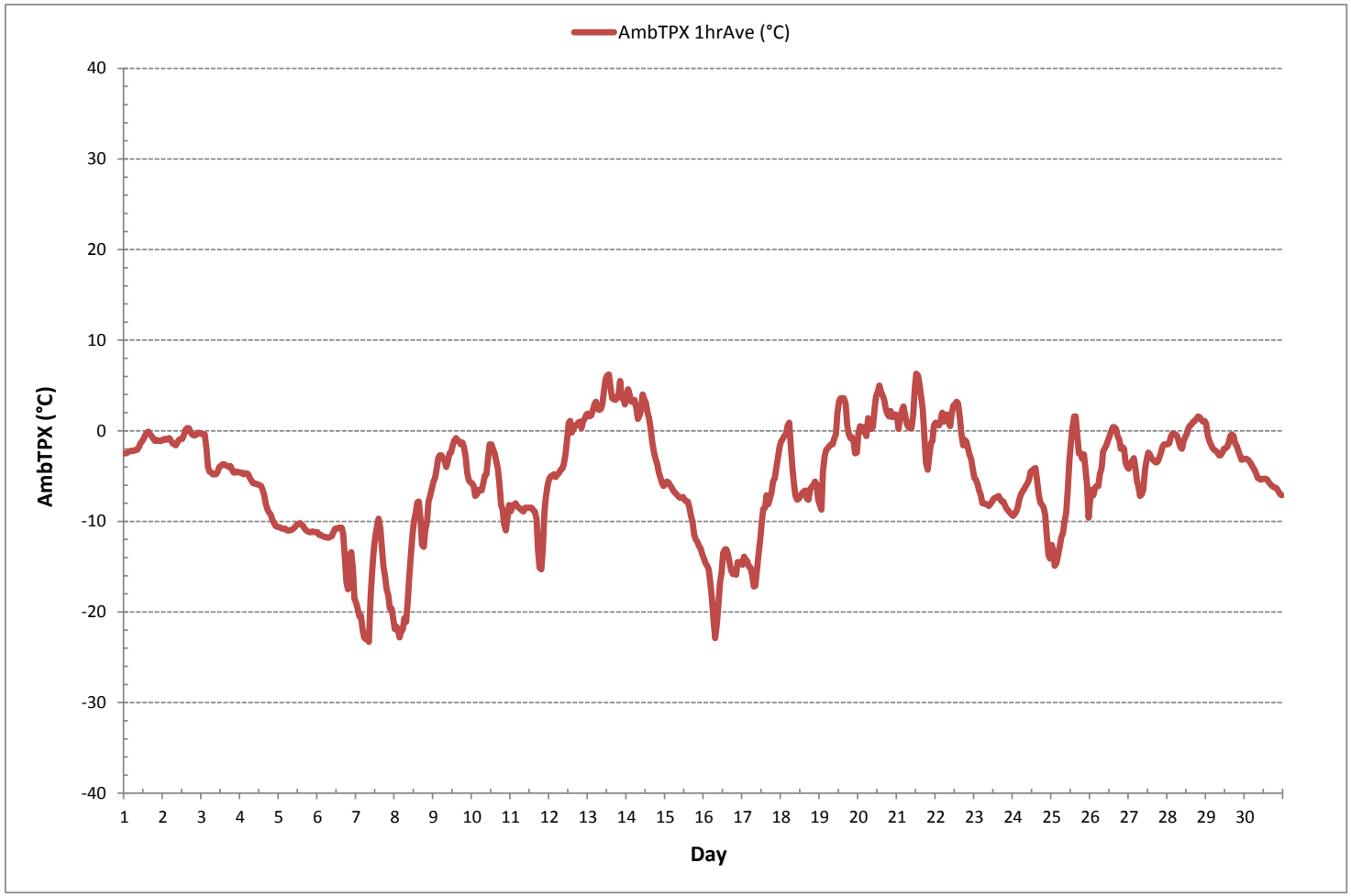
24 HR AVERAGES November 2018



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	-23.3	°C	@ HOUR	8	ON DAY	7	
MAXIMUM 1-HR AVERAGE:	6.3	°C	@ HOUR	12	ON DAY	21	
MAXIMUM 24-HR AVERAGE:	3.5	°C			ON DAY	13	
			OPERATIONAL TIME:			720	hrs
			AMD OPERATION UPTIME:			100.0	%
STANDARD DEVIATION:	6.0		MONTHLY AVERAGE:			-5.2	°C

AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)



STATION TEMPERATURE

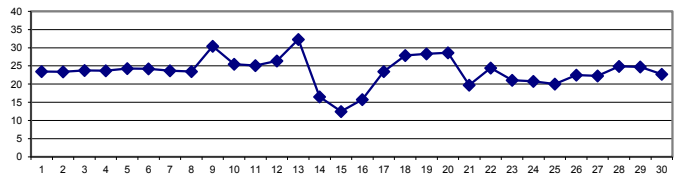
STATION TEMPERATURE Hourly Averages (StnTPX °C)

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	23.9	23.8	23.8	23.8	23.9	23.9	23.8	23.8	23.8	23.7	23.5	23.5	23.1	23.3	23.3	23.2	22.5	23.3	23.3	23.3	23.5	23.6	23.4	23.4	22.5	23.9	23.5	24
2	23.2	23.1	22.8	22.9	22.9	23.4	23.3	23.3	23.4	23.2	23.1	23.6	23.4	23.3	23.3	23.6	23.8	23.7	23.9	23.9	23.9	23.9	24.0	23.9	22.8	24.0	23.4	24
3	23.8	24.1	23.9	24.3	24.1	24.0	24.0	24.2	24.2	24.3	24.2	23.9	23.6	23.3	23.2	23.4	23.7	23.9	23.6	23.3	23.3	23.3	23.3	23.3	23.2	24.3	23.8	24
4	23.3	23.1	23.3	23.4	23.3	23.2	23.4	23.6	23.7	23.8	23.6	23.6	23.7	23.7	23.7	23.9	24.1	24.0	23.8	23.8	23.6	24.0	24.3	24.5	23.1	24.5	23.7	24
5	24.4	24.4	24.4	24.1	24.3	24.1	24.2	24.4	24.3	24.3	24.0	24.0	23.9	24.1	24.1	24.2	24.2	24.3	24.4	24.3	24.5	24.6	24.4	24.5	23.9	24.6	24.3	24
6	24.6	24.6	24.6	24.6	24.7	24.6	24.5	24.6	23.8	23.6	23.4	24.2	24.2	24.7	24.6	23.6	23.7	24.1	24.0	24.1	24.0	24.2	24.0	23.9	23.4	24.7	24.2	24
7	23.9	23.9	23.8	23.7	23.7	23.7	23.7	23.8	23.5	24.5	24.7	24.5	23.7	23.5	21.7	22.2	23.4	23.6	23.6	23.8	23.7	23.7	23.7	23.6	21.7	24.7	23.7	24
8	23.5	23.4	23.6	23.5	23.6	23.6	23.6	23.4	23.5	23.9	24.4	24.4	22.6	21.8	21.2	21.9	23.3	23.9	23.9	24.8	23.8	23.9	23.5	24.0	21.2	24.8	23.5	24
9	24.8	25.6	26.4	27.8	28.7	29.2	29.1	29.0	28.9	29.8	31.1	32.2	33.1	33.4	33.7	33.4	33.3	32.9	32.7	32.7	32.0	30.8	30.0	29.8	24.8	33.7	30.4	24
10	29.7	26.7	23.9	24.3	24.3	24.2	24.2	24.2	24.1	24.1	23.9	23.8	23.8	23.8	28.1	30.0	30.1	29.1	27.3	25.9	24.4	23.4	23.8	25.0	23.4	30.1	25.5	24
11	25.1	25.7	26.5	27.0	27.1	27.0	27.0	26.5	26.2	26.3	26.3	26.0	25.7	25.3	24.4	24.3	24.1	23.3	23.7	23.7	23.1	22.7	22.8	23.1	22.7	27.1	25.1	24
12	23.3	23.3	23.7	23.8	23.8	24.0	24.2	23.9	24.0	23.7	23.7	23.2	22.3	21.7	22.9	28.2	30.1	30.9	31.6	32.2	32.0	32.1	32.6	33.1	21.7	33.1	26.4	24
13	33.4	33.2	33.3	34.0	34.4	34.8	34.7	34.3	34.2	34.5	36.0	37.7	38.4	**38.7**	37.8	36.3	36.0	35.9	35.9	27.1	24.2	18.2	16.4	15.0	15.0	**38.7**	**32.3**	24
14	14.0	13.7	13.6	13.2	12.9	12.7	12.3	11.6	11.0	12.5	21.8	22.7	22.4	22.0	21.6	21.3	20.5	19.0	17.9	17.1	16.3	15.6	15.0	14.4	11.0	22.7	16.5	24
15	14.1	14.3	14.2	14.2	14.1	13.9	13.7	13.5	13.3	13.2	13.1	13.5	13.5	13.5	13.4	13.1	12.4	11.8	11.2	10.4	9.8	9.3	9.0	8.5	8.5	14.3	12.5	24
16	8.0	7.6	7.2	6.9	6.2	5.0	3.8	2.4	**1.9**	13.8	21.9	22.8	22.8	22.3	20.1	21.0	22.9	23.3	23.3	23.3	23.2	23.6	23.6	23.4	**1.9**	23.6	15.8	24
17	23.5	23.6	23.6	23.4	23.5	23.6	23.7	23.7	23.7	24.1	24.3	24.1	23.3	22.5	23.1	23.1	23.6	23.6	24.0	23.1	23.0	23.1	23.6	23.6	22.5	24.3	23.5	24
18	23.8	23.8	23.9	23.9	23.9	24.4	24.5	23.9	26.7	30.9	29.9	30.2	29.9	29.5	30.1	29.9	30.0	30.2	30.0	29.8	29.9	29.8	29.9	30.0	23.8	30.9	27.9	24
19	29.9	29.0	23.7	24.0	26.4	23.8	23.6	23.8	23.5	23.4	23.5	23.2	27.9	33.2	33.9	34.2	34.2	33.2	32.0	31.3	31.0	30.8	30.2	30.3	23.2	34.2	28.3	24
20	30.3	31.1	30.8	30.9	31.5	31.3	32.2	32.8	32.2	31.8	33.1	35.3	36.7	37.8	37.5	25.5	25.1	23.6	22.1	20.7	19.6	18.8	18.2	17.6	17.6	37.8	28.6	24
21	17.2	16.8	16.3	16.3	16.5	16.5	16.2	15.8	15.4	15.1	15.4	16.8	19.0	20.7	22.4	22.7	23.0	23.6	24.2	24.8	24.8	24.8	24.7	24.7	15.1	24.8	19.7	24
22	24.5	24.6	24.5	24.6	24.6	24.6	24.6	24.5	24.7	21.7	23.1	24.9	25.4	25.2	25.3	25.2	25.1	24.3	24.3	24.4	24.5	24.3	24.0	23.7	21.7	25.4	24.4	24
23	23.0	22.0	21.8	21.5	21.1	20.7	20.8	20.7	20.8	20.8	20.8	21.1	21.6	21.8	21.8	21.7	21.5	21.0	20.7	20.5	20.3	20.3	20.1	20.0	20.0	23.0	21.1	24
24	19.9	19.8	19.8	19.7	19.8	20.0	20.4	20.7	21.0	21.3	21.7	22.2	22.7	22.9	23.1	22.9	21.8	21.4	21.1	20.9	20.5	19.8	18.8	18.1	18.1	23.1	20.8	24
25	17.9	17.8	17.3	16.8	16.5	16.4	16.7	16.9	17.2	17.8	18.6	19.7	21.5	23.5	24.8	24.8	24.4	23.4	22.5	22.0	21.6	21.4	21.1	20.4	16.4	24.8	20.0	24
26	19.9	19.7	19.7	19.9	20.1	20.3	20.4	20.8	21.3	22.0	22.4	23.1	23.7	24.2	24.7	25.3	25.2	24.7	24.5	24.1	23.8	23.8	23.4	22.9	19.7	25.3	22.5	24
27	22.4	22.4	22.5	22.6	22.5	22.0	21.4	20.9	20.3	20.2	21.1	22.2	22.7	23.3	23.5	23.3	23.0	22.8	22.7	22.7	22.7	22.7	23.0	23.2	20.2	23.5	22.3	24
28	23.4	23.6	23.8	24.1	24.3	24.4	24.4	24.4	24.2	24.0	24.2	25.0	25.3	25.5	25.3	25.3	25.4	25.4	25.5	25.7	25.9	26.0	26.1	26.2	23.4	26.2	24.9	24
29	26.3	26.1	25.7	25.5	25.1	24.8	24.5	24.3	24.1	23.9	24.0	24.2	24.5	24.6	24.7	25.0	24.9	24.8	24.7	24.7	24.6	24.4	24.1	23.9	23.9	26.3	24.7	24
30	23.9	23.9	23.9	23.8	23.7	23.5	23.3	23.0	22.7	22.4	22.2	22.2	22.3	22.5	22.6	22.5	22.3	22.1	22.1	22.0	22.0	22.0	21.9	21.8	21.8	23.9	22.7	24
HOURLY MAX	33.4	33.2	33.3	34.0	34.4	34.8	34.7	34.3	34.2	34.5	36.0	37.7	38.4	38.7	37.8	36.3	36.0	35.9	35.9	32.7	32.0	32.1	32.6	33.1				
HOURLY AVG	23.0	22.8	22.5	22.6	22.7	22.6	22.5	22.4	22.4	23.0	23.8	24.3	24.6	24.9	25.0	24.8	24.9	24.7	24.5	24.0	23.7	23.3	23.1	23.0				

