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AMBIENT AIR MONITORING MONTHLY DATA REPORT
PEACE RIVER AREA MONITORING PROGRAM COMMITTEE
THREE CREEKS 986B STATION

JOB #: 8449-2018-09-67-C

September 2018

Prepared for:

PEACE RIVER AREA MONITORING PROGRAM COMMITTEE

Attention: LILY LIN

DATE: October 12, 2018

Prepared by:

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Reviewed by:

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Supervisor, Customer Service, Air Services

SUMMARY

In September 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 (June, 2017).

SO₂: A post-repair calibration was performed on September 11, following the replacement of a damaged sample filter holder. Four hours of downtime were incurred as a result.

TRS: The initial attempt at the routine monthly calibration on September 11 was aborted as the AMD's calibration requirements were not met at Mid point, due to an operator/trainee error. The analyzer was restored to as-found settings and a successful monthly calibration was subsequently completed by a Senior Technician. Four hours of downtime were incurred due to the unsuccessful calibration attempt.

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						MAXIMUM VALUES							OPERATIONAL TIME (%)
Three Creeks 986b Station						1-HOUR					24-HOUR		
PARAMETER	OBJECTIVES		EXCEEDANCES		MONTHLY AVERAGE	READING	DAY	HOUR	WIND SPEED (kph)	WIND DIRECTION (sector)	READING	DAY	
	1-hr	24-hr	1-hr	24-hr									
SO ₂ (ppb)	172	48	0	0	0	1	1	0	2.4	WSW	1	1	99.4
TRS (ppb)	-	-	-	-	0.34	3.68	24	19	2.1	SE	0.70	24	99.4
THC (ppm)	-	-	-	-	2.04	2.53	27	3	0.9	E	2.17	28	100.0
CH ₄ (ppm)	-	-	-	-	2.04	2.53	27	3	0.9	E	2.17	28	100.0
NMHC (ppm)	-	-	-	-	0.00	0.01	21	5	1.2	E	0.00	1	100.0
RELATIVE HUMIDITY (%)	-	-	-	-	77	100	2	5	5.2	SE	99	8	100.0
BAROMETRIC PRESSURE (millibar)	-	-	-	-	947	958	29	13	9.0	NNW	956	29	100.0
AMBIENT TEMPERATURE (°C)	-	-	-	-	4.3	18.0	7	14	2.5	E	12.3	7	100.0
STATION TEMPERATURE (°C)	-	-	-	-	23.1	25.1	15	8	1.3	NNW	23.7	14	100.0
VECTOR WS (kph)	-	-	-	-	0.5	17.8	22	19	-	SSE	9.9	22	100.0
VECTOR WD (sec)	-	-	-	-	346 (NNW)	-	-	-	-	-	-	-	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	September

CONTINUOUS AMBIENT MONITORING						
PARAMETER	% TIME OPERATIONAL	ONE - HOUR AVERAGE			24 - HOUR AVERAGE	
		MAXIMUM VALUES	NO. READINGS > REGULATION	MAXIMUM VALUES	NO. READINGS > REGULATION	
SO ₂	99.4	0.001 ppm	0	0.001 ppm	0	
TRS	99.4	0.004 ppm	-	0.001 ppm	-	
THC	100.0	2.53 ppm	-	2.17 ppm	-	
CH ₄	100.0	2.53 ppm	-	2.17 ppm	-	
NMHC	100.0	0.01 ppm	-	0.00 ppm	-	
RH	100.0	100 %	-	99 %	-	
BP	100.0	958 mb	-	956 mb	-	
Ambient TPX	100.0	18.0 °C	-	12.3 °C	-	
Station TPX	100.0	25.1 °C	-	23.7 °C	-	
Wind Speed	100.0	17.8 kph	-	9.9 kph	-	
Wind Direction	100.0	-	-	-	-	

SIGNATURE OF COMPANY REPRESENTATIVE

FOR ALBERTA ENVIRONMENT USE ONLY

Exceedance Summary Report

SO₂ 1-Hour Exceedances

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

SO₂ 24-Hour Exceedances

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

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

<u>Title</u>	<u>Page</u>
SUMMARY	2
MONTHLY CONTINUOUS DATA SUMMARY REPORT	3
SOUR GAS SUMMARY REPORT	4
EXCEEDANCE SUMMARY REPORT	5
TABLE OF CONTENTS	6
<hr style="border-top: 1px dashed black;"/>	
1.0 Discussion	8
<hr style="border-top: 1px dashed black;"/>	
2.0 Project Personnel	10
<hr style="border-top: 1px dashed black;"/>	
3.0 Plant Monthly Required AMD Summary	10
<hr style="border-top: 1px dashed black;"/>	
4.0 Calculations and Results	10
<hr style="border-top: 1px dashed black;"/>	
5.0 Methods and Procedures	11
<hr style="border-top: 1px dashed black;"/>	
Appendix I	Continuous Monitoring Data Results 14
	Sulphur Dioxide 15
	Total Reduced Sulphur 21
	Total Hydrocarbon 27
	Methane 33
	Non-Methane Hydrocarbon 39
	Wind Speed 45
	Wind Direction 50
	Relative Humidity 54
	Barometric Pressure 57
	Ambient Temperature 60
	Station Temperature 63
Appendix II	Equipment Calibration Results 66
	Sulphur Dioxide 67
	Total Reduced Sulphur 71
	Total Hydrocarbon 74
	Wind System 78
	Meteorological System Check 80

	Calibrators	82
	Calibration Gases	85
Appendix III	Maximum Instantaneous Data	89
Appendix IV	Report Certification Form	102
Appendix V	Data Validation Certification Form	104

1.0 Discussion

This monthly report consists of continuous monitoring results for the following parameters: Sulphur Dioxide (SO₂), Total Reduced Sulphur (TRS), Total Hydrocarbon (THC), Methane (CH₄), Non-Methane Hydrocarbon (NMHC), 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 (SO₂)

- Operational time for the monitoring period was 99.4%, equivalent to four hours of downtime.
- The routine monthly calibration was performed on September 11 and the results met AMD requirements. Upon completion of the calibration, the sample filter holder was found damaged and was subsequently replaced. A post-repair calibration was then completed, after the analyzer had been restored to as-found settings. Four hours of downtime were incurred, at hours 11:00 - 14:00, due to the post-repair calibration.

TOTAL REDUCED SULPHUR (TRS)

- Operational time for the monitoring period was 99.4%, equivalent to four hours of downtime.
- The routine monthly calibration was initiated at hour 07:00 on September 11. The calibration was, however, aborted as the AMD's calibration requirements were not met at Mid point, due to an operator/trainee error. The analyzer was restored to the as-found settings recorded before the calibration attempt and a successful monthly calibration was subsequently completed by a Senior Technician. Four hours of downtime were incurred, at hours 07:00 - 10:00, due to the unsuccessful calibration attempt.

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

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

BAROMETRIC PRESSURE (BP)

- Operational time for the monitoring period was 100%.
- A pressure sensor check was conducted on September 11. The result was satisfactory.

AMBIENT TEMPERATURE (AmbTPX)

- Operational time for the monitoring period was 100%.
- A temperature sensor check was conducted on September 11. The result was satisfactory.

STATION TEMPERATURE (StnTPX)

- Operational time for the monitoring period was 100%.

2.0 Project Personnel

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

3.0 Plant Monthly Required AMD Summary

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

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 (June, 2017).

4.0 Calculations and Results

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

As per PRAMP's request, data flagging for SO₂ was changed, for hours 07:00-14:00 on September 11, from what Maxxam had originally presented. This change in flagging had no apparent impact on the quality and defensibility of results.

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

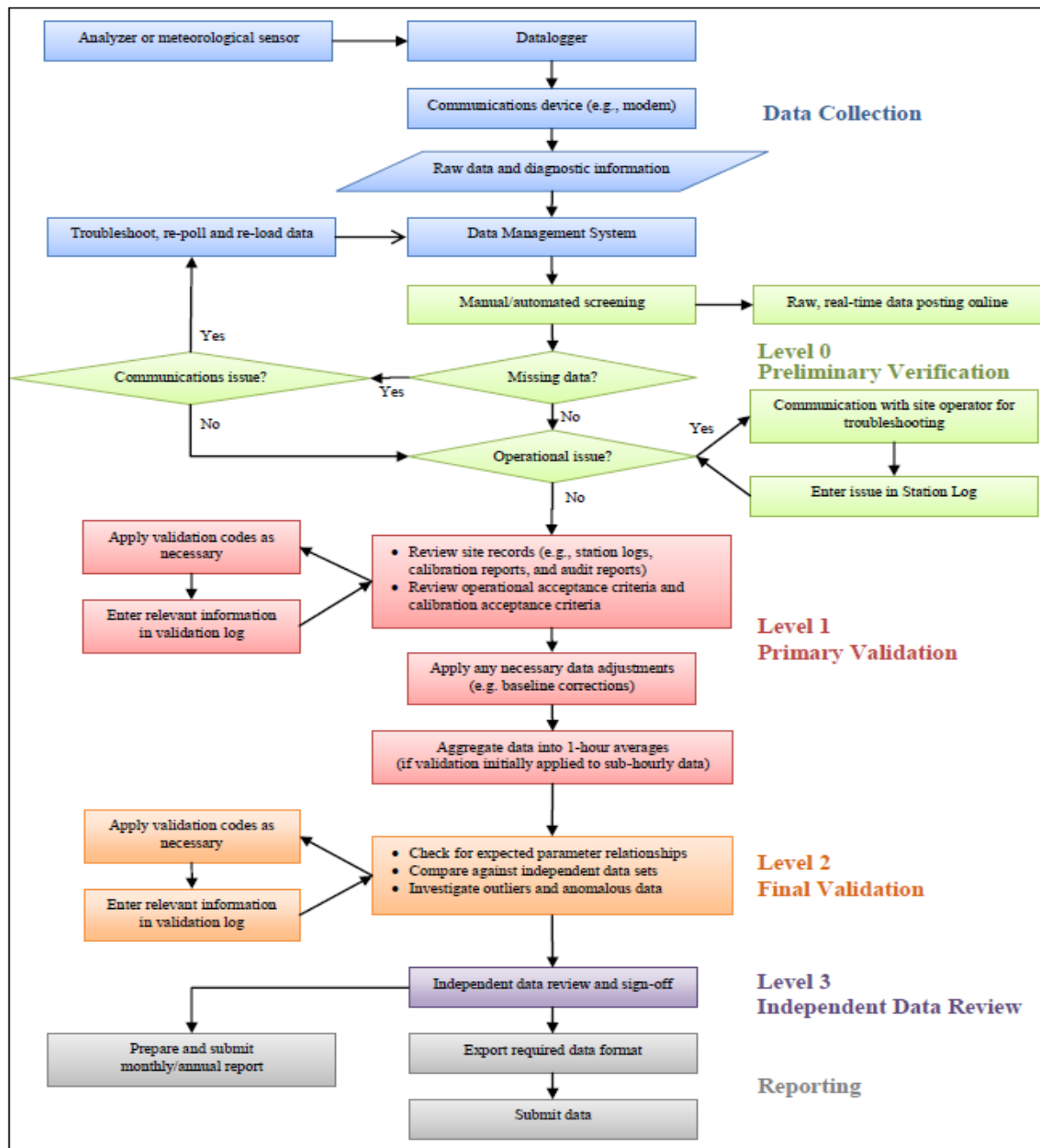
The purpose of Level 2 validation is to verify that there are no inconsistencies among related data, or among regional data measured at nearby sites.

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 (SO₂ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.	
DAY 1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0	1	1	24
DAY 2	1	1	1	0	S	0	1	1	0	1	0	1	1	1	1	1	1	1	1	1	0	0	1	1	0	1	1	24
DAY 3	0	0	0	S	1	0	1	1	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	24
DAY 4	0	0	S	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	1	0	0	0	0	0	0	1	0	24
DAY 5	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	1	0	24
DAY 6	S	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	0	S	0	1	0	24
DAY 7	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	S	0	0	1	0	24
DAY 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	24
DAY 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	24
DAY 10	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
DAY 11	0	0	0	0	0	0	0	C	C	C	C	C1	C1	C1	C1	0	0	0	S	0	0	1	0	0	0	1	0	20
DAY 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	24
DAY 13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	24
DAY 14	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	S	1	1	0	1	1	0	0	1	0	1	0	24
DAY 15	0	0	0	0	0	0	0	0	0	1	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	1	0	24
DAY 16	0	0	0	0	0	1	0	0	0	1	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	1	0	24
DAY 17	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
DAY 18	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
DAY 19	0	0	0	0	0	0	0	0	0	0	S	0	1	1	1	1	1	1	0	1	1	1	0	1	0	1	0	24
DAY 20	1	1	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	0	0	0	1	0	0	0	0	1	1	24
DAY 21	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
DAY 22	1	0	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
DAY 23	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
DAY 24	0	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
DAY 25	0	0	0	0	S	0	0	0	0	0	1	1	1	1	0	1	0	1	0	1	1	1	1	1	0	1	0	24
DAY 26	1	1	1	S	1	1	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	24
DAY 27	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
DAY 28	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
DAY 29	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	24
DAY 30	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0	1	S	1	0	1	0	24
HOURLY MAX	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				
HOURLY AVG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

STATUS FLAG CODES

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

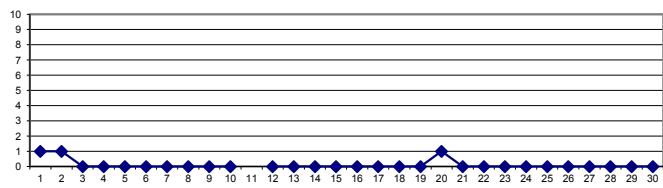
OBJECTIVE LIMIT:

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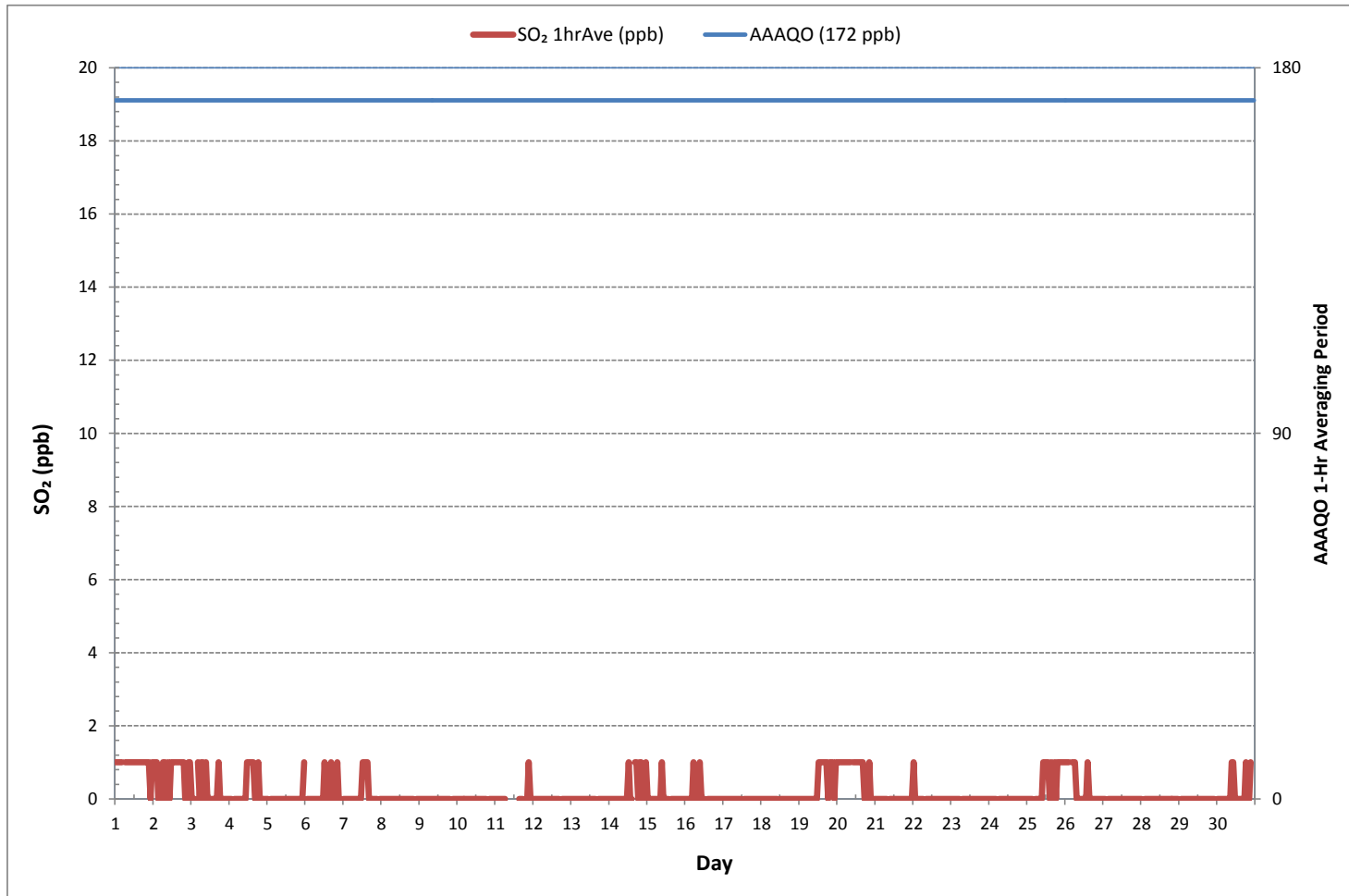
MONTHLY SUMMARY

NUMBER OF 1-HR EXCEEDANCES:	0
NUMBER OF 24-HR EXCEEDANCES:	0
NUMBER OF NON-ZERO READINGS:	119
MINIMUM 1-HR AVERAGE:	0 ppb @ HOUR 22 ON DAY 1
MAXIMUM 1-HR AVERAGE:	1 ppb @ HOUR 0 ON DAY 1
MAXIMUM 24-HR AVERAGE:	1 ppb ON DAY 1
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	4 hrs
OPERATIONAL TIME:	716 hrs
AMD OPERATION UPTIME:	99.4 %
STANDARD DEVIATION:	0
MONTHLY AVERAGE:	0 ppb

24 HR AVERAGES September 2018



SULPHUR DIOXIDE Hourly Averages (SO₂ ppb)



Wind: PRAMP_986
 Poll.: PRAMP_986-SO₂[ppb]
 Monthly: 18/09
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

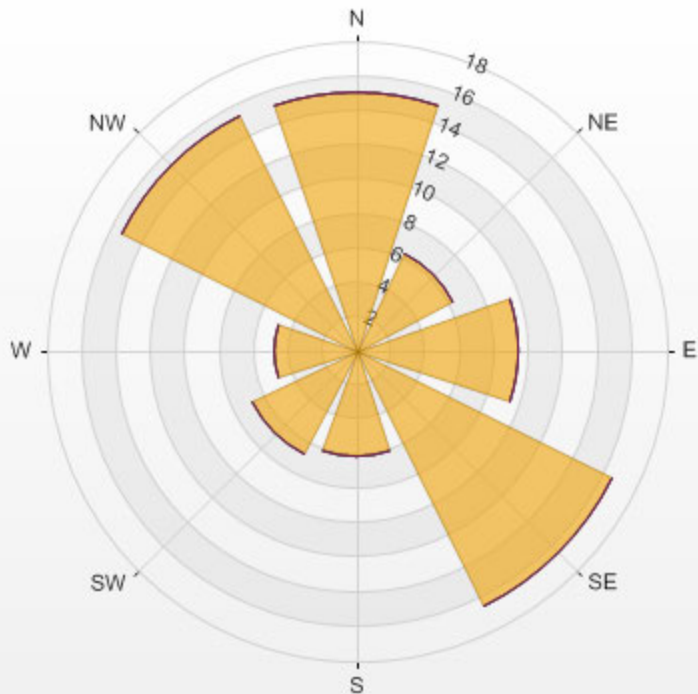
Calm: 19.56%

Calm Avg: 0.19 [ppb]

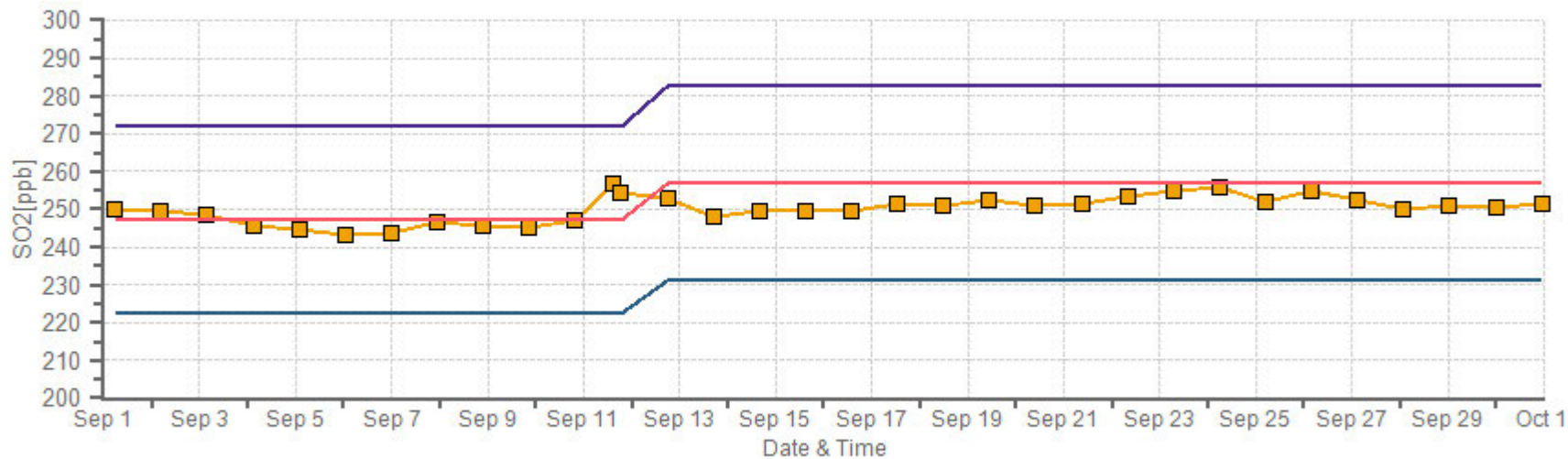
Direction	0-3	3-10	10-85	85-170	>170.0	Total
N	15.0	0.0	0.0	0.0	0.0	15.0
NE	6.3	0.0	0.0	0.0	0.0	6.3
E	9.4	0.0	0.0	0.0	0.0	9.4
SE	16.6	0.0	0.0	0.0	0.0	16.6
S	6.2	0.0	0.0	0.0	0.0	6.2
SW	6.8	0.0	0.0	0.0	0.0	6.8
W	4.9	0.0	0.0	0.0	0.0	4.9
NW	15.3	0.0	0.0	0.0	0.0	15.3
Summary	80.4	0.0	0.0	0.0	0.0	80.4

% Icon Classes (ppb) 80 0-3 0 3-10 0 10-85 0 85-170 0 >170.0

PRAMP_986 Poll.: PRAMP_986-SO2[ppb] 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 19.56% Calm Poll Avg: 0.19[ppb]



SO2[ppb] Calibration: PRAMP_986 Monthly: 18/09 Type: Span



Span Meas Span Ref Span Low Span High

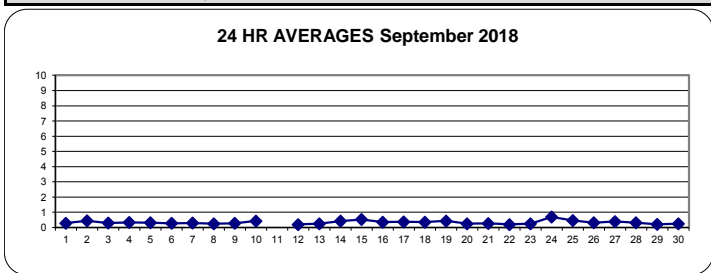
TOTAL REDUCED SULPHUR

TOTAL REDUCED SULPHUR Hourly Averages (TRS ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY																													
1	0.33	0.34	0.30	0.29	0.32	S	0.35	0.31	0.29	0.26	0.23	0.24	0.23	0.24	0.24	0.26	0.21	0.23	0.25	0.31	0.40	0.41	0.49	0.21	0.49	0.29	24		
2	0.42	0.50	0.46	0.43	S	0.50	0.47	0.47	0.38	0.35	0.34	0.33	0.31	0.32	0.34	0.39	0.38	0.51	0.54	0.55	0.64	0.51	0.55	0.76	0.31	0.76	0.45	24	
3	0.56	0.48	0.44	S	0.41	0.35	0.31	0.28	0.24	0.23	0.23	0.22	0.22	0.22	0.21	0.21	0.21	0.22	0.21	0.19	0.24	0.43	0.33	0.38	0.19	0.56	0.30	24	
4	0.56	0.39	S	0.51	0.45	0.42	0.46	0.38	0.30	0.23	0.24	0.24	0.24	0.22	0.22	0.21	0.22	0.23	0.24	0.28	0.34	0.43	0.36	0.37	0.21	0.56	0.33	24	
5	0.36	S	0.55	0.56	0.57	0.58	0.51	0.47	0.25	0.24	0.24	0.25	0.22	0.23	0.22	0.21	0.22	0.22	0.25	0.25	0.23	0.24	0.28	0.21	0.58	0.32	24		
6	S	0.30	0.26	0.26	0.27	0.28	0.32	0.34	0.30	0.31	0.36	0.34	0.28	0.23	0.24	0.22	0.23	0.25	0.28	0.26	0.28	0.26	S	0.22	0.36	0.28	24		
7	0.31	0.30	0.33	0.30	0.27	0.28	0.29	0.31	0.29	0.24	0.25	0.24	0.22	0.24	0.23	0.22	0.21	0.20	0.21	0.22	0.39	0.36	S	0.99	0.20	0.99	0.30	24	
8	0.64	0.29	0.20	0.20	0.18	0.17	0.21	0.21	0.24	0.21	0.20	0.20	0.18	0.20	0.20	0.21	0.21	0.23	0.25	0.24	0.26	S	0.31	0.27	0.17	0.64	0.24	24	
9	0.26	0.25	0.25	0.26	0.27	0.25	0.26	0.27	0.27	0.26	0.26	0.26	0.26	0.25	0.24	0.24	0.24	0.25	0.24	0.24	S	0.54	0.49	0.35	0.24	0.54	0.28	24	
10	0.33	0.34	0.30	0.30	0.31	0.27	0.29	0.35	0.41	0.33	0.27	0.20	0.20	0.20	0.19	0.19	0.21	0.21	0.22	S	0.23	1.42	1.75	1.37	0.19	1.75	0.43	24	
11	2.06	1.34	1.33	0.87	0.84	0.91	0.56	Y	Y	Y	Y	C	C	C	C	C	0.34	0.18	S	0.19	0.16	0.14	0.13	0.14	0.13	2.06	0.66	20	
12	0.15	0.16	0.16	0.16	0.18	0.18	0.17	0.17	0.17	0.18	0.18	0.20	0.19	0.20	0.19	0.21	0.21	0.21	S	0.28	0.25	0.23	0.25	0.25	0.24	0.15	0.28	0.20	24
13	0.23	0.27	0.23	0.21	0.20	0.17	0.19	0.22	0.29	0.32	0.30	0.25	0.21	0.20	0.18	0.18	S	0.24	0.21	0.28	0.32	0.30	0.34	0.35	0.17	0.35	0.25	24	
14	0.36	0.32	0.31	0.39	0.32	0.36	0.41	0.42	0.31	0.22	0.20	0.22	0.21	0.20	0.20	S	0.27	0.26	0.36	0.81	1.07	1.03	0.84	0.66	0.20	1.07	0.42	24	
15	0.71	0.70	0.63	0.88	0.71	0.70	0.73	0.49	0.46	0.30	0.23	0.21	0.23	0.23	S	0.29	0.25	0.25	0.31	0.44	0.85	1.11	0.98	0.42	0.21	1.11	0.53	24	
16	0.95	0.34	0.22	0.23	0.21	0.28	0.22	0.22	0.21	0.24	0.23	0.21	0.20	S	0.26	0.22	0.21	0.22	0.27	0.30	0.26	1.01	0.94	0.95	0.20	1.01	0.36	24	
17	0.80	0.64	0.50	0.43	0.32	0.29	0.35	0.41	0.26	0.23	0.22	0.21	S	0.23	0.22	0.22	0.21	0.22	0.25	0.46	0.82	0.66	0.35	0.34	0.21	0.82	0.38	24	
18	0.33	0.34	0.37	0.38	0.36	0.37	0.46	0.51	0.47	0.33	0.24	S	0.25	0.21	0.21	0.19	0.22	0.21	0.26	0.49	0.39	0.44	0.35	0.59	0.19	0.59	0.35	24	
19	0.60	0.63	0.61	0.54	0.99	0.77	0.42	0.28	0.25	0.21	S	0.26	0.26	0.24	0.20	0.20	0.19	0.18	0.19	0.59	0.99	0.70	0.31	0.18	0.18	0.99	0.43	24	
20	0.18	0.16	0.17	0.18	0.18	0.17	0.19	0.18	0.18	S	0.25	0.20	0.20	0.20	0.19	0.20	0.20	0.20	0.19	0.18	0.41	0.68	0.36	0.36	0.16	0.68	0.24	24	
21	0.37	0.41	0.38	0.41	0.37	0.29	0.31	0.27	S	0.31	0.23	0.20	0.19	0.19	0.18	0.20	0.18	0.18	0.21	0.44	0.32	0.24	0.22	0.18	0.44	0.27	24		
22	0.19	0.20	0.20	0.22	0.22	0.27	0.23	S	0.26	0.20	0.19	0.18	0.18	0.18	0.17	0.18	0.19	0.20	0.21	0.21	0.21	0.20	0.22	0.17	0.27	0.20	24		
23	0.21	0.22	0.22	0.23	0.22	0.22	S	0.29	0.24	0.25	0.23	0.22	0.21	0.21	0.19	0.19	0.20	0.25	0.54	0.49	0.24	0.24	0.24	0.19	0.54	0.25	24		
24	0.25	0.25	0.27	0.28	0.32	S	0.34	0.33	0.31	0.31	0.29	0.28	0.27	0.26	0.26	0.27	0.26	0.26	0.35	3.68	2.54	1.99	1.55	1.09	0.25	3.68	0.70	24	
25	0.84	1.36	0.67	0.48	S	0.90	0.71	0.79	0.39	0.37	0.35	0.33	0.30	0.28	0.25	0.25	0.26	0.27	0.28	0.29	0.28	0.31	0.34	0.35	0.25	1.36	0.46	24	
26	0.60	0.72	0.40	S	0.47	0.23	0.24	0.25	0.26	0.26	0.33	0.33	0.26	0.25	0.26	0.34	0.30	0.25	0.24	0.25	0.26	0.25	0.28	0.25	0.23	0.72	0.32	24	
27	0.26	0.47	S	0.78	0.79	0.64	0.65	0.57	0.43	0.33	0.38	0.37	0.25	0.22	0.21	0.21	0.20	0.19	0.19	0.21	0.45	0.38	0.35	0.40	0.19	0.79	0.39	24	
28	0.39	S	0.41	0.34	0.34	0.42	0.45	0.40	0.43	0.28	0.21	0.21	0.21	0.20	0.21	0.20	0.21	0.21	0.20	0.29	0.41	0.33	0.34	0.47	0.20	0.47	0.31	24	
29	S	0.26	0.22	0.20	0.21	0.20	0.21	0.21	0.21	0.20	0.20	0.20	0.19	0.20	0.18	0.20	0.20	0.18	0.19	0.22	0.21	0.23	0.24	S	0.18	0.26	0.21	24	
30	0.30	0.24	0.28	0.24	0.28	0.29	0.28	0.27	0.22	0.61	0.26	0.19	0.19	0.19	0.18	0.19	0.18	0.18	0.19	0.25	0.26	S	0.30	0.18	0.61	0.25	24		
HOURLY MAX	2.06	1.36	1.33	0.88	0.99	0.91	0.73	0.79	0.47	0.61	0.38	0.37	0.31	0.32	0.34	0.39	0.38	0.51	0.54	3.68	2.54	1.99	1.75	1.37					
HOURLY AVG	0.48	0.44	0.38	0.38	0.38	0.38	0.37	0.35	0.30	0.28	0.26	0.24	0.23	0.22	0.22	0.22	0.23	0.23	0.25	0.43	0.48	0.53	0.48	0.47					