STATUS FLAG CODES

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

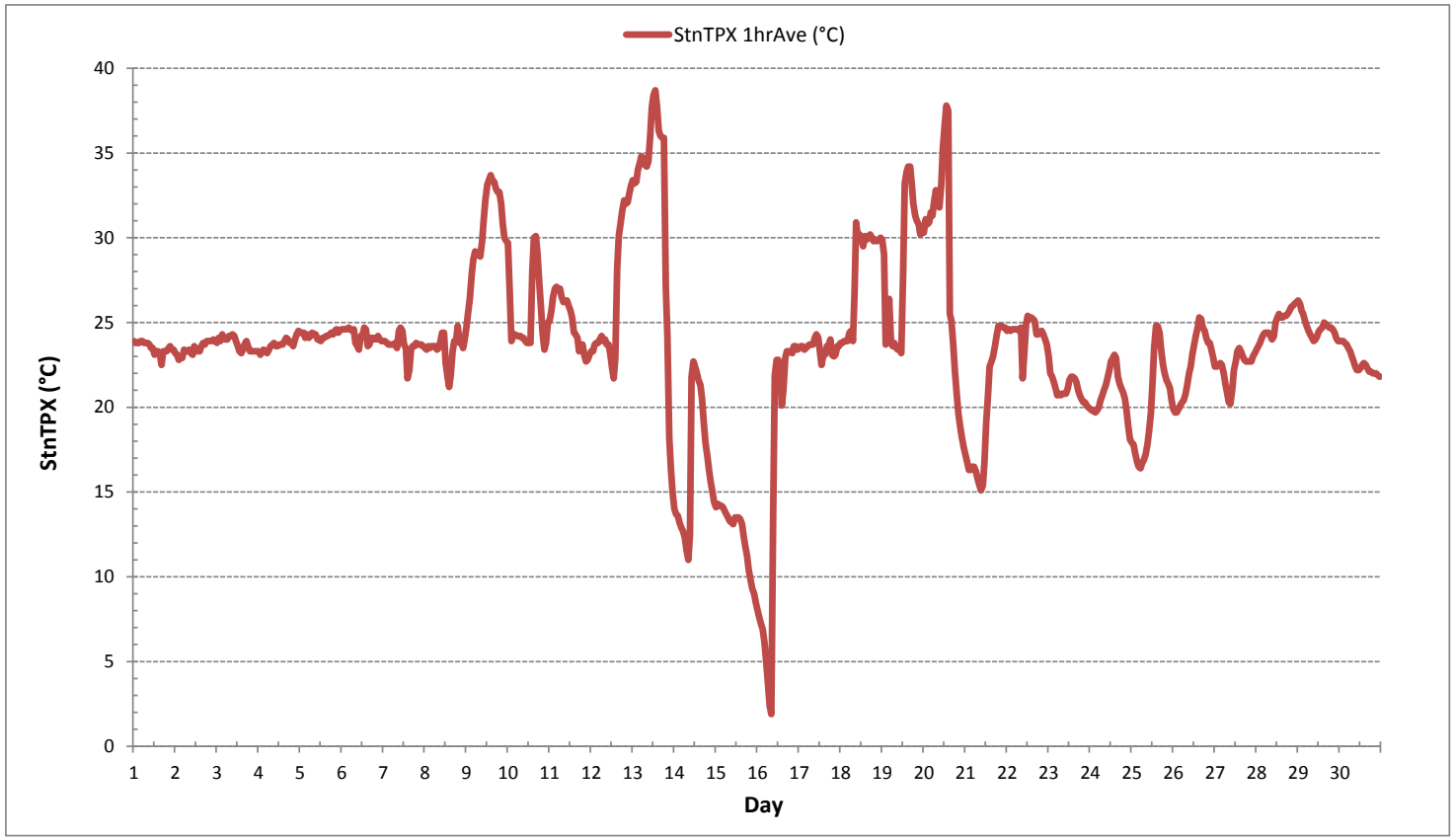
24 HR AVERAGES November 2018



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	1.9	°C	@ HOUR	8	ON DAY	16	
MAXIMUM 1-HR AVERAGE:	38.7	°C	@ HOUR	13	ON DAY	13	
MAXIMUM 24-HR AVERAGE:	32.3	°C			ON DAY	13	
			OPERATIONAL TIME:			720	hrs
			AMD OPERATION UPTIME:			100.0	%
STANDARD DEVIATION:	5.0		MONTHLY AVERAGE:			23.5	°C

STATION TEMPERATURE Hourly Averages (StnTPX °C)



APPENDIX II
EQUIPMENT CALIBRATION RESULTS

SULPHUR DIOXIDE

Thermo 43C Sulphur Dioxide Analyzer Calibration

Date:	November 6, 2018	**Barometer/B.P./units:**	Brunton 05535 expires December 15, 2018	28.26	inHg
Company/Airshed:	PRAMP	**Thermometer/Station Temp:**	F.S. 160348895 expires June 19, 2020	21.9	°C
Location/Station Name:	986B	**Weather Conditions:**	Cloudy/Overcast		
Parameter:	Sulphur Dioxide	**Calibration Purpose:**	routine monthly		
Start Time 24 hr. (mst):	12:26	**Performed By/Reviewer:**	Limin Li	Rob Fisher	
End Time 24 hr. (mst):	16:15	**Cal Gas Expiry Date:**	December 8, 2019		
Calibration Method:	Gas Dilution	**Converter Model & s/n (if applicable):**	n/a		

Analyzer:

Serial Number/Owner:	43C-62339-335 Maxxam	**Range ppb:**	500
Last Calibration Date:	October 11, 2018	**As Found C.F.:**	0.996
Previous C.F.:	0.999	**New C.F.:**	0.999

Calibration Standards:

Low Flow Meter ID/Expiry Date:	N/A
High Flow Meter ID/Expiry Date:	N/A
Calibrator ID/Expiry Date:	Sabio id# 17200415 expires August 21, 2019
Cal Gas Cylinder I.D. # :	EY0000769
Cal Gas Conc. (ppm):	50.5

Standard Calibration Points for Ranges

Point	ppb
High	380
Mid	180
Low	90

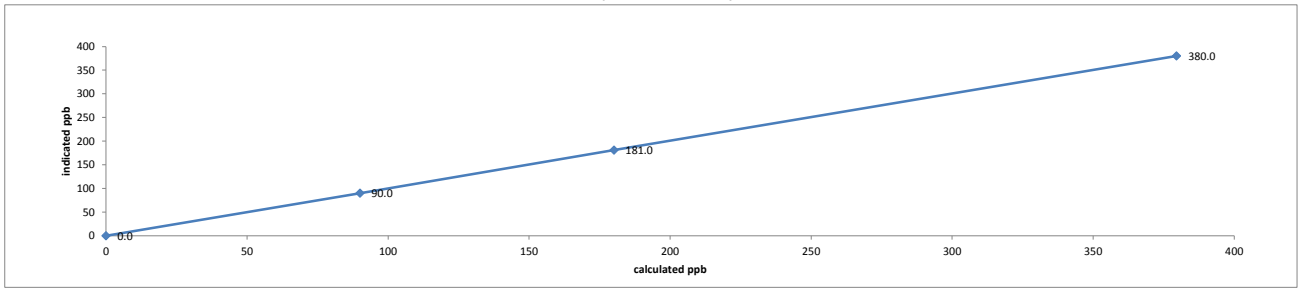
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated	Indicated Concentration (ppb):	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total	Concentration (ppb):		
as found zero	6000	0.00	6000	0.0	0	n/a
as found high	5955	45.10	6000	379.6	381	0.996
adjusted zero	6000	0.00	6000	0.0	0	n/a
adjusted high	5955	45.10	6000	379.6	380	0.999
mid	5979	21.40	6000	180.1	181	0.995
low	5989	10.70	6000	90.1	90	1.001
calibrator zero	6000	0.00	6000	0.0	0	n/a
					Average C.F.=	0.998

Linear Regression/Calibration Results:

		LIMITS
Correlation Coefficient =	**1.000**	**> or = 0.995**
Slope =	**0.999**	**0.95-1.05**
b (Intercept as % of full scale)=	**-0.02%**	**± 3% F.S.**
% change in C.F. from last cal=	**0.27%**	**± 10%**

Thermo 43C Sulphur Dioxide Analyzer Calibration



As found:		As left:	
Bkg:	82.5	Bkg:	82.2
Coef:	0.916	Coef:	0.921
Pmt:	-654	Pmt:	-654
0	Lamp=848	0	Lamp=846
Battery:	3.3	Battery:	3.3
Internal:	28.8	Internal:	30.6
Chamber:	45.3	Chamber:	45.3
Pressure:	415.9	Pressure:	415.9
Flow:	0.722	Flow:	0.725
Intensity:	38034	Intensity:	38120
Averaging Time:	120	Averaging Time:	120
Expected Value:	256.7	Expected Value:	246.8

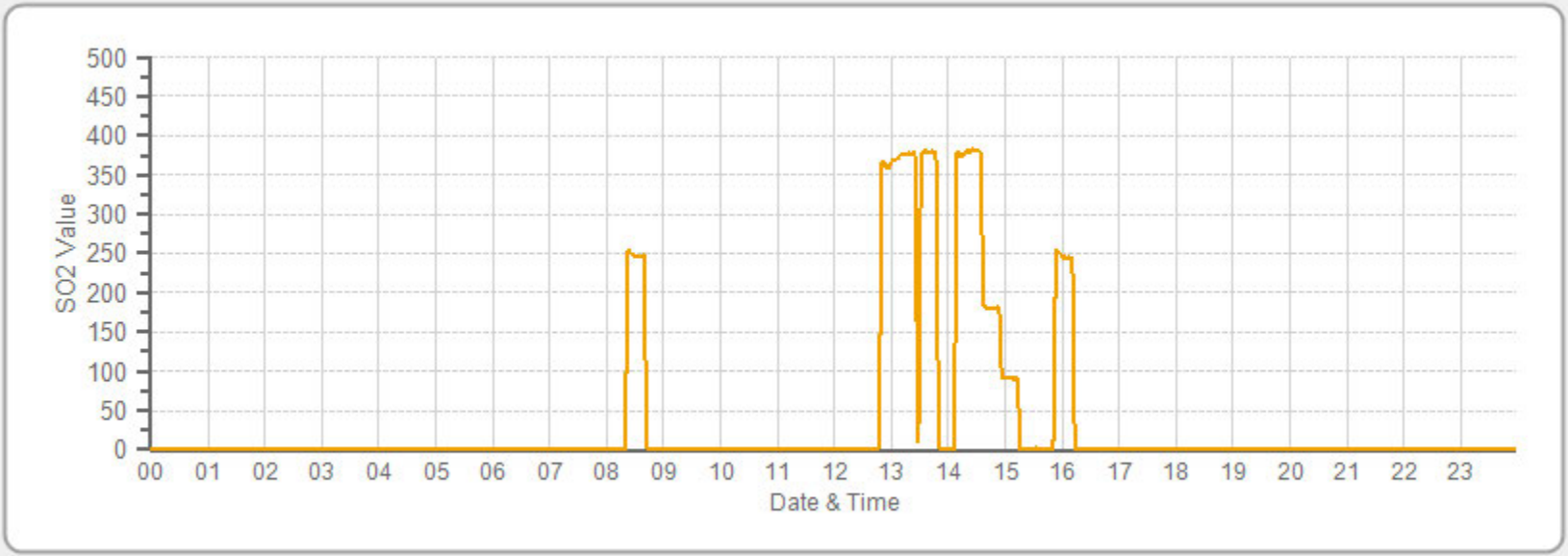
Comments:

The analyzer sample inlet filter was changed.

The analyzer cooling fan filter(s) were cleaned.

The manifold blower was found to be working normally.

SO2[ppb] Station: PRAMP_986 Daily: 18/11/06 Type: AVG 1 Min. [1 Min.]



TOTAL REDUCED SULPHUR

Thermo 43I-TLE Total Reduced Sulphur Analyzer Calibration

Date:	November 6, 2018	**Barometer/B.P./units:**	Brunton 05535 expires December 15, 2018	28.24	inHg
Company/Airshed:	PRAMP	**Thermometer/Station Temp:**	F.S. 160348895 expires June 19, 2020	21.9	°C
Location/Station Name:	986B	**Weather Conditions:**	Cloudy/Overcast		
Parameter:	Total Reduced Sulphur	**Calibration Purpose:**	routine monthly		
Start Time 24 hr. (mst):	9:20	**Performed By/Reviewer:**	Limin Li	Rob Fisher	
End Time 24 hr. (mst):	16:09	**Cal Gas Expiry Date:**	August 23, 2020		
Calibration Method:	Gas Dilution	**Converter Model & s/n (if applicable):**	CD Nova CDN-101 #516		

Analyzer:

Serial Number/Owner:	1152940011	Maxxam	**Range ppb:**	100	
Last Calibration Date:	October 10, 2018		**As Found C.F.:**	0.995	
Previous C.F.:	1.001		**New C.F.:**	1.001	

Calibration Standards:

Low Flow Meter ID/Expiry Date:	Defender Low 152020 expires November 22, 2018
High Flow Meter ID/Expiry Date:	Defender High 148943 expires November 21, 2018
Calibrator ID/Expiry Date:	Environics id# 1991 expires March 15, 2019
Cal Gas Cylinder I.D. # :	LL119500
Cal Gas Conc. (ppm):	9.8

Standard Calibration Points for Ranges

Point	ppb
High	78
Mid	38
Low	19

SO2 Scrubber Check (10 minutes):

Start/End Time 24 hr.:	09:36/09:58
SO2 Analyzer Range:	500
Target Concentration (ppb):	380
As Found Zero:	0.0
Analyzer Response: (ppb):	0.0
Zero Corrected Result (ppb):	0.0

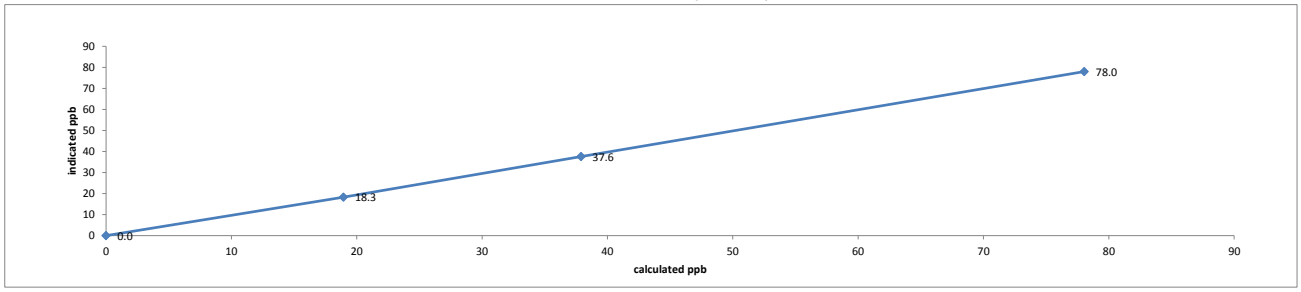
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated		
Point	**Diluent**	**Cal Gas**	**Total**	**Concentration (ppb):**	**Indicated Concentration (ppb):**	**Correction Factors (C.F.):**
as found zero	7430	0.00	7430	0.0	0.0	n/a
as found high	7362	59.89	7422	79.1	79.5	0.995
adjusted zero	7495	0.00	7495	0.0	0.0	n/a
adjusted high	7433	59.67	7493	78.0	78	1.001
mid	7471	29.00	7500	37.9	37.6	1.008
low	7478	14.48	7492	18.9	18.3	1.035
calibrator zero	7499	0.00	7499	0.0	0.1	n/a
					Average C.F.=	1.014

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)=	**0.31%**	**± 3% F.S.**
% change in C.F. from last cal=	**0.64%**	**± 10%**

Thermo 43I-TLE Total Reduced Sulphur Analyzer Calibration



As found:		**As left:**	
Bkg:	2.08	Bkg:	2.15
Coef:	0.968	Coef:	0.979
Pmt:	-691.2	Pmt:	-691.2
Flash:	966	Flash:	966
Internal:	32.1	Internal:	34.0
Chamber:	45.0	Chamber:	45.1
Perm Oven Gas:	45.00	Perm Oven Gas:	45.01
Perm Oven Heater:	44.24	Perm Oven Heater:	44.26
Pressure:	663.2	Pressure:	663.2
Sample Flow:	0.484	Sample Flow:	0.484
Lamp Intensity:	91	Lamp Intensity:	91
Converter:	820	Converter:	820
Converter Set:	820	Converter Set:	820
Averaging Time:	120	Averaging Time:	120
Expected Value:	41.2	Expected Value:	41.2

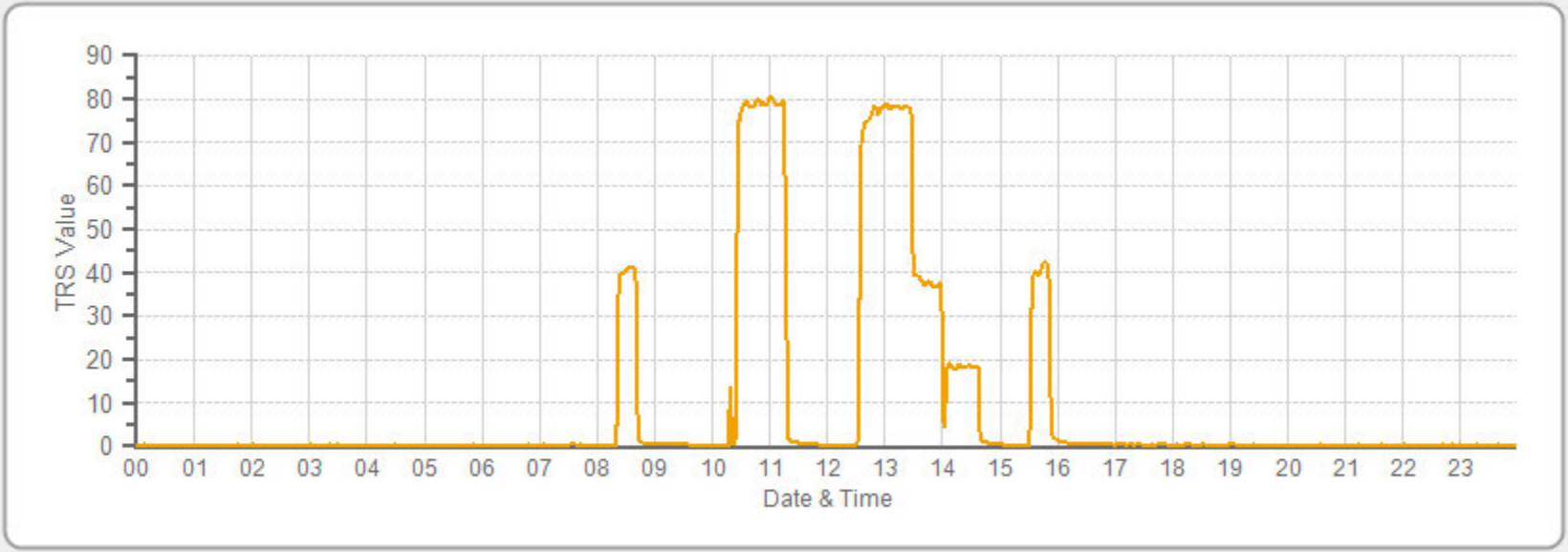
Comments:

The analyzer sample inlet filter was changed.

The analyzer cooling fan filter(s) were cleaned.

The manifold blower was found to be working normally.

TRS[ppb] Station: PRAMP_986 Daily: 18/11/06 Type: AVG 1 Min. [1 Min.]



TOTAL HYDROCARBON

Thermo 55i Methane/Non-Methane Analyzer Calibration

Date:	November 6, 2018	**Barometer/B.P./units:**	Brunton 05535 expires December 15, 2018	28.24	inHg
Company/Airshed:	PRAMP	**Thermometer/Station Temp:**	F.S. 160348895 expires June 19, 2020	21.9	°C
Location/Station Name:	986B	**Weather Conditions:**	Cloudy/Overcast		
Parameter:	CH4 / NMHC / THC	**Calibration Purpose:**	routine monthly		
Start/End Time 24 hr. (mst):	9:20/13:14	**Performed By/Reviewer:**	LIMIN LI	Rob Fisher	
Calibration Method:	Gas Dilution	**Cal Gas Expiry Date:**	October 18, 2025		

Analyzer:

Serial Number/Owner:	1022143392	Maxxam
Measured Flow:	977.7 sccm	
Last Calibration Date:	October 10, 2018	
Range ppm:	20 CH4/20 NMHC/40 THC	

Correction Factors:

	Previous C.F.:	As Found C.F.:	New C.F.:
CH_4 =	1.001	0.999	1.001
NMHC =	0.999	0.976	0.998
THC =	1.000	0.988	1.000

Calibration Standards:

Low Flow Meter ID/Expiry Date:	N/A		
High Flow Meter ID/Expiry Date:	N/A		
Calibrator ID/Expiry Date:	Sabio id# 17200415 expires August 21, 2019		
Cal Gas Cylinder I.D. # :	LL168404		
CH4 Cylinder Conc.=	597.0	206.0	**=C_3H_8 Cylinder Conc.**
CH_4 expressed as C_3H_8=	566.5	1163.5	**=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	3500	0.00	3500	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
as found high	3414	84.20	3498	14.37	13.64	28.01	14.39	13.97	28.36	0.999	0.976	0.988
adjusted zero	3500	0.00	3500	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
adjusted high	3414	84.20	3498	14.37	13.64	28.01	14.36	13.66	28.02	1.001	0.998	1.000
mid	3456	42.10	3498	7.19	6.82	14.00	7.29	6.82	14.11	0.986	1.000	0.992
low	3477	21.10	3498	3.60	3.42	7.02	3.68	3.41	7.09	0.979	1.002	0.990
calibrator zero	3500	0.00	3500	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
									Average C.F.=	0.988	1.000	0.994

Linear Regression/Calibration Results:

	CH_4	NMHC	THC	LIMITS
Correlation Coefficient =	**1.000**	**1.000**	**1.000**	**> or = 0.995**
Slope =	**0.998**	**1.002**	**1.000**	**0.95-1.05**
b (Intercept as % of full scale)=	**0.27%**	**-0.04%**	**0.12%**	**± 3% F.S.**
% change in C.F. from last cal=	**0.24%**	**2.29%**	**1.25%**	**± 10%**

As Left Instrument Diagnostics:

Interface Board Voltages:	Bias Supply:	-311.4		Calibration History cnt'd:	NM Peak Area:	76948
Temperatures:	Detector Oven:	175.1		Crucial Settings:	Methane Start:	8
	Filter:	175.1			Methane End:	16
	Column Oven:	74.9			Backflush:	18
	Internal:	36.2			NMHV Start:	26
Cylinder Pressures/reg.:	Carrier:	1600	50		NMHC End:	56
	Fuel:	750	50	Run History>1:	Date:	06NOV18
	Span Gas:	550	24		Time:	09:27
	Zero Air Generator:	50			CH_4 PK HT:	2700
Internal Pressures:	Carrier:	31.3			CH_4 RT:	12.2
	Fuel:	40.5			CH_4 Baseline:	1698
	Air:	31.2			CH_4 LOD:	16
FID Status:	Status:	LIT			CH_4 SD:	5
	Counts:	21022			CH_4 CONC:	1.99
	Flame:	323.2			NM PK HT:	0
	Det Base:	175			NM Peak Area:	0
Flame and Power Stats:	Last Power On:	01OCT18 09:30			NM CONC:	0.00
	Flameouts:	1			NM Base Start:	1683
	Det Oven at Start:	169.5			NM Base End:	1684
	Col Oven at Start:	74.8			NM LOD:	7
Calibration History:	Time:	10OCT18 16:29			NM Start IDX:	16
	Type:	SPAN			NM End IDX:	49
	Status:	GOOD			NM Max Slope:	4.0e-01
	Check/Adjust:	ADJUST			NM Min Slope:	-4.7e-01
	CH_4 Span Conc:	14.37			NM PT Count:	0
	CH_4 SP Ratio:	0.000736		Expected Values:	Previous CH4:	10.21
	CH_4 RT:	12.4			Previous NMHC	11.06
	CH_4 PK IDX:	22			Previous THC:	21.14
	CH_4 PK HT:	19514			New CH4:	10.21
	NM Span Conc:	13.64			New NMHC	11.06
	NM SP Ratio:	0.000177			New THC:	21.14

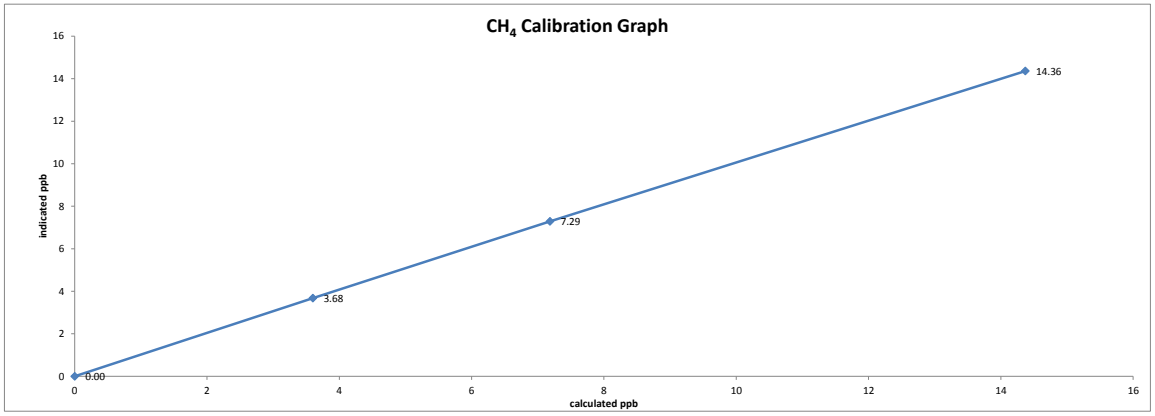
Comments:

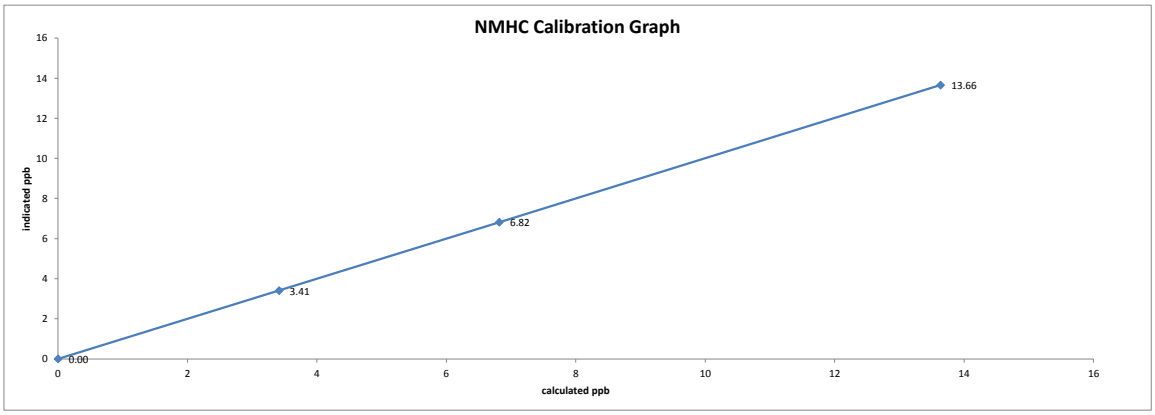
The analyzer sample inlet filter was changed.

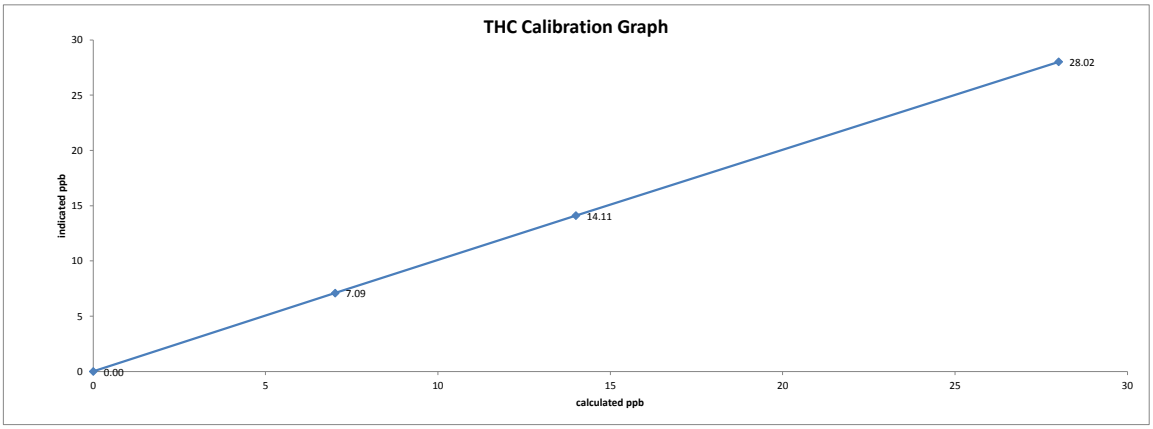
The analyzer cooling fan filter(s) were cleaned.

The manifold blower was found to be working normally.