STATUS FLAG CODES

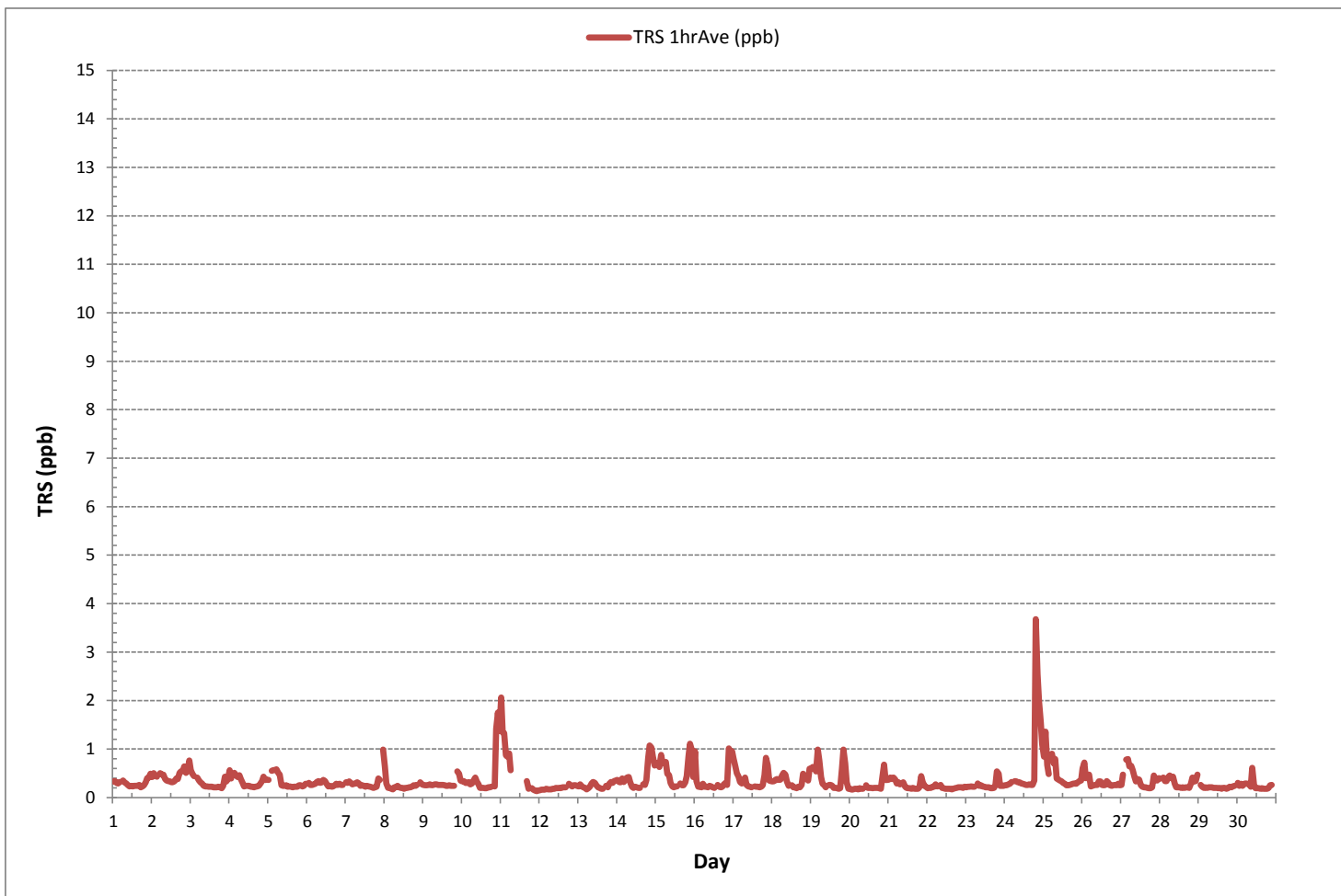
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	679				
MINIMUM 1-HR AVERAGE:	0.13	ppb	@ HOUR	22	ON DAY
MAXIMUM 1-HR AVERAGE:	3.68	ppb	@ HOUR	19	ON DAY
MAXIMUM 24-HR AVERAGE:	0.70	ppb			ON DAY
IZS CALIBRATION TIME:	32	hrs	OPERATIONAL TIME:	716	hrs
MONTHLY CALIBRATION TIME:	5	hrs	AMD OPERATION UPTIME:	99.4	%
STANDARD DEVIATION:	0.27		MONTHLY AVERAGE:	0.34	ppb

TOTAL REDUCED SULPHUR Hourly Averages (TRS ppb)



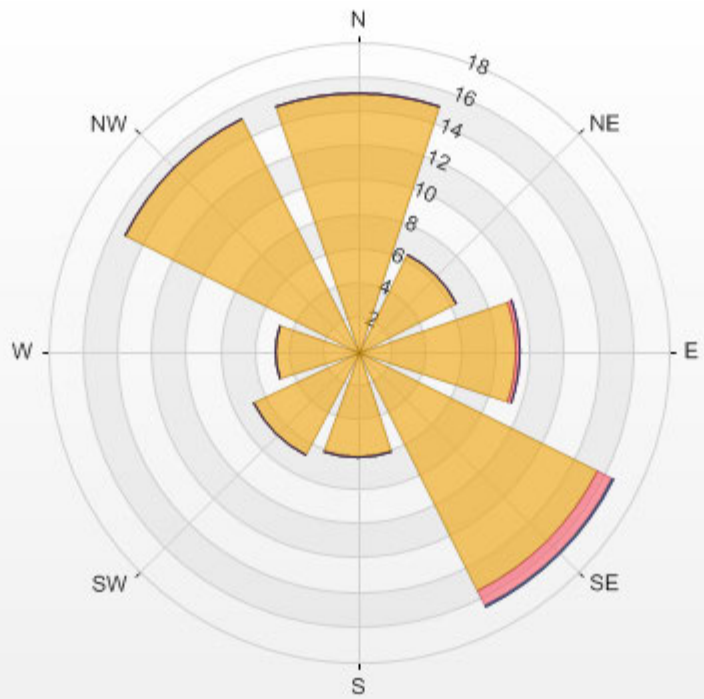
Wind: PRAMP_986
 Poll.: PRAMP_986-TRS[ppb]
 Monthly: 18/09
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 19.59% Calm Avg: 0.48 [ppb]

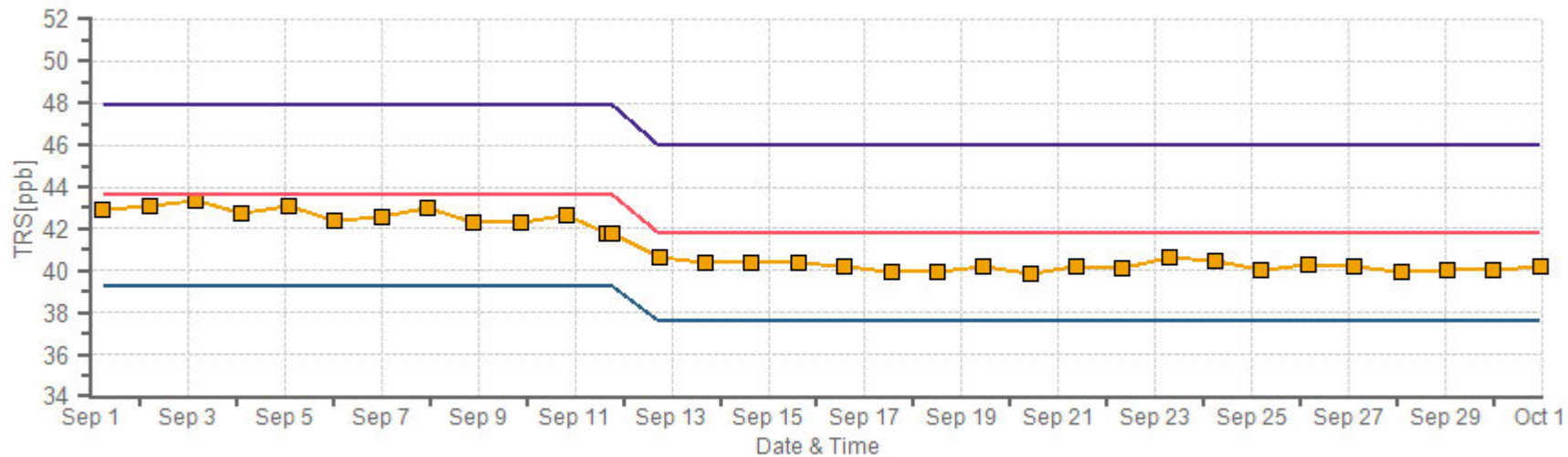
Direction	0-1	1-3	3-10	>10.0	Total
N	15.0	0.0	0.0	0.0	15.0
NE	6.3	0.0	0.0	0.0	6.3
E	9.1	0.3	0.0	0.0	9.4
SE	15.6	0.9	0.2	0.0	16.6
S	6.2	0.0	0.0	0.0	6.2
SW	6.8	0.0	0.0	0.0	6.8
W	4.9	0.0	0.0	0.0	4.9
NW	15.2	0.0	0.0	0.0	15.2
Summary	79.1	1.2	0.2	0.0	80.4

% Icon Classes (ppb) 79 0-1 1 1-3 0 3-10 0 >10.0

PRAMP_986 Poll.: PRAMP_986-TRS[ppb] 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 19.59% Calm Poll Avg: 0.48[ppb]



TRS[ppb] Calibration: PRAMP_986 Monthly: 18/09 Type: Span



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

TOTAL HYDROCARBON



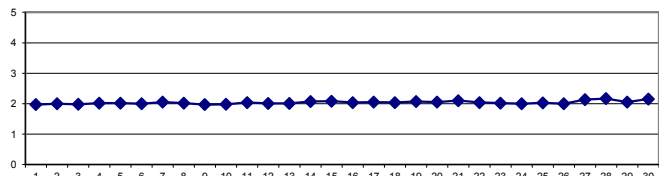
TOTAL HYDROCARBONS Hourly Averages (THC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.				
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.					
DAY																																
1	1.93	1.93	1.94	1.96	1.96	S	1.95	1.95	1.95	1.96	1.97	1.97	1.97	1.97	1.96	1.96	1.96	1.95	1.97	1.97	1.98	2.01	1.98	2.04	1.93	2.04	1.97	24				
2	2.15	2.05	2.07	2.07	S	2.04	2.04	2.02	1.99	1.98	1.98	1.98	1.96	1.95	1.95	1.95	1.94	2.00	1.95	1.96	2.00	2.01	2.03	2.00	1.94	2.15	2.00	24				
3	1.99	2.00	1.98	S	1.98	1.99	1.98	1.96	1.96	1.97	1.97	1.97	1.97	1.96	1.96	1.96	1.96	1.97	1.97	2.03	2.01	2.00	2.06	1.96	2.06	1.98	24					
4	2.01	2.05	S	2.09	2.11	2.15	2.15	2.08	2.01	1.99	1.99	2.00	1.99	1.98	1.97	1.98	1.98	1.98	1.97	1.97	1.99	2.01	2.01	2.01	1.97	2.15	2.02	24				
5	2.02	S	2.08	2.08	2.09	2.10	2.12	2.24	2.02	2.00	1.99	1.99	1.98	1.98	1.96	1.96	1.97	1.99	1.98	1.99	1.98	1.98	1.98	1.98	1.96	2.24	2.02	24				
6	S	1.98	1.98	1.98	1.99	2.00	2.00	2.01	2.00	2.00	2.00	2.01	2.00	2.01	2.01	2.00	1.98	2.00	2.00	1.99	2.01	2.00	2.01	S	1.98	2.01	2.00	24				
7	2.02	2.02	2.03	2.03	2.02	2.03	2.03	2.04	2.04	2.05	2.05	2.05	2.03	2.02	2.03	2.04	2.04	2.04	2.03	2.03	2.09	2.20	S	2.18	2.02	2.20	2.05	24				
8	2.17	2.15	2.06	2.06	2.05	2.04	2.03	2.02	2.02	2.01	2.01	2.00	2.00	2.00	2.02	2.01	2.01	2.01	2.00	1.99	1.97	S	1.97	1.97	1.97	2.17	2.02	24				
9	1.97	1.96	1.96	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.96	1.96	1.96	1.96	1.96	1.97	1.97	S	1.98	1.98	1.97	1.96	1.98	1.97	24				
10	1.97	1.97	1.98	2.00	1.99	1.98	1.98	1.99	1.99	1.99	1.99	1.98	1.98	1.98	1.97	1.97	1.97	1.96	1.96	S	1.99	2.00	1.99	1.98	1.96	2.00	1.98	24				
11	1.98	2.03	2.15	2.24	2.16	2.09	2.10	2.09	2.00	1.98	1.96	1.96	1.97	1.97	C	C	C	C	S	2.00	1.99	2.00	2.00	2.00	1.96	2.24	2.04	24				
12	2.00	2.00	2.00	2.01	2.01	2.01	2.01	2.01	2.00	2.01	2.00	1.99	1.99	1.99	1.99	2.00	2.01	S	2.01	2.01	2.02	2.02	2.01	2.01	1.99	2.02	2.01	24				
13	2.01	2.03	2.02	2.02	2.03	2.04	2.03	2.03	2.01	2.00	2.00	2.00	2.00	1.99	1.98	1.97	S	1.98	1.98	2.00	2.02	2.01	2.01	2.02	1.97	2.04	2.01	24				
14	2.03	2.06	2.11	2.16	2.18	2.18	2.19	2.20	2.15	2.05	2.03	2.03	2.02	2.01	2.00	S	2.00	2.00	2.04	2.02	2.03	2.04	2.12	2.06	2.00	2.20	2.07	24				
15	2.15	2.07	2.18	2.36	2.29	2.29	2.22	2.13	2.08	2.02	1.99	2.00	2.00	S	2.00	2.00	2.00	2.00	2.01	2.02	2.06	2.04	2.05	1.99	2.36	2.08	24					
16	2.05	2.02	2.01	2.01	2.02	2.02	2.02	2.01	2.01	2.02	2.02	2.02	2.02	S	2.01	2.01	2.01	2.01	2.02	2.04	2.10	2.12	2.07	2.25	2.01	2.25	2.04	24				
17	2.08	2.07	2.13	2.07	2.08	2.11	2.13	2.09	2.07	2.06	2.04	2.03	S	2.02	2.01	2.01	2.01	2.01	2.02	2.02	2.02	2.04	2.07	2.04	2.01	2.13	2.05	24				
18	2.04	2.04	2.04	2.06	2.06	2.06	2.06	2.05	2.05	2.04	2.03	S	2.00	2.00	1.99	1.99	2.00	2.01	2.02	2.08	2.04	2.04	2.04	2.05	1.99	2.08	2.04	24				
19	2.07	2.03	2.04	2.10	2.20	2.29	2.09	2.03	2.00	2.01	S	2.02	2.03	2.02	2.02	2.01	2.00	2.00	2.00	2.07	2.32	2.20	2.14	2.03	2.00	2.32	2.07	24				
20	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.01	S	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.01	2.03	2.04	2.21	2.39	2.24	2.24	2.00	2.39	2.05	24				
21	2.18	2.46	2.27	2.30	2.16	2.15	2.21	2.07	S	2.03	2.02	2.00	2.00	2.00	2.01	2.00	2.00	2.00	2.01	2.11	2.19	2.05	2.05	2.06	2.00	2.46	2.10	24				
22	2.07	2.08	2.07	2.08	2.07	2.10	2.09	S	2.04	2.04	2.04	2.01	2.01	2.01	2.00	2.00	2.00	2.00	2.00	2.01	2.02	2.03	2.03	2.03	2.00	2.10	2.04	24				
23	2.03	2.03	2.02	2.02	2.01	2.01	S	2.02	2.04	2.05	2.06	2.04	2.02	2.02	2.01	2.00	1.99	1.99	2.12	2.02	2.00	1.99	1.99	1.99	1.99	2.12	2.02	24				
24	2.00	1.99	2.00	2.01	2.02	S	2.00	2.00	1.99	1.98	1.98	1.98	1.98	1.98	1.97	1.97	1.97	1.98	2.00	2.00	2.00	2.03	2.11	1.97	2.11	2.00	24					
25	2.23	2.22	2.14	2.13	S	2.06	2.03	2.05	2.03	2.03	2.02	2.01	2.01	1.99	1.98	1.97	1.97	1.96	1.97	1.97	1.97	1.98	1.98	1.96	2.23	2.03	24					
26	2.03	2.01	2.02	S	2.05	2.00	2.01	2.01	1.98	1.99	1.98	1.98	1.97	1.97	1.97	1.96	1.97	1.97	1.99	1.99	2.00	2.01	2.02	2.02	1.96	2.05	2.00	24				
27	2.05	2.20	S	2.53	2.23	2.21	2.22	2.13	2.14	2.11	2.06	2.04	2.02	2.02	2.00	2.01	2.01	2.00	2.00	2.10	2.31	2.05	2.41	2.16	2.00	2.53	2.13	24				
28	2.37	S	2.22	2.26	2.24	2.33	2.41	2.39	2.30	2.11	2.05	2.02	2.01	2.00	2.00	1.99	1.98	1.98	1.99	2.24	2.22	2.31	2.31	2.25	1.98	2.41	2.17	24				
29	S	2.03	2.03	2.04	2.04	2.03	2.03	2.03	2.03	2.02	2.02	2.02	2.02	2.03	2.03	2.02	2.02	2.00	2.08	2.11	2.09	2.30	2.13	S	2.00	2.30	2.05	24				
30	2.29	2.43	2.51	2.27	2.36	2.34	2.31	2.24	2.13	2.09	2.05	2.01	2.02	2.01	2.00	1.99	2.00	1.99	1.99	2.02	2.06	2.14	S	2.20	1.99	2.51	2.15	24				
HOURLY MAX	2.37	2.46	2.51	2.53	2.36	2.34	2.41	2.39	2.30	2.11	2.06	2.05	2.03	2.03	2.03	2.04	2.04	2.04	2.12	2.24	2.32	2.39	2.41	2.25								
HOURLY AVG	2.07	2.07	2.07	2.10	2.08	2.09	2.08	2.06	2.04	2.02	2.01	2.00	2.00	1.99	1.99	1.99	1.99	1.99	2.00	2.02	2.06	2.07	2.06	2.06								

STATUS FLAG CODES

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

24 HR AVERAGES September 2018

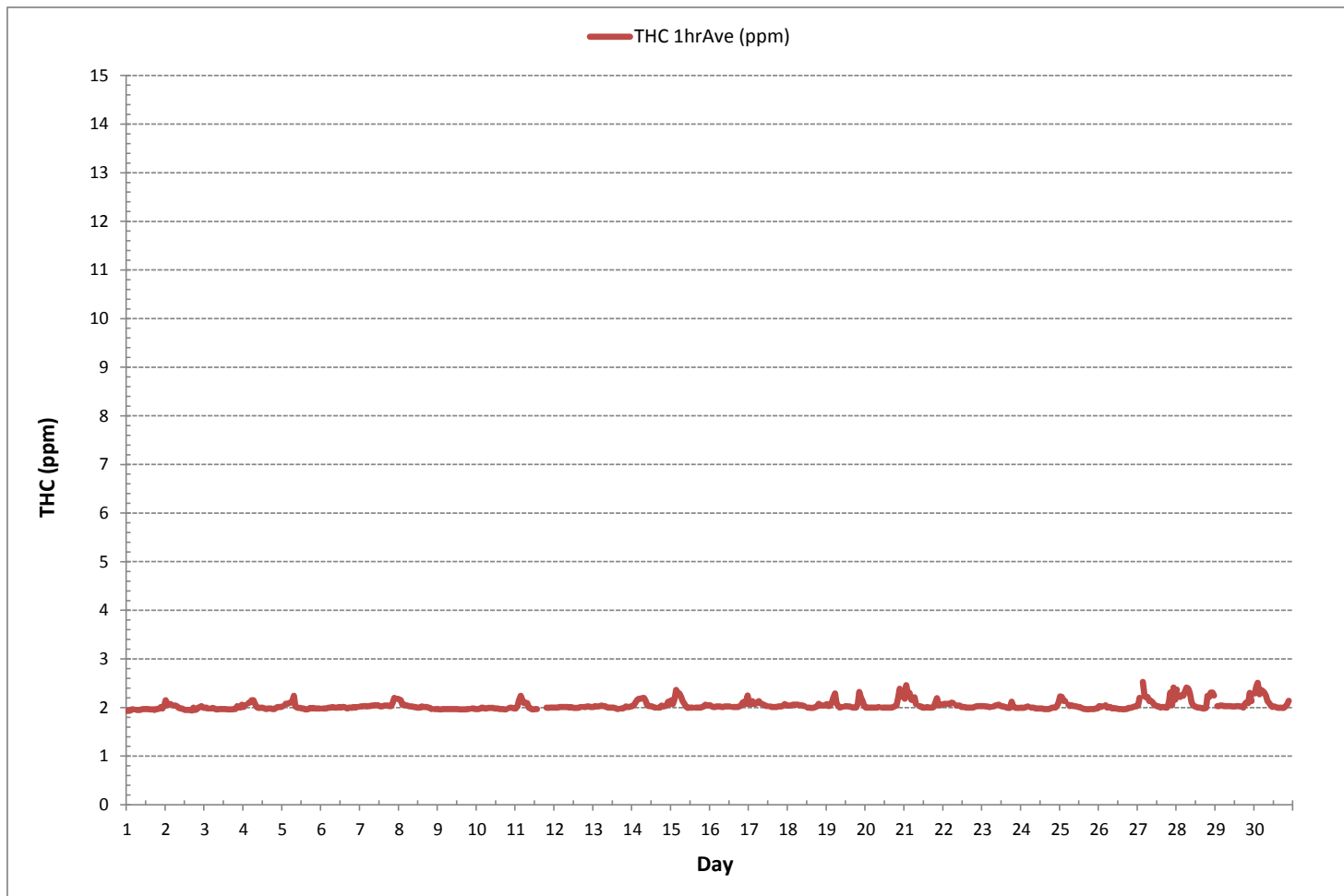


MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	684			
MINIMUM 1-HR AVERAGE:	1.93 ppm	@ HOUR	0	ON DAY
MAXIMUM 1-HR AVERAGE:	2.53 ppm	@ HOUR	3	ON DAY
MAXIMUM 24-HR AVERAGE:	2.17 ppm			ON DAY
IZS CALIBRATION TIME:	32	hrs	OPERATIONAL TIME:	720
MONTHLY CALIBRATION TIME:	4	hrs	AMD OPERATION UPTIME:	100.0
STANDARD DEVIATION:	0.09		MONTHLY AVERAGE:	2.04
				ppm



TOTAL HYDROCARBONS Hourly Averages (THC ppm)



Wind: PRAMP_986
 Poll.: PRAMP_986-THC55[ppm]
 Monthly: 18/09
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

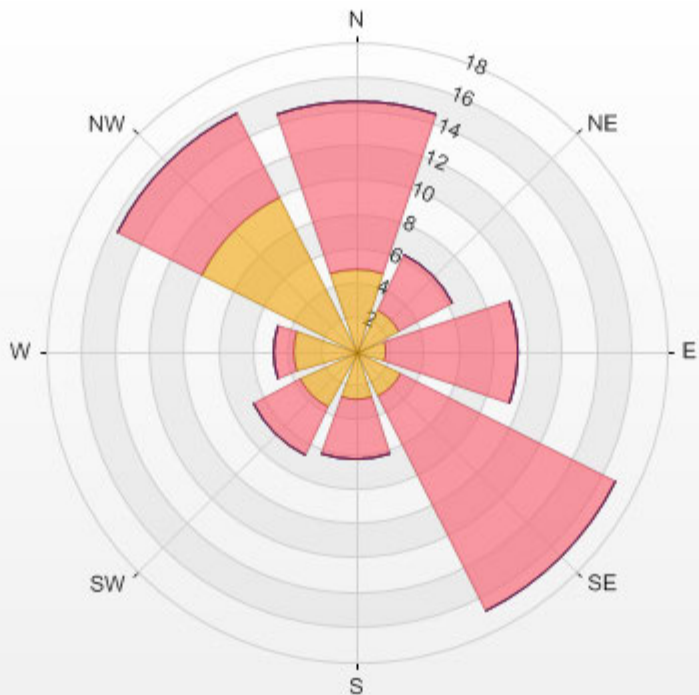
Calm: 19.59%

Calm Avg: 2.12 [ppm]

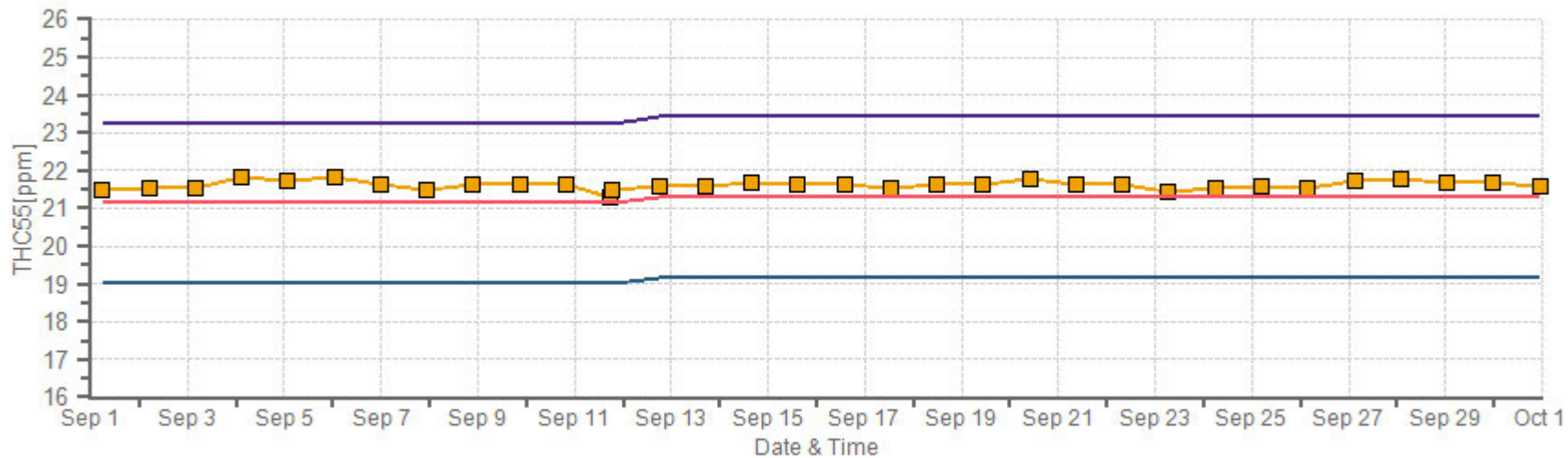
Direction	0-2	2-3	3-5	5-10	>10.0	Total
N	4.8	9.8	0.0	0.0	0.0	14.6
NE	2.8	3.5	0.0	0.0	0.0	6.3
E	1.8	7.6	0.0	0.0	0.0	9.4
SE	2.9	13.9	0.0	0.0	0.0	16.8
S	2.8	3.5	0.0	0.0	0.0	6.3
SW	3.7	3.1	0.0	0.0	0.0	6.7
W	3.7	1.2	0.0	0.0	0.0	4.8
NW	10.1	5.4	0.0	0.0	0.0	15.5
Summary	32.4	48.0	0.0	0.0	0.0	80.4

% Icon Classes (ppm) 32 0-2 48 2-3 0 3-5 0 5-10 0 >10.0

PRAMP_986 Poll.: PRAMP_986-THC55[ppm] 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 19.59% Calm Poll Avg: 2.12[ppm]



THC55[ppm] Calibration: PRAMP_986 Monthly: 18/09 Type: Span



Span Meas Span Ref Span Low Span High

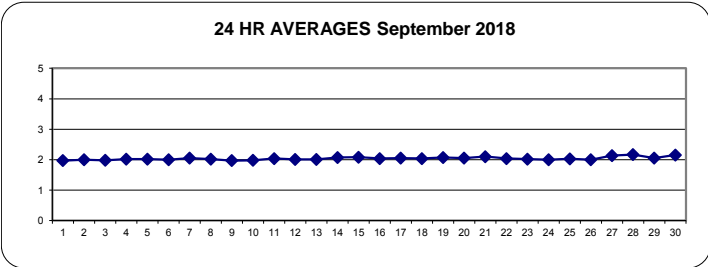
METHANE

METHANE Hourly Averages (CH₄ ppm)