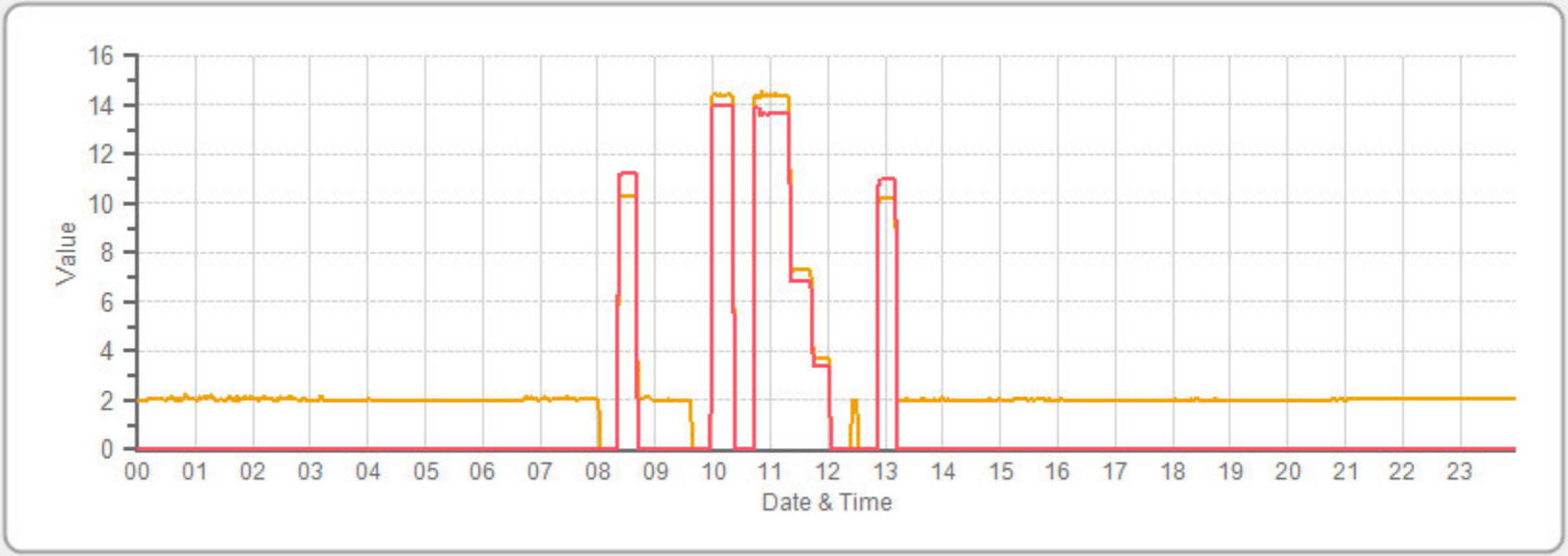
Date:	November 6, 2018	Start/End Time 24 hr. (mst):	9:20/13:14
Company/Airshed:	PRAMP	Calibration Purpose:	routine monthly
Location/Station Name:	986B	Calibration Method:	Gas Dilution







Station: PRAMP_986 Daily: 18/11/06 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:**	Tom Bourque
Audit Date:	April 4, 2018	**Start/End Time (mst):**	16:22/17:42
Calibration Purpose:	routine annual	**Weather Conditions:**	Mainly sunny

Wind Sensor Information

Sensor ID Data:		**Sensor Outputs:**	
Sensor Make:	RM Young	**Velocity Voltage Output Range:**	0-1V
Sensor Model:	5305VK	**Velocity Unit Output Range:**	0-200 KPH
Serial #:	129612	**Direction Voltage Output Range:**	0-1 V
Previous Cal/Audit Date:	April 5, 2017	**Direction Unit Output Range:**	0-360 DEG

Wind Calibrator Information

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

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

RPM	Wind Speed Generated kph	Clockwise Wind Speed kph	Counter Clockwise Wind Speed kph	Correction Factor
0	0	0.1	0.1	-
1000	18.4	18.5	18.5	0.996
2000	36.9	36.9	36.9	1.001
3000	55.3	55.3	55.3	1.000
4000	73.7	73.7	73.7	1.000
5000	92.2	92.2	92.2	1.000
6000	110.6	110.7	110.7	0.999
7000	129.0	129.2	129.2	0.998
8000	147.4	147.7	147.7	0.998
9000	165.9	166.2	166.2	0.998
10000	184.3	184.8	184.8	0.997
		The audit meets AMD requirements.	**Average Correction Factor=**	**0.999**

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

Generated Wind Direction 0-360 (Up)	Generated Wind Direction 360-0 (Down)	Indicated Wind Direction 0-360 (Up)	Indicated Wind Direction 360-0 (Down)	Degrees Difference 0-360 (Up)	Degrees Difference 360-0 (Down)	Average Absolute Degrees Difference
0	355	0	354	0.3	1.4	0.8
30	330	30	330	0.2	0.1	0.1
60	300	61	301	-0.7	-0.9	0.8
90	270	91	271	-1.1	-1.2	1.1
120	240	122	243	-1.7	-2.6	2.2
150	210	153	213	-2.5	-2.9	2.7
180	180	183	183	-2.6	-2.6	2.6
210	150	213	152	-2.6	-1.7	2.1
240	120	243	122	-2.8	-2.0	2.4
270	90	272	91	-2.3	-1.1	1.7
300	60	301	62	-0.8	-1.7	1.2
330	30	331	30	-0.5	-0.3	0.4
355	0	354	0	1.3	0.3	0.8
The audit meets AMD requirements.			**Average Absolute Degrees Difference=**			**1.5**

Comments:

METEOROLOGICAL SYSTEMS CHECK

Meteorological System Checklist

Date:	November 1, 2018		
Technician:	Limin Li		
Reviewer:	Rob Fisher		
Station:	PRAMP 986B		
Unit:	**Make:**	**Model:**	**Serial #:**
Temperature Sensor:	RM Young	43172VC	61012322
Barometric Pressure Sensor:	MetOne	090D	F3845
Relative Humidity Sensor:	RM Young	43172VC	61012322
Anemometer:	RM Young	05305VK	129612
AMBIENT TEMPERATURE SENSOR CHECK			
Previous check date:	October 11, 2018		
Parameter:	Temperature @ 2 metres		
Reference Thermometer ID:	F.S. 160348895 expires June 19, 2020		
Reference Temperature (^{o}C):	-0.6		
Station - Ambient Temperature (^{o}C):	-0.3		
Temperature Difference (^{o}C):	-0.3		
BAROMETRIC PRESSURE SENSOR CHECK			
Previous check date:	October 11, 2018		
Reference Barometer ID:	Brunton 05535 expires December 15, 2018		
Reference Pressure - Units/Reading:	inHg	27.88	
Station Pressure - Units/Reading:	inHg	27.85	
Pressure Tolerance +/- 15% of error:	24 - 32	0.10%	
RELATIVE HUMIDITY (HYGROMETER) SENSOR CHECK			
Previous check date:	October 11, 2018		
Reference Hygrometer ID:	F.S. id# 160348895 expires June 19, 2020		
Reference Hygrometer % RH- Reading:	73.70		
Station Hygrometer % RH- Reading:	77.80		
RH Tolerance +/- 15% of difference:	62.65 - 84.76	-5.6%	
ANEMOMETER - WIND SPEED & WIND DIRECTION SENSOR CHECK			
WIND SPEED		WIND DIRECTION	
Previous check date:	October 11, 2018	Previous check date:	October 11, 2018
Wind Speed Observed (kph):	0 ~ 10	Wind Direction Observed:	SE
Wind speed on Data Logger (kph):	6	Wind Direction on Data Logger:	SE
		Wind Direction Pass/Fail?:	Pass

CALIBRATORS

Alberta Government

Calibrator Performance Audit

Oxides Of Nitrogen

File No. 2018-130A

Company Maxxam **Operator:** Mike

Calibrator:

Make/Model	Sabio	
Serial Number	17200415	
Last Verification Date	May 16, 2017	
NO Cylinder S/N	LL104183	
NO [PPM]	50.8 NOx [PPM]	50.9
Expiry Date	October 24, 2020	

Flow Measurement Device:

Make/Model	Bios Definer 220
Serial Number	H=128686; L=129069
Temperature (°C)	22.2 C
Barometric Pressure	706.1mmHg

Dilution Flow (sccm)

Pt. #1 5057 Pt. #2 5055 Pt. #3 5070

Gas Flow (sccm)

Pt. #1 77.4 Pt. #2 37.9 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
5102	0.0	0.0000	0.0000	0.0001	-0.0002	-0.0001	Limit ± 10%	
5057	77.4	0.7775	0.7779	0.7973	0.0012	0.7985	3%	3%
5055	37.9	0.3809	0.3816	0.3896	0.0000	0.3896	2%	2%
5070	19.1	0.1914	0.1918	0.1962	0.0000	0.1962	2%	2%
						Absolute Average Percent Difference	2%	2%

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

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

Flow	O_3 Conc	NO Decrease	NO	NO2	NOX	% Diff. Vs Audit gas	
						NO_2	% Diff. Limit
5057	0.0	0.0000	0.7868	0.0006	0.7874		
5057	500.0	0.5003	0.2865	0.5016	0.7875	0%	± 10%
5057	275.0	0.2802	0.5066	0.2797	0.7862	0%	± 10%
5057	100.0	0.1053	0.6815	0.1046	0.7863	-1%	± 10%
				Absolute Average Percent Difference		0%	± 10%

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

NO_2		LIMITS
Correlation=	1.0000	≥ 0.995
m (Slope)=	1.0020	0.90-1.10
b (Intercept % of FS)=	-0.0259	± 3% F.S.

AENV Standards

Audit Calibrator

Make/Model	Thermo 146i
Serial/AMU Number	1809
SRM Gas Cylinder No.	APEX1170572
Cylinder Conc. (ppm)	49.99

NO_X Analyzer

Make/Model	Thermo 42i
Serial/AMU Number	1868
Last Calibration Date	August 16, 2018
Full Scale (ppm)	1.0
Cylinder Gas Expiry Date	November 15, 2020

COMMENTS:

Auditor: Shea Beaton Date: August 21, 2018

Operator Signature: Location: McIntyre Center Edmonton

Alberta Government

Calibrator Performance Audit

Oxides Of Nitrogen

File No. 2018-560A

Company: Maxxam **Operator:** Chris W

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

Dilution Flow (sccm)

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

Gas Flow (sccm)

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

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO_2	NOx	NO	NOx
5000	0.0	0.000	0.000	0.000	0.000	0.000	Limit ± 10%	
4988	75.1	0.786	0.787	0.785	-0.002	0.783	0%	-1%
4988	36.5	0.382	0.383	0.382	0.001	0.383	0%	0%
4988	18.3	0.192	0.192	0.190	0.000	0.190	-1%	-1%
						Absolute Average Percent Difference	0%	1%

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

NO		**LIMITS**	**NOx**	
Correlation=	1.0000	**≥ 0.990**	Correlation=	1.0000
m (Slope)=	0.9996	**0.90-1.10**	m (Slope)=	0.9956
b (Intercept % of FS)=	-0.0599	**± 3% F.S.**	b (Intercept % of FS)=	-0.0005

Flow	O_3 Conc	NO Decrease	NO	NO2	NOX	% Diff. Vs Audit gas	
						NO_2	% Diff. Limit
4988	0.000	0.000	0.788	-0.001	0.787	-1%	± 10%
4988	0.350	0.519	0.269	0.512	0.780	0%	± 10%
4988	0.160	0.231	0.557	0.229	0.786	-1%	± 10%
4988	0.070	0.099	0.689	0.097	0.787	1%	± 10%
					Absolute Average Percent Difference		

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

NO_2		**LIMITS**
Correlation=	1.0000	**≥ 0.995**
m (Slope)=	0.9885	**0.90-1.10**
b (Intercept % of FS)=	-0.0567	**± 3% F.S.**

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

COMMENTS: Cylinder contains 47.9 ppm SO2.

Auditor: Al Clark Date: March 15, 2018

Operator Signature: Location: McIntyre Center Edmonton

CALIBRATION GASES

Alberta Government

Calibration Gas Audit

Single Component Cylinder Gas

File No. 2016-436CGA

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

Cylinder #: EY0000769 Concentration PPM: 50.5 Tolerance(%) 1.6 Certified By: Praxair

Expiry Date: December 8, 2019

Reference Calibrator and Gas:

Make/Model: Thermo 146i
Serial Number: AMU 1809
Last Verification Date: January 26, 2017
Gas Type: SO2 Conc. 98.07
Cylinder Number: CAL016625
Expiry Date: January 5, 2019

Flow Measurement Device:

Make/Model: Bios Befiner 220
Serial Number: AMU1941
Temp.°C: 24.4
B.P. 704.7

Reference Analyzer:

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

Instrument Settings: Zero: 9.5 Span: 1.023 Range: 1.0

Last Calibration: Date: 25-Jan-17 C.F. 1.000 Done By: SB

Calibrator Flows (sccm)		Indicated Concentration (PPM)	Gas Flow/ Dilution Flow	Concentration Factor	Cylinder Concentration
Dilution	Gas				
4911	0.0	0.000			
4918	77.4	0.801	0.01574	63.540	50.9
4918	38.5	0.398	0.00783	127.740	50.9
4915	19.2	0.196	0.00391	255.990	50.0
				Average Cylinder Concentration:	**50.6**

Previous Stated Concentration PPM: 50.5

Percent variance from Stated: **0.2**

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: January 26, 2017

Operator Signature: Location: McIntyre Center Edmonton

Alberta Government

Calibration Gas Audit

Single Component Cylinder Gas

File No. 2017-213CGA

Company: Maxxam **Operator's Name:** C. Wesson

Cylinder #: LL119500 Concentration PPM: 9.8 Tolerance(%) 2 Certified By: Praxair

Expiry Date: August 2020

Reference Calibrator and Gas:

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

Flow Measurement Device:

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

Reference Analyzer:

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

Instrument Settings: Zero: 22.4 Span: 1.091 Range: 0.1

Last Calibration: Date: Sep 22/17 C.F. 1.000 Done By: Al Clark

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

Previous Stated Concentration PPM: 9.8

Percent variance from Stated: **3**

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

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

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

Auditor: Al Clark Date: September 22, 2017

Operator Signature: Location: McIntyre Center Edmonton

Alberta Government

Calibration Gas Audit

CH4 / C3H8 Cylinder Gas

File No. 2017-488CGA

Company: Maxxam **Operators name:** Mike

Cylinder #: LL168404 Conc CH4 (PPM) 597/206 Tolerance (%) 2 Certified By: Praxair

Expiry Date: October 2025

Reference Calibrator and Gas:

Make/Model	R&R MFC 201		
Serial Number	AMU 1690		
Last Verification Date	December 13, 2017		
Gas Type	CH4	Conc.	990.4
Cylinder Number	5604875	Expiry Date	July 2021
Gas Type	C3H8	Conc.	246.5
Cylinder Number	XF003845B	Expiry Date	July 2022

Flow Measurement Device:

Make/Model	Mesa Definer 220
Serial Number	H-133034 / L-132702
Temp.°C	23.1 C
B.P.	707 mmHg

Reference Analyzer:

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

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

	CH4	C3H8
Previous Stated Concentration PPM:	597	206
Percent variance from Stated:	**0**	**1**

Cylinder gas tolerances based on CH4 only

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

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

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

Auditor: Al Clark Date: December 13, 2017

Operator Signature: Location: McIntyre Center Edmonton

APPENDIX III
MAXIMUM INSTANTANEOUS DATA

Maxxam
A Bureau Veritas Group Company

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

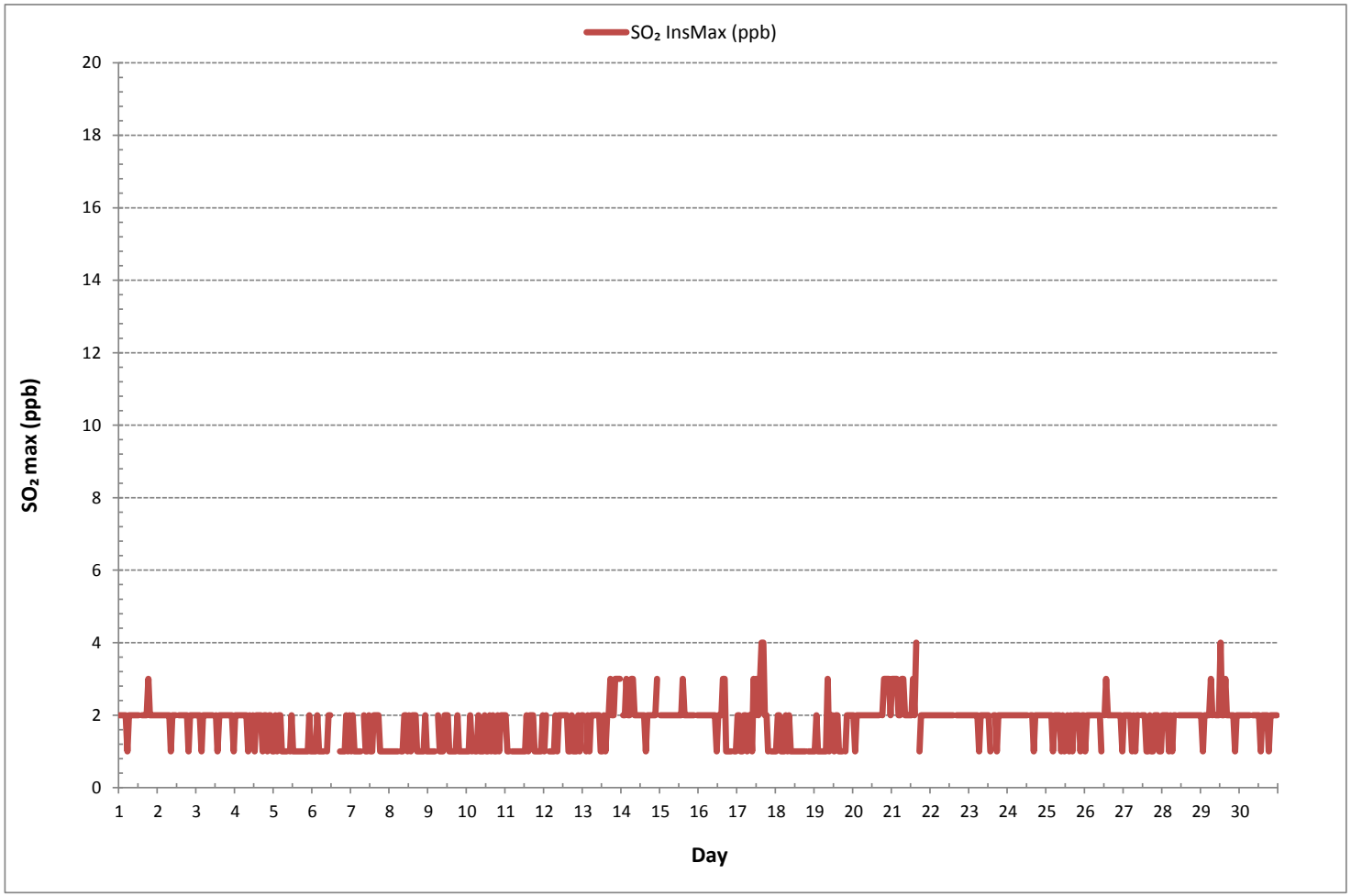
NUMBER OF NON-ZERO READINGS: 683

MAXIMUM INSTANTANEOUS VALUE: 4 ppb @ HOUR 15 ON DAY 17

IZS CALIBRATION TIME: 31 hrs
MONTHLY CALIBRATION TIME: 5 hrs
STANDARD DEVIATION: 1

OPERATIONAL TIME: 719 hrs

SULPHUR DIOXIDE Instantaneous Maximum (SO_2 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	0.19	0.19	0.17	0.19	0.21	0.22	0.24	0.18	0.19	0.18	0.13	0.15	0.18	S	0.25	0.21	0.23	0.21	0.24	0.17	0.17	0.24	0.17	0.23	0.13	0.25	0.20	24
2	0.18	0.18	0.19	0.22	0.18	0.17	0.21	0.18	0.18	0.19	0.17	0.16	S	0.30	0.22	0.19	0.25	0.24	0.49	0.33	0.26	0.33	0.39	0.34	0.16	0.49	0.24	24
3	0.34	0.40	0.41	0.37	0.19	0.22	0.18	0.17	0.19	0.18	0.21	S	0.30	0.20	0.16	0.18	0.17	0.17	0.16	0.18	0.19	0.18	0.20	0.18	0.16	0.41	0.22	24
4	0.19	0.18	0.18	0.21	0.27	0.47	0.40	0.26	0.20	0.22	S	0.35	0.22	0.23	0.27	0.26	0.27	0.28	0.25	0.31	0.27	0.28	0.26	0.25	0.18	0.47	0.26	24
5	0.22	0.21	0.23	0.22	0.21	0.21	0.23	0.22	0.24	S	0.44	0.27	0.24	0.27	0.26	0.27	0.29	0.30	0.26	0.32	0.27	0.27	0.27	0.27	0.21	0.44	0.26	24
6	0.26	0.26	0.26	0.28	0.27	0.29	0.32	0.30	S	C	C	C	C	C	C	C	C	0.40	0.40	0.37	0.32	0.30	0.32	0.28	0.26	0.40	0.31	24
7	0.26	0.26	0.29	0.31	0.27	0.30	0.27	S	0.54	0.41	0.33	0.35	0.33	0.29	0.30	0.29	0.30	0.28	0.31	0.33	0.33	0.36	0.32	0.28	0.26	0.54	0.32	24
8	0.30	0.34	0.29	0.31	0.36	0.36	S	0.62	0.34	0.34	0.37	0.34	0.32	0.36	0.31	0.30	0.32	0.37	0.29	0.26	0.25	0.26	0.29	0.27	0.25	0.62	0.33	24
9	0.28	0.29	0.32	0.28	0.27	S	0.35	0.28	0.26	0.30	0.28	0.29	0.28	0.25	0.31	0.37	0.36	0.52	0.47	0.41	0.35	0.20	0.20	0.23	0.20	0.52	0.31	24
10	0.25	0.23	0.29	0.30	S	0.39	0.41	0.35	0.33	0.39	0.42	0.38	0.37	0.45	0.23	0.24	0.24	0.24	0.25	0.28	0.29	0.33	0.29	0.25	0.23	0.45	0.31	24
11	0.23	0.22	0.24	S	0.34	0.22	0.28	0.31	0.22	0.23	0.26	0.26	0.29	0.25	0.33	0.25	0.27	0.30	0.28	0.27	0.25	0.22	0.23	0.27	0.22	0.34	0.26	24
12	0.25	0.26	S	0.40	0.28	0.27	0.30	0.26	0.31	0.33	0.29	0.29	0.25	0.26	0.27	0.29	0.25	0.23	0.21	0.22	0.23	0.24	0.19	0.20	0.19	0.40	0.26	24
13	0.22	S	0.31	0.23	0.24	0.23	0.24	0.22	0.25	0.20	0.21	0.30	0.34	0.32	0.18	0.22	0.23	0.26	0.26	0.24	0.22	0.24	0.24	0.20	0.18	0.34	0.24	24
14	X	0.21	0.21	0.23	0.20	0.21	0.22	0.18	0.18	S	0.30	0.22	0.23	0.21	0.19	0.18	0.22	0.17	0.17	0.20	0.18	0.19	0.17	S	0.17	0.30	0.20	23
15	0.27	0.24	0.24	0.26	0.25	0.22	0.21	0.22	0.20	0.20	0.20	0.20	0.20	0.19	0.19	0.20	0.21	0.22	0.21	0.22	0.28	0.27	S	0.32	0.19	0.32	0.23	24
16	0.28	0.27	X	X	X	X	X	X	X	X	0.28	0.38	0.58	1.04	1.37	1.35	1.75	0.25	0.26	0.31	0.31	S	0.42	0.30	0.25	1.75	0.61	16
17	0.29	0.28	0.26	0.28	0.28	0.26	0.27	0.29	0.26	0.29	0.73	0.73	1.50	0.30	1.31	1.97	**2.02**	1.17	0.26	0.23	S	0.39	0.26	0.27	0.23	**2.02**	0.60	24
18	0.26	0.24	0.23	0.22	0.23	0.22	0.36	0.34	0.27	0.25	0.24	0.23	0.29	0.27	0.28	0.27	0.23	0.22	0.29	S	0.39	0.27	0.23	0.23	0.22	0.39	0.26	24
19	0.22	0.25	0.25	0.23	0.24	0.25	0.23	0.27	0.24	0.25	0.22	0.21	0.25	0.21	0.19	0.18	0.20	0.22	S	0.35	0.23	0.22	0.21	0.19	0.18	0.35	0.23	24
20	0.22	0.19	0.20	0.23	0.21	0.23	0.19	0.22	0.23	0.22	0.23	0.21	0.20	0.19	0.17	0.17	0.17	S	0.30	0.23	0.20	0.26	0.20	0.19	0.17	0.30	0.21	24
21	0.21	0.21	0.19	0.21	0.18	0.17	0.19	0.21	0.16	0.19	0.18	0.16	0.15	0.18	0.15	0.43	S	0.32	0.24	0.25	0.25	0.24	0.23	0.20	0.15	0.43	0.21	24
22	0.20	0.24	0.22	0.33	0.24	0.18	0.19	0.14	0.14	0.11	0.15	0.13	0.14	0.12	0.11	S	0.23	0.27	0.27	0.16	0.12	0.11	0.13	0.17	0.11	0.33	0.18	24
23	0.20	0.23	0.19	0.16	0.19	0.17	0.17	0.20	0.17	0.18	0.16	0.15	0.17	0.16	S	0.29	0.18	0.19	0.18	0.18	0.20	0.19	0.19	0.18	0.15	0.29	0.19	24
24	0.16	0.18	0.18	0.18	0.23	0.21	0.20	0.18	0.18	0.19	0.19	0.21	0.18	S	0.33	0.30	0.36	0.34	0.39	0.44	0.43	0.31	0.28	0.23	0.16	0.44	0.25	24
25	0.20	0.30	0.27	0.21	0.21	0.27	0.28	0.28	0.24	0.24	0.23	0.24	S	0.31	0.25	0.20	0.19	0.23	0.24	0.20	0.21	0.24	0.21	0.22	0.19	0.31	0.24	24
26	0.28	0.21	0.21	0.27	0.20	0.27	0.25	0.23	0.22	0.21	0.24	S	0.32	0.26	0.26	0.26	0.25	0.24	0.23	0.25	0.24	0.20	0.24	0.20	0.20	0.32	0.24	24
27	0.22	0.20	0.26	0.19	0.25	0.22	0.25	0.17	0.26	0.28	S	0.36	0.18	0.16	0.17	0.18	0.17	0.19	0.19	0.21	0.22	0.16	0.16	0.20	0.16	0.36	0.21	24
28	0.17	0.22	0.19	0.24	0.24	0.24	0.25	0.26	0.32	S	0.36	0.24	0.22	0.22	0.21	0.19	0.17	0.20	0.19	0.21	0.18	0.18	0.18	0.12	0.12	0.36	0.22	24
29	0.14	0.79	0.19	0.13	0.13	0.13	0.15	0.13	S	0.23	0.14	0.15	0.45	0.20	0.24	0.18	0.17	0.20	0.24	0.20	0.15	0.17	0.16	0.12	0.12	0.79	0.21	24
30	0.11	0.17	0.19	0.18	0.15	0.15	0.12	S	0.28	0.21	0.18	0.20	0.16	0.17	0.18	0.17	0.19	0.19	0.18	0.18	0.18	0.23	0.23	0.22	0.11	0.28	0.18	24
HOURLY MAX	0.34	0.79	0.41	0.40	0.36	0.47	0.41	0.62	0.54	0.41	0.73	0.73	1.50	1.04	1.37	1.97	2.02	1.17	0.49	0.44	0.43	0.39	0.42	0.34				
HOURLY AVG	0.23	0.26	0.24	0.25	0.23	0.24	0.25	0.25	0.24	0.24	0.26	0.27	0.31	0.27	0.31	0.34	0.35	0.29	0.27	0.26	0.25	0.24	0.24	0.23				

STATUS FLAG CODES

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

MONTHLY SUMMARY

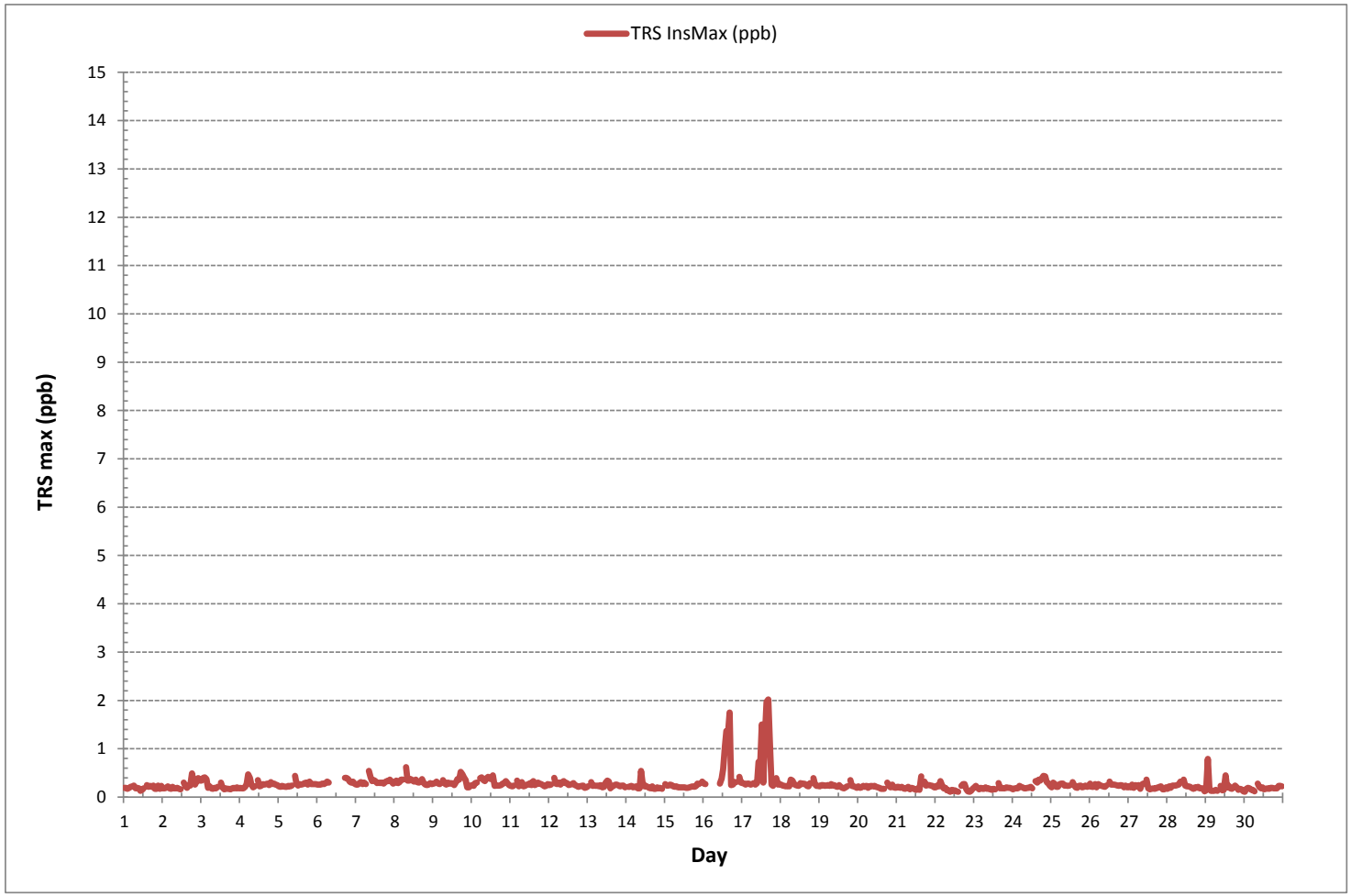
NUMBER OF NON-ZERO READINGS: 672

MAXIMUM INSTANTANEOUS VALUE: 2.02 ppb @ HOUR 16 ON DAY 17

IZS CALIBRATION TIME: 31 hrs
MONTHLY CALIBRATION TIME: 8 hrs
STANDARD DEVIATION: 0.17

OPERATIONAL TIME: 711 hrs

TOTAL REDUCED SULPHUR Instantaneous Maximum (TRS ppb)