DAY	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.	
1	1.93	1.93	1.94	1.96	1.96	S	1.95	1.95	1.95	1.96	1.97	1.97	1.97	1.97	1.96	1.96	1.96	1.96	1.95	1.97	1.97	1.98	2.01	1.98	2.04	1.93	2.04	1.97	24
2	2.15	2.05	2.07	2.07	S	2.04	2.04	2.02	1.99	1.98	1.98	1.98	1.96	1.95	1.95	1.95	1.95	1.94	2.00	1.95	1.96	2.00	2.01	2.03	2.00	1.94	2.15	2.00	24
3	1.99	2.00	1.98	S	1.98	1.99	1.98	1.96	1.96	1.97	1.97	1.97	1.97	1.97	1.96	1.96	1.96	1.96	1.97	1.97	2.03	2.01	2.00	2.06	1.96	2.06	1.98	24	
4	2.01	2.05	S	2.09	2.11	2.15	2.15	2.08	2.01	1.99	1.99	2.00	1.99	1.98	1.97	1.98	1.98	1.98	1.97	1.97	1.99	2.01	2.01	2.01	1.97	2.15	2.02	24	
5	2.02	S	2.08	2.08	2.09	2.10	2.12	2.24	2.02	2.00	1.99	1.99	1.98	1.98	1.96	1.96	1.97	1.99	1.98	1.99	1.98	1.98	1.98	1.98	1.96	2.24	2.02	24	
6	S	1.98	1.98	1.98	1.99	2.00	2.00	2.01	2.00	2.00	2.00	2.01	2.00	2.01	2.01	2.00	1.98	2.00	2.00	1.99	2.01	2.00	2.01	S	1.98	2.01	2.00	24	
7	2.02	2.02	2.03	2.03	2.02	2.03	2.03	2.04	2.04	2.05	2.05	2.05	2.03	2.02	2.03	2.04	2.04	2.04	2.03	2.03	2.09	2.20	S	2.18	2.02	2.20	2.05	24	
8	2.17	2.15	2.06	2.06	2.05	2.04	2.03	2.02	2.02	2.01	2.01	2.00	2.00	2.00	2.02	2.01	2.01	2.01	2.00	1.99	1.97	S	1.97	1.97	1.97	2.17	2.02	24	
9	1.97	1.96	1.96	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.96	1.96	1.96	1.96	1.96	1.97	1.97	S	1.98	1.98	1.97	1.96	1.98	1.97	24
10	1.97	1.97	1.98	2.00	1.99	1.98	1.98	1.99	1.99	1.99	1.99	1.99	1.98	1.98	1.98	1.97	1.97	1.97	1.96	1.96	S	1.99	2.00	1.99	1.98	1.96	2.00	1.98	24
11	1.98	2.03	2.15	2.24	2.16	2.09	2.10	2.09	2.00	1.98	1.96	1.96	1.97	1.97	C	C	C	C	S	2.00	1.99	2.00	2.00	2.00	1.96	2.24	2.04	24	
12	2.00	2.00	2.00	2.01	2.01	2.01	2.01	2.01	2.01	2.00	2.00	2.00	1.99	1.99	1.99	1.99	1.99	2.00	2.01	S	2.01	2.01	2.02	2.02	2.01	1.99	2.02	2.04	24
13	2.01	2.03	2.02	2.02	2.03	2.04	2.03	2.03	2.01	2.00	2.00	2.00	2.00	1.99	1.98	1.97	S	1.98	1.98	2.00	2.02	2.01	2.01	2.02	1.97	2.04	2.01	24	
14	2.03	2.06	2.11	2.16	2.18	2.18	2.19	2.20	2.15	2.05	2.03	2.03	2.02	2.01	2.00	S	2.00	2.00	2.04	2.02	2.03	2.04	2.12	2.06	2.00	2.20	2.07	24	
15	2.15	2.07	2.18	2.36	2.29	2.29	2.22	2.13	2.08	2.02	1.99	2.00	2.00	2.00	S	2.00	2.00	2.00	2.00	2.01	2.02	2.06	2.04	2.05	1.99	2.36	2.08	24	
16	2.05	2.02	2.01	2.01	2.02	2.02	2.02	2.01	2.01	2.02	2.02	2.02	2.02	2.02	S	2.01	2.01	2.01	2.01	2.02	2.04	2.10	2.12	2.07	2.25	2.01	2.25	2.04	24
17	2.08	2.07	2.13	2.07	2.08	2.11	2.13	2.09	2.07	2.06	2.04	2.03	S	2.02	2.01	2.01	2.01	2.01	2.01	2.02	2.02	2.02	2.04	2.07	2.04	2.01	2.13	2.05	24
18	2.04	2.04	2.04	2.06	2.06	2.06	2.06	2.05	2.05	2.04	2.03	S	2.00	2.00	1.99	1.99	2.00	2.01	2.02	2.02	2.08	2.04	2.04	2.05	1.99	2.08	2.04	24	
19	2.07	2.03	2.04	2.10	2.20	2.29	2.09	2.03	2.00	2.01	S	2.02	2.03	2.02	2.02	2.01	2.00	2.00	2.00	2.00	2.07	2.32	2.20	2.14	2.03	2.00	2.32	2.07	24
20	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.01	S	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.01	2.03	2.04	2.21	2.39	2.24	2.24	2.00	2.39	2.05	24	
21	2.18	2.46	2.27	2.30	2.16	2.14	2.21	2.07	S	2.03	2.02	2.00	2.00	2.00	2.01	2.00	2.00	2.00	2.01	2.11	2.19	2.05	2.05	2.06	2.00	2.46	2.10	24	
22	2.07	2.08	2.07	2.08	2.07	2.10	2.09	S	2.04	2.04	2.04	2.01	2.01	2.01	2.00	2.00	2.00	2.00	2.00	2.00	2.01	2.02	2.03	2.03	2.03	2.00	2.10	2.04	24
23	2.03	2.03	2.02	2.02	2.01	2.01	S	2.02	2.04	2.05	2.06	2.04	2.02	2.02	2.01	2.00	1.99	1.99	2.12	2.02	2.00	1.99	1.99	1.99	1.99	2.12	2.02	24	
24	2.00	1.99	2.00	2.01	2.02	S	2.00	2.00	1.99	1.98	1.98	1.98	1.98	1.98	1.97	1.97	1.97	1.98	2.00	2.00	2.00	2.03	2.11	1.97	2.11	2.00	24		
25	2.23	2.22	2.14	2.13	S	2.06	2.03	2.05	2.03	2.03	2.02	2.01	2.01	1.99	1.98	1.97	1.97	1.96	1.97	1.97	1.97	1.97	1.98	1.98	1.96	2.23	2.03	24	
26	2.03	2.01	2.02	S	2.05	2.00	2.01	2.01	1.98	1.99	1.98	1.98	1.97	1.97	1.96	1.97	1.96	1.97	1.99	1.99	2.00	2.01	2.02	2.02	1.96	2.05	2.00	24	
27	2.05	2.20	S	2.53	2.23	2.21	2.22	2.13	2.14	2.11	2.06	2.04	2.02	2.02	2.00	2.01	2.01	2.00	2.00	2.10	2.31	2.05	2.42	2.16	2.00	2.53	2.13	24	
28	2.37	S	2.22	2.26	2.24	2.33	2.41	2.39	2.30	2.11	2.05	2.02	2.01	2.00	2.00	1.99	1.98	1.98	1.99	2.24	2.22	2.31	2.31	2.25	1.98	2.41	2.17	24	
29	S	2.03	2.03	2.04	2.04	2.03	2.03	2.03	2.03	2.02	2.02	2.02	2.02	2.03	2.03	2.02	2.02	2.00	2.08	2.11	2.09	2.30	2.13	S	2.00	2.30	2.05	24	
30	2.29	2.43	2.51	2.27	2.36	2.34	2.31	2.24	2.13	2.09	2.05	2.01	2.02	2.01	2.00	1.99	2.00	1.99	1.99	2.02	2.06	2.14	S	2.20	1.99	2.51	2.15	24	
HOURLY MAX	2.37	2.46	2.51	2.53	2.36	2.34	2.41	2.39	2.30	2.11	2.06	2.05	2.03	2.03	2.03	2.04	2.04	2.04	2.12	2.24	2.32	2.39	2.41	2.25					
HOURLY AVG	2.07	2.07	2.07	2.10	2.08	2.09	2.08	2.06	2.04	2.02	2.01	2.00	2.00	1.99	1.99	1.99	1.99	1.99	2.00	2.02	2.06	2.07	2.06	2.06					

STATUS FLAG CODES

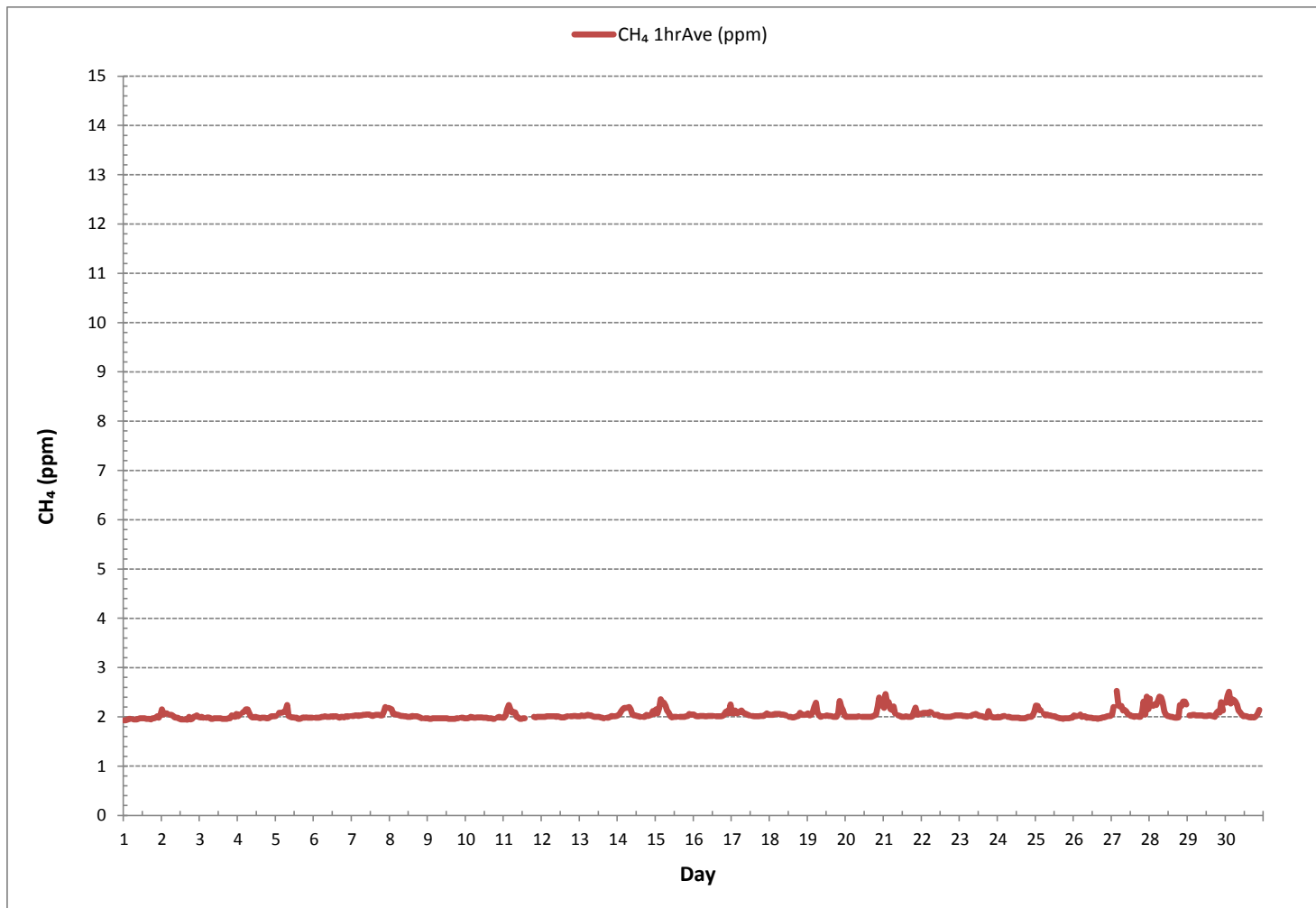
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	684			
MINIMUM 1-HR AVERAGE:	1.93 ppm	@ HOUR	0 ON DAY	1
MAXIMUM 1-HR AVERAGE:	2.53 ppm	@ HOUR	3 ON DAY	27
MAXIMUM 24-HR AVERAGE:	2.17 ppm		ON DAY	28
IZS CALIBRATION TIME:	32 hrs	OPERATIONAL TIME:	720 hrs	
MONTHLY CALIBRATION TIME:	4 hrs	AMD OPERATION UPTIME:	100.0 %	
STANDARD DEVIATION:	0.09	MONTHLY AVERAGE:	2.04 ppm	

METHANE Hourly Averages (CH₄ ppm)



Wind: PRAMP_986
 Poll.: PRAMP_986-CH₄[ppm]
 Monthly: 18/09
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

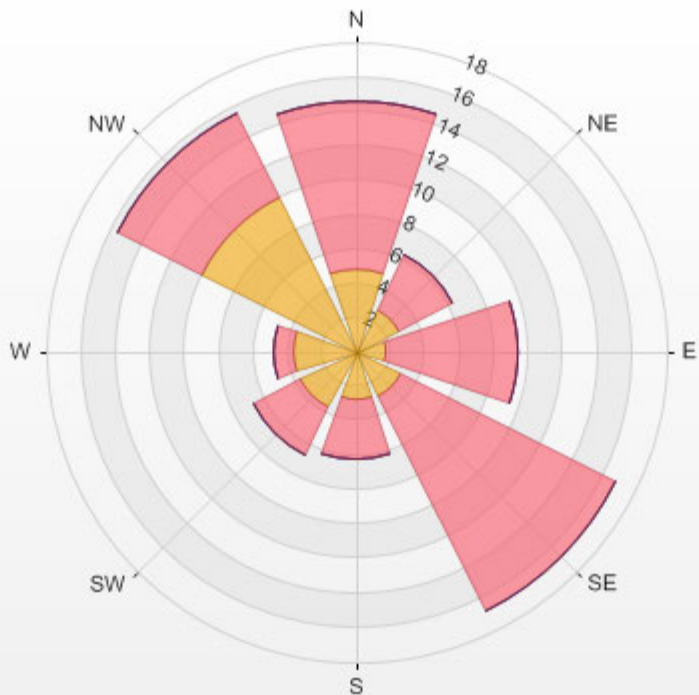
Calm: 19.59%

Calm Avg: 2.12 [ppm]

Direction	0-2	2-3	3-5	5-10	>10.0	Total
N	4.8	9.8	0.0	0.0	0.0	14.6
NE	2.8	3.5	0.0	0.0	0.0	6.3
E	1.8	7.6	0.0	0.0	0.0	9.4
SE	2.9	13.9	0.0	0.0	0.0	16.8
S	2.8	3.5	0.0	0.0	0.0	6.3
SW	3.7	3.1	0.0	0.0	0.0	6.7
W	3.7	1.2	0.0	0.0	0.0	4.8
NW	10.1	5.4	0.0	0.0	0.0	15.5
Summary	32.4	48.0	0.0	0.0	0.0	80.4

% Icon Classes (ppm) 32 0-2 48 2-3 0 3-5 0 5-10 0 >10.0

PRAMP_986 Poll.: PRAMP_986-CH4[ppm] 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 19.59% Calm Poll Avg: 2.12[ppm]



CH4[ppm] Calibration: PRAMP_986 Monthly: 18/09 Type: Span



Span Meas Span Ref Span Low Span High

NON-METHANE HYDROCARBON

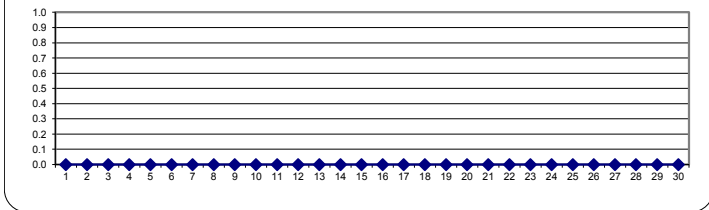
NON-METHANE HYDROCARBONS Hourly Averages (NMHC ppm)

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

STATUS FLAG CODES

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

24 HR AVERAGES September 2018

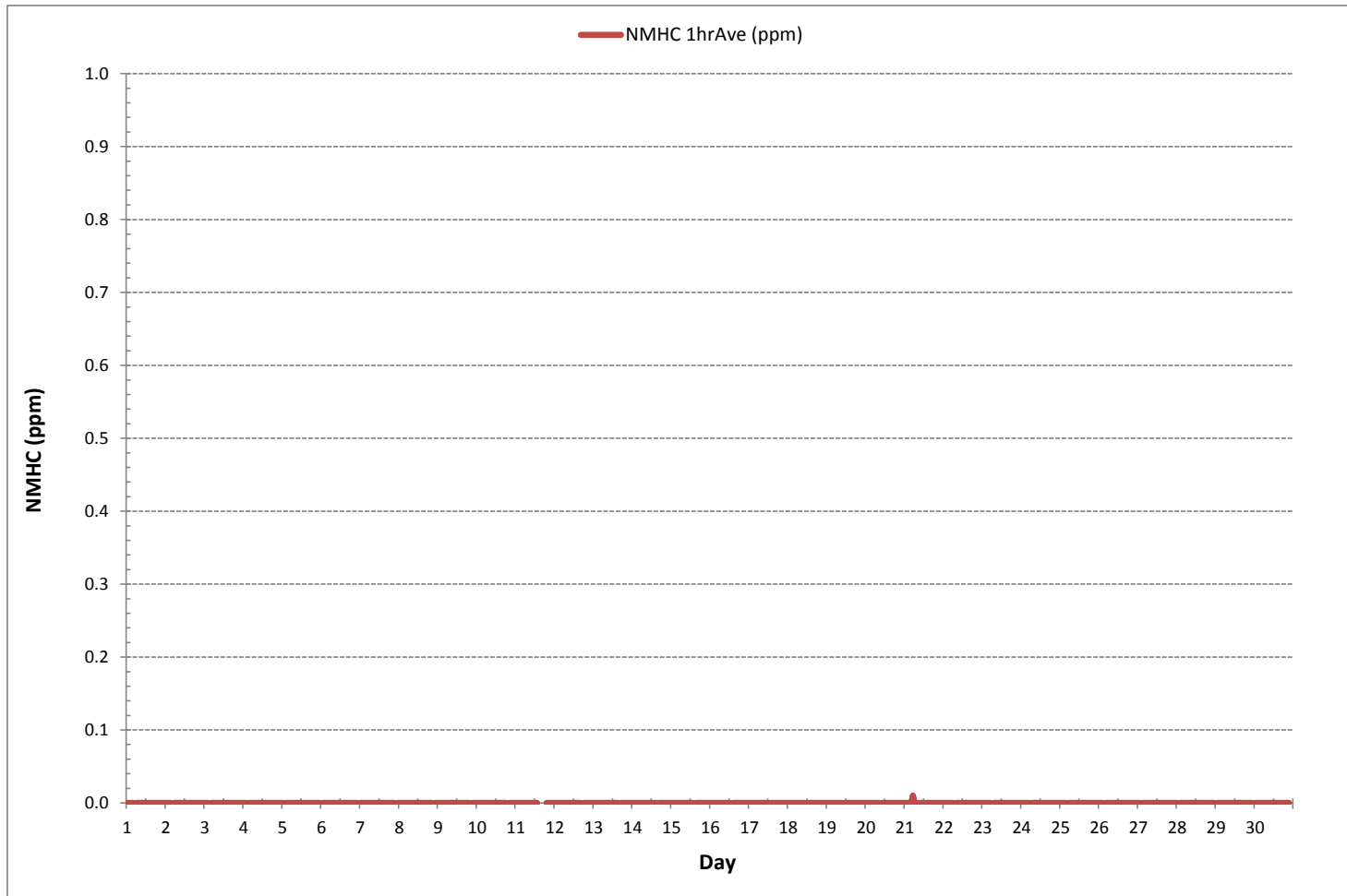


MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	1
MINIMUM 1-HR AVERAGE:	0.00 ppm @ HOUR 0 ON DAY 1
MAXIMUM 1-HR AVERAGE:	0.01 ppm @ HOUR 5 ON DAY 21
MAXIMUM 24-HR AVERAGE:	0.00 ppm ON DAY 1
IZS CALIBRATION TIME:	32 hrs OPERATIONAL TIME: 720 hrs
MONTHLY CALIBRATION TIME:	4 hrs AMD OPERATION UPTIME: 100.0 %
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: 18/09
 Type: PollutionRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

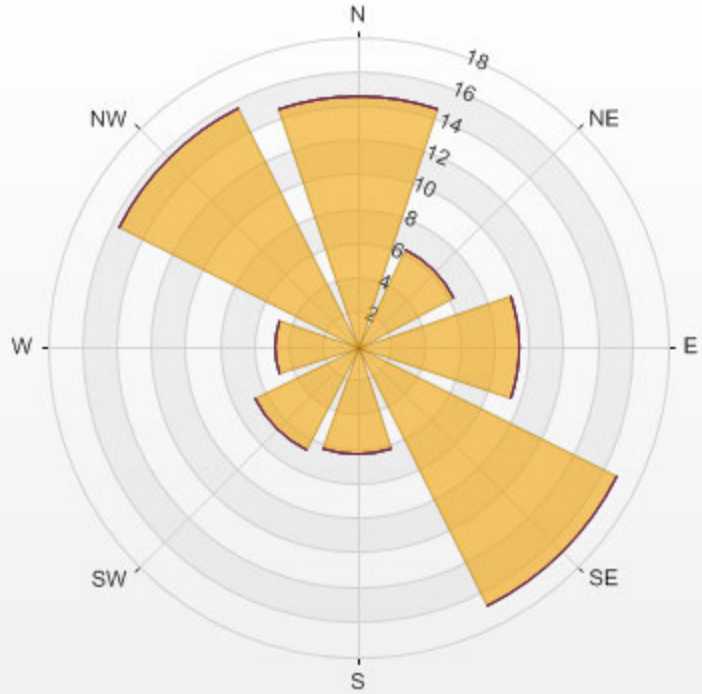
Calm: 19.59%

Calm Avg: 0.00 [ppm]

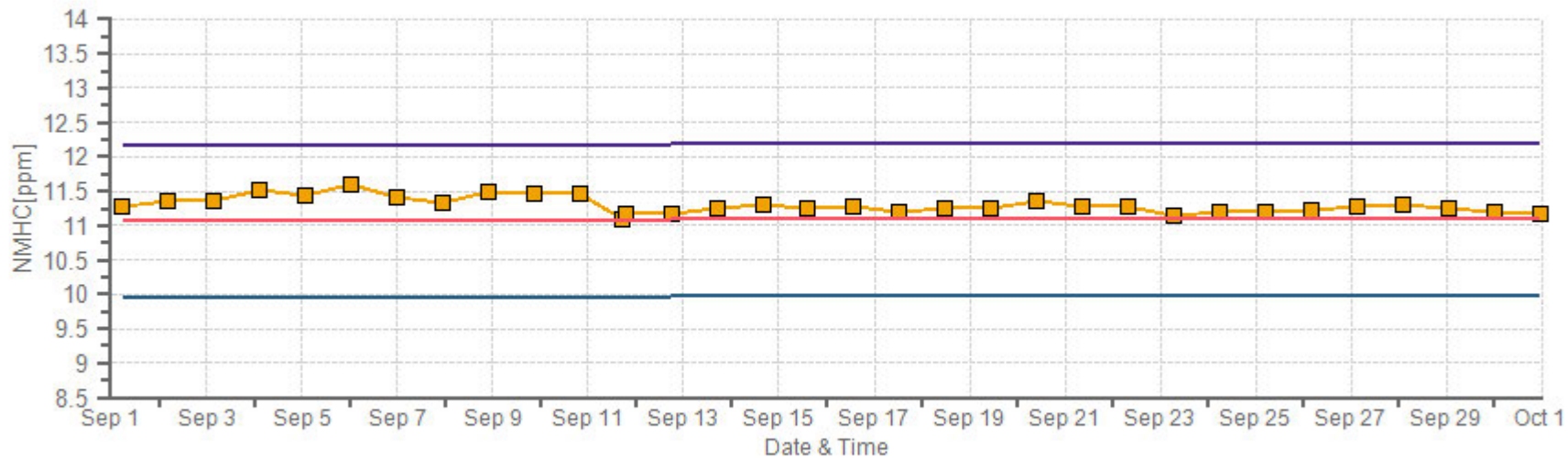
Direction	0-0.1	0.1-0.3	0.3-1	1-2	>2.0	Total
N	14.6	0.0	0.0	0.0	0.0	14.6
NE	6.3	0.0	0.0	0.0	0.0	6.3
E	9.4	0.0	0.0	0.0	0.0	9.4
SE	16.8	0.0	0.0	0.0	0.0	16.8
S	6.3	0.0	0.0	0.0	0.0	6.3
SW	6.7	0.0	0.0	0.0	0.0	6.7
W	4.8	0.0	0.0	0.0	0.0	4.8
NW	15.5	0.0	0.0	0.0	0.0	15.5
Summary	80.4	0.0	0.0	0.0	0.0	80.4

% Icon	Classes (ppm)	80	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] 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 19.59% Calm Poll Avg: 0.00[ppm]



NMHC[ppm] Calibration: PRAMP_986 Monthly: 18/09 Type: Span



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

WIND SPEED



PEACE RIVER AREA MONITORING PROGRAM COMMITTEE
Three Creeks 986b Station - September 2018

WIND SPEED Hourly Averages (WS kph)

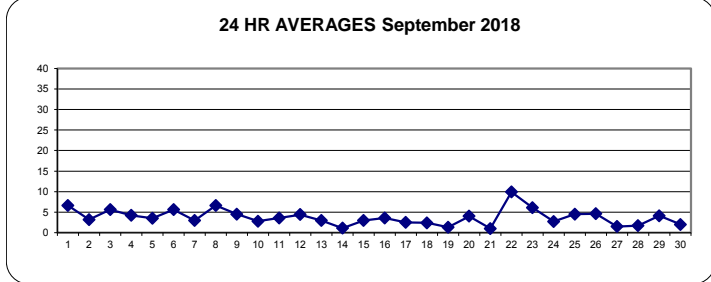
HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
DAY 1	2.4	4.7	6.0	7.2	9.3	6.1	4.7	5.3	8.2	16.5	11.3	15.5	16.7	15.9	13.0	12.4	8.1	7.8	6.1	2.1	1.7	3.2	4.1	3.1	1.7	16.7	6.6	24
2	2.4	4.3	4.4	2.0	3.4	5.2	3.3	3.8	6.6	7.5	7.7	7.3	8.8	7.5	9.3	2.4	0.2	2.1	2.0	2.8	2.2	2.7	0.4	3.5	0.2	9.3	3.2	24
3	2.4	1.5	3.0	3.3	3.4	3.4	7.2	9.0	11.1	11.9	12.6	13.0	11.7	13.0	11.9	11.6	10.2	7.5	4.3	2.0	0.4	1.4	0.2	0.8	0.2	13.0	5.6	24
4	1.5	1.7	1.1	1.4	2.3	2.8	3.2	4.6	5.8	8.5	9.0	8.9	8.2	9.2	8.1	8.3	8.6	8.0	6.6	5.5	2.6	2.4	4.7	4.2	1.1	9.2	4.2	24
5	3.0	1.6	1.1	2.7	1.1	0.6	0.7	2.0	4.6	5.6	5.0	9.0	6.9	5.7	6.9	6.4	5.8	5.4	4.2	3.9	3.6	4.8	5.8	4.9	0.6	9.0	3.5	24
6	4.8	5.7	5.0	6.1	7.5	8.8	7.2	6.4	5.4	4.8	5.1	7.3	7.2	7.0	7.1	6.5	6.2	7.4	5.4	4.1	3.4	4.0	4.4	5.1	3.4	8.8	5.6	24
7	5.6	4.9	4.8	6.3	7.2	6.8	5.5	5.4	2.7	2.8	2.6	4.7	1.6	1.9	2.5	3.9	3.7	4.2	2.2	2.3	1.9	0.7	1.3	0.6	0.6	7.2	3.0	24
8	1.2	3.6	3.9	3.1	3.9	4.9	5.4	4.9	7.5	6.5	4.7	5.7	4.8	3.2	6.6	8.5	10.3	11.7	7.1	8.5	12.3	13.9	13.8	11.2	1.2	13.9	6.6	24
9	10.6	10.6	9.8	8.5	7.5	7.1	7.5	7.4	6.2	6.3	5.1	4.9	5.2	4.6	3.1	4.7	3.7	3.9	2.7	1.6	2.0	4.0	3.5	5.2	1.6	10.6	4.5	24
10	5.8	2.9	3.3	4.1	5.1	3.4	3.4	2.7	2.5	2.9	4.1	7.0	8.1	7.5	7.2	8.0	8.2	8.1	9.0	3.5	0.3	1.1	1.8	2.0	0.3	9.0	2.8	24
11	2.5	2.7	2.5	4.1	2.3	1.7	3.4	3.1	5.7	3.5	1.7	4.4	9.0	10.4	10.8	15.0	11.3	9.9	9.3	7.3	8.5	7.6	7.5	6.4	1.7	15.0	3.6	24
12	6.9	4.9	6.3	5.9	4.8	5.5	5.7	5.0	5.3	4.7	5.6	7.0	5.5	6.1	4.6	3.2	5.9	4.9	3.8	4.1	3.1	0.6	1.4	1.8	0.6	7.0	4.4	24
13	1.4	0.8	1.0	1.3	1.4	0.5	0.8	1.1	1.1	1.3	3.8	2.6	4.5	6.4	4.5	9.9	8.7	7.5	6.5	6.6	5.3	5.3	3.5	3.3	0.5	9.9	3.0	24
14	3.1	3.0	1.8	2.5	2.3	2.3	1.4	2.0	2.0	2.6	4.9	2.7	1.7	2.8	2.7	0.8	2.4	1.2	1.9	1.4	1.2	0.9	2.5	1.6	0.8	4.9	1.1	24
15	1.8	2.0	1.3	1.0	1.7	0.9	2.2	0.5	1.3	4.5	6.7	8.8	7.8	8.6	7.3	5.7	5.6	4.8	2.8	1.3	1.0	0.8	1.6	2.1	0.5	8.8	3.0	24
16	1.6	2.8	3.3	4.0	3.2	3.5	4.8	4.7	4.4	5.9	8.0	6.6	7.2	7.4	7.2	5.5	5.8	6.1	5.3	1.2	0.9	0.9	0.6	0.7	0.6	8.0	3.6	24
17	0.7	1.5	1.7	1.9	3.3	2.0	1.8	3.5	4.3	5.7	5.5	7.4	7.4	5.5	3.3	3.5	3.7	3.7	3.0	2.5	2.4	1.9	2.6	3.6	0.7	7.4	2.5	24
18	3.3	2.6	1.5	1.9	1.8	1.9	0.8	1.4	2.1	6.2	6.1	8.2	6.1	8.0	5.9	6.5	4.6	5.2	3.8	3.7	5.4	4.3	1.5	4.0	0.8	8.2	2.4	24
19	4.8	2.4	1.5	0.5	0.5	2.1	2.1	5.2	3.4	2.4	2.5	3.7	2.3	3.4	2.6	1.8	3.1	2.7	3.4	2.1	0.9	1.0	3.9	4.2	0.5	5.2	1.3	24
20	4.7	4.6	4.7	4.9	5.2	6.1	6.5	5.3	5.7	6.8	6.9	6.9	5.4	6.8	4.8	8.5	6.7	6.3	3.5	0.6	0.4	0.9	1.0	1.3	0.4	8.5	4.0	24
21	0.8	0.6	0.3	0.6	1.2	1.2	0.7	1.6	1.3	1.9	1.3	1.6	1.1	0.7	2.4	2.2	3.0	5.2	3.1	1.3	1.2	1.4	2.5	2.7	0.3	5.2	1.0	24
22	2.8	1.9	3.7	3.5	2.8	1.6	1.5	2.5	6.0	13.0	14.6	15.1	14.6	13.3	12.8	15.7	15.4	14.8	15.4	17.8	15.9	12.4	13.9	13.3	1.5	17.8	9.9	24
23	12.5	10.9	11.2	9.4	9.7	10.1	7.4	8.4	10.8	10.9	9.2	7.8	7.7	8.1	6.7	5.2	4.7	2.5	1.1	2.7	3.2	3.9	4.1	4.3	1.1	12.5	6.1	24
24	5.3	5.7	3.7	1.4	1.3	6.9	1.8	5.2	6.7	9.4	11.7	11.8	8.1	4.9	2.9	7.0	6.6	3.3	0.1	2.1	2.1	2.2	1.9	2.5	0.1	11.8	2.7	24
25	2.6	1.7	3.7	4.1	5.1	3.1	1.7	3.5	6.8	8.2	8.0	9.4	8.7	8.3	10.9	11.8	10.4	8.4	8.2	8.2	7.5	7.4	7.6	5.6	1.7	11.8	4.5	24
26	0.9	2.3	2.6	5.9	5.9	5.0	4.6	3.5	3.9	6.3	6.7	11.1	11.2	12.5	9.5	5.7	5.0	5.0	4.4	3.7	2.7	2.3	2.6	4.9	0.9	12.5	4.6	24
27	2.2	0.9	0.1	0.9	0.5	1.2	0.8	0.7	3.5	2.0	3.7	4.8	7.3	6.8	7.0	5.9	6.3	6.4	4.2	1.2	1.9	1.2	1.8	1.4	0.1	7.3	1.5	24
28	0.8	1.1	0.9	1.7	1.3	1.9	0.9	1.2	0.6	0.7	2.4	4.3	4.4	7.7	6.4	7.8	8.4	6.6	1.8	0.3	1.2	0.7	0.5	0.3	0.3	8.4	1.7	24
29	3.6	3.7	3.2	3.7	5.7	5.7	5.4	5.4	6.5	8.6	8.4	8.2	8.2	9.0	7.2	6.6	5.2	3.0	0.6	0.9	1.7	2.0	2.1	1.4	0.6	9.0	4.1	24
30	1.7	0.9	1.6	2.7	2.1	2.7	2.1	3.1	1.9	3.1	4.5	2.9	3.7	2.1	2.3	1.4	1.7	5.3	4.1	2.0	2.7	1.4	1.2	2.0	0.9	5.3	2.0	24
HOURLY MAX	12.5	10.9	11.2	9.4	9.7	10.1	7.5	9.0	11.1	16.5	14.6	15.5	16.7	15.9	13.0	15.7	15.4	14.8	15.4	17.8	15.9	13.9	13.9	13.3				