TOTAL HYDROCARBONS Instantaneous Maximum (THC ppm)

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	2.03	2.06	2.02	2.04	2.09	2.16	2.11	2.18	2.18	2.15	2.04	1.98	1.98	S	1.99	1.98	1.97	1.97	1.97	1.98	1.98	1.98	1.98	1.98	1.97	2.18	2.03	24
2	1.97	1.99	1.97	1.97	1.98	1.98	1.98	1.97	1.97	1.97	1.97	1.98	S	1.98	1.99	2.13	2.04	2.01	2.02	2.00	2.02	2.02	2.01	2.01	1.97	2.13	2.00	24
3	2.06	2.05	2.20	2.16	2.00	2.00	2.03	2.00	2.02	2.09	2.17	S	1.98	1.98	1.97	1.97	1.98	1.98	1.98	1.98	1.98	1.98	1.98	2.02	1.97	2.20	2.02	24
4	1.99	1.98	1.99	1.99	2.01	1.98	1.98	1.98	1.98	1.97	S	1.96	1.96	1.96	1.99	2.02	2.09	1.97	1.97	1.97	1.97	1.98	1.98	1.99	1.96	2.09	1.99	24
5	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.99	1.98	S	1.99	1.98	1.98	2.10	2.00	1.99	2.07	1.99	1.99	2.54	2.05	1.99	2.05	2.07	1.98	2.54	2.03	24
6	2.36	2.23	2.17	2.18	2.05	2.01	2.20	2.16	S	C	C	C	C	C	2.13	2.12	2.06	2.01	2.02	2.01	2.01	2.03	2.02	2.02	2.01	2.36	2.10	24
7	2.03	2.05	2.06	2.08	2.07	2.09	2.10	S	2.11	2.10	2.08	2.07	2.16	2.14	2.05	2.05	2.05	2.07	2.07	2.09	2.09	2.09	2.09	2.12	2.03	2.16	2.08	24
8	2.12	2.12	2.15	2.17	2.19	2.19	S	2.16	2.15	2.11	2.13	2.13	2.12	3.13	2.53	2.03	2.83	2.09	2.07	2.07	2.05	2.03	2.03	2.03	2.03	3.13	2.20	24
9	2.05	2.06	2.06	2.06	2.06	S	2.04	2.07	2.06	2.07	2.24	3.00	2.93	2.61	2.45	2.13	3.06	2.82	2.59	2.07	2.30	2.57	2.40	3.01	2.04	3.06	2.38	24
10	2.49	2.43	2.02	2.04	S	2.03	2.02	2.02	2.03	2.03	2.15	3.34	2.51	2.22	2.07	2.03	2.00	3.36	2.95	2.04	**6.12**	2.49	3.13	3.09	2.00	**6.12**	2.55	24
11	2.89	2.16	2.06	S	2.24	2.21	2.03	2.39	2.25	2.28	2.29	2.24	2.25	2.03	2.01	2.00	2.01	2.00	2.00	2.04	2.04	2.00	2.01	1.99	1.99	2.89	2.15	24
12	1.99	2.00	S	2.01	2.01	2.03	2.03	2.03	2.04	2.03	2.02	2.01	1.99	1.97	2.01	2.03	2.03	2.02	2.01	2.03	2.01	2.03	2.02	2.04	1.97	2.04	2.02	24
13	2.03	S	2.03	2.03	2.03	2.03	2.04	2.03	2.03	2.04	2.03	2.03	2.03	2.02	2.04	2.07	2.07	2.09	2.10	2.09	1.97	2.00	2.00	1.96	1.96	2.10	2.03	24
14	X	1.89	1.90	1.89	1.90	1.89	1.91	1.89	X	S	2.39	2.17	2.05	2.18	2.21	2.12	1.97	2.14	2.91	2.07	2.09	2.16	2.03	S	1.89	2.91	2.09	22
15	1.99	1.96	1.97	1.96	1.97	1.96	1.96	1.94	1.94	1.94	1.92	1.94	1.93	1.94	1.93	1.94	1.92	X	X	X	X	X	X	X	1.92	1.99	1.95	17
16	X	X	X	X	X	X	X	X	X	X	X	2.00	1.98	1.98	1.99	2.00	2.01	1.99	2.01	2.00	2.01	S	2.03	2.03	1.98	2.03	2.00	13
17	2.02	2.01	2.02	2.05	2.05	2.06	2.07	2.07	2.09	2.09	2.08	2.09	2.05	2.03	2.03	2.14	2.41	2.02	2.03	2.02	S	2.01	1.99	2.00	1.99	2.41	2.06	24
18	1.99	2.02	1.99	1.98	2.48	2.33	2.21	2.17	2.15	2.12	2.08	2.02	2.08	2.28	2.22	2.26	2.34	2.26	2.05	S	2.06	2.07	2.05	2.06	1.98	2.48	2.14	24
19	2.06	2.13	2.05	2.01	2.04	2.03	2.02	2.01	2.00	1.98	1.99	1.97	2.00	1.99	2.01	2.01	2.01	2.03	S	2.02	2.01	2.03	2.00	2.01	1.97	2.13	2.02	24
20	2.00	1.99	2.01	2.01	2.02	2.00	2.02	2.01	2.02	2.02	2.03	2.04	2.05	2.08	2.06	2.06	2.00	S	2.00	2.00	1.98	2.01	2.01	1.97	1.97	2.08	2.02	24
21	1.98	1.97	1.99	1.99	1.98	1.98	2.03	1.98	1.97	1.99	2.10	1.96	1.97	1.97	1.95	1.95	S	4.41	2.03	2.10	2.18	2.17	2.89	2.26	1.95	4.41	2.16	24
22	2.06	2.07	2.09	2.12	2.07	2.04	2.01	1.95	2.12	2.09	1.93	1.95	1.97	2.02	2.29	S	1.98	2.36	2.54	2.62	1.99	2.09	2.10	2.08	1.93	2.62	2.11	24
23	2.01	2.00	1.97	1.95	1.95	2.14	1.95	2.07	1.98	1.98	1.98	1.95	2.16	2.02	S	1.96	1.98	1.96	1.97	1.95	1.95	1.98	1.96	1.97	1.95	2.16	1.99	24
24	2.20	1.98	1.96	1.98	1.98	1.98	1.98	1.98	2.01	1.98	2.12	2.30	2.40	S	2.14	2.75	3.73	2.78	2.12	2.00	2.00	1.99	2.01	2.01	1.96	3.73	2.19	24
25	2.01	2.09	2.08	2.04	2.05	2.07	2.07	2.07	2.08	2.07	2.07	2.04	S	2.01	2.01	2.02	2.01	2.02	2.02	2.01	2.02	2.03	3.27	3.27	2.01	3.27	2.15	24
26	2.05	2.05	2.11	2.08	2.05	2.02	2.00	2.02	2.01	2.06	2.06	S	2.11	2.12	2.11	2.11	2.11	2.10	2.30	2.10	2.10	2.10	2.10	2.07	2.00	2.30	2.08	24
27	2.06	2.05	2.04	2.07	2.05	2.02	2.02	2.05	2.04	2.04	S	2.08	2.05	2.05	2.05	2.06	2.06	2.05	2.04	2.03	2.03	2.03	2.03	2.06	2.02	2.08	2.05	24
28	2.07	2.11	2.11	2.11	2.12	2.15	2.14	2.28	2.40	S	2.36	2.29	2.21	2.19	2.14	2.09	2.09	2.08	2.09	2.04	2.04	2.10	2.18	2.27	2.04	2.40	2.16	24
29	2.21	2.30	2.42	2.46	2.44	2.35	2.10	2.26	S	2.43	2.47	2.12	2.16	2.20	2.08	2.06	2.23	2.69	2.18	2.24	2.12	2.37	3.78	2.85	2.06	3.78	2.37	24
30	2.80	2.07	2.33	2.05	2.18	2.12	2.20	S	2.21	2.31	2.36	2.23	2.20	2.20	2.09	2.04	2.10	2.30	2.33	2.02	2.19	2.22	2.00	2.00	2.00	2.80	2.20	24
HOURLY MAX	2.89	2.43	2.42	2.46	2.48	2.35	2.21	2.39	2.40	2.43	2.47	3.34	2.93	3.13	2.53	2.75	3.73	4.41	2.95	2.62	6.12	2.57	3.78	3.27				
HOURLY AVG	2.13	2.06	2.06	2.05	2.07	2.07	2.04	2.06	2.07	2.08	2.12	2.14	2.12	2.13	2.09	2.07	2.18	2.27	2.16	2.08	2.19	2.09	2.21	2.19				