STATUS FLAG CODES

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

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

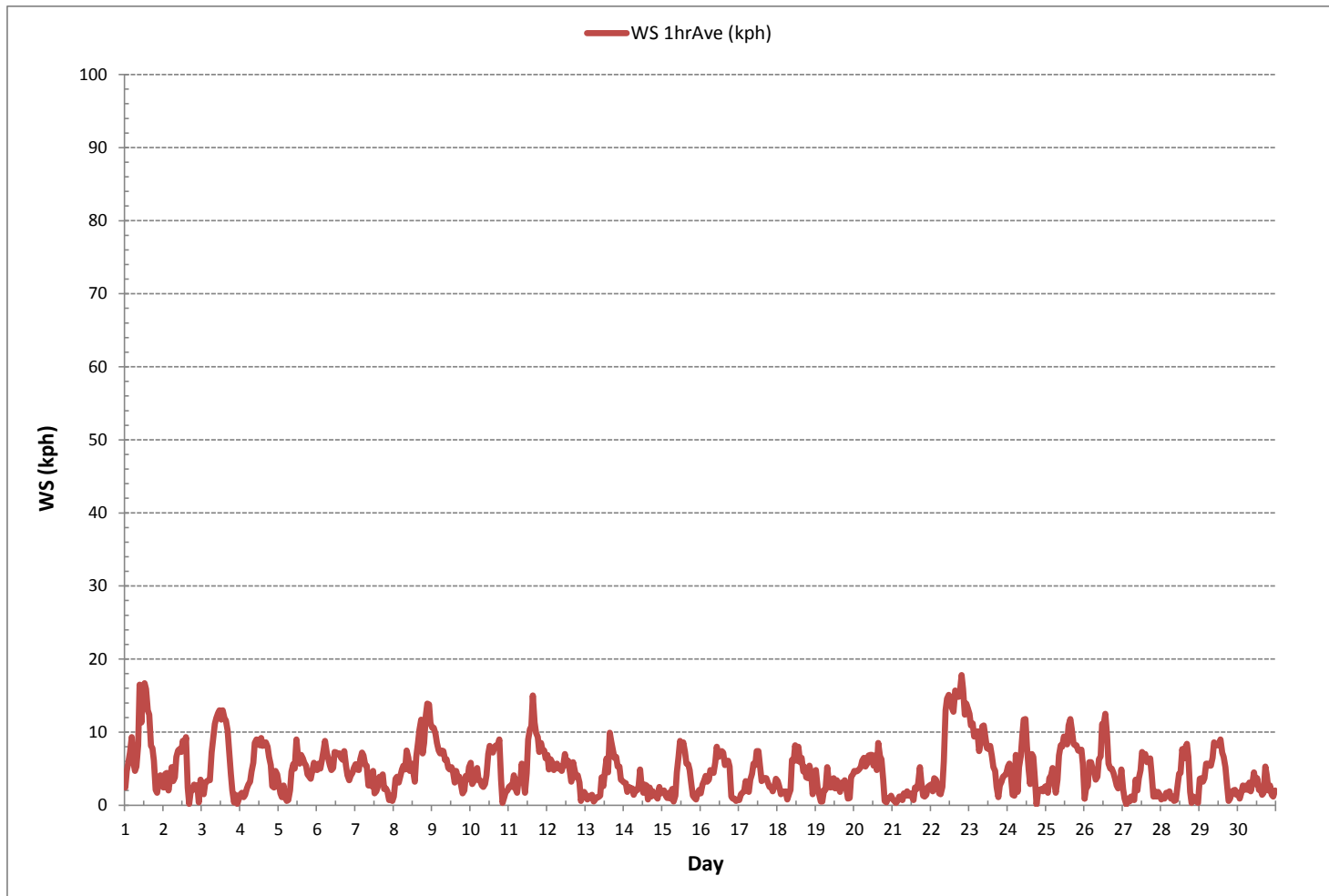
24 HR AVERAGES September 2018



MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	720
MINIMUM 1-HR AVERAGE:	0.1 kph @ HOUR 18 ON DAY 24
MAXIMUM 1-HR AVERAGE:	17.8 kph @ HOUR 19 ON DAY 22
MAXIMUM 24-HR AVERAGE:	9.9 kph ON DAY 22
MONTHLY CALIBRATION TIME:	0 hrs
OPERATIONAL TIME:	720 hrs
STANDARD DEVIATION:	3.4
AMT OPERATION UPTIME:	100.0 %
MONTHLY AVERAGE:	0.5 kph

WIND SPEED Hourly Averages (WS kph)



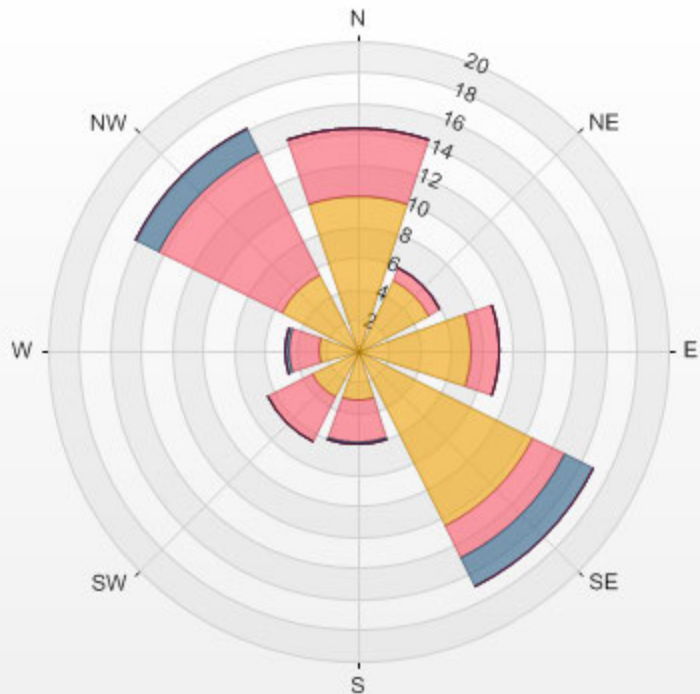
Wind: PRAMP_986
 Monitor: WSP [kph]
 Monthly: 18/09
 Type: WindRose
 Direction: Blowing From (Wind Frequency)
 Based On 1 Hr.

Calm: 19.86%

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	10.0	4.4	0.0	0.0	0.0	0.0	14.4
NE	5.1	0.8	0.0	0.0	0.0	0.0	6.0
E	7.4	1.8	0.0	0.0	0.0	0.0	9.2
SE	12.6	2.4	2.1	0.0	0.0	0.0	17.1
S	3.2	2.8	0.1	0.0	0.0	0.0	6.1
SW	3.3	3.2	0.0	0.0	0.0	0.0	6.5
W	2.5	1.9	0.3	0.0	0.0	0.0	4.7
NW	5.4	9.0	1.7	0.0	0.0	0.0	16.1
Summary	49.6	26.4	4.2	0.0	0.0	0.0	80.1

% Icon Classes (kph) 50 1.8-6.0 26 6.0-12.0 4 12.0-20.0 0 20.0-29.0 0 29.0-39.0 0 >39.0

PRAMP_986 2018/09/01 00:00 - 2018/09/30 23:00 Calm: 19.86% Calm Wind Avg Speed: 1.09(kph)



WIND DIRECTION



PEACE RIVER AREA MONITORING PROGRAM COMMITTEE
Three Creeks 986b Station - September 2018

WIND DIRECTION Hourly Averages (WD)

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

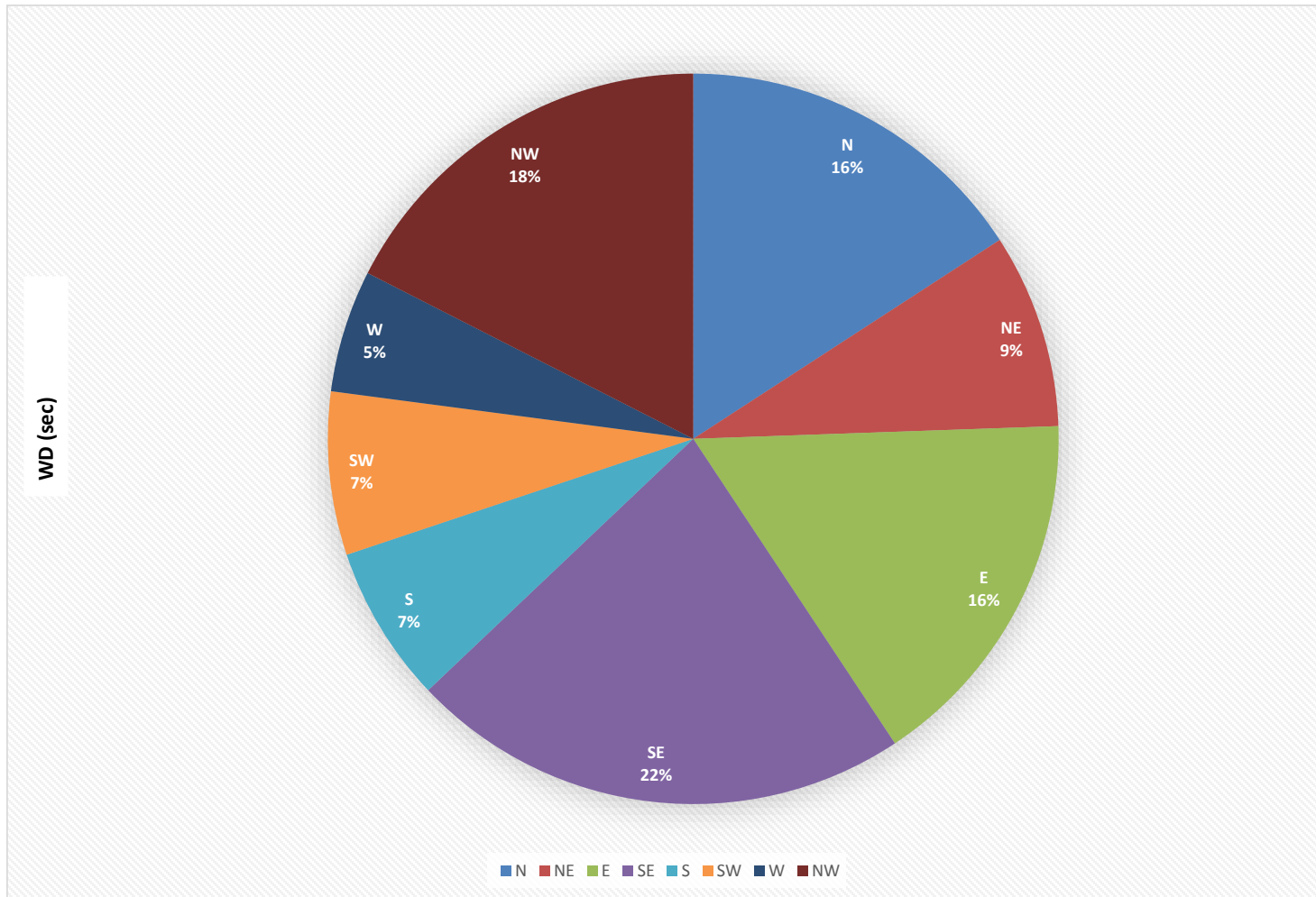
STATUS FLAG CODES

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

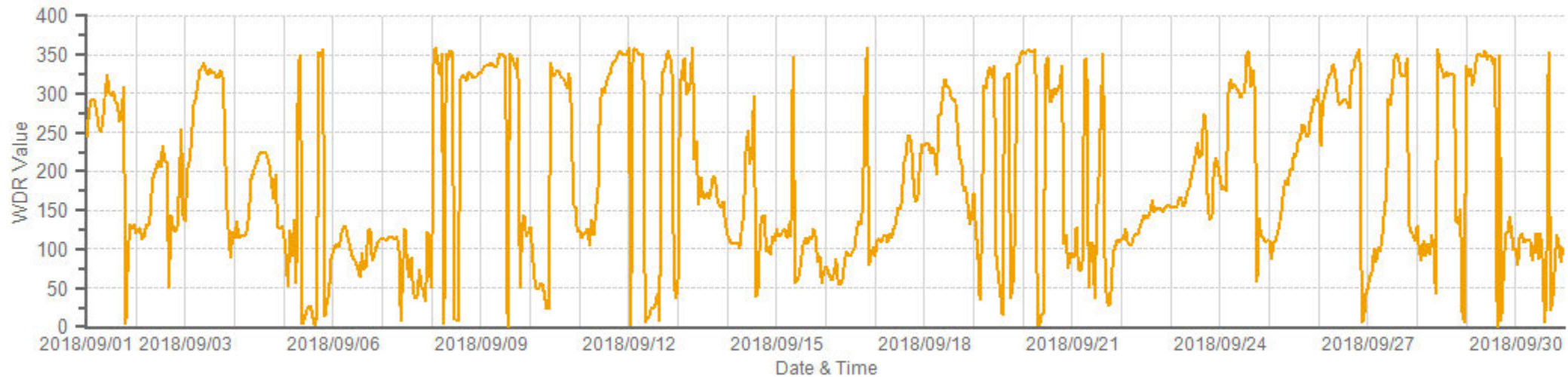
LAST CALIBRATION:	April 4, 2018
DECLINATION :	MAGNETIC DECLINATION 15 DEGREE EAST

MONTHLY CALIBRATION TIME:	0	hrs	OPERATIONAL TIME:	720	hrs
STANDARD DEVIATION:	109		AMD OPERATION UPTIME:	100.0	%
			MONTHLY AVERAGE:	346 (NNW)	

WIND DIRECTION Hourly Averages (WD)



WDR[degwdr] Station: PRAMP_986 Monthly: 18/09 Type: AVG 1 Hr. [1 Hr.]



— WDR[degwdr]

RELATIVE HUMIDITY



PEACE RIVER AREA MONITORING PROGRAM COMMITTEE
Three Creeks 986b Station - September 2018

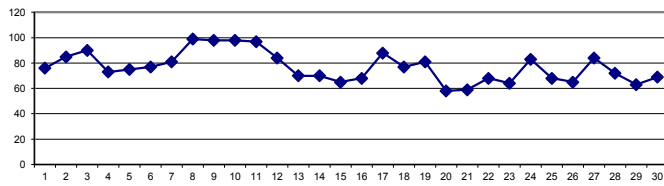
RELATIVE HUMIDITY Hourly Averages (RH %)

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

STATUS FLAG CODES

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

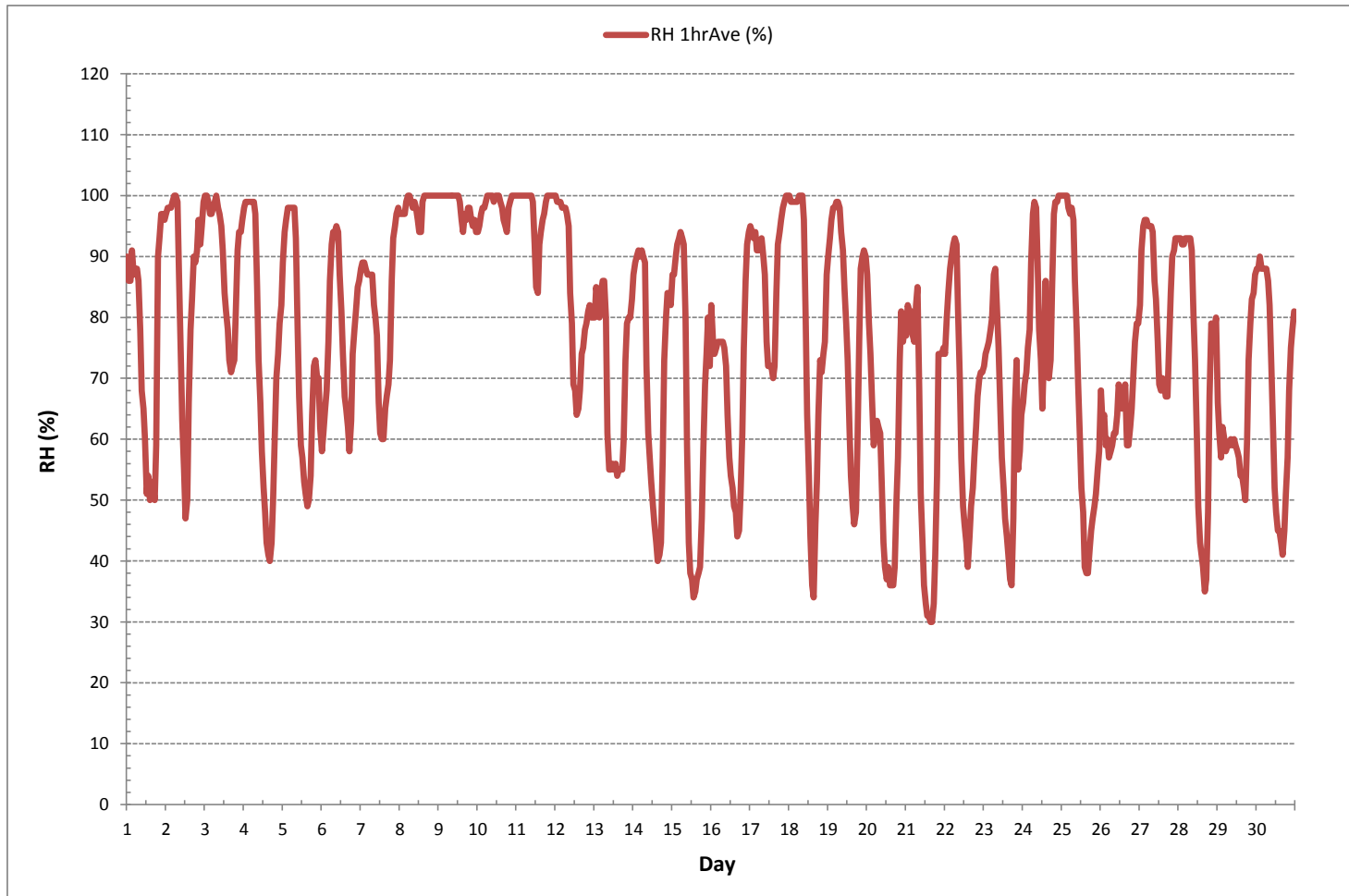
24 HR AVERAGES September 2018



MONTHLY SUMMARY

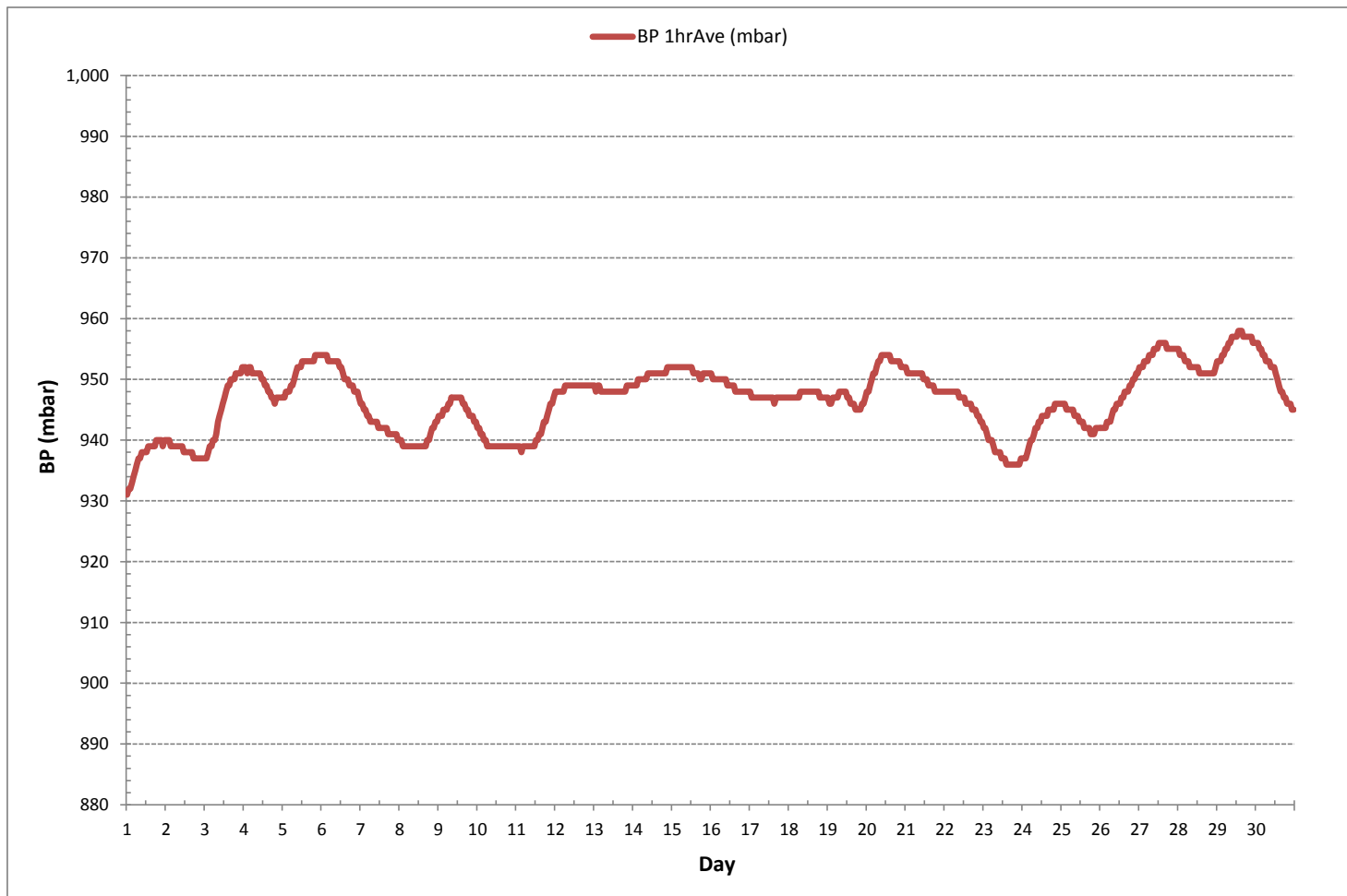
MINIMUM 1-HR AVERAGE:	30	%	@ HOUR	15	ON DAY	21
MAXIMUM 1-HR AVERAGE:	100	%	@ HOUR	5	ON DAY	2
MAXIMUM 24-HR AVERAGE:	99	%			ON DAY	8
OPERATIONAL TIME:						720 hrs
AMD OPERATION UPTIME:						100.0 %
STANDARD DEVIATION:	19		MONTHLY AVERAGE:			77 %

RELATIVE HUMIDITY Hourly Averages (RH %)



BAROMETRIC PRESSURE

BAROMETRIC PRESSURE Hourly Averages (BP mbar)



AMBIENT TEMPERATURE



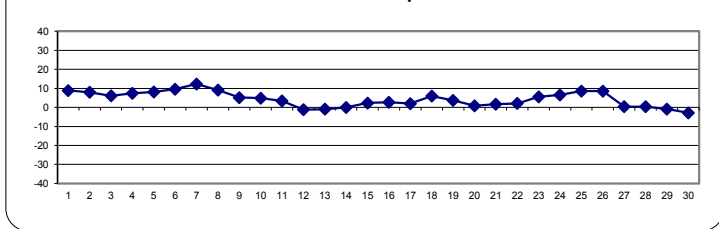
AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)

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	8.4	8.6	7.7	6.9	7.8	7.8	7.9	8.3	9.9	11.0	11.5	11.5	12.2	11.1	11.3	10.8	11.6	12.1	10.4	6.9	6.3	4.9	4.4	4.0	4.0	12.2	8.9	24	
2	3.2	2.8	2.2	1.1	1.1	1.7	1.6	3.7	7.6	10.2	12.6	14.2	15.4	15.2	12.6	11.0	10.8	10.9	10.2	8.4	9.0	8.1	6.5	1.1	15.4	8.0	24		
3	5.6	6.1	6.8	6.5	6.0	6.2	6.8	7.4	7.3	5.9	5.6	6.0	6.2	6.8	6.8	7.3	7.7	7.4	7.0	6.1	4.0	3.8	4.1	3.3	3.3	7.7	6.1	24	
4	1.2	0.0	-1.0	-1.5	-1.7	-1.7	-1.5	1.0	4.9	7.6	9.8	11.6	12.9	13.9	15.2	15.7	15.9	15.9	14.8	12.2	10.3	9.1	7.7	6.6	-1.7	15.9	7.5	24	
5	5.0	3.7	2.4	1.0	0.3	-0.2	-0.4	2.1	5.7	8.5	10.8	12.3	13.4	14.6	15.2	15.5	15.1	14.4	12.1	10.1	9.1	8.6	8.0	8.0	-0.4	15.5	8.1	24	
6	7.6	7.2	6.8	6.7	6.5	6.3	6.7	7.1	7.3	7.0	6.6	8.0	9.7	12.1	14.3	15.0	15.3	15.6	14.5	11.9	10.3	9.5	8.5	8.5	6.3	15.6	9.6	24	
7	8.5	8.5	8.3	8.5	9.0	9.0	9.1	9.5	10.9	11.7	12.9	15.5	17.0	17.9	18.0	17.5	17.1	17.0	16.0	13.3	11.1	9.7	9.2	9.6	8.3	18.0	12.3	24	
8	9.9	9.9	9.9	9.4	9.0	9.0	8.7	8.8	8.7	8.8	9.3	9.9	10.2	10.4	10.2	9.9	9.4	9.2	9.2	9.1	8.2	7.4	6.9	6.3	6.3	10.4	9.1	24	
9	5.9	5.7	5.4	5.3	5.0	4.7	4.5	4.4	4.4	4.6	4.8	5.0	4.9	5.3	5.8	6.0	5.9	5.8	5.8	5.8	5.8	5.7	4.9	4.5	4.4	6.0	5.2	24	
10	4.5	4.3	3.9	3.6	3.7	3.9	4.0	4.2	4.8	5.7	6.4	6.4	6.5	6.5	6.6	6.7	6.3	6.0	5.5	4.5	4.1	3.2	2.6	2.8	2.6	6.7	4.9	24	
11	3.2	3.0	3.3	3.4	3.5	4.0	4.4	4.8	5.4	6.1	6.5	7.4	7.9	8.3	6.8	4.6	1.7	0.7	0.2	0.0	-0.3	-0.6	-0.8	-1.0	-1.0	8.3	3.4	24	
12	-1.2	-1.4	-1.5	-1.9	-2.0	-2.3	-2.7	-2.6	-2.3	-0.1	-0.6	-0.2	0.0	-0.1	0.0	0.0	-0.3	-0.6	-0.9	-1.1	-1.4	-1.5	-1.5	-1.6	-1.6	-2.7	0.0	-1.2	24
13	-1.7	-1.7	-1.9	-2.0	-2.1	-2.2	-2.2	-1.7	-1.1	-0.7	-0.5	-0.2	0.3	0.6	1.4	2.1	2.0	1.8	0.6	-1.2	-2.2	-2.6	-3.0	-3.6	-3.6	2.1	-0.9	24	
14	-4.7	-5.0	-5.6	-6.1	-6.0	-6.6	-6.7	-4.8	0.2	1.6	2.4	3.7	4.7	5.7	5.4	6.4	5.7	5.4	4.1	1.7	0.1	-0.7	-0.6	-0.6	-6.7	6.4	0.0	24	
15	-1.7	-1.8	-2.6	-3.1	-3.2	-3.8	-4.4	-2.7	1.0	4.3	5.8	6.1	6.6	7.2	7.1	6.9	6.9	6.7	5.9	4.4	3.3	2.7	1.7	1.2	-4.4	7.2	2.3	24	
16	-0.7	0.4	0.7	0.4	0.1	0.0	-0.1	-0.1	0.8	2.3	4.0	5.7	6.3	6.5	7.2	7.2	7.7	7.5	6.4	4.9	2.9	0.7	-1.3	-2.3	-2.3	7.7	2.8	24	
17	-2.6	-2.7	-3.0	-2.7	-1.7	-0.8	-0.8	-0.2	1.4	2.6	4.3	4.8	5.0	5.2	5.6	5.5	4.6	3.7	3.4	3.2	2.9	3.0	3.2	3.3	-3.0	5.6	2.0	24	
18	3.2	3.1	3.0	2.8	2.8	2.6	1.9	2.5	3.0	3.8	6.2	7.9	9.2	10.0	10.8	11.0	10.2	10.1	8.4	7.1	7.3	6.7	6.1	3.5	1.9	11.0	6.0	24	
19	2.7	1.7	0.5	-0.6	-1.7	-1.6	-0.6	-0.4	0.0	0.8	2.5	4.5	6.5	8.7	10.2	11.5	11.7	11.7	9.0	5.1	1.9	2.5	2.2	1.2	-1.7	11.7	3.7	24	
20	0.3	0.6	0.6	0.8	0.6	-0.2	-0.9	-1.1	-0.8	0.5	2.3	3.4	3.6	3.2	4.4	4.1	4.1	3.5	2.1	0.3	-1.6	-2.8	-2.8	-3.5	-3.5	4.4	0.9	24	
21	-3.8	-4.2	-3.7	-3.4	-2.7	-2.6	-3.4	-3.1	0.1	3.3	5.5	6.5	7.1	8.1	8.6	9.2	9.2	8.3	5.9	2.7	-1.2	-1.9	-2.0	-2.3	-4.2	9.2	1.7	24	
22	-2.5	-3.5	-3.2	-3.3	-3.8	-4.9	-4.9	-3.1	0.8	3.3	4.9	6.3	7.2	7.6	7.8	7.3	6.8	6.1	5.1	4.1	3.3	2.9	2.7	2.5	-4.9	7.8	2.1	24	
23	2.3	2.1	2.0	1.9	1.8	1.5	-0.1	0.0	2.0	3.9	6.2	7.7	8.4	10.1	10.8	11.6	12.3	12.8	9.6	5.0	3.1	6.9	7.1	6.2	-0.1	12.8	5.6	24	
24	6.2	5.6	5.5	4.9	5.0	5.0	4.9	5.3	6.2	8.1	9.7	10.4	11.6	10.1	9.6	11.3	11.4	10.3	8.0	4.6	2.6	1.2	0.5	0.5	0.5	11.6	6.6	24	
25	0.8	0.6	1.3	1.9	2.3	1.8	1.8	2.5	4.9	6.9	9.5	11.2	12.9	14.5	16.2	15.9	15.8	14.8	13.6	13.1	12.6	11.7	10.5	9.5	0.6	16.2	8.6	24	
26	7.8	8.4	8.2	8.9	8.7	8.9	8.7	8.6	8.9	9.3	9.3	9.6	10.2	10.6	10.4	10.5	10.9	10.3	9.2	8.2	6.9	5.5	4.9	4.0	4.0	10.9	8.6	24	
27	2.7	0.2	-1.6	-2.7	-3.4	-3.7	-4.3	-2.8	0.2	1.9	3.0	4.4	5.2	5.5	5.2	4.5	4.2	4.0	1.7	-0.5	-2.3	-3.2	-4.1	-4.6	-4.6	5.5	0.4	24	
28	-5.5	-5.2	-5.6	-5.6	-4.7	-4.5	-4.3	-3.3	-1.0	2.1	3.2	5.0	5.9	6.9	7.4	7.6	7.3	6.3	3.3	-0.7	-2.5	-2.0	-0.9	-0.3	-5.6	7.6	0.4	24	
29	0.7	0.6	0.2	-0.6	-0.5	-0.4	-0.6	-0.5	-0.1	0.0	0.1	0.4	0.6	0.6	1.1	0.9	1.2	1.3	-1.0	-3.5	-4.5	-5.1	-5.0	-6.1	-6.1	1.3	-0.8	24	
30	-6.7	-7.2	-8.4	-8.0	-8.4	-8.6	-8.7	-7.1	-4.0	-1.5	0.0	1.4	1.5	2.3	2.3	2.8	3.4	2.5	0.8	-0.5	-2.6	-3.9	-4.6	-5.2	-8.7	3.4	-2.9	24	
HOURLY MAX	9.9	9.9	9.9	9.4	9.0	9.0	9.1	9.5	10.9	11.7	12.9	15.5	17.0	17.9	18.0	17.5	17.1	17.0	16.0	13.3	12.6	11.7	10.5	9.6					
HOURLY AVG	2.0	1.7	1.4	1.1	1.0	0.9	0.8	1.6	3.2	4.7	5.8	6.9	7.6	8.2	8.5	8.5	8.4	8.1	6.7	4.9	3.5	3.0	2.6	2.0					

STATUS FLAG CODES

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

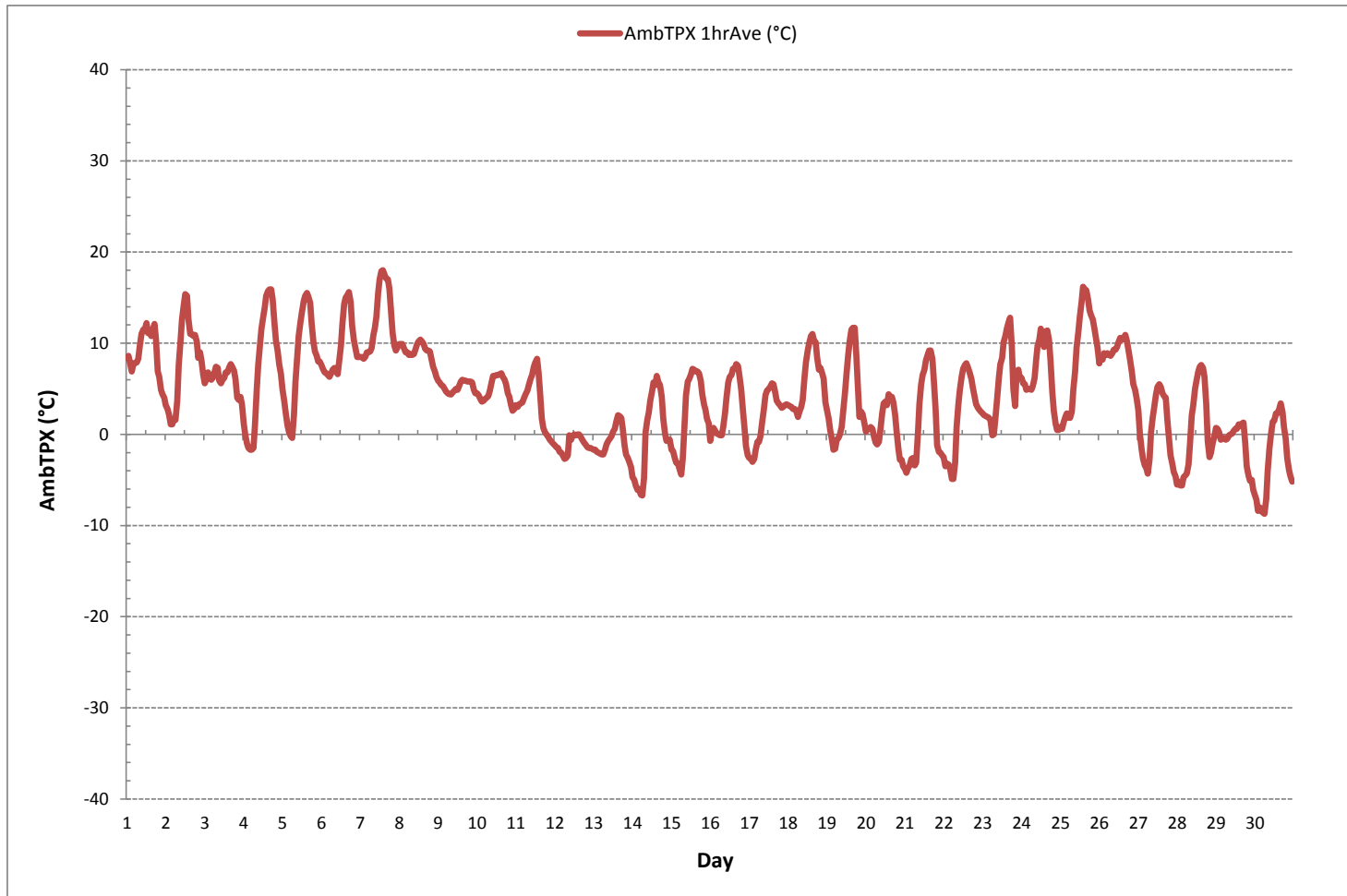
24 HR AVERAGES September 2018



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	-8.7 °C	@ HOUR	6	ON DAY	30
MAXIMUM 1-HR AVERAGE:	18.0 °C	@ HOUR	14	ON DAY	7
MAXIMUM 24-HR AVERAGE:	12.3 °C			ON DAY	7
OPERATIONAL TIME:					720 hrs
AMD OPERATION UPTIME:					100.0 %
STANDARD DEVIATION:	5.3	MONTHLY AVERAGE:			4.3 °C

AMBIENT TEMPERATURE Hourly Averages (AmbTPX °C)



STATION TEMPERATURE



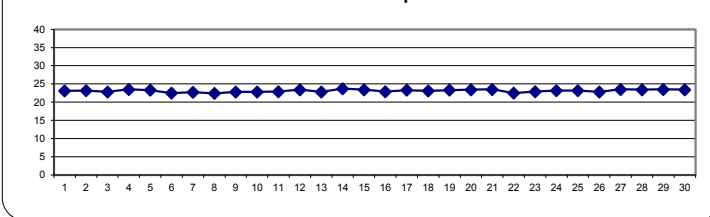
STATION TEMPERATURE Hourly Averages (StnTPX °C)

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	22.8	22.7	23.0	23.1	22.8	22.9	22.8	22.9	23.7	24.2	24.4	24.0	23.8	23.5	23.2	22.9	22.6	22.4	22.3	22.6	22.8	23.1	23.1	23.2	22.3	24.4	23.1	24
2	23.7	23.5	23.4	23.8	23.8	23.4	23.8	23.5	23.9	24.0	24.4	23.3	23.5	23.6	22.4	22.5	22.4	22.0	21.7	22.2	22.7	22.6	22.8	23.0	21.7	24.4	23.2	24
3	23.3	23.2	22.9	22.9	23.2	22.9	22.9	22.7	22.8	22.7	22.5	22.6	22.5	22.4	22.5	22.1	22.2	22.2	22.7	22.9	23.5	23.4	23.3	23.3	22.1	23.5	22.8	24
4	23.8	23.9	24.1	24.1	24.0	24.1	24.0	23.7	24.0	23.5	23.9	24.5	23.5	23.0	23.4	23.8	23.7	23.1	22.2	22.2	22.9	22.9	23.3	23.6	22.2	24.5	23.5	24
5	23.9	23.8	23.9	23.7	23.8	23.9	23.8	23.9	23.6	22.6	23.8	23.8	23.0	22.6	22.0	22.9	23.0	23.1	22.2	22.4	23.0	23.1	23.0	22.9	22.0	23.9	23.3	24
6	22.7	22.5	22.5	22.4	22.8	22.0	22.3	22.2	22.1	22.3	22.2	22.0	22.0	22.9	23.0	22.2	22.9	22.5	22.4	22.5	22.8	22.8	23.0	22.8	22.0	23.0	22.5	24
7	22.7	22.7	22.5	22.4	22.0	22.3	22.3	22.1	22.3	22.5	23.4	23.2	22.4	21.8	22.7	23.9	23.7	23.8	23.0	22.4	22.7	23.0	22.7	22.6	21.8	23.9	22.7	24
8	22.5	22.6	22.6	22.6	22.7	22.7	22.6	22.6	22.4	22.5	22.2	21.9	21.8	21.9	22.0	22.2	22.1	22.4	22.4	22.5	22.6	22.4	22.7	22.9	21.8	22.9	22.4	24
9	22.8	22.8	23.1	22.9	23.1	22.9	23.1	22.9	23.1	22.8	22.8	22.6	22.7	22.5	22.4	21.9	22.6	22.5	22.9	22.9	22.9	22.8	22.9	23.0	21.9	23.1	22.8	24
10	22.7	22.9	23.2	23.2	23.0	23.1	22.8	22.8	22.7	22.4	22.2	22.5	22.5	22.4	22.5	22.7	22.4	22.7	22.8	23.1	23.2	23.4	23.5	23.2	22.2	23.5	22.8	24
11	23.2	23.2	23.1	22.8	23.1	23.1	22.8	22.2	21.6	21.2	22.0	21.6	24.1	21.7	23.3	23.4	22.6	22.5	23.4	23.6	23.4	23.4	23.5	23.6	21.2	24.1	22.9	24
12	23.6	23.6	23.5	23.7	23.7	23.7	23.7	23.7	23.4	23.6	23.2	22.9	22.6	22.4	22.7	23.1	23.3	23.5	23.6	23.6	23.6	23.8	23.7	23.7	22.4	23.8	23.4	24
13	23.6	23.8	23.8	23.8	23.9	23.8	23.8	23.8	23.6	23.4	23.0	22.8	22.6	22.1	21.3	20.5	20.1	19.5	20.8	23.0	23.5	23.5	24.0	24.0	19.5	24.0	22.8	24
14	24.2	24.3	24.2	24.4	24.2	24.3	24.4	24.2	25.0	24.7	24.5	23.7	23.1	22.9	22.5	22.0	21.8	21.5	22.8	23.5	23.8	24.0	23.8	23.8	21.5	25.0	23.7	24
15	24.0	24.0	24.0	24.2	24.1	24.3	24.2	24.2	25.1	24.5	23.2	22.5	22.3	22.5	22.2	22.5	21.7	22.3	22.8	23.4	23.6	23.6	23.8	23.9	21.5	25.1	23.4	24
16	24.0	23.9	23.6	23.5	23.5	23.5	23.4	23.4	23.2	22.9	22.0	21.7	21.5	21.5	21.2	21.5	22.1	22.2	22.7	23.3	23.6	23.8	24.1	24.1	21.2	24.1	22.9	24
17	24.1	24.2	24.2	24.1	23.8	23.8	23.9	23.7	23.2	22.6	22.2	21.8	22.1	22.4	22.7	22.9	23.3	23.3	23.4	23.4	23.4	23.3	23.4	21.8	24.2	23.3	24	
18	23.4	23.4	23.4	23.4	23.6	23.4	23.6	23.5	23.3	23.4	23.3	23.2	23.8	23.0	22.7	22.5	22.2	22.5	22.1	23.0	22.9	23.0	23.2	23.5	22.1	23.8	23.1	24
19	23.5	23.8	24.1	24.1	24.0	24.0	23.8	23.8	23.6	23.5	23.1	22.4	21.9	22.4	22.5	22.5	22.3	22.0	21.9	23.3	23.9	23.8	23.8	24.0	21.9	24.1	23.3	24
20	24.1	24.0	23.7	23.7	23.7	23.8	23.8	23.8	23.8	23.4	23.1	23.4	22.5	22.7	21.7	21.8	22.7	23.0	23.5	23.9	23.9	23.9	24.3	24.1	21.7	24.3	23.4	24
21	24.2	24.3	24.0	24.1	24.1	24.0	24.0	24.0	24.5	24.4	23.8	23.2	23.3	22.8	22.4	22.2	21.8	21.5	21.5	23.6	24.0	24.2	24.3	24.2	21.5	24.5	23.5	24
22	24.4	24.3	24.2	24.2	24.1	24.4	24.3	24.4	24.1	22.3	21.2	20.9	21.1	21.5	21.8	21.3	20.8	21.0	21.3	21.1	21.1	21.8	21.8	21.9	20.8	24.4	22.5	24
23	22.0	22.3	22.2	22.5	22.9	22.7	23.2	23.4	23.2	23.0	22.9	22.5	22.3	22.6	22.5	22.7	22.8	22.8	22.4	23.3	23.6	23.7	23.5	23.6	22.0	23.7	22.9	24
24	23.4	23.1	23.3	23.3	23.4	23.4	23.1	23.2	23.2	23.3	23.4	23.6	23.8	23.4	22.3	22.7	22.6	22.3	22.1	23.3	23.7	23.8	23.9	23.8	22.1	23.9	23.2	24
25	23.8	23.8	23.8	23.7	23.6	23.8	23.8	23.7	23.9	23.2	22.7	23.3	23.6	23.1	23.3	23.1	22.5	22.5	22.7	22.5	22.4	22.6	22.9	23.0	22.4	23.9	23.2	24
26	23.3	23.1	23.1	23.1	23.0	23.0	23.1	22.8	22.7	22.7	22.3	22.3	22.3	22.1	22.0	21.8	21.9	22.2	22.7	23.0	23.4	23.5	23.4	23.6	21.8	23.6	22.8	24
27	23.6	23.9	24.1	24.1	24.2	24.1	24.3	24.1	23.6	23.3	23.1	23.0	22.3	22.6	22.3	22.8	23.0	21.8	22.7	23.9	24.0	24.1	24.0	24.2	21.8	24.3	23.5	24
28	24.3	24.1	24.2	24.2	24.1	24.1	23.9	23.9	23.6	23.9	23.5	23.3	22.8	22.9	22.4	22.0	21.6	21.1	22.4	23.9	24.1	23.9	23.9	23.7	21.1	24.3	23.4	24
29	23.8	23.8	24.0	23.9	24.0	23.8	23.8	23.7	23.7	23.5	23.4	23.3	23.2	23.3	22.8	22.9	22.9	20.7	22.7	23.8	24.2	24.1	24.1	24.1	20.7	24.2	23.5	24
30	24.1	24.3	24.1	24.1	24.2	24.1	24.0	24.0	23.7	23.4	22.8	22.4	22.5	22.5	21.7	22.2	22.3	20.9	23.0	23.8	24.0	24.1	24.2	24.3	20.9	24.3	23.4	24
HOURLY MAX	24.4	24.3	24.2	24.4	24.2	24.4	24.4	24.4	25.1	24.7	24.5	24.5	24.1	23.6	23.4	23.9	23.9	23.8	23.6	23.9	24.2	24.2	24.3	24.3				
HOURLY AVG	23.5	23.5	23.5	23.5	23.5	23.5	23.5	23.4	23.4	23.2	23.0	22.8	22.7	22.6	22.4	22.4	22.4	22.2	22.5	23.1	23.3	23.4	23.5	23.5				

STATUS FLAG CODES

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

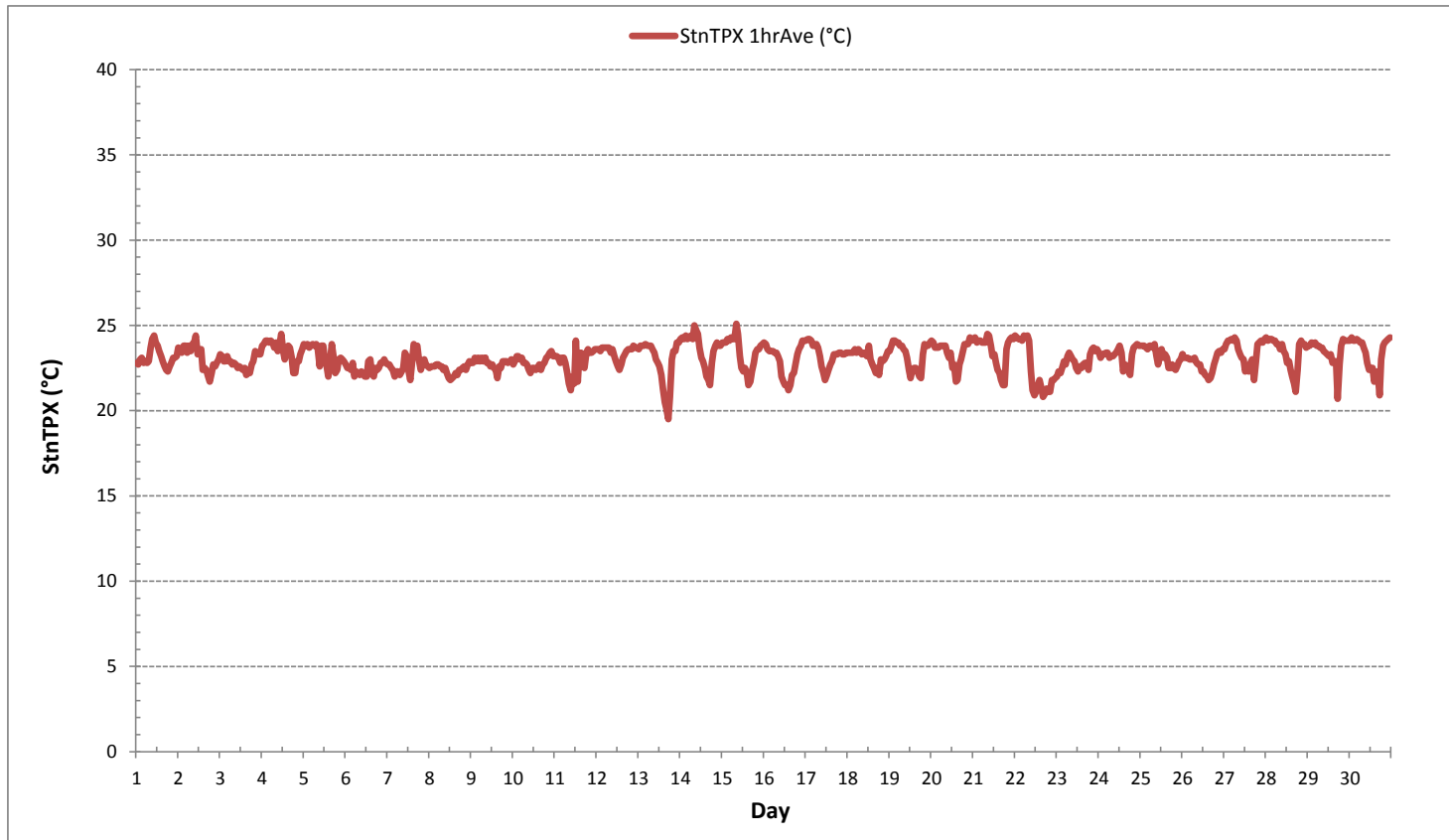
24 HR AVERAGES September 2018



MONTHLY SUMMARY

MINIMUM 1-HR AVERAGE:	19.5 °C	@ HOUR	17	ON DAY	13
MAXIMUM 1-HR AVERAGE:	25.1 °C	@ HOUR	8	ON DAY	15
MAXIMUM 24-HR AVERAGE:	23.7 °C			ON DAY	14
OPERATIONAL TIME:				720	hrs
AMD OPERATION UPTIME:				100.0	%
STANDARD DEVIATION:	0.8	MONTHLY AVERAGE:	23.1	°C	

STATION TEMPERATURE Hourly Averages (StnTPX °C)



APPENDIX II
EQUIPMENT CALIBRATION RESULTS

SULPHUR DIOXIDE



Thermo 43C Sulphur Dioxide Analyzer Calibration

Date:	September 11, 2018	Barometer/B.P./units:	Brunton 05535 expires December 15, 2018	27.76	inHg
Company/Airshed:	PRAMP	Thermometer/Station Temp:	F.S. 160348895 expires June 19, 2020	21.64	°C
Location/Station Name:	986B	Weather Conditions:	Mainly cloudy with clear breaks		
Parameter:	Sulphur Dioxide	Calibration Purpose:	routine monthly		
Start Time 24 hr. (mst):	7:20	Performed By/Reviewer:	Limin Li	Rob Fisher	
End Time 24 hr. (mst):	11:20	Cal Gas Expiry Date:	May 23, 2019		
Calibration Method:	Gas Dilution	Converter Model & s/n (if applicable):	n/a		
Analyzer:		Serial Number/Owner:	43C-62339-335	Maxxam	
Last Calibration Date:	August 2, 2018	Range ppb:	500		
Previous C.F.:	1.000	As Found C.F.:	1.046		
		New C.F.:	1.001		

Calibration Standards:	Standard Calibration Points for Ranges								
Low Flow Meter ID/Expiry Date: Defender Low 156151 expires October 2, 2018	<table border="1"> <tr><th>Point</th><th>ppb</th></tr> <tr><td>High</td><td>380</td></tr> <tr><td>Mid</td><td>180</td></tr> <tr><td>Low</td><td>90</td></tr> </table>	Point	ppb	High	380	Mid	180	Low	90
Point	ppb								
High	380								
Mid	180								
Low	90								
High Flow Meter ID/Expiry Date: Defender High 156312 expires December 13, 2018									
Calibrator ID/Expiry Date: Envionics id# 1991 expires March 15, 2019									
Cal Gas Cylinder I.D. # : LL119513									
Cal Gas Conc. (ppm): 50.6									

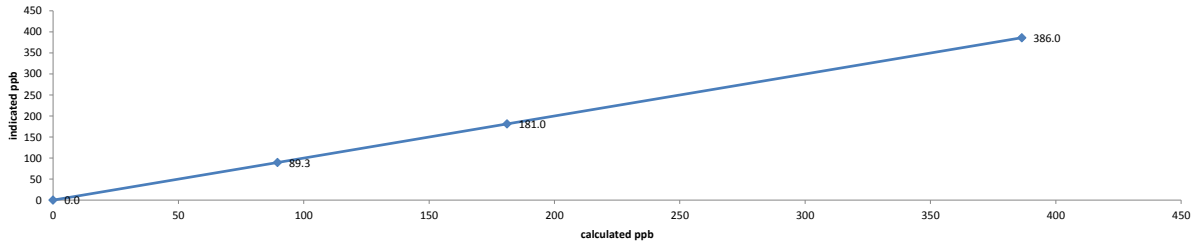
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration (ppb):	Indicated Concentration (ppb):	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total			
as found zero	5963	0.00	5963	0.0	-1.3	n/a
as found high	5920	45.56	5966	386.4	368.0	1.046
adjusted zero	5963	0.00	5963	0.0	0.0	n/a
adjusted high	5920	45.56	5966	386.4	386.0	1.001
mid	5969	21.44	5990	181.1	181.0	1.001
low	5989	10.62	6000	89.6	89.3	1.003
calibrator zero	6000	0.00	6000	0.0	0.2	n/a
Average C.F.=						1.002

Linear Regression/Calibration Results:

Correlation Coefficient =	1.000	LIMITS	> or = 0.995
Slope =	1.001		0.95-1.05
b (Intercept as % of full scale)=	0.01%		± 3% F.S.
% change in C.F. from last cal=	-4.64%		± 10%

Thermo 43C Sulphur Dioxide Analyzer Calibration



As found:		As left:	
Bkg:	85.7	Bkg:	86.7
Coef:	0.900	Coef:	0.937
Pmt:	-654	Pmt:	-654
0	Lamp=856	0	Lamp=856
Battery:	3.3	Battery:	3.3
Internal:	27.6	Internal:	26.9
Chamber:	45.3	Chamber:	45.3
Pressure:	412.8	Pressure:	415.9
Flow:	0.719	Flow:	0.724
Intensity:	37764	Intensity:	38078
Expected Value:	247.0	Expected Value:	255.7

Comments:

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



Thermo 43C Sulphur Dioxide Analyzer Calibration

Date:	September 11, 2018	Barometer/B.P./units:	Brunton 05535 expires December 15, 2018	27.76	inHg
Company/Airshed:	PRAMP	Thermometer/Station Temp:	F.S. 160348895 expires June 19, 2020	21.64	°C
Location/Station Name:	986B	Weather Conditions:	Mainly cloudy with clear breaks		
Parameter:	Sulphur Dioxide	Calibration Purpose:	repeat		
Start Time 24 hr. (mst):	11:26	Performed By/Reviewer:	Limin Li	Rob Fisher	
End Time 24 hr. (mst):	14:59	Cal Gas Expiry Date:	May 23, 2019		
Calibration Method:	Gas Dilution	Converter Model & s/n (if applicable):	n/a		
Analyzer:		Range ppb:	500		
Serial Number/Owner:	43C-62339-335 Maxxam	As Found C.F.:	1.027		
Last Calibration Date:	August 2, 2018	New C.F.:	0.997		
Previous C.F.:	1.000				

Calibration Standards:	Standard Calibration Points for Ranges								
Low Flow Meter ID/Expiry Date: Defender Low 156151 expires October 2, 2018	<table border="1"> <tr><th>Point</th><th>ppb</th></tr> <tr><td>High</td><td>380</td></tr> <tr><td>Mid</td><td>180</td></tr> <tr><td>Low</td><td>90</td></tr> </table>	Point	ppb	High	380	Mid	180	Low	90
Point	ppb								
High	380								
Mid	180								
Low	90								
High Flow Meter ID/Expiry Date: Defender High 156312 expires December 13, 2018									
Calibrator ID/Expiry Date: Envionics id# 1991 expires March 15, 2019									
Cal Gas Cylinder I.D. # : LL119513									
Cal Gas Conc. (ppm): 50.6									

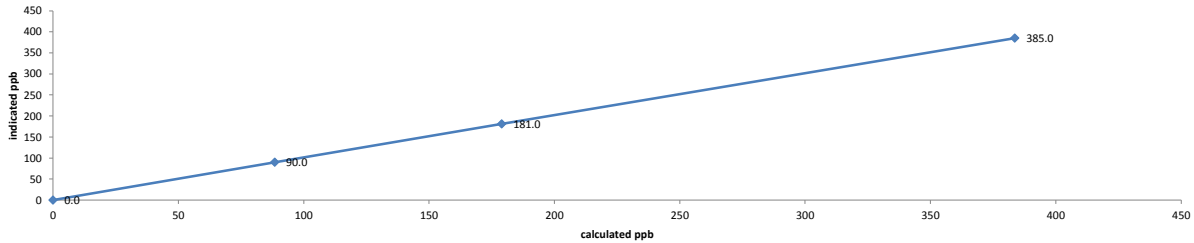
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated	Indicated Concentration (ppb):	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total	Concentration (ppb):		
as found zero	5986	0.00	5986	0.0	-2.6	n/a
as found high	5936	45.35	5981	383.7	371.0	1.027
adjusted zero	5986	0.00	5986	0.0	0.0	n/a
adjusted high	5936	45.35	5981	383.7	385.0	0.997
mid	5990	21.26	6012	179.0	181.0	0.989
low	6014	10.53	6025	88.4	90.0	0.982
calibrator zero	5986	0.00	5986	0.0	0.7	n/a
Average C.F.=						0.989

Linear Regression/Calibration Results:

Correlation Coefficient =	1.000	LIMITS	> or = 0.995
Slope =	0.997		0.95-1.05
b (Intercept as % of full scale)=	-0.16%		± 3% F.S.
% change in C.F. from last cal=	-2.69%		± 10%

Thermo 43C Sulphur Dioxide Analyzer Calibration

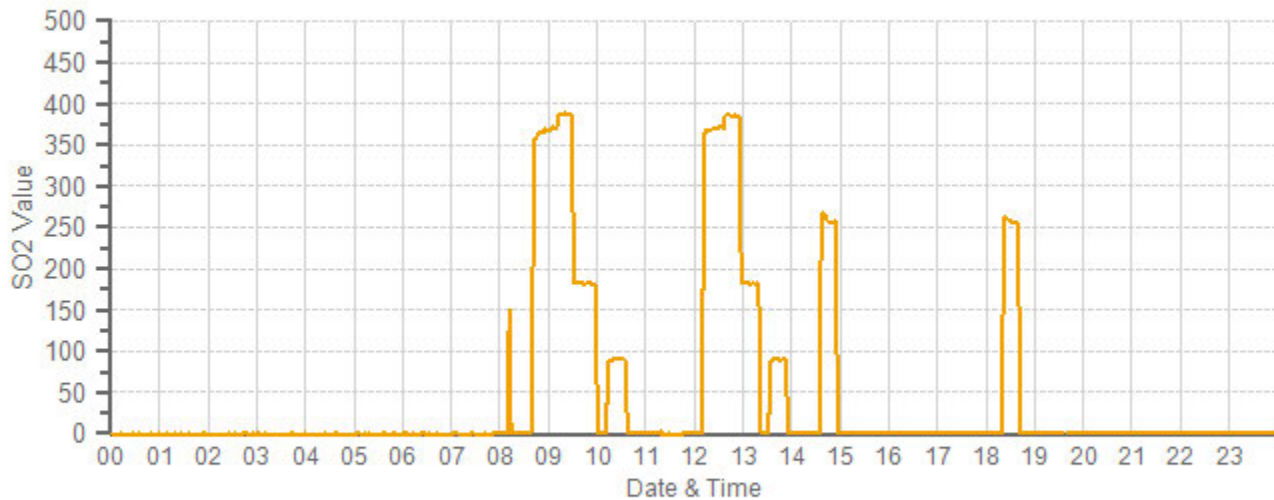


As found:		As left:	
Bkg:	85.7	Bkg:	86.8
Coef:	0.900	Coef:	0.933
Pmt:	-654	Pmt:	-654
0	Lamp=856	0	Lamp=855
Battery:	3.3	Battery:	3.3
Internal:	27.6	Internal:	29.3
Chamber:	45.3	Chamber:	45.3
Pressure:	412.8	Pressure:	409.7
Flow:	0.719	Flow:	0.711
Intensity:	37764	Intensity:	37547
Expected Value:	247.0	Expected Value:	256.7

Comments:

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

SO2[ppb] Station: PRAMP_986 Daily: 18/09/11 Type: AVG 1 Min. [1 Min.]