STATUS FLAG CODES

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

MONTHLY SUMMARY

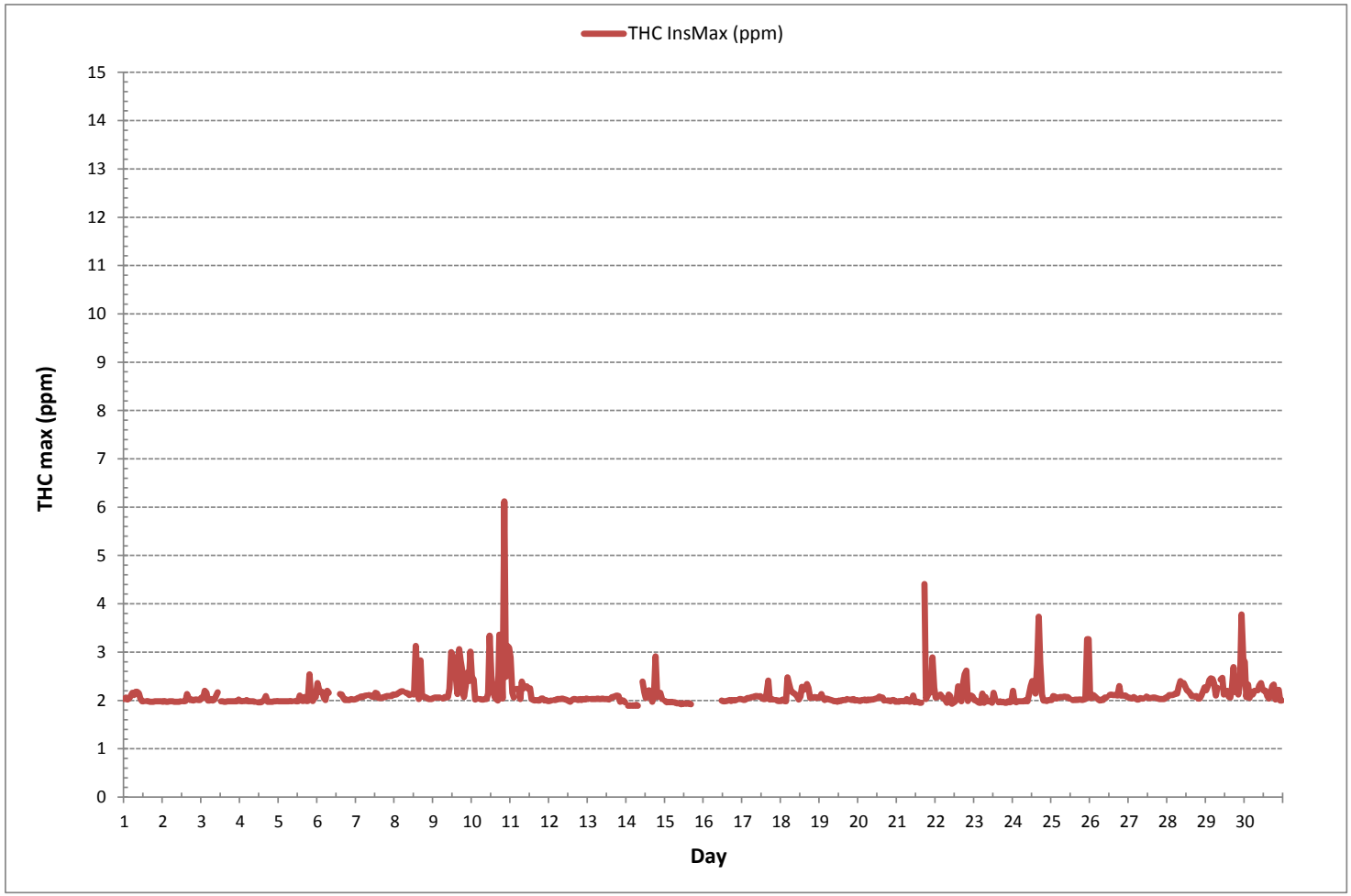
NUMBER OF NON-ZERO READINGS: 665

MAXIMUM INSTANTANEOUS VALUE: 6.12 ppm @ HOUR 20 ON DAY 10

IZS CALIBRATION TIME: 30 hrs
MONTHLY CALIBRATION TIME: 5 hrs
STANDARD DEVIATION: 0.29

OPERATIONAL TIME: 700 hrs

TOTAL HYDROCARBONS Instantaneous Maximum (THC 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	2.03	2.06	2.02	2.04	2.09	2.16	2.11	2.18	2.18	2.15	2.04	1.98	1.98	S	1.99	1.98	1.97	1.97	1.97	1.98	1.98	1.98	1.98	1.98	1.97	2.18	2.03	24
2	1.97	1.99	1.97	1.97	1.98	1.98	1.98	1.97	1.97	1.97	1.97	1.98	S	1.98	1.99	2.13	2.04	2.01	2.02	2.00	2.02	2.02	2.01	2.01	1.97	2.13	2.00	24
3	2.06	2.05	2.20	2.16	2.00	2.00	2.03	2.00	2.02	2.09	2.17	S	1.98	1.98	1.97	1.97	1.98	1.98	1.98	1.98	1.98	1.98	1.98	2.02	1.97	2.20	2.02	24
4	1.99	1.98	1.99	1.99	2.01	1.98	1.98	1.98	1.98	1.97	S	1.96	1.96	1.96	1.99	2.02	2.09	1.97	1.97	1.97	1.97	1.98	1.98	1.99	1.96	2.09	1.99	24
5	1.98	1.98	1.98	1.98	1.98	1.98	1.98	1.99	1.98	S	1.99	1.98	1.98	2.10	2.00	1.99	2.07	1.99	1.99	2.54	2.05	1.99	2.05	2.07	1.98	2.54	2.03	24
6	2.36	2.23	2.17	2.18	2.05	2.01	2.20	2.16	S	C	C	C	C	C	2.13	2.12	2.06	2.01	2.02	2.01	2.01	2.03	2.02	2.02	2.01	2.36	2.10	24
7	2.03	2.05	2.06	2.08	2.07	2.09	2.10	S	2.11	2.10	2.08	2.07	2.16	2.14	2.05	2.05	2.05	2.07	2.07	2.09	2.09	2.09	2.09	2.12	2.03	2.16	2.08	24
8	2.12	2.12	2.15	2.17	2.19	2.19	S	2.16	2.15	2.11	2.13	2.13	2.12	3.13	2.53	2.03	2.83	2.09	2.07	2.07	2.05	2.03	2.03	2.03	2.03	3.13	2.20	24
9	2.05	2.06	2.06	2.06	2.06	S	2.04	2.04	2.06	2.07	2.24	3.00	2.93	2.61	2.45	2.13	3.06	2.82	2.59	2.07	2.30	2.57	2.40	3.01	2.04	3.06	2.38	24
10	2.49	2.43	2.02	2.04	S	2.03	2.02	2.02	2.03	2.03	2.15	3.34	2.51	2.22	2.07	2.03	2.00	3.36	2.95	2.04	**6.12**	2.49	3.13	3.09	2.00	**6.12**	**2.55**	24
11	2.89	2.16	2.06	S	2.24	2.21	2.03	2.39	2.25	2.28	2.29	2.24	2.25	2.03	2.01	2.00	2.01	2.00	2.00	2.04	2.04	2.00	2.01	1.99	1.99	2.89	2.15	24
12	1.99	2.00	S	2.01	2.01	2.03	2.03	2.03	2.04	2.03	2.02	2.01	1.99	1.97	2.01	2.03	2.03	2.02	2.01	2.03	2.01	2.03	2.02	2.04	1.97	2.04	2.02	24
13	2.03	S	2.03	2.03	2.03	2.03	2.04	2.03	2.03	2.04	2.03	2.03	2.03	2.02	2.04	2.07	2.07	2.09	2.10	2.09	1.97	2.00	2.00	1.96	1.96	2.10	2.03	24
14	X	1.89	1.90	1.89	1.90	1.89	1.91	1.89	X	S	2.39	2.17	2.05	2.18	2.21	2.12	1.97	2.14	2.91	2.07	2.09	2.16	2.03	S	1.89	2.91	2.09	22
15	1.99	1.96	1.97	1.96	1.97	1.96	1.96	1.94	1.94	1.94	1.92	1.94	1.93	1.94	1.93	1.94	1.92	X	X	X	X	X	X	X	1.92	1.99	1.95	17
16	X	X	X	X	X	X	X	X	X	X	X	2.00	1.98	1.98	1.99	2.00	2.01	1.99	2.01	2.00	2.01	S	2.03	2.03	1.98	2.03	2.00	13
17	2.02	2.01	2.02	2.05	2.05	2.06	2.07	2.07	2.07	2.09	2.08	2.09	2.05	2.03	2.03	2.14	2.41	2.02	2.03	2.02	S	2.01	1.99	2.00	1.99	2.41	2.06	24
18	1.99	2.02	1.99	1.98	2.48	2.33	2.21	2.17	2.15	2.12	2.08	2.02	2.08	2.28	2.22	2.26	2.34	2.26	2.05	S	2.06	2.07	2.05	2.06	1.98	2.48	2.14	24
19	2.06	2.13	2.05	2.01	2.04	2.03	2.02	2.01	2.00	1.98	1.99	1.97	2.00	1.99	2.01	2.01	2.01	2.03	S	2.02	2.01	2.03	2.00	2.01	1.97	2.13	2.02	24
20	2.00	1.99	2.01	2.01	2.02	2.00	2.02	2.01	2.02	2.02	2.03	2.04	2.05	2.06	2.06	2.06	2.00	S	2.00	2.00	1.98	2.01	2.01	1.97	1.97	2.06	2.02	24
21	1.98	1.97	1.99	1.99	1.98	1.98	1.98	1.98	1.97	1.96	1.96	1.96	1.97	1.97	1.95	1.95	S	4.41	2.03	2.10	2.18	2.17	2.89	2.26	1.95	4.41	2.15	24
22	2.06	2.07	2.09	2.12	2.06	2.04	2.01	1.95	2.12	2.09	1.93	1.95	1.97	2.02	2.29	S	1.98	2.36	2.54	2.62	1.99	2.09	2.10	2.08	1.93	2.62	2.11	24
23	2.01	2.00	1.97	1.95	1.95	2.14	1.95	2.07	1.98	1.98	1.98	1.95	2.16	2.02	S	1.96	1.98	1.96	1.97	1.95	1.95	1.98	1.96	1.97	1.95	2.16	1.99	24
24	2.20	1.98	1.96	1.98	1.98	1.98	1.98	1.98	2.01	1.98	2.12	2.30	2.40	S	2.14	2.75	3.73	2.78	2.12	2.00	2.00	1.99	2.01	2.01	1.96	3.73	2.19	24
25	2.01	2.09	2.08	2.04	2.05	2.07	2.07	2.07	2.08	2.07	2.07	2.04	S	2.01	2.01	2.02	2.01	2.02	2.02	2.01	2.02	2.03	3.27	3.27	2.01	3.27	2.15	24
26	2.05	2.05	2.07	2.08	2.05	2.02	2.00	2.02	2.01	2.06	2.06	S	2.11	2.12	2.11	2.11	2.11	2.10	2.30	2.10	2.10	2.10	2.10	2.07	2.00	2.30	2.08	24
27	2.06	2.05	2.04	2.07	2.05	2.02	2.02	2.05	2.04	2.04	S	2.08	2.05	2.05	2.05	2.06	2.06	2.05	2.04	2.03	2.03	2.03	2.03	2.06	2.02	2.08	2.05	24
28	2.07	2.11	2.11	2.11	2.12	2.14	2.14	2.21	2.27	S	2.23	2.18	2.15	2.12	2.12	2.09	2.09	2.08	2.09	2.04	2.04	2.10	2.18	2.27	2.04	2.27	2.13	24
29	2.21	2.30	2.42	2.46	2.44	2.35	2.10	2.26	S	2.43	2.47	2.12	2.16	2.20	2.08	2.06	2.23	2.69	2.18	2.24	2.12	2.37	3.78	2.85	2.06	3.78	2.37	24
30	2.80	2.07	2.33	2.05	2.18	2.12	2.20	S	2.21	2.31	2.36	2.23	2.20	2.20	2.09	2.04	2.10	2.30	2.33	2.02	2.19	2.22	2.00	2.00	2.00	2.80	2.20	24
HOURLY MAX	2.89	2.43	2.42	2.46	2.48	2.35	2.21	2.39	2.27	2.43	2.47	3.34	2.93	3.13	2.53	2.75	3.73	4.41	2.95	2.62	6.12	2.57	3.78	3.27				
HOURLY AVG	2.13	2.06	2.06	2.05	2.07	2.07	2.04	2.06	2.06	2.08	2.11	2.14	2.12	2.12	2.09	2.07	2.18	2.27	2.16	2.08	2.19	2.09	2.21	2.19				

STATUS FLAG CODES

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

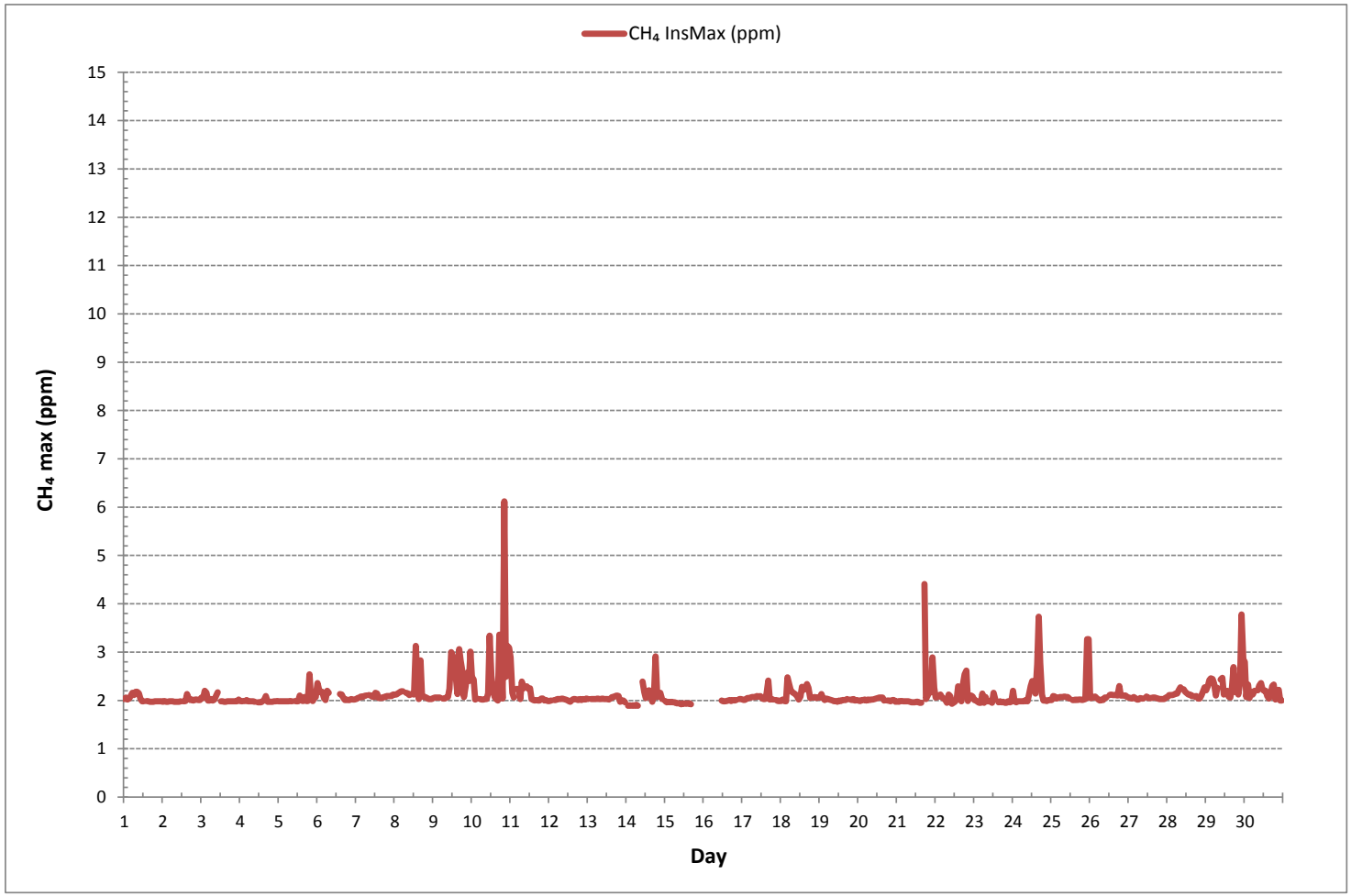
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS: 665

MAXIMUM INSTANTANEOUS VALUE: 6.12 ppm @ HOUR 20 ON DAY 10

IZS CALIBRATION TIME:	30	1.89	OPERATIONAL TIME:	700	hrs
MONTHLY CALIBRATION TIME:	5	6.12			
STANDARD DEVIATION:	0.29	2.55			

METHANE MAX Instantaneous Maximum (CH_4 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	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
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	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	0.00	24
7	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
8	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
9	0.00	0.00	0.00	0.00	0.00	S	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	24
10	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
11	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
12	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
13	0.00	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
14	X	0.00	0.00	0.00	0.00	0.00	0.00	0.00	X	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	S	0.00	0.00	0.00	22
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	X	X	X	X	X	X	X	0.00	0.00	0.00	17
16	X	X	X	X	X	X	X	X	X	X	X	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
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.03	0.00	24
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	24
21	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.04	0.15	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	0.15	0.01	24
22	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	24
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	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	0.01	0.00	24
26	0.00	0.00	0.06	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	0.06	0.00	24
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
28	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.09	0.14	S	0.13	0.11	0.07	0.09	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.03	24
29	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
30	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
HOURLY MAX	0.00	0.00	0.06	0.00	0.03	0.05	0.06	0.09	0.14	0.04	0.15	0.11	0.07	0.09	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
HOURLY AVG	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	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				

STATUS FLAG CODES

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

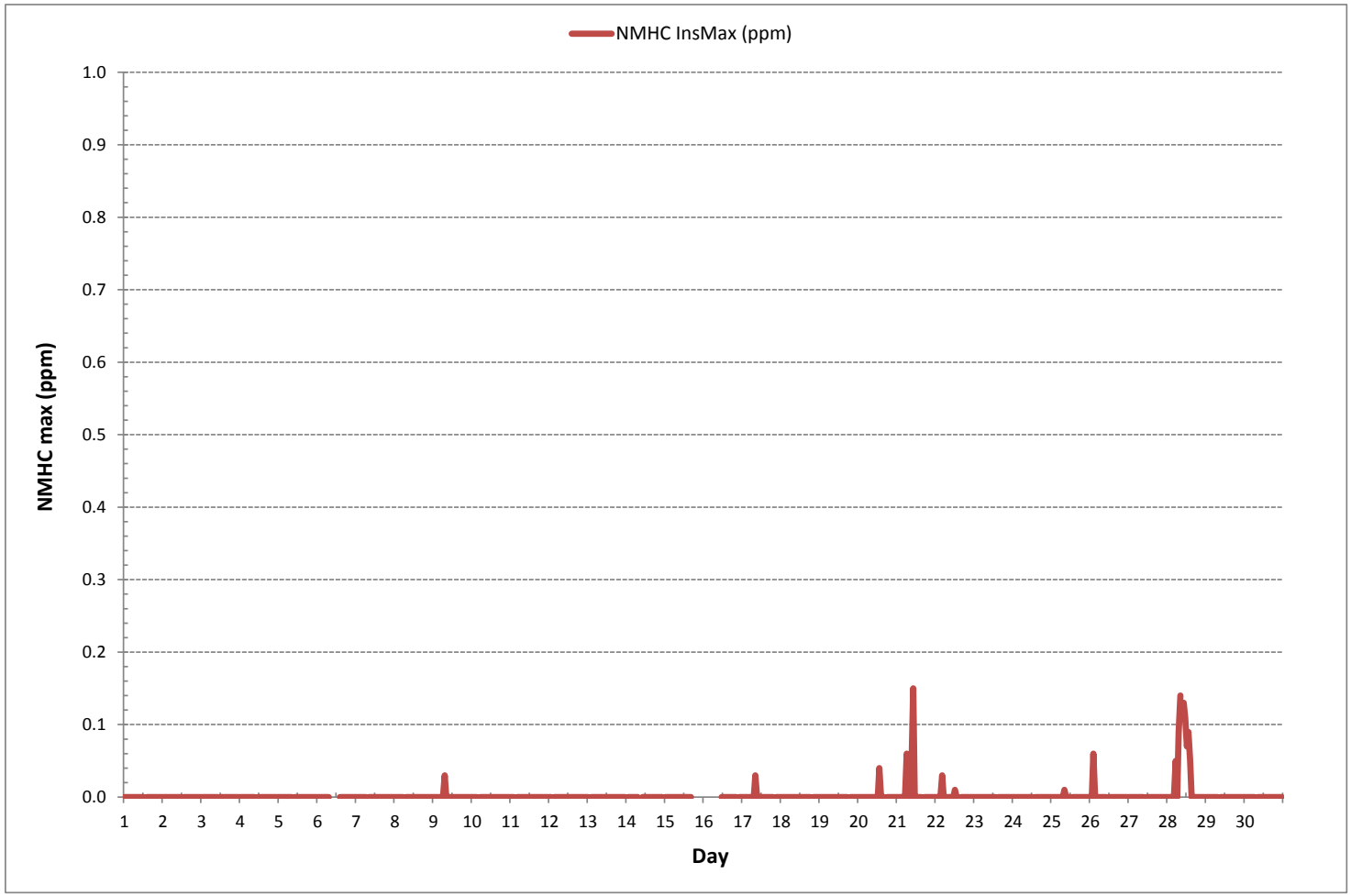
MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS: 18