— SO2[ppb]

TOTAL REDUCED SULPHUR



Thermo 431-TLE Total Reduced Sulphur Analyzer Calibration

Date: <u>September 11, 2018</u> Company/Airshed: <u>PRAMP</u> Location/Station Name: <u>986B</u> Parameter: <u>Total Reduced Sulphur</u> Start Time 24 hr. (mst): <u>11:26</u> End Time 24 hr. (mst): <u>16:07</u> Calibration Method: <u>Gas Dilution</u>	Barometer/B.P./units: <u>Brunton 05535 expires December 15, 2018</u> <u>27.76</u> <u>inHg</u> Thermometer/Station Temp: <u>F.S. 160348895 expires June 19, 2020</u> <u>21.64</u> <u>°C</u> Weather Conditions: <u>Mainly cloudy with clear breaks</u> Calibration Purpose: <u>routine monthly</u> Performed By/Reviewer: <u>Limin Li</u> <u>Rob Fisher</u> Cal Gas Expiry Date: <u>August 23, 2020</u> Converter Model & s/n (if applicable): <u>CD-NOVA CDN-101 #516</u>
Analyzer: Serial Number/Owner: <u>1152940011</u> <u>Maxxam</u> Last Calibration Date: <u>August 2, 2018</u> Previous C.F.: <u>1.000</u>	Range ppb: <u>100</u> As Found C.F.: <u>0.966</u> New C.F.: <u>0.999</u>

Calibration Standards: Low Flow Meter ID/Expiry Date: <u>Defender Low 156151 expires October 2, 2018</u> High Flow Meter ID/Expiry Date: <u>Defender High 156312 expires December 13, 2018</u> Calibrator ID/Expiry Date: <u>Sabio id# 17200415 expires August 21, 2019</u> Cal Gas Cylinder I.D. #: <u>LL119500</u> Cal Gas Conc. (ppm): <u>9.8</u>	Standard Calibration Points for Ranges <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Point</td><td>ppb</td></tr> <tr><td>High</td><td>78</td></tr> <tr><td>Mid</td><td>38</td></tr> <tr><td>Low</td><td>19</td></tr> </table>	Point	ppb	High	78	Mid	38	Low	19	SO2 Scrubber Check (10 minutes): Start/End Time 24 hr.: <u>08:30/08:40</u> SO2 Analyzer Range: <u>500</u> Target Concentration (ppb): <u>380</u> As Found Zero: <u>0.0</u> Analyzer Response (ppb): <u>0.0</u> Zero Corrected Result (ppb): <u>0.0</u>
Point	ppb									
High	78									
Mid	38									
Low	19									

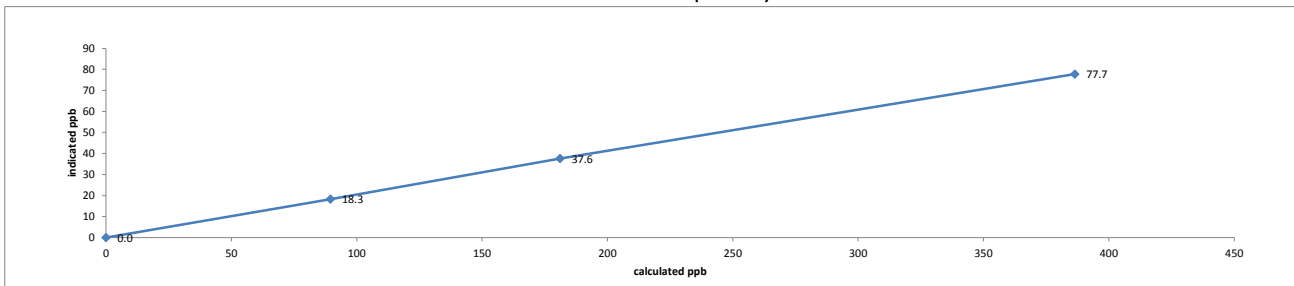
ALL POINTS ARE 15 MINUTES OF STABILITY AS OF SEPTEMBER 23, 2015

Calibrator Flow Rates (cc/min)				Calculated Concentration (ppb):	Indicated Concentration (ppb):	Correction Factors (C.F.):
Point	Diluent	Cal Gas	Total			
as found zero	7562	0.00	7562	0.0	0.2	n/a
as found high	7512	60.00	7573	77.7	80.6	0.966
adjusted zero	7562	0.00	7562	0.0	0.0	n/a
adjusted high	7512	60.00	7573	77.7	77.7	0.999
mid	7544	29.45	7573	38.1	37.6	1.014
low	7562	14.71	7577	19.0	18.3	1.040
calibrator zero	7577	0.00	7577	0.0	0.2	n/a
Average C.F. =						1.018

Linear Regression/Calibration Results:

Correlation Coefficient =	<u>1.000</u>	LIMITS	<u>> or = 0.995</u>
Slope =	<u>0.997</u>		<u>0.95-1.05</u>
b (Intercept as % of full scale) =	<u>0.41%</u>		<u>± 3% F.S.</u>
% change in C.F. from last cal =	<u>3.38%</u>		<u>± 10%</u>

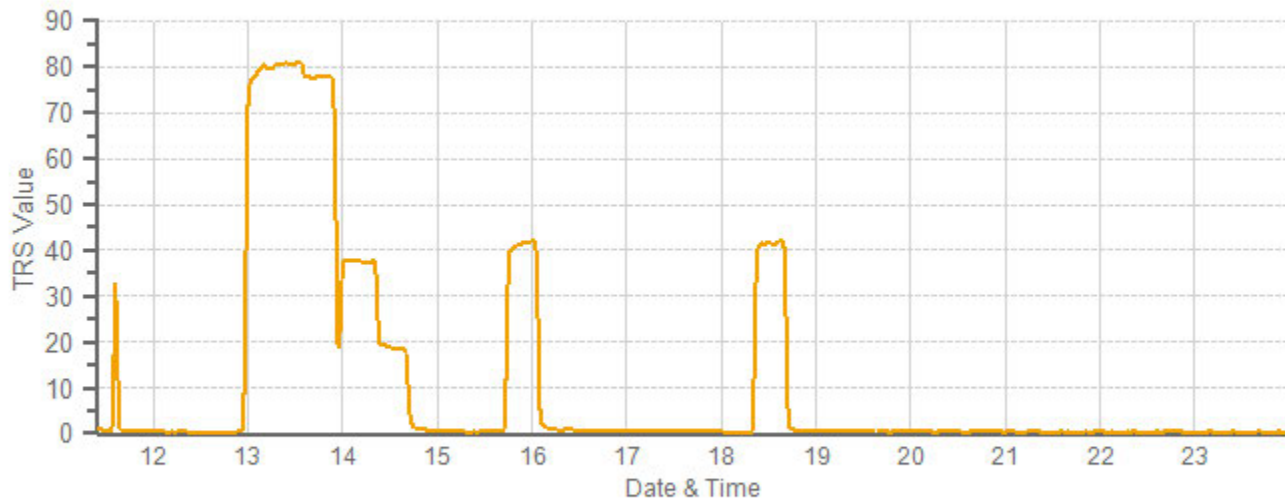
Thermo 431-TLE Total Reduced Sulphur Analyzer Calibration



As found: Bkg: <u>1.81</u> Coef: <u>0.961</u> Pmt: <u>-690.8</u> Flash: <u>963</u> Internal: <u>31.4</u> Chamber: <u>45.0</u> Perm Oven Gas: <u>45.00</u> Perm Oven Heater: <u>44.24</u> Pressure: <u>655.3</u> Sample Flow: <u>0.479</u> Lamp Intensity: <u>91</u> Converter: <u>820</u> Converter Set: <u>820</u> Averaging Time: <u>120</u> Expected Value: <u>43.6</u>	As left: Bkg: <u>1.81</u> Coef: <u>0.924</u> Pmt: <u>-691.2</u> Flash: <u>961</u> Internal: <u>32.0</u> Chamber: <u>44.9</u> Perm Oven Gas: <u>45.00</u> Perm Oven Heater: <u>44.25</u> Pressure: <u>653.8</u> Sample Flow: <u>0.477</u> Lamp Intensity: <u>91</u> Converter: <u>820</u> Converter Set: <u>820</u> Averaging Time: <u>120</u> Expected Value: <u>41.8</u>
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Comments:
 The analyzer sample inlet filter was changed. The analyzer cooling fan filter(s) were cleaned.
The manifold blower was found to be working normally.

TRS[ppb] Station: PRAMP_986 Periodically: 2018/09/11 11:25-2018/09/11 23:59 Type: AVG 1 Min. [1 Min.]



— TRS[ppb]

TOTAL HYDROCARBON



Thermo 55i Methane/Non-Methane Analyzer Calibration

Date:	September 11, 2018	Barometer/B.P./units:	Brunton 05535 expires December 15, 2018	27.76	inHg
Company/Airshed:	PRAMP	Thermometer/Station Temp:	F.S. 160348895 expires June 19, 2020	22.3	°C
Location/Station Name:	986B	Weather Conditions:	Mainly cloudy with clear breaks		
Parameter:	CH4 / NMHC / THC	Calibration Purpose:	routine monthly		
Start/End Time 24 hr. (mst):	14:20/17:45	Performed By/Reviewer:	Limin Li	Rob Fisher	
Calibration Method:	Gas Dilution	Cal Gas Expiry Date:	October 18, 2025		

Analyzer:		Correction Factors:			
Serial Number/Owner:	1022143392 Maxxam	Previous C.F.:	As Found C.F.:	New C.F.:	
Measured Flow:	964.9 SCCM	CH ₄ =	1.000	1.011	0.998
Last Calibration Date:	August 2, 2018	NMHC =	1.001	0.962	1.003
Range ppm:	20 CH4/20 NMHC/40 THC	THC =	1.001	0.986	1.000

Calibration Standards:

Low Flow Meter ID/Expiry Date:	Defender Low 156151 expires October 2, 2018	Standard Calibration Points for Analyzer Range of 20/20/40 ppm			
High Flow Meter ID/Expiry Date:	Defender High 156312 expires December 13, 2018	Point	CH4	NMHC	THC
Calibrator ID/Expiry Date:	Envirotronics id# 1991 expires March 15, 2019	High	13.00	13.00	26.00
Cal Gas Cylinder I.D. #:	LL168404	Mid	7.00	7.00	14.00
CH4 Cylinder Conc. =	597.0 206.0 =C ₂ H ₆ Cylinder Conc.	Low	3.00	3.00	6.00
CH ₄ expressed as C ₂ H ₆ =	566.5 1163.5 =total CH4 equivalent				

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

Point	Calibrator Flow Rates (cc/min)			Calculated CH ₄ (ppm)	Calculated NMHC (ppm)	Calculated THC (ppm)	Indicated CH ₄ (ppm)	Indicated NMHC (ppm)	Indicated THC (ppm)	Correction Factors:		
	Diluent	Cal Gas	Total Flow							CH ₄	NMHC	THC
as found zero	3498	0.00	3498	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
as found high	3419	84.91	3504	14.46	13.73	28.19	14.31	14.27	28.58	1.011	0.962	0.986
adjusted zero	3498	0.00	3498	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
adjusted high	3419	84.91	3504	14.46	13.73	28.19	14.49	13.69	28.18	0.998	1.003	1.000
mid	3456	42.16	3499	7.19	6.83	14.02	7.28	6.81	14.09	0.988	1.003	0.995
low	3483	17.99	3501	3.07	2.91	5.98	3.11	2.89	6.00	0.987	1.007	0.997
calibrator zero	3498	0.00	3498	0.00	0.00	0.00	0.00	0.00	0.00	n/a	n/a	n/a
Average C.F. =										0.991	1.004	0.997

Linear Regression/Calibration Results:

Correlation Coefficient =	CH ₄	NMHC	THC	LIMITS
Slope =	1.000	1.000	1.000	> or = 0.995
b (Intercept as % of full scale) =	1.001	0.998	1.000	0.95-1.05
% change in C.F. from last cal =	0.15%	-0.03%	0.06%	± 3% F.S.
	-1.08%	3.91%	1.46%	± 10%

As Left Instrument Diagnostics:

Interface Board Voltages:	Bias Supply:	-311.2	Calibration History cnt'd:	NM Peak Area:	72796
Temperatures:	Detector Oven:	175.1	Crucial Settings:	Methane Start:	8
	Filter:	175		Methane End:	16
	Column Oven:	75		Backflush:	18
	Internal:	34.3		NMHV Start:	26
Cylinder Pressures/reg.:	Carrier:	600 50	Run History>1:	NMHC End:	56
	Fuel:	700 55		Date:	11SEP18
	Span Gas:	1300 26		Time:	09:14
	Zero Air Generator:	48		CH ₄ PK HT:	2690
Internal Pressures:	Carrier:	31.3		CH ₄ RT:	12.4
	Fuel:	40.5		CH ₄ Baseline:	1583
	Air:	30.8		CH ₄ LOD:	11
FID Status:	Status:	LIT		CH ₄ SD:	3
	Counts:	19331		CH ₄ CONC:	2.0
	Flame:	320.7		NM PK HT:	0
	Det Base:	175		NM Peak Area:	0
Flame and Power Stats:	Last Power On:	30AUG18 08:10		NM CONC:	0.00
	Flameouts:	1		NM Base Start:	1566
	Det Oven at Start:	108.3		NM Base End:	1569
	Col Oven at Start:	73.9		NM LOD:	9
Calibration History:	Time:	30AUG18 10:42		NM Start IDX:	20
	Type:	Span		NM End IDX:	42
	Status:	GOOD		NM Max Slope:	6.8e-01
	Check/Adjust:	ADJUST		NM Min Slope:	-7.6e-01
	CH ₄ Span Conc:	14.46	Expected Values:	NM PT Count:	0
	CH ₄ SP Ratio:	0.000742		Previous CH ₄ :	10.08
	CH ₄ RT:	12.2		Previous NMHC:	11.06
	CH ₄ PK IDX:	21		Previous THC:	21.14
	CH ₄ PK HT:	19492		New CH ₄ :	10.21
	NM Span Conc:	13.72		New NMHC:	11.08
	NM SP Ratio:	0.000188		New THC:	21.30

Comments:

The analyzer sample inlet filter was changed.

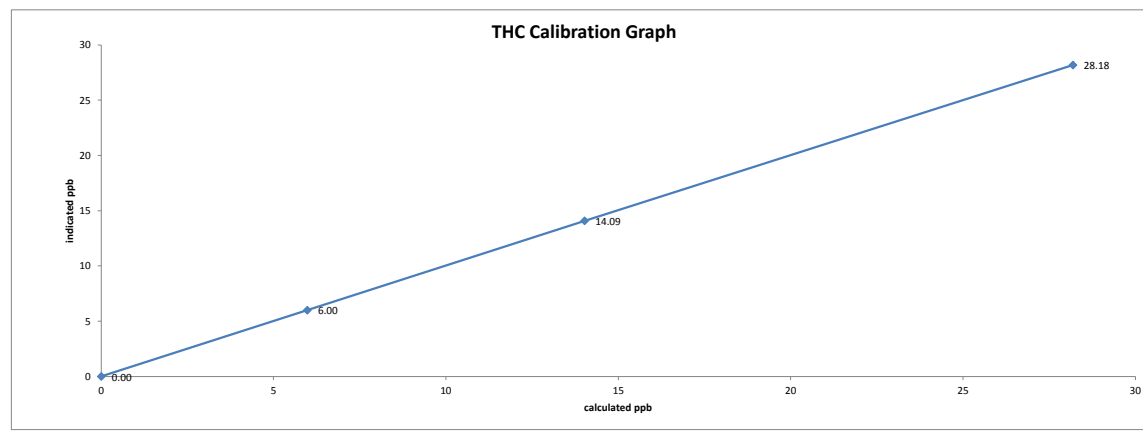
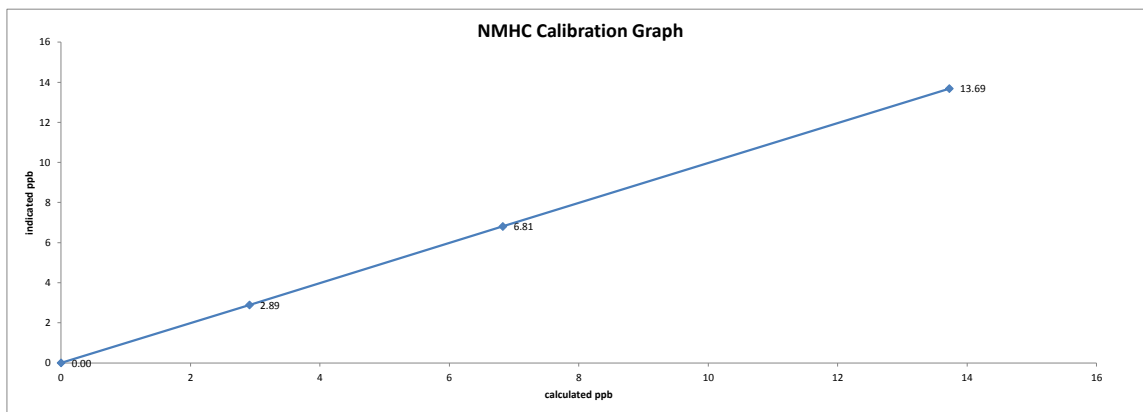
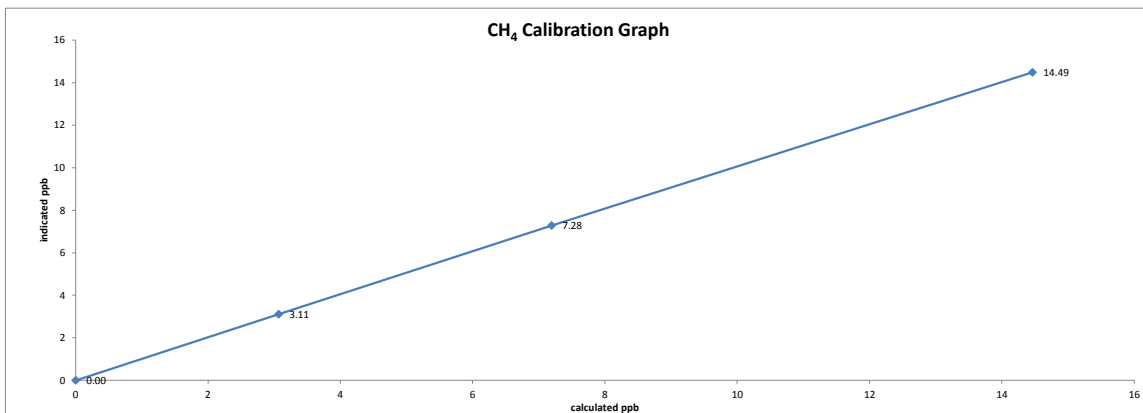
No zero adjustment was required/made. As found zero values were copied to adjusted zero values for linearity calculation purposes.

The analyzer cooling fan filter(s) were cleaned.

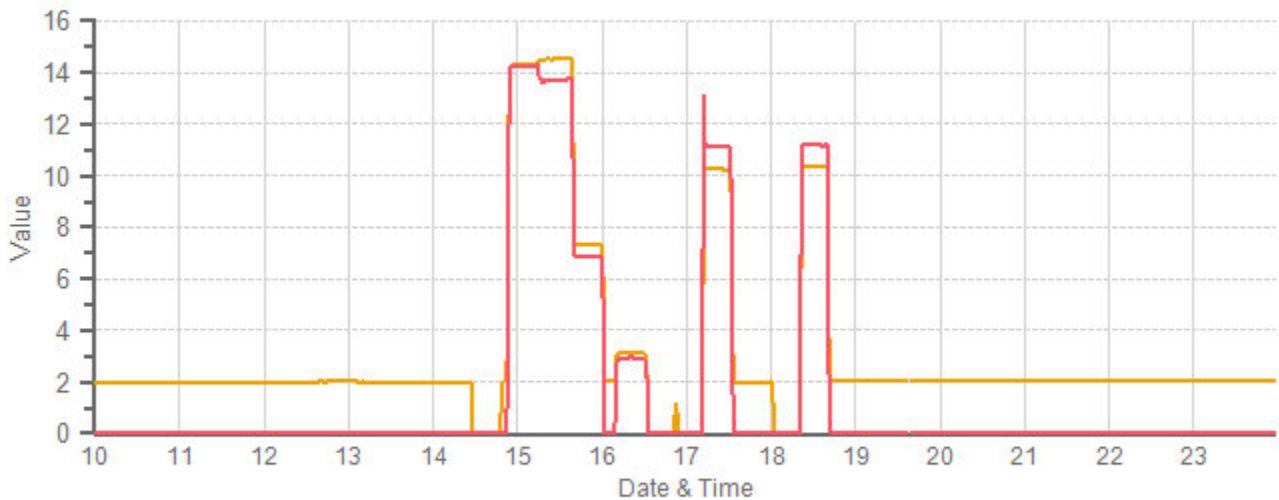
The manifold blower was found to be working normally.

Date: September 11, 2018
Company/Airshed: PRAMP
Location/Station Name: 986B

Start/End Time 24 hr. (mst): 14:20/17:45
Calibration Purpose: routine monthly
Calibration Method: Gas Dilution



Station: PRAMP_986 Periodically: 2018/09/11 10:00-2018/09/11 23:59 Type: AVG 1 Min. [1 Min.]



— CH4[ppm] — NMHC[ppm]

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:	September 11, 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:	August 2, 2018		
Parameter:	Temperature @ 2 metres (1 C tolerance)		
Reference Thermometer ID:	F.S. 160348895 expires June 19, 2020		
Reference Temperature (°C):	6.1		
Station - Ambient Temperature (°C):	6.3		
Temperature Difference (°C):	-0.2		
BAROMETRIC PRESSURE SENSOR CHECK			
Previous check date:	August 2, 2018		
Reference Barometer ID:	Brunton 05535 expires December 15, 2018		
Reference Pressure - Units/Reading:	inHg	27.76	
Station Pressure - Units/Reading:	inHg	27.74	
Pressure Tolerance +/- 15% of error:	24 - 32	0.08%	
RELATIVE HUMIDITY (HYGROMETER) SENSOR CHECK			
Previous check date:	August 2, 2018		
Reference Hygrometer ID:	F.S. id# 160348895 expires June 19, 2020		
Reference Hygrometer % RH- Reading:	90.54		
Station Hygrometer % RH- Reading:	100.00		
RH Tolerance +/- 15% of difference:	76.96 - 104.12	-10.4%	
ANEMOMETER - WIND SPEED & WIND DIRECTION SENSOR CHECK			
WIND SPEED		WIND DIRECTION	
Previous check date:	August 2, 2018	Previous check date:	August 2, 2018
Wind Speed Observed (kph):	0-5	Wind Direction Observed:	E
Wind speed on Data Logger (kph):	2.5	Wind Direction on Data Logger:	E
		Wind Direction Pass/Fail?:	Pass

CALIBRATORS

Company: Maxxam Operator: Chris W

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

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

Calibrator Flow (sccm)		Calculated Conc.(ppm)		Indicated Conc.(ppm)			% Difference vs Audit Gas	
Dilution	Gas	NO	NOx	NO	NO ₂	NOx	NO	NOx
5000	0.0	0.000	0.000	0.000	0.000	0.000	Limit ± 10%	
4988	75.1	0.786	0.787	0.785	-0.002	0.783	0%	-1%
4988	36.5	0.382	0.383	0.382	0.001	0.383	0%	0%
4988	18.3	0.192	0.192	0.190	0.000	0.190	-1%	-1%
Absolute Average Percent Difference							0%	1%

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

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

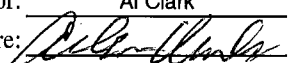
Flow	O ₃ Conc	NO Decrease	NO	NO ₂	NOX	% Diff. Vs Audit gas	
4988	0.000	0.000	0.788	-0.001	0.787	NO ₂	% Diff. Limit
4988	0.350	0.519	0.269	0.512	0.780	-1%	± 10%
4988	0.160	0.231	0.557	0.229	0.786	0%	± 10%
4988	0.070	0.099	0.689	0.097	0.787	-1%	± 10%
Absolute Average Percent Difference						1%	± 10%

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

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

COMMENTS: Cylinder contains 47.9 ppm SO2.

Auditor: Al Clark
Operator Signature: 

Date: March 15, 2018
Location: McIntyre Center Edmonton

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

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

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

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

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

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

NO₂	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	NO_x Analyzer
Audit Calibrator	
Make/Model	<u>Thermo 146i</u>
Serial/AMU Number	<u>1809</u>
SRM Gas Cylinder No.	<u>APEX1170572</u>
Cylinder Conc. (ppm)	<u>49.99</u>
	Make/Model <u>Thermo 42i</u>
	Serial/AMU Number <u>1868</u>
	Last Calibration Date <u>August 16, 2018</u>
	Full Scale (ppm) <u>1.0</u>
	Cylinder Gas Expiry Date <u>November 15, 2020</u>

COMMENTS:

Auditor: Shea Beaton
Operator Signature: 

Date: August 21, 2018
Location: McIntyre Center Edmonton

CALIBRATION GASES



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2016-086CGA

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

Reference Calibrator and Gas:

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

Flow Measurement Device:

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

Reference Analyzer:

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

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

Previous Stated Concentration PPM: 50.6

Percent variance from Stated: 1.1

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

Auditor: Al Clark
Operator Signature: *Al Clark*

Date: June 17, 2016
Location: McIntyre Center Edmonton



Calibration Gas Audit

Single Component Cylinder Gas

File No. 2017-213CGA

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

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

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

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

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

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

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

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



Calibration Gas Audit

CH4 / C3H8 Cylinder Gas

File No. 2017-488CGA

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

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

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

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

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

Cylinder gas tolerances based on CH4 only

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

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

APPENDIX III
MAXIMUM INSTANTANEOUS DATA



PEACE RIVER AREA MONITORING PROGRAM COMMITTEE
Three Creeks 986b Station - September 2018

SULPHUR DIOXIDE Instantaneous Maximum (SO₂ ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59					
DAY 1	0	0	0	0	0	S	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	24
2	0	0	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
3	0	1	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	24
4	0	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
5	0	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24
6	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	S	0	1	0	24
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	S	0	0	1	0	24
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	S	0	0	0	1	0	24
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	24
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	0	0	0	0	0	24
11	0	0	0	0	0	0	0	C	C	C	C	C1	C1	C1	C1	1	2	2	S	2	1	2	1	2	0	2	1	20	
12	2	2	2	2	2	1	1	2	2	1	1	1	2	1	1	1	1	1	S	1	1	2	1	1	1	1	2	1	24
13	1	1	2	1	1	1	1	1	2	1	1	1	1	1	1	1	S	1	1	1	1	1	1	1	1	1	2	1	24
14	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	S	1	1	1	1	1	1	1	1	1	0	1	1	24
15	1	1	1	1	0	1	1	1	1	2	1	1	1	1	S	1	1	1	1	1	1	1	1	1	1	0	2	1	24
16	1	1	1	1	1	1	1	1	0	1	1	0	1	S	1	1	0	1	1	1	1	0	0	1	0	0	1	1	24
17	0	0	0	1	0	1	1	0	0	1	1	1	S	2	1	0	1	0	0	1	1	0	1	0	0	0	2	1	24
18	0	1	0	0	0	1	1	0	1	1	1	S	0	1	1	1	1	0	1	1	0	0	1	1	0	1	1	1	24
19	1	1	1	1	0	1	1	0	1	1	S	0	0	1	1	0	1	1	1	0	1	1	0	1	0	1	0	1	24
20	0	0	1	0	1	1	0	1	0	S	1	1	1	1	1	1	0	0	0	0	0	1	0	0	0	0	1	0	24
21	0	0	1	1	1	1	0	0	S	1	1	0	0	0	0	1	1	0	0	0	0	1	0	0	0	0	1	0	24
22	1	1	0	0	0	1	1	S	1	0	0	1	0	0	0	1	0	1	1	1	1	0	1	0	0	0	1	0	24
23	0	0	0	1	0	0	S	0	0	0	1	1	1	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	24
24	0	0	0	0	0	S	0	1	0	0	0	0	1	0	1	0	1	1	1	0	1	1	1	0	1	0	1	0	24
25	0	0	0	0	S	0	0	1	0	0	1	1	1	1	0	0	1	1	0	1	1	1	1	1	1	0	1	1	24
26	1	1	1	S	1	1	1	0	0	1	1	0	1	0	1	1	1	1	1	0	1	1	1	1	0	0	1	1	24
27	0	0	S	0	0	1	0	1	1	0	1	0	1	1	1	0	1	1	2	0	1	0	0	0	0	0	2	1	24
28	0	S	0	0	0	0	1	1	1	0	1	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	1	0	24
29	S	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	S	0	1	0	24
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	S	0	0	1	0	24
HOURLY MAX	2	2	2	2	2	1	1	2	2	2	1	1	2	2	1	1	2	2	2	2	2	2	2	1	2				
HOURLY AVG	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				

STATUS FLAG CODES

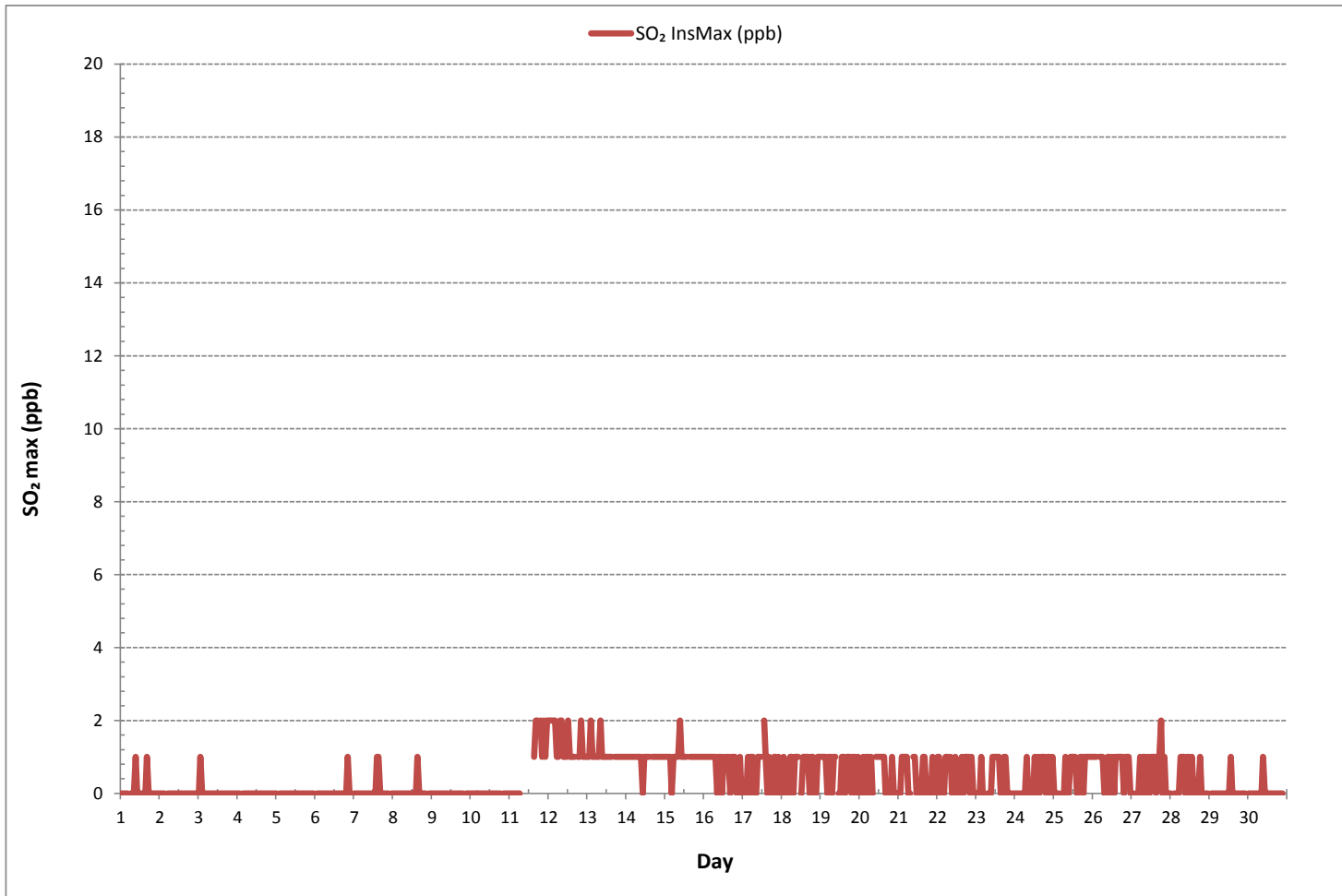
C	- MONTHLY CALIBRATION	Q	- QUALITY ASSURANCE
C1	- REPEAT CALIBRATION	R	- RECOVERY
Y	- MAINTENANCE	X	- MACHINE MALFUNCTION
S	- DAILY ZERO/SPAN CHECK	G	- OUT FOR REPAIR
S1	- REPEAT ZERO/SPAN CHECK	P	- POWER FAILURE

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	261
MAXIMUM INSTANTANEOUS VALUE:	2 ppb @ HOUR 16 ON DAY 11
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	4 hrs
STANDARD DEVIATION:	1
OPERATIONAL TIME:	716 hrs



SULPHUR DIOXIDE Instantaneous Maximum (SO₂ ppb)





PEACE RIVER AREA MONITORING PROGRAM COMMITTEE
Three Creeks 986b Station - September 2018

TOTAL REDUCED SULPHUR Instantaneous Maximum (TRS ppb)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
DAY																												
1	0.42	0.39	0.34	0.34	0.38	S	0.41	0.35	0.33	0.32	0.31	0.32	0.29	0.29	0.34	0.34	0.35	0.27	0.28	0.32	0.43	0.59	0.52	0.66	0.27	0.66	0.37	24
2	0.78	0.62	0.55	0.65	S	0.62	0.61	0.59	0.50	0.45	0.40	0.42	0.37	0.43	0.46	0.48	0.47	0.80	0.65	0.81	0.80	0.62	0.69	1.03	0.37	1.03	0.60	24
3	0.67	0.57	0.56	S	0.51	0.43	0.39	0.33	0.31	0.33	0.30	0.34	0.31	0.32	0.30	0.30	0.29	0.32	0.32	0.44	0.61	0.45	0.63	0.29	0.67	0.41	24	
4	0.85	0.63	S	0.69	0.61	0.59	0.59	0.59	0.44	0.35	0.36	0.36	0.37	0.37	0.32	0.34	0.34	0.35	0.41	0.39	0.56	0.62	0.51	0.50	0.32	0.85	0.48	24
5	0.48	S	0.78	0.82	0.85	0.82	0.71	0.70	0.35	0.36	0.36	0.35	0.34	0.33	0.33	0.30	0.31	0.34	0.33	0.38	0.35	0.33	0.33	0.39	0.30	0.85	0.46	24
6	S	0.42	0.41	0.36	0.39	0.38	0.45	0.46	0.42	0.53	0.56	0.52	0.40	0.36	0.34	0.34	0.37	0.36	0.43	0.43	0.42	0.37	0.39	S	0.34	0.56	0.41	24
7	0.43	0.43	0.46	0.47	0.37	0.40	0.42	0.42	0.43	0.36	0.38	0.34	0.32	0.35	0.35	0.35	0.33	0.33	0.33	0.34	0.93	1.05	S	1.53	0.32	1.53	0.48	24
8	1.06	0.44	0.34	0.32	0.27	0.24	0.30	0.33	0.34	0.29	0.30	0.26	0.24	0.27	0.29	0.26	0.30	0.30	0.31	0.30	0.34	S	0.45	0.34	0.24	1.06	0.34	24
9	0.33	0.31	0.32	0.33	0.35	0.32	0.33	0.32	0.34	0.31	0.31	0.30	0.30	0.35	0.28	0.29	0.30	0.33	0.29	0.32	S	0.73	0.62	0.50	0.28	0.73	0.36	24
10	0.42	0.45	0.38	0.44	0.43	0.32	0.35	0.54	0.50	0.40	0.35	0.29	0.26	0.27	0.30	0.28	0.28	0.29	0.28	S	0.36	2.63	2.29	2.31	0.26	2.63	0.63	24
11	3.02	1.99	1.77	1.30	1.24	1.34	1.01	Y	Y	Y	Y	C	C	C	C	C	C	0.43	S	0.42	0.33	0.30	0.28	0.29	0.28	3.02	1.06	20
12	0.32	0.31	0.29	0.28	0.31	0.27	0.27	0.29	0.29	0.28	0.29	0.29	0.32	0.29	0.29	0.31	0.28	S	0.41	0.34	0.30	0.34	0.35	0.33	0.27	0.41	0.31	24
13	0.32	0.38	0.34	0.33	0.31	0.28	0.29	0.33	0.45	0.47	0.44	0.39	0.33	0.32	0.31	0.33	S	0.40	0.34	0.42	0.50	0.46	0.53	0.51	0.28	0.53	0.38	24
14	0.51	0.47	0.46	0.56	0.43	0.52	0.63	0.61	0.49	0.36	0.34	0.37	0.35	0.33	0.34	S	0.43	0.44	0.50	1.20	1.72	1.50	1.65	0.85	0.33	1.72	0.65	24
15	0.97	0.99	0.84	1.13	1.07	1.03	1.14	0.66	0.72	0.51	0.37	0.31	0.36	0.35	S	0.47	0.38	0.45	0.41	0.82	1.18	2.19	1.97	1.08	0.31	2.19	0.84	24
16	1.34	0.73	0.35	0.35	0.32	0.42	0.37	0.36	0.34	0.37	0.38	0.33	0.32	S	0.40	0.33	0.35	0.34	0.40	0.47	0.58	1.63	1.86	1.31	0.32	1.86	0.59	24
17	1.04	0.99	0.76	0.75	0.48	0.40	0.59	0.68	0.38	0.36	0.33	0.33	S	0.39	0.34	0.34	0.33	0.34	0.37	0.78	1.09	1.06	0.48	0.43	0.33	1.09	0.57	24
18	0.45	0.44	0.46	0.49	0.44	0.46	0.89	1.00	0.60	0.49	0.33	S	0.39	0.31	0.30	0.28	0.36	0.29	0.38	0.73	0.67	0.54	0.51	0.76	0.28	1.00	0.50	24
19	0.75	0.82	0.76	0.75	1.42	1.18	0.65	0.42	0.35	0.32	S	0.37	0.36	0.32	0.28	0.30	0.29	0.29	0.30	1.03	1.42	0.98	0.62	0.31	0.28	1.42	0.62	24
20	0.27	0.29	0.29	0.28	0.29	0.29	0.32	0.29	0.30	S	0.42	0.32	0.32	0.33	0.33	0.35	0.33	0.35	0.32	0.35	0.88	0.89	0.58	0.58	0.27	0.89	0.39	24
21	0.55	0.59	0.52	0.65	0.60	0.49	0.47	0.43	S	0.47	0.37	0.36	0.34	0.33	0.33	0.33	0.31	0.34	0.33	0.38	0.65	0.53	0.40	0.40	0.31	0.65	0.44	24
22	0.36	0.38	0.39	0.38	0.41	0.50	0.42	S	0.50	0.35	0.36	0.34	0.35	0.34	0.33	0.34	0.33	0.33	0.34	0.35	0.38	0.35	0.34	0.35	0.33	0.50	0.37	24
23	0.35	0.33	0.34	0.35	0.36	0.36	S	0.46	0.36	0.36	0.36	0.34	0.33	0.32	0.34	0.32	0.30	0.34	0.51	0.72	0.72	0.35	0.35	0.30	0.72	0.39	24	
24	0.37	0.36	0.40	0.41	0.42	S	0.47	0.45	0.42	0.44	0.38	0.38	0.38	0.38	0.36	0.37	0.36	0.37	0.75	5.97	4.38	3.33	2.13	1.77	0.36	5.97	1.09	24
25	1.57	2.48	0.90	0.92	S	1.15	1.01	1.45	0.49	0.49	0.47	0.41	0.41	0.37	0.36	0.34	0.33	0.43	0.40	0.38	0.39	0.39	0.47	0.45	0.33	2.48	0.70	24
26	1.44	1.43	0.54	S	0.74	0.35	0.34	0.33	0.35	0.36	0.43	0.44	0.34	0.33	0.35	0.49	0.42	0.31	0.32	0.33	0.34	0.31	0.37	0.30	0.30	1.44	0.48	24
27	0.33	0.78	S	1.14	0.89	0.82	0.74	0.72	0.60	0.42	0.51	0.47	0.36	0.30	0.28	0.31	0.29	0.30	0.29	0.34	0.68	0.52	0.49	0.62	0.28	1.14	0.53	24
28	0.55	S	0.57	0.49	0.53	0.66	0.71	0.56	0.57	0.47	0.33	0.31	0.34	0.34	0.30	0.32	0.33	0.31	0.30	0.47	0.53	0.47	0.48	0.68	0.30	0.71	0.46	24
29	S	0.43	0.33	0.31	0.33	0.31	0.36	0.33	0.33	0.39	0.33	0.42	0.32	0.36	0.31	0.35	0.44	0.35	0.33	0.37	0.37	0.39	0.45	S	0.31	0.45	0.36	24
30	0.56	0.42	0.46	0.43	0.44	0.49	0.44	0.45	0.37	1.16	0.58	0.36	0.39	0.36	0.35	0.35	0.33	0.33	0.35	0.37	0.40	0.43	S	0.55	0.33	1.16	0.45	24
HOURLY MAX	3.02	2.48	1.77	1.30	1.42	1.34	1.14	1.45	0.72	1.16	0.58	0.52	0.41	0.43	0.46	0.49	0.47	0.80	0.75	5.97	4.38	3.33	2.29	2.31				
HOURLY AVG	0.73	0.67	0.53	0.56	0.54	0.55	0.54	0.52	0.42	0.42	0.38	0.36	0.34	0.34	0.33	0.34	0.34	0.36	0.38	0.68	0.76	0.85	0.73	0.71				

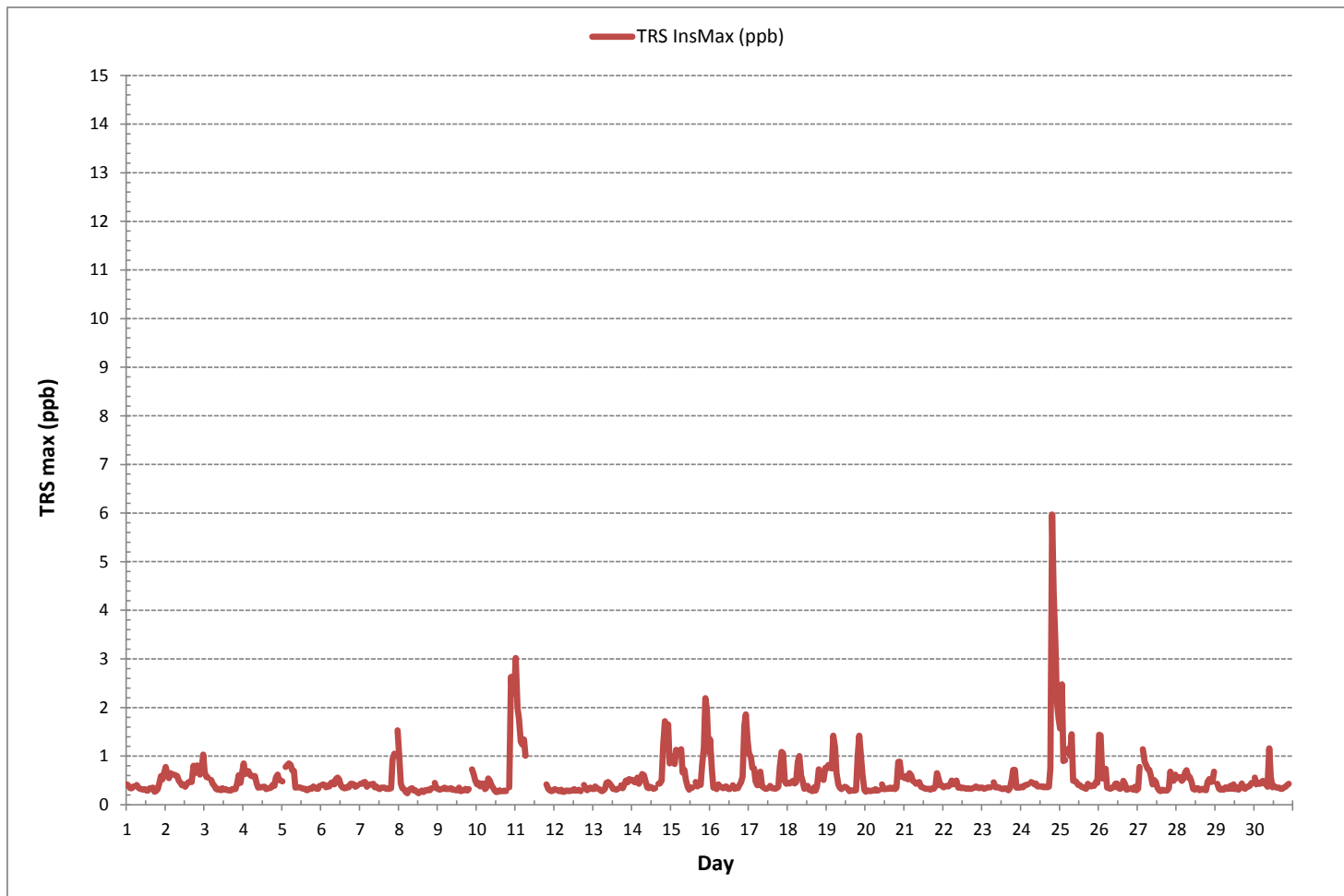
STATUS FLAG CODES

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

MONTHLY SUMMARY

NUMBER OF NON-ZERO READINGS:	678
MAXIMUM INSTANTANEOUS VALUE:	5.97 ppb @ HOUR 19 ON DAY 24
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	6 hrs
STANDARD DEVIATION:	0.43
OPERATIONAL TIME:	716 hrs

TOTAL REDUCED SULPHUR Instantaneous Maximum (TRS ppb)





TOTAL HYDROCARBONS Instantaneous Maximum (THC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY	DAILY	24-HR	RDGS.	
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	MIN.	MAX.	AVG.		
DAY																													
1	1.94	1.96	1.96	2.02	1.97	S	1.95	1.96	1.97	1.98	1.97	1.98	1.98	1.98	1.97	1.97	1.97	1.96	2.06	2.14	2.14	2.41	2.06	2.36	1.94	2.41	2.03	24	
2	3.03	2.07	2.12	2.18	S	2.07	2.06	2.08	2.00	2.00	1.98	1.98	1.96	1.97	1.97	2.00	1.96	2.50	2.01	1.99	2.03	2.08	2.16	2.08	1.96	3.03	2.10	24	
3	2.02	2.11	2.04	S	2.00	2.07	2.08	1.98	1.98	1.98	1.98	1.99	1.99	1.98	1.99	1.98	1.98	1.99	2.04	1.99	2.17	2.08	2.16	2.20	1.98	2.20	2.03	24	
4	2.06	2.25	S	2.19	2.15	2.17	2.19	2.17	2.03	2.00	2.00	2.00	2.00	1.99	1.98	1.99	1.99	1.99	2.00	2.00	2.03	2.05	2.08	2.03	1.98	2.25	2.06	24	
5	2.05	S	2.17	2.16	2.15	2.16	2.16	2.70	2.04	2.01	2.00	2.00	1.99	1.99	1.97	1.99	1.98	2.00	2.01	2.01	2.00	1.99	1.99	1.99	1.97	2.70	2.07	24	
6	S	1.99	1.98	1.99	2.00	2.04	2.02	2.05	2.02	2.02	2.01	2.02	2.01	2.03	2.01	2.02	2.01	2.01	2.02	2.01	2.02	2.01	2.03	S	1.98	2.05	2.01	24	
7	2.03	2.03	2.04	2.04	2.03	2.05	2.04	2.06	2.05	2.08	2.06	2.07	2.05	2.03	2.05	2.05	2.05	2.05	2.04	2.08	2.20	2.54	S	2.49	2.03	2.54	2.10	24	
8	2.30	2.30	2.08	2.09	2.09	2.05	2.04	2.03	2.03	2.02	2.03	2.01	2.03	2.01	2.06	2.03	2.03	2.03	2.02	2.01	1.99	S	1.98	1.98	1.98	2.30	2.05	24	
9	1.98	1.97	1.97	1.98	1.98	1.98	1.98	1.98	1.99	1.98	1.98	1.97	1.98	1.97	1.98	1.98	1.97	1.97	1.99	1.98	S	1.99	1.99	1.98	1.97	1.99	1.98	24	
10	1.98	1.98	2.01	2.01	2.00	1.99	1.99	2.00	1.99	1.99	2.00	1.99	1.99	1.99	1.98	1.98	1.98	1.97	1.98	S	2.10	2.05	2.02	2.01	1.97	2.10	2.00	24	
11	2.03	2.06	2.27	2.35	2.21	2.13	2.14	2.15	2.04	2.02	1.98	1.98	2.00	1.99	C	C	C	C	S	2.00	2.00	2.02	2.01	2.01	1.98	2.35	2.07	24	
12	2.01	2.01	2.01	2.02	2.02	2.02	2.02	2.01	2.01	2.01	2.01	2.01	2.00	2.00	2.00	2.03	2.02	S	2.02	2.05	2.10	2.03	2.03	2.01	2.00	2.10	2.02	24	
13	2.03	2.06	2.05	2.06	2.05	2.05	2.08	2.04	2.02	2.01	2.01	2.05	2.00	2.01	2.02	1.97	S	1.99	1.99	2.03	2.08	2.02	2.02	2.03	1.97	2.08	2.03	24	
14	2.04	2.08	2.13	2.20	2.21	2.19	2.21	2.22	2.21	2.11	2.04	2.04	2.02	2.02	2.02	S	2.01	2.01	2.22	2.10	2.36	2.11	2.48	2.08	2.01	2.48	2.14	24	
15	2.41	2.19	2.51	2.75	2.53	2.79	2.47	2.19	2.17	2.06	2.01	2.00	2.00	2.01	S	2.01	2.03	2.01	2.01	2.02	2.18	2.37	2.09	2.11	2.00	2.79	2.21	24	
16	2.10	2.03	2.03	2.02	2.04	2.04	2.03	2.02	2.03	2.03	2.03	2.03	S	2.02	2.02	2.02	2.03	2.02	2.11	2.11	2.58	2.54	2.59	2.64	2.02	2.64	2.14	24	
17	2.42	2.10	2.97	2.11	2.10	2.14	2.16	2.11	2.08	2.07	2.05	2.04	S	2.03	2.04	2.03	2.02	2.03	2.03	2.04	2.03	2.36	2.32	2.07	2.02	2.97	2.15	24	
18	2.18	2.06	2.07	2.08	2.17	2.09	2.10	2.07	2.06	2.06	2.04	S	2.02	2.01	2.00	2.00	2.01	2.02	2.03	2.16	2.11	2.08	2.14	2.17	2.00	2.18	2.08	24	
19	2.20	2.05	2.05	2.66	2.48	2.99	2.38	2.07	2.01	2.02	S	2.03	2.04	2.03	2.03	2.06	2.02	2.01	2.03	2.37	3.13	2.44	2.32	2.06	2.01	3.13	2.24	24	
20	2.03	2.01	2.01	2.01	2.01	2.01	2.02	2.02	2.02	S	2.01	2.01	2.02	2.01	2.01	2.01	2.01	2.01	2.13	2.13	2.12	2.58	3.13	2.71	3.18	2.01	3.18	2.18	24
21	2.78	3.31	2.73	2.93	2.54	2.68	2.40	2.18	S	2.05	2.04	2.01	2.01	2.01	2.01	2.01	2.02	2.01	2.08	2.58	2.57	2.21	2.08	2.08	2.01	3.31	2.32	24	
22	2.10	2.10	2.09	2.10	2.08	2.17	2.16	S	2.07	2.05	2.09	2.05	2.04	2.04	2.02	2.02	2.04	2.02	2.01	2.02	2.03	2.04	2.04	2.04	2.01	2.17	2.06	24	
23	2.04	2.04	2.03	2.03	2.02	2.02	S	2.04	2.06	2.06	2.07	2.05	2.05	2.03	2.02	2.01	2.00	2.01	2.41	2.11	2.07	2.02	2.08	2.04	2.00	2.41	2.06	24	
24	2.01	2.03	2.01	2.05	2.10	S	2.01	2.04	2.02	2.00	1.99	2.00	1.99	1.99	1.98	1.98	1.98	1.98	2.20	2.20	2.03	2.02	2.06	2.22	1.98	2.22	2.04	24	
25	2.27	2.29	2.19	2.17	S	2.10	2.07	2.10	2.04	2.07	2.05	2.02	2.02	2.00	1.99	1.98	1.98	1.97	1.98	1.98	1.97	1.98	2.01	1.99	1.97	2.29	2.05	24	
26	2.51	2.51	2.08	S	2.13	2.05	2.08	2.11	2.01	2.03	2.00	2.00	1.99	1.99	2.00	1.98	1.99	2.02	2.04	2.03	2.02	2.04	2.04	2.13	1.98	2.51	2.08	24	
27	2.30	2.63	S	3.31	2.80	2.51	2.63	2.22	2.20	2.18	2.09	2.05	2.04	2.03	2.02	2.03	2.03	2.02	2.04	3.09	5.70	2.20	3.11	2.53	2.02	5.70	2.51	24	
28	3.11	S	2.60	2.72	2.59	2.78	2.59	2.53	2.38	2.18	2.07	2.03	2.02	2.01	2.01	2.02	2.00	2.01	2.02	2.99	2.60	3.37	2.96	2.45	2.00	3.37	2.43	24	
29	S	2.04	2.05	2.08	2.08	2.03	2.04	2.05	2.04	2.03	2.04	2.03	2.03	2.04	2.04	2.04	2.03	2.02	2.85	2.76	2.56	4.12	2.98	S	2.02	4.12	2.27	24	
30	3.38	3.71	3.43	2.79	2.82	2.95	2.57	2.29	2.22	2.13	2.11	2.04	2.04	2.02	2.07	2.00	2.09	2.00	2.02	2.05	2.66	2.54	S	3.17	2.00	3.71	2.48	24	
HOURLY MAX	3.38	3.71	3.43	3.31	2.82	2.99	2.63	2.70	2.38	2.18	2.11	2.07	2.05	2.04	2.07	2.06	2.09	2.50	2.85	3.09	5.70	4.12	3.11	3.18					
HOURLY AVG	2.26	2.21	2.20	2.25	2.19	2.23	2.16	2.12	2.06	2.04	2.03	2.02	2.01	2.01	2.01	2.01	2.01	2.03	2.08	2.17	2.35	2.30	2.23	2.22					

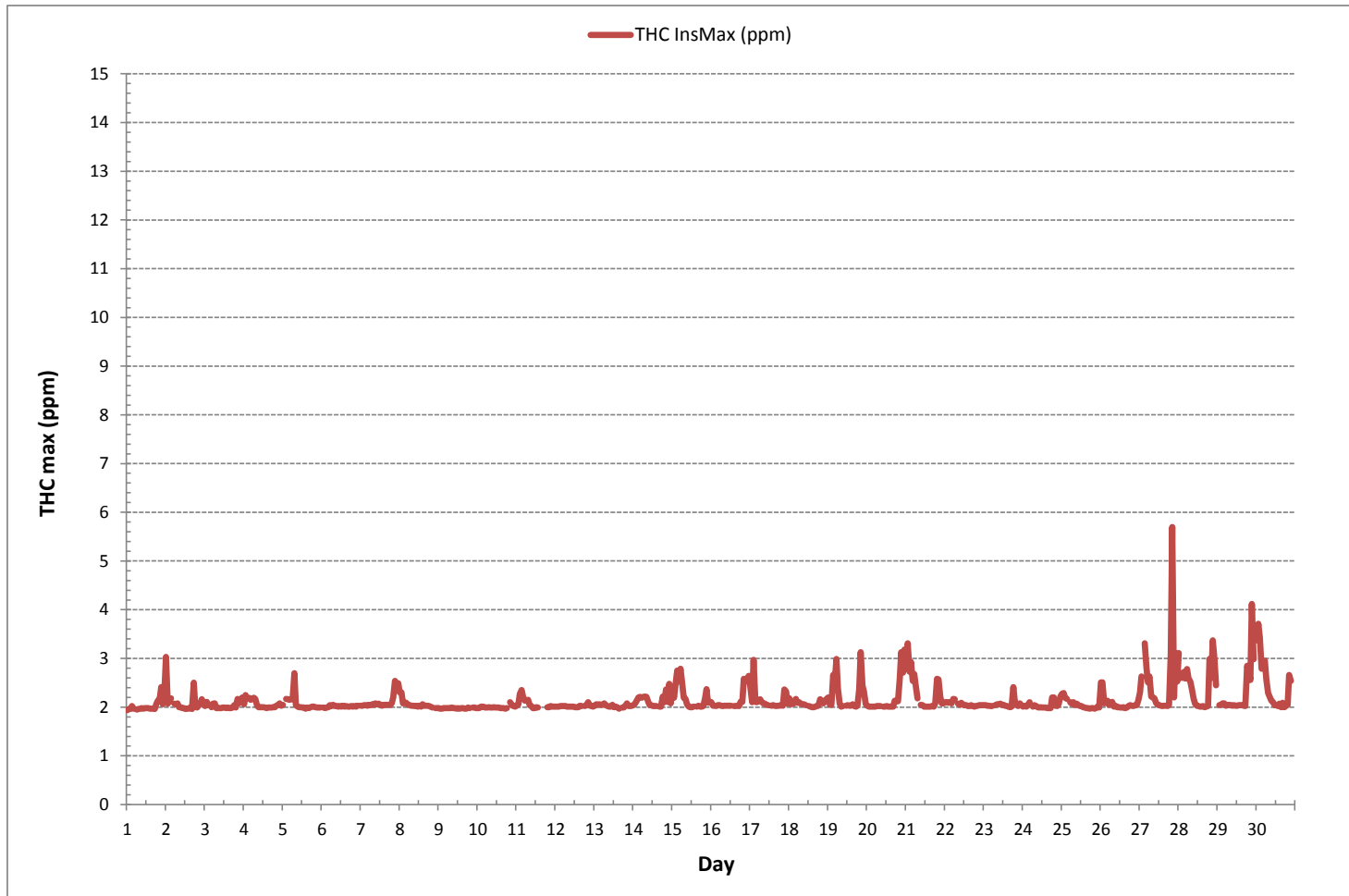
STATUS FLAG CODES

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:	684		
MAXIMUM INSTANTANEOUS VALUE:	5.70 ppm	@ HOUR	20 ON DAY 27
IZS CALIBRATION TIME:	32 hrs	OPERATIONAL TIME:	720 hrs
MONTHLY CALIBRATION TIME:	4 hrs		
STANDARD DEVIATION:	0.29		

TOTAL HYDROCARBONS Instantaneous Maximum (THC ppm)