MAXIMUM INSTANTANEOUS VALUE: 0.15 ppm @ HOUR 10 ON DAY 21

IZS CALIBRATION TIME:	30	0.00	OPERATIONAL TIME:	700	hrs
MONTHLY CALIBRATION TIME:	5	0.15			
STANDARD DEVIATION:	0.01	0.03			

NON-METHANE HYDROCARBONS Instantaneous Maximum (NMHC ppm)



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	25.2	19.5	20.8	20.1	11.7	11.5	10.4	7.9	7.6	6.6	7.1	6.4	9.2	7.4	8.5	12.3	12.8	13.5	15.8	15.9	12.0	15.1	16.7	20.1	6.4	25.2	13.1	24
2	20.4	21.2	23.5	21.1	22.0	14.3	19.9	18.3	16.7	19.5	17.3	9.0	10.4	7.8	7.7	5.9	3.3	3.4	5.8	5.0	7.9	12.4	9.7	7.0	3.3	23.5	12.9	24
3	9.3	8.3	15.5	25.7	22.4	13.4	15.9	16.5	11.2	9.4	11.3	12.3	10.9	14.4	11.1	11.5	12.9	10.2	23.7	26.1	18.3	17.9	21.9	21.7	8.3	26.1	15.5	24
4	22.3	23.0	18.2	18.8	23.3	22.9	20.0	25.0	24.4	27.1	31.5	29.5	28.7	27.3	27.2	26.1	26.5	28.9	20.7	19.8	16.1	15.9	12.0	9.2	9.2	31.5	**22.7**	24
5	9.8	10.7	9.6	13.2	14.4	15.3	12.0	9.8	11.2	11.1	17.2	15.4	12.9	14.3	12.9	12.3	10.7	11.2	7.6	3.6	7.3	7.6	5.5	5.8	3.6	17.2	10.9	24
6	5.1	5.4	6.3	8.1	8.3	6.1	6.5	7.0	5.4	7.6	8.8	11.0	15.9	14.0	14.3	13.3	8.0	6.2	6.4	6.8	10.0	12.8	6.6	4.4	4.4	15.9	8.5	24
7	4.4	3.6	4.9	4.7	4.0	3.7	4.9	5.3	5.4	6.5	5.9	5.7	7.2	8.8	11.3	13.3	10.6	8.9	7.1	7.0	7.1	6.3	6.6	5.8	3.6	13.3	6.6	24
8	4.3	5.3	5.1	4.0	6.7	6.9	5.9	5.9	8.3	11.1	5.8	6.9	10.9	11.0	16.5	14.4	5.6	7.6	11.1	14.2	12.3	18.2	16.1	16.0	4.0	18.2	9.6	24
9	16.3	15.0	16.0	18.4	21.0	21.4	17.9	15.2	8.8	6.4	11.3	10.0	12.0	14.8	13.8	9.3	7.6	11.6	17.2	15.2	22.6	15.9	11.8	5.9	5.9	22.6	14.0	24
10	5.5	4.6	4.6	5.0	6.3	5.4	4.0	4.0	5.0	4.5	3.3	17.3	22.1	22.1	25.7	18.6	12.8	6.3	4.8	4.5	6.2	4.7	5.2	8.4	3.3	25.7	8.8	24
11	7.7	5.0	13.3	14.8	12.1	15.9	18.4	13.0	10.9	15.0	11.3	9.9	10.4	15.1	14.0	13.9	4.8	5.5	7.8	7.9	13.1	13.7	18.8	16.0	4.8	18.8	12.0	24
12	17.0	14.7	12.5	13.7	17.7	14.1	11.5	14.1	13.5	14.7	15.3	16.0	16.5	21.0	20.9	13.6	12.7	13.2	14.4	14.5	11.1	14.1	12.4	19.7	11.1	21.0	14.9	24
13	17.6	22.1	14.5	18.4	23.1	20.8	19.8	20.9	22.4	21.7	26.9	25.2	23.3	23.6	21.2	17.4	16.0	17.3	18.8	20.7	30.8	17.5	28.0	23.4	14.5	30.8	21.3	24
14	25.7	27.2	22.6	15.5	15.5	17.0	14.4	13.3	15.1	7.0	10.9	17.6	14.3	17.0	15.9	16.9	14.1	14.1	11.6	14.8	14.2	14.4	17.4	17.2	7.0	27.2	16.0	24
15	13.1	19.3	19.0	20.4	16.0	15.8	16.4	12.1	11.7	14.2	15.4	18.4	21.1	21.7	26.4	25.8	25.9	24.9	26.3	28.0	23.6	27.7	30.3	22.8	11.7	30.3	20.7	24
16	21.9	18.9	15.7	16.7	9.1	4.3	6.7	4.0	6.0	5.0	6.9	10.8	16.9	19.5	22.3	21.1	18.9	14.8	17.0	15.2	13.4	14.1	14.1	18.2	4.0	22.3	13.8	24
17	14.8	16.9	18.4	16.9	16.1	15.2	9.3	8.5	8.1	6.3	4.9	7.3	6.3	5.4	10.2	12.7	15.2	12.5	15.5	15.1	14.5	15.2	14.0	17.9	4.9	18.4	12.4	24
18	14.8	15.4	14.5	9.9	11.0	14.3	20.8	20.3	21.0	20.1	20.3	14.0	14.2	10.5	9.7	7.9	6.8	4.3	10.4	13.6	13.4	13.1	9.6	8.7	4.3	21.0	13.3	24
19	8.6	8.1	13.4	15.3	15.0	14.3	14.0	17.4	14.1	14.2	17.0	18.3	17.9	17.6	16.2	15.0	14.0	11.6	11.1	8.4	8.0	8.9	6.8	8.8	6.8	18.3	13.1	24
20	12.5	12.5	14.6	13.7	11.2	12.5	15.5	16.6	14.6	17.6	12.7	16.8	18.7	19.9	20.3	16.0	14.0	11.3	9.4	13.4	15.7	12.7	13.2	11.9	9.4	20.3	14.5	24
21	11.1	9.1	16.8	16.6	19.9	13.2	12.0	11.3	9.2	13.5	12.0	10.9	12.7	15.1	10.0	7.5	9.3	11.0	4.6	9.7	8.4	8.6	10.2	8.8	4.6	19.9	11.3	24
22	14.9	17.1	18.3	16.5	20.7	22.6	22.5	22.2	17.4	18.3	26.2	24.3	27.2	24.9	29.1	**40.3**	14.1	11.2	10.2	18.4	19.3	18.1	16.8	17.4	10.2	**40.3**	20.3	24
23	25.3	31.3	21.1	18.7	17.7	13.3	12.1	7.5	4.9	9.3	8.4	9.3	6.6	11.6	16.1	12.2	12.3	16.1	14.6	14.3	11.1	9.6	11.6	11.7	4.9	31.3	13.6	24
24	9.3	10.1	15.5	14.8	14.2	12.3	9.3	7.4	8.2	3.1	6.0	5.9	8.9	9.6	8.9	9.3	4.4	2.8	1.5	2.6	2.9	3.3	3.2	5.0	1.5	15.5	7.4	24
25	5.6	5.3	4.8	7.3	9.1	9.2	11.5	9.6	10.2	9.5	12.2	12.3	9.6	13.1	21.1	22.4	10.5	12.0	13.0	13.2	16.9	8.4	8.5	9.1	4.8	22.4	11.0	24
26	8.3	10.4	7.8	10.7	12.3	9.3	11.7	10.6	12.6	12.5	14.3	14.1	16.2	15.0	9.0	13.8	21.0	19.8	12.4	13.6	15.0	11.4	13.8	16.8	7.8	21.0	13.0	24
27	13.5	12.4	11.8	14.2	10.5	11.4	8.4	12.9	12.6	10.6	10.6	12.6	16.6	18.7	12.2	12.6	12.6	10.2	14.4	13.0	13.0	11.1	8.6	7.4	7.4	18.7	12.2	24
28	7.2	7.6	5.9	12.6	13.6	12.3	12.7	16.7	15.6	18.1	19.2	22.4	17.1	19.3	18.0	21.9	16.7	16.0	16.2	15.5	16.0	16.8	14.5	14.2	5.9	22.4	15.3	24
29	13.7	14.4	11.8	10.9	12.7	10.3	8.1	12.2	8.7	5.6	5.0	7.6	7.6	4.7	4.6	9.0	11.1	11.0	8.0	7.5	8.9	5.9	3.4	3.8	3.4	14.4	8.6	24
30	4.3	5.6	7.9	8.3	9.3	9.1	10.4	10.5	9.3	9.1	9.9	10.3	9.4	10.0	7.5	9.3	5.8	5.2	4.8	5.3	2.2	2.7	2.7	4.9	2.2	10.5	7.2	24
HOURLY MAX	25.7	31.3	23.5	25.7	23.3	22.9	22.5	25.0	24.4	27.1	31.5	29.5	28.7	27.3	29.1	40.3	26.5	28.9	26.3	28.0	30.8	27.7	30.3	23.4				

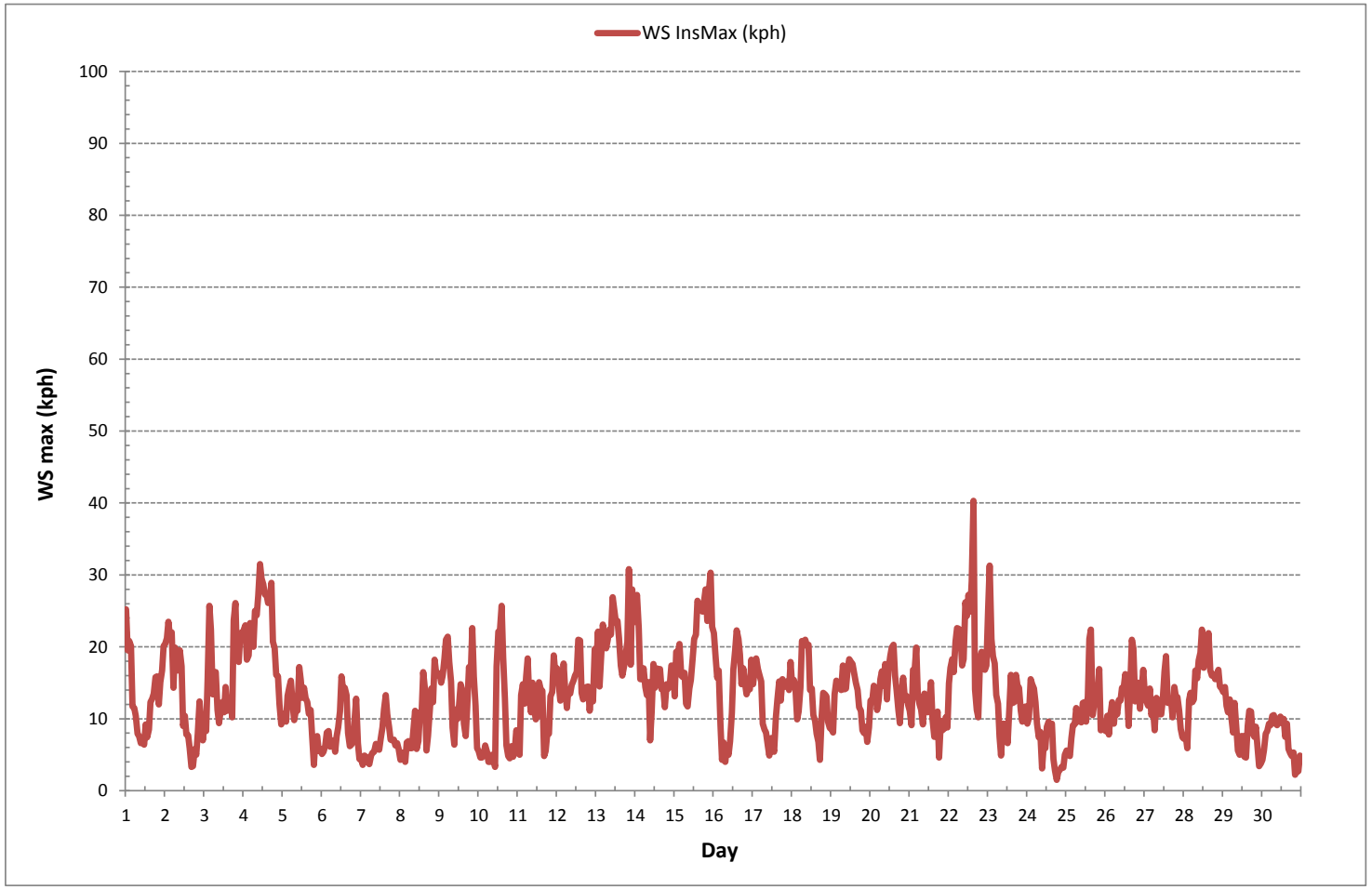
STATUS FLAG CODES

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

MONTHLY SUMMARY

MAXIMUM INSTANTANEOUS VALUE:	40.3	kph	@ HOUR	15	ON DAY	22
OPERATIONAL TIME:						720 hrs

WIND SPEED Instantaneous Maximum (WS kph)



APPENDIX IV
REPORT CERTIFICATION FORM

Report Certification Form

Alberta Airshed (if applicable)	**EPA Approval or Code of Practice Registration #** (if applicable)
YES	**NA**
Company Name (if applicable)	**Industrial Operation Name** (if applicable)
Peace River Area Monitoring Program Committee	**Three Creeks 986b Station**
Name of the Representative of the Person Responsible	**Position / Title of the Representative of the Person Responsible**
Mike Bisaga / Lily Lin	**Technical Program Managers**
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	**Position / Title of External Person Certifying the Report**
Cheri Sinclair	**Supervisor, Customer Service, Air Services**
Company Name for the External Person Certifying the Report	**Identification of Qualifications / Professional Designations of the External Person Certifying the Report**
Maxxam Analytics, A Bureau Veritas Group Company	**B.Sc.**

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

Cheri Sinclair

Signature of the External Person Certifying the Report

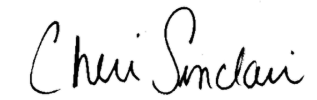
18 - Dec - 2018

Report Issued Date (dd-mon-yyyy)

APPENDIX V
DATA VALIDATION CERTIFICATION FORM

Validation Certificate Form

Client:	Peace River Area Monitoring Program Committee	**Project #:**	8449-2018-11-67-C
Site:	Three Creeks 986b Station	**Contact:**	Karla Reesor

Level 0 Preliminary Verification		**Date**	10 - Dec - 2018
Level 1 Primary Validation		**Date**	17 - Dec - 2018
Level 2 Final Validation		**Date**	18 - Dec - 2018
Level 3 Independent Data Review		**Date**	18 - Dec - 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.