METHANE MAX Instantaneous Maximum (CH₄ ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.		
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59						
DAY 1	1.94	1.96	1.96	2.02	1.97	S	1.95	1.96	1.97	1.98	1.97	1.98	1.98	1.98	1.97	1.97	1.97	1.96	2.06	2.14	2.14	2.41	2.06	2.36	1.94	2.41	2.03	24		
2	3.03	2.07	2.12	2.18	S	2.07	2.06	2.08	2.00	2.00	1.98	1.98	1.96	1.97	1.97	2.00	1.96	2.50	2.01	1.99	2.03	2.08	2.16	2.08	1.96	3.03	2.10	24		
3	2.02	2.11	2.04	S	2.00	2.07	2.08	1.98	1.98	1.98	1.99	1.99	1.98	1.99	1.98	1.99	1.98	1.99	2.04	1.99	2.17	2.08	2.11	2.20	1.98	2.20	2.03	24		
4	2.06	2.25	S	2.19	2.15	2.17	2.19	2.17	2.03	2.00	2.00	2.00	2.00	1.99	1.98	1.99	1.99	1.99	2.00	2.00	2.03	2.05	2.08	2.03	1.98	2.25	2.06	24		
5	2.05	S	2.17	2.16	2.15	2.16	2.16	2.70	2.04	2.01	2.00	2.00	1.99	1.99	1.97	1.99	1.98	2.00	2.01	2.01	2.00	1.99	1.99	1.99	1.97	2.70	2.07	24		
6	S	1.99	1.98	1.99	2.00	2.04	2.02	2.05	2.02	2.02	2.01	2.02	2.01	2.03	2.01	2.02	2.01	2.01	2.02	2.01	2.02	2.01	2.03	S	1.98	2.05	2.01	24		
7	2.03	2.03	2.04	2.04	2.03	2.05	2.04	2.06	2.05	2.08	2.06	2.07	2.05	2.03	2.05	2.05	2.05	2.05	2.04	2.08	2.20	2.54	S	2.49	2.03	2.54	2.10	24		
8	2.30	2.30	2.08	2.09	2.09	2.05	2.04	2.03	2.03	2.02	2.03	2.01	2.03	2.01	2.06	2.03	2.03	2.03	2.03	2.02	2.01	1.99	S	1.98	1.98	1.98	2.30	2.05	24	
9	1.98	1.97	1.97	1.98	1.98	1.98	1.98	1.98	1.99	1.98	1.98	1.97	1.98	1.97	1.98	1.98	1.97	1.97	1.99	1.98	S	1.99	1.99	1.98	1.97	1.99	1.98	24		
10	1.98	1.98	2.01	2.01	2.00	1.99	1.99	2.00	1.99	1.99	2.00	1.99	1.99	1.99	1.98	1.98	1.98	1.98	1.97	1.99	S	2.10	2.05	2.02	2.01	1.97	2.10	2.00	24	
11	2.03	2.06	2.27	2.35	2.21	2.13	2.14	2.15	2.04	2.02	1.98	1.98	2.00	1.99	C	C	C	C	S	2.00	2.00	2.02	2.01	2.01	1.98	2.35	2.07	24		
12	2.01	2.01	2.01	2.02	2.02	2.02	2.01	2.01	2.01	2.01	2.01	2.01	2.00	2.00	2.00	2.03	2.02	S	2.02	2.05	2.10	2.03	2.03	2.01	2.00	2.10	2.02	24		
13	2.03	2.06	2.05	2.06	2.05	2.05	2.08	2.04	2.02	2.01	2.01	2.05	2.00	2.01	2.00	1.97	S	1.99	1.99	2.03	2.08	2.02	2.02	2.03	1.97	2.08	2.03	24		
14	2.04	2.08	2.13	2.20	2.21	2.19	2.21	2.22	2.21	2.11	2.04	2.04	2.02	2.02	2.02	S	2.01	2.01	2.22	2.10	2.36	2.11	2.48	2.08	2.01	2.48	2.14	24		
15	2.41	2.19	2.51	2.75	2.53	2.79	2.47	2.19	2.17	2.06	2.01	2.00	2.00	2.01	S	2.01	2.03	2.01	2.01	2.02	2.18	2.37	2.09	2.11	2.00	2.79	2.21	24		
16	2.10	2.03	2.03	2.02	2.04	2.04	2.03	2.02	2.03	2.03	2.03	2.03	2.03	S	2.02	2.02	2.03	2.02	2.11	2.11	2.58	2.54	2.59	2.64	2.02	2.64	2.14	24		
17	2.42	2.10	2.97	2.11	2.10	2.14	2.16	2.11	2.08	2.07	2.05	2.04	S	2.03	2.04	2.03	2.02	2.03	2.03	2.04	2.03	2.36	2.32	2.07	2.02	2.97	2.15	24		
18	2.18	2.06	2.07	2.08	2.17	2.09	2.10	2.07	2.06	2.06	2.04	S	2.02	2.01	2.00	2.00	2.01	2.02	2.01	2.02	2.03	2.16	2.11	2.08	2.14	2.17	2.00	2.18	2.08	24
19	2.20	2.05	2.05	2.66	2.48	2.99	2.38	2.07	2.01	2.02	S	2.03	2.04	2.03	2.03	2.06	2.02	2.01	2.03	2.37	3.13	2.44	2.32	2.06	2.01	3.13	2.24	24		
20	2.03	2.01	2.01	2.01	2.01	2.01	2.02	2.02	2.02	S	2.01	2.01	2.02	2.01	2.01	2.01	2.01	2.01	2.03	2.13	2.12	2.58	3.13	2.71	3.18	2.01	3.18	2.18	24	
21	2.78	3.31	2.73	2.93	2.54	2.68	2.40	2.18	S	2.05	2.04	2.01	2.01	2.01	2.01	2.01	2.02	2.01	2.02	2.08	2.58	2.57	2.21	2.08	2.08	2.01	3.31	2.32	24	
22	2.10	2.10	2.09	2.10	2.08	2.17	2.16	S	2.07	2.05	2.09	2.05	2.04	2.04	2.02	2.02	2.04	2.02	2.01	2.02	2.03	2.04	2.04	2.04	2.01	2.17	2.06	24		
23	2.04	2.04	2.03	2.03	2.02	2.02	S	2.04	2.06	2.06	2.07	2.05	2.05	2.03	2.02	2.01	2.00	2.01	2.41	2.11	2.07	2.02	2.08	2.04	2.00	2.41	2.06	24		
24	2.01	2.03	2.01	2.05	2.10	S	2.01	2.04	2.02	2.00	1.99	2.00	1.99	1.99	1.98	1.98	1.98	1.98	2.20	2.20	2.03	2.02	2.06	2.22	1.98	2.22	2.04	24		
25	2.27	2.29	2.19	2.17	S	2.10	2.07	2.10	2.04	2.07	2.05	2.02	2.02	2.00	1.99	1.98	1.98	1.97	1.98	1.98	1.97	1.98	2.01	1.99	1.97	2.29	2.05	24		
26	2.51	2.51	2.08	S	2.13	2.05	2.08	2.11	2.01	2.03	2.00	2.00	1.99	1.99	2.00	1.98	1.99	2.02	2.04	2.03	2.02	2.04	2.13	1.98	2.51	2.08	24			
27	2.30	2.63	S	3.31	2.80	2.51	2.63	2.22	2.20	2.18	2.09	2.05	2.04	2.03	2.02	2.03	2.03	2.02	2.04	3.09	5.70	2.20	3.11	2.53	2.02	5.70	2.51	24		
28	3.11	S	2.60	2.72	2.59	2.78	2.59	2.53	2.38	2.18	2.07	2.03	2.02	2.01	2.01	2.02	2.00	2.01	2.02	2.99	2.60	3.37	2.96	2.45	2.00	3.37	2.43	24		
29	S	2.04	2.05	2.08	2.08	2.03	2.04	2.05	2.04	2.03	2.04	2.03	2.03	2.04	2.04	2.04	2.03	2.02	2.85	2.76	2.56	4.12	2.98	S	2.02	4.12	2.27	24		
30	3.38	3.71	3.43	2.79	2.82	2.95	2.57	2.29	2.22	2.13	2.11	2.04	2.04	2.02	2.07	2.00	2.09	2.00	2.02	2.05	2.66	2.54	S	3.17	2.00	3.71	2.48	24		
HOURLY MAX	3.38	3.71	3.43	3.31	2.82	2.99	2.63	2.70	2.38	2.18	2.11	2.07	2.05	2.04	2.07	2.06	2.09	2.50	2.85	3.09	5.70	4.12	3.11	3.18						
HOURLY AVG	2.26	2.21	2.20	2.25	2.19	2.23	2.16	2.12	2.06	2.04	2.03	2.02	2.01	2.01	2.01	2.01	2.01	2.02	2.08	2.17	2.35	2.30	2.23	2.22						

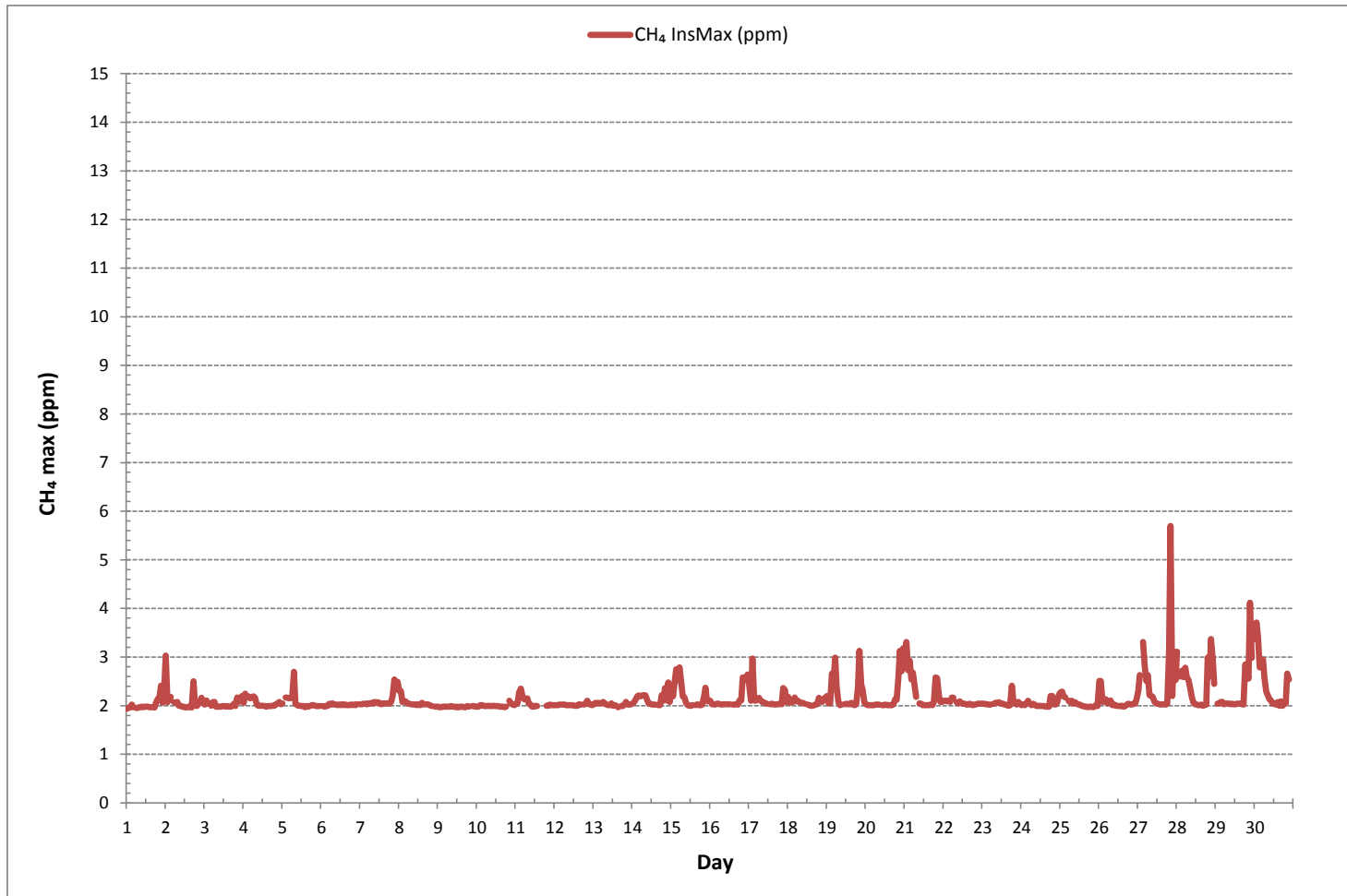
STATUS FLAG CODES

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:	684		
MAXIMUM INSTANTANEOUS VALUE:	5.70 ppm @ HOUR 20 ON DAY 27		
IZS CALIBRATION TIME:	32 hrs	OPERATIONAL TIME:	720 hrs
MONTHLY CALIBRATION TIME:	4 hrs		
STANDARD DEVIATION:	0.29		

METHANE MAX Instantaneous Maximum (CH₄ ppm)





PEACE RIVER AREA MONITORING PROGRAM COMMITTEE
Three Creeks 986b Station - September 2018

NON-METHANE HYDROCARBONS Instantaneous Maximum (NMHC ppm)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
DAY 1	0.00	0.00	0.00	0.00	0.00	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
2	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
3	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
4	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
5	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
6	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	24
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	24
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	24
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	24
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	24
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	C	C	C	C	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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
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	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
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
17	0.00	0.00	0.07	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	0.07	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	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	24
21	0.00	0.00	0.00	0.00	0.00	0.09	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	0.09	0.00	24
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
23	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
24	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
25	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
26	0.00	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
27	0.00	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
28	0.00	S	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24
29	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	S	0.00	0.00	24
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	S	0.00	0.00	0.00	24
HOURLY MAX	0.00	0.00	0.07	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
HOURLY AVG	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

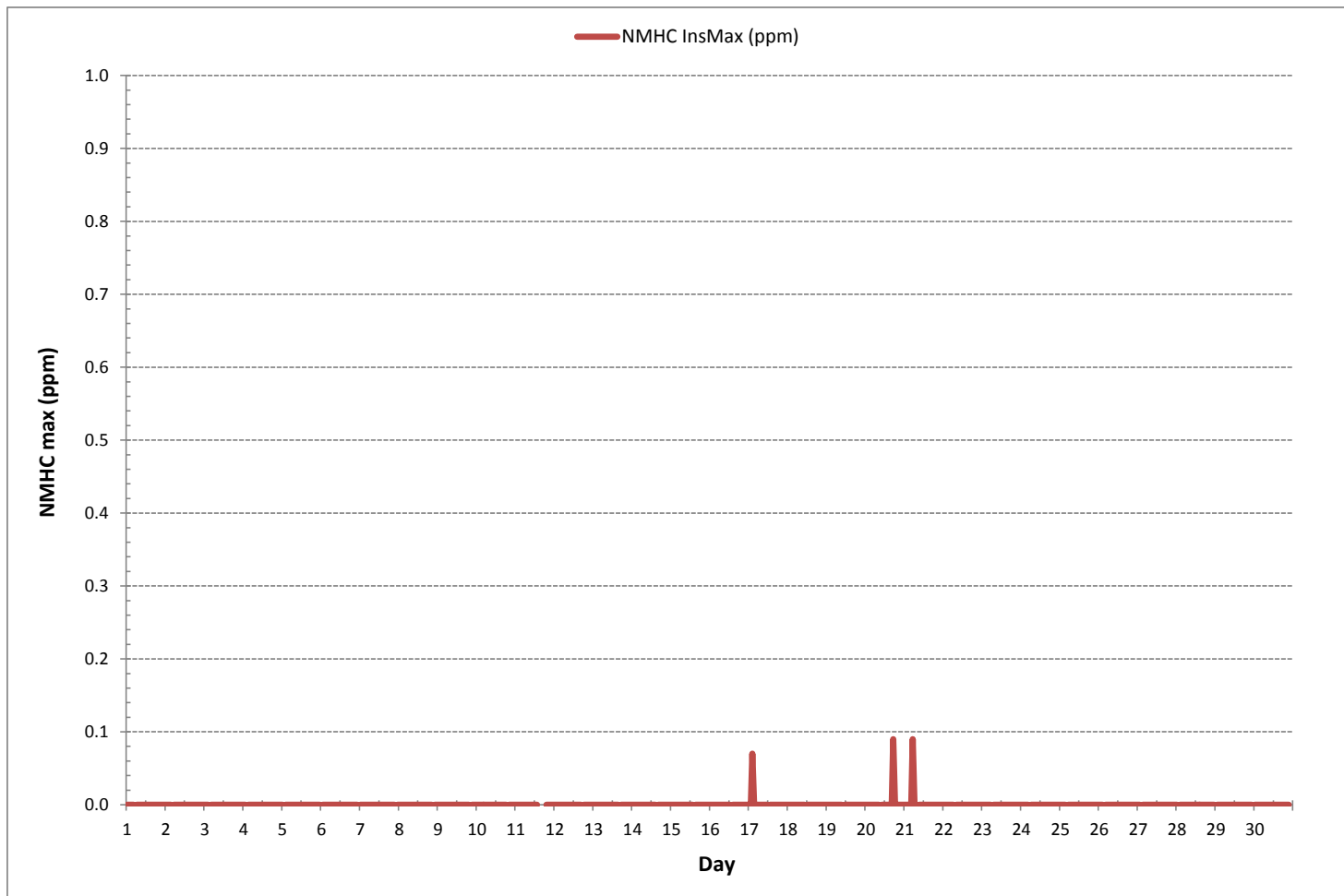
STATUS FLAG CODES

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:	3
MAXIMUM INSTANTANEOUS VALUE:	0.09 ppm @ HOUR 17 ON DAY 20
IZS CALIBRATION TIME:	32 hrs
MONTHLY CALIBRATION TIME:	4 hrs
STANDARD DEVIATION:	0.01
OPERATIONAL TIME:	720 hrs

NON-METHANE HYDROCARBONS Instantaneous Maximum (NMHC ppm)





PEACE RIVER AREA MONITORING PROGRAM COMMITTEE
Three Creeks 986b Station - September 2018

WIND SPEED Instantaneous Maximum (WS kph)

HR START (MST)	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	DAILY MIN.	DAILY MAX.	24-HR AVG.	RDGS.
HR END (MST)	0:59	1:59	2:59	3:59	4:59	5:59	6:59	7:59	8:59	9:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59				
DAY 1	9.4	19.5	18.9	17.1	18.0	22.0	14.2	17.9	25.2	32.7	33.0	33.0	34.7	35.1	26.8	27.1	27.4	26.4	28.2	22.2	13.2	6.3	7.9	7.0	6.3	35.1	21.8	24
2	6.8	7.8	7.8	4.6	7.8	9.3	7.3	8.6	18.9	18.6	22.6	22.8	25.9	26.7	35.6	11.1	5.9	7.8	7.3	7.9	8.4	23.8	8.5	7.9	4.6	35.6	13.3	24
3	6.1	13.9	12.6	10.6	9.3	8.1	23.9	22.7	37.7	33.8	39.3	35.7	33.4	33.5	30.8	28.2	26.0	20.7	14.2	4.3	3.6	3.7	4.2	3.6	3.6	39.3	19.2	24
4	4.2	7.5	3.3	3.6	5.1	5.6	7.0	8.4	19.4	20.6	25.4	25.1	25.3	30.8	23.5	25.4	26.7	25.6	16.3	10.0	12.1	6.6	8.8	7.6	3.3	30.8	14.7	24
5	6.3	4.4	6.3	5.7	3.8	4.5	4.4	12.8	13.5	20.4	17.7	29.1	23.5	19.9	22.6	24.5	18.1	15.3	11.7	10.2	12.0	14.4	16.5	16.8	3.8	29.1	13.9	24
6	16.9	18.5	16.9	21.4	20.2	20.4	24.0	17.9	17.1	21.0	22.9	24.6	24.2	21.3	22.6	20.4	23.2	19.8	19.2	18.4	14.3	13.9	12.9	14.6	12.9	24.6	19.4	24
7	13.9	14.2	13.1	17.1	16.2	16.2	13.7	17.0	9.9	8.4	9.0	13.9	8.0	9.1	9.1	12.4	11.1	13.0	9.2	6.8	8.9	6.2	5.7	6.0	5.7	17.1	11.2	24
8	6.1	12.0	13.1	8.9	13.5	17.9	15.6	14.1	20.0	21.8	13.8	17.6	19.4	17.9	14.2	20.0	20.8	22.9	18.1	23.6	26.3	27.3	30.0	27.7	6.1	30.0	18.4	24
9	27.3	33.9	27.6	24.9	23.0	21.2	22.2	21.0	17.4	19.7	15.0	14.1	13.5	14.3	13.3	13.3	11.5	9.6	9.4	4.7	6.2	11.0	14.9	15.3	4.7	33.9	16.8	24
10	14.6	11.1	9.6	10.5	15.4	10.4	10.6	7.1	7.5	8.5	11.7	15.0	16.9	18.5	18.3	16.1	16.8	16.8	16.5	8.5	2.3	3.5	3.8	5.5	2.3	18.5	11.5	24
11	5.1	5.7	5.2	7.5	4.4	5.9	8.3	8.5	11.6	10.7	9.6	13.3	17.5	24.5	27.3	36.9	33.2	29.8	28.7	21.7	23.9	24.1	22.6	19.2	4.4	36.9	16.9	24
12	21.6	16.6	21.3	16.4	16.1	19.3	16.0	15.6	17.3	18.2	18.2	22.3	16.9	19.0	13.6	14.5	13.5	12.7	11.3	12.6	10.4	5.6	5.8	5.3	5.3	22.3	15.0	24
13	5.2	3.2	8.0	4.9	3.9	3.5	3.8	4.6	7.2	8.3	13.6	12.6	15.5	17.7	18.5	20.7	22.1	19.2	18.1	10.9	8.6	8.9	5.6	6.2	3.2	22.1	10.5	24
14	6.1	6.7	5.6	5.3	6.3	5.1	3.8	5.0	6.9	13.7	15.0	11.9	12.4	15.6	18.8	10.5	9.8	8.1	6.0	5.5	4.7	7.3	5.6	8.0	3.8	18.8	8.5	24
15	6.3	5.9	5.1	4.6	5.1	2.8	4.7	4.9	6.0	15.4	20.9	29.4	23.4	27.1	22.1	19.3	16.6	14.8	8.4	4.8	4.4	4.1	6.7	6.8	2.8	29.4	11.2	24
16	7.0	11.6	10.5	12.5	12.1	13.9	17.4	11.7	14.2	23.1	26.0	20.1	21.7	22.0	27.9	17.3	17.0	15.6	10.5	7.7	4.6	5.6	5.0	3.4	3.4	27.9	14.1	24
17	3.2	6.0	6.7	6.4	7.6	5.8	5.7	10.8	12.0	13.7	14.3	16.6	15.5	15.2	13.4	11.8	12.0	11.7	9.8	5.0	3.9	5.3	8.6	10.5	3.2	16.6	9.6	24
18	8.8	8.1	6.8	5.9	7.0	7.5	6.1	6.0	8.4	15.3	16.1	19.5	16.5	20.4	20.7	16.8	13.8	13.7	12.6	8.0	12.1	9.5	11.5	8.7	5.9	20.7	11.7	24
19	8.7	4.9	4.0	5.3	3.8	5.2	14.0	16.0	12.7	8.9	9.5	16.4	10.9	14.0	13.8	12.1	13.4	12.0	7.9	8.3	4.8	4.5	11.4	9.9	3.8	16.4	9.7	24
20	12.9	14.1	14.7	16.9	16.5	18.0	22.7	17.5	18.3	24.5	24.9	24.5	19.9	17.5	18.8	20.7	14.5	12.3	7.5	2.9	2.3	4.0	6.0	5.5	2.3	24.9	14.9	24
21	3.9	4.8	2.1	3.5	5.1	5.0	6.6	4.3	6.9	7.0	11.3	14.0	16.4	12.8	14.3	11.5	14.4	14.9	10.4	7.7	5.4	5.5	6.7	8.7	2.1	16.4	8.5	24
22	8.4	5.9	8.3	7.4	7.5	6.2	5.5	6.5	18.5	29.9	32.3	31.1	30.1	26.7	30.8	26.9	28.0	28.9	28.9	30.1	27.4	22.3	22.6	23.1	5.5	32.3	20.6	24
23	20.1	18.2	20.3	17.0	16.8	16.8	14.4	20.5	21.6	21.9	20.6	22.7	21.0	22.8	24.3	14.7	17.7	8.2	4.3	4.1	7.8	11.6	17.8	13.2	4.1	24.3	16.6	24
24	13.9	11.6	11.0	5.7	7.3	20.9	6.4	16.6	14.9	21.7	25.4	25.5	19.9	25.3	9.6	20.0	19.4	8.5	3.5	3.9	4.3	4.6	4.7	9.3	3.5	25.5	13.1	24
25	7.4	4.9	8.1	8.0	8.7	6.1	6.1	10.9	17.0	15.9	20.6	23.6	24.9	23.5	35.8	41.5	35.9	26.1	26.1	24.4	25.5	21.8	15.9	12.6	4.9	41.5	18.8	24
26	7.2	12.4	8.7	10.3	10.0	11.1	11.9	8.6	10.0	13.1	17.3	24.1	23.2	24.4	20.3	13.8	17.6	15.1	12.1	12.6	10.7	13.8	8.5	14.7	7.2	24.4	13.8	24
27	7.3	4.4	2.4	4.3	2.7	3.8	4.3	4.7	7.2	6.5	8.5	13.9	16.2	20.4	20.5	17.4	14.8	16.6	9.7	5.1	4.5	3.3	3.5	4.0	2.4	20.5	8.6	24
28	9.3	3.5	3.3	3.7	3.8	4.4	3.7	3.7	2.9	4.7	7.9	16.0	16.7	21.6	24.2	21.1	24.1	19.1	9.3	2.4	3.1	2.9	2.6	3.4	2.4	24.2	9.1	24
29	9.6	6.8	9.3	7.3	13.8	20.0	15.6	17.2	29.5	28.6	23.3	21.8	26.2	26.9	29.6	21.6	15.1	13.6	7.3	2.9	3.9	4.9	5.3	5.1	2.9	29.6	15.2	24
30	4.9	3.3	4.8	8.5	4.9	6.6	5.0	9.8	7.0	8.6	10.7	10.5	13.5	11.6	13.3	8.2	11.3	15.6	13.4	7.2	7.3	4.0	4.5	5.8	3.3	15.6	8.3	24
HOURLY MAX	27.3	33.9	27.6	24.9	23.0	22.0	24.0	22.7	37.7	33.8	39.3	35.7	34.7	35.1	35.8	41.5	35.9	29.8	28.9	30.1	27.4	27.3	30.0	27.7				

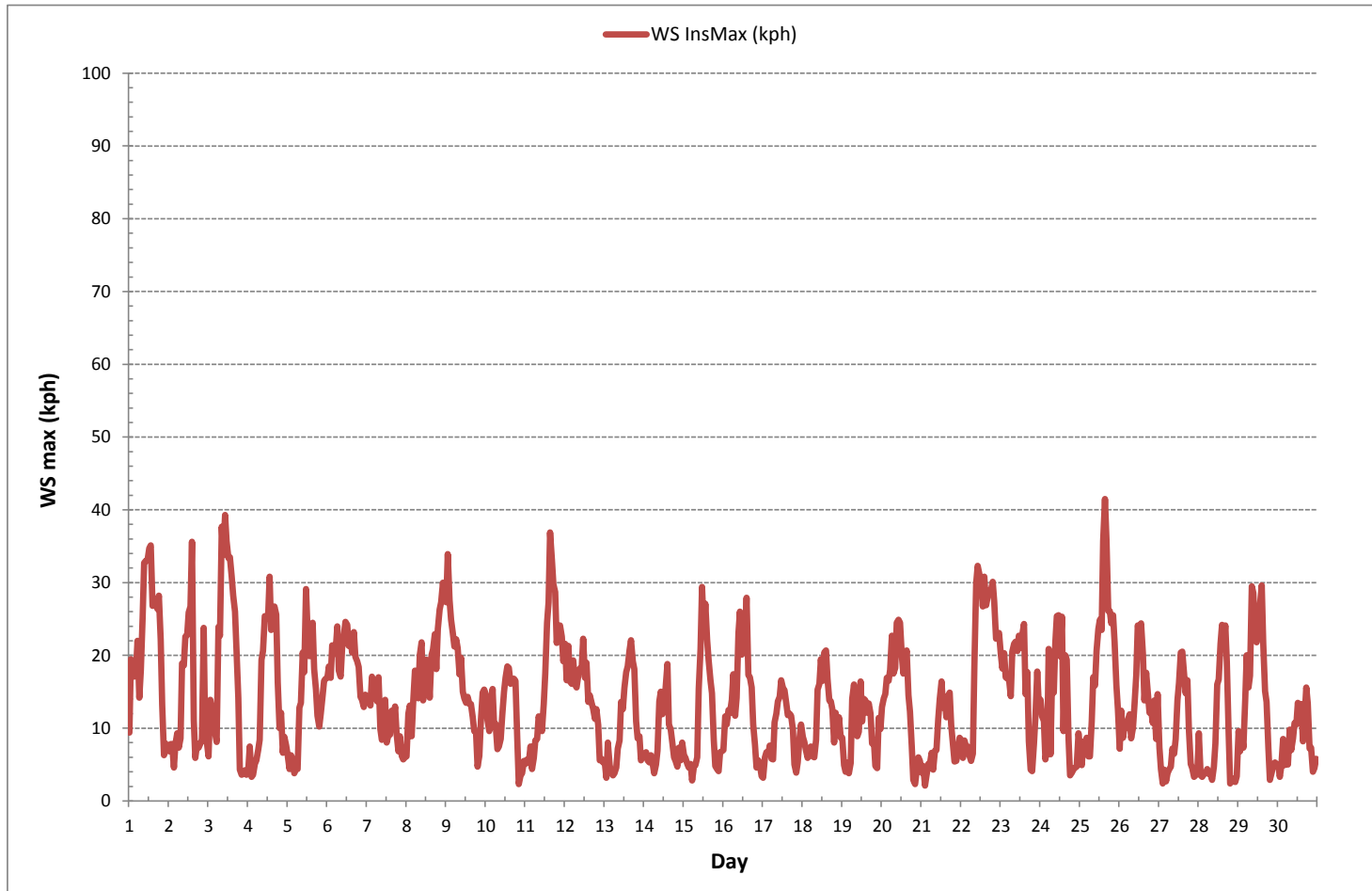
STATUS FLAG CODES

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

MONTHLY SUMMARY

MAXIMUM INSTANTANEOUS VALUE:	41.5 kph	@ HOUR	15	ON DAY	25
OPERATIONAL TIME:	720 hrs				

WIND SPEED Instantaneous Maximum (WS kph)

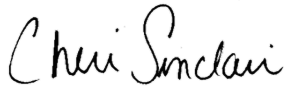


***APPENDIX IV
REPORT CERTIFICATION FORM***

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.)	
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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.



Signature of the External Person Certifying the Report

12 - Oct - 2018





Report Issued Date (dd-mon-yyyy)

APPENDIX V
DATA VALIDATION CERTIFICATION FORM



Validation Certificate Form

Client: <u>Peace River Area Monitoring Program Committee</u>	Project #: <u>8449-2018-09-67-C</u>
Site: <u>Three Creeks 986b Station</u>	Contact: <u>Karla Reesor</u>

Level 0 Preliminary Verification	<u></u>	Date <u>05 - Oct - 2018</u>
Level 1 Primary Validation	<u></u>	Date <u>05 - Oct - 2018</u>
Level 2 Final Validation	<u></u>	Date <u>12 - Oct - 2018</u>
Level 3 Independent Data Review	<u></u>	Date <u>12 - Oct - 2018</u>
Post-Final Validation	<u>NA</u>	Date <u>NA</u>

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